Salem 2

Initiating Events



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TS 3.11.2.5 WITHIN THE REQUIRED TIME PERIOD

Unit 2 operators were slow in reducing the oxygen concentration in the waste gas decay tank to levels below those potentially explosive and exceeded the time limit required by technical specification 3.11.2.5. The risk associated with this event was minimal because all fire protection equipment remained available. This event was characterized as a "green" issue due to its very low safety significance since all fire protection equipment in the area remained available and the event was of limited duration. Inspection Report# : 1999007(pdf)



🚺 Jul 11, 1999

Identified By: NRC Item Type: FIN Finding

FIRE PROTECTION/BARRIERS

PSEG maintained appropriate control of combustible material and ignition sources in inspected areas. In general, impaired fire barriers were clearly tagged and documented in the corrective action program (CAP). However, the inspectors discovered some minor deficiencies such as a fire door which would not completely close without operator assistance. The minor violation associated with the fire door which would not close completely without operator assistance was classified as a green finding due to its very low safety significance. Inspection Report# : <u>1999005(pdf)</u>

Dection Report# . <u>1999005(</u>



Significance: Apr 01, 2000 Identified By: Self Disclosing Item Type: FIN Finding

A TECHNICIAN APPLIED A JUMPER TO THE WRONG RELAY CONTACTS DURING ON-LINE MAINTENANCE, CAUSING A COMPLETE LOSS OF ALL CIRCULATING WATER TRAVELING SCREENS

A maintenance technician applied a jumper to the wrong contacts on a protective relay during a planned on-line maintenance activity associated with the 12B circulating water pump breaker. This error resulted in the complete loss of all circulating water system traveling water screens (TWSs). The safety significance of this event was very low because the TWSs were restored within five minutes and there was no observable affect on circulating water flow to the main condenser.

Inspection Report# : 2000002(pdf)

Mitigating Systems

Significance: Feb 07, 2000 Identified By: NRC

Item Type: VIO Violation

THE CARBON DIOXIDE TESTS FOR THE UNITS 1 & 2 4,160 VAC SWITCHGEAR ROOMS DID NOT REACH OR MAINTAIN THE REQUIRED CO2 CONCENTRATION OF 50%

PSEG did not ensure that the carbon dioxide concentration tests for the Units 1 & 2 4,160 VAC switchgear rooms reached and maintained the required CO2 concentration of 50%. This is a violation of Unit 1 license condition C.5 and Unit 2 license condition 2.C.10. This finding was determined to be WHITE by the significance determination process. The safety significance of this WHITE finding is low to moderate. During the supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that PSEG had performed a comprehensive evaluation of the failure of the carbon dioxide suppression system to achieve its design concentration. PSEG is currently working to correct carbon dioxide concentrations for the total flooding fire suppression systems, upgrade electrical raceway fire barrier systems, and convert the 4160v switchgear room fire suppression system from manual to automatic. Based on PSEG's acceptable performance in addressing the switchgear room fire suppression system issue, the White finding associated with this issue will only be consdidered in assessing tplant

performance for a total of four quarters in accordance with the guidance in NRC Inspection Manual Chapter 0305. Inspection Report# : <u>1999010(pdf</u>)



Significance: Feb 07, 2000

Identified By: NRC Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THE CO2 SYSTEMS FOR THE UNITS 1 & 2 4,160 VAC ELECTRIC PENETRATION ROOMS REACHED AND MAINTAINED THE REQUIRED CO2 CONCENTRATION

The team identified that the carbon dioxide concentration tests for the Units 1 & 2 electrical penetration areas did not reach or maintain the required CO2 concentration of 50%. This failure is a violation of license conditions for each unit. This finding was evaluated by the significance determination process (SDP) and determined to be GREEN based on the other detection and suppression systems available in the area. The safety significance of this finding is very low. Inspection Report# : 1999010(*pdf*)



Significance: Feb 07, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THAT ONE TRAIN OF EQUIPMENT NECESSARY TO ACHIEVE HOT SHUTDOWN FORM THE EMERGENCY CONTROL STATION IS FREE OF FIRE DAMAGE

PSEG identified a condition in which they failed to ensure that one train of equipment necessary to achieve hot shutdown from the emergency control station is free of fire damage. This is a non-cited violation of Section III.G.1.a of Appendix R. This issue was evaluated by the SDP and found to be within the licensee's respone band. (GREEN) The safety significance of this finding is very low. Inspection Report# : 1999010(pdf)



Feb 07, 2000

Identified By: Licensee Item Type: NCV NonCited Violation

PSEG IDENTIFIED A CONDITION IN WHICH A FIRE COULD DAMAGE CABLES SUCH THAT THE POWER OPERATED RELIEF VALVE WOULD OPEN AND THE ASSOCIATED BLOCK VALVE COULD NOT BE CLOSED.

PSEG identified a condition in which a fire could damage cables such that the power operated relief valve would open and the associated block valve could not be closed. The failure to protect one train of equipment necessary to achieve hot shutdown is a violation of III.G.1.a of Appendix R. This finding was evaluated by the SDP and determined to be GREEN. The safety significance of this finding was very low. Inspection Report# : 1999010(pdf)



Sep 01, 1999

Significance: Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE ACCEPTANCE CRITERIA IN SURVEILLANCE TEST PROCEDURES

The acceptance criteria in the auxiliary feedwater (AFW) pump surveillance test procedures was inadequate since it did not ensure that the pump performance was capable of meeting accident analysis performance or pump operability criteria found in the Unit 1 and 2 Technical Specifications. This issue was considered potentially significant due to the allowable degraded core cooling capability associated with the established AFW pump minimum performance acceptance criteria. This issue has been entered into PSEG Nuclear's corrective action program (CAP). The issue was considered "green" in the significance determination process since it did not have an immediate impact on AFW system operability as determined by an evaluation of recent pump performance.

Inspection Report# : <u>1999006(pdf)</u>



Significance: Sep 01, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

MULTIPLE EXAMPLES OF INEFFECTIVE IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM

The team identified some instances where PSEG Nuclear did not effectively implement the corrective action program (CAP): 1) A prior performance weakness resulted in a governor control system needle valve setting for the 23 AFW pump turbine that was not optimal for actual operating conditions; 2) During operation of the 23 AFW pump, the team identified that the turbine outboard bearing temperature exhibited an increasing trend, which represented an operability question, and PSEG Nuclear was not aware of this potential problem. Consequently, this problem was not entered into the CAP; and, 3) Other examples of ineffective implementation of the CAP were identified, including deficiencies not

promptly entered into the CAP or not adequately corrected. These issues were considered to be significant in that they indicated an overall CAP weakness since problems were noted in not identifying corrective action items and the lack of timeliness and effectiveness of corrective actions. These issues were considered "green" in the significance determination process because they did not have an immediate impact on AFW system operability and were ultimately included in PSEG Nuclear's CAP.

Inspection Report# : 1999006(pdf)





Identified By: NRC Item Type: NCV NonCited Violation

Significance:

INADEQUATE DESIGN CONTROL CONCERNING REPLACEMENT PARTS FOR POSITIONERS FOR AFW FLOW CONTROL VAVLES

The team found that the positioners for the AFW flow control valves had been maintained with parts that were not qualified for use in safety-related applications. This issue was considered significant since the functionality for valves in a risk significant system was being challenged. The qualification issue was considered "green" in the significance determination process because it did not have an immediate impact on AFW system operability based on an engineering evaluation and the issue was being addressed by PSEG Nuclear's CAP. Inspection Report# : 1999006(pdf)



Significance: Jul 11, 1999

Identified By: Licensee Item Type: FIN Finding

CFCU TRAIN UNAVAILABILITY PERFORMANCE CRITERIA

PSEG nuclear personnel properly monitored containment fan cooling unit (CFCU) performance for reliability and unavailability. However, while PSEG's recent change in the CFCU train unavailability performance criteria was acceptable, it was not based on an evaluation of all of the appropriate factors. Also, the goals for the diesel generators were weak in that the cause of the associated unavailability was not addressed. This finding was assessed to be green as a reevaluation by PSEG of the CFCU train unavailability performance criteria using more appropriate factors revealed only a minimal increase in large early release frequency (LERF). Inspection Report# : 1999005(pdf)



📕 Jul 11, 1999

Identified By: NRC Item Type: FIN Finding

INCOMPLETE COMPENSATORY MEASURES FOR DEGRADED EQUIPMENT CONDITIONS

PSEG nuclear operators appropriately assessed three degraded equipment conditions in terms of their impact on the design basis functions of the affected systems. Each of the operability evaluations were completed in a timely manner. However, some of the associated compensatory measures were either incomplete or poorly controlled. This finding was evaluated to be green due to the minor significance of the compensatory measures needed and the absence of NRC requirements in this area. Inspection Report# : 1999005(pdf)



Significance: Feb 09, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO DOCUMENT AND MAINTAIN QUALITY RECORDS OF EMERGENT TROUBLESHOOTING AND MAINTENANCE ACTIVITIES ON THE CONTROL CIRCUITRY FOR THE 1B EDG

PSEG Nuclear maintenance failed to document and maintain records of emergent troubleshooting and maintenance activities on the control circuitry for the 1B EDG. PSEG Nuclear also failed to maintain records of a September 2000 internal inspection of the 12 charging pump speed increaser. These two examples of PSEG Nuclear's failure to maintain complete and adequate inspection and maintenance records were a non-cited violation of Technical Specification 6.10.1.b and 10 CFR 50, Appendix B, Criterion XVII, Quality Assurance Records. The findings were evaluated using the significance determination process (SDP) and considered to be of very low risk significance because the failure to maintain the records did not affect the availability of the mitigating systems.

Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO FOLLOW PROCEDURES AND PERFORM AN ADEQUATE POST-TRIP REVIEW FOLLOWING THE PRESSURIZER SPRAY VALVE FAILURE, REACTOR TRIP AND SAFETY INJECTION EVENT Operating procedures did not provide adequate guidance to operators during their response to a stuck open pressurizer spray valve event that resulted in an automatic reactor trip and safety injection. The instructions which existed regarding the valve, including stopping reactor coolant pumps and isolating control air, conflicted with actions needed to address the event. However, PSEG Nuclear did not identify the procedural deficiencies during the post-trip review of the event as specified by the post-trip review procedure. The failure to identify and evaluate these procedural deficiencies was a non-cited violation. This finding was evaluated using the SDP and determined to be of very low risk significance, because the procedural deficiencies did not prevent the operators from controlling plant pressure during the event. Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002

Identified By: NRC

Item Type: NCV NonCited Violation FAILURE TO IMPLEMENT PROMPT CORRECTIVE ACTIONS FOR A DEGRADED 2C EDG CYLINDER ISOLATION VALVE

PSEG Nuclear failed to promptly identify and correct a condition adverse to quality involving a degraded cylinder isolation valve (petcock) which was not functioning properly during corrective maintenance on the 2C EDG. During a subsequent test of the 2C EDG, flames were observed to be coming out of the cylinder 5R petcock, and the CO2 automatic fire suppression system actuated before the operators completed the EDG shutdown. The failure to identify and correct the degraded cylinder isolation valve was considered a non-cited violation of 10 CFR 50, Appendix XVI, Corrective Actions. The finding was evaluated using the SDP and considered to be of very low risk significance, because the emergency diesel generator unavailability time associated with this event was within the Technical Specification allowed outage time. Inspection Report# : 2001012(pdf)



Significance: Dec 29, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO PERFORM FUNCTIONAL TESTING OF THE UNIT 2 RADIOACTIVE WASTE GAS HOLDUP SYSTEM EFFLUENT OXYGEN MONITORING SYSTEM WITHIN SURVEILLANCE INTERVAL SPECIFIED BY TS 4.3.3.9 AND 4.0.2

Technical Specification 4.3.3.9 and associated Table 4.3-13, item 1.b, require, in part, that a functional test of the radioactive waste gas holdup system effluent oxygen monitoring system be functionally tested monthly. Technical Specification 4.0.2 states, in part, that the surveillance requirement shall be performed within the specified surveillance interval with a maximum allowable not to exceed 25 percent of the specified surveillance interval. Contrary to the above, the Unit 2 waste gas analyzer surveillance was not completed until November 29, 2001. This was approximately four days past the maximum allowable overdue date of November 24, 2001. Inspection Report# : 2001011(pdf)



Significance: Nov 10, 2001

Identified By: NRC Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO PROMPTLY IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY THAT HAD THE POTENTIAL TO AFFECT THE OPERABILITY OF THE NO. 21 CHARGING SYSTEM PUMP

Failure to implement appropriate corrective actions for a degraded no. 22 charging pump (CS) lubricating oil condition. PSEG Nuclear replaced the degraded oil, but did not implement any actions to prevent recurrence. This finding was of very low significance since the no. 22 CS pump has performed satisfactorily subsequent to the oil analysis results being addressed and the lubricating oil replacement. Inspection Report# : 2001010(pdf)



Significance: Aug 11, 2001

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY IDENTIFY AND CORRECT AN ADVERSE CONDITION THAT AFFECTED THE OPERABILITY OF THE CONTAINMENT SPRAY ADDITIVE TANK

PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 2 containment spray additive tank (SAT) level trend that occurred over a several month period. This resulted in dilution of the Unit 2 SAT sodium hydroxide (NAOH) concentration below the TS required minimum value for a period of up to 109 days. This finding was evaluated using SDP and found to be of very low significance since the tank concentration was above the minimum calculated NAOH concentration required for the SAT to perform its accident mitigation function. Inspection Report# : 2001008(pdf)



Item Type: NCV NonCited Violation

FAILURE TO EVALUATE WHETHER A PIPE LEAK IDENTIFIED DOWNSTREAM OF THE 21SW4 VALVE WAS INSIDE THE ASME SECTION OF THE SW SYSTEM FOR SEVEN WEEKS

10CFR50, Appendix B, Criteiron XVI, requires, in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, on June 20, 2001, PSEG Nuclear identified a pipe leak downstream of the 21SW4 valve, but did not evaluate whether the leak was inside the ASME section of the SW system until approximately August 9. Inspection Report# : 2001008(pdf)



Significance: May 19, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

WORKER ADJUSTED THE PACKING ON THE 22 AFW PUMP WITHOUT HAVING AN APPROVED WORK DOCUMENT

TS 6.8.1 requires "that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix "A" of Regulatory Guicde 1.33. RG 1.33 requires that procedures be developed to conduct maintenance on safety-related systems. PSEG Nuclear procedure NC.NA-AP.ZZ-0009(Q), "Work Management Program," requires that individuals perform work in accordance with appropriate work documents. On May 11, 2001, a plant worker adjusted the packing on the 22 AFW pump without having the approved work documents. Inspection Report# : 2001006(pdf)



Significance: Feb 10, 2001

Identified By: NRC

Item Type: NCV NonCited Violation UNTIMELY AND INEFFECTIVE CORRECTIVE ACTIONS TO PREVENT THE RECURRENCE OF VIBRATION INDUCED FAILURES OF THE 21 CCHX OUTLET VALVE, 21SW127

PSEG Nuclear did not take timely and effective corrective actions for vibration induced failures of service water valve 21 SW 127 on the 21 component cooling heat exchanger outlet. Failure of 21 SW 127 rendered the 21 component cooling water (CCW) loop inoperable when the redundant 22 CCW loop was inoperable to support a liquid radwaste discharge. The finding had a credible impact on safety since the failure of 21 SW 127 resulted in both component cooling water loops being out-of-service and resulted in a loss of the decay heat removal safety function. The SDP evaluation determined that the event was of very low safety significance due to the short duration of the event. The failure to implement effective, timely corrective actions for 21 SW 127 was considered a non-cited violation.

Inspection Report# : 2000011(pdf)



Significance: Feb 10, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

LICENSEE IDENTIFIED THAT SAFETY-RELATED VENTILATION DAMPER SPRING WAS MODIFIED DURING MAINTENANCE WITHOUT APPROPRIATE DESIGN CONTROLS

10 CFR 50, Appendix B, Criterion III, Design Control, requires that measures be established for the selection and review for suitability of application of parts that are essential to the safety-related functions of structures, systems and components. PSEG Nuclear identified that while repairing Unit 1 auxiliary building ventilation excess flow damper, S1ABV-1ABS8 under Order 60014824, a spring that assists in damper actuation was modified without the proper engineering documentation. This was documented in the corrective action program as Notification 20052729. Inspection Report# : 2000011(pdf)



Significance: Nov 11, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO SCHEDULE AND PERFORM PREVENTIVE MAINTENANCE FOR A TURBINE DRIVEN AUXILIARY FEEDWATER MODIFICAITON

PSEG Nuclear did not perform the specified preventive maintenance (PM) tasks for the new equipment associated with the turbine driven auxiliary feedwater pump enclosure modification at both units. This problem resulted in a credible impact on safety-related equipment which could have affected the availability and reliability of the auxiliary feedwater system. The failure to properly perform PM tasks for new equipment associated with modification 2EC-3522 as required by Procedure NC.WM-AP.ZZ-0003(Q), Rev 0, "Regular Maintenance Process," was considered to be a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." The issue was determined to be of very low risk significance using the Significance Determination Process phase 1 screening because no actual equipment failures were attributed to the missed PMs.

Inspection Report# : 2000009(pdf)

Barrier Integrity



Feb 27, 2000

Identified By: NRC Item Type: FIN Finding

SMALL UNIDENTIFIED LEAK FROM THE CVCS AT UNIT 2 PERSISTED FOR 3 1/2 HOURS BEFORE IDENTIFICATION AND TERMINATION A small unidentified leak from the chemical and volume control system at Unit 2 persisted for approximately 3 1/2 hours before operators

recognized and terminated the condition. PSEG attributed the delays in recognizing the condition, in part, to the fact that two other concurrent evolutions were in progress or had just been completed which effectively masked the indications of a leak, namely volume control tank level and plant ventilation radiation levels. The safety and risk significance of this incident was very low because adequate reactor coolant inventory sources remained available throughout the event and offsite release rates remained well below regulatory limits.



Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO DEVELOP ADEQUATE INSTRUCTIONS TO REPACK THE 2CV49 VALVE AS REQUIRED BY 10CFR50, APPENDIX B, CRITERION V

10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall prescribed by documented instructions that include appropriate acceptance criteria to determine that important activities have been satisfactorily accomplished. Contrary to the above, PSEG Nuclear determined on September 6, 2001, that the packing data sheet for the 2CV49 valve was incorrect. As a result, valve 2CV49 developed an excessive packing leak that could have resulted in an exposure to the control room operators in excess of the 10 CFR 50, Appendix A, General Design Criteria 19 limits following a postulated LOCA.

Inspection Report# : 2001011(pdf)



Significance: Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation FAILURE TO ISOLATE THE AFFECTED PENETRATION AS REQUIRED BY TS 3.6.3 SUBSEQUENT TO DISABLING SERVICE WATER VALVES 22SW58 AND 22SW72

Technical Specification 3.6.3, requires, in part, that inoperable containment penetration isolation valves be restored to an operable condition within four hours or the associated penetration shall be isolated. Contrary to the above, PSEG Nuclear disabled two containment isolation valves (22SW58 and 22SW72) on September 23, 2001, but did not isolate the associated penetration within four hours as required by TS 3.6.3. Inspection Report# : 2001011(pdf)

Emergency Preparedness

Occupational Radiation Safety



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

INADVERTENT DISCHARGE FROM THE 23 WASTE GAS DECAY TANK TO THE AUXILIARY BUILDING

PSEG operators inadvertently vented radioactive gas into the Unit 2 auxiliary building. The plant vent and auxiliary building air radiation monitors detected increased radiation levels, which remained well below technical specification limits. Errors by control room and field operators, including failure to follow procedures, contributed to the incident. This event was characterized as a "green" issue since the increased radiation levels in the auxiliary building were well below regulatory limits.

Inspection Report# : <u>1999007(pdf)</u>

Public Radiation Safety



Oct 10, 1999

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO REPORT IN RAD. ENV. OP. REPORTS ACTIONS TO PREVENT RECURRENCE OF RAD. ENVIR. AIR SAMPLER OUTAGES PSEG failed to provide complete information in their 1997 and 1998 Annual Radiological Environmental Operating Reports in that these documents did not describe plans to prevent recurrence of multiple environmental air sampler outages. This issue was characterized as a Non-Cited Violation of TS 3.12.1. The safety significance of this issue was very low because it did not significantly compromise PSEG's ability to assess the environmental impact of continued plant operation.

Inspection Report# : 1999008(pdf)



Aug 29, 1999 Significance:

Identified By: Licensee

Item Type: NCV NonCited Violation **INADEQUATELY PERFORMED SURVEILLANCE PROCEDURE**

The carbon adsorber (activated charcoal) in the auxiliary building ventilation exhaust system was operated at an air flow in excess of the specified maximum. Operators declared the adsorber inoperable until engineering department personnel assessed the potential impact of this occurrence, which was later determined to be negligible. This issue had low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Insufficient attention to detail by a control room operator had resulted in this incident, which represented a non-cited violation of technical specification 6.8.1. This issue was characterized as a "green" event due to its very low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine.

Inspection Report# : 1999007(pdf)



Dec 29, 2001 Significance:

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN YEAR 2000 CALIBRATION RECORDS FOR CHEMICAL WASTE BASIN MONITOR (R37) AND UNIT 1 **CONTAINMENT FAN COOLER-SW DISCHARGE MONITOR (1R13B)**

Technical Specification Section 6.10.d requires that records of surveillance activities, inspections, and calibrations, required by the TSs, be retained for at least five years. The radiological calibration results for the Chemical Waste Basin Monitor (R37) and the Unit 1 Containment Fan Cooler-Service Water Line Discharge Monitor (1R13B) for the year 2000 were not retrievable. PSEG Nuclear placed this issue into its corrective action system as a Notification Report (Notification 20084063). The finding was determined to be of very low safety significance, because the issue did not impair the ability to assess the public dose, and did not result in exceeding public dose limits listed in Appendix I of 10 CFR 50 or 10 CFR 20.1301(d). The issue was not reportable in the Annual Radiological Effluent Report. Further, PSEG Nuclear produced a work record indicating the calibrations had been properly performed.

Inspection Report# : 2001011(pdf)

Physical Protection



Item Type: NCV NonCited Violation

FAILURE TO CONDUCT PACKAGE SEARCH IN ACCORDANCE WITH SITE SECURITY PLAN

Security personnel did not properly search a hand-carried package prior to granting it unrestricted access to the site protected area (PA). Specifically, guards permitted a plant worker to bypass the x-ray machine and carry a large bag of moving blankets into the PA without a search of the bag's contents. Later examination of the bag's contents yielded no contraband. This incident was characterized as a "green" issue since no contraband was identified in the package which was not searched. Inspection Report# : 1999007(pdf)

Miscellaneous

Significance: N/A Mar 23, 2001 Identified By: NRC Item Type: FIN Finding PROBLEM IDENTIFICATION AND RESOLUTION PROGRAM INSPECTION

The licensee staff used the notification system appropriately to identify issues needing review for corrective actions. Daily issue review and prioritization meetings focused on safety and minimization of plant risk. Operators reviewed the risk worth of planned work activities. Operability determinations appeared adequate for the reviewed issues. Identified issues were being reviewed for apparent and root causes. Root cause evaluations were conducted to an appropriate depth and provided associated corrective actions. Corrective actions for identified issues were effective, commensurate with the safety significance of the issues, and sensitive to the necessity for reliable equipment performance. The extent of condition and generic applicability for significant conditions adverse to quality were properly considered. The size of the corrective action backlog and timeliness of corrective action completion, with respect to safety significance, was formally tracked and managed. The licensee had taken actions commensurate with the importance of service water system issue; however, detritus and silt continued to challenge the operators and plant equipment. Self-assessments and audits were self-critical and provided appropriate feedback, including notifications and recommendations. Inspection Report# : 2001004(pdf)

Significance: N/A Nov 11, 2000 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO PERFORM A NITROGEN PURGE IN ACCORDANCE WITH PROCEDURES RESULTING IN INCREASED DOSE RATES Plant procedure IOP-6 specifies that a degassification evolution be performed on the primary coolant during a shutdown, via purging the hydrogen cover gas in the volume control tank with nitrogen. The cover gas in the volume control tank was not purged with nitrogen during shutdown on October 6, 2000, as described in Notification 20042531. This resulted in PSEG Nuclear personnel having to perform a second chemically-induced crud burst, resulting in increased dose rates on various pipes and components located inside the bio-shield. Inspection Report# : 2000009(pdf)

Significance: N/A Apr 18, 2000 Identified By: NRC Item Type: FIN Finding PROBLEM IDENTIFICATION AND RESOLUTION

No significant findings were identified. There was however, some concern regarding the number of human performance errors that have occurred within all departments at the station over the past two years. The team noted that during the inspection, previously identified human performance issues were all rolled up into one station notification that addressed the human performance issue. Along these lines, but under a separate notification, the team noted a roll up of another human performance issue that dealt specifically with station personnel failing to follow procedures. As identified by the licensee and the team, it was determined that ineffective corrective actions, regarding human performance errors, were attributal to some narrowly focused root cause analyses or to poor correlation of causes with corrective actions. These causes were similar to that noted in the training area (exam quality and written test results). Since improvement plans were being developed to address this area as of the end of the inspection, it was too early to assess the resolution to these problems and subsequent corrective actions. Follow up action is warranted in this area.

Inspection Report# : 2000003(pdf)

Last modified : April 01, 2002

Salem 2

Initiating Events



Significance: Apr 01, 2000 Identified By: Self Disclosing Item Type: FIN Finding

A TECHNICIAN APPLIED A JUMPER TO THE WRONG RELAY CONTACTS DURING ON-LINE MAINTENANCE, CAUSING A COMPLETE LOSS OF ALL CIRCULATING WATER TRAVELING SCREENS

A maintenance technician applied a jumper to the wrong contacts on a protective relay during a planned on-line maintenance activity associated with the 12B circulating water pump breaker. This error resulted in the complete loss of all circulating water system traveling water screens (TWSs). The safety significance of this event was very low because the TWSs were restored within five minutes and there was no observable affect on circulating water flow to the main condenser.

Inspection Report# : 2000002(pdf)



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TS 3.11.2.5 WITHIN THE REQUIRED TIME PERIOD

Unit 2 operators were slow in reducing the oxygen concentration in the waste gas decay tank to levels below those potentially explosive and exceeded the time limit required by technical specification 3.11.2.5. The risk associated with this event was minimal because all fire protection equipment remained available. This event was characterized as a "green" issue due to its very low safety significance since all fire protection equipment in the area remained available and the event was of limited duration.

Inspection Report# : <u>1999007(pdf)</u>



Significance: Jul 11, 1999 Identified By: NRC Item Type: FIN Finding

FIRE PROTECTION/BARRIERS

PSEG maintained appropriate control of combustible material and ignition sources in inspected areas. In general, impaired fire barriers were clearly tagged and documented in the corrective action program (CAP). However, the inspectors discovered some minor deficiencies such as a fire door which would not completely close without operator assistance. The minor violation associated with the fire door which would not close completely without operator assistance was classified as a green finding due to its very low safety significance. Inspection Report# : 1999005(pdf)

Mitigating Systems



Identified By: NRC Item Type: VIO Violation

THE CARBON DIOXIDE TESTS FOR THE UNITS 1 & 2 4,160 VAC SWITCHGEAR ROOMS DID NOT REACH OR MAINTAIN THE REQUIRED CO2 CONCENTRATION OF 50%

PSEG did not ensure that the carbon dioxide concentration tests for the Units 1 & 2 4,160 VAC switchgear rooms reached and maintained the required CO2 concentration of 50%. This is a violation of Unit 1 license condition C.5 and Unit 2 license condition 2.C.10. This finding was determined to be WHITE by the significance determination process. The safety significance of this WHITE finding is low to moderate. During the supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that PSEG had performed a comprehensive evaluation of the failure of the carbon dioxide suppression system to achieve its design concentration. PSEG is currently working to correct carbon dioxide concentrations for the total flooding fire suppression systems, upgrade electrical raceway fire barrier systems, and convert the 4160v switchgear room fire suppression systems from manual to automatic. Based on PSEG's acceptable performance in addressing the switchgear room fire suppression system issue, the White finding associated with this issue will only be consdidered in assessing tplant

performance for a total of four quarters in accordance with the guidance in NRC Inspection Manual Chapter 0305. Inspection Report# : <u>1999010(pdf</u>)



Significance: Feb 07, 2000

Identified By: NRC Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THE CO2 SYSTEMS FOR THE UNITS 1 & 2 4,160 VAC ELECTRIC PENETRATION ROOMS REACHED AND MAINTAINED THE REQUIRED CO2 CONCENTRATION

The team identified that the carbon dioxide concentration tests for the Units 1 & 2 electrical penetration areas did not reach or maintain the required CO2 concentration of 50%. This failure is a violation of license conditions for each unit. This finding was evaluated by the significance determination process (SDP) and determined to be GREEN based on the other detection and suppression systems available in the area. The safety significance of this finding is very low. Inspection Report# : 1999010(*pdf*)



Significance: Feb 07, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THAT ONE TRAIN OF EQUIPMENT NECESSARY TO ACHIEVE HOT SHUTDOWN FORM THE EMERGENCY CONTROL STATION IS FREE OF FIRE DAMAGE

PSEG identified a condition in which they failed to ensure that one train of equipment necessary to achieve hot shutdown from the emergency control station is free of fire damage. This is a non-cited violation of Section III.G.1.a of Appendix R. This issue was evaluated by the SDP and found to be within the licensee's respone band. (GREEN) The safety significance of this finding is very low. Inspection Report# : 1999010(pdf)



Feb 07, 2000

Identified By: Licensee Item Type: NCV NonCited Violation

PSEG IDENTIFIED A CONDITION IN WHICH A FIRE COULD DAMAGE CABLES SUCH THAT THE POWER OPERATED RELIEF VALVE WOULD OPEN AND THE ASSOCIATED BLOCK VALVE COULD NOT BE CLOSED.

PSEG identified a condition in which a fire could damage cables such that the power operated relief valve would open and the associated block valve could not be closed. The failure to protect one train of equipment necessary to achieve hot shutdown is a violation of III.G.1.a of Appendix R. This finding was evaluated by the SDP and determined to be GREEN. The safety significance of this finding was very low. Inspection Report# : 1999010(pdf)



Sep 01, 1999

Significance: Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE ACCEPTANCE CRITERIA IN SURVEILLANCE TEST PROCEDURES

The acceptance criteria in the auxiliary feedwater (AFW) pump surveillance test procedures was inadequate since it did not ensure that the pump performance was capable of meeting accident analysis performance or pump operability criteria found in the Unit 1 and 2 Technical Specifications. This issue was considered potentially significant due to the allowable degraded core cooling capability associated with the established AFW pump minimum performance acceptance criteria. This issue has been entered into PSEG Nuclear's corrective action program (CAP). The issue was considered "green" in the significance determination process since it did not have an immediate impact on AFW system operability as determined by an evaluation of recent pump performance.

Inspection Report# : <u>1999006(pdf)</u>



Significance: Sep 01, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

MULTIPLE EXAMPLES OF INEFFECTIVE IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM

The team identified some instances where PSEG Nuclear did not effectively implement the corrective action program (CAP): 1) A prior performance weakness resulted in a governor control system needle valve setting for the 23 AFW pump turbine that was not optimal for actual operating conditions; 2) During operation of the 23 AFW pump, the team identified that the turbine outboard bearing temperature exhibited an increasing trend, which represented an operability question, and PSEG Nuclear was not aware of this potential problem. Consequently, this problem was not entered into the CAP; and, 3) Other examples of ineffective implementation of the CAP were identified, including deficiencies not

promptly entered into the CAP or not adequately corrected. These issues were considered to be significant in that they indicated an overall CAP weakness since problems were noted in not identifying corrective action items and the lack of timeliness and effectiveness of corrective actions. These issues were considered "green" in the significance determination process because they did not have an immediate impact on AFW system operability and were ultimately included in PSEG Nuclear's CAP.

Inspection Report# : <u>1999006(pdf)</u>





Identified By: NRC Item Type: NCV NonCited Violation

Significance:

INADEQUATE DESIGN CONTROL CONCERNING REPLACEMENT PARTS FOR POSITIONERS FOR AFW FLOW CONTROL VAVLES

The team found that the positioners for the AFW flow control valves had been maintained with parts that were not qualified for use in safety-related applications. This issue was considered significant since the functionality for valves in a risk significant system was being challenged. The qualification issue was considered "green" in the significance determination process because it did not have an immediate impact on AFW system operability based on an engineering evaluation and the issue was being addressed by PSEG Nuclear's CAP. Inspection Report# : 1999006(pdf)



Significance: Jul 11, 1999

Identified By: Licensee Item Type: FIN Finding

CFCU TRAIN UNAVAILABILITY PERFORMANCE CRITERIA

PSEG nuclear personnel properly monitored containment fan cooling unit (CFCU) performance for reliability and unavailability. However, while PSEG's recent change in the CFCU train unavailability performance criteria was acceptable, it was not based on an evaluation of all of the appropriate factors. Also, the goals for the diesel generators were weak in that the cause of the associated unavailability was not addressed. This finding was assessed to be green as a reevaluation by PSEG of the CFCU train unavailability performance criteria using more appropriate factors revealed only a minimal increase in large early release frequency (LERF). Inspection Report# : 1999005(pdf)



TII Jul 11, 1999

Identified By: NRC Item Type: FIN Finding

INCOMPLETE COMPENSATORY MEASURES FOR DEGRADED EQUIPMENT CONDITIONS

PSEG nuclear operators appropriately assessed three degraded equipment conditions in terms of their impact on the design basis functions of the affected systems. Each of the operability evaluations were completed in a timely manner. However, some of the associated compensatory measures were either incomplete or poorly controlled. This finding was evaluated to be green due to the minor significance of the compensatory measures needed and the absence of NRC requirements in this area. Inspection Report# : 1999005(pdf)



Significance: Feb 09, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO DOCUMENT AND MAINTAIN QUALITY RECORDS OF EMERGENT TROUBLESHOOTING AND MAINTENANCE ACTIVITIES ON THE CONTROL CIRCUITRY FOR THE 1B EDG

PSEG Nuclear maintenance failed to document and maintain records of emergent troubleshooting and maintenance activities on the control circuitry for the 1B EDG. PSEG Nuclear also failed to maintain records of a September 2000 internal inspection of the 12 charging pump speed increaser. These two examples of PSEG Nuclear's failure to maintain complete and adequate inspection and maintenance records were a non-cited violation of Technical Specification 6.10.1.b and 10 CFR 50, Appendix B, Criterion XVII, Quality Assurance Records. The findings were evaluated using the significance determination process (SDP) and considered to be of very low risk significance because the failure to maintain the records did not affect the availability of the mitigating systems.

Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO FOLLOW PROCEDURES AND PERFORM AN ADEQUATE POST-TRIP REVIEW FOLLOWING THE PRESSURIZER SPRAY VALVE FAILURE, REACTOR TRIP AND SAFETY INJECTION EVENT Operating procedures did not provide adequate guidance to operators during their response to a stuck open pressurizer spray valve event that resulted in an automatic reactor trip and safety injection. The instructions which existed regarding the valve, including stopping reactor coolant pumps and isolating control air, conflicted with actions needed to address the event. However, PSEG Nuclear did not identify the procedural deficiencies during the post-trip review of the event as specified by the post-trip review procedure. The failure to identify and evaluate these procedural deficiencies was a non-cited violation. This finding was evaluated using the SDP and determined to be of very low risk significance, because the procedural deficiencies did not prevent the operators from controlling plant pressure during the event. Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT PROMPT CORRECTIVE ACTIONS FOR A DEGRADED 2C EDG CYLINDER ISOLATION VALVE

PSEG Nuclear failed to promptly identify and correct a condition adverse to quality involving a degraded cylinder isolation valve (petcock) which was not functioning properly during corrective maintenance on the 2C EDG. During a subsequent test of the 2C EDG, flames were observed to be coming out of the cylinder 5R petcock, and the CO2 automatic fire suppression system actuated before the operators completed the EDG shutdown. The failure to identify and correct the degraded cylinder isolation valve was considered a non-cited violation of 10 CFR 50, Appendix XVI, Corrective Actions. The finding was evaluated using the SDP and considered to be of very low risk significance, because the emergency diesel generator unavailability time associated with this event was within the Technical Specification allowed outage time. Inspection Report# : 2001012(pdf)



Significance: Dec 29, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO PERFORM FUNCTIONAL TESTING OF THE UNIT 2 RADIOACTIVE WASTE GAS HOLDUP SYSTEM EFFLUENT OXYGEN MONITORING SYSTEM WITHIN SURVEILLANCE INTERVAL SPECIFIED BY TS 4.3.3.9 AND 4.0.2

Technical Specification 4.3.3.9 and associated Table 4.3-13, item 1.b, require, in part, that a functional test of the radioactive waste gas holdup system effluent oxygen monitoring system be functionally tested monthly. Technical Specification 4.0.2 states, in part, that the surveillance requirement shall be performed within the specified surveillance interval with a maximum allowable not to exceed 25 percent of the specified surveillance interval. Contrary to the above, the Unit 2 waste gas analyzer surveillance was not completed until November 29, 2001. This was approximately four days past the maximum allowable overdue date of November 24, 2001. Inspection Report# : 2001011(pdf)



Significance: Nov 10, 2001

Identified By: NRC Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO PROMPTLY IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY THAT HAD THE POTENTIAL TO AFFECT THE OPERABILITY OF THE NO. 21 CHARGING SYSTEM PUMP

Failure to implement appropriate corrective actions for a degraded no. 22 charging pump (CS) lubricating oil condition. PSEG Nuclear replaced the degraded oil, but did not implement any actions to prevent recurrence. This finding was of very low significance since the no. 22 CS pump has performed satisfactorily subsequent to the oil analysis results being addressed and the lubricating oil replacement. Inspection Report# : 2001010(pdf)



Significance: Aug 11, 2001

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY IDENTIFY AND CORRECT AN ADVERSE CONDITION THAT AFFECTED THE OPERABILITY OF THE CONTAINMENT SPRAY ADDITIVE TANK

PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 2 containment spray additive tank (SAT) level trend that occurred over a several month period. This resulted in dilution of the Unit 2 SAT sodium hydroxide (NAOH) concentration below the TS required minimum value for a period of up to 109 days. This finding was evaluated using SDP and found to be of very low significance since the tank concentration was above the minimum calculated NAOH concentration required for the SAT to perform its accident mitigation function. Inspection Report# : 2001008(pdf)



Item Type: NCV NonCited Violation

FAILURE TO EVALUATE WHETHER A PIPE LEAK IDENTIFIED DOWNSTREAM OF THE 21SW4 VALVE WAS INSIDE THE ASME SECTION OF THE SW SYSTEM FOR SEVEN WEEKS

10CFR50, Appendix B, Criteiron XVI, requires, in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, on June 20, 2001, PSEG Nuclear identified a pipe leak downstream of the 21SW4 valve, but did not evaluate whether the leak was inside the ASME section of the SW system until approximately August 9. Inspection Report# : 2001008(pdf)



Significance: May 19, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

WORKER ADJUSTED THE PACKING ON THE 22 AFW PUMP WITHOUT HAVING AN APPROVED WORK DOCUMENT

TS 6.8.1 requires "that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix "A" of Regulatory Guicde 1.33. RG 1.33 requires that procedures be developed to conduct maintenance on safety-related systems. PSEG Nuclear procedure NC.NA-AP.ZZ-0009(Q), "Work Management Program," requires that individuals perform work in accordance with appropriate work documents. On May 11, 2001, a plant worker adjusted the packing on the 22 AFW pump without having the approved work documents. Inspection Report# : 2001006(pdf)



Significance: Feb 10, 2001

Identified By: NRC

Item Type: NCV NonCited Violation UNTIMELY AND INEFFECTIVE CORRECTIVE ACTIONS TO PREVENT THE RECURRENCE OF VIBRATION INDUCED FAILURES OF THE 21 CCHX OUTLET VALVE, 21SW127

PSEG Nuclear did not take timely and effective corrective actions for vibration induced failures of service water valve 21 SW 127 on the 21 component cooling heat exchanger outlet. Failure of 21 SW 127 rendered the 21 component cooling water (CCW) loop inoperable when the redundant 22 CCW loop was inoperable to support a liquid radwaste discharge. The finding had a credible impact on safety since the failure of 21 SW 127 resulted in both component cooling water loops being out-of-service and resulted in a loss of the decay heat removal safety function. The SDP evaluation determined that the event was of very low safety significance due to the short duration of the event. The failure to implement effective, timely corrective actions for 21 SW 127 was considered a non-cited violation.

Inspection Report# : 2000011(pdf)



Significance: Feb 10, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

LICENSEE IDENTIFIED THAT SAFETY-RELATED VENTILATION DAMPER SPRING WAS MODIFIED DURING MAINTENANCE WITHOUT APPROPRIATE DESIGN CONTROLS

10 CFR 50, Appendix B, Criterion III, Design Control, requires that measures be established for the selection and review for suitability of application of parts that are essential to the safety-related functions of structures, systems and components. PSEG Nuclear identified that while repairing Unit 1 auxiliary building ventilation excess flow damper, S1ABV-1ABS8 under Order 60014824, a spring that assists in damper actuation was modified without the proper engineering documentation. This was documented in the corrective action program as Notification 20052729. Inspection Report# : 2000011(pdf)



Significance: Nov 11, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO SCHEDULE AND PERFORM PREVENTIVE MAINTENANCE FOR A TURBINE DRIVEN AUXILIARY FEEDWATER MODIFICAITON

PSEG Nuclear did not perform the specified preventive maintenance (PM) tasks for the new equipment associated with the turbine driven auxiliary feedwater pump enclosure modification at both units. This problem resulted in a credible impact on safety-related equipment which could have affected the availability and reliability of the auxiliary feedwater system. The failure to properly perform PM tasks for new equipment associated with modification 2EC-3522 as required by Procedure NC.WM-AP.ZZ-0003(Q), Rev 0, "Regular Maintenance Process," was considered to be a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." The issue was determined to be of very low risk significance using the Significance Determination Process phase 1 screening because no actual equipment failures were attributed to the missed PMs.

Inspection Report# : 2000009(pdf)

Barrier Integrity



📕 Feb 27, 2000

Identified By: NRC Item Type: FIN Finding

SMALL UNIDENTIFIED LEAK FROM THE CVCS AT UNIT 2 PERSISTED FOR 3 1/2 HOURS BEFORE IDENTIFICATION AND TERMINATION A small unidentified leak from the chemical and volume control system at Unit 2 persisted for approximately 3 1/2 hours before operators

recognized and terminated the condition. PSEG attributed the delays in recognizing the condition, in part, to the fact that two other concurrent evolutions were in progress or had just been completed which effectively masked the indications of a leak, namely volume control tank level and plant ventilation radiation levels. The safety and risk significance of this incident was very low because adequate reactor coolant inventory sources remained available throughout the event and offsite release rates remained well below regulatory limits.



Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO DEVELOP ADEQUATE INSTRUCTIONS TO REPACK THE 2CV49 VALVE AS REQUIRED BY 10CFR50, APPENDIX B, CRITERION V

10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall prescribed by documented instructions that include appropriate acceptance criteria to determine that important activities have been satisfactorily accomplished. Contrary to the above, PSEG Nuclear determined on September 6, 2001, that the packing data sheet for the 2CV49 valve was incorrect. As a result, valve 2CV49 developed an excessive packing leak that could have resulted in an exposure to the control room operators in excess of the 10 CFR 50, Appendix A, General Design Criteria 19 limits following a postulated LOCA.

Inspection Report# : 2001011(pdf)



Significance: Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation FAILURE TO ISOLATE THE AFFECTED PENETRATION AS REQUIRED BY TS 3.6.3 SUBSEQUENT TO DISABLING SERVICE WATER VALVES 22SW58 AND 22SW72

Technical Specification 3.6.3, requires, in part, that inoperable containment penetration isolation valves be restored to an operable condition within four hours or the associated penetration shall be isolated. Contrary to the above, PSEG Nuclear disabled two containment isolation valves (22SW58 and 22SW72) on September 23, 2001, but did not isolate the associated penetration within four hours as required by TS 3.6.3. Inspection Report# : 2001011(pdf)

Emergency Preparedness

Occupational Radiation Safety



Identified By: Licensee Item Type: NCV NonCited Violation

INADVERTENT DISCHARGE FROM THE 23 WASTE GAS DECAY TANK TO THE AUXILIARY BUILDING

PSEG operators inadvertently vented radioactive gas into the Unit 2 auxiliary building. The plant vent and auxiliary building air radiation monitors detected increased radiation levels, which remained well below technical specification limits. Errors by control room and field operators, including failure to follow procedures, contributed to the incident. This event was characterized as a "green" issue since the increased radiation levels in the auxiliary building were well below regulatory limits.

Inspection Report# : <u>1999007(pdf</u>)

Public Radiation Safety



Oct 10, 1999

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO REPORT IN RAD. ENV. OP. REPORTS ACTIONS TO PREVENT RECURRENCE OF RAD. ENVIR. AIR SAMPLER OUTAGES PSEG failed to provide complete information in their 1997 and 1998 Annual Radiological Environmental Operating Reports in that these documents did not describe plans to prevent recurrence of multiple environmental air sampler outages. This issue was characterized as a Non-Cited Violation of TS 3.12.1. The safety significance of this issue was very low because it did not significantly compromise PSEG's ability to assess the environmental impact of continued plant operation.

Inspection Report# : 1999008(pdf)



Aug 29, 1999 Significance:

Identified By: Licensee

Item Type: NCV NonCited Violation **INADEQUATELY PERFORMED SURVEILLANCE PROCEDURE**

The carbon adsorber (activated charcoal) in the auxiliary building ventilation exhaust system was operated at an air flow in excess of the specified maximum. Operators declared the adsorber inoperable until engineering department personnel assessed the potential impact of this occurrence, which was later determined to be negligible. This issue had low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Insufficient attention to detail by a control room operator had resulted in this incident, which represented a non-cited violation of technical specification 6.8.1. This issue was characterized as a "green" event due to its very low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine.

Inspection Report# : 1999007(pdf)



Dec 29, 2001 Significance:

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN YEAR 2000 CALIBRATION RECORDS FOR CHEMICAL WASTE BASIN MONITOR (R37) AND UNIT 1 **CONTAINMENT FAN COOLER-SW DISCHARGE MONITOR (1R13B)**

Technical Specification Section 6.10.d requires that records of surveillance activities, inspections, and calibrations, required by the TSs, be retained for at least five years. The radiological calibration results for the Chemical Waste Basin Monitor (R37) and the Unit 1 Containment Fan Cooler-Service Water Line Discharge Monitor (1R13B) for the year 2000 were not retrievable. PSEG Nuclear placed this issue into its corrective action system as a Notification Report (Notification 20084063). The finding was determined to be of very low safety significance, because the issue did not impair the ability to assess the public dose, and did not result in exceeding public dose limits listed in Appendix I of 10 CFR 50 or 10 CFR 20.1301(d). The issue was not reportable in the Annual Radiological Effluent Report. Further, PSEG Nuclear produced a work record indicating the calibrations had been properly performed.

Inspection Report# : 2001011(pdf)

Physical Protection



Item Type: NCV NonCited Violation

FAILURE TO CONDUCT PACKAGE SEARCH IN ACCORDANCE WITH SITE SECURITY PLAN

Security personnel did not properly search a hand-carried package prior to granting it unrestricted access to the site protected area (PA). Specifically, guards permitted a plant worker to bypass the x-ray machine and carry a large bag of moving blankets into the PA without a search of the bag's contents. Later examination of the bag's contents yielded no contraband. This incident was characterized as a "green" issue since no contraband was identified in the package which was not searched. Inspection Report# : 1999007(pdf)

Miscellaneous

Significance: N/A Apr 18, 2000 Identified By: NRC Item Type: FIN Finding PROBLEM IDENTIFICATION AND RESOLUTION

No significant findings were identified. There was however, some concern regarding the number of human performance errors that have occurred within all departments at the station over the past two years. The team noted that during the inspection, previously identified human performance issues were all rolled up into one station notification that addressed the human performance issue. Along these lines, but under a separate notification, the team noted a roll up of another human performance issue that dealt specifically with station personnel failing to follow procedures. As identified by the licensee and the team, it was determined that ineffective corrective actions, regarding human performance errors, were attributal to some narrowly focused root cause analyses or to poor correlation of causes with corrective actions. These causes were similar to that noted in the training area (exam quality and written test results). Since improvement plans were being developed to address this area as of the end of the inspection, it was too early to assess the resolution to these problems and subsequent corrective actions. Follow up action is warranted in this area.

Inspection Report# : 2000003(pdf)

Significance: N/A Mar 23, 2001 Identified By: NRC Item Type: FIN Finding

PROBLEM IDENTIFICATION AND RESOLUTION PROGRAM INSPECTION

The licensee staff used the notification system appropriately to identify issues needing review for corrective actions. Daily issue review and prioritization meetings focused on safety and minimization of plant risk. Operators reviewed the risk worth of planned work activities. Operability determinations appeared adequate for the reviewed issues. Identified issues were being reviewed for apparent and root causes. Root cause evaluations were conducted to an appropriate depth and provided associated corrective actions. Corrective actions for identified issues were effective, commensurate with the safety significance of the issues, and sensitive to the necessity for reliable equipment performance. The extent of condition and generic applicability for significant conditions adverse to quality were properly considered. The size of the corrective action backlog and timeliness of corrective action completion, with respect to safety significance, was formally tracked and managed. The licensee had taken actions commensurate with the importance of service water system issue; however, detritus and silt continued to challenge the operators and plant equipment. Self-assessments and audits were self-critical and provided appropriate feedback, including notifications and recommendations. Inspection Report# : 2001004(pdf)

Significance: N/A Nov 11, 2000 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO PERFORM A NITROGEN PURGE IN ACCORDANCE WITH PROCEDURES RESULTING IN INCREASED DOSE RATES

Plant procedure IOP-6 specifies that a degassification evolution be performed on the primary coolant during a shutdown, via purging the hydrogen cover gas in the volume control tank with nitrogen. The cover gas in the volume control tank was not purged with nitrogen during shutdown on October 6, 2000, as described in Notification 20042531. This resulted in PSEG Nuclear personnel having to perform a second chemically-induced crud burst, resulting in increased dose rates on various pipes and components located inside the bio-shield. Inspection Report# : 2000009(pdf)

Last modified : April 01, 2002

Salem 2

Initiating Events



Significance: Apr 01, 2000 Identified By: Self Disclosing Item Type: FIN Finding

A TECHNICIAN APPLIED A JUMPER TO THE WRONG RELAY CONTACTS DURING ON-LINE MAINTENANCE, CAUSING A COMPLETE LOSS OF ALL CIRCULATING WATER TRAVELING SCREENS

A maintenance technician applied a jumper to the wrong contacts on a protective relay during a planned on-line maintenance activity associated with the 12B circulating water pump breaker. This error resulted in the complete loss of all circulating water system traveling water screens (TWSs). The safety significance of this event was very low because the TWSs were restored within five minutes and there was no observable affect on circulating water flow to the main condenser.

Inspection Report# : 2000002(pdf)



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TS 3.11.2.5 WITHIN THE REQUIRED TIME PERIOD

Unit 2 operators were slow in reducing the oxygen concentration in the waste gas decay tank to levels below those potentially explosive and exceeded the time limit required by technical specification 3.11.2.5. The risk associated with this event was minimal because all fire protection equipment remained available. This event was characterized as a "green" issue due to its very low safety significance since all fire protection equipment in the area remained available and the event was of limited duration.

Inspection Report# : <u>1999007(pdf)</u>



Significance: Jul 11, 1999 Identified By: NRC Item Type: FIN Finding

FIRE PROTECTION/BARRIERS

PSEG maintained appropriate control of combustible material and ignition sources in inspected areas. In general, impaired fire barriers were clearly tagged and documented in the corrective action program (CAP). However, the inspectors discovered some minor deficiencies such as a fire door which would not completely close without operator assistance. The minor violation associated with the fire door which would not close completely without operator assistance was classified as a green finding due to its very low safety significance. Inspection Report# : 1999005(pdf)

Mitigating Systems



Identified By: NRC Item Type: VIO Violation

THE CARBON DIOXIDE TESTS FOR THE UNITS 1 & 2 4,160 VAC SWITCHGEAR ROOMS DID NOT REACH OR MAINTAIN THE REQUIRED CO2 CONCENTRATION OF 50%

PSEG did not ensure that the carbon dioxide concentration tests for the Units 1 & 2 4,160 VAC switchgear rooms reached and maintained the required CO2 concentration of 50%. This is a violation of Unit 1 license condition C.5 and Unit 2 license condition 2.C.10. This finding was determined to be WHITE by the significance determination process. The safety significance of this WHITE finding is low to moderate. During the supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that PSEG had performed a comprehensive evaluation of the failure of the carbon dioxide suppression system to achieve its design concentration. PSEG is currently working to correct carbon dioxide concentrations for the total flooding fire suppression systems, upgrade electrical raceway fire barrier systems, and convert the 4160v switchgear room fire suppression systems from manual to automatic. Based on PSEG's acceptable performance in addressing the switchgear room fire suppression system issue, the White finding associated with this issue will only be consdidered in assessing tplant

performance for a total of four quarters in accordance with the guidance in NRC Inspection Manual Chapter 0305. Inspection Report# : <u>1999010(pdf</u>)



Significance: Feb 07, 2000

Identified By: NRC Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THE CO2 SYSTEMS FOR THE UNITS 1 & 2 4,160 VAC ELECTRIC PENETRATION ROOMS REACHED AND MAINTAINED THE REQUIRED CO2 CONCENTRATION

The team identified that the carbon dioxide concentration tests for the Units 1 & 2 electrical penetration areas did not reach or maintain the required CO2 concentration of 50%. This failure is a violation of license conditions for each unit. This finding was evaluated by the significance determination process (SDP) and determined to be GREEN based on the other detection and suppression systems available in the area. The safety significance of this finding is very low. Inspection Report# : 1999010(*pdf*)



Significance: Feb 07, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THAT ONE TRAIN OF EQUIPMENT NECESSARY TO ACHIEVE HOT SHUTDOWN FORM THE EMERGENCY CONTROL STATION IS FREE OF FIRE DAMAGE

PSEG identified a condition in which they failed to ensure that one train of equipment necessary to achieve hot shutdown from the emergency control station is free of fire damage. This is a non-cited violation of Section III.G.1.a of Appendix R. This issue was evaluated by the SDP and found to be within the licensee's respone band. (GREEN) The safety significance of this finding is very low. Inspection Report# : 1999010(pdf)



Feb 07, 2000

Identified By: Licensee Item Type: NCV NonCited Violation

PSEG IDENTIFIED A CONDITION IN WHICH A FIRE COULD DAMAGE CABLES SUCH THAT THE POWER OPERATED RELIEF VALVE WOULD OPEN AND THE ASSOCIATED BLOCK VALVE COULD NOT BE CLOSED.

PSEG identified a condition in which a fire could damage cables such that the power operated relief valve would open and the associated block valve could not be closed. The failure to protect one train of equipment necessary to achieve hot shutdown is a violation of III.G.1.a of Appendix R. This finding was evaluated by the SDP and determined to be GREEN. The safety significance of this finding was very low. Inspection Report# : 1999010(pdf)



Feb 09, 2002

Significance: Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO DOCUMENT AND MAINTAIN QUALITY RECORDS OF EMERGENT TROUBLESHOOTING AND MAINTENANCE ACTIVITIES ON THE CONTROL CIRCUITRY FOR THE 1B EDG

PSEG Nuclear maintenance failed to document and maintain records of emergent troubleshooting and maintenance activities on the control circuitry for the 1B EDG. PSEG Nuclear also failed to maintain records of a September 2000 internal inspection of the 12 charging pump speed increaser. These two examples of PSEG Nuclear's failure to maintain complete and adequate inspection and maintenance records were a non-cited violation of Technical Specification 6.10.1.b and 10 CFR 50, Appendix B, Criterion XVII, Quality Assurance Records. The findings were evaluated using the significance determination process (SDP) and considered to be of very low risk significance because the failure to maintain the records did not affect the availability of the mitigating systems. Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW PROCEDURES AND PERFORM AN ADEQUATE POST-TRIP REVIEW FOLLOWING THE PRESSURIZER SPRAY VALVE FAILURE, REACTOR TRIP AND SAFETY INJECTION EVENT

Operating procedures did not provide adequate guidance to operators during their response to a stuck open pressurizer spray valve event that resulted in an automatic reactor trip and safety injection. The instructions which existed regarding the valve, including stopping reactor coolant pumps and isolating control air, conflicted with actions needed to address the event. However, PSEG Nuclear did not identify the procedural

deficiencies during the post-trip review of the event as specified by the post-trip review procedure. The failure to identify and evaluate these procedural deficiencies was a non-cited violation. This finding was evaluated using the SDP and determined to be of very low risk significance, because the procedural deficiencies did not prevent the operators from controlling plant pressure during the event. Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002 Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT PROMPT CORRECTIVE ACTIONS FOR A DEGRADED 2C EDG CYLINDER ISOLATION VALVE

PSEG Nuclear failed to promptly identify and correct a condition adverse to quality involving a degraded cylinder isolation valve (petcock) which was not functioning properly during corrective maintenance on the 2C EDG. During a subsequent test of the 2C EDG, flames were observed to be coming out of the cylinder 5R petcock, and the CO2 automatic fire suppression system actuated before the operators completed the EDG shutdown. The failure to identify and correct the degraded cylinder isolation valve was considered a non-cited violation of 10 CFR 50, Appendix XVI, Corrective Actions. The finding was evaluated using the SDP and considered to be of very low risk significance, because the emergency diesel generator unavailability time associated with this event was within the Technical Specification allowed outage time. Inspection Report# : 2001012(pdf)



Significance: Dec 29, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO PERFORM FUNCTIONAL TESTING OF THE UNIT 2 RADIOACTIVE WASTE GAS HOLDUP SYSTEM EFFLUENT OXYGEN MONITORING SYSTEM WITHIN SURVEILLANCE INTERVAL SPECIFIED BY TS 4.3.3.9 AND 4.0.2

Technical Specification 4.3.3.9 and associated Table 4.3-13, item 1.b, require, in part, that a functional test of the radioactive waste gas holdup system effluent oxygen monitoring system be functionally tested monthly. Technical Specification 4.0.2 states, in part, that the surveillance requirement shall be performed within the specified surveillance interval with a maximum allowable not to exceed 25 percent of the specified surveillance interval. Contrary to the above, the Unit 2 waste gas analyzer surveillance was not completed until November 29, 2001. This was approximately four days past the maximum allowable overdue date of November 24, 2001. Inspection Report# : 2001011(pdf)





Identified By: NRC Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO PROMPTLY IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY THAT HAD THE POTENTIAL TO AFFECT THE OPERABILITY OF THE NO. 21 CHARGING SYSTEM PUMP

Failure to implement appropriate corrective actions for a degraded no. 22 charging pump (CS) lubricating oil condition. PSEG Nuclear replaced the degraded oil, but did not implement any actions to prevent recurrence. This finding was of very low significance since the no. 22 CS pump has performed satisfactorily subsequent to the oil analysis results being addressed and the lubricating oil replacement. Inspection Report# : 2001010(pdf)



Significance: Aug 11, 2001 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY IDENTIFY AND CORRECT AN ADVERSE CONDITION THAT AFFECTED THE OPERABILITY OF THE CONTAINMENT SPRAY ADDITIVE TANK

PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 2 containment spray additive tank (SAT) level trend that occurred over a several month period. This resulted in dilution of the Unit 2 SAT sodium hydroxide (NAOH) concentration below the TS required minimum value for a period of up to 109 days. This finding was evaluated using SDP and found to be of very low significance since the tank concentration was above the minimum calculated NAOH concentration required for the SAT to perform its accident mitigation function. Inspection Report# : 2001008(pdf)



Significance: Aug 11, 2001 Identified By: Licensee Item Type: NCV NonCited Violation FAILURE TO EVALUATE WHETHER A PIPE LEAK IDENTIFIED DOWNSTREAM OF THE 21SW4 VALVE WAS INSIDE THE ASME SECTION OF THE SW SYSTEM FOR SEVEN WEEKS 10CFR50, Appendix B, Criteiron XVI, requires, in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, on June 20, 2001, PSEG Nuclear identified a pipe leak downstream of the 21SW4 valve, but did not evaluate whether the leak was inside the ASME section of the SW system until approximately August 9. Inspection Report# : 2001008(pdf)



Significance: May 19, 2001 Identified By: NRC

Item Type: NCV NonCited Violation WORKER ADJUSTED THE PACKING ON THE 22 AFW PUMP WITHOUT HAVING AN APPROVED WORK DOCUMENT

TS 6.8.1 requires "that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix "A" of Regulatory Guicde 1.33. RG 1.33 requires that procedures be developed to conduct maintenance on safety-related systems. PSEG Nuclear procedure NC.NA-AP.ZZ-0009(Q), "Work Management Program," requires that individuals perform work in accordance with appropriate work documents. On May 11, 2001, a plant worker adjusted the packing on the 22 AFW pump without having the approved work documents. Inspection Report# : 2001006(pdf)



Significance: Feb 10, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

UNTIMELY AND INEFFECTIVE CORRECTIVE ACTIONS TO PREVENT THE RECURRENCE OF VIBRATION INDUCED FAILURES OF THE 21 CCHX OUTLET VALVE, 21SW127

PSEG Nuclear did not take timely and effective corrective actions for vibration induced failures of service water valve 21 SW 127 on the 21 component cooling heat exchanger outlet. Failure of 21 SW 127 rendered the 21 component cooling water (CCW) loop inoperable when the redundant 22 CCW loop was inoperable to support a liquid radwaste discharge. The finding had a credible impact on safety since the failure of 21 SW 127 resulted in both component cooling water loops being out-of-service and resulted in a loss of the decay heat removal safety function. The SDP evaluation determined that the event was of very low safety significance due to the short duration of the event. The failure to implement effective, timely corrective actions for 21 SW 127 was considered a non-cited violation. Inspection Report# : 2000011(pdf)



Significance: Feb 10, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

LICENSEE IDENTIFIED THAT SAFETY-RELATED VENTILATION DAMPER SPRING WAS MODIFIED DURING MAINTENANCE WITHOUT APPROPRIATE DESIGN CONTROLS

10 CFR 50, Appendix B, Criterion III, Design Control, requires that measures be established for the selection and review for suitability of application of parts that are essential to the safety-related functions of structures, systems and components. PSEG Nuclear identified that while repairing Unit 1 auxiliary building ventilation excess flow damper, S1ABV-1ABS8 under Order 60014824, a spring that assists in damper actuation was modified without the proper engineering documentation. This was documented in the corrective action program as Notification 20052729. Inspection Report# : 2000011(pdf)



Nov 11, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO SCHEDULE AND PERFORM PREVENTIVE MAINTENANCE FOR A TURBINE DRIVEN AUXILIARY FEEDWATER MODIFICAITON

PSEG Nuclear did not perform the specified preventive maintenance (PM) tasks for the new equipment associated with the turbine driven auxiliary feedwater pump enclosure modification at both units. This problem resulted in a credible impact on safety-related equipment which could have affected the availability and reliability of the auxiliary feedwater system. The failure to properly perform PM tasks for new equipment associated with modification 2EC-3522 as required by Procedure NC.WM-AP.ZZ-0003(Q), Rev 0, "Regular Maintenance Process," was considered to be a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." The issue was determined to be of very low risk significance using the Significance Determination Process phase 1 screening because no actual equipment failures were attributed to the missed PMs.

Inspection Report# : 2000009(pdf)



Item Type: NCV NonCited Violation

INADEQUATE ACCEPTANCE CRITERIA IN SURVEILLANCE TEST PROCEDURES

The acceptance criteria in the auxiliary feedwater (AFW) pump surveillance test procedures was inadequate since it did not ensure that the pump performance was capable of meeting accident analysis performance or pump operability criteria found in the Unit 1 and 2 Technical Specifications. This issue was considered potentially significant due to the allowable degraded core cooling capability associated with the established AFW pump minimum performance acceptance criteria. This issue has been entered into PSEG Nuclear's corrective action program (CAP). The issue was considered "green" in the significance determination process since it did not have an immediate impact on AFW system operability as determined by an evaluation of recent pump performance.

Inspection Report# : 1999006(pdf)



Sep 01, 1999 Significance: Identified By: NRC

Item Type: NCV NonCited Violation

MULTIPLE EXAMPLES OF INEFFECTIVE IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM

The team identified some instances where PSEG Nuclear did not effectively implement the corrective action program (CAP): 1) A prior performance weakness resulted in a governor control system needle valve setting for the 23 AFW pump turbine that was not optimal for actual operating conditions; 2) During operation of the 23 AFW pump, the team identified that the turbine outboard bearing temperature exhibited an increasing trend, which represented an operability question, and PSEG Nuclear was not aware of this potential problem. Consequently, this problem was not entered into the CAP; and, 3) Other examples of ineffective implementation of the CAP were identified, including deficiencies not promptly entered into the CAP or not adequately corrected. These issues were considered to be significant in that they indicated an overall CAP weakness since problems were noted in not identifying corrective action items and the lack of timeliness and effectiveness of corrective actions. These issues were considered "green" in the significance determination process because they did not have an immediate impact on AFW system operability and were ultimately included in PSEG Nuclear's CAP.

Inspection Report# : 1999006(pdf)





Identified By: NRC Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL CONCERNING REPLACEMENT PARTS FOR POSITIONERS FOR AFW FLOW CONTROL VAVLES The team found that the positioners for the AFW flow control valves had been maintained with parts that were not qualified for use in safety-related applications. This issue was considered significant since the functionality for valves in a risk significant system was being challenged. The qualification issue was considered "green" in the significance determination process because it did not have an immediate impact on AFW system operability based on an engineering evaluation and the issue was being addressed by PSEG Nuclear's CAP. Inspection Report# : 1999006(pdf)





Identified By: Licensee Item Type: FIN Finding

Significance:

CFCU TRAIN UNAVAILABILITY PERFORMANCE CRITERIA

PSEG nuclear personnel properly monitored containment fan cooling unit (CFCU) performance for reliability and unavailability. However, while PSEG's recent change in the CFCU train unavailability performance criteria was acceptable, it was not based on an evaluation of all of the appropriate factors. Also, the goals for the diesel generators were weak in that the cause of the associated unavailability was not addressed. This finding was assessed to be green as a reevaluation by PSEG of the CFCU train unavailability performance criteria using more appropriate factors revealed only a minimal increase in large early release frequency (LERF). Inspection Report# : 1999005(pdf)





Identified By: NRC Item Type: FIN Finding

Significance:

INCOMPLETE COMPENSATORY MEASURES FOR DEGRADED EQUIPMENT CONDITIONS

PSEG nuclear operators appropriately assessed three degraded equipment conditions in terms of their impact on the design basis functions of the affected systems. Each of the operability evaluations were completed in a timely manner. However, some of the associated compensatory measures were either incomplete or poorly controlled. This finding was evaluated to be green due to the minor significance of the compensatory measures needed and the absence of NRC requirements in this area.

Inspection Report# : 1999005(pdf)

Barrier Integrity



Feb 27, 2000

Identified By: NRC Item Type: FIN Finding

SMALL UNIDENTIFIED LEAK FROM THE CVCS AT UNIT 2 PERSISTED FOR 3 1/2 HOURS BEFORE IDENTIFICATION AND TERMINATION A small unidentified leak from the chemical and volume control system at Unit 2 persisted for approximately 3 1/2 hours before operators

recognized and terminated the condition. PSEG attributed the delays in recognizing the condition, in part, to the fact that two other concurrent evolutions were in progress or had just been completed which effectively masked the indications of a leak, namely volume control tank level and plant ventilation radiation levels. The safety and risk significance of this incident was very low because adequate reactor coolant inventory sources remained available throughout the event and offsite release rates remained well below regulatory limits.



Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO DEVELOP ADEQUATE INSTRUCTIONS TO REPACK THE 2CV49 VALVE AS REQUIRED BY 10CFR50, APPENDIX B, CRITERION V

10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall prescribed by documented instructions that include appropriate acceptance criteria to determine that important activities have been satisfactorily accomplished. Contrary to the above, PSEG Nuclear determined on September 6, 2001, that the packing data sheet for the 2CV49 valve was incorrect. As a result, valve 2CV49 developed an excessive packing leak that could have resulted in an exposure to the control room operators in excess of the 10 CFR 50, Appendix A, General Design Criteria 19 limits following a postulated LOCA.

Inspection Report# : 2001011(pdf)



Significance: Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation FAILURE TO ISOLATE THE AFFECTED PENETRATION AS REQUIRED BY TS 3.6.3 SUBSEQUENT TO DISABLING SERVICE WATER VALVES 22SW58 AND 22SW72

Technical Specification 3.6.3, requires, in part, that inoperable containment penetration isolation valves be restored to an operable condition within four hours or the associated penetration shall be isolated. Contrary to the above, PSEG Nuclear disabled two containment isolation valves (22SW58 and 22SW72) on September 23, 2001, but did not isolate the associated penetration within four hours as required by TS 3.6.3. Inspection Report# : 2001011(pdf)

Emergency Preparedness

Occupational Radiation Safety



Identified By: Licensee Item Type: NCV NonCited Violation

INADVERTENT DISCHARGE FROM THE 23 WASTE GAS DECAY TANK TO THE AUXILIARY BUILDING

PSEG operators inadvertently vented radioactive gas into the Unit 2 auxiliary building. The plant vent and auxiliary building air radiation monitors detected increased radiation levels, which remained well below technical specification limits. Errors by control room and field operators, including failure to follow procedures, contributed to the incident. This event was characterized as a "green" issue since the increased radiation levels in the auxiliary building were well below regulatory limits.

Inspection Report# : <u>1999007(pdf</u>)

Public Radiation Safety



Oct 10, 1999

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO REPORT IN RAD. ENV. OP. REPORTS ACTIONS TO PREVENT RECURRENCE OF RAD. ENVIR. AIR SAMPLER OUTAGES PSEG failed to provide complete information in their 1997 and 1998 Annual Radiological Environmental Operating Reports in that these documents did not describe plans to prevent recurrence of multiple environmental air sampler outages. This issue was characterized as a Non-Cited Violation of TS 3.12.1. The safety significance of this issue was very low because it did not significantly compromise PSEG's ability to assess the environmental impact of continued plant operation.

Inspection Report# : 1999008(pdf)



Dec 29, 2001 Significance:

Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN YEAR 2000 CALIBRATION RECORDS FOR CHEMICAL WASTE BASIN MONITOR (R37) AND UNIT 1 **CONTAINMENT FAN COOLER-SW DISCHARGE MONITOR (1R13B)**

Technical Specification Section 6.10.d requires that records of surveillance activities, inspections, and calibrations, required by the TSs, be retained for at least five years. The radiological calibration results for the Chemical Waste Basin Monitor (R37) and the Unit 1 Containment Fan Cooler-Service Water Line Discharge Monitor (1R13B) for the year 2000 were not retrievable. PSEG Nuclear placed this issue into its corrective action system as a Notification Report (Notification 20084063). The finding was determined to be of very low safety significance, because the issue did not impair the ability to assess the public dose, and did not result in exceeding public dose limits listed in Appendix I of 10 CFR 50 or 10 CFR 20.1301(d). The issue was not reportable in the Annual Radiological Effluent Report. Further, PSEG Nuclear produced a work record indicating the calibrations had been properly performed.

Inspection Report# : 2001011(pdf)



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

INADEQUATELY PERFORMED SURVEILLANCE PROCEDURE

The carbon adsorber (activated charcoal) in the auxiliary building ventilation exhaust system was operated at an air flow in excess of the specified maximum. Operators declared the adsorber inoperable until engineering department personnel assessed the potential impact of this occurrence, which was later determined to be negligible. This issue had low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Insufficient attention to detail by a control room operator had resulted in this incident, which represented a non-cited violation of technical specification 6.8.1. This issue was characterized as a "green" event due to its very low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine.

Inspection Report# : 1999007(pdf)

Physical Protection



Item Type: NCV NonCited Violation

FAILURE TO CONDUCT PACKAGE SEARCH IN ACCORDANCE WITH SITE SECURITY PLAN

Security personnel did not properly search a hand-carried package prior to granting it unrestricted access to the site protected area (PA). Specifically, guards permitted a plant worker to bypass the x-ray machine and carry a large bag of moving blankets into the PA without a search of the bag's contents. Later examination of the bag's contents yielded no contraband. This incident was characterized as a "green" issue since no contraband was identified in the package which was not searched. Inspection Report# : 1999007(pdf)

Miscellaneous

Significance: N/A Apr 18, 2000 Identified By: NRC Item Type: FIN Finding PROBLEM IDENTIFICATION AND RESOLUTION

No significant findings were identified. There was however, some concern regarding the number of human performance errors that have occurred within all departments at the station over the past two years. The team noted that during the inspection, previously identified human performance issues were all rolled up into one station notification that addressed the human performance issue. Along these lines, but under a separate notification, the team noted a roll up of another human performance issue that dealt specifically with station personnel failing to follow procedures. As identified by the licensee and the team, it was determined that ineffective corrective actions, regarding human performance errors, were attributal to some narrowly focused root cause analyses or to poor correlation of causes with corrective actions. These causes were similar to that noted in the training area (exam quality and written test results). Since improvement plans were being developed to address this area as of the end of the inspection, it was too early to assess the resolution to these problems and subsequent corrective actions. Follow up action is warranted in this area.

Inspection Report# : 2000003(pdf)

Significance: N/A Mar 23, 2001 Identified By: NRC Item Type: FIN Finding

PROBLEM IDENTIFICATION AND RESOLUTION PROGRAM INSPECTION

The licensee staff used the notification system appropriately to identify issues needing review for corrective actions. Daily issue review and prioritization meetings focused on safety and minimization of plant risk. Operators reviewed the risk worth of planned work activities. Operability determinations appeared adequate for the reviewed issues. Identified issues were being reviewed for apparent and root causes. Root cause evaluations were conducted to an appropriate depth and provided associated corrective actions. Corrective actions for identified issues were effective, commensurate with the safety significance of the issues, and sensitive to the necessity for reliable equipment performance. The extent of condition and generic applicability for significant conditions adverse to quality were properly considered. The size of the corrective action backlog and timeliness of corrective action completion, with respect to safety significance, was formally tracked and managed. The licensee had taken actions commensurate with the importance of service water system issues; however, detritus and silt continued to challenge the operators and plant equipment. Self-assessments and audits were self-critical and provided appropriate feedback, including notifications and recommendations. Inspection Report# : 2001004(pdf)

Significance: N/A Nov 11, 2000 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO PERFORM A NITROGEN PURGE IN ACCORDANCE WITH PROCEDURES RESULTING IN INCREASED DOSE RATES

Plant procedure IOP-6 specifies that a degassification evolution be performed on the primary coolant during a shutdown, via purging the hydrogen cover gas in the volume control tank with nitrogen. The cover gas in the volume control tank was not purged with nitrogen during shutdown on October 6, 2000, as described in Notification 20042531. This resulted in PSEG Nuclear personnel having to perform a second chemically-induced crud burst, resulting in increased dose rates on various pipes and components located inside the bio-shield. Inspection Report# : 2000009(pdf)

Last modified : March 29, 2002

Salem 2

Initiating Events



Significance: Apr 01, 2000 Identified By: Self Disclosing Item Type: FIN Finding

A TECHNICIAN APPLIED A JUMPER TO THE WRONG RELAY CONTACTS DURING ON-LINE MAINTENANCE, CAUSING A COMPLETE LOSS OF ALL CIRCULATING WATER TRAVELING SCREENS

A maintenance technician applied a jumper to the wrong contacts on a protective relay during a planned on-line maintenance activity associated with the 12B circulating water pump breaker. This error resulted in the complete loss of all circulating water system traveling water screens (TWSs). The safety significance of this event was very low because the TWSs were restored within five minutes and there was no observable affect on circulating water flow to the main condenser.

Inspection Report# : 2000002(pdf)



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TS 3.11.2.5 WITHIN THE REQUIRED TIME PERIOD

Unit 2 operators were slow in reducing the oxygen concentration in the waste gas decay tank to levels below those potentially explosive and exceeded the time limit required by technical specification 3.11.2.5. The risk associated with this event was minimal because all fire protection equipment remained available. This event was characterized as a "green" issue due to its very low safety significance since all fire protection equipment in the area remained available and the event was of limited duration.

Inspection Report# : <u>1999007(pdf)</u>



Significance: Jul 11, 1999 Identified By: NRC Item Type: FIN Finding

FIRE PROTECTION/BARRIERS

PSEG maintained appropriate control of combustible material and ignition sources in inspected areas. In general, impaired fire barriers were clearly tagged and documented in the corrective action program (CAP). However, the inspectors discovered some minor deficiencies such as a fire door which would not completely close without operator assistance. The minor violation associated with the fire door which would not close completely without operator assistance was classified as a green finding due to its very low safety significance. Inspection Report# : 1999005(pdf)

Mitigating Systems



Item Type: NCV NonCited Violation

FAILURE TO SCHEDULE AND PERFORM PREVENTIVE MAINTENANCE FOR A TURBINE DRIVEN AUXILIARY FEEDWATER MODIFICAITON

PSEG Nuclear did not perform the specified preventive maintenance (PM) tasks for the new equipment associated with the turbine driven auxiliary feedwater pump enclosure modification at both units. This problem resulted in a credible impact on safety-related equipment which could have affected the availability and reliability of the auxiliary feedwater system. The failure to properly perform PM tasks for new equipment associated with modification 2EC-3522 as required by Procedure NC.WM-AP.ZZ-0003(Q), Rev 0, "Regular Maintenance Process," was considered to be a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." The issue was determined to be of very low risk significance using the Significance Determination Process phase 1 screening because no actual equipment failures were attributed to the missed PMs.

Inspection Report# : 2000009(pdf)

Feb 07. 2000

Identified By: NRC Item Type: VIO Violation

Significance:

THE CARBON DIOXIDE TESTS FOR THE UNITS 1 & 2 4,160 VAC SWITCHGEAR ROOMS DID NOT REACH OR MAINTAIN THE REQUIRED CO2 CONCENTRATION OF 50%

PSEG did not ensure that the carbon dioxide concentration tests for the Units 1 & 2 4,160 VAC switchgear rooms reached and maintained the required CO2 concentration of 50%. This is a violation of Unit 1 license condition C.5 and Unit 2 license condition 2.C.10. This finding was determined to be WHITE by the significance determination process. The safety significance of this WHITE finding is low to moderate. During the supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that PSEG had performed a comprehensive evaluation of the failure of the carbon dioxide suppression system to achieve its design concentration. PSEG is currently working to correct carbon dioxide concentrations for the total flooding fire suppression systems, upgrade electrical raceway fire barrier systems, and convert the 4160v switchgear room fire suppression systems from manual to automatic. Based on PSEG's acceptable performance in addressing the switchgear room fire suppression system issue, the White finding associated with this issue will only be consdidered in assessing tplant performance for a total of four quarters in accordance with the guidance in NRC Inspection Manual Chapter 0305. Inspection Report# : <u>1999010(pdf)</u>



Significance: Feb 07, 2000 Identified By: NRC

Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THE CO2 SYSTEMS FOR THE UNITS 1 & 2 4,160 VAC ELECTRIC PENETRATION ROOMS REACHED AND MAINTAINED THE REQUIRED CO2 CONCENTRATION

The team identified that the carbon dioxide concentration tests for the Units 1 & 2 electrical penetration areas did not reach or maintain the required CO2 concentration of 50%. This failure is a violation of license conditions for each unit. This finding was evaluated by the significance determination process (SDP) and determined to be GREEN based on the other detection and suppression systems available in the area. The safety significance of this finding is very low.

Inspection Report# : <u>1999010(pdf</u>)



Feb 07, 2000

Significance: Fe Identified By: Licensee

Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THAT ONE TRAIN OF EQUIPMENT NECESSARY TO ACHIEVE HOT SHUTDOWN FORM THE EMERGENCY CONTROL STATION IS FREE OF FIRE DAMAGE

PSEG identified a condition in which they failed to ensure that one train of equipment necessary to achieve hot shutdown from the emergency control station is free of fire damage. This is a non-cited violation of Section III.G.1.a of Appendix R. This issue was evaluated by the SDP and found to be within the licensee's respone band. (GREEN) The safety significance of this finding is very low. Inspection Report# : 1999010(pdf)



Significance: Feb 07, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

PSEG IDENTIFIED A CONDITION IN WHICH A FIRE COULD DAMAGE CABLES SUCH THAT THE POWER OPERATED RELIEF VALVE WOULD OPEN AND THE ASSOCIATED BLOCK VALVE COULD NOT BE CLOSED.

PSEG identified a condition in which a fire could damage cables such that the power operated relief valve would open and the associated block valve could not be closed. The failure to protect one train of equipment necessary to achieve hot shutdown is a violation of III.G.1.a of Appendix R. This finding was evaluated by the SDP and determined to be GREEN. The safety significance of this finding was very low. Inspection Report# : 1999010(pdf)



Significance: Feb 09, 2002

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO DOCUMENT AND MAINTAIN QUALITY RECORDS OF EMERGENT TROUBLESHOOTING AND MAINTENANCE ACTIVITIES ON THE CONTROL CIRCUITRY FOR THE 1B EDG

PSEG Nuclear maintenance failed to document and maintain records of emergent troubleshooting and maintenance activities on the control circuitry for the 1B EDG. PSEG Nuclear also failed to maintain records of a September 2000 internal inspection of the 12 charging pump speed increaser. These two examples of PSEG Nuclear's failure to maintain complete and adequate inspection and maintenance records were a non-

cited violation of Technical Specification 6.10.1.b and 10 CFR 50, Appendix B, Criterion XVII, Quality Assurance Records. The findings were evaluated using the significance determination process (SDP) and considered to be of very low risk significance because the failure to maintain the records did not affect the availability of the mitigating systems. Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW PROCEDURES AND PERFORM AN ADEQUATE POST-TRIP REVIEW FOLLOWING THE PRESSURIZER SPRAY VALVE FAILURE, REACTOR TRIP AND SAFETY INJECTION EVENT

Operating procedures did not provide adequate guidance to operators during their response to a stuck open pressurizer spray valve event that resulted in an automatic reactor trip and safety injection. The instructions which existed regarding the valve, including stopping reactor coolant pumps and isolating control air, conflicted with actions needed to address the event. However, PSEG Nuclear did not identify the procedural deficiencies during the post-trip review of the event as specified by the post-trip review procedure. The failure to identify and evaluate these procedural deficiencies was a non-cited violation. This finding was evaluated using the SDP and determined to be of very low risk significance, because the procedural deficiencies did not prevent the operators from controlling plant pressure during the event. Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002

Identified By: NRC

Item Type: NCV NonCited Violation FAILURE TO IMPLEMENT PROMPT CORRECTIVE ACTIONS FOR A DEGRADED 2C EDG CYLINDER ISOLATION VALVE

PSEG Nuclear failed to promptly identify and correct a condition adverse to quality involving a degraded cylinder isolation valve (petcock) which was not functioning properly during corrective maintenance on the 2C EDG. During a subsequent test of the 2C EDG, flames were observed to be coming out of the cylinder 5R petcock, and the CO2 automatic fire suppression system actuated before the operators completed the EDG shutdown. The failure to identify and correct the degraded cylinder isolation valve was considered a non-cited violation of 10 CFR 50, Appendix XVI, Corrective Actions. The finding was evaluated using the SDP and considered to be of very low risk significance, because the emergency diesel generator unavailability time associated with this event was within the Technical Specification allowed outage time. Inspection Report# : 2001012(pdf)



Significance: Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO PERFORM FUNCTIONAL TESTING OF THE UNIT 2 RADIOACTIVE WASTE GAS HOLDUP SYSTEM EFFLUENT OXYGEN MONITORING SYSTEM WITHIN SURVEILLANCE INTERVAL SPECIFIED BY TS 4.3.3.9 AND 4.0.2

Technical Specification 4.3.3.9 and associated Table 4.3-13, item 1.b, require, in part, that a functional test of the radioactive waste gas holdup system effluent oxygen monitoring system be functionally tested monthly. Technical Specification 4.0.2 states, in part, that the surveillance requirement shall be performed within the specified surveillance interval with a maximum allowable not to exceed 25 percent of the specified surveillance interval. Contrary to the above, the Unit 2 waste gas analyzer surveillance was not completed until November 29, 2001. This was approximately four days past the maximum allowable overdue date of November 24, 2001. Inspection Report# : 2001011(pdf)

spection Report# : 2001011(



Significance: Nov 10, 2001 Identified By: NRC

Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO PROMPTLY IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY THAT HAD THE POTENTIAL TO AFFECT THE OPERABILITY OF THE NO. 21 CHARGING SYSTEM PUMP

Failure to implement appropriate corrective actions for a degraded no. 22 charging pump (CS) lubricating oil condition. PSEG Nuclear replaced the degraded oil, but did not implement any actions to prevent recurrence. This finding was of very low significance since the no. 22 CS pump has performed satisfactorily subsequent to the oil analysis results being addressed and the lubricating oil replacement. Inspection Report# : 2001010(pdf)



FAILURE TO PROMPTLY IDENTIFY AND CORRECT AN ADVERSE CONDITION THAT AFFECTED THE OPERABILITY OF THE CONTAINMENT SPRAY ADDITIVE TANK

PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 2 containment spray additive tank (SAT) level trend that occurred over a several month period. This resulted in dilution of the Unit 2 SAT sodium hydroxide (NAOH) concentration below the TS required minimum value for a period of up to 109 days. This finding was evaluated using SDP and found to be of very low significance since the tank concentration was above the minimum calculated NAOH concentration required for the SAT to perform its accident mitigation function. Inspection Report# : 2001008(pdf)



Significance: Aug 11, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO EVALUATE WHETHER A PIPE LEAK IDENTIFIED DOWNSTREAM OF THE 21SW4 VALVE WAS INSIDE THE ASME SECTION OF THE SW SYSTEM FOR SEVEN WEEKS

10CFR50, Appendix B, Criteiron XVI, requires, in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, on June 20, 2001, PSEG Nuclear identified a pipe leak downstream of the 21SW4 valve, but did not evaluate whether the leak was inside the ASME section of the SW system until approximately August 9. Inspection Report# : 2001008(pdf)

Significance: May



Identified By: NRC Item Type: NCV NonCited Violation

WORKER ADJUSTED THE PACKING ON THE 22 AFW PUMP WITHOUT HAVING AN APPROVED WORK DOCUMENT

TS 6.8.1 requires "that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix "A" of Regulatory Guicde 1.33. RG 1.33 requires that procedures be developed to conduct maintenance on safety-related systems. PSEG Nuclear procedure NC.NA-AP.ZZ-0009(Q), "Work Management Program," requires that individuals perform work in accordance with appropriate work documents. On May 11, 2001, a plant worker adjusted the packing on the 22 AFW pump without having the approved work documents. Inspection Report# : 2001006(pdf)



Significance: Feb 10, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

UNTIMELY AND INEFFECTIVE CORRECTIVE ACTIONS TO PREVENT THE RECURRENCE OF VIBRATION INDUCED FAILURES OF THE 21 CCHX OUTLET VALVE, 21SW127

PSEG Nuclear did not take timely and effective corrective actions for vibration induced failures of service water valve 21 SW 127 on the 21 component cooling heat exchanger outlet. Failure of 21 SW 127 rendered the 21 component cooling water (CCW) loop inoperable when the redundant 22 CCW loop was inoperable to support a liquid radwaste discharge. The finding had a credible impact on safety since the failure of 21 SW 127 resulted in both component cooling water loops being out-of-service and resulted in a loss of the decay heat removal safety function. The SDP evaluation determined that the event was of very low safety significance due to the short duration of the event. The failure to implement effective, timely corrective actions for 21 SW 127 was considered a non-cited violation. Inspection Report# : 2000011(pdf)



Significance: Feb 10, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

LICENSEE IDENTIFIED THAT SAFETY-RELATED VENTILATION DAMPER SPRING WAS MODIFIED DURING MAINTENANCE WITHOUT APPROPRIATE DESIGN CONTROLS

10 CFR 50, Appendix B, Criterion III, Design Control, requires that measures be established for the selection and review for suitability of application of parts that are essential to the safety-related functions of structures, systems and components. PSEG Nuclear identified that while repairing Unit 1 auxiliary building ventilation excess flow damper, S1ABV-1ABS8 under Order 60014824, a spring that assists in damper actuation was modified without the proper engineering documentation. This was documented in the corrective action program as Notification 20052729. Inspection Report# : 2000011(pdf)



INADEQUATE ACCEPTANCE CRITERIA IN SURVEILLANCE TEST PROCEDURES

The acceptance criteria in the auxiliary feedwater (AFW) pump surveillance test procedures was inadequate since it did not ensure that the pump performance was capable of meeting accident analysis performance or pump operability criteria found in the Unit 1 and 2 Technical Specifications. This issue was considered potentially significant due to the allowable degraded core cooling capability associated with the established AFW pump minimum performance acceptance criteria. This issue has been entered into PSEG Nuclear's corrective action program (CAP). The issue was considered "green" in the significance determination process since it did not have an immediate impact on AFW system operability as determined by an evaluation of recent pump performance.

Inspection Report# : 1999006(pdf)



Sep 01, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

MULTIPLE EXAMPLES OF INEFFECTIVE IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM

The team identified some instances where PSEG Nuclear did not effectively implement the corrective action program (CAP): 1) A prior performance weakness resulted in a governor control system needle valve setting for the 23 AFW pump turbine that was not optimal for actual operating conditions; 2) During operation of the 23 AFW pump, the team identified that the turbine outboard bearing temperature exhibited an increasing trend, which represented an operability question, and PSEG Nuclear was not aware of this potential problem. Consequently, this problem was not entered into the CAP; and, 3) Other examples of ineffective implementation of the CAP were identified, including deficiencies not promptly entered into the CAP or not adequately corrected. These issues were considered to be significant in that they indicated an overall CAP weakness since problems were noted in not identifying corrective action items and the lack of timeliness and effectiveness of corrective actions. These issues were considered "green" in the significance determination process because they did not have an immediate impact on AFW system operability and were ultimately included in PSEG Nuclear's CAP.

Inspection Report# : 1999006(pdf)



Sep 01, 1999

Identified By: NRC

Significance:

Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL CONCERNING REPLACEMENT PARTS FOR POSITIONERS FOR AFW FLOW CONTROL VAVLES The team found that the positioners for the AFW flow control valves had been maintained with parts that were not qualified for use in safety-related applications. This issue was considered significant since the functionality for valves in a risk significant system was being challenged. The qualification issue was considered "green" in the significance determination process because it did not have an immediate impact on AFW system operability based on an engineering evaluation and the issue was being addressed by PSEG Nuclear's CAP. Inspection Report# : 1999006(pdf)



Jul 11, 1999

Identified By: Licensee Item Type: FIN Finding

CFCU TRAIN UNAVAILABILITY PERFORMANCE CRITERIA

PSEG nuclear personnel properly monitored containment fan cooling unit (CFCU) performance for reliability and unavailability. However, while PSEG's recent change in the CFCU train unavailability performance criteria was acceptable, it was not based on an evaluation of all of the appropriate factors. Also, the goals for the diesel generators were weak in that the cause of the associated unavailability was not addressed. This finding was assessed to be green as a reevaluation by PSEG of the CFCU train unavailability performance criteria using more appropriate factors revealed only a minimal increase in large early release frequency (LERF). Inspection Report# : 1999005(pdf)



Significance: Jul 11, 1999

Identified By: NRC Item Type: FIN Finding

INCOMPLETE COMPENSATORY MEASURES FOR DEGRADED EQUIPMENT CONDITIONS

PSEG nuclear operators appropriately assessed three degraded equipment conditions in terms of their impact on the design basis functions of the affected systems. Each of the operability evaluations were completed in a timely manner. However, some of the associated compensatory measures were either incomplete or poorly controlled. This finding was evaluated to be green due to the minor significance of the compensatory measures needed and the absence of NRC requirements in this area.

Inspection Report# : 1999005(pdf)

Barrier Integrity



Feb 27, 2000

Identified By: NRC Item Type: FIN Finding

SMALL UNIDENTIFIED LEAK FROM THE CVCS AT UNIT 2 PERSISTED FOR 3 1/2 HOURS BEFORE IDENTIFICATION AND TERMINATION A small unidentified leak from the chemical and volume control system at Unit 2 persisted for approximately 3 1/2 hours before operators

recognized and terminated the condition. PSEG attributed the delays in recognizing the condition, in part, to the fact that two other concurrent evolutions were in progress or had just been completed which effectively masked the indications of a leak, namely volume control tank level and plant ventilation radiation levels. The safety and risk significance of this incident was very low because adequate reactor coolant inventory sources remained available throughout the event and offsite release rates remained well below regulatory limits. Inspection Report# : 2000001(pdf)



Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO DEVELOP ADEQUATE INSTRUCTIONS TO REPACK THE 2CV49 VALVE AS REQUIRED BY 10CFR50, APPENDIX B, **CRITERION V**

10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall prescribed by documented instructions that include appropriate acceptance criteria to determine that important activities have been satisfactorily accomplished. Contrary to the above, PSEG Nuclear determined on September 6, 2001, that the packing data sheet for the 2CV49 valve was incorrect. As a result, valve 2CV49 developed an excessive packing leak that could have resulted in an exposure to the control room operators in excess of the 10 CFR 50, Appendix A, General Design Criteria 19 limits following a postulated LOCA.

Inspection Report# : 2001011(pdf)



Significance: Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation FAILURE TO ISOLATE THE AFFECTED PENETRATION AS REQUIRED BY TS 3.6.3 SUBSEQUENT TO DISABLING SERVICE WATER VALVES 22SW58 AND 22SW72

Technical Specification 3.6.3, requires, in part, that inoperable containment penetration isolation valves be restored to an operable condition within four hours or the associated penetration shall be isolated. Contrary to the above, PSEG Nuclear disabled two containment isolation valves (22SW58 and 22SW72) on September 23, 2001, but did not isolate the associated penetration within four hours as required by TS 3.6.3. Inspection Report# : 2001011(pdf)

Emergency Preparedness

Occupational Radiation Safety



Significance: Identified By: Licensee Item Type: NCV NonCited Violation

INADVERTENT DISCHARGE FROM THE 23 WASTE GAS DECAY TANK TO THE AUXILIARY BUILDING

PSEG operators inadvertently vented radioactive gas into the Unit 2 auxiliary building. The plant vent and auxiliary building air radiation monitors detected increased radiation levels, which remained well below technical specification limits. Errors by control room and field operators, including failure to follow procedures, contributed to the incident. This event was characterized as a "green" issue since the increased radiation levels in the auxiliary building were well below regulatory limits.

Inspection Report# : 1999007(pdf)

Public Radiation Safety



Significance: Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN YEAR 2000 CALIBRATION RECORDS FOR CHEMICAL WASTE BASIN MONITOR (R37) AND UNIT 1 **CONTAINMENT FAN COOLER-SW DISCHARGE MONITOR (1R13B)**

Technical Specification Section 6.10.d requires that records of surveillance activities, inspections, and calibrations, required by the TSs, be retained for at least five years. The radiological calibration results for the Chemical Waste Basin Monitor (R37) and the Unit 1 Containment Fan Cooler-Service Water Line Discharge Monitor (1R13B) for the year 2000 were not retrievable. PSEG Nuclear placed this issue into its corrective action system as a Notification Report (Notification 20084063). The finding was determined to be of very low safety significance, because the issue did not impair the ability to assess the public dose, and did not result in exceeding public dose limits listed in Appendix I of 10 CFR 50 or 10 CFR 20.1301(d). The issue was not reportable in the Annual Radiological Effluent Report. Further, PSEG Nuclear produced a work record indicating the calibrations had been properly performed.

Inspection Report# : 2001011(pdf)



Oct 10, 1999

Significance: Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO REPORT IN RAD. ENV. OP. REPORTS ACTIONS TO PREVENT RECURRENCE OF RAD. ENVIR. AIR SAMPLER OUTAGES PSEG failed to provide complete information in their 1997 and 1998 Annual Radiological Environmental Operating Reports in that these documents did not describe plans to prevent recurrence of multiple environmental air sampler outages. This issue was characterized as a Non-Cited Violation of TS 3.12.1. The safety significance of this issue was very low because it did not significantly compromise PSEG's ability to assess the environmental impact of continued plant operation.

Inspection Report# : 1999008(pdf)



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

INADEQUATELY PERFORMED SURVEILLANCE PROCEDURE

The carbon adsorber (activated charcoal) in the auxiliary building ventilation exhaust system was operated at an air flow in excess of the specified maximum. Operators declared the adsorber inoperable until engineering department personnel assessed the potential impact of this occurrence, which was later determined to be negligible. This issue had low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Insufficient attention to detail by a control room operator had resulted in this incident, which represented a non-cited violation of technical specification 6.8.1. This issue was characterized as a "green" event due to its very low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine.

Inspection Report# : 1999007(pdf)

Physical Protection



Item Type: NCV NonCited Violation

FAILURE TO CONDUCT PACKAGE SEARCH IN ACCORDANCE WITH SITE SECURITY PLAN

Security personnel did not properly search a hand-carried package prior to granting it unrestricted access to the site protected area (PA). Specifically, guards permitted a plant worker to bypass the x-ray machine and carry a large bag of moving blankets into the PA without a search of the bag's contents. Later examination of the bag's contents yielded no contraband. This incident was characterized as a "green" issue since no contraband was identified in the package which was not searched. Inspection Report# : 1999007(pdf)

Miscellaneous

Significance: N/A Nov 11, 2000 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO PERFORM A NITROGEN PURGE IN ACCORDANCE WITH PROCEDURES RESULTING IN INCREASED DOSE RATES

Plant procedure IOP-6 specifies that a degassification evolution be performed on the primary coolant during a shutdown, via purging the hydrogen cover gas in the volume control tank with nitrogen. The cover gas in the volume control tank was not purged with nitrogen during shutdown on October 6, 2000, as described in Notification 20042531. This resulted in PSEG Nuclear personnel having to perform a second chemically-induced crud burst, resulting in increased dose rates on various pipes and components located inside the bio-shield. Inspection Report# : 2000009(pdf)

Significance: N/A Apr 18, 2000 Identified By: NRC Item Type: FIN Finding PROBLEM IDENTIFICATION AND RESOLUTION

No significant findings were identified. There was however, some concern regarding the number of human performance errors that have occurred within all departments at the station over the past two years. The team noted that during the inspection, previously identified human performance issues were all rolled up into one station notification that addressed the human performance issue. Along these lines, but under a separate notification, the team noted a roll up of another human performance issue that dealt specifically with station personnel failing to follow procedures. As identified by the licensee and the team, it was determined that ineffective corrective actions, regarding human performance errors, were attributal to some narrowly focused root cause analyses or to poor correlation of causes with corrective actions. These causes were similar to that noted in the training area (exam quality and written test results). Since improvement plans were being developed to address this area as of the end of the inspection, it was too early to assess the resolution to these problems and subsequent corrective actions. Follow up action is warranted in this area.

Inspection Report# : 2000003(pdf)

Significance: N/A Mar 23, 2001 Identified By: NRC Item Type: FIN Finding

PROBLEM IDENTIFICATION AND RESOLUTION PROGRAM INSPECTION

The licensee staff used the notification system appropriately to identify issues needing review for corrective actions. Daily issue review and prioritization meetings focused on safety and minimization of plant risk. Operators reviewed the risk worth of planned work activities. Operability determinations appeared adequate for the reviewed issues. Identified issues were being reviewed for apparent and root causes. Root cause evaluations were conducted to an appropriate depth and provided associated corrective actions. Corrective actions for identified issues were effective, commensurate with the safety significance of the issues, and sensitive to the necessity for reliable equipment performance. The extent of condition and generic applicability for significant conditions adverse to quality were properly considered. The size of the corrective action backlog and timeliness of corrective action completion, with respect to safety significance, was formally tracked and managed. The licensee had taken actions commensurate with the importance of service water system issues; however, detritus and silt continued to challenge the operators and plant equipment. Self-assessments and audits were self-critical and provided appropriate feedback, including notifications and recommendations. Inspection Report# : 2001004(pdf)

Last modified : March 28, 2002

Salem 2

Initiating Events



Significance: Apr 01, 2000 Identified By: Self Disclosing Item Type: FIN Finding

A TECHNICIAN APPLIED A JUMPER TO THE WRONG RELAY CONTACTS DURING ON-LINE MAINTENANCE, CAUSING A COMPLETE LOSS OF ALL CIRCULATING WATER TRAVELING SCREENS

A maintenance technician applied a jumper to the wrong contacts on a protective relay during a planned on-line maintenance activity associated with the 12B circulating water pump breaker. This error resulted in the complete loss of all circulating water system traveling water screens (TWSs). The safety significance of this event was very low because the TWSs were restored within five minutes and there was no observable affect on circulating water flow to the main condenser.

Inspection Report# : 2000002(pdf)



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TS 3.11.2.5 WITHIN THE REQUIRED TIME PERIOD

Unit 2 operators were slow in reducing the oxygen concentration in the waste gas decay tank to levels below those potentially explosive and exceeded the time limit required by technical specification 3.11.2.5. The risk associated with this event was minimal because all fire protection equipment remained available. This event was characterized as a "green" issue due to its very low safety significance since all fire protection equipment in the area remained available and the event was of limited duration.

Inspection Report# : <u>1999007(pdf)</u>



Significance: Jul 11, 1999 Identified By: NRC Item Type: FIN Finding

FIRE PROTECTION/BARRIERS

PSEG maintained appropriate control of combustible material and ignition sources in inspected areas. In general, impaired fire barriers were clearly tagged and documented in the corrective action program (CAP). However, the inspectors discovered some minor deficiencies such as a fire door which would not completely close without operator assistance. The minor violation associated with the fire door which would not close completely without operator assistance was classified as a green finding due to its very low safety significance. Inspection Report# : 1999005(pdf)

Mitigating Systems



Item Type: NCV NonCited Violation

UNTIMELY AND INEFFECTIVE CORRECTIVE ACTIONS TO PREVENT THE RECURRENCE OF VIBRATION INDUCED FAILURES OF THE 21 CCHX OUTLET VALVE, 21SW127

PSEG Nuclear did not take timely and effective corrective actions for vibration induced failures of service water valve 21 SW 127 on the 21 component cooling heat exchanger outlet. Failure of 21 SW 127 rendered the 21 component cooling water (CCW) loop inoperable when the redundant 22 CCW loop was inoperable to support a liquid radwaste discharge. The finding had a credible impact on safety since the failure of 21 SW 127 resulted in both component cooling water loops being out-of-service and resulted in a loss of the decay heat removal safety function. The SDP evaluation determined that the event was of very low safety significance due to the short duration of the event. The failure to implement effective, timely corrective actions for 21 SW 127 was considered a non-cited violation. Inspection Report# : 2000011(pdf)



Significance: Feb 10, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

LICENSEE IDENTIFIED THAT SAFETY-RELATED VENTILATION DAMPER SPRING WAS MODIFIED DURING MAINTENANCE WITHOUT APPROPRIATE DESIGN CONTROLS

10 CFR 50, Appendix B, Criterion III, Design Control, requires that measures be established for the selection and review for suitability of application of parts that are essential to the safety-related functions of structures, systems and components. PSEG Nuclear identified that while repairing Unit 1 auxiliary building ventilation excess flow damper, S1ABV-1ABS8 under Order 60014824, a spring that assists in damper actuation was modified without the proper engineering documentation. This was documented in the corrective action program as Notification 20052729. Inspection Report# : 2000011(pdf)



Significance: Nov 11, 2000

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO SCHEDULE AND PERFORM PREVENTIVE MAINTENANCE FOR A TURBINE DRIVEN AUXILIARY FEEDWATER MODIFICAITON

PSEG Nuclear did not perform the specified preventive maintenance (PM) tasks for the new equipment associated with the turbine driven auxiliary feedwater pump enclosure modification at both units. This problem resulted in a credible impact on safety-related equipment which could have affected the availability and reliability of the auxiliary feedwater system. The failure to properly perform PM tasks for new equipment associated with modification 2EC-3522 as required by Procedure NC.WM-AP.ZZ-0003(Q), Rev 0, "Regular Maintenance Process," was considered to be a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." The issue was determined to be of very low risk significance using the Significance Determination Process phase 1 screening because no actual equipment failures were attributed to the missed PMs.

Inspection Report# : 2000009(pdf)



Significance: Feb 09, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO DOCUMENT AND MAINTAIN QUALITY RECORDS OF EMERGENT TROUBLESHOOTING AND MAINTENANCE ACTIVITIES ON THE CONTROL CIRCUITRY FOR THE 1B EDG

PSEG Nuclear maintenance failed to document and maintain records of emergent troubleshooting and maintenance activities on the control circuitry for the 1B EDG. PSEG Nuclear also failed to maintain records of a September 2000 internal inspection of the 12 charging pump speed increaser. These two examples of PSEG Nuclear's failure to maintain complete and adequate inspection and maintenance records were a non-cited violation of Technical Specification 6.10.1.b and 10 CFR 50, Appendix B, Criterion XVII, Quality Assurance Records. The findings were evaluated using the significance determination process (SDP) and considered to be of very low risk significance because the failure to maintain the records did not affect the availability of the mitigating systems.

Inspection Report# : 2001012(pdf)



Feb 09, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW PROCEDURES AND PERFORM AN ADEQUATE POST-TRIP REVIEW FOLLOWING THE PRESSURIZER SPRAY VALVE FAILURE, REACTOR TRIP AND SAFETY INJECTION EVENT

Operating procedures did not provide adequate guidance to operators during their response to a stuck open pressurizer spray valve event that resulted in an automatic reactor trip and safety injection. The instructions which existed regarding the valve, including stopping reactor coolant pumps and isolating control air, conflicted with actions needed to address the event. However, PSEG Nuclear did not identify the procedural deficiencies during the post-trip review of the event as specified by the post-trip review procedure. The failure to identify and evaluate these procedural deficiencies was a non-cited violation. This finding was evaluated using the SDP and determined to be of very low risk significance, because the procedural deficiencies did not prevent the operators from controlling plant pressure during the event. Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO IMPLEMENT PROMPT CORRECTIVE

FAILURE TO IMPLEMENT PROMPT CORRECTIVE ACTIONS FOR A DEGRADED 2C EDG CYLINDER ISOLATION VALVE

PSEG Nuclear failed to promptly identify and correct a condition adverse to quality involving a degraded cylinder isolation valve (petcock) which was not functioning properly during corrective maintenance on the 2C EDG. During a subsequent test of the 2C EDG, flames were observed to be coming out of the cylinder 5R petcock, and the CO2 automatic fire suppression system actuated before the operators completed the EDG shutdown. The failure to identify and correct the degraded cylinder isolation valve was considered a non-cited violation of 10 CFR 50, Appendix XVI, Corrective Actions. The finding was evaluated using the SDP and considered to be of very low risk significance, because the emergency diesel generator unavailability time associated with this event was within the Technical Specification allowed outage time. Inspection Report# : 2001012(pdf)



Significance: Dec 29, 2001 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO PERFORM FUNCTIONAL TESTING OF THE UNIT 2 RADIOACTIVE WASTE GAS HOLDUP SYSTEM EFFLUENT OXYGEN MONITORING SYSTEM WITHIN SURVEILLANCE INTERVAL SPECIFIED BY TS 4.3.3.9 AND 4.0.2

Technical Specification 4.3.3.9 and associated Table 4.3-13, item 1.b, require, in part, that a functional test of the radioactive waste gas holdup system effluent oxygen monitoring system be functionally tested monthly. Technical Specification 4.0.2 states, in part, that the surveillance requirement shall be performed within the specified surveillance interval with a maximum allowable not to exceed 25 percent of the specified surveillance interval. Contrary to the above, the Unit 2 waste gas analyzer surveillance was not completed until November 29, 2001. This was approximately four days past the maximum allowable overdue date of November 24, 2001.

Inspection Report# : 2001011(pdf)



Significance: Nov 10, 2001 Identified By: NRC

Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO PROMPTLY IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY THAT HAD THE POTENTIAL TO AFFECT THE OPERABILITY OF THE NO. 21 CHARGING SYSTEM PUMP

Failure to implement appropriate corrective actions for a degraded no. 22 charging pump (CS) lubricating oil condition. PSEG Nuclear replaced the degraded oil, but did not implement any actions to prevent recurrence. This finding was of very low significance since the no. 22 CS pump has performed satisfactorily subsequent to the oil analysis results being addressed and the lubricating oil replacement. Inspection Report# : 2001010(pdf)



Significance: Aug 11, 2001

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY IDENTIFY AND CORRECT AN ADVERSE CONDITION THAT AFFECTED THE OPERABILITY OF THE CONTAINMENT SPRAY ADDITIVE TANK

PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 2 containment spray additive tank (SAT) level trend that occurred over a several month period. This resulted in dilution of the Unit 2 SAT sodium hydroxide (NAOH) concentration below the TS required minimum value for a period of up to 109 days. This finding was evaluated using SDP and found to be of very low significance since the tank concentration was above the minimum calculated NAOH concentration required for the SAT to perform its accident mitigation function. Inspection Report# : 2001008(pdf)



Significance: Aug 11, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO EVALUATE WHETHER A PIPE LEAK IDENTIFIED DOWNSTREAM OF THE 21SW4 VALVE WAS INSIDE THE ASME SECTION OF THE SW SYSTEM FOR SEVEN WEEKS

10CFR50, Appendix B, Criteiron XVI, requires, in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, on June 20, 2001, PSEG Nuclear identified a pipe leak downstream of the 21SW4 valve, but did not evaluate whether the leak was inside the ASME section of the SW system until approximately August 9. Inspection Report# : 2001008(pdf)



Significance: May 19, 2001 Identified By: NRC Item Type: NCV NonCited Violation WORKER ADJUSTED THE PACKING ON THE 22 AFW PUMP WITHOUT HAVING AN APPROVED WORK DOCUMENT TS 6.8.1 requires "that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix "A" of Regulatory Guicde 1.33. RG 1.33 requires that procedures be developed to conduct maintenance on safety-related systems. PSEG Nuclear procedure NC.NA-AP.ZZ-0009(Q), "Work Management Program," requires that individuals perform work in accordance with appropriate work documents. On May 11, 2001, a plant worker adjusted the packing on the 22 AFW pump without having the approved work documents. Inspection Report# : 2001006(pdf)

Feb 07, 2000 Significance:

Identified By: NRC Item Type: VIO Violation

THE CARBON DIOXIDE TESTS FOR THE UNITS 1 & 2 4,160 VAC SWITCHGEAR ROOMS DID NOT REACH OR MAINTAIN THE REQUIRED CO2 CONCENTRATION OF 50%

PSEG did not ensure that the carbon dioxide concentration tests for the Units 1 & 2 4,160 VAC switchgear rooms reached and maintained the required CO2 concentration of 50%. This is a violation of Unit 1 license condition C.5 and Unit 2 license condition 2.C.10. This finding was determined to be WHITE by the significance determination process. The safety significance of this WHITE finding is low to moderate. During the supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that PSEG had performed a comprehensive evaluation of the failure of the carbon dioxide suppression system to achieve its design concentration. PSEG is currently working to correct carbon dioxide concentrations for the total flooding fire suppression systems, upgrade electrical raceway fire barrier systems, and convert the 4160v switchgear room fire suppression systems from manual to automatic. Based on PSEG's acceptable performance in addressing the switchgear room fire suppression system issue, the White finding associated with this issue will only be consdidered in assessing tplant performance for a total of four quarters in accordance with the guidance in NRC Inspection Manual Chapter 0305. Inspection Report# : <u>1999010(pdf)</u>



Significance: Feb 07, 2000

Identified By: NRC Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THE CO2 SYSTEMS FOR THE UNITS 1 & 2 4,160 VAC ELECTRIC PENETRATION ROOMS REACHED AND MAINTAINED THE REQUIRED CO2 CONCENTRATION

The team identified that the carbon dioxide concentration tests for the Units 1 & 2 electrical penetration areas did not reach or maintain the required CO2 concentration of 50%. This failure is a violation of license conditions for each unit. This finding was evaluated by the significance determination process (SDP) and determined to be GREEN based on the other detection and suppression systems available in the area. The safety significance of this finding is very low.

Inspection Report# : <u>1999010(pdf</u>)



Significance: Feb 07, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THAT ONE TRAIN OF EQUIPMENT NECESSARY TO ACHIEVE HOT SHUTDOWN FORM THE EMERGENCY CONTROL STATION IS FREE OF FIRE DAMAGE

PSEG identified a condition in which they failed to ensure that one train of equipment necessary to achieve hot shutdown from the emergency control station is free of fire damage. This is a non-cited violation of Section III.G.1.a of Appendix R. This issue was evaluated by the SDP and found to be within the licensee's respone band. (GREEN) The safety significance of this finding is very low. Inspection Report# : 1999010(pdf)



Significance: Feb 07, 2000

Identified By: Licensee Item Type: NCV NonCited Violation

PSEG IDENTIFIED A CONDITION IN WHICH A FIRE COULD DAMAGE CABLES SUCH THAT THE POWER OPERATED RELIEF VALVE WOULD OPEN AND THE ASSOCIATED BLOCK VALVE COULD NOT BE CLOSED.

PSEG identified a condition in which a fire could damage cables such that the power operated relief valve would open and the associated block valve could not be closed. The failure to protect one train of equipment necessary to achieve hot shutdown is a violation of III.G.1.a of Appendix R. This finding was evaluated by the SDP and determined to be GREEN. The safety significance of this finding was very low. Inspection Report# : <u>1999010(pdf)</u>


Item Type: NCV NonCited Violation

INADEQUATE ACCEPTANCE CRITERIA IN SURVEILLANCE TEST PROCEDURES

The acceptance criteria in the auxiliary feedwater (AFW) pump surveillance test procedures was inadequate since it did not ensure that the pump performance was capable of meeting accident analysis performance or pump operability criteria found in the Unit 1 and 2 Technical Specifications. This issue was considered potentially significant due to the allowable degraded core cooling capability associated with the established AFW pump minimum performance acceptance criteria. This issue has been entered into PSEG Nuclear's corrective action program (CAP). The issue was considered "green" in the significance determination process since it did not have an immediate impact on AFW system operability as determined by an evaluation of recent pump performance.

Inspection Report# : 1999006(pdf)



Sep 01, 1999 Significance: Identified By: NRC

Item Type: NCV NonCited Violation

MULTIPLE EXAMPLES OF INEFFECTIVE IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM

The team identified some instances where PSEG Nuclear did not effectively implement the corrective action program (CAP): 1) A prior performance weakness resulted in a governor control system needle valve setting for the 23 AFW pump turbine that was not optimal for actual operating conditions; 2) During operation of the 23 AFW pump, the team identified that the turbine outboard bearing temperature exhibited an increasing trend, which represented an operability question, and PSEG Nuclear was not aware of this potential problem. Consequently, this problem was not entered into the CAP; and, 3) Other examples of ineffective implementation of the CAP were identified, including deficiencies not promptly entered into the CAP or not adequately corrected. These issues were considered to be significant in that they indicated an overall CAP weakness since problems were noted in not identifying corrective action items and the lack of timeliness and effectiveness of corrective actions. These issues were considered "green" in the significance determination process because they did not have an immediate impact on AFW system operability and were ultimately included in PSEG Nuclear's CAP.

Inspection Report# : 1999006(pdf)





Identified By: NRC Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL CONCERNING REPLACEMENT PARTS FOR POSITIONERS FOR AFW FLOW CONTROL VAVLES The team found that the positioners for the AFW flow control valves had been maintained with parts that were not qualified for use in safety-related applications. This issue was considered significant since the functionality for valves in a risk significant system was being challenged. The qualification issue was considered "green" in the significance determination process because it did not have an immediate impact on AFW system operability based on an engineering evaluation and the issue was being addressed by PSEG Nuclear's CAP. Inspection Report# : 1999006(pdf)





Identified By: Licensee Item Type: FIN Finding

Significance:

CFCU TRAIN UNAVAILABILITY PERFORMANCE CRITERIA

PSEG nuclear personnel properly monitored containment fan cooling unit (CFCU) performance for reliability and unavailability. However, while PSEG's recent change in the CFCU train unavailability performance criteria was acceptable, it was not based on an evaluation of all of the appropriate factors. Also, the goals for the diesel generators were weak in that the cause of the associated unavailability was not addressed. This finding was assessed to be green as a reevaluation by PSEG of the CFCU train unavailability performance criteria using more appropriate factors revealed only a minimal increase in large early release frequency (LERF). Inspection Report# : 1999005(pdf)





Identified By: NRC Item Type: FIN Finding

Significance:

INCOMPLETE COMPENSATORY MEASURES FOR DEGRADED EQUIPMENT CONDITIONS

PSEG nuclear operators appropriately assessed three degraded equipment conditions in terms of their impact on the design basis functions of the affected systems. Each of the operability evaluations were completed in a timely manner. However, some of the associated compensatory measures were either incomplete or poorly controlled. This finding was evaluated to be green due to the minor significance of the compensatory measures needed and the absence of NRC requirements in this area.

Inspection Report# : 1999005(pdf)

Barrier Integrity



Significance: Dec 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation FAILURE TO DEVELOP ADEQUATE INSTRUCTIONS TO REPACK THE 2CV49 VALVE AS REQUIRED BY 10CFR50, APPENDIX B, CRITERION V

10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall prescribed by documented instructions that include appropriate acceptance criteria to determine that important activities have been satisfactorily accomplished. Contrary to the above, PSEG Nuclear determined on September 6, 2001, that the packing data sheet for the 2CV49 valve was incorrect. As a result, valve 2CV49 developed an excessive packing leak that could have resulted in an exposure to the control room operators in excess of the 10 CFR 50, Appendix A, General Design Criteria 19 limits following a postulated LOCA.

Inspection Report# : 2001011(pdf)



Significance: Dec 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO ISOLATE THE AFFECTED PENETRATION AS REQUIRED BY TS 3.6.3 SUBSEQUENT TO DISABLING SERVICE WATER VALVES 22SW58 AND 22SW72

Technical Specification 3.6.3, requires, in part, that inoperable containment penetration isolation valves be restored to an operable condition within four hours or the associated penetration shall be isolated. Contrary to the above, PSEG Nuclear disabled two containment isolation valves (22SW58 and 22SW72) on September 23, 2001, but did not isolate the associated penetration within four hours as required by TS 3.6.3. Inspection Report# : 2001011(pdf)



📕 Feb 27, 2000

Identified By: NRC Item Type: FIN Finding

SMALL UNIDENTIFIED LEAK FROM THE CVCS AT UNIT 2 PERSISTED FOR 3 1/2 HOURS BEFORE IDENTIFICATION AND TERMINATION A small unidentified leak from the chemical and volume control system at Unit 2 persisted for approximately 3 1/2 hours before operators recognized and terminated the condition. PSEG attributed the delays in recognizing the condition, in part, to the fact that two other concurrent evolutions were in progress or had just been completed which effectively masked the indications of a leak, namely volume control tank level and plant ventilation radiation levels. The safety and risk significance of this incident was very low because adequate reactor coolant inventory sources remained available throughout the event and offsite release rates remained well below regulatory limits. Inspection Report# : 2000001(pdf)

Emergency Preparedness

Occupational Radiation Safety



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

INADVERTENT DISCHARGE FROM THE 23 WASTE GAS DECAY TANK TO THE AUXILIARY BUILDING

PSEG operators inadvertently vented radioactive gas into the Unit 2 auxiliary building. The plant vent and auxiliary building air radiation monitors detected increased radiation levels, which remained well below technical specification limits. Errors by control room and field operators, including failure to follow procedures, contributed to the incident. This event was characterized as a "green" issue since the increased radiation levels in the auxiliary building were well below regulatory limits.

Inspection Report# : <u>1999007(pdf</u>)

Public Radiation Safety



Significance: Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN YEAR 2000 CALIBRATION RECORDS FOR CHEMICAL WASTE BASIN MONITOR (R37) AND UNIT 1 **CONTAINMENT FAN COOLER-SW DISCHARGE MONITOR (1R13B)**

Technical Specification Section 6.10.d requires that records of surveillance activities, inspections, and calibrations, required by the TSs, be retained for at least five years. The radiological calibration results for the Chemical Waste Basin Monitor (R37) and the Unit 1 Containment Fan Cooler-Service Water Line Discharge Monitor (1R13B) for the year 2000 were not retrievable. PSEG Nuclear placed this issue into its corrective action system as a Notification Report (Notification 20084063). The finding was determined to be of very low safety significance, because the issue did not impair the ability to assess the public dose, and did not result in exceeding public dose limits listed in Appendix I of 10 CFR 50 or 10 CFR 20.1301(d). The issue was not reportable in the Annual Radiological Effluent Report. Further, PSEG Nuclear produced a work record indicating the calibrations had been properly performed.

Inspection Report# : 2001011(pdf)



Oct 10, 1999

Significance: Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO REPORT IN RAD. ENV. OP. REPORTS ACTIONS TO PREVENT RECURRENCE OF RAD. ENVIR. AIR SAMPLER OUTAGES PSEG failed to provide complete information in their 1997 and 1998 Annual Radiological Environmental Operating Reports in that these documents did not describe plans to prevent recurrence of multiple environmental air sampler outages. This issue was characterized as a Non-Cited Violation of TS 3.12.1. The safety significance of this issue was very low because it did not significantly compromise PSEG's ability to assess the environmental impact of continued plant operation.

Inspection Report# : 1999008(pdf)



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

INADEQUATELY PERFORMED SURVEILLANCE PROCEDURE

The carbon adsorber (activated charcoal) in the auxiliary building ventilation exhaust system was operated at an air flow in excess of the specified maximum. Operators declared the adsorber inoperable until engineering department personnel assessed the potential impact of this occurrence, which was later determined to be negligible. This issue had low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Insufficient attention to detail by a control room operator had resulted in this incident, which represented a non-cited violation of technical specification 6.8.1. This issue was characterized as a "green" event due to its very low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine.

Inspection Report# : 1999007(pdf)

Physical Protection



Item Type: NCV NonCited Violation

FAILURE TO CONDUCT PACKAGE SEARCH IN ACCORDANCE WITH SITE SECURITY PLAN

Security personnel did not properly search a hand-carried package prior to granting it unrestricted access to the site protected area (PA). Specifically, guards permitted a plant worker to bypass the x-ray machine and carry a large bag of moving blankets into the PA without a search of the bag's contents. Later examination of the bag's contents yielded no contraband. This incident was characterized as a "green" issue since no contraband was identified in the package which was not searched. Inspection Report# : 1999007(pdf)

Miscellaneous

Significance: N/A Mar 23, 2001 Identified By: NRC Item Type: FIN Finding PROBLEM IDENTIFICATION AND RESOLUTION PROGRAM INSPECTION

The licensee staff used the notification system appropriately to identify issues needing review for corrective actions. Daily issue review and prioritization meetings focused on safety and minimization of plant risk. Operators reviewed the risk worth of planned work activities. Operability determinations appeared adequate for the reviewed issues. Identified issues were being reviewed for apparent and root causes. Root cause evaluations were conducted to an appropriate depth and provided associated corrective actions. Corrective actions for identified issues were effective, commensurate with the safety significance of the issues, and sensitive to the necessity for reliable equipment performance. The extent of condition and generic applicability for significant conditions adverse to quality were properly considered. The size of the corrective action backlog and timeliness of corrective action completion, with respect to safety significance, was formally tracked and managed. The licensee had taken actions commensurate with the importance of service water system issues; however, detritus and silt continued to challenge the operators and plant equipment. Self-assessments and audits were self-critical and provided appropriate feedback, including notifications and recommendations. Inspection Report# : 2001004(pdf)

Significance: N/A Nov 11, 2000 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO PERFORM A NITROGEN PURGE IN ACCORDANCE WITH PROCEDURES RESULTING IN INCREASED DOSE RATES Plant procedure IOP-6 specifies that a degassification evolution be performed on the primary coolant during a shutdown, via purging the hydrogen cover gas in the volume control tank with nitrogen. The cover gas in the volume control tank was not purged with nitrogen during shutdown on October 6, 2000, as described in Notification 20042531. This resulted in PSEG Nuclear personnel having to perform a second chemically-induced crud burst, resulting in increased dose rates on various pipes and components located inside the bio-shield. Inspection Report# : 2000009(pdf)

Significance: N/A Apr 18, 2000 Identified By: NRC Item Type: FIN Finding PROBLEM IDENTIFICATION AND RESOLUTION

No significant findings were identified. There was however, some concern regarding the number of human performance errors that have occurred within all departments at the station over the past two years. The team noted that during the inspection, previously identified human performance issues were all rolled up into one station notification that addressed the human performance issue. Along these lines, but under a separate notification, the team noted a roll up of another human performance issue that dealt specifically with station personnel failing to follow procedures. As identified by the licensee and the team, it was determined that ineffective corrective actions, regarding human performance errors, were attributal to some narrowly focused root cause analyses or to poor correlation of causes with corrective actions. These causes were similar to that noted in the training area (exam quality and written test results). Since improvement plans were being developed to address this area as of the end of the inspection, it was too early to assess the resolution to these problems and subsequent corrective actions. Follow up action is warranted in this area.

Inspection Report# : 2000003(pdf)

Last modified : March 28, 2002

Salem 2

Initiating Events



Significance: Apr 01, 2000 Identified By: Self Disclosing Item Type: FIN Finding

A TECHNICIAN APPLIED A JUMPER TO THE WRONG RELAY CONTACTS DURING ON-LINE MAINTENANCE, CAUSING A COMPLETE LOSS OF ALL CIRCULATING WATER TRAVELING SCREENS

A maintenance technician applied a jumper to the wrong contacts on a protective relay during a planned on-line maintenance activity associated with the 12B circulating water pump breaker. This error resulted in the complete loss of all circulating water system traveling water screens (TWSs). The safety significance of this event was very low because the TWSs were restored within five minutes and there was no observable affect on circulating water flow to the main condenser.

Inspection Report# : 2000002(pdf)



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TS 3.11.2.5 WITHIN THE REQUIRED TIME PERIOD

Unit 2 operators were slow in reducing the oxygen concentration in the waste gas decay tank to levels below those potentially explosive and exceeded the time limit required by technical specification 3.11.2.5. The risk associated with this event was minimal because all fire protection equipment remained available. This event was characterized as a "green" issue due to its very low safety significance since all fire protection equipment in the area remained available and the event was of limited duration.

Inspection Report# : <u>1999007(pdf)</u>



Significance: Jul 11, 1999 Identified By: NRC Item Type: FIN Finding

FIRE PROTECTION/BARRIERS

PSEG maintained appropriate control of combustible material and ignition sources in inspected areas. In general, impaired fire barriers were clearly tagged and documented in the corrective action program (CAP). However, the inspectors discovered some minor deficiencies such as a fire door which would not completely close without operator assistance. The minor violation associated with the fire door which would not close completely without operator assistance was classified as a green finding due to its very low safety significance. Inspection Report# : 1999005(pdf)

Mitigating Systems



Item Type: NCV NonCited Violation

WORKER ADJUSTED THE PACKING ON THE 22 AFW PUMP WITHOUT HAVING AN APPROVED WORK DOCUMENT

TS 6.8.1 requires "that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix "A" of Regulatory Guicde 1.33. RG 1.33 requires that procedures be developed to conduct maintenance on safety-related systems. PSEG Nuclear procedure NC.NA-AP.ZZ-0009(Q), "Work Management Program," requires that individuals perform work in accordance with appropriate work documents. On May 11, 2001, a plant worker adjusted the packing on the 22 AFW pump without having the approved work documents. Inspection Report# : 2001006(pdf)

Significance: Feb 10, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

UNTIMELY AND INEFFECTIVE CORRECTIVE ACTIONS TO PREVENT THE RECURRENCE OF VIBRATION INDUCED FAILURES OF THE 21 CCHX OUTLET VALVE, 21SW127

PSEG Nuclear did not take timely and effective corrective actions for vibration induced failures of service water valve 21 SW 127 on the 21 component cooling heat exchanger outlet. Failure of 21 SW 127 rendered the 21 component cooling water (CCW) loop inoperable when the redundant 22 CCW loop was inoperable to support a liquid radwaste discharge. The finding had a credible impact on safety since the failure of 21 SW 127 resulted in both component cooling water loops being out-of-service and resulted in a loss of the decay heat removal safety function. The SDP evaluation determined that the event was of very low safety significance due to the short duration of the event. The failure to implement effective, timely corrective actions for 21 SW 127 was considered a non-cited violation. Inspection Report# : 2000011(pdf)

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Significance: Feb 10, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

LICENSEE IDENTIFIED THAT SAFETY-RELATED VENTILATION DAMPER SPRING WAS MODIFIED DURING MAINTENANCE WITHOUT APPROPRIATE DESIGN CONTROLS

10 CFR 50, Appendix B, Criterion III, Design Control, requires that measures be established for the selection and review for suitability of application of parts that are essential to the safety-related functions of structures, systems and components. PSEG Nuclear identified that while repairing Unit 1 auxiliary building ventilation excess flow damper, S1ABV-1ABS8 under Order 60014824, a spring that assists in damper actuation was modified without the proper engineering documentation. This was documented in the corrective action program as Notification 20052729. Inspection Report# : 2000011(pdf)



Significance: Nov 11, 2000

Identified By: NRC

Item Type: NCV NonCited Violation FAILURE TO SCHEDULE AND PERFORM PREVENTIVE MAINTENANCE FOR A TURBINE DRIVEN AUXILIARY FEEDWATER

MODIFICAITON

PSEG Nuclear did not perform the specified preventive maintenance (PM) tasks for the new equipment associated with the turbine driven auxiliary feedwater pump enclosure modification at both units. This problem resulted in a credible impact on safety-related equipment which could have affected the availability and reliability of the auxiliary feedwater system. The failure to properly perform PM tasks for new equipment associated with modification 2EC-3522 as required by Procedure NC.WM-AP.ZZ-0003(Q), Rev 0, "Regular Maintenance Process," was considered to be a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." The issue was determined to be of very low risk significance using the Significance Determination Process phase 1 screening because no actual equipment failures were attributed to the missed PMs.

Inspection Report# : 2000009(pdf)



Feb 09, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO DOCUMENT AND MAINTAIN QUALITY RECORDS OF EMERGENT TROUBLESHOOTING AND MAINTENANCE ACTIVITIES ON THE CONTROL CIRCUITRY FOR THE 1B EDG

PSEG Nuclear maintenance failed to document and maintain records of emergent troubleshooting and maintenance activities on the control circuitry for the 1B EDG. PSEG Nuclear also failed to maintain records of a September 2000 internal inspection of the 12 charging pump speed increaser. These two examples of PSEG Nuclear's failure to maintain complete and adequate inspection and maintenance records were a non-cited violation of Technical Specification 6.10.1.b and 10 CFR 50, Appendix B, Criterion XVII, Quality Assurance Records. The findings were evaluated using the significance determination process (SDP) and considered to be of very low risk significance because the failure to maintain the records did not affect the availability of the mitigating systems. Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO FOLLOW PROCEDURES AND PERFORM AN ADEQUATE POST-TRIP REVIEW FOLLOWING THE PRESSURIZER SPRAY VALVE FAILURE, REACTOR TRIP AND SAFETY INJECTION EVENT

Operating procedures did not provide adequate guidance to operators during their response to a stuck open pressurizer spray valve event that resulted in an automatic reactor trip and safety injection. The instructions which existed regarding the valve, including stopping reactor coolant

pumps and isolating control air, conflicted with actions needed to address the event. However, PSEG Nuclear did not identify the procedural deficiencies during the post-trip review of the event as specified by the post-trip review procedure. The failure to identify and evaluate these procedural deficiencies was a non-cited violation. This finding was evaluated using the SDP and determined to be of very low risk significance, because the procedural deficiencies did not prevent the operators from controlling plant pressure during the event. Inspection Report# : 2001012(pdf)





Significance: Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT PROMPT CORRECTIVE ACTIONS FOR A DEGRADED 2C EDG CYLINDER ISOLATION VALVE

PSEG Nuclear failed to promptly identify and correct a condition adverse to quality involving a degraded cylinder isolation valve (petcock) which was not functioning properly during corrective maintenance on the 2C EDG. During a subsequent test of the 2C EDG, flames were observed to be coming out of the cylinder 5R petcock, and the CO2 automatic fire suppression system actuated before the operators completed the EDG shutdown. The failure to identify and correct the degraded cylinder isolation valve was considered a non-cited violation of 10 CFR 50, Appendix XVI, Corrective Actions. The finding was evaluated using the SDP and considered to be of very low risk significance, because the emergency diesel generator unavailability time associated with this event was within the Technical Specification allowed outage time. Inspection Report# : 2001012(pdf)



Significance: Dec Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO PERFORM FUNCTIONAL TESTING OF THE UNIT 2 RADIOACTIVE WASTE GAS HOLDUP SYSTEM EFFLUENT OXYGEN MONITORING SYSTEM WITHIN SURVEILLANCE INTERVAL SPECIFIED BY TS 4.3.3.9 AND 4.0.2

Technical Specification 4.3.3.9 and associated Table 4.3-13, item 1.b, require, in part, that a functional test of the radioactive waste gas holdup system effluent oxygen monitoring system be functionally tested monthly. Technical Specification 4.0.2 states, in part, that the surveillance requirement shall be performed within the specified surveillance interval with a maximum allowable not to exceed 25 percent of the specified surveillance interval. Contrary to the above, the Unit 2 waste gas analyzer surveillance was not completed until November 29, 2001. This was approximately four days past the maximum allowable overdue date of November 24, 2001. Inspection Report# : 2001011(pdf)



Significance: Nov 10, 2001

Identified By: NRC Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO PROMPTLY IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY THAT HAD THE POTENTIAL TO AFFECT THE OPERABILITY OF THE NO. 21 CHARGING SYSTEM PUMP

Failure to implement appropriate corrective actions for a degraded no. 22 charging pump (CS) lubricating oil condition. PSEG Nuclear replaced the degraded oil, but did not implement any actions to prevent recurrence. This finding was of very low significance since the no. 22 CS pump has performed satisfactorily subsequent to the oil analysis results being addressed and the lubricating oil replacement. Inspection Report# : 2001010(pdf)



Significance: Aug 11, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY IDENTIFY AND CORRECT AN ADVERSE CONDITION THAT AFFECTED THE OPERABILITY OF THE CONTAINMENT SPRAY ADDITIVE TANK

PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 2 containment spray additive tank (SAT) level trend that occurred over a several month period. This resulted in dilution of the Unit 2 SAT sodium hydroxide (NAOH) concentration below the TS required minimum value for a period of up to 109 days. This finding was evaluated using SDP and found to be of very low significance since the tank concentration was above the minimum calculated NAOH concentration required for the SAT to perform its accident mitigation function. Inspection Report# : 2001008(pdf)



Significance: Aug 11, 2001 Identified By: Licensee Item Type: NCV NonCited Violation FAILURE TO EVALUATE WHETHER A PIPE LEAK IDENTIFIED DOWNSTREAM OF THE 21SW4 VALVE WAS INSIDE THE ASME SECTION

OF THE SW SYSTEM FOR SEVEN WEEKS

10CFR50, Appendix B, Criteiron XVI, requires, in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, on June 20, 2001, PSEG Nuclear identified a pipe leak downstream of the 21SW4 valve, but did not evaluate whether the leak was inside the ASME section of the SW system until approximately August 9. Inspection Report# : 2001008(pdf)

Significance: Feb 07, 2000 Identified By: NRC Item Type: VIO Violation

THE CARBON DIOXIDE TESTS FOR THE UNITS 1 & 2 4,160 VAC SWITCHGEAR ROOMS DID NOT REACH OR MAINTAIN THE REQUIRED CO2 CONCENTRATION OF 50%

PSEG did not ensure that the carbon dioxide concentration tests for the Units 1 & 2 4,160 VAC switchgear rooms reached and maintained the required CO2 concentration of 50%. This is a violation of Unit 1 license condition C.5 and Unit 2 license condition 2.C.10. This finding was determined to be WHITE by the significance determination process. The safety significance of this WHITE finding is low to moderate. During the supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that PSEG had performed a comprehensive evaluation of the failure of the carbon dioxide suppression system to achieve its design concentration. PSEG is currently working to correct carbon dioxide concentrations for the total flooding fire suppression systems, upgrade electrical raceway fire barrier systems, and convert the 4160v switchgear room fire suppression system from manual to automatic. Based on PSEG's acceptable performance in addressing the switchgear room fire suppression system issue, the White finding associated with this issue will only be consdidered in assessing tplant performance for a total of four quarters in accordance with the guidance in NRC Inspection Manual Chapter 0305. Inspection Report# : <u>1999010(pdf)</u>



Significance: Feb 07, 2000

Identified By: NRC Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THE CO2 SYSTEMS FOR THE UNITS 1 & 2 4,160 VAC ELECTRIC PENETRATION ROOMS REACHED AND MAINTAINED THE REQUIRED CO2 CONCENTRATION

The team identified that the carbon dioxide concentration tests for the Units 1 & 2 electrical penetration areas did not reach or maintain the required CO2 concentration of 50%. This failure is a violation of license conditions for each unit. This finding was evaluated by the significance determination process (SDP) and determined to be GREEN based on the other detection and suppression systems available in the area. The safety significance of this finding is very low.

Inspection Report# : <u>1999010(pdf</u>)



Significance: Feb 07, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THAT ONE TRAIN OF EQUIPMENT NECESSARY TO ACHIEVE HOT SHUTDOWN FORM THE EMERGENCY CONTROL STATION IS FREE OF FIRE DAMAGE

PSEG identified a condition in which they failed to ensure that one train of equipment necessary to achieve hot shutdown from the emergency control station is free of fire damage. This is a non-cited violation of Section III.G.1.a of Appendix R. This issue was evaluated by the SDP and found to be within the licensee's respone band. (GREEN) The safety significance of this finding is very low. Inspection Report# : 1999010(pdf)



Significance: Feb 07, 2000

Identified By: Licensee Item Type: NCV NonCited Violation

PSEG IDENTIFIED A CONDITION IN WHICH A FIRE COULD DAMAGE CABLES SUCH THAT THE POWER OPERATED RELIEF VALVE WOULD OPEN AND THE ASSOCIATED BLOCK VALVE COULD NOT BE CLOSED.

PSEG identified a condition in which a fire could damage cables such that the power operated relief valve would open and the associated block valve could not be closed. The failure to protect one train of equipment necessary to achieve hot shutdown is a violation of III.G.1.a of Appendix R. This finding was evaluated by the SDP and determined to be GREEN. The safety significance of this finding was very low. Inspection Report# : <u>1999010(pdf)</u>



Item Type: NCV NonCited Violation

INADEQUATE ACCEPTANCE CRITERIA IN SURVEILLANCE TEST PROCEDURES

The acceptance criteria in the auxiliary feedwater (AFW) pump surveillance test procedures was inadequate since it did not ensure that the pump performance was capable of meeting accident analysis performance or pump operability criteria found in the Unit 1 and 2 Technical Specifications. This issue was considered potentially significant due to the allowable degraded core cooling capability associated with the established AFW pump minimum performance acceptance criteria. This issue has been entered into PSEG Nuclear's corrective action program (CAP). The issue was considered "green" in the significance determination process since it did not have an immediate impact on AFW system operability as determined by an evaluation of recent pump performance.

Inspection Report# : 1999006(pdf)



Sep 01, 1999 Significance: Identified By: NRC

Item Type: NCV NonCited Violation

MULTIPLE EXAMPLES OF INEFFECTIVE IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM

The team identified some instances where PSEG Nuclear did not effectively implement the corrective action program (CAP): 1) A prior performance weakness resulted in a governor control system needle valve setting for the 23 AFW pump turbine that was not optimal for actual operating conditions; 2) During operation of the 23 AFW pump, the team identified that the turbine outboard bearing temperature exhibited an increasing trend, which represented an operability question, and PSEG Nuclear was not aware of this potential problem. Consequently, this problem was not entered into the CAP; and, 3) Other examples of ineffective implementation of the CAP were identified, including deficiencies not promptly entered into the CAP or not adequately corrected. These issues were considered to be significant in that they indicated an overall CAP weakness since problems were noted in not identifying corrective action items and the lack of timeliness and effectiveness of corrective actions. These issues were considered "green" in the significance determination process because they did not have an immediate impact on AFW system operability and were ultimately included in PSEG Nuclear's CAP.

Inspection Report# : 1999006(pdf)





Identified By: NRC Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL CONCERNING REPLACEMENT PARTS FOR POSITIONERS FOR AFW FLOW CONTROL VAVLES The team found that the positioners for the AFW flow control valves had been maintained with parts that were not qualified for use in safety-related applications. This issue was considered significant since the functionality for valves in a risk significant system was being challenged. The qualification issue was considered "green" in the significance determination process because it did not have an immediate impact on AFW system operability based on an engineering evaluation and the issue was being addressed by PSEG Nuclear's CAP. Inspection Report# : 1999006(pdf)



Jul 11, 1999

Identified By: Licensee Item Type: FIN Finding

Significance:

CFCU TRAIN UNAVAILABILITY PERFORMANCE CRITERIA

PSEG nuclear personnel properly monitored containment fan cooling unit (CFCU) performance for reliability and unavailability. However, while PSEG's recent change in the CFCU train unavailability performance criteria was acceptable, it was not based on an evaluation of all of the appropriate factors. Also, the goals for the diesel generators were weak in that the cause of the associated unavailability was not addressed. This finding was assessed to be green as a reevaluation by PSEG of the CFCU train unavailability performance criteria using more appropriate factors revealed only a minimal increase in large early release frequency (LERF). Inspection Report# : 1999005(pdf)





Identified By: NRC Item Type: FIN Finding

Significance:

INCOMPLETE COMPENSATORY MEASURES FOR DEGRADED EQUIPMENT CONDITIONS

PSEG nuclear operators appropriately assessed three degraded equipment conditions in terms of their impact on the design basis functions of the affected systems. Each of the operability evaluations were completed in a timely manner. However, some of the associated compensatory measures were either incomplete or poorly controlled. This finding was evaluated to be green due to the minor significance of the compensatory measures needed and the absence of NRC requirements in this area.

Inspection Report# : 1999005(pdf)

Barrier Integrity



Significance: Dec 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation FAILURE TO DEVELOP ADEQUATE INSTRUCTIONS TO REPACK THE 2CV49 VALVE AS REQUIRED BY 10CFR50, APPENDIX B, CRITERION V

10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall prescribed by documented instructions that include appropriate acceptance criteria to determine that important activities have been satisfactorily accomplished. Contrary to the above, PSEG Nuclear determined on September 6, 2001, that the packing data sheet for the 2CV49 valve was incorrect. As a result, valve 2CV49 developed an excessive packing leak that could have resulted in an exposure to the control room operators in excess of the 10 CFR 50, Appendix A, General Design Criteria 19 limits following a postulated LOCA.

Inspection Report# : 2001011(pdf)



Significance: Dec 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO ISOLATE THE AFFECTED PENETRATION AS REQUIRED BY TS 3.6.3 SUBSEQUENT TO DISABLING SERVICE WATER VALVES 22SW58 AND 22SW72

Technical Specification 3.6.3, requires, in part, that inoperable containment penetration isolation valves be restored to an operable condition within four hours or the associated penetration shall be isolated. Contrary to the above, PSEG Nuclear disabled two containment isolation valves (22SW58 and 22SW72) on September 23, 2001, but did not isolate the associated penetration within four hours as required by TS 3.6.3. Inspection Report# : 2001011(pdf)



📕 Feb 27, 2000

Identified By: NRC Item Type: FIN Finding

SMALL UNIDENTIFIED LEAK FROM THE CVCS AT UNIT 2 PERSISTED FOR 3 1/2 HOURS BEFORE IDENTIFICATION AND TERMINATION A small unidentified leak from the chemical and volume control system at Unit 2 persisted for approximately 3 1/2 hours before operators recognized and terminated the condition. PSEG attributed the delays in recognizing the condition, in part, to the fact that two other concurrent evolutions were in progress or had just been completed which effectively masked the indications of a leak, namely volume control tank level and plant ventilation radiation levels. The safety and risk significance of this incident was very low because adequate reactor coolant inventory sources remained available throughout the event and offsite release rates remained well below regulatory limits. Inspection Report# : 2000001(pdf)

Emergency Preparedness

Occupational Radiation Safety



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

INADVERTENT DISCHARGE FROM THE 23 WASTE GAS DECAY TANK TO THE AUXILIARY BUILDING

PSEG operators inadvertently vented radioactive gas into the Unit 2 auxiliary building. The plant vent and auxiliary building air radiation monitors detected increased radiation levels, which remained well below technical specification limits. Errors by control room and field operators, including failure to follow procedures, contributed to the incident. This event was characterized as a "green" issue since the increased radiation levels in the auxiliary building were well below regulatory limits.

Inspection Report# : <u>1999007(pdf</u>)

Public Radiation Safety



Significance: Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN YEAR 2000 CALIBRATION RECORDS FOR CHEMICAL WASTE BASIN MONITOR (R37) AND UNIT 1 **CONTAINMENT FAN COOLER-SW DISCHARGE MONITOR (1R13B)**

Technical Specification Section 6.10.d requires that records of surveillance activities, inspections, and calibrations, required by the TSs, be retained for at least five years. The radiological calibration results for the Chemical Waste Basin Monitor (R37) and the Unit 1 Containment Fan Cooler-Service Water Line Discharge Monitor (1R13B) for the year 2000 were not retrievable. PSEG Nuclear placed this issue into its corrective action system as a Notification Report (Notification 20084063). The finding was determined to be of very low safety significance, because the issue did not impair the ability to assess the public dose, and did not result in exceeding public dose limits listed in Appendix I of 10 CFR 50 or 10 CFR 20.1301(d). The issue was not reportable in the Annual Radiological Effluent Report. Further, PSEG Nuclear produced a work record indicating the calibrations had been properly performed.

Inspection Report# : 2001011(pdf)



Oct 10, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO REPORT IN RAD. ENV. OP. REPORTS ACTIONS TO PREVENT RECURRENCE OF RAD. ENVIR. AIR SAMPLER OUTAGES PSEG failed to provide complete information in their 1997 and 1998 Annual Radiological Environmental Operating Reports in that these documents did not describe plans to prevent recurrence of multiple environmental air sampler outages. This issue was characterized as a Non-Cited Violation of TS 3.12.1. The safety significance of this issue was very low because it did not significantly compromise PSEG's ability to assess the environmental impact of continued plant operation.

Inspection Report# : 1999008(pdf)



Significance: Aug 29, 1999 Identified By: Licensee

Item Type: NCV NonCited Violation INADEQUATELY PERFORMED SURVEILLANCE PROCEDURE

The carbon adsorber (activated charcoal) in the auxiliary building ventilation exhaust system was operated at an air flow in excess of the specified maximum. Operators declared the adsorber inoperable until engineering department personnel assessed the potential impact of this occurrence, which was later determined to be negligible. This issue had low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Insufficient attention to detail by a control room operator had resulted in this incident, which represented a non-cited violation of technical specification 6.8.1. This issue was characterized as a "green" event due to its very low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine.

Inspection Report# : 1999007(pdf)

Physical Protection



Item Type: NCV NonCited Violation

FAILURE TO CONDUCT PACKAGE SEARCH IN ACCORDANCE WITH SITE SECURITY PLAN

Security personnel did not properly search a hand-carried package prior to granting it unrestricted access to the site protected area (PA). Specifically, guards permitted a plant worker to bypass the x-ray machine and carry a large bag of moving blankets into the PA without a search of the bag's contents. Later examination of the bag's contents yielded no contraband. This incident was characterized as a "green" issue since no contraband was identified in the package which was not searched. Inspection Report# : 1999007(pdf)

Miscellaneous

Significance: N/A Mar 23, 2001 Identified By: NRC Item Type: FIN Finding PROBLEM IDENTIFICATION AND RESOLUTION PROGRAM INSPECTION

The licensee staff used the notification system appropriately to identify issues needing review for corrective actions. Daily issue review and prioritization meetings focused on safety and minimization of plant risk. Operators reviewed the risk worth of planned work activities. Operability determinations appeared adequate for the reviewed issues. Identified issues were being reviewed for apparent and root causes. Root cause evaluations were conducted to an appropriate depth and provided associated corrective actions. Corrective actions for identified issues were effective, commensurate with the safety significance of the issues, and sensitive to the necessity for reliable equipment performance. The extent of condition and generic applicability for significant conditions adverse to quality were properly considered. The size of the corrective action backlog and timeliness of corrective action completion, with respect to safety significance, was formally tracked and managed. The licensee had taken actions commensurate with the importance of service water system issues; however, detritus and silt continued to challenge the operators and plant equipment. Self-assessments and audits were self-critical and provided appropriate feedback, including notifications and recommendations. Inspection Report# : 2001004(pdf)

Significance: N/A Nov 11, 2000 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO PERFORM A NITROGEN PURGE IN ACCORDANCE WITH PROCEDURES RESULTING IN INCREASED DOSE RATES Plant procedure IOP-6 specifies that a degassification evolution be performed on the primary coolant during a shutdown, via purging the hydrogen cover gas in the volume control tank with nitrogen. The cover gas in the volume control tank was not purged with nitrogen during shutdown on October 6, 2000, as described in Notification 20042531. This resulted in PSEG Nuclear personnel having to perform a second chemically-induced crud burst, resulting in increased dose rates on various pipes and components located inside the bio-shield. Inspection Report# : 2000009(pdf)

Significance: N/A Apr 18, 2000 Identified By: NRC Item Type: FIN Finding PROBLEM IDENTIFICATION AND RESOLUTION

No significant findings were identified. There was however, some concern regarding the number of human performance errors that have occurred within all departments at the station over the past two years. The team noted that during the inspection, previously identified human performance issues were all rolled up into one station notification that addressed the human performance issue. Along these lines, but under a separate notification, the team noted a roll up of another human performance issue that dealt specifically with station personnel failing to follow procedures. As identified by the licensee and the team, it was determined that ineffective corrective actions, regarding human performance errors, were attributal to some narrowly focused root cause analyses or to poor correlation of causes with corrective actions. These causes were similar to that noted in the training area (exam quality and written test results). Since improvement plans were being developed to address this area as of the end of the inspection, it was too early to assess the resolution to these problems and subsequent corrective actions. Follow up action is warranted in this area.

Inspection Report# : 2000003(pdf)

Last modified : March 27, 2002

Salem 2

Initiating Events



Significance: Apr 01, 2000 Identified By: Self Disclosing Item Type: FIN Finding

A TECHNICIAN APPLIED A JUMPER TO THE WRONG RELAY CONTACTS DURING ON-LINE MAINTENANCE, CAUSING A COMPLETE LOSS OF ALL CIRCULATING WATER TRAVELING SCREENS

A maintenance technician applied a jumper to the wrong contacts on a protective relay during a planned on-line maintenance activity associated with the 12B circulating water pump breaker. This error resulted in the complete loss of all circulating water system traveling water screens (TWSs). The safety significance of this event was very low because the TWSs were restored within five minutes and there was no observable affect on circulating water flow to the main condenser.

Inspection Report# : 2000002(pdf)



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TS 3.11.2.5 WITHIN THE REQUIRED TIME PERIOD

Unit 2 operators were slow in reducing the oxygen concentration in the waste gas decay tank to levels below those potentially explosive and exceeded the time limit required by technical specification 3.11.2.5. The risk associated with this event was minimal because all fire protection equipment remained available. This event was characterized as a "green" issue due to its very low safety significance since all fire protection equipment in the area remained available and the event was of limited duration.

Inspection Report# : <u>1999007(pdf)</u>



Significance: Jul 11, 1999 Identified By: NRC Item Type: FIN Finding

FIRE PROTECTION/BARRIERS

PSEG maintained appropriate control of combustible material and ignition sources in inspected areas. In general, impaired fire barriers were clearly tagged and documented in the corrective action program (CAP). However, the inspectors discovered some minor deficiencies such as a fire door which would not completely close without operator assistance. The minor violation associated with the fire door which would not close completely without operator assistance was classified as a green finding due to its very low safety significance. Inspection Report# : 1999005(pdf)

Mitigating Systems



Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY IDENTIFY AND CORRECT AN ADVERSE CONDITION THAT AFFECTED THE OPERABILITY OF THE CONTAINMENT SPRAY ADDITIVE TANK

PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 2 containment spray additive tank (SAT) level trend that occurred over a several month period. This resulted in dilution of the Unit 2 SAT sodium hydroxide (NAOH) concentration below the TS required minimum value for a period of up to 109 days. This finding was evaluated using SDP and found to be of very low significance since the tank concentration was above the minimum calculated NAOH concentration required for the SAT to perform its accident mitigation function. Inspection Report# : 2001008(pdf)



Significance: Aug 11, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO EVALUATE WHETHER A PIPE LEAK IDENTIFIED DOWNSTREAM OF THE 21SW4 VALVE WAS INSIDE THE ASME SECTION OF THE SW SYSTEM FOR SEVEN WEEKS

10CFR50, Appendix B, Criteiron XVI, requires, in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, on June 20, 2001, PSEG Nuclear identified a pipe leak downstream of the 21SW4 valve, but did not evaluate whether the leak was inside the ASME section of the SW system until approximately August 9. Inspection Report# : 2001008(pdf)



Significance: May 19, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

WORKER ADJUSTED THE PACKING ON THE 22 AFW PUMP WITHOUT HAVING AN APPROVED WORK DOCUMENT

TS 6.8.1 requires "that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix "A" of Regulatory Guicde 1.33. RG 1.33 requires that procedures be developed to conduct maintenance on safety-related systems. PSEG Nuclear procedure NC.NA-AP.ZZ-0009(Q), "Work Management Program," requires that individuals perform work in accordance with appropriate work documents. On May 11, 2001, a plant worker adjusted the packing on the 22 AFW pump without having the approved work documents. Inspection Report# : 2001006(pdf)



Significance: Feb 10, 2001 Identified By: NRC

Item Type: NCV NonCited Violation

UNTIMELY AND INEFFECTIVE CORRECTIVE ACTIONS TO PREVENT THE RECURRENCE OF VIBRATION INDUCED FAILURES OF THE 21 CCHX OUTLET VALVE, 21SW127

PSEG Nuclear did not take timely and effective corrective actions for vibration induced failures of service water valve 21 SW 127 on the 21 component cooling heat exchanger outlet. Failure of 21 SW 127 rendered the 21 component cooling water (CCW) loop inoperable when the redundant 22 CCW loop was inoperable to support a liquid radwaste discharge. The finding had a credible impact on safety since the failure of 21 SW 127 resulted in both component cooling water loops being out-of-service and resulted in a loss of the decay heat removal safety function. The SDP evaluation determined that the event was of very low safety significance due to the short duration of the event. The failure to implement effective, timely corrective actions for 21 SW 127 was considered a non-cited violation.



Feb 10, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

LICENSEE IDENTIFIED THAT SAFETY-RELATED VENTILATION DAMPER SPRING WAS MODIFIED DURING MAINTENANCE WITHOUT APPROPRIATE DESIGN CONTROLS

10 CFR 50, Appendix B, Criterion III, Design Control, requires that measures be established for the selection and review for suitability of application of parts that are essential to the safety-related functions of structures, systems and components. PSEG Nuclear identified that while repairing Unit 1 auxiliary building ventilation excess flow damper, S1ABV-1ABS8 under Order 60014824, a spring that assists in damper actuation was modified without the proper engineering documentation. This was documented in the corrective action program as Notification 20052729. Inspection Report# : 2000011(pdf)



Nov 11, 2000

Identified By: NRC Item Type: NCV NonCited Violation

Significance:

FAILURE TO SCHEDULE AND PERFORM PREVENTIVE MAINTENANCE FOR A TURBINE DRIVEN AUXILIARY FEEDWATER MODIFICAITON

PSEG Nuclear did not perform the specified preventive maintenance (PM) tasks for the new equipment associated with the turbine driven auxiliary feedwater pump enclosure modification at both units. This problem resulted in a credible impact on safety-related equipment which could have affected the availability and reliability of the auxiliary feedwater system. The failure to properly perform PM tasks for new equipment associated with modification 2EC-3522 as required by Procedure NC.WM-AP.ZZ-0003(Q), Rev 0, "Regular Maintenance Process," was considered to be a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." The issue was determined to be of very low risk significance using the Significance Determination Process phase 1 screening because no actual equipment failures were attributed to the missed

PMs. Inspection Report# : <u>2000009(pdf</u>)



Significance: Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO PERFORM FUNCTIONAL TESTING OF THE UNIT 2 RADIOACTIVE WASTE GAS HOLDUP SYSTEM EFFLUENT OXYGEN MONITORING SYSTEM WITHIN SURVEILLANCE INTERVAL SPECIFIED BY TS 4.3.3.9 AND 4.0.2

Technical Specification 4.3.3.9 and associated Table 4.3-13, item 1.b, require, in part, that a functional test of the radioactive waste gas holdup system effluent oxygen monitoring system be functionally tested monthly. Technical Specification 4.0.2 states, in part, that the surveillance requirement shall be performed within the specified surveillance interval with a maximum allowable not to exceed 25 percent of the specified surveillance interval. Contrary to the above, the Unit 2 waste gas analyzer surveillance was not completed until November 29, 2001. This was approximately four days past the maximum allowable overdue date of November 24, 2001. Inspection Report# : 2001011(pdf)



Significance: Nov 10, 2001

Identified By: NRC Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO PROMPTLY IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY THAT HAD THE POTENTIAL TO AFFECT THE OPERABILITY OF THE NO. 21 CHARGING SYSTEM PUMP

Failure to implement appropriate corrective actions for a degraded no. 22 charging pump (CS) lubricating oil condition. PSEG Nuclear replaced the degraded oil, but did not implement any actions to prevent recurrence. This finding was of very low significance since the no. 22 CS pump has performed satisfactorily subsequent to the oil analysis results being addressed and the lubricating oil replacement. Inspection Report# : 2001010(pdf)



Significance: Feb 07, 2000

Identified By: NRC

Item Type: VIO Violation

THE CARBON DIOXIDE TESTS FOR THE UNITS 1 & 2 4,160 VAC SWITCHGEAR ROOMS DID NOT REACH OR MAINTAIN THE REQUIRED CO2 CONCENTRATION OF 50%

PSEG did not ensure that the carbon dioxide concentration tests for the Units 1 & 2 4,160 VAC switchgear rooms reached and maintained the required CO2 concentration of 50%. This is a violation of Unit 1 license condition C.5 and Unit 2 license condition 2.C.10. This finding was determined to be WHITE by the significance determination process. The safety significance of this WHITE finding is low to moderate. During the supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that PSEG had performed a comprehensive evaluation of the failure of the carbon dioxide suppression system to achieve its design concentration. PSEG is currently working to correct carbon dioxide concentrations for the total flooding fire suppression systems, upgrade electrical raceway fire barrier systems, and convert the 4160v switchgear room fire suppression systems from manual to automatic. Based on PSEG's acceptable performance in addressing the switchgear room fire suppression system issue, the White finding associated with this issue will only be consdidered in assessing tplant performance for a total of four quarters in accordance with the guidance in NRC Inspection Manual Chapter 0305. Inspection Report# : <u>1999010(pdf)</u>



🚺 Feb 07, 2000

Identified By: NRC Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THE CO2 SYSTEMS FOR THE UNITS 1 & 2 4,160 VAC ELECTRIC PENETRATION ROOMS REACHED AND MAINTAINED THE REQUIRED CO2 CONCENTRATION

The team identified that the carbon dioxide concentration tests for the Units 1 & 2 electrical penetration areas did not reach or maintain the required CO2 concentration of 50%. This failure is a violation of license conditions for each unit. This finding was evaluated by the significance determination process (SDP) and determined to be GREEN based on the other detection and suppression systems available in the area. The safety significance of this finding is very low.

Inspection Report# : <u>1999010(pdf)</u>



PSEG FAILED TO ENSURE THAT ONE TRAIN OF EQUIPMENT NECESSARY TO ACHIEVE HOT SHUTDOWN FORM THE EMERGENCY CONTROL STATION IS FREE OF FIRE DAMAGE

PSEG identified a condition in which they failed to ensure that one train of equipment necessary to achieve hot shutdown from the emergency control station is free of fire damage. This is a non-cited violation of Section III.G.1.a of Appendix R. This issue was evaluated by the SDP and found to be within the licensee's respone band. (GREEN) The safety significance of this finding is very low. Inspection Report# : 1999010(pdf)



Feb 07, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

PSEG IDENTIFIED A CONDITION IN WHICH A FIRE COULD DAMAGE CABLES SUCH THAT THE POWER OPERATED RELIEF VALVE WOULD OPEN AND THE ASSOCIATED BLOCK VALVE COULD NOT BE CLOSED.

PSEG identified a condition in which a fire could damage cables such that the power operated relief valve would open and the associated block valve could not be closed. The failure to protect one train of equipment necessary to achieve hot shutdown is a violation of III.G.1.a of Appendix R. This finding was evaluated by the SDP and determined to be GREEN. The safety significance of this finding was very low. Inspection Report# : 1999010(pdf)



Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE ACCEPTANCE CRITERIA IN SURVEILLANCE TEST PROCEDURES

The acceptance criteria in the auxiliary feedwater (AFW) pump surveillance test procedures was inadequate since it did not ensure that the pump performance was capable of meeting accident analysis performance or pump operability criteria found in the Unit 1 and 2 Technical Specifications. This issue was considered potentially significant due to the allowable degraded core cooling capability associated with the established AFW pump minimum performance acceptance criteria. This issue has been entered into PSEG Nuclear's corrective action program (CAP). The issue was considered "green" in the significance determination process since it did not have an immediate impact on AFW system operability as determined by an evaluation of recent pump performance.

Inspection Report# : 1999006(pdf)





Identified By: NRC

Item Type: NCV NonCited Violation

MULTIPLE EXAMPLES OF INEFFECTIVE IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM

The team identified some instances where PSEG Nuclear did not effectively implement the corrective action program (CAP): 1) A prior performance weakness resulted in a governor control system needle valve setting for the 23 AFW pump turbine that was not optimal for actual operating conditions; 2) During operation of the 23 AFW pump, the team identified that the turbine outboard bearing temperature exhibited an increasing trend, which represented an operability question, and PSEG Nuclear was not aware of this potential problem. Consequently, this problem was not entered into the CAP; and, 3) Other examples of ineffective implementation of the CAP were identified, including deficiencies not promptly entered into the CAP or not adequately corrected. These issues were considered to be significant in that they indicated an overall CAP weakness since problems were noted in not identifying corrective action items and the lack of timeliness and effectiveness of corrective actions. These issues were considered "green" in the significance determination process because they did not have an immediate impact on AFW system operability and were ultimately included in PSEG Nuclear's CAP.

Inspection Report# : 1999006(pdf)



Identified By: NRC Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL CONCERNING REPLACEMENT PARTS FOR POSITIONERS FOR AFW FLOW CONTROL VAVLES

The team found that the positioners for the AFW flow control valves had been maintained with parts that were not qualified for use in safety-related applications. This issue was considered significant since the functionality for valves in a risk significant system was being challenged. The aualification issue was considered "areen" in the significance determination process because it did not have an immediate impact on AFW system operability based on an engineering evaluation and the issue was being addressed by PSEG Nuclear's CAP. Inspection Report# : 1999006(pdf)



Identified By: Licensee Item Type: FIN Finding

CFCU TRAIN UNAVAILABILITY PERFORMANCE CRITERIA

PSEG nuclear personnel properly monitored containment fan cooling unit (CFCU) performance for reliability and unavailability. However, while PSEG's recent change in the CFCU train unavailability performance criteria was acceptable, it was not based on an evaluation of all of the appropriate factors. Also, the goals for the diesel generators were weak in that the cause of the associated unavailability was not addressed. This finding was assessed to be green as a reevaluation by PSEG of the CFCU train unavailability performance criteria using more appropriate factors revealed only a minimal increase in large early release frequency (LERF). Inspection Report# : 1999005(pdf)

spection Report# : <u>1999005</u>



Significance: Jul 11, 1999 Identified By: NRC

Item Type: FIN Finding

INCOMPLETE COMPENSATORY MEASURES FOR DEGRADED EQUIPMENT CONDITIONS

PSEG nuclear operators appropriately assessed three degraded equipment conditions in terms of their impact on the design basis functions of the affected systems. Each of the operability evaluations were completed in a timely manner. However, some of the associated compensatory measures were either incomplete or poorly controlled. This finding was evaluated to be green due to the minor significance of the compensatory measures needed and the absence of NRC requirements in this area.

Inspection Report# : <u>1999005(pdf)</u>

Barrier Integrity



Significance: Dec 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO DEVELOP ADEQUATE INSTRUCTIONS TO REPACK THE 2CV49 VALVE AS REQUIRED BY 10CFR50, APPENDIX B, CRITERION V

10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall prescribed by documented instructions that include appropriate acceptance criteria to determine that important activities have been satisfactorily accomplished. Contrary to the above, PSEG Nuclear determined on September 6, 2001, that the packing data sheet for the 2CV49 valve was incorrect. As a result, valve 2CV49 developed an excessive packing leak that could have resulted in an exposure to the control room operators in excess of the 10 CFR 50, Appendix A, General Design Criteria 19 limits following a postulated LOCA.

Inspection Report# : 2001011(pdf)



Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

Significance:

FAILURE TO ISOLATE THE AFFECTED PENETRATION AS REQUIRED BY TS 3.6.3 SUBSEQUENT TO DISABLING SERVICE WATER VALVES 22SW58 AND 22SW72

Technical Specification 3.6.3, requires, in part, that inoperable containment penetration isolation valves be restored to an operable condition within four hours or the associated penetration shall be isolated. Contrary to the above, PSEG Nuclear disabled two containment isolation valves (22SW58 and 22SW72) on September 23, 2001, but did not isolate the associated penetration within four hours as required by TS 3.6.3. Inspection Report# : 2001011(pdf)



Significance: Feb 27, 2000

Identified By: NRC Item Type: FIN Finding

SMALL UNIDENTIFIED LEAK FROM THE CVCS AT UNIT 2 PERSISTED FOR 3 1/2 HOURS BEFORE IDENTIFICATION AND TERMINATION A small unidentified leak from the chemical and volume control system at Unit 2 persisted for approximately 3 1/2 hours before operators recognized and terminated the condition. PSEG attributed the delays in recognizing the condition, in part, to the fact that two other concurrent evolutions were in progress or had just been completed which effectively masked the indications of a leak, namely volume control tank level and plant ventilation radiation levels. The safety and risk significance of this incident was very low because adequate reactor coolant inventory sources remained available throughout the event and offsite release rates remained well below regulatory limits. Inspection Report# : 200001(pdf)

Emergency Preparedness

Occupational Radiation Safety



Identified By: Licensee

Item Type: NCV NonCited Violation

INADVERTENT DISCHARGE FROM THE 23 WASTE GAS DECAY TANK TO THE AUXILIARY BUILDING

PSEG operators inadvertently vented radioactive gas into the Unit 2 auxiliary building. The plant vent and auxiliary building air radiation monitors detected increased radiation levels, which remained well below technical specification limits. Errors by control room and field operators, including failure to follow procedures, contributed to the incident. This event was characterized as a "green" issue since the increased radiation levels in the auxiliary building were well below regulatory limits.

Inspection Report# : 1999007(pdf)

Public Radiation Safety



Significance: Dec 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN YEAR 2000 CALIBRATION RECORDS FOR CHEMICAL WASTE BASIN MONITOR (R37) AND UNIT 1 CONTAINMENT FAN COOLER-SW DISCHARGE MONITOR (1R13B)

Technical Specification Section 6.10.d requires that records of surveillance activities, inspections, and calibrations, required by the TSs, be retained for at least five years. The radiological calibration results for the Chemical Waste Basin Monitor (R37) and the Unit 1 Containment Fan Cooler-Service Water Line Discharge Monitor (1R13B) for the year 2000 were not retrievable. PSEG Nuclear placed this issue into its corrective action system as a Notification Report (Notification 20084063). The finding was determined to be of very low safety significance, because the issue did not impair the ability to assess the public dose, and did not result in exceeding public dose limits listed in Appendix I of 10 CFR 50 or 10 CFR 20.1301(d). The issue was not reportable in the Annual Radiological Effluent Report. Further, PSEG Nuclear produced a work record indicating the calibrations had been properly performed.

Inspection Report# : 2001011(pdf)



Oct 10, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO REPORT IN RAD. ENV. OP. REPORTS ACTIONS TO PREVENT RECURRENCE OF RAD. ENVIR. AIR SAMPLER OUTAGES PSEG failed to provide complete information in their 1997 and 1998 Annual Radiological Environmental Operating Reports in that these documents did not describe plans to prevent recurrence of multiple environmental air sampler outages. This issue was characterized as a Non-Cited Violation of TS 3.12.1. The safety significance of this issue was very low because it did not significantly compromise PSEG's ability to assess the

environmental impact of continued plant operation. Inspection Report# : 1999008(pdf)



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

INADEQUATELY PERFORMED SURVEILLANCE PROCEDURE

The carbon adsorber (activated charcoal) in the auxiliary building ventilation exhaust system was operated at an air flow in excess of the specified maximum. Operators declared the adsorber inoperable until engineering department personnel assessed the potential impact of this occurrence, which was later determined to be negligible. This issue had low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Insufficient attention to detail by a control room operator had resulted in this incident, which represented a non-cited violation of

technical specification 6.8.1. This issue was characterized as a "green" event due to its very low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Inspection Report# : 1999007(pdf)

Physical Protection



Significance: Aug 29, 1999 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO CONDUCT PACKAGE SEARCH IN ACCORDANCE WITH SITE SECURITY PLAN

Security personnel did not properly search a hand-carried package prior to granting it unrestricted access to the site protected area (PA). Specifically, guards permitted a plant worker to bypass the x-ray machine and carry a large bag of moving blankets into the PA without a search of the bag's contents. Later examination of the bag's contents yielded no contraband. This incident was characterized as a "green" issue since no contraband was identified in the package which was not searched. Inspection Report# : <u>1999007(pdf)</u>

Miscellaneous

Significance: N/A Mar 23, 2001 Identified By: NRC Item Type: FIN Finding

PROBLEM IDENTIFICATION AND RESOLUTION PROGRAM INSPECTION

The licensee staff used the notification system appropriately to identify issues needing review for corrective actions. Daily issue review and prioritization meetings focused on safety and minimization of plant risk. Operators reviewed the risk worth of planned work activities. Operability determinations appeared adequate for the reviewed issues. Identified issues were being reviewed for apparent and root causes. Root cause evaluations were conducted to an appropriate depth and provided associated corrective actions. Corrective actions for identified issues were effective, commensurate with the safety significance of the issues, and sensitive to the necessity for reliable equipment performance. The extent of condition and generic applicability for significant conditions adverse to quality were properly considered. The size of the corrective action backlog and timeliness of corrective action completion, with respect to safety significance, was formally tracked and managed. The licensee had taken actions commensurate with the importance of service water system issues; however, detritus and silt continued to challenge the operators and plant equipment. Self-assessments and audits were self-critical and provided appropriate feedback, including notifications and recommendations. Inspection Report# : 2001004(pdf)

Significance: N/A Nov 11, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO PERFORM A NITROGEN PURGE IN ACCORDANCE WITH PROCEDURES RESULTING IN INCREASED DOSE RATES Plant procedure IOP-6 specifies that a degassification evolution be performed on the primary coolant during a shutdown, via purging the hydrogen cover gas in the volume control tank with nitrogen. The cover gas in the volume control tank was not purged with nitrogen during shutdown on October 6, 2000, as described in Notification 20042531. This resulted in PSEG Nuclear personnel having to perform a second chemically-induced crud burst, resulting in increased dose rates on various pipes and components located inside the bio-shield. Inspection Report# : 2000009(pdf)

Significance: N/A Apr 18, 2000 Identified By: NRC Item Type: FIN Finding PROBLEM IDENTIFICATION AND RESOLUTION

No significant findings were identified. There was however, some concern regarding the number of human performance errors that have occurred within all departments at the station over the past two years. The team noted that during the inspection, previously identified human performance issues were all rolled up into one station notification that addressed the human performance issue. Along these lines, but under a separate notification, the team noted a roll up of another human performance issue that dealt specifically with station personnel failing to follow procedures. As identified by the licensee and the team, it was determined that ineffective corrective actions, regarding human performance errors, were attributal to some narrowly focused root cause analyses or to poor correlation of causes with corrective actions. These causes were similar to that noted in the training area (exam quality and written test results). Since improvement plans were being developed to address this area as of the end of the inspection, it was too early to assess the resolution to these problems and subsequent corrective actions. Follow up action is warranted in this area.

Inspection Report# : 2000003(pdf)

Last modified : March 26, 2002

Initiating Events



Significance: Apr 01, 2000 Identified By: Self Disclosing Item Type: FIN Finding

A TECHNICIAN APPLIED A JUMPER TO THE WRONG RELAY CONTACTS DURING ON-LINE MAINTENANCE, CAUSING A COMPLETE LOSS OF ALL CIRCULATING WATER TRAVELING SCREENS

A maintenance technician applied a jumper to the wrong contacts on a protective relay during a planned on-line maintenance activity associated with the 12B circulating water pump breaker. This error resulted in the complete loss of all circulating water system traveling water screens (TWSs). The safety significance of this event was very low because the TWSs were restored within five minutes and there was no observable affect on circulating water flow to the main condenser.

Inspection Report# : 2000002(pdf)



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TS 3.11.2.5 WITHIN THE REQUIRED TIME PERIOD

Unit 2 operators were slow in reducing the oxygen concentration in the waste gas decay tank to levels below those potentially explosive and exceeded the time limit required by technical specification 3.11.2.5. The risk associated with this event was minimal because all fire protection equipment remained available. This event was characterized as a "green" issue due to its very low safety significance since all fire protection equipment in the area remained available and the event was of limited duration.



Significance: Jul 11, 1999 Identified By: NRC Item Type: FIN Finding FIRE PROTECTION/BARRIERS

PSEG maintained appropriate control of combustible material and ignition sources in inspected areas. In general, impaired fire barriers were clearly tagged and documented in the corrective action program (CAP). However, the inspectors discovered some minor deficiencies such as a fire door which would not completely close without operator assistance. The minor violation associated with the fire door which would not close completely without operator assistance was classified as a green finding due to its very low safety significance. Inspection Report# : 1999005(pdf)

Mitigating Systems



Significance: Dec 29, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO PERFORM FUNCTIONAL TESTING OF THE UNIT 2 RADIOACTIVE WASTE GAS HOLDUP SYSTEM EFFLUENT OXYGEN MONITORING SYSTEM WITHIN SURVEILLANCE INTERVAL SPECIFIED BY TS 4.3.3.9 AND 4.0.2

Technical Specification 4.3.3.9 and associated Table 4.3-13, item 1.b, require, in part, that a functional test of the radioactive waste gas holdup system effluent oxygen monitoring system be functionally tested monthly. Technical Specification 4.0.2 states, in part, that the surveillance requirement shall be performed within the specified surveillance interval with a maximum allowable not to exceed 25 percent of the specified surveillance interval. Contrary to the above, the Unit 2 waste gas analyzer surveillance was not completed until November 29, 2001. This was approximately four days past the maximum allowable overdue date of November 24, 2001. Inspection Report# : 2001011(pdf)

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Significance: Nov 10, 2001 Identified By: NRC

Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO PROMPTLY IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY THAT HAD THE POTENTIAL TO AFFECT THE OPERABILITY OF THE NO. 21 CHARGING SYSTEM PUMP

Failure to implement appropriate corrective actions for a degraded no. 22 charging pump (CS) lubricating oil condition. PSEG Nuclear replaced the

degraded oil, but did not implement any actions to prevent recurrence. This finding was of very low significance since the no. 22 CS pump has performed satisfactorily subsequent to the oil analysis results being addressed and the lubricating oil replacement. Inspection Report# : 2001010(pdf)



Aug 11, 2001

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY IDENTIFY AND CORRECT AN ADVERSE CONDITION THAT AFFECTED THE OPERABILITY OF THE CONTAINMENT SPRAY ADDITIVE TANK

PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 2 containment spray additive tank (SAT) level trend that occurred over a several month period. This resulted in dilution of the Unit 2 SAT sodium hydroxide (NAOH) concentration below the TS required minimum value for a period of up to 109 days. This finding was evaluated using SDP and found to be of very low significance since the tank concentration was above the minimum calculated NAOH concentration required for the SAT to perform its accident mitigation function. Inspection Report# : 2001008(pdf)



🔲 Aug 11, 2001

Significance: Au Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO EVALUATE WHETHER A PIPE LEAK IDENTIFIED DOWNSTREAM OF THE 21SW4 VALVE WAS INSIDE THE ASME SECTION OF THE SW SYSTEM FOR SEVEN WEEKS

10CFR50, Appendix B, Criteiron XVI, requires, in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, on June 20, 2001, PSEG Nuclear identified a pipe leak downstream of the 21SW4 valve, but did not evaluate whether the leak was inside the ASME section of the SW system until approximately August 9. Inspection Report# : 2001008(pdf)

Significance:

🚺 May 19, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

WORKER ADJUSTED THE PACKING ON THE 22 AFW PUMP WITHOUT HAVING AN APPROVED WORK DOCUMENT

TS 6.8.1 requires "that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix "A" of Regulatory Guicde 1.33. RG 1.33 requires that procedures be developed to conduct maintenance on safety-related systems. PSEG Nuclear procedure NC.NA-AP.ZZ-0009(Q), "Work Management Program," requires that individuals perform work in accordance with appropriate work documents. On May 11, 2001, a plant worker adjusted the packing on the 22 AFW pump without having the approved work documents. Inspection Report# : 2001006(pdf)



Feb 10, 2001

Identified By: NRC

Significance:

Item Type: NCV NonCited Violation

UNTIMELY AND INEFFECTIVE CORRECTIVE ACTIONS TO PREVENT THE RECURRENCE OF VIBRATION INDUCED FAILURES OF THE 21 CCHX OUTLET VALVE, 21SW127

PSEG Nuclear did not take timely and effective corrective actions for vibration induced failures of service water valve 21 SW 127 on the 21 component cooling heat exchanger outlet. Failure of 21 SW 127 rendered the 21 component cooling water (CCW) loop inoperable when the redundant 22 CCW loop was inoperable to support a liquid radwaste discharge. The finding had a credible impact on safety since the failure of 21 SW 127 resulted in both component cooling water loops being out-of-service and resulted in a loss of the decay heat removal safety function. The SDP evaluation determined that the event was of very low safety significance due to the short duration of the event. The failure to implement effective, timely corrective actions for 21 SW 127 was considered a non-cited violation. Inspection Report# : 2000011(pdf)



Significance: Feb 10, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

LICENSEE IDENTIFIED THAT SAFETY-RELATED VENTILATION DAMPER SPRING WAS MODIFIED DURING MAINTENANCE WITHOUT APPROPRIATE DESIGN CONTROLS

10 CFR 50, Appendix B, Criterion III, Design Control, requires that measures be established for the selection and review for suitability of application of parts that are essential to the safety-related functions of structures, systems and components. PSEG Nuclear identified that while repairing Unit 1 auxiliary building ventilation excess flow damper, S1ABV-1ABS8 under Order 60014824, a spring that assists in damper actuation was modified without the proper engineering documentation. This was documented in the corrective action program as Notification 20052729. Inspection Report# : 2000011(pdf)



Item Type: NCV NonCited Violation

FAILURE TO SCHEDULE AND PERFORM PREVENTIVE MAINTENANCE FOR A TURBINE DRIVEN AUXILIARY FEEDWATER MODIFICAITON

PSEG Nuclear did not perform the specified preventive maintenance (PM) tasks for the new equipment associated with the turbine driven auxiliary feedwater pump enclosure modification at both units. This problem resulted in a credible impact on safety-related equipment which could have affected the availability and reliability of the auxiliary feedwater system. The failure to properly perform PM tasks for new equipment associated with modification 2EC-3522 as required by Procedure NC.WM-AP.ZZ-0003(Q), Rev 0, "Regular Maintenance Process," was considered to be a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." The issue was determined to be of very low risk significance using the Significance Determination Process phase 1 screening because no actual equipment failures were attributed to the missed PMs.

Inspection Report# : 2000009(pdf)

Significance: Feb 07, 2000 Identified By: NRC Item Type: VIO Violation

THE CARBON DIOXIDE TESTS FOR THE UNITS 1 & 2 4,160 VAC SWITCHGEAR ROOMS DID NOT REACH OR MAINTAIN THE REQUIRED CO2 CONCENTRATION OF 50%

PSEG did not ensure that the carbon dioxide concentration tests for the Units 1 & 2 4,160 VAC switchgear rooms reached and maintained the required CO2 concentration of 50%. This is a violation of Unit 1 license condition C.5 and Unit 2 license condition 2.C.10. This finding was determined to be WHITE by the significance determination process. The safety significance of this WHITE finding is low to moderate. During the supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that PSEG had performed a comprehensive evaluation of the failure of the carbon dioxide suppression system to achieve its design concentration. PSEG is currently working to correct carbon dioxide concentrations for the total flooding fire suppression systems, upgrade electrical raceway fire barrier systems, and convert the 4160v switchgear room fire suppression systems from manual to automatic. Based on PSEG's acceptable performance in addressing the switchgear room fire suppression system issue, the White finding associated with this issue will only be consdidered in assessing tplant performance for a total of four quarters in accordance with the guidance in NRC Inspection Manual Chapter 0305. Inspection Report# : <u>1999010(pdf)</u>



Significance: Feb 07, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THE CO2 SYSTEMS FOR THE UNITS 1 & 2 4,160 VAC ELECTRIC PENETRATION ROOMS REACHED AND MAINTAINED THE REQUIRED CO2 CONCENTRATION

The team identified that the carbon dioxide concentration tests for the Units 1 & 2 electrical penetration areas did not reach or maintain the required CO2 concentration of 50%. This failure is a violation of license conditions for each unit. This finding was evaluated by the significance determination process (SDP) and determined to be GREEN based on the other detection and suppression systems available in the area. The safety significance of this finding is very low.

Inspection Report# : <u>1999010(pdf</u>)



Feb 07, 2000

Significance: Fe Identified By: Licensee

Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THAT ONE TRAIN OF EQUIPMENT NECESSARY TO ACHIEVE HOT SHUTDOWN FORM THE EMERGENCY CONTROL STATION IS FREE OF FIRE DAMAGE

PSEG identified a condition in which they failed to ensure that one train of equipment necessary to achieve hot shutdown from the emergency control station is free of fire damage. This is a non-cited violation of Section III.G.1.a of Appendix R. This issue was evaluated by the SDP and found to be within the licensee's respone band. (GREEN) The safety significance of this finding is very low. Inspection Report# : 1999010(pdf)



Significance: Feb 07, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

PSEG IDENTIFIED A CONDITION IN WHICH A FIRE COULD DAMAGE CABLES SUCH THAT THE POWER OPERATED RELIEF VALVE WOULD OPEN AND THE ASSOCIATED BLOCK VALVE COULD NOT BE CLOSED.

PSEG identified a condition in which a fire could damage cables such that the power operated relief valve would open and the associated block valve could not be closed. The failure to protect one train of equipment necessary to achieve hot shutdown is a violation of III.G.1.a of Appendix R. This finding was evaluated by the SDP and determined to be GREEN. The safety significance of this finding was very low. Inspection Report# : <u>1999010</u>(*pdf*)



INADEQUATE ACCEPTANCE CRITERIA IN SURVEILLANCE TEST PROCEDURES

The acceptance criteria in the auxiliary feedwater (AFW) pump surveillance test procedures was inadequate since it did not ensure that the pump performance was capable of meeting accident analysis performance or pump operability criteria found in the Unit 1 and 2 Technical Specifications. This issue was considered potentially significant due to the allowable degraded core cooling capability associated with the established AFW pump minimum performance acceptance criteria. This issue has been entered into PSEG Nuclear's corrective action program (CAP). The issue was considered "green" in the significance determination process since it did not have an immediate impact on AFW system operability as determined by an evaluation of recent pump performance.

Inspection Report# : 1999006(pdf)



Sep 01, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

MULTIPLE EXAMPLES OF INEFFECTIVE IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM

The team identified some instances where PSEG Nuclear did not effectively implement the corrective action program (CAP): 1) A prior performance weakness resulted in a governor control system needle valve setting for the 23 AFW pump turbine that was not optimal for actual operating conditions; 2) During operation of the 23 AFW pump, the team identified that the turbine outboard bearing temperature exhibited an increasing trend, which represented an operability question, and PSEG Nuclear was not aware of this potential problem. Consequently, this problem was not entered into the CAP; and, 3) Other examples of ineffective implementation of the CAP were identified, including deficiencies not promptly entered into the CAP or not adequately corrected. These issues were considered to be significant in that they indicated an overall CAP weakness since problems were noted in not identifying corrective action items and the lack of timeliness and effectiveness of corrective actions. These issues were considered "green" in the significance determination process because they did not have an immediate impact on AFW system operability and were ultimately included in PSEG Nuclear's CAP.

Inspection Report# : 1999006(pdf)



Sep 01, 1999 Significance:

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL CONCERNING REPLACEMENT PARTS FOR POSITIONERS FOR AFW FLOW CONTROL VAVLES The team found that the positioners for the AFW flow control valves had been maintained with parts that were not gualified for use in safety-related applications. This issue was considered significant since the functionality for valves in a risk significant system was being challenged. The qualification issue was considered "green" in the significance determination process because it did not have an immediate impact on AFW system operability based on an engineering evaluation and the issue was being addressed by PSEG Nuclear's CAP. Inspection Report# : 1999006(pdf)



Significance: Jul 11, 1999 Identified By: Licensee

Item Type: FIN Finding

CFCU TRAIN UNAVAILABILITY PERFORMANCE CRITERIA

PSEG nuclear personnel properly monitored containment fan cooling unit (CFCU) performance for reliability and unavailability. However, while PSEG's recent change in the CFCU train unavailability performance criteria was acceptable, it was not based on an evaluation of all of the appropriate factors. Also, the goals for the diesel generators were weak in that the cause of the associated unavailability was not addressed. This finding was assessed to be green as a reevaluation by PSEG of the CFCU train unavailability performance criteria using more appropriate factors revealed only a minimal increase in large early release frequency (LERF).

Inspection Report# : 1999005(pdf)



Significance: Jul 11, 1999 Identified By: NRC Item Type: FIN Finding

INCOMPLETE COMPENSATORY MEASURES FOR DEGRADED EQUIPMENT CONDITIONS

PSEG nuclear operators appropriately assessed three degraded equipment conditions in terms of their impact on the design basis functions of the affected systems. Each of the operability evaluations were completed in a timely manner. However, some of the associated compensatory measures were either incomplete or poorly controlled. This finding was evaluated to be green due to the minor significance of the compensatory measures needed and the absence of NRC requirements in this area.

Inspection Report# : 1999005(pdf)

Barrier Integrity



Item Type: NCV NonCited Violation

FAILURE TO DEVELOP ADEQUATE INSTRUCTIONS TO REPACK THE 2CV49 VALVE AS REQUIRED BY 10CFR50, APPENDIX B, CRITERION V

10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall prescribed by documented instructions that include appropriate acceptance criteria to determine that important activities have been satisfactorily accomplished. Contrary to the above, PSEG Nuclear determined on September 6, 2001, that the packing data sheet for the 2CV49 valve was incorrect. As a result, valve 2CV49 developed an excessive packing leak that could have resulted in an exposure to the control room operators in excess of the 10 CFR 50, Appendix A, General Design Criteria 19 limits following a postulated LOCA.

Inspection Report# : 2001011(pdf)



Significance: Dec 29, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO ISOLATE THE AFFECTED PENETRATION AS REQUIRED BY TS 3.6.3 SUBSEQUENT TO DISABLING SERVICE WATER VALVES 22SW58 AND 22SW72

Technical Specification 3.6.3, requires, in part, that inoperable containment penetration isolation valves be restored to an operable condition within four hours or the associated penetration shall be isolated. Contrary to the above, PSEG Nuclear disabled two containment isolation valves (22SW58 and 22SW72) on September 23, 2001, but did not isolate the associated penetration within four hours as required by TS 3.6.3. Inspection Report# : 2001011(pdf)



Feb 27, 2000

Significance: Identified By: NRC

Item Type: FIN Finding

SMALL UNIDENTIFIED LEAK FROM THE CVCS AT UNIT 2 PERSISTED FOR 3 1/2 HOURS BEFORE IDENTIFICATION AND TERMINATION A small unidentified leak from the chemical and volume control system at Unit 2 persisted for approximately 3 1/2 hours before operators recognized and terminated the condition. PSEG attributed the delays in recognizing the condition, in part, to the fact that two other concurrent evolutions were in progress or had just been completed which effectively masked the indications of a leak, namely volume control tank level and plant ventilation radiation levels. The safety and risk significance of this incident was very low because adequate reactor coolant inventory sources remained available throughout the event and offsite release rates remained well below regulatory limits. Inspection Report# : 2000001(pdf)

Emergency Preparedness

Occupational Radiation Safety



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation INADVERTENT DISCHARGE FROM THE 23 WASTE GAS DECAY TANK TO THE AUXILIARY BUILDING PSEG operators inadvertently vented radioactive gas into the Unit 2 auxiliary building. The plant vent and auxiliary building air radiation monitors detected increased radiation levels, which remained well below technical specification limits. Errors by control room and field operators, including follows to follow the follower provided to the incident. This count was a follower to be increased radiation to the difference of the increased radiation below technical specification limits.

detected increased radiation levels, which remained well below technical specification limits. Errors by control room and field operators, including failure to follow procedures, contributed to the incident. This event was characterized as a "green" issue since the increased radiation levels in the auxiliary building were well below regulatory limits. Inspection Report# : <u>1999007(pdf</u>)

Public Radiation Safety

Identified By: Licensee



Item Type: NCV NonCited Violation FAILURE TO MAINTAIN YEAR 2000 CALIBRATION RECORDS FOR CHEMICAL WASTE BASIN MONITOR (R37) AND UNIT 1 CONTAINMENT FAN COOLER-SW DISCHARGE MONITOR (1R13B)

Technical Specification Section 6.10.d requires that records of surveillance activities, inspections, and calibrations, required by the TSs, be retained for at least five years. The radiological calibration results for the Chemical Waste Basin Monitor (R37) and the Unit 1 Containment Fan Cooler-Service Water Line Discharge Monitor (1R13B) for the year 2000 were not retrievable. PSEG Nuclear placed this issue into its corrective action

system as a Notification Report (Notification 20084063). The finding was determined to be of very low safety significance, because the issue did not impair the ability to assess the public dose, and did not result in exceeding public dose limits listed in Appendix I of 10 CFR 50 or 10 CFR 20.1301(d). The issue was not reportable in the Annual Radiological Effluent Report. Further, PSEG Nuclear produced a work record indicating the calibrations had been properly performed.

Inspection Report# : 2001011 (pdf)



Oct 10, 1999

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO REPORT IN RAD. ENV. OP. REPORTS ACTIONS TO PREVENT RECURRENCE OF RAD. ENVIR. AIR SAMPLER OUTAGES PSEG failed to provide complete information in their 1997 and 1998 Annual Radiological Environmental Operating Reports in that these documents did not describe plans to prevent recurrence of multiple environmental air sampler outages. This issue was characterized as a Non-Cited Violation of TS 3.12.1. The safety significance of this issue was very low because it did not significantly compromise PSEG's ability to assess the environmental impact of continued plant operation. Inspection Report# : 1999008(pdf)



Significance: Aug 29, 1999

Identified By: Licensee

Item Type: NCV NonCited Violation

INADEQUATELY PERFORMED SURVEILLANCE PROCEDURE

The carbon adsorber (activated charcoal) in the auxiliary building ventilation exhaust system was operated at an air flow in excess of the specified maximum. Operators declared the adsorber inoperable until engineering department personnel assessed the potential impact of this occurrence, which was later determined to be negligible. This issue had low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Insufficient attention to detail by a control room operator had resulted in this incident, which represented a non-cited violation of technical specification 6.8.1. This issue was characterized as a "green" event due to its very low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine.

Inspection Report# : <u>1999007(pdf</u>)

Physical Protection



Significance: Aug 29, 1999

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO CONDUCT PACKAGE SEARCH IN ACCORDANCE WITH SITE SECURITY PLAN

Security personnel did not properly search a hand-carried package prior to granting it unrestricted access to the site protected area (PA). Specifically, guards permitted a plant worker to bypass the x-ray machine and carry a large bag of moving blankets into the PA without a search of the bag's contents. Later examination of the bag's contents yielded no contraband. This incident was characterized as a "green" issue since no contraband was identified in the package which was not searched. Inspection Report# : <u>1999007(pdf</u>)

Miscellaneous

Significance: N/A Mar 23, 2001 Identified By: NRC Item Type: FIN Finding

PROBLEM IDENTIFICATION AND RESOLUTION PROGRAM INSPECTION

The licensee staff used the notification system appropriately to identify issues needing review for corrective actions. Daily issue review and prioritization meetings focused on safety and minimization of plant risk. Operators reviewed the risk worth of planned work activities. Operability determinations appeared adequate for the reviewed issues. Identified issues were being reviewed for apparent and root causes. Root cause evaluations were conducted to an appropriate depth and provided associated corrective actions. Corrective actions for identified issues were effective, commensurate with the safety significance of the issues, and sensitive to the necessity for reliable equipment performance. The extent of condition and generic applicability for significant conditions adverse to quality were properly considered. The size of the corrective action backlog and timeliness of corrective action completion, with respect to safety significance, was formally tracked and managed. The licensee had taken actions commensurate with the importance of service water system issues; however, detritus and silt continued to challenge the operators and plant equipment. Self-assessments and audits were self-critical and provided appropriate feedback, including notifications and recommendations. Inspection Report# : 2001004(pdf)

Significance: N/A Nov 11, 2000 Identified By: Licensee Item Type: NCV NonCited Violation

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FAILURE TO PERFORM A NITROGEN PURGE IN ACCORDANCE WITH PROCEDURES RESULTING IN INCREASED DOSE RATES

Plant procedure IOP-6 specifies that a degassification evolution be performed on the primary coolant during a shutdown, via purging the hydrogen cover gas in the volume control tank was not purged with nitrogen during shutdown on October 6, 2000, as described in Notification 20042531. This resulted in PSEG Nuclear personnel having to perform a second chemically-induced crud burst, resulting in increased dose rates on various pipes and components located inside the bio-shield. Inspection Report# : 2000009(pdf)

Significance: N/A Apr 18, 2000 Identified By: NRC Item Type: FIN Finding PROBLEM IDENTIFICATION AND RESOLUTION

No significant findings were identified. There was however, some concern regarding the number of human performance errors that have occurred within all departments at the station over the past two years. The team noted that during the inspection, previously identified human performance issues were all rolled up into one station notification that addressed the human performance issue. Along these lines, but under a separate notification, the team noted a roll up of another human performance issue that dealt specifically with station personnel failing to follow procedures. As identified by the licensee and the team, it was determined that ineffective corrective actions, regarding human performance errors, were attributal to some narrowly focused root cause analyses or to poor correlation of causes with corrective actions. These causes were similar to that noted in the training area (exam quality and written test results). Since improvement plans were being developed to address this area as of the end of the inspection, it was too early to assess the resolution to these problems and subsequent corrective actions. Follow up action is warranted in this area.

Inspection Report# : 2000003(pdf)

Last modified : March 01, 2002

Salem 2

Initiating Events



Significance: May 11, 2002 Identified By: Licensee Item Type: NCV NonCited Violation

INADEQUATE IMPLEMENTATION OF PROCEDURES CONTROLLING REACTOR COOLANT SYSTEM COOLDOWN RATE Technical Specification 6.8.1.a requires that written procedures be established, implemented and maintained covering the applicable procedures recommended by Appendix"A" of Regulatory Guide (RG)1.33, Revision2, February1978. RG1.33 requires general plant operating procedures for hot standby to cold shutdown. Salem operations procedure S2.OP-IO.ZZ-0006(Q), "Hot Standby to Cold Shutdown," step 3.6.3 provides precautions and limitations to determine RCS temperature and pressure at least once per 30 minutes with a maximum cooldown rate of 100°F in any one hour. Contrary to the above, PSEG Nuclear inadequately implemented S2.OP-IO.ZZ-0006(Q) and inadequately determined that RCS temperature was within limits with a maximum cooldown of 100°F in any one hour period when the RCS temperature change exceeded the 100°F limit between 0150 and 0219 hours with a maximum temperature drop of 127°F in a one hour period. This issue was placed into PSEG Nuclear's correction action program as notification 20095802.

Inspection Report# : 2002004(pdf)



Significance: Apr 01, 2000 Identified By: Self Disclosing

Item Type: FIN Finding

A TECHNICIAN APPLIED A JUMPER TO THE WRONG RELAY CONTACTS DURING ON-LINE MAINTENANCE, CAUSING A COMPLETE LOSS OF ALL CIRCULATING WATER TRAVELING SCREENS

A maintenance technician applied a jumper to the wrong contacts on a protective relay during a planned on-line maintenance activity associated with the 12B circulating water pump breaker. This error resulted in the complete loss of all circulating water system traveling water screens (TWSs). The safety significance of this event was very low because the TWSs were restored within five minutes and there was no observable affect on circulating water flow to the main condenser. Inspection Report# : 2000002(pdf)



Significance: Aug 29, 1999

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TS 3.11.2.5 WITHIN THE REQUIRED TIME PERIOD

Unit 2 operators were slow in reducing the oxygen concentration in the waste gas decay tank to levels below those potentially explosive and exceeded the time limit required by technical specification 3.11.2.5. The risk associated with this event was minimal because all fire protection equipment remained available. This event was characterized as a "green" issue due to its very low safety significance since all fire protection equipment in the area remained available and the event was of limited duration. Inspection Report# : <u>1999007(pdf)</u>





Significance: Jul 11, Identified By: NRC

Item Type: FIN Finding

FIRE PROTECTION/BARRIERS

PSEG maintained appropriate control of combustible material and ignition sources in inspected areas. In general, impaired fire barriers were clearly tagged and documented in the corrective action program (CAP). However, the inspectors discovered some minor deficiencies such as a fire door which would not completely close without operator assistance. The minor violation associated with the fire door which would not close completely without operator assistance was classified as a green finding due to its very low safety significance.

Inspection Report# : 1999005(pdf)

Mitigating Systems



Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO DOCUMENT AND MAINTAIN QUALITY RECORDS OF EMERGENT TROUBLESHOOTING AND MAINTENANCE ACTIVITIES ON THE CONTROL CIRCUITRY FOR THE 1B EDG

PSEG Nuclear maintenance failed to document and maintain records of emergent troubleshooting and maintenance activities on the control circuitry for the 1B EDG. PSEG Nuclear also failed to maintain records of a September 2000 internal inspection of the 12 charging pump speed increaser. These two examples of PSEG Nuclear's failure to maintain complete and adequate inspection and maintenance records were a non-cited violation of Technical Specification 6.10.1.b and 10 CFR 50, Appendix B, Criterion XVII, Quality Assurance Records. The findings were evaluated using the significance determination process (SDP) and considered to be of very low risk significance because the failure to maintain the records did not affect the availability of the mitigating systems. Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO FOLLOW PROCEDURES AND PERFORM AN ADEQUATE POST-TRIP REVIEW FOLLOWING THE PRESSURIZER SPRAY VALVE FAILURE, REACTOR TRIP AND SAFETY INJECTION EVENT

Operating procedures did not provide adequate guidance to operators during their response to a stuck open pressurizer spray valve event that resulted in an automatic reactor trip and safety injection. The instructions which existed regarding the valve, including stopping reactor coolant pumps and isolating control air, conflicted with actions needed to address the event. However, PSEG Nuclear did not identify the procedural deficiencies during the post-trip review of the event as specified by the post-trip review procedure. The failure to identify and evaluate these procedural deficiencies was a non-cited violation. This finding was evaluated using the SDP and determined to be of very low risk significance, because the procedural deficiencies did not prevent the operators from controlling plant pressure during the event.

Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT PROMPT CORRECTIVE ACTIONS FOR A DEGRADED 2C EDG CYLINDER ISOLATION VALVE PSEG Nuclear failed to promptly identify and correct a condition adverse to quality involving a degraded cylinder isolation valve (petcock) which was not functioning properly during corrective maintenance on the 2C EDG. During a subsequent test of the 2C EDG, flames were observed to be coming out of the cylinder 5R petcock, and the CO2 automatic fire suppression system actuated before the operators completed the EDG shutdown. The failure to identify and correct the degraded cylinder isolation valve was considered a non-cited violation of 10 CFR 50, Appendix XVI, Corrective Actions. The finding was evaluated using the SDP and considered to be of very low risk significance, because the emergency diesel generator unavailability time associated with this event was within the Technical Specification allowed outage time. Inspection Report# : 2001012(pdf)

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Significance: Dec 29, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO PERFORM FUNCTIONAL TESTING OF THE UNIT 2 RADIOACTIVE WASTE GAS HOLDUP SYSTEM EFFLUENT OXYGEN MONITORING SYSTEM WITHIN SURVEILLANCE INTERVAL SPECIFIED BY TS 4.3.3.9 AND 4.0.2

Technical Specification 4.3.3.9 and associated Table 4.3-13, item 1.b, require, in part, that a functional test of the radioactive waste gas holdup system effluent oxygen monitoring system be functionally tested monthly. Technical Specification 4.0.2 states, in part, that the surveillance requirement shall be performed within the specified surveillance interval with a maximum allowable not to exceed 25 percent of the specified surveillance interval. Contrary to the above, the Unit 2 waste gas analyzer surveillance was not completed until November 29, 2001. This was approximately four days past the maximum allowable overdue date of November 24, 2001.

Inspection Report# : 2001011(pdf)

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Significance: Nov 10, 2001 Identified By: NRC

Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO PROMPTLY IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY THAT HAD THE

POTENTIAL TO AFFECT THE OPERABILITY OF THE NO. 21 CHARGING SYSTEM PUMP

Failure to implement appropriate corrective actions for a degraded no. 22 charging pump (CS) lubricating oil condition. PSEG Nuclear replaced the degraded oil, but did not implement any actions to prevent recurrence. This finding was of very low significance since the no. 22 CS pump has performed satisfactorily subsequent to the oil analysis results being addressed and the lubricating oil replacement.

Inspection Report# : 2001010(pdf)



Significance: Aug 11, 2001 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY IDENTIFY AND CORRECT AN ADVERSE CONDITION THAT AFFECTED THE OPERABILITY OF THE CONTAINMENT SPRAY ADDITIVE TANK

PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 2 containment spray additive tank (SAT) level trend that occurred over a several month period. This resulted in dilution of the Unit 2 SAT sodium hydroxide (NAOH) concentration below the TS required minimum value for a period of up to 109 days. This finding was evaluated using SDP and found to be of very low significance since the tank concentration was above the minimum calculated NAOH concentration required for the SAT to perform its accident mitigation function.

Inspection Report# : 2001008(pdf)



Significance: Aug 11, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO EVALUATE WHETHER A PIPE LEAK IDENTIFIED DOWNSTREAM OF THE 21SW4 VALVE WAS INSIDE THE ASME SECTION OF THE SW SYSTEM FOR SEVEN WEEKS

10CFR50, Appendix B, Criteiron XVI, requires, in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, on June 20, 2001, PSEG Nuclear identified a pipe leak downstream of the 21SW4 valve, but did not evaluate whether the leak was inside the ASME section of the SW system until approximately August 9. Inspection Report# : 2001008(pdf)



Significance: May 19, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

WORKER ADJUSTED THE PACKING ON THE 22 AFW PUMP WITHOUT HAVING AN APPROVED WORK DOCUMENT

TS 6.8.1 requires "that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix "A" of Regulatory Guicde 1.33. RG 1.33 requires that procedures be developed to conduct maintenance on safety-related systems. PSEG Nuclear procedure NC.NA-AP.ZZ-0009(Q), "Work Management Program," requires that individuals perform work in accordance with appropriate work documents. On May 11, 2001, a plant worker adjusted the packing on the 22 AFW pump without having the approved work documents.

Inspection Report# : 2001006(pdf)



Significance: Feb 10, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

UNTIMELY AND INEFFECTIVE CORRECTIVE ACTIONS TO PREVENT THE RECURRENCE OF VIBRATION INDUCED FAILURES OF THE 21 CCHX OUTLET VALVE, 21SW127

PSEG Nuclear did not take timely and effective corrective actions for vibration induced failures of service water valve 21 SW 127 on the 21 component cooling heat exchanger outlet. Failure of 21 SW 127 rendered the 21 component cooling water (CCW) loop inoperable when the redundant 22 CCW loop was inoperable to support a liquid radwaste discharge. The finding had a credible impact on safety since the failure of 21 SW 127 resulted in both component cooling water loops being out-of-service and resulted in a loss of the decay heat removal safety function. The SDP evaluation determined that the event was of very low safety significance due to the short duration of the event. The failure to implement effective, timely corrective actions for 21 SW 127 was considered a non-cited violation.

Inspection Report# : 2000011(pdf)

Significance: Feb 10, 2001 Identified By: Licensee Item Type: NCV NonCited Violation

LICENSEE IDENTIFIED THAT SAFETY-RELATED VENTILATION DAMPER SPRING WAS MODIFIED DURING MAINTENANCE WITHOUT APPROPRIATE DESIGN CONTROLS

10 CFR 50, Appendix B, Criterion III, Design Control, requires that measures be established for the selection and review for suitability of application of parts that are essential to the safety-related functions of structures, systems and components. PSEG Nuclear identified that while repairing Unit 1 auxiliary building ventilation excess flow damper, S1ABV-1ABS8 under Order 60014824, a spring that assists in damper actuation was modified without the proper engineering documentation. This was documented in the corrective action program as Notification 20052729.

Inspection Report# : <u>2000011(pdf</u>)



Significance: Nov 11, 2000 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO SCHEDULE AND PERFORM PREVENTIVE MAINTENANCE FOR A TURBINE DRIVEN AUXILIARY FEEDWATER MODIFICAITON

PSEG Nuclear did not perform the specified preventive maintenance (PM) tasks for the new equipment associated with the turbine driven auxiliary feedwater pump enclosure modification at both units. This problem resulted in a credible impact on safety-related equipment which could have affected the availability and reliability of the auxiliary feedwater system. The failure to properly perform PM tasks for new equipment associated with modification 2EC-3522 as required by Procedure NC.WM-AP.ZZ-0003(Q), Rev 0, "Regular Maintenance Process," was considered to be a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." The issue was determined to be of very low risk significance using the Significance Determination Process phase 1 screening because no actual equipment failures were attributed to the missed PMs. Inspection Report# : 2000009(pdf)



Significance: Feb 07, 2000 Identified By: NRC

Item Type: VIO Violation

THE CARBON DIOXIDE TESTS FOR THE UNITS 1 & 2 4,160 VAC SWITCHGEAR ROOMS DID NOT REACH OR MAINTAIN THE REQUIRED CO2 CONCENTRATION OF 50%

PSEG did not ensure that the carbon dioxide concentration tests for the Units 1 & 2 4,160 VAC switchgear rooms reached and maintained the required CO2 concentration of 50%. This is a violation of Unit 1 license condition C.5 and Unit 2 license condition 2.C.10. This finding was determined to be WHITE by the significance determination process. The safety significance of this WHITE finding is low to moderate. During the supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that PSEG had performed a comprehensive evaluation of the failure of the carbon dioxide suppression system to achieve its design concentration. PSEG is currently working to correct carbon dioxide concentrations for the total flooding fire suppression systems, upgrade electrical raceway fire barrier systems, and convert the 4160v switchgear room fire suppression system issue, the White finding associated with this issue will only be consdidered in assessing tplant performance for a total of four quarters in accordance with the guidance in NRC Inspection Manual Chapter 0305. Inspection Report# : 1999010(pdf)



Feb 07. 2000

Identified By: NRC

Significance:

Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THE CO2 SYSTEMS FOR THE UNITS 1 & 2 4,160 VAC ELECTRIC PENETRATION ROOMS REACHED AND MAINTAINED THE REQUIRED CO2 CONCENTRATION

The team identified that the carbon dioxide concentration tests for the Units 1 & 2 electrical penetration areas did not reach or maintain the required CO2 concentration of 50%. This failure is a violation of license conditions for each unit. This finding was evaluated by the significance determination process (SDP) and determined to be GREEN based on the other detection and suppression systems available in the area. The safety significance of this finding is very low. Inspection Report# : 1999010(pdf)

nce: G Feb 07, 2000

Significance: Feb 0 Identified By: Licensee

Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THAT ONE TRAIN OF EQUIPMENT NECESSARY TO ACHIEVE HOT SHUTDOWN FORM THE EMERGENCY CONTROL STATION IS FREE OF FIRE DAMAGE

PSEG identified a condition in which they failed to ensure that one train of equipment necessary to achieve hot shutdown from the emergency control station is free of fire damage. This is a non-cited violation of Section III.G.1.a of Appendix R. This issue was evaluated by the SDP and found to be within the licensee's respone band. (GREEN) The safety significance of this finding is very

low.

Inspection Report# : <u>1999010(pdf)</u>



Significance: Feb 07, 2000

Identified By: Licensee Item Type: NCV NonCited Violation

PSEG IDENTIFIED A CONDITION IN WHICH A FIRE COULD DAMAGE CABLES SUCH THAT THE POWER OPERATED RELIEF VALVE WOULD OPEN AND THE ASSOCIATED BLOCK VALVE COULD NOT BE CLOSED.

PSEG identified a condition in which a fire could damage cables such that the power operated relief valve would open and the associated block valve could not be closed. The failure to protect one train of equipment necessary to achieve hot shutdown is a violation of III.G.1.a of Appendix R. This finding was evaluated by the SDP and determined to be GREEN. The safety significance of this finding was very low.

Inspection Report# : 1999010(pdf)



Significance: Sep 01, 1999 Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE ACCEPTANCE CRITERIA IN SURVEILLANCE TEST PROCEDURES

The acceptance criteria in the auxiliary feedwater (AFW) pump surveillance test procedures was inadequate since it did not ensure that the pump performance was capable of meeting accident analysis performance or pump operability criteria found in the Unit 1 and 2 Technical Specifications. This issue was considered potentially significant due to the allowable degraded core cooling capability associated with the established AFW pump minimum performance acceptance criteria. This issue has been entered into PSEG Nuclear's corrective action program (CAP). The issue was considered "green" in the significance determination process since it did not have an immediate impact on AFW system operability as determined by an evaluation of recent pump performance. Inspection Report# : <u>1999006(pdf)</u>



📕 Sep 01, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

MULTIPLE EXAMPLES OF INEFFECTIVE IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM

The team identified some instances where PSEG Nuclear did not effectively implement the corrective action program (CAP): 1) A prior performance weakness resulted in a governor control system needle valve setting for the 23 AFW pump turbine that was not optimal for actual operating conditions; 2) During operation of the 23 AFW pump, the team identified that the turbine outboard bearing temperature exhibited an increasing trend, which represented an operability question, and PSEG Nuclear was not aware of this potential problem. Consequently, this problem was not entered into the CAP; and, 3) Other examples of ineffective implementation of the CAP were identified, including deficiencies not promptly entered into the CAP or not adequately corrected. These issues were considered to be significant in that they indicated an overall CAP weakness since problems were noted in not identifying corrective action items and the lack of timeliness and effectiveness of corrective actions. These issues were considered "green" in the significance determination process because they did not have an immediate impact on AFW system operability and were ultimately included in PSEG Nuclear's CAP.

Inspection Report# : <u>1999006(pdf)</u>



Significance: Sep 01, 1999

Identified By: NRC Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL CONCERNING REPLACEMENT PARTS FOR POSITIONERS FOR AFW FLOW CONTROL VAVLES

The team found that the positioners for the AFW flow control valves had been maintained with parts that were not qualified for use in safety-related applications. This issue was considered significant since the functionality for valves in a risk significant system was being challenged. The qualification issue was considered "green" in the significance determination process because it did not have an immediate impact on AFW system operability based on an engineering evaluation and the issue was being addressed by PSEG Nuclear's CAP.

Inspection Report# : <u>1999006(pdf)</u>

Significance: Jul 11, 1999 Identified By: Licensee Item Type: FIN Finding

CFCU TRAIN UNAVAILABILITY PERFORMANCE CRITERIA

PSEG nuclear personnel properly monitored containment fan cooling unit (CFCU) performance for reliability and unavailability. However, while PSEG's recent change in the CFCU train unavailability performance criteria was acceptable, it was not based on an evaluation of all of the appropriate factors. Also, the goals for the diesel generators were weak in that the cause of the associated unavailability was not addressed. This finding was assessed to be green as a reevaluation by PSEG of the CFCU train unavailability performance criteria using more appropriate factors revealed only a minimal increase in large early release frequency (LERF). Inspection Report# : <u>1999005(pdf</u>)



Significance: Jul 11, 1999 Identified By: NRC

Item Type: FIN Finding

INCOMPLETE COMPENSATORY MEASURES FOR DEGRADED EQUIPMENT CONDITIONS

PSEG nuclear operators appropriately assessed three degraded equipment conditions in terms of their impact on the design basis functions of the affected systems. Each of the operability evaluations were completed in a timely manner. However, some of the associated compensatory measures were either incomplete or poorly controlled. This finding was evaluated to be green due to the minor significance of the compensatory measures needed and the absence of NRC requirements in this area. Inspection Report# : 1999005(pdf)

Barrier Integrity



Significance: Dec 29, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO DEVELOP ADEQUATE INSTRUCTIONS TO REPACK THE 2CV49 VALVE AS REQUIRED BY 10CFR50, APPENDIX B, CRITERION V

10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall prescribed by documented instructions that include appropriate acceptance criteria to determine that important activities have been satisfactorily accomplished. Contrary to the above, PSEG Nuclear determined on September 6, 2001, that the packing data sheet for the 2CV49 valve was incorrect. As a result, valve 2CV49 developed an excessive packing leak that could have resulted in an exposure to the control room operators in excess of the 10 CFR 50, Appendix A, General Design Criteria 19 limits following a postulated LOCA. Inspection Report# : 2001011(pdf)



Significance: Dec 29, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO ISOLATE THE AFFECTED PENETRATION AS REQUIRED BY TS 3.6.3 SUBSEQUENT TO DISABLING SERVICE WATER VALVES 22SW58 AND 22SW72

Technical Specification 3.6.3, requires, in part, that inoperable containment penetration isolation valves be restored to an operable condition within four hours or the associated penetration shall be isolated. Contrary to the above, PSEG Nuclear disabled two containment isolation valves (22SW58 and 22SW72) on September 23, 2001, but did not isolate the associated penetration within four hours as required by TS 3.6.3. Inspection Report# : 2001011(pdf)



Significance: Feb 27, 2000

Identified By: NRC Item Type: FIN Finding

SMALL UNIDENTIFIED LEAK FROM THE CVCS AT UNIT 2 PERSISTED FOR 3 1/2 HOURS BEFORE IDENTIFICATION AND TERMINATION

A small unidentified leak from the chemical and volume control system at Unit 2 persisted for approximately 3 1/2 hours before operators recognized and terminated the condition. PSEG attributed the delays in recognizing the condition, in part, to the fact that two other concurrent evolutions were in progress or had just been completed which effectively masked the indications of a leak, namely volume control tank level and plant ventilation radiation levels. The safety and risk significance of this incident was very low because adequate reactor coolant inventory sources remained available throughout the event and offsite release rates remained well below regulatory limits.

Inspection Report# : 2000001(pdf)

Emergency Preparedness

Occupational Radiation Safety

Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

INADVERTENT DISCHARGE FROM THE 23 WASTE GAS DECAY TANK TO THE AUXILIARY BUILDING

PSEG operators inadvertently vented radioactive gas into the Unit 2 auxiliary building. The plant vent and auxiliary building air radiation monitors detected increased radiation levels, which remained well below technical specification limits. Errors by control room and field operators, including failure to follow procedures, contributed to the incident. This event was characterized as a "green" issue since the increased radiation levels in the auxiliary building were well below regulatory limits. Inspection Report# : <u>1999007(pdf)</u>

Public Radiation Safety



Significance: Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN YEAR 2000 CALIBRATION RECORDS FOR CHEMICAL WASTE BASIN MONITOR (R37) AND UNIT 1 CONTAINMENT FAN COOLER-SW DISCHARGE MONITOR (1R13B)

Technical Specification Section 6.10.d requires that records of surveillance activities, inspections, and calibrations, required by the TSs, be retained for at least five years. The radiological calibration results for the Chemical Waste Basin Monitor (R37) and the Unit 1 Containment Fan Cooler-Service Water Line Discharge Monitor (1R13B) for the year 2000 were not retrievable. PSEG Nuclear placed this issue into its corrective action system as a Notification Report (Notification 20084063). The finding was determined to be of very low safety significance, because the issue did not impair the ability to assess the public dose, and did not result in exceeding public dose limits listed in Appendix I of 10 CFR 50 or 10 CFR 20.1301(d). The issue was not reportable in the Annual Radiological Effluent Report. Further, PSEG Nuclear produced a work record indicating the calibrations had been properly performed. Inspection Report# : 2001011(pdf)



Significance: Oct 10, 1999 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO REPORT IN RAD. ENV. OP. REPORTS ACTIONS TO PREVENT RECURRENCE OF RAD. ENVIR. AIR SAMPLER OUTAGES

PSEG failed to provide complete information in their 1997 and 1998 Annual Radiological Environmental Operating Reports in that these documents did not describe plans to prevent recurrence of multiple environmental air sampler outages. This issue was characterized as a Non-Cited Violation of TS 3.12.1. The safety significance of this issue was very low because it did not significantly compromise PSEG's ability to assess the environmental impact of continued plant operation. Inspection Report# : 1999008(pdf)



Significance: Aug 29, 1999

Identified By: Licensee

Item Type: NCV NonCited Violation

INADEQUATELY PERFORMED SURVEILLANCE PROCEDURE

The carbon adsorber (activated charcoal) in the auxiliary building ventilation exhaust system was operated at an air flow in excess of the specified maximum. Operators declared the adsorber inoperable until engineering department personnel assessed the potential impact of this occurrence, which was later determined to be negligible. This issue had low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Insufficient attention to detail by a control room operator had resulted in this incident, which represented a non-cited violation of technical specification 6.8.1. This issue was characterized as a

"green" event due to its very low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Inspection Report# : 1999007(pdf)

Physical Protection



Significance: 🗾 Aug 29, 1999 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO CONDUCT PACKAGE SEARCH IN ACCORDANCE WITH SITE SECURITY PLAN

Security personnel did not properly search a hand-carried package prior to granting it unrestricted access to the site protected area (PA). Specifically, guards permitted a plant worker to bypass the x-ray machine and carry a large bag of moving blankets into the PA without a search of the bag's contents. Later examination of the bag's contents yielded no contraband. This incident was characterized as a "green" issue since no contraband was identified in the package which was not searched. Inspection Report# : 1999007(pdf)

Miscellaneous

Significance: N/A Mar 23, 2001 Identified By: NRC Item Type: FIN Finding

PROBLEM IDENTIFICATION AND RESOLUTION PROGRAM INSPECTION

The licensee staff used the notification system appropriately to identify issues needing review for corrective actions. Daily issue review and prioritization meetings focused on safety and minimization of plant risk. Operators reviewed the risk worth of planned work activities. Operability determinations appeared adequate for the reviewed issues. Identified issues were being reviewed for apparent and root causes. Root cause evaluations were conducted to an appropriate depth and provided associated corrective actions. Corrective actions for identified issues were effective, commensurate with the safety significance of the issues, and sensitive to the necessity for reliable equipment performance. The extent of condition and generic applicability for significant conditions adverse to quality were properly considered. The size of the corrective action backlog and timeliness of corrective action completion, with respect to safety significance, was formally tracked and managed. The licensee had taken actions commensurate with the importance of service water system issues; however, detritus and silt continued to challenge the operators and plant equipment. Self-assessments and audits were self-critical and provided appropriate feedback, including notifications and recommendations.

Inspection Report# : 2001004(pdf)

Significance: N/A Nov 11, 2000 Identified By: Licensee Item Type: NCV NonCited Violation FAILURE TO PERFORM A NITROGEN PURGE IN ACCORDANCE WITH PROCEDURES RESULTING IN INCREASED DOSE RATES

Plant procedure IOP-6 specifies that a degassification evolution be performed on the primary coolant during a shutdown, via purging the hydrogen cover gas in the volume control tank with nitrogen. The cover gas in the volume control tank was not purged with nitrogen during shutdown on October 6, 2000, as described in Notification 20042531. This resulted in PSEG Nuclear personnel having to perform a second chemically-induced crud burst, resulting in increased dose rates on various pipes and components located inside the bio-shield. Inspection Report# : 2000009(pdf)

Significance: N/A Apr 18, 2000 Identified By: NRC Item Type: FIN Finding

PROBLEM IDENTIFICATION AND RESOLUTION

The licensee was effective at identifying problems. Nevertheless, the team found two instances, involving low significance, where issues were not entered into the corrective action process in a timely manner. The instances did not represent a programmatic trend or concern. The licensee's resolution of problems was adequate. Based on the sample reviewed, items entered into the corrective action program were properly classified and prioritized for resolution. Evaluations and root cause analysis were of good depth and quality. The prescribed corrective actions appeared appropriate to correct the problems and the corrective actions were generally completed in a timely manner. However, there were a few instances where the required evaluations for notifications were untimely or when the prescribed corrective actions were overdue. Although none of the examples resulted in a significant adverse condition,

they were similar to previous NRC observations and the licensee's self-assessments of activities involving the corrective action program. In the area of safety conscious work environment (SCWE), plant personnel were familiar with and did not feel reluctant to use the processes that existed for raising safety issues. Inspection Report# : 2000003(pdf)

Last modified : July 22, 2002
Salem 2

Initiating Events

Significance: May 11, 2002 Identified By: Licensee Item Type: NCV NonCited Violation INADEQUATE IMPLEMENTATION OF PROCEDURES CONTROLLING REACTOR COOLANT SYSTEM COOLDOWN RATE

Technical Specification 6.8.1.a requires that written procedures be established, implemented and maintained covering the applicable procedures recommended by Appendix"A" of Regulatory Guide (RG)1.33, Revision2, February1978. RG1.33 requires general plant operating procedures for hot standby to cold shutdown. Salem operations procedure S2.OP-IO.ZZ-0006(Q), "Hot Standby to Cold Shutdown," step 3.6.3 provides precautions and limitations to determine RCS temperature and pressure at least once per 30 minutes with a maximum cooldown rate of 100°F in any one hour. Contrary to the above, PSEG Nuclear inadequately implemented S2.OP-IO.ZZ-0006(Q) and inadequately determined that RCS temperature was within limits with a maximum cooldown of 100°F in any one hour period when the RCS temperature change exceeded the 100°F limit between 0150 and 0219 hours with a maximum temperature drop of 127° F in a one hour period. This issue was placed into PSEG Nuclear's correction action program as notification 20095802. Inspection Report# : 2002004(pdf)



Significance: Apr 01, 2000

Identified By: Self Disclosing Item Type: FIN Finding

A TECHNICIAN APPLIED A JUMPER TO THE WRONG RELAY CONTACTS DURING ON-LINE MAINTENANCE, CAUSING A COMPLETE LOSS OF ALL CIRCULATING WATER TRAVELING **SCREENS**

A maintenance technician applied a jumper to the wrong contacts on a protective relay during a planned on-line maintenance activity associated with the 12B circulating water pump breaker. This error resulted in the complete loss of all circulating water system traveling water screens (TWSs). The safety significance of this event was very low because the TWSs were restored within five minutes and there was no observable affect on circulating water flow to the main condenser.

Inspection Report# : 2000002(pdf)

Significance: Aug 29, 1999

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TS 3.11.2.5 WITHIN THE REQUIRED TIME PERIOD

Unit 2 operators were slow in reducing the oxygen concentration in the waste gas decay tank to levels below those potentially explosive and exceeded the time limit required by technical specification 3.11.2.5. The risk associated with this event was minimal because all fire protection equipment remained available. This event was characterized as a "green" issue due to its very low safety significance since all fire protection equipment in the area remained available and the event was of limited duration.

Inspection Report# : <u>1999007</u>(pdf)

Significance: G Jul 11, 1999

Identified By: NRC Item Type: FIN Finding FIRE PROTECTION/BARRIERS

PSEG maintained appropriate control of combustible material and ignition sources in inspected areas. In general, impaired fire barriers were clearly tagged and documented in the corrective action program (CAP). However, the inspectors discovered some minor deficiencies such as a fire door which would not completely close without operator assistance. The minor violation associated with the fire door which would not close completely without operator assistance was classified as a green finding due to its very low safety significance. Inspection Report# : 1999005(pdf)

Mitigating Systems



Significance: Jun 29, 2002 Identified By: NRC

Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO ADEQUATELY EVALUATE PREVENTIVE MAINTENANCE ACTIVITIES A violation of 10 CFR 50.65(a)(3) dispositioned as a non-cited violation was identified because PSEG Nuclear failed to ensure that the objective of preventing failures through maintenance was appropriately balanced against the objective of minimizing unavailability due to monitoring or preventive maintenance. PSEG Nuclear failed to adequately evaluate PM activities for the 22 charging pump, failed to take into account industry-wide operating experience, and failed to ensure that the objective of preventing failure of the 22 CVC pump through maintenance was appropriately balanced against the goal of minimizing unavailability due to preventive maintenance. The cross-cutting aspects of this issue related to problem identification and resolution contributing causes were discussed in NRC Inspection Report 50-272 & 311-2001-012. The risk associated with the failure of the 22 charging pump was determined to be of very low safety significance because the mitigating functions that relied upon a high pressure injection pump were not lost since the redundant high pressure injection pump and both safety injection pumps remained operable during the period of time that the 22 CVC pump was unavailable.

Inspection Report# : <u>2002006(pdf</u>)

Significance: Feb 09, 2002

Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO DOCUMENT AND MAINTAIN QUALITY RECORDS OF EMERGENT TROUBLESHOOTING AND MAINTENANCE ACTIVITIES ON THE CONTROL CIRCUITRY FOR THE 1B EDG

PSEG Nuclear maintenance failed to document and maintain records of emergent troubleshooting and maintenance activities on the control circuitry for the 1B EDG. PSEG Nuclear also failed to maintain records of a September 2000 internal inspection of the 12 charging pump speed increaser. These two examples of PSEG Nuclear's failure to maintain complete and adequate inspection and maintenance records were a non-cited violation of Technical Specification 6.10.1.b and 10 CFR 50, Appendix B, Criterion XVII, Quality Assurance Records. The findings were evaluated using the significance determination process (SDP) and considered to be of very low risk significance because the failure to maintain the records did not affect the availability of the mitigating systems. Inspection Report# : 2001012(pdf)



Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO FOLLOW PROCEDURES AND PERFORM AN ADEQUATE POST-TRIP REVIEW FOLLOWING THE PRESSURIZER SPRAY VALVE FAILURE, REACTOR TRIP AND SAFETY **INJECTION EVENT**

Operating procedures did not provide adequate guidance to operators during their response to a stuck open pressurizer spray valve event that resulted in an automatic reactor trip and safety injection. The instructions which existed regarding the valve, including stopping reactor coolant pumps and isolating control air, conflicted with actions needed to address the event. However, PSEG Nuclear did not identify the procedural deficiencies during the post-trip review of the event as specified by the post-trip review procedure. The failure to identify and evaluate these procedural deficiencies was a non-cited violation. This finding was evaluated using the SDP and determined to be of very low risk significance, because the procedural deficiencies did not prevent the operators from controlling plant pressure during the event.

Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT PROMPT CORRECTIVE ACTIONS FOR A DEGRADED 2C EDG CYLINDER **ISOLATION VALVE**

PSEG Nuclear failed to promptly identify and correct a condition adverse to quality involving a degraded cylinder isolation valve (petcock) which was not functioning properly during corrective maintenance on the 2C EDG. During a subsequent test of the 2C EDG, flames were observed to be coming out of the cylinder 5R petcock, and the CO2 automatic fire suppression system actuated before the operators completed the EDG shutdown. The failure to identify and correct the degraded cylinder isolation valve was considered a non-cited violation of 10 CFR 50, Appendix XVI, Corrective Actions. The finding was evaluated using the SDP and considered to be of very low risk significance, because the emergency diesel generator unavailability time associated with this event was within the Technical Specification allowed outage time.

Inspection Report# : 2001012(pdf)



Significance: Dec 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO PERFORM FUNCTIONAL TESTING OF THE UNIT 2 RADIOACTIVE WASTE GAS HOLDUP SYSTEM EFFLUENT OXYGEN MONITORING SYSTEM WITHIN SURVEILLANCE **INTERVAL SPECIFIED BY TS 4.3.3.9 AND 4.0.2**

Technical Specification 4.3.3.9 and associated Table 4.3-13, item 1.b, require, in part, that a functional test of the radioactive waste gas holdup system effluent oxygen monitoring system be functionally tested monthly. Technical Specification 4.0.2 states, in part, that the surveillance requirement shall be performed within the specified surveillance interval with a maximum allowable not to exceed 25 percent of the specified surveillance interval. Contrary to the above, the Unit 2 waste gas analyzer surveillance was not completed until November 29, 2001. This was approximately four days past the maximum allowable overdue date of November 24, 2001. Inspection Report# : 2001011(pdf)



Identified By: NRC Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO PROMPTLY IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY THAT HAD THE POTENTIAL TO AFFECT THE OPERABILITY OF THE NO. 21 CHARGING SYSTEM PUMP

Failure to implement appropriate corrective actions for a degraded no. 22 charging pump (CS) lubricating oil condition. PSEG Nuclear replaced the degraded oil, but did not implement any actions to prevent recurrence. This finding was of very low significance since the no. 22 CS pump has performed satisfactorily subsequent to the oil analysis results being addressed and the lubricating oil replacement.

Inspection Report# : 2001010(pdf)



Significance: Gaug 11, 2001

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY IDENTIFY AND CORRECT AN ADVERSE CONDITION THAT AFFECTED THE OPERABILITY OF THE CONTAINMENT SPRAY ADDITIVE TANK

PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 2 containment spray additive tank (SAT) level trend that occurred over a several month period. This resulted in dilution of the Unit 2 SAT sodium hydroxide (NAOH) concentration below the TS required minimum value for a period of up to 109 days. This finding was evaluated using SDP and found to be of very low significance since the tank concentration was above the minimum calculated NAOH concentration required for the SAT to perform its accident mitigation function. Inspection Report# : 2001008(pdf)



Significance: Aug 11, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO EVALUATE WHETHER A PIPE LEAK IDENTIFIED DOWNSTREAM OF THE 21SW4 VALVE WAS INSIDE THE ASME SECTION OF THE SW SYSTEM FOR SEVEN WEEKS

10CFR50, Appendix B, Criteiron XVI, requires, in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, on June 20, 2001, PSEG Nuclear identified a pipe leak downstream of the 21SW4 valve, but did not evaluate whether the leak was inside the ASME section of the SW system until approximately August 9.

Inspection Report# : 2001008(pdf)

Significance: May 19, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

WORKER ADJUSTED THE PACKING ON THE 22 AFW PUMP WITHOUT HAVING AN APPROVED WORK DOCUMENT

TS 6.8.1 requires "that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix "A" of Regulatory Guicde 1.33. RG 1.33 requires that procedures be developed to conduct maintenance on safety-related systems. PSEG Nuclear procedure NC.NA-AP.ZZ-0009(Q), "Work Management Program," requires that individuals perform work in accordance with appropriate work documents. On May 11, 2001, a plant worker adjusted the packing on the 22 AFW pump without having the approved work documents.

Inspection Report# : 2001006(pdf)



Significance: Feb 10, 2001

Identified By: NRC Item Type: NCV NonCited Violation

UNTIMELY AND INEFFECTIVE CORRECTIVE ACTIONS TO PREVENT THE RECURRENCE OF VIBRATION INDUCED FAILURES OF THE 21 CCHX OUTLET VALVE, 21SW127

PSEG Nuclear did not take timely and effective corrective actions for vibration induced failures of service water valve 21 SW 127 on the 21 component cooling heat exchanger outlet. Failure of 21 SW 127 rendered the 21 component cooling water (CCW) loop inoperable when the redundant 22 CCW loop was inoperable to support a liquid radwaste discharge. The finding had a credible impact on safety since the failure of 21 SW 127 resulted in both component cooling water loops being out-of-service and resulted in a loss of the decay heat removal safety function. The SDP evaluation determined that the event was of very low safety significance due to the short duration of the event. The failure to implement effective, timely corrective actions for 21 SW 127 was considered a non-cited violation. Inspection Report# : 2000011(pdf)



Significance: Feb 10, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

LICENSEE IDENTIFIED THAT SAFETY-RELATED VENTILATION DAMPER SPRING WAS MODIFIED **DURING MAINTENANCE WITHOUT APPROPRIATE DESIGN CONTROLS**

10 CFR 50, Appendix B, Criterion III, Design Control, requires that measures be established for the selection and review for suitability of application of parts that are essential to the safety-related functions of structures, systems and components. PSEG Nuclear identified that while repairing Unit 1 auxiliary building ventilation excess flow damper, S1ABV-1ABS8 under Order 60014824, a spring that assists in damper actuation was modified without the proper engineering documentation. This was documented in the corrective action program as Notification 20052729. Inspection Report# : 2000011(pdf)



Significance: Nov 11, 2000

Identified By: NRC

Item Type: NCV NonCited Violation FAILURE TO SCHEDULE AND PERFORM PREVENTIVE MAINTENANCE FOR A TURBINE DRIVEN **AUXILIARY FEEDWATER MODIFICAITON**

PSEG Nuclear did not perform the specified preventive maintenance (PM) tasks for the new equipment associated with the turbine driven auxiliary feedwater pump enclosure modification at both units. This problem resulted in a credible impact on safety-related equipment which could have affected the availability and reliability of the auxiliary feedwater system. The failure to properly perform PM tasks for new equipment associated with modification 2EC-3522 as required by Procedure NC.WM-AP.ZZ-0003(O), Rev 0, "Regular Maintenance Process," was considered to be a noncited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." The issue was determined to be of very low risk significance using the Significance Determination Process phase 1 screening because no actual equipment failures were attributed to the missed PMs.

Inspection Report# : 2000009(pdf)

Significance: Feb 07, 2000 Identified By: NRC

Item Type: VIO Violation THE CARBON DIOXIDE TESTS FOR THE UNITS 1 & 2 4,160 VAC SWITCHGEAR ROOMS DID NOT **REACH OR MAINTAIN THE REQUIRED CO2 CONCENTRATION OF 50%**

PSEG did not ensure that the carbon dioxide concentration tests for the Units 1 & 2 4,160 VAC switchgear rooms reached and maintained the required CO2 concentration of 50%. This is a violation of Unit 1 license condition C.5 and Unit 2 license condition 2.C.10. This finding was determined to be WHITE by the significance determination process. The safety significance of this WHITE finding is low to moderate. During the supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that PSEG had performed a comprehensive evaluation of the failure of the carbon dioxide suppression system to achieve its design concentration. PSEG is currently working to correct carbon dioxide concentrations for the total flooding fire suppression systems, upgrade electrical raceway fire barrier systems, and convert the 4160v switchgear room fire suppression systems from manual to automatic. Based on PSEG's acceptable performance in addressing the switchgear room fire suppression system issue, the White finding associated with this issue will only be consdidered in assessing tplant performance for a total of four quarters in accordance with the guidance in NRC Inspection Manual Chapter 0305. Inspection Report# : 1999010(pdf)



Significance: Feb 07, 2000 Identified By: NRC Item Type: NCV NonCited Violation PSEG FAILED TO ENSURE THE CO2 SYSTEMS FOR THE UNITS 1 & 2 4,160 VAC ELECTRIC PENETRATION ROOMS REACHED AND MAINTAINED THE REQUIRED CO2 CONCENTRATION The team identified that the carbon dioxide concentration tests for the Units 1 & 2 electrical penetration areas did not reach or maintain the required CO2 concentration of 50%. This failure is a violation of license conditions for each unit. This finding was evaluated by the significance determination process (SDP) and determined to be GREEN based on the other detection and suppression systems available in the area. The safety significance of this finding is very low. Inspection Report# : 1999010(pdf)



Significance: Feb 07, 2000 Identified By: Licensee

Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THAT ONE TRAIN OF EQUIPMENT NECESSARY TO ACHIEVE HOT SHUTDOWN FORM THE EMERGENCY CONTROL STATION IS FREE OF FIRE DAMAGE

PSEG identified a condition in which they failed to ensure that one train of equipment necessary to achieve hot shutdown from the emergency control station is free of fire damage. This is a non-cited violation of Section III.G.1.a of Appendix R. This issue was evaluated by the SDP and found to be within the licensee's respone band. (GREEN) The safety significance of this finding is very low.

Inspection Report# : 1999010(pdf)



Significance: Feb 07, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

PSEG IDENTIFIED A CONDITION IN WHICH A FIRE COULD DAMAGE CABLES SUCH THAT THE POWER OPERATED RELIEF VALVE WOULD OPEN AND THE ASSOCIATED BLOCK VALVE COULD NOT BE CLOSED.

PSEG identified a condition in which a fire could damage cables such that the power operated relief valve would open and the associated block valve could not be closed. The failure to protect one train of equipment necessary to achieve hot shutdown is a violation of III.G.1.a of Appendix R. This finding was evaluated by the SDP and determined to be

GREEN. The safety significance of this finding was very low. Inspection Report# : <u>1999010(pdf)</u>



Significance: Sep 01, 1999 Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE ACCEPTANCE CRITERIA IN SURVEILLANCE TEST PROCEDURES

The acceptance criteria in the auxiliary feedwater (AFW) pump surveillance test procedures was inadequate since it did not ensure that the pump performance was capable of meeting accident analysis performance or pump operability criteria found in the Unit 1 and 2 Technical Specifications. This issue was considered potentially significant due to the allowable degraded core cooling capability associated with the established AFW pump minimum performance acceptance criteria. This issue has been entered into PSEG Nuclear's corrective action program (CAP). The issue was considered "green" in the significance determination process since it did not have an immediate impact on AFW system operability as determined by an evaluation of recent pump performance. Inspection Report# : 1999006(pdf)



Significance: Sep 01, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

MULTIPLE EXAMPLES OF INEFFECTIVE IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM

The team identified some instances where PSEG Nuclear did not effectively implement the corrective action program (CAP): 1) A prior performance weakness resulted in a governor control system needle valve setting for the 23 AFW pump turbine that was not optimal for actual operating conditions; 2) During operation of the 23 AFW pump, the team identified that the turbine outboard bearing temperature exhibited an increasing trend, which represented an operability question, and PSEG Nuclear was not aware of this potential problem. Consequently, this problem was not entered into the CAP; and, 3) Other examples of ineffective implementation of the CAP were identified, including deficiencies not promptly entered into the CAP or not adequately corrected. These issues were considered to be significant in that they indicated an overall CAP weakness since problems were noted in not identifying corrective action items and the lack of timeliness and effectiveness of corrective actions. These issues were considered "green" in the significance determination process because they did not have an immediate impact on AFW system operability and were ultimately included in PSEG Nuclear's CAP.

Inspection Report# : 1999006(pdf)



Significance: Sep 01, 1999

Identified By: NRC Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL CONCERNING REPLACEMENT PARTS FOR POSITIONERS FOR AFW FLOW CONTROL VAVLES

The team found that the positioners for the AFW flow control valves had been maintained with parts that were not qualified for use in safety-related applications. This issue was considered significant since the functionality for valves in a risk significant system was being challenged. The qualification issue was considered "green" in the significance determination process because it did not have an immediate impact on AFW system operability based on an engineering evaluation and the issue was being addressed by PSEG Nuclear's CAP. Inspection Report# : 1999006(pdf)



Identified By: Licensee Item Type: FIN Finding

CFCU TRAIN UNAVAILABILITY PERFORMANCE CRITERIA

PSEG nuclear personnel properly monitored containment fan cooling unit (CFCU) performance for reliability and unavailability. However, while PSEG's recent change in the CFCU train unavailability performance criteria was acceptable, it was not based on an evaluation of all of the appropriate factors. Also, the goals for the diesel generators were weak in that the cause of the associated unavailability was not addressed. This finding was assessed to be green as a reevaluation by PSEG of the CFCU train unavailability performance criteria using more appropriate factors revealed only a minimal increase in large early release frequency (LERF). Inspection Report# : <u>1999005(pdf</u>)

Significance: Jul 11, 1999 Identified By: NRC Item Type: FIN Finding

INCOMPLETE COMPENSATORY MEASURES FOR DEGRADED EQUIPMENT CONDITIONS

PSEG nuclear operators appropriately assessed three degraded equipment conditions in terms of their impact on the design basis functions of the affected systems. Each of the operability evaluations were completed in a timely manner. However, some of the associated compensatory measures were either incomplete or poorly controlled. This finding was evaluated to be green due to the minor significance of the compensatory measures needed and the absence of NRC requirements in this area.

Inspection Report# : 1999005(pdf)

Barrier Integrity

Significance: Dec 29, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO DEVELOP ADEQUATE INSTRUCTIONS TO REPACK THE 2CV49 VALVE AS REQUIRED **BY 10CFR50, APPENDIX B, CRITERION V**

10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall prescribed by documented instructions that include appropriate acceptance criteria to determine that important activities have been satisfactorily accomplished. Contrary to the above, PSEG Nuclear determined on September 6, 2001, that the packing data sheet for the 2CV49 valve was incorrect. As a result, valve 2CV49 developed an excessive packing leak that could have resulted in an exposure to the control room operators in excess of the 10 CFR 50, Appendix A, General Design Criteria 19 limits following a postulated LOCA.

Inspection Report# : 2001011(pdf)

Significance: Dec 29, 2001 Identified By: Licensee Item Type: NCV NonCited Violation FAILURE TO ISOLATE THE AFFECTED PENETRATION AS REQUIRED BY TS 3.6.3 SUBSEQUENT TO **DISABLING SERVICE WATER VALVES 22SW58 AND 22SW72**

Technical Specification 3.6.3, requires, in part, that inoperable containment penetration isolation valves be restored to an operable condition within four hours or the associated penetration shall be isolated. Contrary to the above, PSEG Nuclear disabled two containment isolation valves (22SW58 and 22SW72) on September 23, 2001, but did not isolate the associated penetration within four hours as required by TS 3.6.3. Inspection Report# : 2001011(pdf)



Significance: Feb 27, 2000 Identified By: NRC Item Type: FIN Finding SMALL UNIDENTIFIED LEAK FROM THE CVCS AT UNIT 2 PERSISTED FOR 3 1/2 HOURS BEFORE IDENTIFICATION AND TERMINATION

A small unidentified leak from the chemical and volume control system at Unit 2 persisted for approximately 3 1/2 hours before operators recognized and terminated the condition. PSEG attributed the delays in recognizing the condition, in part, to the fact that two other concurrent evolutions were in progress or had just been completed which effectively masked the indications of a leak, namely volume control tank level and plant ventilation radiation levels. The safety and risk significance of this incident was very low because adequate reactor coolant inventory sources remained available throughout the event and offsite release rates remained well below regulatory limits. Inspection Report# : 2000001(pdf)

Emergency Preparedness

Occupational Radiation Safety

Significance: G Aug 29, 1999

Identified By: Licensee

Item Type: NCV NonCited Violation

INADVERTENT DISCHARGE FROM THE 23 WASTE GAS DECAY TANK TO THE AUXILIARY BUILDING

PSEG operators inadvertently vented radioactive gas into the Unit 2 auxiliary building. The plant vent and auxiliary building air radiation monitors detected increased radiation levels, which remained well below technical specification limits. Errors by control room and field operators, including failure to follow procedures, contributed to the incident. This event was characterized as a "green" issue since the increased radiation levels in the auxiliary building were well below regulatory limits.

Inspection Report# : <u>1999007(pdf</u>)

Public Radiation Safety

Significance: G Dec 29, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN YEAR 2000 CALIBRATION RECORDS FOR CHEMICAL WASTE BASIN MONITOR (R37) AND UNIT 1 CONTAINMENT FAN COOLER-SW DISCHARGE MONITOR (1R13B) Technical Specification Section 6.10.d requires that records of surveillance activities, inspections, and calibrations, required by the TSs, be retained for at least five years. The radiological calibration results for the Chemical Waste Basin Monitor (R37) and the Unit 1 Containment Fan Cooler-Service Water Line Discharge Monitor (1R13B) for the year 2000 were not retrievable. PSEG Nuclear placed this issue into its corrective action system as a Notification Report (Notification 20084063). The finding was determined to be of very low safety significance, because the issue did not impair the ability to assess the public dose, and did not result in exceeding public dose limits listed in Appendix I of 10 CFR 50 or 10 CFR 20.1301(d). The issue was not reportable in the Annual Radiological Effluent Report. Further, PSEG Nuclear produced a work record indicating the calibrations had been properly performed. Inspection Report# : 2001011(pdf)



Significance: Oct 10, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO REPORT IN RAD. ENV. OP. REPORTS ACTIONS TO PREVENT RECURRENCE OF RAD. **ENVIR. AIR SAMPLER OUTAGES**

PSEG failed to provide complete information in their 1997 and 1998 Annual Radiological Environmental Operating Reports in that these documents did not describe plans to prevent recurrence of multiple environmental air sampler outages. This issue was characterized as a Non-Cited Violation of TS 3.12.1. The safety significance of this issue was very low because it did not significantly compromise PSEG's ability to assess the environmental impact of continued plant operation.

Inspection Report# : 1999008(pdf)



Significance: Aug 29, 1999

Identified By: Licensee

Item Type: NCV NonCited Violation

INADEQUATELY PERFORMED SURVEILLANCE PROCEDURE

The carbon adsorber (activated charcoal) in the auxiliary building ventilation exhaust system was operated at an air flow in excess of the specified maximum. Operators declared the adsorber inoperable until engineering department personnel assessed the potential impact of this occurrence, which was later determined to be negligible. This issue had low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Insufficient attention to detail by a control room operator had resulted in this incident, which represented a non-cited violation of technical specification 6.8.1. This issue was characterized as a "green" event due to its very low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Inspection Report# : 1999007(pdf)

Physical Protection

Significance: Aug 29, 1999 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO CONDUCT PACKAGE SEARCH IN ACCORDANCE WITH SITE SECURITY PLAN Security personnel did not properly search a hand-carried package prior to granting it unrestricted access to the site protected area (PA). Specifically, guards permitted a plant worker to bypass the x-ray machine and carry a large bag of moving blankets into the PA without a search of the bag's contents. Later examination of the bag's contents yielded no contraband. This incident was characterized as a "green" issue since no contraband was identified in the package which was not searched.

Inspection Report# : <u>1999007</u>(pdf)

Miscellaneous

Significance: N/A Mar 23, 2001 Identified By: NRC Item Type: FIN Finding

PROBLEM IDENTIFICATION AND RESOLUTION PROGRAM INSPECTION

The licensee staff used the notification system appropriately to identify issues needing review for corrective actions. Daily issue review and prioritization meetings focused on safety and minimization of plant risk. Operators reviewed the risk worth of planned work activities. Operability determinations appeared adequate for the reviewed issues. Identified issues were being reviewed for apparent and root causes. Root cause evaluations were conducted to an appropriate depth and provided associated corrective actions. Corrective actions for identified issues were effective, commensurate with the safety significance of the issues, and sensitive to the necessity for reliable equipment performance. The extent of condition and generic applicability for significant conditions adverse to quality were properly considered. The size of the corrective action backlog and timeliness of corrective action completion, with respect to safety significance, was formally tracked and managed. The licensee had taken actions commensurate with the importance of service water system issues; however, detritus and silt continued to challenge the operators and plant equipment. Self-assessments and audits were self-critical and provided appropriate feedback, including notifications and recommendations. Inspection Report# : 2001004(pdf)

Significance: N/A Nov 11, 2000 Identified By: Licensee Item Type: NCV NonCited Violation FAILURE TO PERFORM A NITROGEN PURGE IN ACCORDANCE WITH PROCEDURES RESULTING IN INCREASED DOSE RATES

Plant procedure IOP-6 specifies that a degassification evolution be performed on the primary coolant during a shutdown, via purging the hydrogen cover gas in the volume control tank with nitrogen. The cover gas in the volume control tank was not purged with nitrogen during shutdown on October 6, 2000, as described in Notification 20042531. This resulted in PSEG Nuclear personnel having to perform a second chemically-induced crud burst, resulting in increased dose rates on various pipes and components located inside the bio-shield. Inspection Report# : 2000009(pdf)

Significance: N/A Apr 18, 2000

Identified By: NRC Item Type: FIN Finding

PROBLEM IDENTIFICATION AND RESOLUTION

The licensee was effective at identifying problems. Nevertheless, the team found two instances, involving low significance, where issues were not entered into the corrective action process in a timely manner. The instances did not represent a programmatic trend or concern. The licensee's resolution of problems was adequate. Based on the sample reviewed, items entered into the corrective action program were properly classified and prioritized for resolution. Evaluations and root cause analysis were of good depth and quality. The prescribed corrective actions appeared appropriate to correct the problems and the corrective actions were generally completed in a timely manner. However,

there were a few instances where the required evaluations for notifications were untimely or when the prescribed corrective actions were overdue. Although none of the examples resulted in a significant adverse condition, they were similar to previous NRC observations and the licensee's self-assessments of activities involving the corrective action program. In the area of safety conscious work environment (SCWE), plant personnel were familiar with and did not feel reluctant to use the processes that existed for raising safety issues. Inspection Report# : 2000003(pdf)

Last modified : August 29, 2002

Salem 2

Initiating Events

Significance: May 11, 2002 Identified By: Licensee

Item Type: NCV NonCited Violation

INADEQUATE IMPLEMENTATION OF PROCEDURES CONTROLLING REACTOR COOLANT SYSTEM COOLDOWN RATE

Technical Specification 6.8.1.a requires that written procedures be established, implemented and maintained covering the applicable procedures recommended by Appendix"A" of Regulatory Guide (RG)1.33, Revision2, February1978. RG1.33 requires general plant operating procedures for hot standby to cold shutdown. Salem operations procedure S2.OP-IO.ZZ-0006(Q), "Hot Standby to Cold Shutdown," step 3.6.3 provides precautions and limitations to determine RCS temperature and pressure at least once per 30 minutes with a maximum cooldown rate of 100°F in any one hour. Contrary to the above, PSEG Nuclear inadequately implemented S2.OP-IO.ZZ-0006(Q) and inadequately determined that RCS temperature was within limits with a maximum cooldown of 100°F in any one hour period when the RCS temperature change exceeded the 100°F limit between 0150 and 0219 hours with a maximum temperature drop of 127° F in a one hour period. This issue was placed into PSEG Nuclear's correction action program as notification 20095802. Inspection Report# : 2002004(pdf)



Significance: Apr 01, 2000

Identified By: Self Disclosing

Item Type: FIN Finding

A TECHNICIAN APPLIED A JUMPER TO THE WRONG RELAY CONTACTS DURING ON-LINE MAINTENANCE, CAUSING A COMPLETE LOSS OF ALL CIRCULATING WATER TRAVELING SCREENS

A maintenance technician applied a jumper to the wrong contacts on a protective relay during a planned on-line maintenance activity associated with the 12B circulating water pump breaker. This error resulted in the complete loss of all circulating water system traveling water screens (TWSs). The safety significance of this event was very low because the TWSs were restored within five minutes and there was no observable affect on circulating water flow to the main condenser.

Inspection Report# : 2000002(pdf)



Significance: Aug 29, 1999

Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO COMPLY WITH TS 3.11.2.5 WITHIN THE REQUIRED TIME PERIOD

Unit 2 operators were slow in reducing the oxygen concentration in the waste gas decay tank to levels below those potentially explosive and exceeded the time limit required by technical specification 3.11.2.5. The risk associated with this event was minimal because all fire protection equipment remained available. This event was characterized as a "green" issue due to its very low safety significance since all fire protection equipment in the area remained available and the event was of limited duration.

Inspection Report# : <u>1999007(pdf)</u>



Item Type: FIN Finding FIRE PROTECTION/BARRIERS

PSEG maintained appropriate control of combustible material and ignition sources in inspected areas. In general, impaired fire barriers were clearly tagged and documented in the corrective action program (CAP). However, the inspectors discovered some minor deficiencies such as a fire door which would not completely close without operator assistance. The minor violation associated with the fire door which would not close completely without operator assistance was classified as a green finding due to its very low safety significance.

Inspection Report# : <u>1999005(pdf</u>)

Mitigating Systems

Significance: TBD Sep 30, 2002 Identified By: NRC Item Type: URI Unresolved item PSEG NUCLEAR FAILED TO PROPERLY MAINTAIN ROOM ISOLATION BARRIERS AND IMPROPERLY IMPLEMENTED A MODIFICATION TO THE SWITCHGEAR PENETRATION AREA VENTILATION SYSTEM

The inspectors identified an apparent violation of License Conditions 2.C.5 (Unit 1) and 2.C.10 (Unit 2). PSEG Nuclear failed to properly maintain the carbon dioxide automatic fire suppression system as required by the fire protection program. Specifically, tracer gas testing identified that leakage from six safety-related electrical rooms (three at Unit 1 and three at Unit 2) was sufficient to prevent the carbon dioxide (CO2) system from reaching and maintaining the 50 percent CO2 concentration for a hold time of 20 minutes as required by the National Fire Protection Association (NFPA)-12, "Standard on Carbon Dioxide Extinguishing Systems." The leakage problems were attributed to a faulty design modification and a failure to perform effective preventive maintenance on the area isolation barriers. The determination of the significance of this finding was not completed by the end of the period. Therefore this finding will remain unresolved pending completion of the significance determination process (SDP). Inspection Report# : 2002007(pdf)



Significance: Sep 30, 2002 Identified By: NRC Item Type: NCV NonCited Violation PSEG FAILED TO IMPLEMENT PROMP AND EFFECTIVE CORRECTIVE ACTIONS SUBSEQUENT TO A JANUARY 2001 SURVEILLANCE TEST

PSEG Nuclear failed to implement effective corrective actions subsequent to January 2001 surveillance testing that indicated that the Unit 1 auxiliary building ventilation (ABV) system charcoal adsorber bank was degraded. The charcoal bank failed the next scheduled test conducted in August 2002 and placed the unit into a twenty-four hour shutdown action statement. This finding was evaluated using the Phase 1 SDP worksheet and determined to be of very low risk significance (Green), because the problem only affected the radiological barrier function of the auxiliary building. Additionally the test results indicated that the charcoal performance would have met the design analysis assumptions. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy The charcoal bank failed the next scheduled test conducted in August 2002 and placed the unit into a twenty-four hour shutdown action statement. This finding was evaluated using the Phase 1 SDP worksheet and determined to be of very low risk significance (Green), because the problem only affected the radiological barrier function of the auxiliary building. Additionally the test results indicated that the charcoal performance would have met the design analysis assumptions. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program so notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy low risk significance (Green), because the problem only affected the radiological barrier function of the auxiliary building. Additionally the test results indicated that the charcoal performance would have met the design analysis assumptions. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consiste

Significance: Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

PSEG FAILED TO PROMPTLY IDENTIFY AND CORRECT THE CAUSE FOR AN IMPROPER AIRFLOW CONDITION THAT DEGRADED THE RADIOACTIVE REMOVAL CAPABILITY OF THE **ABV SYSTEM**

PSEG Nuclear failed to properly evaluate and correct a degraded ABV system condition that adversely affected the radiological barrier function of the system. Specifically, the inspectors identified that airflow was out of the residual heat removal room and into the auxiliary building stairwell. This provided a pathway for radioactive effluents to bypass the auxiliary building ventilation charcoal filters. The inspectors reviewed the SDP Phase 1 screening worksheet and noted that findings that adversely affect the radiological barrier function of the auxiliary building are of very low risk significance. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20116935 and is being treated as a non-cited violation consistent with the NRC's enforcement policy Inspection Report# : 2002007(pdf)



Significance: Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

PSEG FAILED TO TAKE ADEQUATE CORRECTIVE ACTIONS FOR A 2001 DILUTION EVENT ON THE **UNIT 2 SAT AND FAILED TO PRECLUDE REPEATING THE EVENT ON UNIT 1 SAT**

PSEG Nuclear failed to identify the adverse consequences associated with a Unit 1 containment spray additive tank (SAT) increasing level trend that occurred over a several month period. This resulted in dilution of the Unit 1 SAT sodium hydroxide (NaOH) below the TS required minimum concentration value. The inspectors determined that the failure to take adequate corrective actions to preclude repetition of a significant condition adverse to quality constituted a violation of 10 CFR 50 Appendix B, Criterion XVI. Specifically, PSEG Nuclear failed to take adequate corrective actions for a 2001 dilution event on the Unit 2 SAT and failed to preclude repeating the event on the Unit 1 SAT. The risk significance of this finding was very low because the tank concentration was below the TS limit, but was above the minimum calculated NaOH concentration of 28 percent required for the SAT to perform its accident mitigation function. This very low risk violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy Inspection Report# : 2002007(pdf)



Significance: Jun 29, 2002

Identified By: NRC Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO ADEQUATELY EVALUATE PREVENTIVE MAINTENANCE ACTIVITIES A violation of 10 CFR 50.65(a)(3) dispositioned as a non-cited violation was identified because PSEG Nuclear failed to ensure that the objective of preventing failures through maintenance was appropriately balanced against the objective of minimizing unavailability due to monitoring or preventive maintenance. PSEG Nuclear failed to adequately evaluate PM activities for the 22 charging pump, failed to take into account industry-wide operating experience, and failed to ensure that the objective of preventing failure of the 22 CVC pump through maintenance was appropriately balanced against the goal of minimizing unavailability due to preventive maintenance. The cross-cutting aspects of this issue related to problem identification and resolution contributing causes were discussed in NRC Inspection Report 50-272 & 311-2001-012. The risk associated with the failure of the 22 charging pump was determined to be of very low safety significance because the mitigating functions that relied upon a high pressure injection pump were not lost since the redundant high pressure injection pump and both safety injection pumps remained operable during the period of time that the 22 CVC pump was unavailable.

Inspection Report# : 2002006(pdf)



FAILURE TO DOCUMENT AND MAINTAIN QUALITY RECORDS OF EMERGENT TROUBLESHOOTING AND MAINTENANCE ACTIVITIES ON THE CONTROL CIRCUITRY FOR THE **1BEDG**

PSEG Nuclear maintenance failed to document and maintain records of emergent troubleshooting and maintenance activities on the control circuitry for the 1B EDG. PSEG Nuclear also failed to maintain records of a September 2000 internal inspection of the 12 charging pump speed increaser. These two examples of PSEG Nuclear's failure to maintain complete and adequate inspection and maintenance records were a non-cited violation of Technical Specification 6.10.1.b and 10 CFR 50, Appendix B, Criterion XVII, Quality Assurance Records. The findings were evaluated using the significance determination process (SDP) and considered to be of very low risk significance because the failure to maintain the records did not affect the availability of the mitigating systems.

Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO FOLLOW PROCEDURES AND PERFORM AN ADEQUATE POST-TRIP REVIEW FOLLOWING THE PRESSURIZER SPRAY VALVE FAILURE, REACTOR TRIP AND SAFETY **INJECTION EVENT**

Operating procedures did not provide adequate guidance to operators during their response to a stuck open pressurizer spray valve event that resulted in an automatic reactor trip and safety injection. The instructions which existed regarding the valve, including stopping reactor coolant pumps and isolating control air, conflicted with actions needed to address the event. However, PSEG Nuclear did not identify the procedural deficiencies during the post-trip review of the event as specified by the post-trip review procedure. The failure to identify and evaluate these procedural deficiencies was a non-cited violation. This finding was evaluated using the SDP and determined to be of very low risk significance, because the procedural deficiencies did not prevent the operators from controlling plant pressure during the event.

Inspection Report# : 2001012(pdf)



Significance: Feb 09, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT PROMPT CORRECTIVE ACTIONS FOR A DEGRADED 2C EDG CYLINDER **ISOLATION VALVE**

PSEG Nuclear failed to promptly identify and correct a condition adverse to quality involving a degraded cylinder isolation valve (petcock) which was not functioning properly during corrective maintenance on the 2C EDG. During a subsequent test of the 2C EDG, flames were observed to be coming out of the cylinder 5R petcock, and the CO2 automatic fire suppression system actuated before the operators completed the EDG shutdown. The failure to identify and correct the degraded cylinder isolation valve was considered a non-cited violation of 10 CFR 50, Appendix XVI, Corrective Actions. The finding was evaluated using the SDP and considered to be of very low risk significance, because the emergency diesel generator unavailability time associated with this event was within the Technical Specification allowed outage time.

Inspection Report# : 2001012(pdf)



Significance: Dec 29, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO PERFORM FUNCTIONAL TESTING OF THE UNIT 2 RADIOACTIVE WASTE GAS HOLDUP SYSTEM EFFLUENT OXYGEN MONITORING SYSTEM WITHIN SURVEILLANCE **INTERVAL SPECIFIED BY TS 4.3.3.9 AND 4.0.2**

Technical Specification 4.3.3.9 and associated Table 4.3-13, item 1.b, require, in part, that a functional test of the radioactive waste gas holdup system effluent oxygen monitoring system be functionally tested monthly. Technical

Specification 4.0.2 states, in part, that the surveillance requirement shall be performed within the specified surveillance interval with a maximum allowable not to exceed 25 percent of the specified surveillance interval. Contrary to the above, the Unit 2 waste gas analyzer surveillance was not completed until November 29, 2001. This was approximately four days past the maximum allowable overdue date of November 24, 2001. Inspection Report# : 2001011(pdf)



Significance: Nov 10, 2001

Identified By: NRC Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO PROMPTLY IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY THAT HAD THE POTENTIAL TO AFFECT THE OPERABILITY OF THE NO. 21 CHARGING SYSTEM PUMP

Failure to implement appropriate corrective actions for a degraded no. 22 charging pump (CS) lubricating oil condition. PSEG Nuclear replaced the degraded oil, but did not implement any actions to prevent recurrence. This finding was of very low significance since the no. 22 CS pump has performed satisfactorily subsequent to the oil analysis results being addressed and the lubricating oil replacement.

Inspection Report# : <u>2001010(pdf</u>)



Significance: Aug 11, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY IDENTIFY AND CORRECT AN ADVERSE CONDITION THAT AFFECTED THE OPERABILITY OF THE CONTAINMENT SPRAY ADDITIVE TANK

PSEG Nuclear failed to identify the adverse consequences associated with an increasing Unit 2 containment spray additive tank (SAT) level trend that occurred over a several month period. This resulted in dilution of the Unit 2 SAT sodium hydroxide (NAOH) concentration below the TS required minimum value for a period of up to 109 days. This finding was evaluated using SDP and found to be of very low significance since the tank concentration was above the minimum calculated NAOH concentration required for the SAT to perform its accident mitigation function. Inspection Report# : 2001008(pdf)



Significance: Aug 11, 2001 Identified By: Licensee

Item Type: NCV NonCited Violation

FAILURE TO EVALUATE WHETHER A PIPE LEAK IDENTIFIED DOWNSTREAM OF THE 21SW4 VALVE WAS INSIDE THE ASME SECTION OF THE SW SYSTEM FOR SEVEN WEEKS

10CFR50, Appendix B, Criteiron XVI, requires, in part, that conditions adverse to quality be promptly identified and corrected. Contrary to the above, on June 20, 2001, PSEG Nuclear identified a pipe leak downstream of the 21SW4 valve, but did not evaluate whether the leak was inside the ASME section of the SW system until approximately August 9.

Inspection Report# : 2001008(pdf)

Significance: May 19, 2001 Identified By: NRC Item Type: NCV NonCited Violation WORKER ADJUSTED THE PACKING ON THE 22 AFW PUMP WITHOUT HAVING AN APPROVED WORK DOCUMENT

TS 6.8.1 requires "that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix "A" of Regulatory Guicde 1.33. RG 1.33 requires that procedures be developed to conduct maintenance on safety-related systems. PSEG Nuclear procedure NC.NA-AP.ZZ-0009(Q), "Work Management

Program," requires that individuals perform work in accordance with appropriate work documents. On May 11, 2001, a plant worker adjusted the packing on the 22 AFW pump without having the approved work documents. Inspection Report# : 2001006(pdf)

Significance: Feb 10, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

UNTIMELY AND INEFFECTIVE CORRECTIVE ACTIONS TO PREVENT THE RECURRENCE OF **VIBRATION INDUCED FAILURES OF THE 21 CCHX OUTLET VALVE, 21SW127**

PSEG Nuclear did not take timely and effective corrective actions for vibration induced failures of service water valve 21 SW 127 on the 21 component cooling heat exchanger outlet. Failure of 21 SW 127 rendered the 21 component cooling water (CCW) loop inoperable when the redundant 22 CCW loop was inoperable to support a liquid radwaste discharge. The finding had a credible impact on safety since the failure of 21 SW 127 resulted in both component cooling water loops being out-of-service and resulted in a loss of the decay heat removal safety function. The SDP evaluation determined that the event was of very low safety significance due to the short duration of the event. The failure to implement effective, timely corrective actions for 21 SW 127 was considered a non-cited violation. Inspection Report# : 2000011(pdf)



Feb 10, 2001 Significance:

Identified By: Licensee

Item Type: NCV NonCited Violation LICENSEE IDENTIFIED THAT SAFETY-RELATED VENTILATION DAMPER SPRING WAS MODIFIED

DURING MAINTENANCE WITHOUT APPROPRIATE DESIGN CONTROLS

10 CFR 50, Appendix B, Criterion III, Design Control, requires that measures be established for the selection and review for suitability of application of parts that are essential to the safety-related functions of structures, systems and components. PSEG Nuclear identified that while repairing Unit 1 auxiliary building ventilation excess flow damper, S1ABV-1ABS8 under Order 60014824, a spring that assists in damper actuation was modified without the proper engineering documentation. This was documented in the corrective action program as Notification 20052729. Inspection Report# : 2000011(pdf)



Significance: Nov 11, 2000 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO SCHEDULE AND PERFORM PREVENTIVE MAINTENANCE FOR A TURBINE DRIVEN **AUXILIARY FEEDWATER MODIFICAITON**

PSEG Nuclear did not perform the specified preventive maintenance (PM) tasks for the new equipment associated with the turbine driven auxiliary feedwater pump enclosure modification at both units. This problem resulted in a credible impact on safety-related equipment which could have affected the availability and reliability of the auxiliary feedwater system. The failure to properly perform PM tasks for new equipment associated with modification 2EC-3522 as required by Procedure NC.WM-AP.ZZ-0003(Q), Rev 0, "Regular Maintenance Process," was considered to be a noncited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." The issue was determined to be of very low risk significance using the Significance Determination Process phase 1 screening because no actual equipment failures were attributed to the missed PMs. Inspection Report# : 2000009(pdf)

Significance: Feb 07, 2000 Identified By: NRC Item Type: VIO Violation THE CARBON DIOXIDE TESTS FOR THE UNITS 1 & 2 4,160 VAC SWITCHGEAR ROOMS DID NOT

REACH OR MAINTAIN THE REQUIRED CO2 CONCENTRATION OF 50%

PSEG did not ensure that the carbon dioxide concentration tests for the Units 1 & 2 4,160 VAC switchgear rooms reached and maintained the required CO2 concentration of 50%. This is a violation of Unit 1 license condition C.5 and Unit 2 license condition 2.C.10. This finding was determined to be WHITE by the significance determination process. The safety significance of this WHITE finding is low to moderate. During the supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that PSEG had performed a comprehensive evaluation of the failure of the carbon dioxide suppression system to achieve its design concentration. PSEG is currently working to correct carbon dioxide concentrations for the total flooding fire suppression systems, upgrade electrical raceway fire barrier systems, and convert the 4160v switchgear room fire suppression systems from manual to automatic. Based on PSEG's acceptable performance in addressing the switchgear room fire suppression system issue, the White finding associated with this issue will only be consdidered in assessing tplant performance for a total of four quarters in accordance with the guidance in NRC Inspection Manual Chapter 0305. Inspection Report# : 1999010(pdf)



Significance: Feb 07, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THE CO2 SYSTEMS FOR THE UNITS 1 & 2 4,160 VAC ELECTRIC PENETRATION ROOMS REACHED AND MAINTAINED THE REQUIRED CO2 CONCENTRATION The team identified that the carbon dioxide concentration tests for the Units 1 & 2 electrical penetration areas did not reach or maintain the required CO2 concentration of 50%. This failure is a violation of license conditions for each unit. This finding was evaluated by the significance determination process (SDP) and determined to be GREEN based on the other detection and suppression systems available in the area. The safety significance of this finding is very low. Inspection Report# : 1999010(pdf)



Significance: Feb 07, 2000 Identified By: Licensee Item Type: NCV NonCited Violation

PSEG FAILED TO ENSURE THAT ONE TRAIN OF EQUIPMENT NECESSARY TO ACHIEVE HOT SHUTDOWN FORM THE EMERGENCY CONTROL STATION IS FREE OF FIRE DAMAGE

PSEG identified a condition in which they failed to ensure that one train of equipment necessary to achieve hot shutdown from the emergency control station is free of fire damage. This is a non-cited violation of Section III.G.1.a of Appendix R. This issue was evaluated by the SDP and found to be within the licensee's respone band. (GREEN) The safety significance of this finding is very low.

Inspection Report# : 1999010(pdf)



Significance: Feb 07, 2000

Identified By: Licensee Item Type: NCV NonCited Violation

PSEG IDENTIFIED A CONDITION IN WHICH A FIRE COULD DAMAGE CABLES SUCH THAT THE POWER OPERATED RELIEF VALVE WOULD OPEN AND THE ASSOCIATED BLOCK VALVE COULD NOT BE CLOSED.

PSEG identified a condition in which a fire could damage cables such that the power operated relief valve would open and the associated block valve could not be closed. The failure to protect one train of equipment necessary to achieve hot shutdown is a violation of III.G.1.a of Appendix R. This finding was evaluated by the SDP and determined to be GREEN. The safety significance of this finding was very low. Inspection Report# : 1999010(pdf)

G Sep 01, 1999 Significance:

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE ACCEPTANCE CRITERIA IN SURVEILLANCE TEST PROCEDURES

The acceptance criteria in the auxiliary feedwater (AFW) pump surveillance test procedures was inadequate since it did not ensure that the pump performance was capable of meeting accident analysis performance or pump operability criteria found in the Unit 1 and 2 Technical Specifications. This issue was considered potentially significant due to the allowable degraded core cooling capability associated with the established AFW pump minimum performance acceptance criteria. This issue has been entered into PSEG Nuclear's corrective action program (CAP). The issue was considered "green" in the significance determination process since it did not have an immediate impact on AFW system operability as determined by an evaluation of recent pump performance.

Inspection Report# : 1999006(pdf)



Significance: Sep 01, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

MULTIPLE EXAMPLES OF INEFFECTIVE IMPLEMENTATION OF THE CORRECTIVE ACTION PROGRAM

The team identified some instances where PSEG Nuclear did not effectively implement the corrective action program (CAP): 1) A prior performance weakness resulted in a governor control system needle valve setting for the 23 AFW pump turbine that was not optimal for actual operating conditions; 2) During operation of the 23 AFW pump, the team identified that the turbine outboard bearing temperature exhibited an increasing trend, which represented an operability question, and PSEG Nuclear was not aware of this potential problem. Consequently, this problem was not entered into the CAP; and, 3) Other examples of ineffective implementation of the CAP were identified, including deficiencies not promptly entered into the CAP or not adequately corrected. These issues were considered to be significant in that they indicated an overall CAP weakness since problems were noted in not identifying corrective action items and the lack of timeliness and effectiveness of corrective actions. These issues were considered "green" in the significance determination process because they did not have an immediate impact on AFW system operability and were ultimately included in PSEG Nuclear's CAP.

Inspection Report# : 1999006(pdf)



Significance: Sep 01, 1999

Identified By: NRC

Item Type: NCV NonCited Violation

INADEOUATE DESIGN CONTROL CONCERNING REPLACEMENT PARTS FOR POSITIONERS FOR **AFW FLOW CONTROL VAVLES**

The team found that the positioners for the AFW flow control valves had been maintained with parts that were not qualified for use in safety-related applications. This issue was considered significant since the functionality for valves in a risk significant system was being challenged. The qualification issue was considered "green" in the significance determination process because it did not have an immediate impact on AFW system operability based on an engineering evaluation and the issue was being addressed by PSEG Nuclear's CAP. Inspection Report# : 1999006(pdf)



Significance: **G** Jul 11, 1999

Identified By: Licensee

Item Type: FIN Finding **CFCU TRAIN UNAVAILABILITY PERFORMANCE CRITERIA**

PSEG nuclear personnel properly monitored containment fan cooling unit (CFCU) performance for reliability and unavailability. However, while PSEG's recent change in the CFCU train unavailability performance criteria was acceptable, it was not based on an evaluation of all of the appropriate factors. Also, the goals for the diesel generators were weak in that the cause of the associated unavailability was not addressed. This finding was assessed to be green as a reevaluation by PSEG of the CFCU train unavailability performance criteria using more appropriate factors revealed

only a minimal increase in large early release frequency (LERF). Inspection Report# : <u>1999005(pdf)</u>

Significance: **G** Jul 11, 1999

Identified By: NRC Item Type: FIN Finding

INCOMPLETE COMPENSATORY MEASURES FOR DEGRADED EQUIPMENT CONDITIONS

PSEG nuclear operators appropriately assessed three degraded equipment conditions in terms of their impact on the design basis functions of the affected systems. Each of the operability evaluations were completed in a timely manner. However, some of the associated compensatory measures were either incomplete or poorly controlled. This finding was evaluated to be green due to the minor significance of the compensatory measures needed and the absence of NRC requirements in this area.

Inspection Report# : <u>1999005(pdf)</u>

Barrier Integrity



Significance: Dec 29, 2001 Identified By: Licensee Item Type: NCV NonCited Violation FAILURE TO DEVELOP ADEQUATE INSTRUCTIONS TO REPACK THE 2CV49 VALVE AS REQUIRED

BY 10CFR50, APPENDIX B, CRITERION V

10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall prescribed by documented instructions that include appropriate acceptance criteria to determine that important activities have been satisfactorily accomplished. Contrary to the above, PSEG Nuclear determined on September 6, 2001, that the packing data sheet for the 2CV49 valve was incorrect. As a result, valve 2CV49 developed an excessive packing leak that could have resulted in an exposure to the control room operators in excess of the 10 CFR 50, Appendix A, General Design Criteria 19 limits following a postulated LOCA.

Inspection Report# : <u>2001011(pdf</u>)



Significance: Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO ISOLATE THE AFFECTED PENETRATION AS REQUIRED BY TS 3.6.3 SUBSEQUENT TO DISABLING SERVICE WATER VALVES 22SW58 AND 22SW72

Technical Specification 3.6.3, requires, in part, that inoperable containment penetration isolation valves be restored to an operable condition within four hours or the associated penetration shall be isolated. Contrary to the above, PSEG Nuclear disabled two containment isolation valves (22SW58 and 22SW72) on September 23, 2001, but did not isolate the associated penetration within four hours as required by TS 3.6.3. Inspection Report# : 2001011(pdf)

Significance: Feb 27, 2000

Identified By: NRC Item Type: FIN Finding

SMALL UNIDENTIFIED LEAK FROM THE CVCS AT UNIT 2 PERSISTED FOR 3 1/2 HOURS BEFORE IDENTIFICATION AND TERMINATION

A small unidentified leak from the chemical and volume control system at Unit 2 persisted for approximately 3 1/2 hours before operators recognized and terminated the condition. PSEG attributed the delays in recognizing the

condition, in part, to the fact that two other concurrent evolutions were in progress or had just been completed which effectively masked the indications of a leak, namely volume control tank level and plant ventilation radiation levels. The safety and risk significance of this incident was very low because adequate reactor coolant inventory sources remained available throughout the event and offsite release rates remained well below regulatory limits. Inspection Report# : 2000001(pdf)

Emergency Preparedness

Occupational Radiation Safety

📩 Aug 29, 1999 Significance: Identified By: Licensee Item Type: NCV NonCited Violation **INADVERTENT DISCHARGE FROM THE 23 WASTE GAS DECAY TANK TO THE AUXILIARY** BUILDING

PSEG operators inadvertently vented radioactive gas into the Unit 2 auxiliary building. The plant vent and auxiliary building air radiation monitors detected increased radiation levels, which remained well below technical specification limits. Errors by control room and field operators, including failure to follow procedures, contributed to the incident. This event was characterized as a "green" issue since the increased radiation levels in the auxiliary building were well below regulatory limits.

Inspection Report# : 1999007(pdf)

Public Radiation Safety



Significance: Dec 29, 2001

Identified By: Licensee Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN YEAR 2000 CALIBRATION RECORDS FOR CHEMICAL WASTE BASIN MONITOR (R37) AND UNIT 1 CONTAINMENT FAN COOLER-SW DISCHARGE MONITOR (1R13B) Technical Specification Section 6.10.d requires that records of surveillance activities, inspections, and calibrations, required by the TSs, be retained for at least five years. The radiological calibration results for the Chemical Waste Basin Monitor (R37) and the Unit 1 Containment Fan Cooler-Service Water Line Discharge Monitor (1R13B) for the year 2000 were not retrievable. PSEG Nuclear placed this issue into its corrective action system as a Notification Report (Notification 20084063). The finding was determined to be of very low safety significance, because the issue did not impair the ability to assess the public dose, and did not result in exceeding public dose limits listed in Appendix I of 10 CFR 50 or 10 CFR 20.1301(d). The issue was not reportable in the Annual Radiological Effluent Report. Further, PSEG Nuclear produced a work record indicating the calibrations had been properly performed. Inspection Report# : 2001011(pdf)



Cct 10, 1999 Significance: Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO REPORT IN RAD. ENV. OP. REPORTS ACTIONS TO PREVENT RECURRENCE OF RAD.

ENVIR. AIR SAMPLER OUTAGES

PSEG failed to provide complete information in their 1997 and 1998 Annual Radiological Environmental Operating Reports in that these documents did not describe plans to prevent recurrence of multiple environmental air sampler outages. This issue was characterized as a Non-Cited Violation of TS 3.12.1. The safety significance of this issue was very low because it did not significantly compromise PSEG's ability to assess the environmental impact of continued plant operation.

Inspection Report# : <u>1999008(pdf</u>)



Significance: Aug 29, 1999 Identified By: Licensee Item Type: NCV NonCited Violation

INADEQUATELY PERFORMED SURVEILLANCE PROCEDURE

The carbon adsorber (activated charcoal) in the auxiliary building ventilation exhaust system was operated at an air flow in excess of the specified maximum. Operators declared the adsorber inoperable until engineering department personnel assessed the potential impact of this occurrence, which was later determined to be negligible. This issue had low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Insufficient attention to detail by a control room operator had resulted in this incident, which represented a non-cited violation of technical specification 6.8.1. This issue was characterized as a "green" event due to its very low safety significance since the excessive flow rate did not affect the adsorber's ability to filter radioiodine. Inspection flow rate did not affect the adsorber's ability to filter radioiodine. Inspection Report# : 1999007(pdf)

Physical Protection

Significance: G Aug 29, 1999

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO CONDUCT PACKAGE SEARCH IN ACCORDANCE WITH SITE SECURITY PLAN

Security personnel did not properly search a hand-carried package prior to granting it unrestricted access to the site protected area (PA). Specifically, guards permitted a plant worker to bypass the x-ray machine and carry a large bag of moving blankets into the PA without a search of the bag's contents. Later examination of the bag's contents yielded no contraband. This incident was characterized as a "green" issue since no contraband was identified in the package which was not searched.

Inspection Report# : <u>1999007(pdf</u>)

Miscellaneous

Significance: N/A Mar 23, 2001 Identified By: NRC Item Type: FIN Finding PROBLEM IDENTIFICATION AND RESOLUTION PROGRAM INSPECTION

The licensee staff used the notification system appropriately to identify issues needing review for corrective actions. Daily issue review and prioritization meetings focused on safety and minimization of plant risk. Operators reviewed the risk worth of planned work activities. Operability determinations appeared adequate for the reviewed issues. Identified issues were being reviewed for apparent and root causes. Root cause evaluations were conducted to an appropriate depth and provided associated corrective actions. Corrective actions for identified issues were effective, commensurate with the safety significance of the issues, and sensitive to the necessity for reliable equipment performance. The extent of condition and generic applicability for significant conditions adverse to quality were properly considered. The size

of the corrective action backlog and timeliness of corrective action completion, with respect to safety significance, was formally tracked and managed. The licensee had taken actions commensurate with the importance of service water system issues; however, detritus and silt continued to challenge the operators and plant equipment. Self-assessments and audits were self-critical and provided appropriate feedback, including notifications and recommendations. Inspection Report# : 2001004(pdf)

Significance: N/A Nov 11, 2000 Identified By: Licensee Item Type: NCV NonCited Violation FAILURE TO PERFORM A NITROGEN PURGE IN ACCORDANCE WITH PROCEDURES RESULTING IN INCREASED DOSE RATES

Plant procedure IOP-6 specifies that a degassification evolution be performed on the primary coolant during a shutdown, via purging the hydrogen cover gas in the volume control tank with nitrogen. The cover gas in the volume control tank was not purged with nitrogen during shutdown on October 6, 2000, as described in Notification 20042531. This resulted in PSEG Nuclear personnel having to perform a second chemically-induced crud burst, resulting in increased dose rates on various pipes and components located inside the bio-shield. Inspection Report# : 2000009(pdf)

Significance: N/A Apr 18, 2000 Identified By: NRC Item Type: FIN Finding PROBLEM IDENTIFICATION AND RESOLUTION

The licensee was effective at identifying problems. Nevertheless, the team found two instances, involving low significance, where issues were not entered into the corrective action process in a timely manner. The instances did not represent a programmatic trend or concern. The licensee's resolution of problems was adequate. Based on the sample reviewed, items entered into the corrective action program were properly classified and prioritized for resolution. Evaluations and root cause analysis were of good depth and quality. The prescribed corrective actions appeared appropriate to correct the problems and the corrective actions were generally completed in a timely manner. However, there were a few instances where the required evaluations for notifications were untimely or when the prescribed corrective actions, they were similar to previous NRC observations and the licensee's self-assessments of activities involving the corrective action program. In the area of safety conscious work environment (SCWE), plant personnel were familiar with and did not feel reluctant to use the processes that existed for raising safety issues. Inspection Report# : 2000003(*pdf*)

Last modified : December 02, 2002

Initiating Events

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Significance: May 11, 2002 Identified By: Licensee Item Type: NCV NonCited Violation INADEQUATE IMPLEMENTATION OF PROCEDURES CONTROLLING REACTOR COOLANT SYSTEM COOLDOWN RATE

Technical Specification 6.8.1.a requires that written procedures be established, implemented and maintained covering the applicable procedures recommended by Appendix"A" of Regulatory Guide (RG)1.33, Revision2, February1978. RG1.33 requires general plant operating procedures for hot standby to cold shutdown. Salem operations procedure S2.OP-IO.ZZ-0006(Q), "Hot Standby to Cold Shutdown," step 3.6.3 provides precautions and limitations to determine RCS temperature and pressure at least once per 30 minutes with a maximum cooldown rate of 100°F in any one hour. Contrary to the above, PSEG Nuclear inadequately implemented S2.OP-IO.ZZ-0006(Q) and inadequately determined that RCS temperature was within limits with a maximum cooldown of 100°F in any one hour period when the RCS temperature change exceeded the 100°F limit between 0150 and 0219 hours with a maximum temperature drop of 127°F in a one hour period. This issue was placed into PSEG Nuclear's correction action program as notification 20095802.

Inspection Report# : 2002004(pdf)



Significance: Feb 09, 2002 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO FOLLOW PROCEDURES AND PERFORM AN A

FAILURE TO FOLLOW PROCEDURES AND PERFORM AN ADEQUATE POST-TRIP REVIEW FOLLOWING THE PRESSURIZER SPRAY VALVE FAILURE, REACTOR TRIP AND SAFETY INJECTION EVENT

Operating procedures did not provide adequate guidance to operators during their response to a stuck open pressurizer spray valve event that resulted in an automatic reactor trip and safety injection. The instructions which existed regarding the valve, including stopping reactor coolant pumps and isolating control air, conflicted with actions needed to address the event. However, PSEG Nuclear did not identify the procedural deficiencies during the post-trip review of the event as specified by the post-trip review procedure. The failure to identify and evaluate these procedural deficiencies was a non-cited violation. This finding was evaluated using the SDP and determined to be of very low risk significance, because the procedural deficiencies did not prevent the operators from controlling plant pressure during the event. Inspection Report# : 2001012(pdf)

Mitigating Systems



Significance: Dec 28, 2002 Identified By: NRC Item Type: NCV NonCited Violation

PSEG FAILED TO MAINTAIN COMPLETE AND ADEQUATE MAINTENANCE RECORDS

A non-cited violation of Technical Specification 6.10.1 b was identified for failure to maintain quality records of principal maintenance activities performed on the 1PR2 valve and on the 22 containment fan cooling unit. This finding was similar to a non-cited violation identified in Inspection Report 2001-12 and indicated that previous actions to correct this problem had not been effective. This finding was greater than minor since it impacted the inspectors ability to independently assess the condition of these components following maintenance activities. This finding was of very low significance because the components performed properly during the post-maintenance testing. Inspection Report# : 2002009(pdf)



Significance: Dec 28, 2002 Identified By: NRC Item Type: NCV NonCited Violation SHUTDOWN COOLING LOOP INOPERABLE AND LESS THAN 3 FEET OF WATER ABOVE THE FUEL A non-cited violation of Technical Specification 6.8.1 was identified for failure to establish and implement adequate procedures prior to the removal of the 11 CC pump room cooler fan from service for maintenance. This finding was greater than minor since it resulted in a condition

where the two operable residual heat removal systems were not available when the reactor cavity water level was less than twenty-three feet above the top of the fuel as required by TS 3.9.8.2. The finding was evaluated by Regional and NRR Senior Reactor Analysts and determined to be of very low significance since the 11 CC pump remained functional during the period of time when the fan was out of service without the necessary compensatory measures.

Inspection Report# : 2002009(pdf)

Significance: Sep 30, 2002

Identified By: NRC Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO PROPERLY MAINTAIN ROOM ISOLATION BARRIERS AND IMPROPERLY IMPLEMENTED A MODIFICATION TO THE SWITCHGEAR PENETRATION AREA VENTILATION SYSTEM

An unresolved item was identified in Inspection Report 2002-07 for failure to properly maintain the automatic fire suppression system in six safety-related electrical areas as required by the fire protection program. The item remained unresolved to complete the risk assessment. A noncited violation was identified in this report for failure to maintain the fire protection program as discussed above as required by License Conditions 2.C.5 (Unit 1) and 2.C.10 (Unit 2). The finding adversely impacted fire suppression equipment capability, affecting the reactor safety mitigating system cornerstone objectives, and therefore was greater than minor. The finding was determined to be of very low significance due to the multiple trains of mitigating systems which would survive postulated fire events.

Inspection Report# : 2002007(pdf) Inspection Report# : 2002009(pdf)



Significance: Sep 30, 2002 Identified By: NRC Item Type: NCV NonCited Violation

PSEG FAILED TO TAKE ADEQUATE CORRECTIVE ACTIONS FOR A 2001 DILUTION EVENT ON THE UNIT 2 SAT AND FAILED TO PRECLUDE REPEATING THE EVENT ON UNIT 1 SAT

PSEG Nuclear failed to identify the adverse consequences associated with a Unit 1 containment spray additive tank (SAT) increasing level trend that occurred over a several month period. This resulted in dilution of the Unit 1 SAT sodium hydroxide (NaOH) below the TS required minimum concentration value. The inspectors determined that the failure to take adequate corrective actions to preclude repetition of a significant condition adverse to quality constituted a violation of 10 CFR 50 Appendix B, Criterion XVI. Specifically, PSEG Nuclear failed to take adequate corrective actions for a 2001 dilution event on the Unit 2 SAT and failed to preclude repeating the event on the Unit 1 SAT. The risk significance of this finding was very low because the tank concentration was below the TS limit, but was above the minimum calculated NaOH concentration of 28 percent required for the SAT to perform its accident mitigation function. This very low risk violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy

Inspection Report# : 2002007(pdf)



Significance: Jun 29, 2002

Identified By: NRC Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO ADEQUATELY EVALUATE PREVENTIVE MAINTENANCE ACTIVITIES

A violation of 10 CFR 50.65(a)(3) dispositioned as a non-cited violation was identified because PSEG Nuclear failed to ensure that the objective of preventing failures through maintenance was appropriately balanced against the objective of minimizing unavailability due to monitoring or preventive maintenance. PSEG Nuclear failed to adequately evaluate PM activities for the 22 charging pump, failed to take into account industry-wide operating experience, and failed to ensure that the objective of preventing failure of the 22 CVC pump through maintenance was appropriately balanced against the goal of minimizing unavailability due to preventive maintenance. The cross-cutting aspects of this issue related to problem identification and resolution contributing causes were discussed in NRC Inspection Report 50-272 & 311-2001-012. The risk associated with the failure of the 22 charging pump was determined to be of very low safety significance because the mitigating functions that relied upon a high pressure injection pump were not lost since the redundant high pressure injection pump and both safety injection pumps remained operable during the period of time that the 22 CVC pump was unavailable. Inspection Report# : 2002006(pdf)



Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO DOCUMENT AND MAINTAIN QUALITY RECORDS OF EMERGENT TROUBLESHOOTING AND MAINTENANCE ACTIVITIES ON THE CONTROL CIRCUITRY FOR THE 1B EDG

PSEG Nuclear maintenance failed to document and maintain records of emergent troubleshooting and maintenance activities on the control circuitry for the 1B EDG. PSEG Nuclear also failed to maintain records of a September 2000 internal inspection of the 12 charging pump speed

increaser. These two examples of PSEG Nuclear's failure to maintain complete and adequate inspection and maintenance records were a noncited violation of Technical Specification 6.10.1.b and 10 CFR 50, Appendix B, Criterion XVII, Quality Assurance Records. The findings were evaluated using the significance determination process (SDP) and considered to be of very low risk significance because the failure to maintain the records did not affect the availability of the mitigating systems.

Inspection Report# : 2001012(pdf)

Significance: Feb 09, 2002

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT PROMPT CORRECTIVE ACTIONS FOR A DEGRADED 2C EDG CYLINDER ISOLATION VALVE

PSEG Nuclear failed to promptly identify and correct a condition adverse to quality involving a degraded cylinder isolation valve (petcock) which was not functioning properly during corrective maintenance on the 2C EDG. During a subsequent test of the 2C EDG, flames were observed to be coming out of the cylinder 5R petcock, and the CO2 automatic fire suppression system actuated before the operators completed the EDG shutdown. The failure to identify and correct the degraded cylinder isolation valve was considered a non-cited violation of 10 CFR 50, Appendix XVI, Corrective Actions. The finding was evaluated using the SDP and considered to be of very low risk significance, because the emergency diesel generator unavailability time associated with this event was within the Technical Specification allowed outage time. Inspection Report# : 2001012(pdf)

Barrier Integrity



Identified By: NRC

Item Type: NCV NonCited Violation PSEG FAILED TO IMPLEMENT PROMP AND EFFECTIVE CORRECTIVE ACTIONS SUBSEQUENT TO A JANUARY 2001 SURVEILLANCE TEST

PSEG Nuclear failed to implement effective corrective actions subsequent to January 2001 surveillance testing that indicated that the Unit 1 auxiliary building ventilation (ABV) system charcoal adsorber bank was degraded. The charcoal bank failed the next scheduled test conducted in August 2002 and placed the unit into a twenty-four hour shutdown action statement. This finding was evaluated using the Phase 1 SDP worksheet and determined to be of very low risk significance (Green), because the problem only affected the radiological barrier function of the auxiliary building. Additionally the test results indicated that the charcoal performance would have met the design analysis assumptions. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy The charcoal bank failed the next scheduled test conducted in August 2002 and placed the unit into a twenty-four hour shutdown action statement. This finding was evaluated using the Phase 1 SDP worksheet and determined to be of very low risk significance (Green), because the problem only affected the next scheduled test conducted in August 2002 and placed the unit into a twenty-four hour shutdown action statement. This finding was evaluated using the Phase 1 SDP worksheet and determined to be of very low risk significance (Green), because the problem only affected the radiological barrier function of the auxiliary building. Additionally the test results indicated that the charcoal performance would have met the design analysis assumptions. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy Inspection program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy Inspection Report# :



Significance: Sep 30, 2002

Identified By: NRC Item Type: NCV NonCited Violation

PSEG FAILED TO PROMPTLY IDENTIFY AND CORRECT THE CAUSE FOR AN IMPROPER AIRFLOW CONDITION THAT DEGRADED THE RADIOACTIVE REMOVAL CAPABILITY OF THE ABV SYSTEM

PSEG Nuclear failed to properly evaluate and correct a degraded ABV system condition that adversely affected the radiological barrier function of the system. Specifically, the inspectors identified that airflow was out of the residual heat removal room and into the auxiliary building stairwell. This provided a pathway for radioactive effluents to bypass the auxiliary building ventilation charcoal filters. The inspectors reviewed the SDP Phase 1 screening worksheet and noted that findings that adversely affect the radiological barrier function of the auxiliary building are of very low risk significance. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20116935 and is being treated as a non-cited violation consistent with the NRC's enforcement policy Inspection Report# : 2002007(pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Miscellaneous

Last modified : March 25, 2003

Salem 2 1Q/2003 Plant Inspection Findings

Initiating Events

Significance: Mar 29, 2003 Identified By: NRC Item Type: FIN Finding SALEM UNITS 1 AND 2 CONTROL AIR TRANSIENT

A self-revealing finding occurred when Salem Units 1 and 2 experienced a control air transient. Equipment anomalies during the transient revealed a valve configuration problem, an incomplete control air preventive maintenance item, and inadequate corrective action for a significant air leak. This finding was not a violation of NRC requirements, in that the performance deficiencies occurred on non-safety related systems. The finding had an actual impact on plant stability and operator actions were necessary to reseat a reactor coolant system letdown line relief valve. This finding screened to Green in phase 1 of the SDP, because mitigation equipment was not affected by the control air transient. Inspection Report# : 2003003(pdf)

Mitigating Systems



Significance: Mar 29, 2003 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO PROPERLY EVALUATE AUXILIARY FEEDWATER PUMP SKID The inspectors identified that temporary modifications to the 22 auxiliary feedwater (AFW)

The inspectors identified that temporary modifications to the 22 auxiliary feedwater (AFW) pump and the 13 AFW pump skids were not properly evaluated. This NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control" was greater than minor, because it affected the mitigating system cornerstone and the reliability of two AFW pumps. This finding was determined to be of very low safety significance, because pump shaft leakoff conditions were such that the unauthorized modifications had not impacted pump operation.

Inspection Report# : 2003003(pdf)



Significance: Mar 29, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

EMERGENCY DIESEL GENERATOR DEFICIENT CORRECTIVE ACTIONS

A self-revealing finding was identified when the 1B emergency diesel generator (EDG) tripped during postmaintenance testing (PMT). The PMT was for separate test reasons and fortuitously revealed the EDG deficiency. The EDG deficiency involved a known electrical connector problem and inadequate interim corrective actions. This NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," is greater than minor, because it affected the mitigating systems cornerstone of equipment reliability. This finding was of very low significance, because the inadequate interim corrective actions did not cause any EDG to be inoperable for greater than the TS allowed outage time. Inspection Report# : 2003003(pdf)



Significance: Mar 28, 2003 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO IMPLEMENT CORRECTIVE ACTIONS

The team identified a non-cited violation involving two examples where PSEG failed to correct conditions adverse to quality as required by 10 CFR 50, Appendix B Criterion XVI, Corrective Actions. Specifically, PSEG failed to evaluate and correct an adverse condition involving the protection of wires located inside of control room panels from an over-current condition, and also failed to correct an adverse condition involving a degraded component cooling water system pipe support. These findings were evaluated using the Phase 1 worksheet of the significance determination process and found to be of very low significance (Green) since they did not result in the actual loss of a mitigating system.

Inspection Report# : 2003004(pdf)



Significance: Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

PSEG FAILED TO MAINTAIN COMPLETE AND ADEQUATE MAINTENANCE RECORDS A non-cited violation of Technical Specification 6.10.1.b was identified for failure to maintain quality records of principal maintenance activities performed on the 1PR2 valve and on the 22 containment fan cooling unit. This finding was similar to a non-cited violation identified in Inspection Report 2001-12 and indicated that previous actions to correct this problem had not been effective. This finding was greater than minor since it impacted the inspectors ability to independently assess the condition of these components following maintenance activities. This finding was of very low significance because the components performed properly during the post-maintenance testing. Inspection Report# : 2002009(pdf)



Significance: Dec 28, 2002

Identified By: NRC Item Type: NCV NonCited Violation

SHUTDOWN COOLING LOOP INOPERABLE AND LESS THAN 3 FEET OF WATER ABOVE THE FUEL A non-cited violation of Technical Specification 6.8.1 was identified for failure to establish and implement adequate procedures prior to the removal of the 11 CC pump room cooler fan from service for maintenance. This finding was greater than minor since it resulted in a condition where the two operable residual heat removal systems were not available when the reactor cavity water level was less than twenty-three feet above the top of the fuel as required by TS 3.9.8.2. The finding was evaluated by Regional and NRR Senior Reactor Analysts and determined to be of very low significance since the 11 CC pump remained functional during the period of time when the fan was out of service without the necessary compensatory measures.

Inspection Report# : 2002009(pdf)

Significance: Sep 30, 2002 Identified By: NRC Item Type: NCV NonCited Violation PSEG NUCLEAR FAILED TO PROPERLY MAINTAIN ROOM ISOLATION BARRIERS AND

IMPROPERLY IMPLEMENTED A MODIFICATION TO THE SWITCHGEAR PENETRATION AREA VENTILATION SYSTEM

An unresolved item was identified in Inspection Report 2002-07 for failure to properly maintain the automatic fire suppression system in six safety-related electrical areas as required by the fire protection program. The item remained unresolved to complete the risk assessment. A non-cited violation was identified in this report for failure to maintain the fire protection program as discussed above as required by License Conditions 2.C.5 (Unit 1) and 2.C.10 (Unit 2). The finding adversely impacted fire suppression equipment capability, affecting the reactor safety mitigating system cornerstone objectives, and therefore was greater than minor. The finding was determined to be of very low significance due to the multiple trains of mitigating systems which would survive postulated fire events.

Inspection Report# : <u>2002007(*pdf*</u>) Inspection Report# : <u>2002009(*pdf*</u>)



Significance: Sep 30, 2002

Identified By: NRC Item Type: NCV NonCited Violation

PSEG FAILED TO TAKE ADEQUATE CORRECTIVE ACTIONS FOR A 2001 DILUTION EVENT ON THE UNIT 2 SAT AND FAILED TO PRECLUDE REPEATING THE EVENT ON UNIT 1 SAT

PSEG Nuclear failed to identify the adverse consequences associated with a Unit 1 containment spray additive tank (SAT) increasing level trend that occurred over a several month period. This resulted in dilution of the Unit 1 SAT sodium hydroxide (NaOH) below the TS required minimum concentration value. The inspectors determined that the failure to take adequate corrective actions to preclude repetition of a significant condition adverse to quality constituted a violation of 10 CFR 50 Appendix B, Criterion XVI. Specifically, PSEG Nuclear failed to take adequate corrective actions for a 2001 dilution event on the Unit 2 SAT and failed to preclude repeating the event on the Unit 1 SAT. The risk significance of this finding was very low because the tank concentration was below the TS limit, but was above the minimum calculated NaOH concentration of 28 percent required for the SAT to perform its accident mitigation function. This very low risk violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy Inspection Report# : 2002007(pdf)

Significance: Jun 29, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO ADEQUATELY EVALUATE PREVENTIVE MAINTENANCE ACTIVITIES A violation of 10 CFR 50.65(a)(3) dispositioned as a non-cited violation was identified because PSEG Nuclear failed to ensure that the objective of preventing failures through maintenance was appropriately balanced against the objective of minimizing unavailability due to monitoring or preventive maintenance. PSEG Nuclear failed to adequately evaluate PM activities for the 22 charging pump, failed to take into account industry-wide operating experience, and failed to ensure that the objective of preventing failure of the 22 CVC pump through maintenance was appropriately balanced against the goal of minimizing unavailability due to preventive maintenance. The cross-cutting aspects of this issue related to problem identification and resolution contributing causes were discussed in NRC Inspection Report 50-272 & 311-2001-012. The risk associated with the failure of the 22 charging pump was determined to be of very low safety significance because the mitigating functions that relied upon a high pressure injection pump were not lost since the redundant high pressure injection pump and both safety injection pumps remained operable during the period of time that the 22 CVC pump was unavailable.

Inspection Report# : 2002006(pdf)

Barrier Integrity



Item Type: NCV NonCited Violation PSEG FAILED TO IMPLEMENT PROMP AND EFFECTIVE CORRECTIVE ACTIONS SUBSEQUENT TO A JANUARY 2001 SURVEILLANCE TEST

PSEG Nuclear failed to implement effective corrective actions subsequent to January 2001 surveillance testing that indicated that the Unit 1 auxiliary building ventilation (ABV) system charcoal adsorber bank was degraded. The charcoal bank failed the next scheduled test conducted in August 2002 and placed the unit into a twenty-four hour shutdown action statement. This finding was evaluated using the Phase 1 SDP worksheet and determined to be of very low risk significance (Green), because the problem only affected the radiological barrier function of the auxiliary building. Additionally the test results indicated that the charcoal performance would have met the design analysis assumptions. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy The charcoal bank failed the next scheduled test conducted in August 2002 and placed the unit into a twenty-four hour shutdown action statement. This finding was evaluated using the Phase 1 SDP worksheet and determined to be of very low risk significance (Green), because the problem only affected the radiological barrier function of the auxiliary building. Additionally the test results indicated that the charcoal performance would have met the design analysis assumptions. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program shutdown action statement. This finding was evaluated using the Phase 1 SDP worksheet and determined to be of very low risk significance (Green), because the problem only affected the radiological barrier function of the auxiliary building. Additionally the test results indicated that the charcoal performance would have met the design analysis assumptions. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consisten



Significance: Sep 30, 2002 Identified By: NRC Item Type: NCV NonCited Violation PSEG FAILED TO PROMPTLY IDENTIFY AND CORRECT THE CAUSE FOR AN IMPROPER AIRFLOW CONDITION THAT DEGRADED THE RADIOACTIVE REMOVAL CAPABILITY OF THE ABV SYSTEM

PSEG Nuclear failed to properly evaluate and correct a degraded ABV system condition that adversely affected the radiological barrier function of the system. Specifically, the inspectors identified that airflow was out of the residual heat removal room and into the auxiliary building stairwell. This provided a pathway for radioactive effluents to bypass the auxiliary building ventilation charcoal filters. The inspectors reviewed the SDP Phase 1 screening worksheet and noted that findings that adversely affect the radiological barrier function of the auxiliary building are of very low risk significance. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20116935 and is being treated as a non-cited violation consistent with the NRC's enforcement policy Inspection Report# : 2002007(pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Miscellaneous

Last modified : May 30, 2003

Salem 2 2Q/2003 Plant Inspection Findings

Initiating Events

Significance: ^G Jun 28, 2003 Identified By: Self Disclosing Item Type: NCV NonCited Violation SURVEILLANCE PROCEDURE FOR TESTING A PRESSURIZER SPRAY VALVE (2PS3) WHILE AT POWER WAS NOT FOLLOWED

A self-revealing finding identified a non-cited violation of Technical Specification 6.8.1 because a surveillance procedure for testing a pressurizer spray valve (2PS3)while at power was not followed. This resulted in the inadvertent initiation of continuous spray to the pressurizer. Equipment operators misunderstood the task instructions and prematurely unisolated 2PS3. Control room operators were ineffective in receiving communications from the field and did not question actions inconsistent with the pre-job brief. This finding is greater than minor because it had an actual impact on reactor coolant system pressure and operator manual actions were necessary to avert a reactor plant trip. The finding is of very low safety significance because mitigation systems were unaffected by the operator errors. Inspection Report# : 2003005(pdf)

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G Mar 29, 2003

Significance: Mar 29, 200 Identified By: Self Disclosing

Item Type: FIN Finding

SALEM UNITS 1 AND 2 CONTROL AIR TRANSIENT

A self-revealing finding occurred when Salem Units 1 and 2 experienced a control air transient. Equipment anomalies during the transient revealed a valve configuration problem, an incomplete control air preventive maintenance item, and inadequate corrective action for a significant air leak. This finding was not a violation of NRC requirements, in that the performance deficiencies occurred on non-safety related systems. The finding had an actual impact on plant stability and operator actions were necessary to reseat a reactor coolant system letdown line relief valve. This finding screened to Green in phase 1 of the SDP, because mitigation equipment was not affected by the control air transient. Inspection Report# : 2003003(pdf)

Mitigating Systems

Significance: Mar 29, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROPERLY EVALUATE AUXILIARY FEEDWATER PUMP SKID

The inspectors identified that temporary modifications to the 22 auxiliary feedwater (AFW) pump and the 13 AFW pump skids were not properly evaluated. This NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control" was greater than minor, because it affected the mitigating system cornerstone and the reliability of two AFW pumps. This

finding was determined to be of very low safety significance, because pump shaft leakoff conditions were such that the unauthorized modifications had not impacted pump operation. Inspection Report# : 2003003(pdf)

Significance: Mar 29, 2003

Identified By: Self Disclosing Item Type: NCV NonCited Violation

EMERGENCY DIESEL GENERATOR DEFICIENT CORRECTIVE ACTIONS

A self-revealing finding was identified when the 1B emergency diesel generator (EDG) tripped during postmaintenance testing (PMT). The PMT was for separate test reasons and fortuitously revealed the EDG deficiency. The EDG deficiency involved a known electrical connector problem and inadequate interim corrective actions. This NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," is greater than minor, because it affected the mitigating systems cornerstone of equipment reliability. This finding was of very low significance, because the inadequate interim corrective actions did not cause any EDG to be inoperable for greater than the TS allowed outage time.

Inspection Report# : 2003003(pdf)



Significance: Mar 28, 2003

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT CORRECTIVE ACTIONS

The team identified a non-cited violation involving two examples where PSEG failed to correct conditions adverse to quality as required by 10 CFR 50, Appendix B Criterion XVI, Corrective Actions. Specifically, PSEG failed to evaluate and correct an adverse condition involving the protection of wires located inside of control room panels from an over-current condition, and also failed to correct an adverse condition involving a degraded component cooling water system pipe support. These findings were evaluated using the Phase 1 worksheet of the significance determination process and found to be of very low significance (Green) since they did not result in the actual loss of a mitigating system.

Inspection Report# : 2003004(pdf)



Significance: Dec 28, 2002

Identified By: NRC Item Type: NCV NonCited Violation

PSEG FAILED TO MAINTAIN COMPLETE AND ADEQUATE MAINTENANCE RECORDS

A non-cited violation of Technical Specification 6.10.1.b was identified for failure to maintain quality records of principal maintenance activities performed on the 1PR2 valve and on the 22 containment fan cooling unit. This finding was similar to a non-cited violation identified in Inspection Report 2001-12 and indicated that previous actions to correct this problem had not been effective. This finding was greater than minor since it impacted the inspectors ability to independently assess the condition of these components following maintenance activities. This finding was of very low significance because the components performed properly during the post-maintenance testing. Inspection Report# : 2002009(pdf)



SHUTDOWN COOLING LOOP INOPERABLE AND LESS THAN 3 FEET OF WATER ABOVE THE FUEL

A non-cited violation of Technical Specification 6.8.1 was identified for failure to establish and implement adequate procedures prior to the removal of the 11 CC pump room cooler fan from service for maintenance. This finding was greater than minor since it resulted in a condition where the two operable residual heat removal systems were not available when the reactor cavity water level was less than twenty-three feet above the top of the fuel as required by TS 3.9.8.2. The finding was evaluated by Regional and NRR Senior Reactor Analysts and determined to be of very low significance since the 11 CC pump remained functional during the period of time when the fan was out of service without the necessary compensatory measures.

Inspection Report# : 2002009(pdf)



Significance: Sep 30, 2002 Identified By: NRC

Item Type: NCV NonCited Violation

PSEG NUCLEAR FAILED TO PROPERLY MAINTAIN ROOM ISOLATION BARRIERS AND **IMPROPERLY IMPLEMENTED A MODIFICATION TO THE SWITCHGEAR PENETRATION AREA VENTILATION SYSTEM**

An unresolved item was identified in Inspection Report 2002-07 for failure to properly maintain the automatic fire suppression system in six safety-related electrical areas as required by the fire protection program. The item remained unresolved to complete the risk assessment. A non-cited violation was identified in this report for failure to maintain the fire protection program as discussed above as required by License Conditions 2.C.5 (Unit 1) and 2.C.10 (Unit 2). The finding adversely impacted fire suppression equipment capability, affecting the reactor safety mitigating system cornerstone objectives, and therefore was greater than minor. The finding was determined to be of very low significance due to the multiple trains of mitigating systems which would survive postulated fire events. Inspection Report# : 2002007(pdf)

Inspection Report# : 2002009(pdf)



Significance: Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

PSEG FAILED TO TAKE ADEQUATE CORRECTIVE ACTIONS FOR A 2001 DILUTION EVENT ON THE **UNIT 2 SAT AND FAILED TO PRECLUDE REPEATING THE EVENT ON UNIT 1 SAT**

PSEG Nuclear failed to identify the adverse consequences associated with a Unit 1 containment spray additive tank (SAT) increasing level trend that occurred over a several month period. This resulted in dilution of the Unit 1 SAT sodium hydroxide (NaOH) below the TS required minimum concentration value. The inspectors determined that the failure to take adequate corrective actions to preclude repetition of a significant condition adverse to quality constituted a violation of 10 CFR 50 Appendix B, Criterion XVI. Specifically, PSEG Nuclear failed to take adequate corrective actions for a 2001 dilution event on the Unit 2 SAT and failed to preclude repeating the event on the Unit 1 SAT. The risk significance of this finding was very low because the tank concentration was below the TS limit, but was above the minimum calculated NaOH concentration of 28 percent required for the SAT to perform its accident mitigation function. This very low risk violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy Inspection Report# : 2002007(pdf)

Barrier Integrity


Identified By: NRC Item Type: NCV NonCited Violation PSEG FAILED TO IMPLEMENT PROMP AND EFFECTIVE CORRECTIVE ACTIONS SUBSEQUENT TO A JANUARY 2001 SURVEILLANCE TEST

PSEG Nuclear failed to implement effective corrective actions subsequent to January 2001 surveillance testing that indicated that the Unit 1 auxiliary building ventilation (ABV) system charcoal adsorber bank was degraded. The charcoal bank failed the next scheduled test conducted in August 2002 and placed the unit into a twenty-four hour shutdown action statement. This finding was evaluated using the Phase 1 SDP worksheet and determined to be of very low risk significance (Green), because the problem only affected the radiological barrier function of the auxiliary building. Additionally the test results indicated that the charcoal performance would have met the design analysis assumptions. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy The charcoal bank failed the next scheduled test conducted in August 2002 and placed the unit into a twenty-four hour shutdown action statement. This finding was evaluated using the Phase 1 SDP worksheet and determined to be of very low risk significance (Green), because the problem only affected the radiological barrier function of the auxiliary building. Additionally the test results indicated that the charcoal performance would have met the design analysis assumptions. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program so notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20101881 and is being treated as a non-cited violation consistent with the NRC's enforcement policy Inspec



Significance: Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

PSEG FAILED TO PROMPTLY IDENTIFY AND CORRECT THE CAUSE FOR AN IMPROPER AIRFLOW CONDITION THAT DEGRADED THE RADIOACTIVE REMOVAL CAPABILITY OF THE ABV SYSTEM

PSEG Nuclear failed to properly evaluate and correct a degraded ABV system condition that adversely affected the radiological barrier function of the system. Specifically, the inspectors identified that airflow was out of the residual heat removal room and into the auxiliary building stairwell. This provided a pathway for radioactive effluents to bypass the auxiliary building ventilation charcoal filters. The inspectors reviewed the SDP Phase 1 screening worksheet and noted that findings that adversely affect the radiological barrier function of the auxiliary building are of very low risk significance. This very low risk significance violation has been entered into PSEG Nuclear's corrective action program as notification 20116935 and is being treated as a non-cited violation consistent with the NRC's enforcement policy Inspection Report# : 2002007(pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Miscellaneous

Significance: N/A Mar 28, 2003 Identified By: NRC Item Type: FIN Finding PI&R BIENNIAL SUMMARY CONCLUSION

The team determined that PSEG was generally effective at identifying discrepant conditions and entering them into the corrective action system. However, the findings identified by this team supported the conclusion in the Annual Assessment Letter (NRC Inspection Report 50-272, 311/2003-01) of the existence of a substantive cross cutting issue in the area of problem identification and resolution. The team identified four examples where conditions adverse to quality were not entered into the corrective action system. The team determined that PSEG was generally effective at classifying and performing operability evaluations for discrepant conditions, however, some examples were noted where problem evaluations did not contain sufficient detail to support the conclusions. The team identified a finding with two examples where PSEG failed to correct conditions adverse to quality. The team noted that PSEG performed a root cause evaluation to indentify areas to improve the corrective action program. The team was not able to assess the effectiveness of this effort since the corrective actions had not been completed. On the basis of interviews conducted during the inspection, workers at the site felt free to input safety findings into the corrective action program. Inspection Report# : 2003004(pdf)

Last modified : September 04, 2003

Salem 2 3Q/2003 Plant Inspection Findings

Initiating Events

Significance: ^G Jun 28, 2003 Identified By: Self Disclosing Item Type: NCV NonCited Violation SURVEILLANCE PROCEDURE FOR TESTING A PRESSURIZER SPRAY VALVE (2PS3) WHILE AT POWER WAS NOT FOLLOWED

A self-revealing finding identified a non-cited violation of Technical Specification 6.8.1 because a surveillance procedure for testing a pressurizer spray valve (2PS3)while at power was not followed. This resulted in the inadvertent initiation of continuous spray to the pressurizer. Equipment operators misunderstood the task instructions and prematurely unisolated 2PS3. Control room operators were ineffective in receiving communications from the field and did not question actions inconsistent with the pre-job brief.

This finding is greater than minor because it had an actual impact on reactor coolant system pressure and operator manual actions were necessary to avert a reactor plant trip. The finding is of very low safety significance because mitigation systems were unaffected by the operator errors. Inspection Report# : 2003005(pdf)



Significance: Mar 29, 2003 Identified By: Self Disclosing Item Type: FIN Finding SALEM UNITS 1 AND 2 CONTROL AIR TRANSIENT A self-revealing finding occurred when Salem Units 1 and 2 a

A self-revealing finding occurred when Salem Units 1 and 2 experienced a control air transient. Equipment anomalies during the transient revealed a valve configuration problem, an incomplete control air preventive maintenance item, and inadequate corrective action for a significant air leak.

This finding was not a violation of NRC requirements, in that the performance deficiencies occurred on non-safety related systems. The finding had an actual impact on plant stability and operator actions were necessary to reseat a reactor coolant system letdown line relief valve. This finding screened to Green in phase 1 of the SDP, because mitigation equipment was not affected by the control air transient. Inspection Report# : 2003003(pdf)

Mitigating Systems

Significance: Mar 29, 2003 Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PROPERLY EVALUATE AUXILIARY FEEDWATER PUMP SKID

The inspectors identified that temporary modifications to the 22 auxiliary feedwater (AFW) pump and the 13 AFW pump skids were not properly evaluated.

This NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control" was greater than minor, because it affected the mitigating system cornerstone and the reliability of two AFW pumps. This finding was determined to be of very low safety significance, because pump shaft leakoff conditions were such that the unauthorized modifications had not impacted pump operation.

Inspection Report# : 2003003(pdf)



Identified By: Self Disclosing Item Type: NCV NonCited Violation **EMERGENCY DIESEL GENERATOR DEFICIENT CORRECTIVE ACTIONS**

A self-revealing finding was identified when the 1B emergency diesel generator (EDG) tripped during postmaintenance testing (PMT). The PMT was for separate test reasons and fortuitously revealed the EDG deficiency. The EDG deficiency involved a known electrical connector problem and inadequate interim corrective actions.

This NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," is greater than minor, because it affected the mitigating systems cornerstone of equipment reliability. This finding was of very low significance, because the inadequate interim corrective actions did not cause any EDG to be inoperable for greater than the TS allowed outage time.

Inspection Report# : 2003003(pdf)



Significance: Mar 28, 2003 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO IMPLEMENT CORRECTIVE ACTIONS

The team identified a non-cited violation involving two examples where PSEG failed to correct conditions adverse to quality as required by 10 CFR 50, Appendix B Criterion XVI, Corrective Actions. Specifically, PSEG failed to evaluate and correct an adverse condition involving the protection of wires located inside of control room panels from an over-current condition, and also failed to correct an adverse condition involving a degraded component cooling water system pipe support. These findings were evaluated using the Phase 1 worksheet of the significance determination process and found to be of very low significance (Green) since they did not result in the actual loss of a mitigating system.

Inspection Report# : 2003004(pdf)



Significance: Dec 28, 2002 Identified By: NRC

Item Type: NCV NonCited Violation

PSEG FAILED TO MAINTAIN COMPLETE AND ADEQUATE MAINTENANCE RECORDS

A non-cited violation of Technical Specification 6.10.1.b was identified for failure to maintain quality records of principal maintenance activities performed on the 1PR2 valve and on the 22 containment fan cooling unit. This finding was similar to a non-cited violation identified in Inspection Report 2001-12 and indicated that previous actions to correct this problem had not been effective.

This finding was greater than minor since it impacted the inspectors ability to independently assess the condition of

these components following maintenance activities. This finding was of very low significance because the components performed properly during the post-maintenance testing. Inspection Report# : 2002009(pdf)

G Dec 28, 2002 Significance: Identified By: NRC Item Type: NCV NonCited Violation SHUTDOWN COOLING LOOP INOPERABLE AND LESS THAN 3 FEET OF WATER ABOVE THE FUEL A non-cited violation of Technical Specification 6.8.1 was identified for failure to establish and implement adequate procedures prior to the removal of the 11 CC pump room cooler fan from service for maintenance.

This finding was greater than minor since it resulted in a condition where the two operable residual heat removal systems were not available when the reactor cavity water level was less than twenty-three feet above the top of the fuel as required by TS 3.9.8.2. The finding was evaluated by Regional and NRR Senior Reactor Analysts and determined to be of very low significance since the 11 CC pump remained functional during the period of time when the fan was out of service without the necessary compensatory measures. Inspection Report# : 2002009(pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Miscellaneous

Significance: N/A Mar 28, 2003 Identified By: NRC Item Type: FIN Finding **PI&R BIENNIAL SUMMARY CONCLUSION** The team determined that PSEG was generally effective at identifying discrepant conditions and entering them into the corrective action system. However, the findings identified by this team supported the conclusion in the Annual Assessment Letter (NRC Inspection Report 50-272, 311/2003-01) of the existence of a substantive cross cutting issue in the area of problem identification and resolution. The team identified four examples where conditions adverse to quality were not entered into the corrective action system. The team determined that PSEG was generally effective at classifying and performing operability evaluations for discrepant conditions, however, some examples were noted where problem evaluations did not contain sufficient detail to support the conclusions. The team identified a finding with two examples where PSEG failed to correct conditions adverse to quality. The team noted that PSEG performed a root cause evaluation to indentify areas to improve the corrective action program. The team was not able to assess the effectiveness of this effort since the corrective actions had not been completed. On the basis of interviews conducted during the inspection, workers at the site felt free to input safety findings into the corrective action program. Inspection Report# : 2003004(pdf)

Last modified : December 01, 2003

Salem 2 4Q/2003 Plant Inspection Findings

Initiating Events

Significance: Dec 27, 2003 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO PROMPTLY CORRECT A CONTROL ROD POWER SUPPLY DEFICIENCY Deferral of vendor recommended design changes (fuse uprating) on the control drive mechanisms led to a November 23, 2003, manual reactor trip due to a dropped rod during startup physics testing. A self-revealing NCV was identified for ineffective corrective actions.

This finding is greater than minor, because it caused an actual plant transient. The finding is of very low safety significance, because all mitigation systems were unaffected. Inspection Report# : 2003009(pdf)



Significance: Dec 16, 2003

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT ADEQUATE DESIGN CONTROL MEASURES

The team identified a violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for design control inadequacies during plant modifications, setpoint changes and revisions of calculations associated with the 4160 volt electrical power system. These electrical system design deficiencies caused the two offsite power sources not to be independent of each other as required by 10 CFR 50, Appendix A, Criterion 17, Electric Power Systems.

The finding was more than minor because it affected the design control attribute of the Initiating Events Cornerstone objective and resulted in an increased likelihood of a loss of offsite power (LOOP) event. The finding was determined to be of very low safety significance (Green) based on a the results of a phase 3 SDP analysis which evaluated the increase in core damage frequency (CDF) due to the increased likelihood of a LOOP caused by the design deficiencies. Inspection Report# : 2003008(pdf)



Significance: Dec 16, 2003

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT ADEQUATE CORRECTIVE ACTIONS

The team identified a violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for the failure of the licensee to implement adequate corrective actions to address design issues identified following the July 29, 2003, loss of offsite power event. When performing an operability evaluation to support plant restart, the licensee failed to identify that the lower operating voltage limit for the 4.16 kV buses needed to be increased to prevent recurrence of a similar event. The plant was restarted and operated from August 4 to August 22, 2003, until the issue was identified by the NRC and corrected by the licensee.

The finding was more than minor because it affected the design control attribute of the Initiating Events Cornerstone objective and resulted in an increased likelihood of a loss of offsite power event (LOOP). The finding was determined to be of very low safety significance (Green) based on a the results of a phase 3 SDP analysis which evaluated the increase in core damage frequency (CDF) due to the increased likelihood of a LOOP caused by the failure to take appropriate corrective actions prior to plant restart.

Inspection Report# : 2003008(pdf)



Significance: ^G Jun 28, 2003 Identified By: Self Disclosing Item Type: NCV NonCited Violation SURVEILLANCE PROCEDURE FOR TESTING A PRESSURIZER SPRAY VALVE (2PS3) WHILE AT POWER WAS NOT FOLLOWED

A self-revealing finding identified a non-cited violation of Technical Specification 6.8.1 because a surveillance procedure for testing a pressurizer spray valve (2PS3)while at power was not followed. This resulted in the inadvertent initiation of continuous spray to the pressurizer. Equipment operators misunderstood the task instructions and prematurely unisolated 2PS3. Control room operators were ineffective in receiving communications from the field and did not question actions inconsistent with the pre-job brief.

This finding is greater than minor because it had an actual impact on reactor coolant system pressure and operator manual actions were necessary to avert a reactor plant trip. The finding is of very low safety significance because mitigation systems were unaffected by the operator errors. Inspection Report# : 2003005(pdf)

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Significance: Mar 29, 2003

Identified By: Self Disclosing Item Type: FIN Finding

SALEM UNITS 1 AND 2 CONTROL AIR TRANSIENT

A self-revealing finding occurred when Salem Units 1 and 2 experienced a control air transient. Equipment anomalies during the transient revealed a valve configuration problem, an incomplete control air preventive maintenance item, and inadequate corrective action for a significant air leak.

This finding was not a violation of NRC requirements, in that the performance deficiencies occurred on non-safety related systems. The finding had an actual impact on plant stability and operator actions were necessary to reseat a reactor coolant system letdown line relief valve. This finding screened to Green in phase 1 of the SDP, because mitigation equipment was not affected by the control air transient. Inspection Report# : 2003003(pdf)

Mitigating Systems

Significance: Dec 27, 2003 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO PROMPTLY CORRECT AN EMERGENCY DIESEL GENERATOR DEFICIENCY A compressor air leak on the starting air system for the Unit 2 A EDG was not properly evaluated and corrected, such that the removal of the other compressor for maintenance resulted in the 2A EDG being inoperable. This resulted in a Green self-revealing NCV for ineffective corrective actions.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the 2A EDG was rendered inoperable due to a support system failure. The finding is of very low safety significance, because other EDGs remained unaffected and shutdown risk was not significantly affected. Inspection Report# : 2003009(pdf)

Significance: Dec 27, 2003 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO PROMPTLY CORRECT A RHR WATER HAMMER CONDITION (UNIT 2 CONTAINMENT SPRAY WATER HAMMER)

Ineffective problem evaluation regarding a known air pocket in the Unit 2 residual heat removal (RHR) system resulted in a waterhammer on the RHR and containment spray (CS) systems during a CS full flow test. This self-revealing finding represented an NCV for corrective actions.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the RHR system was unnecessarily subjected to an additional waterhammer and the associated hydraulic stresses and strains. The finding is of very low safety significance, because it did not render the RHR system inoperable.

Inspection Report# : 2003009(pdf)



Significance: Dec 27, 2003

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PRECLUDE STEAM VOID CONDITIONS IN THE RESIDUAL HEAT REMOVAL SYSTEM Ineffective corrective actions existed regarding an identified problem, in that the RHR system operating procedure had an insufficient cooldown period to preclude steam void conditions from developing after RHR flow was secured and this error was not corrected prior to its use. PSEG calculations in May 2003 had identified that the cooldown period should be increased from 15 minutes to 21 minutes. Operators restarted the Unit 2 RHR system on November 19, 2003, after cooling it down for less than 21 minutes, and a waterhammer occurred.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the residual heat removal system was started with potential steam void conditions present. The finding is of very low safety significance, because it did not render the RHR system inoperable. Inspection Report# : 2003009(pdf)



Significance: Dec 27, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY PERFORM RESIDUAL HEAT REMOVAL WATER HAMMER CORRECTIVE ACTIONS

Corrective actions were untimely, in that analyses to determine the stresses on the Unit 2 RHR system from repeated waterhammers were not completed until November 25, 2003. The waterhammer had been first identified on May 10, 2002. The inspectors also identified loose RHR pipe support hangers, which had not been identified by PSEG during system walkdowns in support of the waterhammer issue. This represented an NCV for ineffective corrective actions.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the RHR system was operated with unevaluated conditions due to repeated waterhammers and degraded pipe supports. The finding is of very low safety significance, because it did not render the RHR system inoperable.

Inspection Report# : 2003009(pdf)



Significance: Dec 16, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROPERLY TRANSLATE DESIGN INTO PLANT PROCEDURES

The team identified a violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for failure of the licensee to translate design change information into plant procedures. Following the installation of a plant modification to provide a cross connect between the Unit 1 and 2 chemical and volume control systems (CVCS), instructions for utilizing the cross connect feature were not included at the appropriate steps in the associated procedures.

The finding was more than minor because it affected the design control attribute of the Mitigating Systems Cornerstone objective. The issue was not a design or qualification deficiency that the licensee had evaluated in accordance with GL 91-18, and was determined to be of very low safety significance (Green) because it did not result in an actual loss of safety function of a single train for internal or external event initiated core damage sequences. Inspection Report# : 2003008(pdf)



Significance: Mar 29, 2003 Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PROPERLY EVALUATE AUXILIARY FEEDWATER PUMP SKID

The inspectors identified that temporary modifications to the 22 auxiliary feedwater (AFW) pump and the 13 AFW pump skids were not properly evaluated.

This NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control" was greater than minor, because it affected the mitigating system cornerstone and the reliability of two AFW pumps. This finding was determined to be of very low safety significance, because pump shaft leakoff conditions were such that the unauthorized modifications had not impacted pump operation.

Inspection Report# : 2003003(pdf)



Significance: Mar 29, 2003

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

EMERGENCY DIESEL GENERATOR DEFICIENT CORRECTIVE ACTIONS

A self-revealing finding was identified when the 1B emergency diesel generator (EDG) tripped during postmaintenance testing (PMT). The PMT was for separate test reasons and fortuitously revealed the EDG deficiency. The EDG deficiency involved a known electrical connector problem and inadequate interim corrective actions.

This NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," is greater than minor, because it affected the mitigating systems cornerstone of equipment reliability. This finding was of very low significance, because the inadequate interim corrective actions did not cause any EDG to be inoperable for greater than the TS allowed outage time.

Inspection Report# : 2003003(pdf)



Significance: Mar 28, 2003

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT CORRECTIVE ACTIONS

The team identified a non-cited violation involving two examples where PSEG failed to correct conditions adverse to quality as required by 10 CFR 50, Appendix B Criterion XVI, Corrective Actions. Specifically, PSEG failed to evaluate and correct an adverse condition involving the protection of wires located inside of control room panels from an over-current condition, and also failed to correct an adverse condition involving a degraded component cooling water system pipe support. These findings were evaluated using the Phase 1 worksheet of the significance determination process and found to be of very low significance (Green) since they did not result in the actual loss of a mitigating system.

Inspection Report# : 2003004(pdf)

Barrier Integrity

Dec 27. 2003 Significance:

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PROPERLY IMPLEMENT REACTOR COOLANT SYSTEM INSPECTION PROCEDURES Untimely placement of identified steam generator tube plug deficiencies into the corrective action program represented an NCV for TS procedure requirements.

This performance deficiency was more than minor, because if left uncorrected the degraded SG tube plugs could have led to a more significant problem such as a SG tube failure. The inspectors evaluated the significance of this issue using the guidance contained in the draft Appendix J to the Significance Determination Process, "Steam Generator Tube Integrity Findings." The inspectors determined that this condition was bounded by the column in the SG Tube Integrity SDP matrix associated with "one or more tubes that should have been repaired as a result of previous inspection." As a result this condition was determined to be of very low risk.

Inspection Report# : 2003009(pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Miscellaneous

Significance: N/A Mar 28, 2003 Identified By: NRC Item Type: FIN Finding PI&R BIENNIAL SUMMARY CONCLUSION

The team determined that PSEG was generally effective at identifying discrepant conditions and entering them into the corrective action system. However, the findings identified by this team supported the conclusion in the Annual Assessment Letter (NRC Inspection Report 50-272, 311/2003-01) of the existence of a substantive cross cutting issue in the area of problem identification and resolution. The team identified four examples where conditions adverse to quality were not entered into the corrective action system. The team determined that PSEG was generally effective at classifying and performing operability evaluations for discrepant conditions, however, some examples were noted where problem evaluations did not contain sufficient detail to support the conclusions. The team identified a finding with two examples where PSEG failed to correct conditions adverse to quality. The team noted that PSEG performed a root cause evaluation to indentify areas to improve the corrective action program. The team was not able to assess the effectiveness of this effort since the corrective actions had not been completed. On the basis of interviews conducted during the inspection, workers at the site felt free to input safety findings into the corrective action program. Inspection Report# : 2003004(pdf)

Last modified : March 02, 2004

Salem 2 1Q/2004 Plant Inspection Findings

Initiating Events



Significance: Dec 27, 2003 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO PROMPTLY CORRECT A CONTROL ROD POWER SUPPLY DEFICIENCY Deferral of vendor recommended design changes (fuse uprating) on the control drive mechanisms led to a N

Deferral of vendor recommended design changes (fuse uprating) on the control drive mechanisms led to a November 23, 2003, manual reactor trip due to a dropped rod during startup physics testing. A self-revealing NCV was identified for ineffective corrective actions.

This finding is greater than minor, because it caused an actual plant transient. The finding is of very low safety significance, because all mitigation systems were unaffected. Inspection Report# : 2003009(pdf)



Significance: Dec 16, 2003 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO IMPLEMENT ADEQUATE DESIGN CONTROL MEASURES

The team identified a violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for design control inadequacies during plant modifications, setpoint changes and revisions of calculations associated with the 4160 volt electrical power system. These electrical system design deficiencies caused the two offsite power sources not to be independent of each other as required by 10 CFR 50, Appendix A, Criterion 17, Electric Power Systems.

The finding was more than minor because it affected the design control attribute of the Initiating Events Cornerstone objective and resulted in an increased likelihood of a loss of offsite power (LOOP) event. The finding was determined to be of very low safety significance (Green) based on a the results of a phase 3 SDP analysis which evaluated the increase in core damage frequency (CDF) due to the increased likelihood of a LOOP caused by the design deficiencies.

Inspection Report# : <u>2003008(pdf</u>)



Significance: Dec 16, 2003 Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT ADEQUATE CORRECTIVE ACTIONS

The team identified a violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for the failure of the licensee to implement adequate corrective actions to address design issues identified following the July 29, 2003, loss of offsite power event. When performing an operability evaluation to support plant restart, the licensee failed to identify that the lower operating voltage limit for the 4.16 kV buses needed to be increased to prevent recurrence of a similar event. The plant was restarted and operated from August 4 to August 22, 2003, until the issue was identified by the NRC and corrected by the licensee.

The finding was more than minor because it affected the design control attribute of the Initiating Events Cornerstone objective and resulted in an increased likelihood of a loss of offsite power event (LOOP). The finding was determined to be of very low safety significance (Green) based on a the results of a phase 3 SDP analysis which evaluated the increase in core damage frequency (CDF) due to the increased likelihood of a LOOP caused by the failure to take appropriate corrective actions prior to plant restart. Inspection Report# : 2003008(pdf)

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Significance: Jun 28, 2003 Identified By: Self Disclosing Item Type: NCV NonCited Violation SURVEILLANCE PROCEDURE FOR TESTING A PRESSURIZER SPRAY VALVE (2PS3) WHILE AT POWER WAS NOT FOLLOWED

A self-revealing finding identified a non-cited violation of Technical Specification 6.8.1 because a surveillance procedure for testing a pressurizer spray valve (2PS3)while at power was not followed. This resulted in the inadvertent initiation of continuous spray to the pressurizer. Equipment operators misunderstood the task instructions and prematurely unisolated 2PS3. Control room operators were

ineffective in receiving communications from the field and did not question actions inconsistent with the pre-job brief.

This finding is greater than minor because it had an actual impact on reactor coolant system pressure and operator manual actions were necessary to avert a reactor plant trip. The finding is of very low safety significance because mitigation systems were unaffected by the operator errors.

Inspection Report# : 2003005(pdf)

Mitigating Systems



Identified By: NRC Item Type: FIN Finding

INEFFECTIVE CONTROL AIR QUALITY TESTING

A finding of very low safety significance was identified in that the Control Air (CA) quality test program was inadequate. The test program did not verify the quality of air meets standards specified in ANSI/ISA S7.3-1975, Quality Standard for Instrument Air, as delivered to safety-related air loads.

This finding is greater than minor because it is associated with the Procedure Quality attribute for the CA mitigating system function and, if left uncorrected, could become a more significant safety concern. The finding is of very low safety significance because it did not render the CA system inoperable and because of the CA system redundancy Inspection Report# : 2004006(pdf)



Significance: Mar 12, 2004

Identified By: NRC

Item Type: NCV NonCited Violation

INEFFECTIVE DESIGN CONTROL ASSOCIATED WITH SERVICE WATER DESIGN CHANGE AND INEFFECTIVE CORRECTIVE ACTIONS RELATIVE TO SW HIGH PRESSURE CONDITIONS

A finding of very low safety significance (Green), that is also a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, was identified regarding an inadequate design analysis for a service water system modification performed on both units. The modification had changed the service water recirculation valve operating characteristics and installed orifices in the line without adequately evaluating the effect of an increase in system pressure, impact on pump margin to minimum flow requirements during transients, and impact to the service water high pressure alarm design function.

The finding is greater than minor because it was associated with the mitigating system cornerstone attributes of design control and equipment performance and affected the capability of the system to ensure service water pressure would be maintained within previously evaluated design parameters. Based on a review of PSE&G's analyses of the issue, the team concluded that the finding was a design deficiency which was confirmed not to result in the loss of any mitigating system function. Therefore, in accordance with the SDP Phase I screening worksheet, the issue was determined to be of very low safety significance (Green).

The team identified that a contributing cause of the finding was related to the cross-cutting area of Problem Identification and Resolution. PSEG had not fully evaluated and corrected this issue after several previous opportunities had existed to do so. Inspection Report# : 2004006(pdf)



Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT AN EMERGENCY DIESEL GENERATOR DEFICIENCY

A compressor air leak on the starting air system for the Unit 2 A EDG was not properly evaluated and corrected, such that the removal of the other compressor for maintenance resulted in the 2A EDG being inoperable. This resulted in a Green self-revealing NCV for ineffective corrective actions.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the 2A EDG was rendered inoperable due to a support system failure. The finding is of very low safety significance, because other EDGs remained unaffected and shutdown risk was not significantly affected. Inspection Report# : 2003009(pdf)



Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT A RHR WATER HAMMER CONDITION (UNIT 2 CONTAINMENT SPRAY WATER HAMMER)

Ineffective problem evaluation regarding a known air pocket in the Unit 2 residual heat removal (RHR) system resulted in a waterhammer on the RHR and containment spray (CS) systems during a CS full flow test. This self-revealing finding represented an NCV for corrective actions.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the RHR system was unnecessarily subjected to an additional waterhammer and the associated hydraulic stresses and strains. The finding is of very low safety significance, because it did not render the RHR system inoperable. Inspection Report# : 2003009(pdf)



Significance: Dec 27, 200 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PRECLUDE STEAM VOID CONDITIONS IN THE RESIDUAL HEAT REMOVAL SYSTEM

Ineffective corrective actions existed regarding an identified problem, in that the RHR system operating procedure had an insufficient cooldown period to preclude steam void conditions from developing after RHR flow was secured and this error was not corrected prior to its use. PSEG calculations in May 2003 had identified that the cooldown period should be increased from 15 minutes to 21 minutes. Operators restarted the Unit 2 RHR system on November 19, 2003, after cooling it down for less than 21 minutes, and a waterhammer occurred.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the residual heat removal system was started with potential steam void conditions present. The finding is of very low safety significance, because it did not render the RHR system inoperable. Inspection Report# : 2003009(pdf)



Significance: Dec 27, 2003 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY PERFORM RESIDUAL HEAT REMOVAL WATER HAMMER CORRECTIVE ACTIONS

Corrective actions were untimely, in that analyses to determine the stresses on the Unit 2 RHR system from repeated waterhammers were not completed until November 25, 2003. The waterhammer had been first identified on May 10, 2002. The inspectors also identified loose RHR pipe support hangers, which had not been identified by PSEG during system walkdowns in support of the waterhammer issue. This represented an NCV for ineffective corrective actions.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the RHR system was operated with unevaluated conditions due to repeated waterhammers and degraded pipe supports. The finding is of very low safety significance, because it did not render the RHR system inoperable. Inspection Report# : 2003009(*pdf*)



Significance: Dec 16, 2003 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROPERLY TRANSLATE DESIGN INTO PLANT PROCEDURES

The team identified a violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for failure of the licensee to translate design change information into plant procedures. Following the installation of a plant modification to provide a cross connect between the Unit 1 and 2 chemical and volume control systems (CVCS), instructions for utilizing the cross connect feature were not included at the appropriate steps in the associated procedures.

The finding was more than minor because it affected the design control attribute of the Mitigating Systems Cornerstone objective. The issue was not a design or qualification deficiency that the licensee had evaluated in accordance with GL 91-18, and was determined to be of very low safety significance (Green) because it did not result in an actual loss of safety function of a single train for internal or external event initiated core damage sequences.

Inspection Report# : 2003008(pdf)

Barrier Integrity



Identified By: NRC Item Type: NCV NonCited Violation

CALCULATIONS OF CONTROL AIR ACCUMULATOR VOLUME WERE NON-CONSERVATIVE WITH RESPECT TO THE LTOP PORV ACCUMULATOR DESIGN BASES EVALUATION

The inspectors identified a finding of very low safety significance (Green), that is also a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control. Specifically, design calculations performed to verify adequate accumulator air pressure for Low Temperature Overpressure (LTOP) conditions and acceptable system leakage rates used incorrect design inputs. These non-conservative calculations were referenced during future system evaluations and also used as the basis for operability determinations and alarm set points.

This finding is greater than minor because it was associated with the design control attribute for the power operated relief valve (PORV) mitigating system function. The design calculations formed the bases for subsequent non-conservative operability reviews which affected the objective of adequately ensuring the capability of the PORV accumulators. Because the LTOP condition is only of concern during periods where the reactor is in cold shutdown, the inspectors evaluated the finding using Appendix G, Shutdown Operations to NRC IMC 0609, Significance Determination Process (SDP). The team concluded that this issue was of very low safety significance (Green) since the function had always been maintained.

The inspectors identified that a contributing cause of the finding was related to the cross-cutting area of Problem Identification and Resolution in that Design Engineering personnel had failed to identify and correct errors and discrepancies between design calculations of record. Inspection Report# : 2004006(pdf)

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procedure requirements.

Significance: Dec 27, 2003 Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PROPERLY IMPLEMENT REACTOR COOLANT SYSTEM INSPECTION PROCEDURES Untimely placement of identified steam generator tube plug deficiencies into the corrective action program represented an NCV for TS

This performance deficiency was more than minor, because if left uncorrected the degraded SG tube plugs could have led to a more significant problem such as a SG tube failure. The inspectors evaluated the significance of this issue using the guidance contained in the draft Appendix J to the Significance Determination Process, "Steam Generator Tube Integrity Findings." The inspectors determined that this condition was bounded by the column in the SG Tube Integrity SDP matrix associated with "one or more tubes that should have been repaired as a result of previous inspection." As a result this condition was determined to be of very low risk.

Inspection Report# : <u>2003009(pdf)</u>

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Miscellaneous

1Q/2004 Inspection Findings - Salem 2 Last modified : May 05, 2004

Salem 2 2Q/2004 Plant Inspection Findings

Initiating Events

17.2004.



21 CONTROL ROOM VENTILATION CHILLER REPETITIVE FAILURE The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to implement corrective actions and preclude service water flow control valve 21SW102 failure. In December 2003, PSEG developed corrective actions to improve the reliability of the SW102 valves. The corrective actions were not effectively implemented and did not prevent the recurring failure of 21SW102 on May

This finding was more than minor because it was associated with the equipment performance attribute, and it affected the initiating event cornerstone objective. In accordance with Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 2 SDP evaluation of the significance of the performance deficiency and determined the finding was of very low safety significance (Green). In this evaluation, the inspectors assumed an exposure period of less than three days, the likelihood of a loss of control room ventilation event was increased by one order of magnitude, all mitigating equipment for a loss of control room ventilation event was unaffected by the finding, and operator recovery actions were feasible. Inspection Report# : 2004003(pdf)



Significance: Dec 27, 2003

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT A CONTROL ROD POWER SUPPLY DEFICIENCY

Deferral of vendor recommended design changes (fuse uprating) on the control drive mechanisms led to a November 23, 2003, manual reactor trip due to a dropped rod during startup physics testing. A self-revealing NCV was identified for ineffective corrective actions.

This finding is greater than minor, because it caused an actual plant transient. The finding is of very low safety significance, because all mitigation systems were unaffected.

Inspection Report# : <u>2003009(pdf)</u>



Significance: Dec 16, 2003 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT ADEQUATE DESIGN CONTROL MEASURES

The team identified a violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for design control inadequacies during plant modifications, setpoint changes and revisions of calculations associated with the 4160 volt electrical power system. These electrical system design deficiencies caused the two offsite power sources not to be independent of each other as required by 10 CFR 50, Appendix A, Criterion 17, Electric Power Systems.

The finding was more than minor because it affected the design control attribute of the Initiating Events Cornerstone objective and resulted in an increased likelihood of a loss of offsite power (LOOP) event. The finding was determined to be of very low safety significance (Green) based on a the results of a phase 3 SDP analysis which evaluated the increase in core damage frequency (CDF) due to the increased likelihood of a LOOP caused by the design deficiencies.

Inspection Report# : <u>2003008(pdf</u>)



Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT ADEQUATE CORRECTIVE ACTIONS

The team identified a violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for the failure of the licensee to implement adequate corrective actions to address design issues identified following the July 29, 2003, loss of offsite power event. When performing an operability evaluation to support plant restart, the licensee failed to identify that the lower operating voltage limit for the 4.16 kV buses needed to be increased to prevent recurrence of a similar event. The plant was restarted and operated from August 4 to August 22, 2003, until the issue was identified by the NRC and corrected by the licensee.

The finding was more than minor because it affected the design control attribute of the Initiating Events Cornerstone objective and resulted in an

increased likelihood of a loss of offsite power event (LOOP). The finding was determined to be of very low safety significance (Green) based on a the results of a phase 3 SDP analysis which evaluated the increase in core damage frequency (CDF) due to the increased likelihood of a LOOP caused by the failure to take appropriate corrective actions prior to plant restart. Inspection Report# : 2003008(pdf)

Mitigating Systems



Significance: Jun 24, 2004

Identified By: NRC

Item Type: FIN Finding

FAILURE TO CONDUCT SALEM SIMULATOR TESTING IN ACCORDANCE WITH ANSI/ANS 3.5-1993

The inspectors identified that simulator performance testing on the Salem simulator did not meet the standards as specified in ANSI/ANS 3.5-1993 in that: (1) "best estimate" data for the simulator testing was not used; (2) some (4 of the 11 required) annual simulator transient tests were not performed and; (3) simulator test documentation did not include an evaluation and validation of test results.

This finding is more than minor because it affects the human performance (human error) attribute of the mitigating systems cornerstone. Improperly conducted simulator testing brings simulator fidelity into question. The finding is of very low safety significance (Green) because the discrepancy did not have an adverse impact on operator actions such that safety related equipment was made inoperable during normal operations or in response to a plant transient.

Inspection Report# : <u>2004007(pdf</u>)



Identified By: NRC

Item Type: NCV NonCited Violation

IMPROPER REPAIR TO SAFETY-RELATED COMPONENT

The inspectors identified a non-cited violation of Technical Specification 6.8.1 for failure to properly plan and perform maintenance in accordance with written procedures for an auxiliary building high energy line break (HELB) blowout panel. The HELB panel was reattached with hardened fasteners disabling its ability to blowout at a sufficiently low building pressure.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment capability, in that equipment necessary to establish cold shutdown conditions during a HELB, could be subjected to a steam plume without proper venting. This finding is of very low safety significance, because redundant blowout panels were unaffected. Inspection Report# : 2004002(pdf)



Mar 12, 2004

Identified By: NRC

Item Type: FIN Finding

INEFFECTIVE CONTROL AIR QUALITY TESTING

A finding of very low safety significance was identified in that the Control Air (CA) quality test program was inadequate. The test program did not verify the quality of air meets standards specified in ANSI/ISA S7.3-1975, Quality Standard for Instrument Air, as delivered to safety-related air loads.

This finding is greater than minor because it is associated with the Procedure Quality attribute for the CA mitigating system function and, if left uncorrected, could become a more significant safety concern. The finding is of very low safety significance because it did not render the CA system inoperable and because of the CA system redundancy

Inspection Report# : <u>2004006(pdf)</u>



Mar 12, 2004

Identified By: NRC

Significance:

Item Type: NCV NonCited Violation

INEFFECTIVE DESIGN CONTROL ASSOCIATED WITH SERVICE WATER DESIGN CHANGE AND INEFFECTIVE CORRECTIVE ACTIONS RELATIVE TO SW HIGH PRESSURE CONDITIONS

A finding of very low safety significance (Green), that is also a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, was identified regarding an inadequate design analysis for a service water system modification performed on both units. The modification had changed the service water recirculation valve operating characteristics and installed orifices in the line without adequately evaluating the effect of an increase in system pressure, impact on pump margin to minimum flow requirements during transients, and impact to the service water high pressure alarm design function.

The finding is greater than minor because it was associated with the mitigating system cornerstone attributes of design control and equipment performance and affected the capability of the system to ensure service water pressure would be maintained within previously evaluated design parameters. Based on a review of PSE&G's analyses of the issue, the team concluded that the finding was a design deficiency which was confirmed not to result in the loss of any mitigating system function. Therefore, in accordance with the SDP Phase I screening worksheet, the issue was determined to

be of very low safety significance (Green).

The team identified that a contributing cause of the finding was related to the cross-cutting area of Problem Identification and Resolution. PSEG had not fully evaluated and corrected this issue after several previous opportunities had existed to do so. Inspection Report# : 2004006(pdf)



Significance: Dec 27, 2003 Identified By: Self Disclosing

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT AN EMERGENCY DIESEL GENERATOR DEFICIENCY

A compressor air leak on the starting air system for the Unit 2 A EDG was not properly evaluated and corrected, such that the removal of the other compressor for maintenance resulted in the 2A EDG being inoperable. This resulted in a Green self-revealing NCV for ineffective corrective actions.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the 2A EDG was rendered inoperable due to a support system failure. The finding is of very low safety significance, because other EDGs remained unaffected and shutdown risk was not significantly affected.

Inspection Report# : <u>2003009</u>(pdf)



Significance: Dec 27, 2003 Identified By: Self Disclosing

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT A RHR WATER HAMMER CONDITION (UNIT 2 CONTAINMENT SPRAY WATER HAMMER) Ineffective problem evaluation regarding a known air pocket in the Unit 2 residual heat removal (RHR) system resulted in a waterhammer on the RHR and containment spray (CS) systems during a CS full flow test. This self-revealing finding represented an NCV for corrective actions.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the RHR system was unnecessarily subjected to an additional waterhammer and the associated hydraulic stresses and strains. The finding is of very low safety significance, because it did not render the RHR system inoperable.

Inspection Report# : <u>2003009</u>(pdf)



Significance: Dec 27, 2003

Identified By: Self Disclosing Item Type: NCV NonCited Violation

FAILURE TO PRECLUDE STEAM VOID CONDITIONS IN THE RESIDUAL HEAT REMOVAL SYSTEM

Ineffective corrective actions existed regarding an identified problem, in that the RHR system operating procedure had an insufficient cooldown period to preclude steam void conditions from developing after RHR flow was secured and this error was not corrected prior to its use. PSEG calculations in May 2003 had identified that the cooldown period should be increased from 15 minutes to 21 minutes. Operators restarted the Unit 2 RHR system on November 19, 2003, after cooling it down for less than 21 minutes, and a waterhammer occurred.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the residual heat removal system was started with potential steam void conditions present. The finding is of very low safety significance, because it did not render the RHR system inoperable.

Inspection Report# : <u>2003009(pdf</u>)



Significance: Dec 27, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY PERFORM RESIDUAL HEAT REMOVAL WATER HAMMER CORRECTIVE ACTIONS

Corrective actions were untimely, in that analyses to determine the stresses on the Unit 2 RHR system from repeated waterhammers were not completed until November 25, 2003. The waterhammer had been first identified on May 10, 2002. The inspectors also identified loose RHR pipe support hangers, which had not been identified by PSEG during system walkdowns in support of the waterhammer issue. This represented an NCV for ineffective corrective actions.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the RHR system was operated with unevaluated conditions due to repeated waterhammers and degraded pipe supports. The finding is of very low safety significance, because it did not render the RHR system inoperable. Inspection Report# : 2003009(pdf)

Significance: Dec 16, 2003 Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PROPERLY TRANSLATE DESIGN INTO PLANT PROCEDURES

The team identified a violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for failure of the licensee to translate design change information into plant procedures. Following the installation of a plant modification to provide a cross connect between the Unit 1 and 2 chemical and volume control systems (CVCS), instructions for utilizing the cross connect feature were not included at the appropriate steps in the associated procedures.

The finding was more than minor because it affected the design control attribute of the Mitigating Systems Cornerstone objective. The issue was not a design or qualification deficiency that the licensee had evaluated in accordance with GL 91-18, and was determined to be of very low safety significance (Green) because it did not result in an actual loss of safety function of a single train for internal or external event initiated core damage sequences. Inspection Report# : 2003008(pdf)

Barrier Integrity



Identified By: NRC

Item Type: NCV NonCited Violation

REPETITIVE 25 CONTAINMENT FAN COIL UNIT FAILURE

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to implement corrective actions and preclude service water flow control valve 25SW223 failure and inoperability of its associated containment fan coil unit (CFCU). In October 2000, PSEG assigned corrective actions to improve the reliability of control air to all Unit 1 and Unit 2 SW223 valves in order to address a know design deficiency. The corrective actions were not implemented on the 25SW223 valve prior to its failure on April 18, 2004, due to the same cause.

This finding was more than minor because it was associated with the structures, systems, or component performance attribute and it affected the barrier integrity cornerstone objective. The inspectors determined that the finding was of very low safety significance using Inspection Manual Chapter 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. Inspection Report# : 2004003(pdf)



Jun 30, 2004

Significance:

Item Type: NCV NonCited Violation

INADEQUATE TROUBLESHOOTING PROCEDURES CAUSE AN INADVERTENT SI SIGNAL

Green self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was made apparent for failure to provide maintenance instructions appropriate to the circumstances for troubleshooting activities on the solid state protection system which led to an invalid safety injection signal actuation and caused the control room emergency air conditioning system to be unable to meet General Design Criteria 19 for approximately 2 hours.

This finding was greater than minor because it resulted in the Unit 2 control room emergency air conditioning system being aligned such that it did not comply with its design basis for post loss of coolant accident mitigation. The inspectors determined that the finding was of very low safety significance (Green) using the Phase 1 SDP because the finding only represented a degradation of the radiological barrier function provided for the control room. Inspection Report# : 2004003(pdf)



Significance: Jun 30, 2004

Identified By: Self Disclosing Item Type: NCV NonCited Violation

FAILURE OF 11 TRAVELING WATER SCREEN DUE TO ICE BUILDUP

A self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was made apparent for failure to identify and correct a condition that rendered the 11 service water traveling water screen (TWS) unavailable.

This finding was more than minor because it was associated with the equipment performance attribute, and it affected the Initiating Event and Mitigating System Cornerstone objectives. In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the Region I Senior Reactor Analyst (SRA) conducted a Phase 3 SDP analysis of the significance of the performance deficiency and determined the finding was of very low safety significance (Green). In this analysis, the SRA assumed that the 11 TWS was out-of-service for 68 hours and that the loss of service water (LOSW) initiating event frequency increased during this time because of lost redundancy in the service water trains as a result of the performance deficiency. The SRA determined that the increase in core damage frequency due to internally initiated events was in the low E-8 range.

Inspection Report# : <u>2004003(pdf)</u>



CALCULATIONS OF CONTROL AIR ACCUMULATOR VOLUME WERE NON-CONSERVATIVE WITH RESPECT TO THE LTOP PORV ACCUMULATOR DESIGN BASES EVALUATION

The inspectors identified a finding of very low safety significance (Green), that is also a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control. Specifically, design calculations performed to verify adequate accumulator air pressure for Low Temperature Overpressure (LTOP) conditions and acceptable system leakage rates used incorrect design inputs. These non-conservative calculations were referenced during future system evaluations and also used as the basis for operability determinations and alarm set points.

This finding is greater than minor because it was associated with the design control attribute for the power operated relief valve (PORV) mitigating system function. The design calculations formed the bases for subsequent non-conservative operability reviews which affected the objective of adequately ensuring the capability of the PORV accumulators. Because the LTOP condition is only of concern during periods where the reactor is in cold shutdown, the inspectors evaluated the finding using Appendix G, Shutdown Operations to NRC IMC 0609, Significance Determination Process (SDP). The team concluded that this issue was of very low safety significance (Green) since the function had always been maintained.

The inspectors identified that a contributing cause of the finding was related to the cross-cutting area of Problem Identification and Resolution in that Design Engineering personnel had failed to identify and correct errors and discrepancies between design calculations of record. Inspection Report# : 2004006(pdf)



Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PROPERLY IMPLEMENT REACTOR COOLANT SYSTEM INSPECTION PROCEDURES Untimely placement of identified steam generator tube plug deficiencies into the corrective action program represented an NCV for TS procedure requirements.

This performance deficiency was more than minor, because if left uncorrected the degraded SG tube plugs could have led to a more significant problem such as a SG tube failure. The inspectors evaluated the significance of this issue using the guidance contained in the draft Appendix J to the Significance Determination Process, "Steam Generator Tube Integrity Findings." The inspectors determined that this condition was bounded by the column in the SG Tube Integrity SDP matrix associated with "one or more tubes that should have been repaired as a result of previous inspection." As a result this condition was determined to be of very low risk.

Inspection Report# : <u>2003009(pdf)</u>

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

Last modified : September 08, 2004

Salem 2 3Q/2004 Plant Inspection Findings

Initiating Events



Identified By: NRC Item Type: NCV NonCited Violation

21 CONTROL ROOM VENTILATION CHILLER REPETITIVE FAILURE

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to implement corrective actions and preclude service water flow control valve 21SW102 failure. In December 2003, PSEG developed corrective actions to improve the reliability of the SW102 valves. The corrective actions were not effectively implemented and did not prevent the recurring failure of 21SW102 on May 17, 2004.

This finding was more than minor because it was associated with the equipment performance attribute, and it affected the initiating event cornerstone objective. In accordance with Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 2 SDP evaluation of the significance of the performance deficiency and determined the finding was of very low safety significance (Green). In this evaluation, the inspectors assumed an exposure period of less than three days, the likelihood of a loss of control room ventilation event was increased by one order of magnitude, all mitigating equipment for a loss of control room ventilation event was unaffected by the finding, and operator recovery actions were feasible. Inspection Report# : 2004003(pdf)



Significance: Dec 27, 2003

Identified By: Self Disclosing Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT A CONTROL ROD POWER SUPPLY DEFICIENCY

Deferral of vendor recommended design changes (fuse uprating) on the control drive mechanisms led to a November 23, 2003, manual reactor trip due to a dropped rod during startup physics testing. A self-revealing NCV was identified for ineffective corrective actions.

This finding is greater than minor, because it caused an actual plant transient. The finding is of very low safety significance, because all mitigation systems were unaffected. Inspection Report# : 2003009(pdf)

G

Significance: Dec 16, 2003

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT ADEQUATE DESIGN CONTROL MEASURES

The team identified a violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for design control inadequacies during plant modifications, setpoint changes and revisions of calculations associated with the 4160 volt electrical power system. These electrical system design deficiencies caused the two offsite power sources not to be independent of each other as required by 10 CFR 50, Appendix A, Criterion 17, Electric Power Systems.

The finding was more than minor because it affected the design control attribute of the Initiating Events Cornerstone objective and resulted in an increased likelihood of a loss of offsite power (LOOP) event. The finding was determined to be of very low safety significance (Green) based on a the results of a phase 3 SDP analysis which evaluated the increase in core damage frequency (CDF) due to the increased likelihood of a LOOP caused by the design deficiencies. Inspection Report# : 2003008(*pdf*)



Significance: Dec 16, 2003 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT ADEQUATE CORRECTIVE ACTIONS

The team identified a violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for the failure of the licensee to implement adequate corrective actions to address design issues identified following the July 29, 2003, loss of offsite power event. When performing an operability evaluation to support plant restart, the licensee failed to identify that the lower operating voltage limit for the 4.16 kV buses needed to be increased to prevent recurrence of a similar event. The plant was restarted and operated from August 4 to August 22, 2003, until the issue was identified by the NRC and corrected by the licensee.

The finding was more than minor because it affected the design control attribute of the Initiating Events Cornerstone objective and resulted in an increased likelihood of a loss of offsite power event (LOOP). The finding was determined to be of very low safety significance (Green) based on a the results of a phase 3 SDP analysis which evaluated the increase in core damage frequency (CDF) due to the increased likelihood of a LOOP caused by the failure to take appropriate corrective actions prior to plant restart. Inspection Report# : 2003008(pdf)

Mitigating Systems



SALEM UNIT 2 MANUAL REACTOR TRIP ON JULY 15, 2004

A self-revealing finding was made apparent when Salem Unit 2 was manually tripped on July 15, 2004, by control room operators for a 23 steam generator feedwater regulating valve malfunction. The reactor trip was preceded by a low steam generator water level automatic reactor trip on July 13, 2004, for the same equipment malfunction. Corrective actions prior to the July 15, 2004, trip were not adequate to prevent recurrence of this problem. The finding was not a violation of NRC requirements, in that the performance deficiencies occurred on non-safety related systems.

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. The finding is greater than minor because it affected the equipment reliability attribute and had an impact on the objective of the Initiating Events and Mitigating Systems Cornerstones. In accordance with Inspection Manual 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 2 SDP evaluation of the significance of the performance deficiency and determined the finding was of very low safety significance.

Inspection Report# : 2004004(pdf)



Significance: Jun 24, 2004 Identified By: NRC Item Type: FIN Finding FAILURE TO CONDUCT SALEM SIMULATOR TESTING IN ACCORDANCE WITH ANSI/ANS 3.5-1993 The inspectors identified that simulator performance testing on the Salem simulator did not meet the standards as specified in ANSI/ANS 3.5-1993 in that: (1) "best estimate" data for the simulator testing was not used; (2) some (4 of the 11 required) annual simulator transient tests

were not performed and; (3) simulator test documentation did not include an evaluation and validation of test results.

This finding is more than minor because it affects the human performance (human error) attribute of the mitigating systems cornerstone. Improperly conducted simulator testing brings simulator fidelity into question. The finding is of very low safety significance (Green) because the discrepancy did not have an adverse impact on operator actions such that safety related equipment was made inoperable during normal operations or in response to a plant transient.

Inspection Report# : 2004007(pdf)



Significance: Mar 30, 2004 Identified By: NRC Item Type: NCV NonCited Violation **IMPROPER REPAIR TO SAFETY-RELATED COMPONENT**

The inspectors identified a non-cited violation of Technical Specification 6.8.1 for failure to properly plan and perform maintenance in accordance with written procedures for an auxiliary building high energy line break (HELB) blowout panel. The HELB panel was reattached with hardened fasteners disabling its ability to blowout at a sufficiently low building pressure.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment capability, in that equipment necessary to establish cold shutdown conditions during a HELB, could be subjected to a steam plume without proper venting. This finding is of very low safety significance, because redundant blowout panels were unaffected. Inspection Report# : 2004002(pdf)

Significance: Mar 12, 2004 Identified By: NRC Item Type: FIN Finding **INEFFECTIVE CONTROL AIR QUALITY TESTING**

A finding of very low safety significance was identified in that the Control Air (CA) quality test program was inadequate. The test program did not verify the quality of air meets standards specified in ANSI/ISA S7.3-1975, Quality Standard for Instrument Air, as delivered to safety-related air loads.

This finding is greater than minor because it is associated with the Procedure Quality attribute for the CA mitigating system function and, if left uncorrected, could become a more significant safety concern. The finding is of very low safety significance because it did not render the CA system inoperable and because of the CA system redundancy Inspection Report# : 2004006(pdf)

G

Significance: Mar 12, 2004 Identified By: NRC

Item Type: NCV NonCited Violation

INEFFECTIVE DESIGN CONTROL ASSOCIATED WITH SERVICE WATER DESIGN CHANGE AND INEFFECTIVE CORRECTIVE ACTIONS RELATIVE TO SW HIGH PRESSURE CONDITIONS

A finding of very low safety significance (Green), that is also a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, was identified regarding an inadequate design analysis for a service water system modification performed on both units. The modification had changed the service water recirculation valve operating characteristics and installed orifices in the line without adequately evaluating the effect of an increase in system pressure, impact on pump margin to minimum flow requirements during transients, and impact to the service water high pressure alarm design function.

The finding is greater than minor because it was associated with the mitigating system cornerstone attributes of design control and equipment performance and affected the capability of the system to ensure service water pressure would be maintained within previously evaluated design parameters. Based on a review of PSE&G's analyses of the issue, the team concluded that the finding was a design deficiency which was confirmed not to result in the loss of any mitigating system function. Therefore, in accordance with the SDP Phase I screening worksheet, the issue was determined to be of very low safety significance (Green).

The team identified that a contributing cause of the finding was related to the cross-cutting area of Problem Identification and Resolution. PSEG had not fully evaluated and corrected this issue after several previous opportunities had existed to do so. Inspection Report# : 2004006(pdf)



Significance: Dec 27, 2003 Identified By: Self Disclosing Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT AN EMERGENCY DIESEL GENERATOR DEFICIENCY

A compressor air leak on the starting air system for the Unit 2 A EDG was not properly evaluated and corrected, such that the removal of the other compressor for maintenance resulted in the 2A EDG being inoperable. This resulted in a Green self-revealing NCV for ineffective corrective actions.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the 2A EDG was rendered inoperable due to a support system failure. The finding is of very low safety significance, because other EDGs remained unaffected and shutdown risk was not significantly affected. Inspection Report# : 2003009(pdf)



Significance: Dec 27, 2003 Identified By: Self Disclosing Item Type: NCV NonCited Violation FAILURE TO PROMPTLY CORRECT A RHR WATER HAMMER CONDITION (UNIT 2 CONTAINMENT SPRAY WATER HAMMER)

Ineffective problem evaluation regarding a known air pocket in the Unit 2 residual heat removal (RHR) system resulted in a waterhammer on the RHR and containment spray (CS) systems during a CS full flow test. This self-revealing finding represented an NCV for corrective actions.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the RHR system was unnecessarily subjected to an additional waterhammer and the associated hydraulic stresses and strains. The finding is of very low safety significance, because it did not render the RHR system inoperable. Inspection Report# : 2003009(pdf)

G Dec 2

Significance: Dec 27, 2003 Identified By: Self Disclosing Item Type: NCV NonCited Violation FAILURE TO PRECLUDE STEAM VOID CONDITIONS IN THE RESIDUAL HEAT REMOVAL SYSTEM

Ineffective corrective actions existed regarding an identified problem, in that the RHR system operating procedure had an insufficient cooldown period to preclude steam void conditions from developing after RHR flow was secured and this error was not corrected prior to its use. PSEG calculations in May 2003 had identified that the cooldown period should be increased from 15 minutes to 21 minutes. Operators restarted the Unit 2 RHR system on November 19, 2003, after cooling it down for less than 21 minutes, and a waterhammer occurred.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the residual heat removal system was started with potential steam void conditions present. The finding is of very low safety significance, because it did not render the RHR system inoperable. Inspection Report# : 2003009(pdf)



Significance: Dec 27, 2003 Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY PERFORM RESIDUAL HEAT REMOVAL WATER HAMMER CORRECTIVE ACTIONS Corrective actions were untimely, in that analyses to determine the stresses on the Unit 2 RHR system from repeated waterhammers were not completed until November 25, 2003. The waterhammer had been first identified on May 10, 2002. The inspectors also identified loose RHR pipe support hangers, which had not been identified by PSEG during system walkdowns in support of the waterhammer issue. This represented an NCV for ineffective corrective actions.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that the RHR system was operated with unevaluated conditions due to repeated waterhammers and degraded pipe supports. The finding is of very low safety significance, because it did not render the RHR system inoperable. Inspection Report# : 2003009(pdf)



Dec 16, 2003 Significance: Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO PROPERLY TRANSLATE DESIGN INTO PLANT PROCEDURES

The team identified a violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for failure of the licensee to translate design change information into plant procedures. Following the installation of a plant modification to provide a cross connect between the Unit 1 and 2 chemical and volume control systems (CVCS), instructions for utilizing the cross connect feature were not included at the appropriate steps in the associated procedures.

The finding was more than minor because it affected the design control attribute of the Mitigating Systems Cornerstone objective. The issue was not a design or qualification deficiency that the licensee had evaluated in accordance with GL 91-18, and was determined to be of very low safety significance (Green) because it did not result in an actual loss of safety function of a single train for internal or external event initiated core damage sequences.

Inspection Report# : 2003008(pdf)

Barrier Integrity



Jun 30, 2004 Significance: Identified By: NRC Item Type: NCV NonCited Violation **REPETITIVE 25 CONTAINMENT FAN COIL UNIT FAILURE**

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to implement corrective actions and preclude service water flow control valve 25SW223 failure and inoperability of its associated containment fan coil unit (CFCU). In October 2000, PSEG assigned corrective actions to improve the reliability of control air to all Unit 1 and Unit 2 SW223 valves in order to address a know design deficiency. The corrective actions were not implemented on the 25SW223 valve prior to its failure on April 18, 2004, due to the same cause.

This finding was more than minor because it was associated with the structures, systems, or component performance attribute and it affected the barrier integrity cornerstone objective. The inspectors determined that the finding was of very low safety significance using Inspection Manual Chapter 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.

Inspection Report# : 2004003(pdf)

Significance: Jun 30, 2004 Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE TROUBLESHOOTING PROCEDURES CAUSE AN INADVERTENT SI SIGNAL

Green self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was made apparent for failure to provide maintenance instructions appropriate to the circumstances for troubleshooting activities on the solid state protection system which led to an invalid safety injection signal actuation and caused the control room emergency air conditioning system to be unable to meet General Design Criteria 19 for approximately 2 hours.

This finding was greater than minor because it resulted in the Unit 2 control room emergency air conditioning system being aligned such that it did not comply with its design basis for post loss of coolant accident mitigation. The inspectors determined that the finding was of very low safety significance (Green) using the Phase 1 SDP because the finding only represented a degradation of the radiological barrier function provided for the control room.

Inspection Report# : 2004003(pdf)



Significance: Jun 30, 2004 Identified By: Self Disclosing Item Type: NCV NonCited Violation

FAILURE OF 11 TRAVELING WATER SCREEN DUE TO ICE BUILDUP

A self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was made apparent for failure to identify and correct a condition that rendered the 11 service water traveling water screen (TWS) unavailable.

This finding was more than minor because it was associated with the equipment performance attribute, and it affected the Initiating Event and Mitigating System Cornerstone objectives. In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the Region I Senior Reactor Analyst (SRA) conducted a Phase 3 SDP analysis of the significance of the performance deficiency and determined the finding was of very low safety significance (Green). In this analysis, the SRA assumed that the 11 TWS was out-of-service for 68 hours and that the loss of service water (LOSW) initiating event frequency increased during this time because of lost redundancy in the service water trains as a result of the performance deficiency. The SRA determined that the increase in core damage frequency due to internally initiated events was in the low E-8 range.

Inspection Report# : 2004003(pdf)



Identified By: NRC Item Type: NCV NonCited Violation CALCULATIONS OF CONTROL AIR ACCUMULATOR VOLUME WERE NON-CONSERVATIVE WITH RESPECT TO THE LTOP PORV ACCUMULATOR DESIGN BASES EVALUATION

The inspectors identified a finding of very low safety significance (Green), that is also a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control. Specifically, design calculations performed to verify adequate accumulator air pressure for Low Temperature Overpressure (LTOP) conditions and acceptable system leakage rates used incorrect design inputs. These non-conservative calculations were referenced during future system evaluations and also used as the basis for operability determinations and alarm set points.

This finding is greater than minor because it was associated with the design control attribute for the power operated relief valve (PORV) mitigating system function. The design calculations formed the bases for subsequent non-conservative operability reviews which affected the objective of adequately ensuring the capability of the PORV accumulators. Because the LTOP condition is only of concern during periods where the reactor is in cold shutdown, the inspectors evaluated the finding using Appendix G, Shutdown Operations to NRC IMC 0609, Significance Determination Process (SDP). The team concluded that this issue was of very low safety significance (Green) since the function had always been maintained.

The inspectors identified that a contributing cause of the finding was related to the cross-cutting area of Problem Identification and Resolution in that Design Engineering personnel had failed to identify and correct errors and discrepancies between design calculations of record. Inspection Report# : 2004006(pdf)



Identified By: NRC

Item Type: NCV NonCited Violation FAILURE TO PROPERLY IMPLEMENT REACTOR COOLANT SYSTEM INSPECTION PROCEDURES

Untimely placement of identified steam generator tube plug deficiencies into the corrective action program represented an NCV for TS procedure requirements.

This performance deficiency was more than minor, because if left uncorrected the degraded SG tube plugs could have led to a more significant problem such as a SG tube failure. The inspectors evaluated the significance of this issue using the guidance contained in the draft Appendix J to the Significance Determination Process, "Steam Generator Tube Integrity Findings." The inspectors determined that this condition was

bounded by the column in the SG Tube Integrity SDP matrix associated with "one or more tubes that should have been repaired as a result of previous inspection." As a result this condition was determined to be of very low risk. Inspection Report# : 2003009(pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

Last modified : December 29, 2004

Salem 2 **4Q/2004 Plant Inspection Findings**

Initiating Events



Significance: Identified By: Self Disclosing Item Type: FIN Finding **SALEM UNIT 2 AUTOMATIC REACTOR TRIP ON SEPTEMBER 9, 2004**

A self-revealing finding was identified when the Salem Unit 2 reactor automatically tripped on September 9, 2004, in response to a generator protection trip. PSEG failed to incorporate vendor recommended daily and weekly inspections of the Salem Unit 2 exciter brushes. A brush failure resulted in a generator protection trip. The finding was not a violation of NRC requirements, in that the performance deficiency occurred on a non-safety related system.

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. The finding is greater than minor because it affected the equipment performance attribute and impacted the initiating events cornerstone objective to limit the likelihood of those events that upset plant stability. 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 finding to be of very low safety significance (Green). The finding screened to Green because the issue did not involve a loss-of-coolant accident or external event initiator, and mitigation equipment was also not involved.

Inspection Report# : 2004005(pdf)



G Sep 30, 2004 Significance: Identified By: Self Disclosing Item Type: FIN Finding

SALEM UNIT 2 MANUAL REACTOR TRIP ON JULY 15, 2004

A self-revealing finding was made apparent when Salem Unit 2 was manually tripped on July 15, 2004, by control room operators for a 23 steam generator feedwater regulating valve malfunction. The reactor trip was preceded by a low steam generator water level automatic reactor trip on July 13, 2004, for the same equipment malfunction. Corrective actions prior to the July 15, 2004, trip were not adequate to prevent recurrence of this problem. The finding was not a violation of NRC requirements, in that the performance deficiencies occurred on non-safety related systems.

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. The finding is greater than minor because it affected the equipment reliability attribute and had an impact on the objective of the Initiating Events and Mitigating Systems Cornerstones. In accordance with Inspection Manual 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 2 SDP evaluation of the significance of the performance deficiency and determined the finding was of very low safety significance.

Inspection Report# : 2004004(pdf)



Significance: Jun 30. 2004 Identified By: NRC

Item Type: NCV NonCited Violation

21 CONTROL ROOM VENTILATION CHILLER REPETITIVE FAILURE

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to implement corrective actions and preclude service water flow control valve 21SW102 failure. In December 2003, PSEG developed corrective actions to improve the reliability of the SW102 valves. The corrective actions were not effectively implemented and did not prevent the recurring failure of 21SW102 on May 17, 2004.

This finding was more than minor because it was associated with the equipment performance attribute, and it affected the initiating event cornerstone objective. In accordance with Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 2 SDP evaluation of the significance of the performance deficiency and determined the finding was of very low safety significance (Green). In this evaluation, the inspectors assumed an exposure period of less than three days, the likelihood of a loss of control room ventilation event was increased by one order of magnitude, all mitigating equipment for a loss of control room ventilation event was unaffected by the finding, and operator recovery actions were feasible. Inspection Report# : 2004003(pdf)

Mitigating Systems

Identified By: NRC



Item Type: FIN Finding **REPEAT UNAVAILABILITY OF THE GAS TURBINE DUE TO CONTROL SYSTEM FAULTS**

The inspectors identified a failure to implement effective corrective actions following repetitive failures of the gas turbine control system. The finding was not a violation of NRC requirements because it pertained to non-safety related equipment.

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. The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone. This finding affected the mitigating cornerstone objective, in that, it reduced the availability and reliability of a system that responds to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance based upon a SDP Phase 3 analysis. Inspection Report# : 2004005(pdf)



G Dec 31, 2004 Significance: Identified By: Self Disclosing

Item Type: NCV NonCited Violation

TRASH RACK BIOFOULING CAUSES FAILURE OF NUMBER 26 SERVICE WATER PUMP

A self-revealing finding was identifed when the 26 service water pump was rendered inoperable due to biological fouling of the suction trash rack on September 22, 2004. A large amount of biological growth had previously been identified on the trash rack during an inspection on August 2, 2004; however, PSEG did not clean the trash rack following the inspection. The finding was determined to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action."

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 violations of NRC requirements. The finding was more than minor because it was associated with the equipment availability attribute of the mitigating systems cornerstone objective to maintain 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 evaluation was required because the performance deficiency degraded both the initiating event and mitigating systems cornerstones. However, the inspectors were unable to evaluate the finding using Phase 2, because the Risk-Informed Inspection Notebook for Salem Generating Station did not evaluate loss of service water initiating events. The Region I Senior Reactor Analyst (SRA) conducted a Phase 3 analysis which determined that the finding was of very low safety significance (Green). Inspection Report# : 2004005(pdf)

Significance:

Dec 31, 2004

Identified By: NRC Item Type: NCV NonCited Violation

INCORRECT TEMPORARY MODIFICATION INSTALLATION

The inspectors identified a failure to properly translate temporary modification (TM) instructions into the associated work order. As a result, incorrect sealant was applied around seven floor drain covers in Salem Unit 1 and Unit 2 auxiliary buildings. The covers protected safetyrelated systems, structures, and components in mild areas of the auxiliary building from being exposed to the harsh environment (higher temperature and humidity) associated with a main steam line break. The finding was determined to be a non-cited violation of 10 CFR Part 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 violations of NRC requirements. The finding was more then minor because it was associated with the design control attribute of the mitigating systems cornerstone and affected the objective to maintain the reliability and availability of systems that respond to initiating events to prevent undesirable consequences in the auxiliary building from being exposed to a harsh environment. In accordance with Inspection Manual 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 1 SDP Screening and determined the finding to be of very low safety significance (Green). The finding screened to Green because the issue was a qualification deficiency confirmed not to result in a loss of function. Inspection Report# : 2004005(pdf)



FAILURE TO CONDUCT SALEM SIMULATOR TESTING IN ACCORDANCE WITH ANSI/ANS 3.5-1993

The inspectors identified that simulator performance testing on the Salem simulator did not meet the standards as specified in ANSI/ANS 3.5-1993 in that: (1) "best estimate" data for the simulator testing was not used; (2) some (4 of the 11 required) annual simulator transient tests were not performed and; (3) simulator test documentation did not include an evaluation and validation of test results.

This finding is more than minor because it affects the human performance (human error) attribute of the mitigating systems cornerstone. Improperly conducted simulator testing brings simulator fidelity into question. The finding is of very low safety significance (Green) because the discrepancy did not have an adverse impact on operator actions such that safety related equipment was made inoperable during normal operations or in response to a plant transient. Inspection Report# : 2004007(pdf)

G Mar 30, 2004 Significance: Identified By: NRC Item Type: NCV NonCited Violation **IMPROPER REPAIR TO SAFETY-RELATED COMPONENT**

The inspectors identified a non-cited violation of Technical Specification 6.8.1 for failure to properly plan and perform maintenance in accordance with written procedures for an auxiliary building high energy line break (HELB) blowout panel. The HELB panel was reattached with hardened fasteners disabling its ability to blowout at a sufficiently low building pressure.

This finding is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment capability, in that equipment necessary to establish cold shutdown conditions during a HELB, could be subjected to a steam plume without proper venting. This finding is of very low safety significance, because redundant blowout panels were unaffected. Inspection Report# : 2004002(pdf)



Mar 12, 2004 Significance: Identified By: NRC Item Type: FIN Finding

INEFFECTIVE CONTROL AIR OUALITY TESTING

A finding of very low safety significance was identified in that the Control Air (CA) quality test program was inadequate. The test program did not verify the quality of air meets standards specified in ANSI/ISA S7.3-1975, Quality Standard for Instrument Air, as delivered to safetyrelated air loads.

This finding is greater than minor because it is associated with the Procedure Ouality attribute for the CA mitigating system function and, if left uncorrected, could become a more significant safety concern. The finding is of very low safety significance because it did not render the CA system inoperable and because of the CA system redundancy Inspection Report# : 2004006(pdf)



Significance: Identified By: NRC Item Type: NCV NonCited Violation

INEFFECTIVE DESIGN CONTROL ASSOCIATED WITH SERVICE WATER DESIGN CHANGE AND INEFFECTIVE **CORRECTIVE ACTIONS RELATIVE TO SW HIGH PRESSURE CONDITIONS**

A finding of very low safety significance (Green), that is also a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, was identified regarding an inadequate design analysis for a service water system modification performed on both units. The modification had changed the service water recirculation valve operating characteristics and installed orifices in the line without adequately evaluating the effect of an increase in system pressure, impact on pump margin to minimum flow requirements during transients, and impact to the service water high pressure alarm design function.

The finding is greater than minor because it was associated with the mitigating system cornerstone attributes of design control and equipment performance and affected the capability of the system to ensure service water pressure would be maintained within previously evaluated design parameters. Based on a review of PSE&G's analyses of the issue, the team concluded that the finding was a design deficiency which was confirmed not to result in the loss of any mitigating system function. Therefore, in accordance with the SDP Phase I screening worksheet, the issue was determined to be of very low safety significance (Green).

The team identified that a contributing cause of the finding was related to the cross-cutting area of Problem Identification and Resolution. PSEG had not fully evaluated and corrected this issue after several previous opportunities had existed to do so. Inspection Report# : 2004006(pdf)

Barrier Integrity

Jun 30, 2004 Significance: Identified By: NRC

Item Type: NCV NonCited Violation

REPETITIVE 25 CONTAINMENT FAN COIL UNIT FAILURE

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to implement corrective actions and preclude service water flow control valve 25SW223 failure and inoperability of its associated containment fan coil unit (CFCU). In October 2000, PSEG assigned corrective actions to improve the reliability of control air to all Unit 1 and Unit 2 SW223 valves in order to address a know design deficiency. The corrective actions were not implemented on the 25SW223 valve prior to its failure on April 18, 2004, due to the same cause.

This finding was more than minor because it was associated with the structures, systems, or component performance attribute and it affected the barrier integrity cornerstone objective. The inspectors determined that the finding was of very low safety significance using Inspection Manual Chapter 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.

Inspection Report# : 2004003(pdf)



Significance:

Jun 30, 2004

Identified By: NRC Item Type: NCV NonCited Violation

INADEQUATE TROUBLESHOOTING PROCEDURES CAUSE AN INADVERTENT SI SIGNAL

Green self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was made apparent for failure to provide maintenance instructions appropriate to the circumstances for troubleshooting activities on the solid state protection system which led to an invalid safety injection signal actuation and caused the control room emergency air conditioning system to be unable to meet General Design Criteria 19 for approximately 2 hours.

This finding was greater than minor because it resulted in the Unit 2 control room emergency air conditioning system being aligned such that it did not comply with its design basis for post loss of coolant accident mitigation. The inspectors determined that the finding was of very low safety significance (Green) using the Phase 1 SDP because the finding only represented a degradation of the radiological barrier function provided for the control room.

Inspection Report# : 2004003(pdf)



G Jun 30, 2004 Significance: Identified By: Self Disclosing Item Type: NCV NonCited Violation FAILURE OF 11 TRAVELING WATER SCREEN DUE TO ICE BUILDUP

A self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was made apparent for failure to identify and correct a condition that rendered the 11 service water traveling water screen (TWS) unavailable.

This finding was more than minor because it was associated with the equipment performance attribute, and it affected the Initiating Event and Mitigating System Cornerstone objectives. In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the Region I Senior Reactor Analyst (SRA) conducted a Phase 3 SDP analysis of the significance of the performance deficiency and determined the finding was of very low safety significance (Green). In this analysis, the SRA assumed that the 11 TWS was out-of-service for 68 hours and that the loss of service water (LOSW) initiating event frequency increased during this time because of lost redundancy in the service water trains as a result of the performance deficiency. The SRA determined that the increase in core damage frequency due to internally initiated events was in the low E-8 range.

Inspection Report# : 2004003(pdf)



Significance:

Mar 12, 2004

Identified By: NRC Item Type: NCV NonCited Violation

CALCULATIONS OF CONTROL AIR ACCUMULATOR VOLUME WERE NON-CONSERVATIVE WITH RESPECT TO THE LTOP PORV ACCUMULATOR DESIGN BASES EVALUATION

The inspectors identified a finding of very low safety significance (Green), that is also a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control. Specifically, design calculations performed to verify adequate accumulator air pressure for Low Temperature Overpressure (LTOP) conditions and acceptable system leakage rates used incorrect design inputs. These non-conservative calculations were referenced during future system evaluations and also used as the basis for operability determinations and alarm set points.

This finding is greater than minor because it was associated with the design control attribute for the power operated relief valve (PORV) mitigating system function. The design calculations formed the bases for subsequent non-conservative operability reviews which affected the objective of adequately ensuring the capability of the PORV accumulators. Because the LTOP condition is only of concern during periods where the reactor is in cold shutdown, the inspectors evaluated the finding using Appendix G, Shutdown Operations to NRC IMC 0609,

Significance Determination Process (SDP). The team concluded that this issue was of very low safety significance (Green) since the function had always been maintained.

The inspectors identified that a contributing cause of the finding was related to the cross-cutting area of Problem Identification and Resolution in that Design Engineering personnel had failed to identify and correct errors and discrepancies between design calculations of record. Inspection Report# : 2004006(pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

<u>Physical Protection</u> information not publicly available.

Miscellaneous

Last modified : March 09, 2005

Salem 2 **1Q/2005 Plant Inspection Findings**

Initiating Events



Significance: Identified By: Self Disclosing Item Type: FIN Finding **SALEM UNIT 2 AUTOMATIC REACTOR TRIP ON SEPTEMBER 9, 2004**

A self-revealing finding was identified when the Salem Unit 2 reactor automatically tripped on September 9, 2004, in response to a generator protection trip. PSEG failed to incorporate vendor recommended daily and weekly inspections of the Salem Unit 2 exciter brushes. A brush failure resulted in a generator protection trip. The finding was not a violation of NRC requirements, in that the performance deficiency occurred on a non-safety related system.

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. The finding is greater than minor because it affected the equipment performance attribute and impacted the initiating events cornerstone objective to limit the likelihood of those events that upset plant stability. 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 finding to be of very low safety significance (Green). The finding screened to Green because the issue did not involve a loss-of-coolant accident or external event initiator, and mitigation equipment was also not involved.

Inspection Report# : 2004005(pdf)



G Sep 30, 2004 Significance: Identified By: Self Disclosing Item Type: FIN Finding

SALEM UNIT 2 MANUAL REACTOR TRIP ON JULY 15, 2004

A self-revealing finding was made apparent when Salem Unit 2 was manually tripped on July 15, 2004, by control room operators for a 23 steam generator feedwater regulating valve malfunction. The reactor trip was preceded by a low steam generator water level automatic reactor trip on July 13, 2004, for the same equipment malfunction. Corrective actions prior to the July 15, 2004, trip were not adequate to prevent recurrence of this problem. The finding was not a violation of NRC requirements, in that the performance deficiencies occurred on non-safety related systems.

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. The finding is greater than minor because it affected the equipment reliability attribute and had an impact on the objective of the Initiating Events and Mitigating Systems Cornerstones. In accordance with Inspection Manual 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 2 SDP evaluation of the significance of the performance deficiency and determined the finding was of very low safety significance.

Inspection Report# : 2004004(pdf)



Significance: Jun 30. 2004 Identified By: NRC

Item Type: NCV NonCited Violation

21 CONTROL ROOM VENTILATION CHILLER REPETITIVE FAILURE

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to implement corrective actions and preclude service water flow control valve 21SW102 failure. In December 2003, PSEG developed corrective actions to improve the reliability of the SW102 valves. The corrective actions were not effectively implemented and did not prevent the recurring failure of 21SW102 on May 17, 2004.

This finding was more than minor because it was associated with the equipment performance attribute, and it affected the initiating event cornerstone objective. In accordance with Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 2 SDP evaluation of the significance of the performance deficiency and determined the finding was of very low safety significance (Green). In this evaluation, the inspectors assumed an exposure period of less than three days, the likelihood of a loss of control room ventilation event was increased by one order of magnitude, all mitigating equipment for a loss of control room ventilation event was unaffected by the finding, and operator recovery actions were feasible. Inspection Report# : 2004003(pdf)

Mitigating Systems



Significance: Mar 18, 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)



G Mar 18, 2005 Significance: 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)



Dec 31, 2004

Identified By: NRC Item Type: FIN Finding

REPEAT UNAVAILABILITY OF THE GAS TURBINE DUE TO CONTROL SYSTEM FAULTS

The inspectors identified a failure to implement effective corrective actions following repetitive failures of the gas turbine control system. The finding was not a violation of NRC requirements because it pertained to non-safety related equipment.

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. The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone. This finding affected the mitigating cornerstone objective, in that, it reduced the availability and reliability of a system that responds to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance based upon a SDP Phase 3 analysis. Inspection Report# : 2004005(pdf)



Significance: Dec 31, 2004 Identified By: Self Disclosing

Item Type: NCV NonCited Violation

TRASH RACK BIOFOULING CAUSES FAILURE OF NUMBER 26 SERVICE WATER PUMP

A self-revealing finding was identifed when the 26 service water pump was rendered inoperable due to biological fouling of the suction trash rack on September 22, 2004. A large amount of biological growth had previously been identified on the trash rack during an inspection on August 2, 2004; however, PSEG did not clean the trash rack following the inspection. The finding was determined to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action."

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 violations of NRC requirements. The finding was more than minor because it was

associated with the equipment availability attribute of the mitigating systems cornerstone objective to maintain 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 evaluation was required because the performance deficiency degraded both the initiating event and mitigating systems cornerstones. However, the inspectors were unable to evaluate the finding using Phase 2, because the Risk-Informed Inspection Notebook for Salem Generating Station did not evaluate loss of service water initiating events. The Region I Senior Reactor Analyst (SRA) conducted a Phase 3 analysis which determined that the finding was of very low safety significance (Green).

Inspection Report# : 2004005(pdf)



Significance: Dec 31, 2004 Identified By: NRC

Item Type: NCV NonCited Violation

INCORRECT TEMPORARY MODIFICATION INSTALLATION

The inspectors identified a failure to properly translate temporary modification (TM) instructions into the associated work order. As a result, incorrect sealant was applied around seven floor drain covers in Salem Unit 1 and Unit 2 auxiliary buildings. The covers protected safety-related systems, structures, and components in mild areas of the auxiliary building from being exposed to the harsh environment (higher temperature and humidity) associated with a main steam line break. The finding was determined to be a non-cited violation of 10 CFR Part 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 violations of NRC requirements. The finding was more then minor because it was associated with the design control attribute of the mitigating systems cornerstone and affected the objective to maintain the reliability and availability of systems that respond to initiating events to prevent undesirable consequences in the auxiliary building from being exposed to a harsh environment. In accordance with Inspection Manual 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 1 SDP Screening and determined the finding to be of very low safety significance (Green). The finding screened to Green because the issue was a qualification deficiency confirmed not to result in a loss of function. Inspection Report# : 2004005(pdf)



Significance: Jun 24, 2004 Identified By: NRC Item Type: FIN Finding FAILURE TO CONDUCT SALEM SIMULATOR TESTING IN ACCORDANCE WITH ANSI/ANS 3.5-1993 The inspectors identified that simulator performance testing on the Salem simulator did not meet the standards as specified in ANSI/ANS 3.5-1993 in that: (1) "best estimate" data for the simulator testing was not used; (2) some (4 of the 11 required) annual simulator transient tests

were not performed and; (3) simulator test documentation did not include an evaluation and validation of test results. This finding is more than minor because it affects the human performance (human error) attribute of the mitigating systems cornerstone. Improperly conducted simulator testing brings simulator fidelity into question. The finding is of very low safety significance (Green) because the discrepancy did not have an adverse impact on operator actions such that safety related equipment was made inoperable during normal

operations or in response to a plant transient.

Inspection Report# : 2004007(pdf)

Barrier Integrity



Identified By: NRC Item Type: NCV NonCited Violation

REPETITIVE 25 CONTAINMENT FAN COIL UNIT FAILURE

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to implement corrective actions and preclude service water flow control valve 25SW223 failure and inoperability of its associated containment fan coil unit (CFCU). In October 2000, PSEG assigned corrective actions to improve the reliability of control air to all Unit 1 and Unit 2 SW223 valves in order to address a know design deficiency. The corrective actions were not implemented on the 25SW223 valve prior to its failure on April 18, 2004, due to the same cause.

This finding was more than minor because it was associated with the structures, systems, or component performance attribute and it affected the barrier integrity cornerstone objective. The inspectors determined that the finding was of very low safety significance using Inspection Manual Chapter 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.

Inspection Report# : 2004003(pdf)
Significance: Jun 30, 2004 Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE TROUBLESHOOTING PROCEDURES CAUSE AN INADVERTENT SI SIGNAL

Green self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was made apparent for failure to provide maintenance instructions appropriate to the circumstances for troubleshooting activities on the solid state protection system which led to an invalid safety injection signal actuation and caused the control room emergency air conditioning system to be unable to meet General Design Criteria 19 for approximately 2 hours.

This finding was greater than minor because it resulted in the Unit 2 control room emergency air conditioning system being aligned such that it did not comply with its design basis for post loss of coolant accident mitigation. The inspectors determined that the finding was of very low safety significance (Green) using the Phase 1 SDP because the finding only represented a degradation of the radiological barrier function provided for the control room.

Inspection Report# : 2004003(pdf)



Significance: Jun 30, 2004 Identified By: Self Disclosing Item Type: NCV NonCited Violation

FAILURE OF 11 TRAVELING WATER SCREEN DUE TO ICE BUILDUP

A self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was made apparent for failure to identify and correct a condition that rendered the 11 service water traveling water screen (TWS) unavailable.

This finding was more than minor because it was associated with the equipment performance attribute, and it affected the Initiating Event and Mitigating System Cornerstone objectives. In accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the Region I Senior Reactor Analyst (SRA) conducted a Phase 3 SDP analysis of the significance of the performance deficiency and determined the finding was of very low safety significance (Green). In this analysis, the SRA assumed that the 11 TWS was out-of-service for 68 hours and that the loss of service water (LOSW) initiating event frequency increased during this time because of lost redundancy in the service water trains as a result of the performance deficiency. The SRA determined that the increase in core damage frequency due to internally initiated events was in the low E-8 range.

Inspection Report# : 2004003(pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

<u>Physical Protection</u> information not publicly available.

Miscellaneous

Last modified : June 17, 2005

Salem 2 2Q/2005 Plant Inspection Findings

Initiating Events



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*)



Significance: Dec 31, 2004 Identified By: Self Disclosing Item Type: FIN Finding

SALEM UNIT 2 AUTOMATIC REACTOR TRIP ON SEPTEMBER 9, 2004

A self-revealing finding was identified when the Salem Unit 2 reactor automatically tripped on September 9, 2004, in response to a generator protection trip. PSEG failed to incorporate vendor recommended daily and weekly inspections of the Salem Unit 2 exciter brushes. A brush failure resulted in a generator protection trip. The finding was not a violation of NRC requirements, in that the performance deficiency occurred on a non-safety related system.

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. The finding is greater than minor because it affected the equipment performance attribute and impacted the initiating events cornerstone objective to limit the likelihood of those events that upset plant stability. 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 finding to be of very low safety significance (Green). The finding screened to Green because the issue did not involve a loss-of-coolant accident or external event initiator, and mitigation equipment was also not involved.

Inspection Report# : 2004005(pdf)



Significance: Sep 30, 2004

Identified By: Self Disclosing Item Type: FIN Finding

SALEM UNIT 2 MANUAL REACTOR TRIP ON JULY 15, 2004

A self-revealing finding was made apparent when Salem Unit 2 was manually tripped on July 15, 2004, by control room operators for a 23 steam generator feedwater regulating valve malfunction. The reactor trip was preceded by a low steam generator water level automatic reactor trip on July 13, 2004, for the same equipment malfunction. Corrective actions prior to the July 15, 2004, trip were not adequate to prevent recurrence of this problem. The finding was not a violation of NRC requirements, in that the performance deficiencies occurred on non-safety related systems.

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. The finding is greater than minor because it affected the equipment reliability attribute and had an impact on the objective of the Initiating Events and Mitigating Systems Cornerstones. In accordance with Inspection Manual 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations,"

the inspectors conducted a Phase 2 SDP evaluation of the significance of the performance deficiency and determined the finding was of very low safety significance. Inspection Report# : 2004004(pdf)

Mitigating Systems



Significance: Identified By: Self Disclosing 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)



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)

May 02, 2005 Significance: 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)



Significance: Dec 31, 2004

Identified By: NRC Item Type: FIN Finding

REPEAT UNAVAILABILITY OF THE GAS TURBINE DUE TO CONTROL SYSTEM FAULTS

The inspectors identified a failure to implement effective corrective actions following repetitive failures of the gas turbine control system. The finding was not a violation of NRC requirements because it pertained to non-safety related equipment.

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. The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone. This finding affected the mitigating cornerstone objective, in that, it reduced the availability and reliability of a system that responds to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance based upon a SDP Phase 3 analysis. Inspection Report# : 2004005(pdf)



Significance: Dec 31, 2004 Identified By: Self Disclosing Item Type: NCV NonCited Violation

TRASH RACK BIOFOULING CAUSES FAILURE OF NUMBER 26 SERVICE WATER PUMP

A self-revealing finding was identifed when the 26 service water pump was rendered inoperable due to biological fouling of the suction trash rack on September 22, 2004. A large amount of biological growth had previously been identified on the trash rack during an inspection on August 2, 2004; however, PSEG did not clean the trash rack following the inspection. The finding was determined to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action."

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 violations of NRC requirements. The finding was more than minor because it was associated with the equipment availability attribute of the mitigating systems cornerstone objective to maintain 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 evaluation was required because the performance deficiency degraded both the initiating event and mitigating systems cornerstones. However, the inspectors were unable to evaluate the finding using Phase 2, because the Risk-Informed Inspection Notebook for Salem Generating Station did not evaluate loss of service water initiating events. The Region I Senior Reactor Analyst (SRA) conducted a Phase 3 analysis which determined that the finding was of very low safety significance (Green).

Inspection Report# : 2004005(pdf)



Dec 31, 2004 Significance: Identified By: NRC

Item Type: NCV NonCited Violation

INCORRECT TEMPORARY MODIFICATION INSTALLATION

The inspectors identified a failure to properly translate temporary modification (TM) instructions into the associated work order. As a result, incorrect sealant was applied around seven floor drain covers in Salem Unit 1 and Unit 2 auxiliary buildings. The covers protected safetyrelated systems, structures, and components in mild areas of the auxiliary building from being exposed to the harsh environment (higher temperature and humidity) associated with a main steam line break. The finding was determined to be a non-cited violation of 10 CFR Part 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 violations of NRC requirements. The finding was more then minor because it was associated with the design control attribute of the mitigating systems cornerstone and affected the objective to maintain the reliability and

availability of systems that respond to initiating events to prevent undesirable consequences in the auxiliary building from being exposed to a harsh environment. In accordance with Inspection Manual 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 1 SDP Screening and determined the finding to be of very low safety significance (Green). The finding screened to Green because the issue was a qualification deficiency confirmed not to result in a loss of function. Inspection Report# : 2004005(pdf)

Barrier Integrity

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



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 Revie

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)

Inspection Report# . <u>2003007(</u>puj)

Last modified : August 24, 2005

Salem 2 3Q/2005 Plant Inspection Findings

Initiating Events



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*)



Significance: Dec 31, 2004 Identified By: Self-Revealing Item Type: FIN Finding

SALEM UNIT 2 AUTOMATIC REACTOR TRIP ON SEPTEMBER 9, 2004

A self-revealing finding was identified when the Salem Unit 2 reactor automatically tripped on September 9, 2004, in response to a generator protection trip. PSEG failed to incorporate vendor recommended daily and weekly inspections of the Salem Unit 2 exciter brushes. A brush failure resulted in a generator protection trip. The finding was not a violation of NRC requirements, in that the performance deficiency occurred on a non-safety related system.

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. The finding is greater than minor because it affected the equipment performance attribute and impacted the initiating events cornerstone objective to limit the likelihood of those events that upset plant stability. 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 finding to be of very low safety significance (Green). The finding screened to Green because the issue did not involve a loss-of-coolant accident or external event initiator, and mitigation equipment was also not involved.

Inspection Report# : 2004005(pdf)

Mitigating Systems



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

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: 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)



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)



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)



G May 02, 2005 Significance: 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)



Significance: Dec 31, 2004 Identified By: Self-Revealing Item Type: NCV NonCited Violation

TRASH RACK BIOFOULING CAUSES FAILURE OF NUMBER 26 SERVICE WATER PUMP

A self-revealing finding was identifed when the 26 service water pump was rendered inoperable due to biological fouling of the suction trash rack on September 22, 2004. A large amount of biological growth had previously been identified on the trash rack during an inspection on August 2, 2004; however, PSEG did not clean the trash rack following the inspection. The finding was determined to be a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action."

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 violations of NRC requirements. The finding was more than minor because it was associated with the equipment availability attribute of the mitigating systems cornerstone objective to maintain 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 evaluation was required because the performance deficiency degraded both the initiating event and mitigating systems cornerstones. However, the inspectors were unable to evaluate the finding using Phase 2, because the Risk-Informed Inspection Notebook for Salem Generating Station did not evaluate loss of service water initiating events. The Region I Senior Reactor Analyst (SRA) conducted a Phase 3 analysis which determined that the finding was of very low safety significance (Green). Inspection Report# : 2004005(pdf)

Dec 31, 2004 Significance:

Identified By: NRC Item Type: FIN Finding

The inspectors identified a failure to implement effective corrective actions following repetitive failures of the gas turbine control system. The finding was not a violation of NRC requirements because it pertained to non-safety related equipment.

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. The finding was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone. This finding affected the mitigating cornerstone objective, in that, it reduced the availability and reliability of a system that responds to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance based upon a SDP Phase 3 analysis. Inspection Report# : 2004005(pdf)



Significance: Dec 31, 2004 Identified By: NRC Item Type: NCV NonCited Violation **INCORRECT TEMPORARY MODIFICATION INSTALLATION**

The inspectors identified a failure to properly translate temporary modification (TM) instructions into the associated work order. As a result, incorrect sealant was applied around seven floor drain covers in Salem Unit 1 and Unit 2 auxiliary buildings. The covers protected safetyrelated systems, structures, and components in mild areas of the auxiliary building from being exposed to the harsh environment (higher temperature and humidity) associated with a main steam line break. The finding was determined to be a non-cited violation of 10 CFR Part 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 violations of NRC requirements. The finding was more then minor because it was associated with the design control attribute of the mitigating systems cornerstone and affected the objective to maintain the reliability and availability of systems that respond to initiating events to prevent undesirable consequences in the auxiliary building from being exposed to a harsh environment. In accordance with Inspection Manual 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors conducted a Phase 1 SDP Screening and determined the finding to be of very low safety significance (Green). The finding screened to Green because the issue was a qualification deficiency confirmed not to result in a loss of function. Inspection Report# : 2004005(pdf)

Barrier Integrity



Significance: 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

Significance: Jun 30, 2005 Identified By: NRC Item Type: NCV NonCited Violation INDEPENDENT QUALITY ASSURANCE AUDIT TO ASSESS ALL ELEMENTS OF THE EMERGENCY PREPAREDNESS

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

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 : November 30, 2005

Salem 2 **4Q/2005 Plant Inspection Findings**

Initiating Events



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# : <u>2005003(pdf</u>)

Mitigating Systems



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)



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)



Sep 30, 2005 Significance: 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)



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)

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)



G May 02, 2005 Significance: 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: 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



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)



Dec 31, 2005 Significance: 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)



Significance: Jun 30, 2005 Identified By: NRC Item Type: NCV NonCited Violation

CONTAINMENT CLOSURE REOUIREMENTS 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



G Jun 30, 2005 Significance: 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

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

Salem 2 1Q/2006 Plant Inspection Findings

Initiating Events



Item Type: NCV NonCited Violation

INADÉQUATE 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)



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



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

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)



Feb 17, 2006 Significance: Identified By: NRC Item Type: NCV NonCited Violation INADEOUATE 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: NRC

Item Type: NCV NonCited Violation

RESIDUAL HEAT REMOVAL ROOM INTERNAL FLOOD PROTECTION

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 Unit 2 design did not ensure that an internal auxiliary building flood, due to a postulated moderate energy line break, could not affect both residual heat removal (RHR) pump rooms as specified in Updated Final Safety Analysis Report (UFSAR) section 3.6.5.12.5. This issue did not apply to Salem Unit 1.

The finding was more than minor because it affected the mitigating systems cornerstone as related to the availability, reliability, and capability of the RHR 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. The performance deficiency had a PI&R cross-cutting aspect. Inspection Report# : 2006006(pdf)



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)

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)



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)



G May 02, 2005 Significance: 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



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*)



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)



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



Significance:

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



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 : May 25, 2006

Salem 2 2Q/2006 Plant Inspection Findings

Initiating Events



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.

Mitigating Systems



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 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)

G Feb 17, 2006 Significance: 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)



G Feb 17, 2006 Significance: Identified By: NRC Item Type: NCV NonCited Violation

RESIDUAL HEAT REMOVAL ROOM INTERNAL FLOOD PROTECTION

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 Unit 2 design did not ensure that an internal auxiliary building flood, due to a postulated moderate energy line break, could not affect both residual heat removal (RHR) pump rooms as specified in Updated Final Safety Analysis Report (UFSAR) section 3.6.5.12.5. This issue did not apply to Salem Unit 1.

The finding was more than minor because it affected the mitigating systems cornerstone as related to the availability, reliability, and capability of the RHR 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. The performance deficiency had a PI&R cross-cutting aspect.

Inspection Report# : 2006006(pdf)



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)



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: 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)

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)

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*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

Last modified : August 25, 2006

Salem 2 **3Q/2006 Plant Inspection Findings**

Initiating Events

G Sep 30, 2006 Significance: Identified By: NRC Item Type: NCV NonCited Violation **22 SERVICE WATER STRAINER TRIP**

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for failure to accomplish maintenance in accordance with procedures. PSEG maintenance personnel omitted procedure steps to adequately tighten or properly lock a locknut on the 22 service water strainer during preventive maintenance. Consequently, the 22 service water strainer motor tripped due to increased strainer basket internal interference after it was returned to service.

The finding is more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone, and it affected the cornerstone objective. Unavailability of the 22 SWS and SWP increased the likelihood of a loss of service water. This finding also impacted the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, incorrectly performed maintenance degraded both availability and reliability of the 22 SWS and SWP. 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 more detailed Phase 2 evaluation was required to assess the safety significance because the performance deficiency affected two cornerstones. However, the Risk-Informed Inspection Notebook for Salem Nuclear Generating Station does not evaluate loss of service water initiating events. Therefore, an NRC Region 1 Senior Reactor Analyst (SRA) conducted a Phase 3 analysis and determined the finding was of very low safety significance (Green). The performance deficiency has a cross-cutting aspect in the area of human performance related to the work practices component, because PSEG did not effectively communicate expectations regarding procedure compliance and personnel did not follow procedures. Inspection Report# : 2006004(pdf)



Significance: Sep 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

REACTOR COOLANT SYSTEM TUBING STRUCTURAL INTEGRITY

The inspectors identified a non-cited violation for PSEG's failure to follow Salem Technical Specification 3.4.11.1.b., Structural Integrity. PSEG discovered a leak on the instrument tubing for reactor coolant system loop flow transmitter 2FT416 and did not properly classify and evaluate the leak for operability or structural integrity, or alternatively isolate the affected tubing.

The finding is more than minor because it affects the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown and at power. 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 reactor coolant system (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 has a cross-cutting aspect in the area of problem identification and resolution, related to the corrective action program component, because PSEG did not thoroughly evaluate the condition.

Inspection Report# : 2006004(pdf)

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



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: **G** 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)



Identified By: NRC

Item Type: NCV NonCited Violation

RESIDUAL HEAT REMOVAL ROOM INTERNAL FLOOD PROTECTION

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 Unit 2 design did not ensure that an internal auxiliary building flood, due to a postulated moderate energy line break, could not affect both residual heat removal (RHR) pump rooms as specified in Updated Final Safety Analysis Report (UFSAR) section 3.6.5.12.5. This issue did not apply to Salem Unit 1.

The finding was more than minor because it affected the mitigating systems cornerstone as related to the availability, reliability, and capability of the RHR 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. The performance deficiency had a PI&R cross-cutting aspect. Inspection Report# : 2006006(pdf)

Significance: Dec 31, 2005 Identified By: Self-Revealing Item Type: NCV NonCited Violation

Page 4 of 5

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)

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)



Significance: G Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

INADEOUATE CONTAINMENT CLOSURE PROCEDURE REOUIREMENTS

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*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

Last modified : December 21, 2006

Salem 2 **4Q/2006 Plant Inspection Findings**

Initiating Events

6 Dec 31, 2006 Significance: Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO INSTITUTE EFFECTIVE CORRECTIVE ACTIONS FOR REACTOR COOLANT SYSTEM TUBING LEAKS

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," in that corrective actions established in 1998 to identify, clean, and inspect Unit 2 reactor coolant system (RCS) instrument tubing were not implemented. Because these corrective actions were not implemented, three through-wall cracks were identified in RCS instrument tubing in October 2006.

This finding is 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." 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 finding has a cross-cutting aspect in area of problem identification and resolution, because PSEG did not take appropriate corrective actions, in 1998 and 2005, to address these safety issues in a timely manner, commensurate with their safety significance and complexity. Inspection Report# : 2006005 (pdf)



G Sep 30, 2006 Significance: Identified By: NRC Item Type: NCV NonCited Violation **22 SERVICE WATER STRAINER TRIP**

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for failure to accomplish maintenance in accordance with procedures. PSEG maintenance personnel omitted procedure steps to adequately tighten or properly lock a locknut on the 22 service water strainer during preventive maintenance. Consequently, the 22 service water strainer motor tripped due to increased strainer basket internal interference after it was returned to service.

The finding is more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone, and it affected the cornerstone objective. Unavailability of the 22 SWS and SWP increased the likelihood of a loss of service water. This finding also impacted the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, incorrectly performed maintenance degraded both availability and reliability of the 22 SWS and SWP. 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 more detailed Phase 2 evaluation was required to assess the safety significance because the performance deficiency affected two cornerstones. However, the Risk-Informed Inspection Notebook for Salem Nuclear Generating Station does not evaluate loss of service water initiating events. Therefore, an NRC Region 1 Senior Reactor Analyst (SRA) conducted a Phase 3 analysis and determined the finding was of very low safety significance (Green). The performance deficiency has a cross-cutting aspect in the area of human performance related to the work practices component, because PSEG did not effectively communicate expectations regarding procedure compliance and personnel did not follow procedures. Inspection Report# : 2006004 (pdf)

Significance: Sep 30, 2006 Identified By: NRC Item Type: NCV NonCited Violation

REACTOR COOLANT SYSTEM TUBING STRUCTURAL INTEGRITY

The inspectors identified a non-cited violation for PSEG's failure to follow Salem Technical Specification 3.4.11.1.b., Structural Integrity. PSEG discovered a leak on the instrument tubing for reactor coolant system loop flow transmitter 2FT416 and did not properly classify and evaluate the leak for operability or structural integrity, or alternatively isolate the affected tubing.

The finding is more than minor because it affects the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown and at power. 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 reactor coolant system (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 has a cross-cutting aspect in the area of problem identification and resolution, related to the corrective action program component, because PSEG did not thoroughly evaluate the condition.

Inspection Report# : 2006004 (pdf)



Significance: **G** 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 crosscutting 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: **G** 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# : <u>2006006 (*pdf*</u>)



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: **G** Feb 17, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

RESIDUAL HEAT REMOVAL ROOM INTERNAL FLOOD PROTECTION

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 Unit 2 design did not ensure that an internal auxiliary building flood, due to a postulated moderate energy line break, could not affect both residual heat removal (RHR) pump rooms as specified in Updated Final Safety Analysis Report (UFSAR) section 3.6.5.12.5. This issue did not apply to Salem Unit 1.

The finding was more than minor because it affected the mitigating systems cornerstone as related to the availability, reliability, and capability of the RHR 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. The performance deficiency had a PI&R cross-cutting aspect. Inspection Report# : 2006006 (pdf)

Barrier Integrity

Significance: Dec 31, 2006 Identified By: Self-Revealing Item Type: NCV NonCited Violation INCORRECTLY POSITIONED FUEL ASSEMBLY

A self-revealing non-cited violation of Salem Technical Specification 6.8.1.b, "Procedures and Programs" was identified when PSEG discovered that an irradiated fuel assembly was incorrectly positioned into the spent fuel pool (SFP) and subsequently transferred without authorization during the reactor core offload of Salem Unit 2's fifteenth refueling outage. Contrary to procedural requirements, PSEG did not ensure that the SFP crane operator used a working copy of the applicable transfer sheets, fuel handling technicians did not properly document a fuel movement irregularity and then transferred a fuel assembly within the SFP without fully apprising the fuel handling senior reactor operator (SRO) or reactor engineer (RE) of the circumstances and, finally, PSEG did not ensure that spent fuel manipulations in the SFP were supervised by a qualified SRO or RE.
This finding is more than minor because it affected the configuration control attribute of the barrier integrity cornerstone. Specifically, mispositioned fuel in the SFP increases the likelihood of an unanalyzed condition in the SFP and a potential impact on the fuel cladding barrier. An increased likelihood of an unanalyzed condition existed because SFP activities were conducted such that more than one fuel assembly could have been incorrectly positioned. This finding was evaluated by the significance determination process of Inspection Manual Chapter (IMC) 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria" because neither IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations"; nor IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," apply to the spent fuel pool. NRC management determined the finding was of very low safety significance because the deficiency did not cause actual degradation of plant systems, structures or components. Specifically, PSEG analysis demonstrated that the incorrectly positioned fuel assembly was in an acceptably safe location for each move. This finding has a cross-cutting aspect in the area of human performance because PSEG did not ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety was supported. Inspection Report# : 2006005 (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

Last modified : March 01, 2007

Salem 2 **1Q/2007 Plant Inspection Findings**

Initiating Events

Significance: Dec 31, 2006 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO INSTITUTE EFFECTIVE CORRECTIVE ACTIONS FOR REACTOR COOLANT SYSTEM **TUBING LEAKS**

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," in that corrective actions established in 1998 to identify, clean, and inspect Unit 2 reactor coolant system (RCS) instrument tubing were not implemented. Because these corrective actions were not implemented, three through-wall cracks were identified in RCS instrument tubing in October 2006.

This finding is 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." 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 finding has a cross-cutting aspect in area of problem identification and resolution, because PSEG did not take appropriate corrective actions, in 1998 and 2005, to address these safety issues in a timely manner, commensurate with their safety significance and complexity. Inspection Report# : 2006005 (pdf)



Significance: Sep 30, 2006 Identified By: NRC Item Type: NCV NonCited Violation **22 SERVICE WATER STRAINER TRIP**

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for failure to accomplish maintenance in accordance with procedures. PSEG maintenance personnel omitted procedure steps to adequately tighten or properly lock a locknut on the 22 service water strainer during preventive maintenance. Consequently, the 22 service water strainer motor tripped due to increased strainer basket internal interference after it was returned to service.

The finding is more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone, and it affected the cornerstone objective. Unavailability of the 22 SWS and SWP increased the likelihood of a loss of service water. This finding also impacted the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, incorrectly performed maintenance degraded both availability and reliability of the 22 SWS and SWP. 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 more detailed Phase 2 evaluation was required to assess the safety significance because the performance deficiency affected two cornerstones. However, the Risk-Informed Inspection Notebook for Salem Nuclear Generating Station does not evaluate loss of service water initiating events. Therefore, an NRC Region 1 Senior Reactor Analyst (SRA) conducted a Phase 3 analysis and determined the finding was of very low safety significance (Green). The performance deficiency has a cross-cutting aspect in the area of human performance related to the work practices component, because PSEG did not effectively communicate expectations regarding procedure compliance and personnel did not follow procedures. Inspection Report# : 2006004 (pdf)

Sep 30, 2006 Significance: Identified By: NRC Item Type: NCV NonCited Violation **REACTOR COOLANT SYSTEM TUBING STRUCTURAL INTEGRITY** The inspectors identified a non-cited violation for PSEG's failure to follow Salem Technical Specification 3.4.11.1.b., Structural Integrity. PSEG discovered a leak on the instrument tubing for reactor coolant system loop flow transmitter 2FT416 and did not properly classify and evaluate the leak for operability or structural integrity, or alternatively isolate the

The finding is more than minor because it affects the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown and at power. 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 reactor coolant system (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 has a cross-cutting aspect in the area of problem identification and resolution, related to the corrective action program component, because PSEG did not thoroughly evaluate the condition.

Inspection Report# : 2006004 (pdf)

affected tubing.

Mitigating Systems



G Mar 23, 2007 Significance: Identified By: NRC Item Type: NCV NonCited Violation **REPETITIVE TRIPS OF 22 SERVICE WATER STRAINER**

The NRC identified a non-cited violation of 10 CFR 50, Appendix B, criterion XVI, 'Corrective Action', when the 22 service water (SW) suction strainer tripped on February 24, 2007, rendering the 22 service water pump unavailable for 44 hours to repair the strainer. PSEG did not identify or correct deficiencies that caused five trips of the 22 SW strainer since March 2006. PSEG replaced the 22 service water strainer assembly on March 23, 2007.

The performance deficiency was determined to be more than minor because it rendered the 22 service water pump unavailable for use. The finding was determined to be of very low safety significance (Green) based on a Phase 3 analysis by the regional Senior Risk Analyst. The finding had a cross-cutting aspect in the area of Problem Identification and Resolution in that PSEG did not thoroughly evaluate a problem such that resolutions addressed causes and extent of condition.

Inspection Report# : 2007006 (pdf)



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)

Barrier Integrity

Significance: Dec 31, 2006 Identified By: Self-Revealing Item Type: NCV NonCited Violation INCORRECTLY POSITIONED FUEL ASSEMBLY

A self-revealing non-cited violation of Salem Technical Specification 6.8.1.b, "Procedures and Programs" was identified when PSEG discovered that an irradiated fuel assembly was incorrectly positioned into the spent fuel pool (SFP) and subsequently transferred without authorization during the reactor core offload of Salem Unit 2's fifteenth refueling outage. Contrary to procedural requirements, PSEG did not ensure that the SFP crane operator used a working copy of the applicable transfer sheets, fuel handling technicians did not properly document a fuel movement irregularity and then transferred a fuel assembly within the SFP without fully apprising the fuel handling senior reactor operator (SRO) or reactor engineer (RE) of the circumstances and, finally, PSEG did not ensure that spent fuel manipulations in the SFP were supervised by a qualified SRO or RE.

This finding is more than minor because it affected the configuration control attribute of the barrier integrity cornerstone. Specifically, mispositioned fuel in the SFP increases the likelihood of an unanalyzed condition in the SFP and a potential impact on the fuel cladding barrier. An increased likelihood of an unanalyzed condition existed because SFP activities were conducted such that more than one fuel assembly could have been incorrectly positioned. This finding was evaluated by the significance determination process of Inspection Manual Chapter (IMC) 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria" because neither IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations"; nor IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," apply to the spent fuel pool. NRC management determined the finding was of very low safety significance because the deficiency did not cause actual degradation of plant systems, structures or components. Specifically, PSEG analysis demonstrated that the incorrectly positioned fuel assembly was in an acceptably safe location for each move. This finding has a cross-cutting aspect in the area of human performance because PSEG did not ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety was supported. Inspection Report# : 2006005 (pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Miscellaneous

Significance: N/A Mar 23, 2007 Identified By: NRC Item Type: FIN Finding SALEM BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION

The inspectors concluded that the implementation of the corrective action program (CAP) at Salem was effective. Salem had a low threshold for identifying problems and entering them in the CAP. Once entered into the system, items were screened and prioritized in a timely manner using established criteria. Items entered into the CAP were properly evaluated commensurate with their safety significance. Corrective actions were implemented in a timely manner. PSEG's audits and self-assessments were adequate, however, some self-assessment recommendations were not entered into the CAP. The inspectors observed that PSEG adequately identified, reviewed, and applied relevant industry operating experience through station programs. Based on interviews conducted during the inspection, workers at the site expressed freedom to enter safety concerns into the CAP.

Inspection Report# : 2007006 (pdf)



Significance: Mar 23, 2007 Identified By: NRC Item Type: NCV NonCited Violation FITNESS-FOR-DUTY (FFD) COLLECTION PERSONNEL COLLECTING FFD SAMPLES FROM CO-**WORKERS**

The NRC identified a non-cited violation of 10 CFR 26, Appendix A, subpart B, 2.3 (1) when the inspectors observed PSEG's fitness-for-duty (FFD) collection technicians and security officers perform urine and breath collection on coworkers on March 21, 2007. PSEG implemented immediate corrective actions by stopping the practice of collection personnel performing urine and breath collections on other collection technicians, enhancing the station FFD procedures, and by conducting FFD testing of the affected individuals.

The performance deficiency was determined to be more than minor because, if left uncorrected, it would affect the integrity of the FFD program. The finding was determined to be of very low safety significance (Green) using the Physical Protection Significance Determination Process. The finding had a cross-cutting aspect in the area of Human Performance in that PSEG did not have FFD adequate procedures that ensured that the regulatory requirements prohibiting collectors from collecting samples from co-workers were followed. Inspection Report# : <u>2007006 (pdf</u>)

Significance: Mar 23, 2007 Identified By: NRC Item Type: NCV NonCited Violation FITNESS-FOR-DUTY (FFD) COLLECTORS LEAVING FFD SPECIMENS UNATTENDED

The NRC identified a non-cited violation of 10 CFR 26, Appendix A, Subpart B, 2.4 (g) (20) when the inspectors observed PSEG's fitness-for-duty (FFD) collection technicians leaving split FFD urine specimens in unsealed aliquot tubes and sealed specimen containers in unattended work areas on March 21, 2007. The licensee implemented immediate corrective measures by capping and sealing FFD aliquot specimens, requiring that FFD donors witness the transfer of their FFD urine specimen to a laboratory technician through a chain-of-custody form, and by sampling an additional 25 percent of PSEG employees for a FFD test.

The performance deficiency was determined to be more than minor because, if left uncorrected, it could affect the integrity of the FFD program. The inspector determined that the finding was of very low safety significance (Green) using the Physical Protection Significance Determination Process. The finding had a cross-cutting aspect in the area of Human Performance in that PSEG failed to effectively communicate expectations regarding procedural compliance and personnel did not follow procedures. Inspection Report# : <u>2007006 (pdf</u>)

Last modified : June 01, 2007

Salem 2 2Q/2007 Plant Inspection Findings

Initiating Events



Identified By: Self-Revealing Item Type: FIN Finding **SALEM UNIT 2 AUTOMATIC REACTOR TRIP**

A self-revealing finding for improper maintenance on a demineralizer sight glass was identified when the sight glass catastrophically failed and initiated a condensate system transient that resulted in a reactor trip. Contrary to vendor recommendations that each sight glass be installed and torqued in place only one time, maintenance technicians had re-installed the sight glass on the demineralizer following vessel maintenance. PSEG replaced all Unit 2 demineralizer sight glasses before the subsequent Unit 2 startup. The finding is greater than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone, and because it adversely affects the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609 and determined that the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of human performance because PSEG did not ensure that complete, accurate, and up to date design documentation, procedures, and work packages were available (H.2.c). Specifically, vendor documentation for the demineralizer sight glass was not available on site, and as a result, PSEG did not incorporate appropriate vendor guidance regarding reinstallation and torque requirements for the sight glass into plant procedures.

Inspection Report# : 2007003 (pdf)



G Dec 31, 2006 Significance: Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO IMPLEMENT EFFECTIVE CORRECTIVE ACTIONS FOR REACTOR COOLANT SYSTEM TUBING LEAKS

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," in that corrective actions established in 1998 to identify, clean, and inspect Unit 2 reactor coolant system (RCS) instrument tubing were not implemented. Because these corrective actions were not implemented, three through-wall cracks were identified in RCS instrument tubing in October 2006.

This finding is 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." 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 finding has a cross-cutting aspect in area of problem identification and resolution, because PSEG did not take appropriate corrective actions, in 1998 and 2005, to address these safety issues in a timely manner, commensurate with their safety significance and complexity.

Inspection Report# : 2006005 (pdf)



22 SERVICE WATER STRAINER TRIP

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for failure to accomplish maintenance in accordance with procedures. PSEG maintenance personnel omitted procedure steps to adequately tighten or properly lock a locknut on the 22 service water strainer during preventive maintenance. Consequently, the 22 service water strainer motor tripped due to increased strainer basket internal interference after it was returned to service.

The finding is more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone, and it affected the cornerstone objective. Unavailability of the 22 SWS and SWP increased the likelihood of a loss of service water. This finding also impacted the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, incorrectly performed maintenance degraded both availability and reliability of the 22 SWS and SWP. 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 more detailed Phase 2 evaluation was required to assess the safety significance because the performance deficiency affected two cornerstones. However, the Risk-Informed Inspection Notebook for Salem Nuclear Generating Station does not evaluate loss of service water initiating events. Therefore, an NRC Region 1 Senior Reactor Analyst (SRA) conducted a Phase 3 analysis and determined the finding was of very low safety significance (Green). The performance deficiency has a cross-cutting aspect in the area of human performance related to the work practices component, because PSEG did not effectively communicate expectations regarding procedure compliance and personnel did not follow procedures.

Inspection Report# : 2006004 (pdf)



Significance: Sep 30, 2006

Identified By: NRC Item Type: NCV NonCited Violation

REACTOR COOLANT SYSTEM TUBING STRUCTURAL INTEGRITY

The inspectors identified a non-cited violation for PSEG's failure to follow Salem Technical Specification 3.4.11.1.b., Structural Integrity. PSEG discovered a leak on the instrument tubing for reactor coolant system loop flow transmitter 2FT416 and did not properly classify and evaluate the leak for operability or structural integrity, or alternatively isolate the affected tubing.

The finding is more than minor because it affects the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown and at power. 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 reactor coolant system (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 has a cross-cutting aspect in the area of problem identification and resolution, related to the corrective action program component, because PSEG did not thoroughly evaluate the condition.

Inspection Report# : 2006004 (pdf)

Mitigating Systems

Significance: Jun 29, 2007 Identified By: Self-Revealing Item Type: NCV NonCited Violation FAILURE TO INSPECT TUBING ON THE 22 CONTROL AREA CHILLER

A self-revealing NCV for failure to comply with 10 CFR, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," was identified when operators discovered a significant leak in the copper oil filter tubing on the 22 CAC on May 1, 2007, that made the 22 CAC inoperable. PSEG had not inspected or replaced the affected tubing as specified in the maintenance procedure. PSEG replaced the tubing and returned the 22 CAC to service. This resulted in ten hours of unplanned unavailability on the 22 CAC. The finding is greater than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609 and determined that the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of problem identification and resolution because PSEG did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner commensurate with their safety significance (P.1.d). Specifically, corrective actions to prevent CAC tubing failures were ineffective because the visual inspections required by the procedure revision incorporated after previous CAC oil tubing failures, may not have identified degraded copper tubing in time to prevent tubing failure. Inspection Report# : 2007003 (pdf)



Identified By: Self-Revealing Item Type: NCV NonCited Violation

21 CONTROL AREA CHILLER INOPERABLE DUE TO OPERATOR PROCEDURAL ERROR

A self-revealing NCV for failure to comply with 10 CFR 50, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," was identified when operators discovered the 21 CAC in an inoperable condition on May 1, 2007. In accordance with post-maintenance testing procedures for the 22 CAC, operators placed the 21 CAC in the pump down mode. When the test of the 22 CAC was aborted, operators did not return the 21 CAC to operable status in accordance with procedures. The 21 CAC was inoperable for approximately six hours. PSEG restored the 21 CAC to operable status and entered the issue into the corrective action program (CAP) as notifications 20322784 and 20322793. This finding is greater than minor because the performance deficiency is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609, and determined the finding is of very low risk significance.

The finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not use human error prevention techniques (H.4.a). Specifically, an operator did not identify an incorrect switch position because the operator did not verify the expected system response when placing the 21 CAC switch to run. Inspection Report# : 2007003 (pdf)



G May 01, 2007 Significance:

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT STEP 3.6.2 OF THE COMPONENT FOULING PROCEDURE

The inspectors identified an NCV for failure to comply with 10 CFR 50, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," when operators did not implement additional log readings for service water (SW) heat exchangers (HXs) as specified by plant procedures during extended periods of high river detritus from March through May of 2007. This required PSEG to take the 12 CC HX out of service for 45 hours to complete system flushes in May and June 2007 to restore full operability. The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609 and determined that the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow plant procedures (H.4.b). Specifically, operators did not implement additional log readings for SW HXs as specified by plant procedures during extended periods of high river detritus from March through May of 2007. Inspection Report# : 2007003 (pdf)

Significance: Mar 23, 2007

Identified By: NRC Item Type: NCV NonCited Violation **REPETITIVE TRIPS OF 22 SERVICE WATER STRAINER**

The NRC identified a non-cited violation of 10 CFR 50, Appendix B, criterion XVI, 'Corrective Action', when the 22 service water (SW) suction strainer tripped on February 24, 2007, rendering the 22 service water pump unavailable for 44 hours to repair the strainer. PSEG did not identify or correct deficiencies that caused five trips of the 22 SW strainer since March 2006. PSEG replaced the 22 service water strainer assembly on March 23, 2007.

The performance deficiency was determined to be more than minor because it rendered the 22 service water pump unavailable for use. The finding was determined to be of very low safety significance (Green) based on a Phase 3 analysis by the regional Senior Risk Analyst. The finding had a cross-cutting aspect in the area of Problem Identification and Resolution in that PSEG did not thoroughly evaluate a problem such that resolutions addressed causes and extent of condition.

Inspection Report# : 2007006 (pdf)



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 safetyrelated 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)

Barrier Integrity

Significance: Dec 31, 2006 Identified By: Self-Revealing Item Type: NCV NonCited Violation

INCORRECTLY POSITIONED FUEL ASSEMBLY

A self-revealing non-cited violation of Salem Technical Specification 6.8.1.b, "Procedures and Programs" was identified when PSEG discovered that an irradiated fuel assembly was incorrectly positioned into the spent fuel pool (SFP) and subsequently transferred without authorization during the reactor core offload of Salem Unit 2's fifteenth refueling outage. Contrary to procedural requirements, PSEG did not ensure that the SFP crane operator used a working copy of the applicable transfer sheets, fuel handling technicians did not properly document a fuel movement irregularity and then transferred a fuel assembly within the SFP without fully apprising the fuel handling senior reactor operator (SRO) or reactor engineer (RE) of the circumstances and, finally, PSEG did not ensure that spent fuel manipulations in the SFP were supervised by a qualified SRO or RE.

This finding is more than minor because it affected the configuration control attribute of the barrier integrity

cornerstone. Specifically, mispositioned fuel in the SFP increases the likelihood of an unanalyzed condition in the SFP and a potential impact on the fuel cladding barrier. An increased likelihood of an unanalyzed condition existed because SFP activities were conducted such that more than one fuel assembly could have been incorrectly positioned. This finding was evaluated by the significance determination process of Inspection Manual Chapter (IMC) 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria" because neither IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations"; nor IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," apply to the spent fuel pool. NRC management determined the finding was of very low safety significance because the deficiency did not cause actual degradation of plant systems, structures or components. Specifically, PSEG analysis demonstrated that the incorrectly positioned fuel assembly was in an acceptably safe location for each move. This finding has a cross-cutting aspect in the area of human performance because PSEG did not ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety was supported. Inspection Report# : 2006005 (*pdf*)

Significance: SL-IV Nov 23, 2004

Identified By: NRC Item Type: VIO Violation FAILURE TO NOTIFY NRC OF INCOMPLETE WELD INSPECTIONS AND TO OBTAIN RELIEF REQUEST FOR INCOMPLETE INSPECTION OF WELDS FOR THE SECOND ISI INTERVAL WITHIN REQUIRED TIME PERIOD

The inspectors identified a Severity Level IV cited violation of 10 CFR 50.55a(g)(5)(iv) and 10 CFR 50.55a(g)(5)(iii). PSEG did not submit needed relief requests for ASME code required inspections for Salem Unit 2 within 12 months after the end of the second ten year inservice inspection (ISI) interval and when PSEG notified the Commission of its determination on March 21, 2006, 28 months after the end of ISI interval 2, it did not submit the information necessary to support the determinations. This finding is handled under traditional enforcement because PSEG's actions impacted the NRC regulatory process. The finding is of very low significance because no actual safety consequences occurred.

Inspection Report# : 2007003 (pdf)

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 <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Significance: N/A Mar 23, 2007 Identified By: NRC

Item Type: FIN Finding SALEM BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION

The inspectors concluded that the implementation of the corrective action program (CAP) at Salem was effective. Salem had a low threshold for identifying problems and entering them in the CAP. Once entered into the system, items were screened and prioritized in a timely manner using established criteria. Items entered into the CAP were properly evaluated commensurate with their safety significance. Corrective actions were implemented in a timely manner. PSEG's audits and self-assessments were adequate, however, some self-assessment recommendations were not entered into the CAP. The inspectors observed that PSEG adequately identified, reviewed, and applied relevant industry operating experience through station programs. Based on interviews conducted during the inspection, workers at the site expressed freedom to enter safety concerns into the CAP. Inspection Report# : 2007006 (pdf)



G Mar 23, 2007 Significance: Identified By: NRC Item Type: NCV NonCited Violation FITNESS-FOR-DUTY (FFD) COLLECTION PERSONNEL COLLECTING FFD SAMPLES FROM CO-

WORKERS

The NRC identified a non-cited violation of 10 CFR 26, Appendix A, subpart B, 2.3 (1) when the inspectors observed PSEG's fitness-for-duty (FFD) collection technicians and security officers perform urine and breath collection on coworkers on March 21, 2007. PSEG implemented immediate corrective actions by stopping the practice of collection personnel performing urine and breath collections on other collection technicians, enhancing the station FFD procedures, and by conducting FFD testing of the affected individuals.

The performance deficiency was determined to be more than minor because, if left uncorrected, it would affect the integrity of the FFD program. The finding was determined to be of very low safety significance (Green) using the Physical Protection Significance Determination Process. The finding had a cross-cutting aspect in the area of Human Performance in that PSEG did not have FFD adequate procedures that ensured that the regulatory requirements prohibiting collectors from collecting samples from co-workers were followed. Inspection Report# : 2007006 (pdf)



G Mar 23, 2007 Significance:

Identified By: NRC Item Type: NCV NonCited Violation

FITNESS-FOR-DUTY (FFD) COLLECTORS LEAVING FFD SPECIMENS UNATTENDED

The NRC identified a non-cited violation of 10 CFR 26, Appendix A, Subpart B, 2.4 (g) (20) when the inspectors observed PSEG's fitness-for-duty (FFD) collection technicians leaving split FFD urine specimens in unsealed aliquot tubes and sealed specimen containers in unattended work areas on March 21, 2007. The licensee implemented immediate corrective measures by capping and sealing FFD aliquot specimens, requiring that FFD donors witness the transfer of their FFD urine specimen to a laboratory technician through a chain-of-custody form, and by sampling an additional 25 percent of PSEG employees for a FFD test.

The performance deficiency was determined to be more than minor because, if left uncorrected, it could affect the integrity of the FFD program. The inspector determined that the finding was of very low safety significance (Green) using the Physical Protection Significance Determination Process. The finding had a cross-cutting aspect in the area of Human Performance in that PSEG failed to effectively communicate expectations regarding procedural compliance and personnel did not follow procedures. Inspection Report# : 2007006 (pdf)

Last modified : August 24, 2007

Salem 2 3Q/2007 Plant Inspection Findings

Initiating Events



Identified By: Self-Revealing Item Type: FIN Finding SALEM UNIT 2 AUTOMATIC REACTOR TRIP

A self-revealing finding for improper maintenance on a demineralizer sight glass was identified when the sight glass catastrophically failed and initiated a condensate system transient that resulted in a reactor trip. Contrary to vendor recommendations that each sight glass be installed and torqued in place only one time, maintenance technicians had re-installed the sight glass on the demineralizer following vessel maintenance. PSEG replaced all Unit 2 demineralizer sight glasses before the subsequent Unit 2 startup. The finding is greater than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone, and because it adversely affects the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609 and determined that the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of human performance because PSEG did not ensure that complete, accurate, and up to date design documentation, procedures, and work packages were available (H.2.c). Specifically, vendor documentation for the demineralizer sight glass was not available on site, and as a result, PSEG did not incorporate appropriate vendor guidance regarding reinstallation and torque requirements for the sight glass into plant procedures.

Inspection Report# : 2007003 (pdf)



Significance: Dec 31, 2006 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO IMPLEMENT EFFECTIVE CORRECTIVE ACTIONS FOR REACTOR COOLANT SYSTEM TUBING LEAKS

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," in that corrective actions established in 1998 to identify, clean, and inspect Unit 2 reactor coolant system (RCS) instrument tubing were not implemented. Because these corrective actions were not implemented, three through-wall cracks were identified in RCS instrument tubing in October 2006.

This finding is 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." 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 finding has a cross-cutting aspect in area of problem identification and resolution, because PSEG did not take appropriate corrective actions, in 1998 and 2005, to address these safety issues in a timely manner, commensurate with their safety significance and complexity.

Inspection Report# : 2006005 (pdf)

Mitigating Systems



Identified By: Self-Revealing Item Type: NCV NonCited Violation

FAILURE TO INSPECT TUBING ON THE 22 CONTROL AREA CHILLER

A self-revealing NCV for failure to comply with 10 CFR, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," was identified when operators discovered a significant leak in the copper oil filter tubing on the 22 CAC on May 1, 2007, that made the 22 CAC inoperable. PSEG had not inspected or replaced the affected tubing as specified in the maintenance procedure. PSEG replaced the tubing and returned the 22 CAC to service. This resulted in ten hours of unplanned unavailability on the 22 CAC. The finding is greater than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609 and determined that the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of problem identification and resolution because PSEG did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner commensurate with their safety significance (P.1.d). Specifically, corrective actions to prevent CAC tubing failures were ineffective because the visual inspections required by the procedure revision incorporated after previous CAC oil tubing failures, may not have identified degraded copper tubing in time to prevent tubing failure. Inspection Report# : 2007003 (pdf)



Significance: May 01, 2007 Identified By: Self-Revealing Item Type: NCV NonCited Violation

21 CONTROL AREA CHILLER INOPERABLE DUE TO OPERATOR PROCEDURAL ERROR A self-revealing NCV for failure to comply with 10 CFR 50, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," was identified when operators discovered the 21 CAC in an inoperable condition on May 1, 2007. In accordance with post-maintenance testing procedures for the 22 CAC, operators placed the 21 CAC in the pump down mode. When the test of the 22 CAC was aborted, operators did not return the 21 CAC to operable status in accordance with procedures. The 21 CAC was inoperable for approximately six hours. PSEG restored the 21 CAC to operable status and entered the issue into the corrective action program (CAP) as notifications 20322784 and 20322793. This finding is greater than minor because the performance deficiency is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609, and determined the finding is of very low risk significance.

The finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not use human error prevention techniques (H.4.a). Specifically, an operator did not identify an incorrect switch position because the operator did not verify the expected system response when placing the 21 CAC switch to run. Inspection Report# : 2007003 (pdf)



Significance: May 01, 2007

Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT STEP 3.6.2 OF THE COMPONENT FOULING PROCEDURE

The inspectors identified an NCV for failure to comply with 10 CFR 50, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," when operators did not implement additional log readings for service water (SW) heat exchangers (HXs) as specified by plant procedures during extended periods of high river detritus from March through May of 2007. This required PSEG to take the 12 CC HX out of service for 45 hours to complete system flushes in May and June 2007 to restore full operability. The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609 and determined that the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow plant procedures (H.4.b). Specifically, operators did not implement additional log readings for SW HXs as specified by plant procedures during extended periods of high river detritus from March through May of 2007. Inspection Report# : 2007003 (pdf)



Identified By: NRC Item Type: NCV NonCited Violation **REPETITIVE TRIPS OF 22 SERVICE WATER STRAINER**

The NRC identified a non-cited violation of 10 CFR 50, Appendix B, criterion XVI, 'Corrective Action', when the 22 service water (SW) suction strainer tripped on February 24, 2007, rendering the 22 service water pump unavailable for 44 hours to repair the strainer. PSEG did not identify or correct deficiencies that caused five trips of the 22 SW strainer since March 2006. PSEG replaced the 22 service water strainer assembly on March 23, 2007.

The performance deficiency was determined to be more than minor because it rendered the 22 service water pump unavailable for use. The finding was determined to be of very low safety significance (Green) based on a Phase 3 analysis by the regional Senior Risk Analyst. The finding had a cross-cutting aspect in the area of Problem Identification and Resolution in that PSEG did not thoroughly evaluate a problem such that resolutions addressed causes and extent of condition.

Inspection Report# : 2007006 (pdf)



G Dec 31, 2006 Significance: 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 safetyrelated 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)

Barrier Integrity

⁶ Dec 31, 2006 Significance: Identified By: Self-Revealing Item Type: NCV NonCited Violation **INCORRECTLY POSITIONED FUEL ASSEMBLY**

A self-revealing non-cited violation of Salem Technical Specification 6.8.1.b, "Procedures and Programs" was identified when PSEG discovered that an irradiated fuel assembly was incorrectly positioned into the spent fuel pool (SFP) and subsequently transferred without authorization during the reactor core offload of Salem Unit 2's fifteenth

refueling outage. Contrary to procedural requirements, PSEG did not ensure that the SFP crane operator used a working copy of the applicable transfer sheets, fuel handling technicians did not properly document a fuel movement irregularity and then transferred a fuel assembly within the SFP without fully apprising the fuel handling senior reactor operator (SRO) or reactor engineer (RE) of the circumstances and, finally, PSEG did not ensure that spent fuel manipulations in the SFP were supervised by a qualified SRO or RE.

This finding is more than minor because it affected the configuration control attribute of the barrier integrity cornerstone. Specifically, mispositioned fuel in the SFP increases the likelihood of an unanalyzed condition in the SFP and a potential impact on the fuel cladding barrier. An increased likelihood of an unanalyzed condition existed because SFP activities were conducted such that more than one fuel assembly could have been incorrectly positioned. This finding was evaluated by the significance determination process of Inspection Manual Chapter (IMC) 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria" because neither IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations"; nor IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," apply to the spent fuel pool. NRC management determined the finding was of very low safety significance because the deficiency did not cause actual degradation of plant systems, structures or components. Specifically, PSEG analysis demonstrated that the incorrectly positioned fuel assembly was in an acceptably safe location for each move. This finding has a cross-cutting aspect in the area of human performance because PSEG did not ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety was supported. Inspection Report# : 2006005 (*pdf*)

Significance: SL-IV Nov 23, 2004 Identified By: NRC Item Type: VIO Violation FAILURE TO NOTIFY NRC OF INCOMPLETE WELD INSPECTIONS AND TO OBTAIN RELIEF REQUEST FOR INCOMPLETE INSPECTION OF WELDS FOR THE SECOND ISI INTERVAL WITHIN REQUIRED TIME PERIOD

The inspectors identified a Severity Level IV cited violation of 10 CFR 50.55a(g)(5)(iv) and 10 CFR 50.55a(g)(5)(iii). PSEG did not submit needed relief requests for ASME code required inspections for Salem Unit 2 within 12 months after the end of the second ten year inservice inspection (ISI) interval and when PSEG notified the Commission of its determination on March 21, 2006, 28 months after the end of ISI interval 2, it did not submit the information necessary to support the determinations. This finding is handled under traditional enforcement because PSEG's actions impacted the NRC regulatory process. The finding is of very low significance because no actual safety consequences occurred.

Inspection Report# : 2007003 (pdf)

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 <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Significance: N/A Mar 23, 2007 Identified By: NRC

Item Type: FIN Finding

SALEM BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION

The inspectors concluded that the implementation of the corrective action program (CAP) at Salem was effective. Salem had a low threshold for identifying problems and entering them in the CAP. Once entered into the system, items were screened and prioritized in a timely manner using established criteria. Items entered into the CAP were properly evaluated commensurate with their safety significance. Corrective actions were implemented in a timely manner. PSEG's audits and self-assessments were adequate, however, some self-assessment recommendations were not entered into the CAP. The inspectors observed that PSEG adequately identified, reviewed, and applied relevant industry operating experience through station programs. Based on interviews conducted during the inspection, workers at the site expressed freedom to enter safety concerns into the CAP. Inspection Report# : 2007006 (pdf)



G Mar 23, 2007

Identified By: NRC Item Type: NCV NonCited Violation

FITNESS-FOR-DUTY (FFD) COLLECTION PERSONNEL COLLECTING FFD SAMPLES FROM CO-**WORKERS**

The NRC identified a non-cited violation of 10 CFR 26, Appendix A, subpart B, 2.3 (1) when the inspectors observed PSEG's fitness-for-duty (FFD) collection technicians and security officers perform urine and breath collection on coworkers on March 21, 2007. PSEG implemented immediate corrective actions by stopping the practice of collection personnel performing urine and breath collections on other collection technicians, enhancing the station FFD procedures, and by conducting FFD testing of the affected individuals.

The performance deficiency was determined to be more than minor because, if left uncorrected, it would affect the integrity of the FFD program. The finding was determined to be of very low safety significance (Green) using the Physical Protection Significance Determination Process. The finding had a cross-cutting aspect in the area of Human Performance in that PSEG did not have FFD adequate procedures that ensured that the regulatory requirements prohibiting collectors from collecting samples from co-workers were followed. Inspection Report# : 2007006 (pdf)



G Mar 23, 2007 Significance: Identified By: NRC

Item Type: NCV NonCited Violation

FITNESS-FOR-DUTY (FFD) COLLECTORS LEAVING FFD SPECIMENS UNATTENDED

The NRC identified a non-cited violation of 10 CFR 26, Appendix A, Subpart B, 2.4 (g) (20) when the inspectors observed PSEG's fitness-for-duty (FFD) collection technicians leaving split FFD urine specimens in unsealed aliquot tubes and sealed specimen containers in unattended work areas on March 21, 2007. The licensee implemented immediate corrective measures by capping and sealing FFD aliquot specimens, requiring that FFD donors witness the transfer of their FFD urine specimen to a laboratory technician through a chain-of-custody form, and by sampling an additional 25 percent of PSEG employees for a FFD test.

The performance deficiency was determined to be more than minor because, if left uncorrected, it could affect the integrity of the FFD program. The inspector determined that the finding was of very low safety significance (Green) using the Physical Protection Significance Determination Process. The finding had a cross-cutting aspect in the area of Human Performance in that PSEG failed to effectively communicate expectations regarding procedural compliance and personnel did not follow procedures. Inspection Report# : 2007006 (pdf)

Last modified : December 07, 2007

Salem 2 4Q/2007 Plant Inspection Findings

Initiating Events



Identified By: Self-Revealing Item Type: FIN Finding **SALEM UNIT 2 AUTOMATIC REACTOR TRIP**

A self-revealing finding for improper maintenance on a demineralizer sight glass was identified when the sight glass catastrophically failed and initiated a condensate system transient that resulted in a reactor trip. Contrary to vendor recommendations that each sight glass be installed and torqued in place only one time, maintenance technicians had re-installed the sight glass on the demineralizer following vessel maintenance. PSEG replaced all Unit 2 demineralizer sight glasses before the subsequent Unit 2 startup. The finding is greater than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone, and because it adversely affects the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609 and determined that the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of human performance because PSEG did not ensure that complete, accurate, and up to date design documentation, procedures, and work packages were available (H.2.c). Specifically, vendor documentation for the demineralizer sight glass was not available on site, and as a result, PSEG did not incorporate appropriate vendor guidance regarding reinstallation and torque requirements for the sight glass into plant procedures.

Inspection Report# : 2007003 (pdf)

Mitigating Systems



Significance: Jun 29, 2007 Identified By: Self-Revealing Item Type: NCV NonCited Violation FAILURE TO INSPECT TUBING ON THE 22 CONTROL AREA CHILLER

A self-revealing NCV for failure to comply with 10 CFR, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," was identified when operators discovered a significant leak in the copper oil filter tubing on the 22 CAC on May 1, 2007, that made the 22 CAC inoperable. PSEG had not inspected or replaced the affected tubing as specified in the maintenance procedure. PSEG replaced the tubing and returned the 22 CAC to service. This resulted in ten hours of unplanned unavailability on the 22 CAC. The finding is greater than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609 and determined that the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of problem identification and resolution because PSEG did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner commensurate with their safety significance (P.1.d). Specifically, corrective actions to prevent CAC tubing failures were ineffective because the visual inspections required by the procedure revision incorporated after previous CAC oil tubing failures, may not have identified degraded copper tubing in time to prevent tubing failure. Inspection Report# : 2007003 (pdf)



Identified By: Self-Revealing Item Type: NCV NonCited Violation

21 CONTROL AREA CHILLER INOPERABLE DUE TO OPERATOR PROCEDURAL ERROR

A self-revealing NCV for failure to comply with 10 CFR 50, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," was identified when operators discovered the 21 CAC in an inoperable condition on May 1, 2007. In accordance with post-maintenance testing procedures for the 22 CAC, operators placed the 21 CAC in the pump down mode. When the test of the 22 CAC was aborted, operators did not return the 21 CAC to operable status in accordance with procedures. The 21 CAC was inoperable for approximately six hours. PSEG restored the 21 CAC to operable status and entered the issue into the corrective action program (CAP) as notifications 20322784 and 20322793. This finding is greater than minor because the performance deficiency is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609, and determined the finding is of very low risk significance.

The finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not use human error prevention techniques (H.4.a). Specifically, an operator did not identify an incorrect switch position because the operator did not verify the expected system response when placing the 21 CAC switch to run. Inspection Report# : 2007003 (pdf)



Significance: May 01, 2007 Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT STEP 3.6.2 OF THE COMPONENT FOULING PROCEDURE

The inspectors identified an NCV for failure to comply with 10 CFR 50, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," when operators did not implement additional log readings for service water (SW) heat exchangers (HXs) as specified by plant procedures during extended periods of high river detritus from March through May of 2007. This required PSEG to take the 12 CC HX out of service for 45 hours to complete system flushes in May and June 2007 to restore full operability. The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609 and determined that the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow plant procedures (H.4.b). Specifically, operators did not implement additional log readings for SW HXs as specified by plant procedures during extended periods of high river detritus from March through May of 2007. Inspection Report# : 2007003 (pdf)



G Mar 23, 2007 Significance:

Identified By: NRC

Item Type: NCV NonCited Violation

REPETITIVE TRIPS OF 22 SERVICE WATER STRAINER

The NRC identified a non-cited violation of 10 CFR 50, Appendix B, criterion XVI, 'Corrective Action', when the 22 service water (SW) suction strainer tripped on February 24, 2007, rendering the 22 service water pump unavailable for 44 hours to repair the strainer. PSEG did not identify or correct deficiencies that caused five trips of the 22 SW strainer since March 2006. PSEG replaced the 22 service water strainer assembly on March 23, 2007.

The performance deficiency was determined to be more than minor because it rendered the 22 service water pump unavailable for use. The finding was determined to be of very low safety significance (Green) based on a Phase 3 analysis by the regional Senior Risk Analyst. The finding had a cross-cutting aspect in the area of Problem Identification and Resolution in that PSEG did not thoroughly evaluate a problem such that resolutions addressed causes and extent of condition.

Inspection Report# : 2007006 (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 Mar 23, 2007 Identified By: NRC Item Type: FIN Finding SALEM BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION The inspectors concluded that the implementation of the corrective action program (CAP) at Salem was effective. Salem had a low threshold for identifying problems and entering them in the CAP. Once entered into the system, items were screened and prioritized in a timely manner using established criteria. Items entered into the CAP were properly evaluated commensurate with their safety significance. Corrective actions were implemented in a timely manner. PSEG's audits and self-assessments were adequate, however, some self-assessment recommendations were not entered into the CAP. The inspectors observed that PSEG adequately identified, reviewed, and applied relevant industry operating experience through station programs. Based on interviews conducted during the inspection, workers at the site expressed freedom to enter safety concerns into the CAP.

Inspection Report# : 2007006 (pdf)



G Mar 23, 2007 Significance:

Identified By: NRC

Item Type: NCV NonCited Violation

FITNESS-FOR-DUTY (FFD) COLLECTION PERSONNEL COLLECTING FFD SAMPLES FROM CO-WORKERS

The NRC identified a non-cited violation of 10 CFR 26, Appendix A, subpart B, 2.3 (1) when the inspectors observed PSEG's fitness-for-duty (FFD) collection technicians and security officers perform urine and breath collection on coworkers on March 21, 2007. PSEG implemented immediate corrective actions by stopping the practice of collection personnel performing urine and breath collections on other collection technicians, enhancing the station FFD procedures, and by conducting FFD testing of the affected individuals.

The performance deficiency was determined to be more than minor because, if left uncorrected, it would affect the integrity of the FFD program. The finding was determined to be of very low safety significance (Green) using the Physical Protection Significance Determination Process. The finding had a cross-cutting aspect in the area of Human Performance in that PSEG did not have FFD adequate procedures that ensured that the regulatory requirements prohibiting collectors from collecting samples from co-workers were followed. Inspection Report# : 2007006 (pdf)



Significance: **G** Mar 23, 2007

Identified By: NRC Item Type: NCV NonCited Violation

FITNESS-FOR-DUTY (FFD) COLLECTORS LEAVING FFD SPECIMENS UNATTENDED

The NRC identified a non-cited violation of 10 CFR 26, Appendix A, Subpart B, 2.4 (g) (20) when the inspectors observed PSEG's fitness-for-duty (FFD) collection technicians leaving split FFD urine specimens in unsealed aliquot tubes and sealed specimen containers in unattended work areas on March 21, 2007. The licensee implemented immediate corrective measures by capping and sealing FFD aliquot specimens, requiring that FFD donors witness the transfer of their FFD urine specimen to a laboratory technician through a chain-of-custody form, and by sampling an additional 25 percent of PSEG employees for a FFD test.

The performance deficiency was determined to be more than minor because, if left uncorrected, it could affect the integrity of the FFD program. The inspector determined that the finding was of very low safety significance (Green) using the Physical Protection Significance Determination Process. The finding had a cross-cutting aspect in the area of Human Performance in that PSEG failed to effectively communicate expectations regarding procedural compliance and personnel did not follow procedures. Inspection Report# : 2007006 (pdf)

Last modified : February 04, 2008

Salem 2 1Q/2008 Plant Inspection Findings

Initiating Events

Significance: Mar 31, 2008 Identified By: Self-Revealing Item Type: NCV NonCited Violation SALEM UNIT 2 LOSS OF ALL THREE CHILLERS

The inspectors identified a self-revealing non-cited violation of Technical Specification 6.8.1.a, "Procedures and Programs" when the 23 chiller failed to start on January 22, 2008. PSEG personnel did not start the 23 chiller and verify proper operation before removing the 21 and 22 chillers from service. This resulted in the plant operating for five hours with all three chillers out of service. The inspectors determined that the procedure for chiller operation was inadequate because it did not provide sufficient guidance to operators when removing two chillers from service. PSEG's corrective actions included revising the chiller operating procedure and replacement of the solenoid valve that caused the 23 chiller not to start.

The finding is more than minor because it is associated with the configuration control attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, unavailability of all three chillers increased the likelihood of a loss of control air. The inspectors determined that the finding was of very low safety significance using the Salem plant-specific Phase 2 pre-solved worksheets in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations."

This performance deficiency has a cross-cutting aspect in the area of human performance because PSEG personnel did not effectively communicate human error prevention techniques, such as holding pre-job briefings, self checking, and peer checking, and these techniques were not used commensurate with the risk of the assigned task [H.4(a)]. Specifically, PSEG personnel did not verify the proper operation of the 23 chiller before removing the 21 and 22 chillers from service.

Inspection Report# : 2008002 (pdf)



Identified By: Self-Revealing Item Type: FIN Finding

SALEM UNIT 2 AUTOMATIC REACTOR TRIP

A self-revealing finding for improper maintenance on a demineralizer sight glass was identified when the sight glass catastrophically failed and initiated a condensate system transient that resulted in a reactor trip. Contrary to vendor recommendations that each sight glass be installed and torqued in place only one time, maintenance technicians had re-installed the sight glass on the demineralizer following vessel maintenance. PSEG replaced all Unit 2 demineralizer sight glasses before the subsequent Unit 2 startup. The finding is greater than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone, and because it adversely affects the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609 and determined that the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of human performance because PSEG did not ensure that complete, accurate, and up to date design documentation, procedures, and work packages were available (H.2.c). Specifically, vendor documentation for the demineralizer sight glass was not available on site, and as a result, PSEG did not incorporate appropriate vendor guidance regarding reinstallation and torque requirements for the sight glass into plant procedures.

Inspection Report# : <u>2007003</u> (pdf)

Mitigating Systems

Significance: Mar 31, 2008 Identified By: Self-Revealing Item Type: NCV NonCited Violation

25SW24 FAILURE CAUSED 25 SERVICE WATER PUMP UNAVAILABILITY

The inspectors identified a self-revealing non-cited violation of Technical Specification 6.8.1.a, "Procedures and Programs." The inspectors determined that maintenance procedures for the 25 service water strainer (SWS) blow down valve (25SW24) were inadequate because they did not ensure proper alignment of the valve and actuator. This resulted in the 25 service water pump (SWP) being inoperable for approximately 35 hours. PSEG returned the 25 SW train to service following completion of corrective maintenance on the blow down valve and verification of proper alignment of the valve and actuator. PSEG also revised the applicable maintenance procedures for future maintenance activities.

The finding is more than minor because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability 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 screen and determined that this finding was of very low safety significance.

The finding has a cross-cutting aspect in the area of problem identification and resolution because PSEG did not implement and institutionalize operating experience, including internally generated lessons learned, through changes to station processes, procedures, equipment, and training programs [P.2(b)]. Specifically, PSEG procedures did not incorporate internal operating experience to ensure proper alignment between the service water strainer blow down valve actuator and valve stem.

Inspection Report# : 2008002 (pdf)

Significance: Jun 29, 2007 Identified By: Self-Revealing Item Type: NCV NonCited Violation

FAILURE TO INSPECT TUBING ON THE 22 CONTROL AREA CHILLER

A self-revealing NCV for failure to comply with 10 CFR, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," was identified when operators discovered a significant leak in the copper oil filter tubing on the 22 CAC on May 1, 2007, that made the 22 CAC inoperable. PSEG had not inspected or replaced the affected tubing as specified in the maintenance procedure. PSEG replaced the tubing and returned the 22 CAC to service. This resulted in ten hours of unplanned unavailability on the 22 CAC. The finding is greater than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609 and determined that the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of problem identification and resolution because PSEG did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner commensurate with their safety significance (P.1.d). Specifically, corrective actions to prevent CAC tubing failures were ineffective because the visual inspections required by the procedure revision incorporated after previous CAC oil tubing failures, may not have identified degraded copper tubing in time to prevent tubing failure. Inspection Report# : 2007003 (pdf)

G

Significance: May 01, 2007

Identified By: Self-Revealing Item Type: NCV NonCited Violation

21 CONTROL AREA CHILLER INOPERABLE DUE TO OPERATOR PROCEDURAL ERROR

A self-revealing NCV for failure to comply with 10 CFR 50, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," was identified when operators discovered the 21 CAC in an inoperable condition on May 1, 2007. In accordance with post-maintenance testing procedures for the 22 CAC, operators placed the 21 CAC in the pump down

mode. When the test of the 22 CAC was aborted, operators did not return the 21 CAC to operable status in accordance with procedures. The 21 CAC was inoperable for approximately six hours. PSEG restored the 21 CAC to operable status and entered the issue into the corrective action program (CAP) as notifications 20322784 and 20322793. This finding is greater than minor because the performance deficiency is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609, and determined the finding is of very low risk significance.

The finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not use human error prevention techniques (H.4.a). Specifically, an operator did not identify an incorrect switch position because the operator did not verify the expected system response when placing the 21 CAC switch to run. Inspection Report# : 2007003 (pdf)



Identified By: NRC Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT STEP 3.6.2 OF THE COMPONENT FOULING PROCEDURE

The inspectors identified an NCV for failure to comply with 10 CFR 50, Appendix B, Criterion V, "Instruction, Procedures, and Drawings," when operators did not implement additional log readings for service water (SW) heat exchangers (HXs) as specified by plant procedures during extended periods of high river detritus from March through May of 2007. This required PSEG to take the 12 CC HX out of service for 45 hours to complete system flushes in May and June 2007 to restore full operability. The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609 and determined that the finding is of very low safety significance.

The finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow plant procedures (H.4.b). Specifically, operators did not implement additional log readings for SW HXs as specified by plant procedures during extended periods of high river detritus from March through May of 2007. Inspection Report# : 2007003 (*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 <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : June 05, 2008

Salem 2 2Q/2008 Plant Inspection Findings

Initiating Events

Significance: Jun 30, 2008 Identified By: Self-Revealing Item Type: NCV NonCited Violation **SALEM UNIT 2 LOSS OF ALL THREE CHILLERS**

A self-revealing non-cited violation of Technical Specification (TS) 6.8.1.a, "Procedures and Programs," was identified because PSEG did not maintain adequate control of the system configuration for the Unit 2 chill water system during maintenance on the 21 chiller. Specifically, on May 27, 2008, all three Unit 2 chill water system chillers tripped due to an error in the safety tagging sequence specified by the work control documents for maintenance on the 21 chiller.

This finding is more than minor because it is associated with the configuration control attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, unavailability of all three chillers increased the likelihood of a loss of control air that could result in a complicated plant trip. Per Inspection Manual Chapter (IMC) 0609, Attachment 0609.04, initial screening and characterization of findings, the inspectors conducted a Phase 1 analysis and determined that this finding required a Phase 2 analysis because the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The inspector determined that the finding was of very low safety significance (Green) using the Salem plant specific Phase 2 pre-solved worksheets in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations."

This finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow procedures [H.4(b)]. Specifically, revisions to the work control document for tagging the 21 chiller did not comply with the requirements of PSEG procedure SH.OP-AP.ZZ-0051, "Safety Tagging Operations."

Inspection Report# : 2008003 (pdf)

Significance: Mar 31, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation SALEM UNIT 2 LOSS OF ALL THREE CHILLERS

The inspectors identified a self-revealing non-cited violation of Technical Specification 6.8.1.a, "Procedures and Programs" when the 23 chiller failed to start on January 22, 2008. PSEG personnel did not start the 23 chiller and verify proper operation before removing the 21 and 22 chillers from service. This resulted in the plant operating for five hours with all three chillers out of service. The inspectors determined that the procedure for chiller operation was inadequate because it did not provide sufficient guidance to operators when removing two chillers from service. PSEG's corrective actions included revising the chiller operating procedure and replacement of the solenoid valve that caused the 23 chiller not to start.

The finding is more than minor because it is associated with the configuration control attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, unavailability of all three chillers increased the likelihood of a loss of control air. The inspectors determined that the finding was of very low safety significance using the Salem plant-specific Phase 2 pre-solved worksheets in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations."

This performance deficiency has a cross-cutting aspect in the area of human performance because PSEG personnel did

not effectively communicate human error prevention techniques, such as holding pre-job briefings, self checking, and peer checking, and these techniques were not used commensurate with the risk of the assigned task [H.4(a)]. Specifically, PSEG personnel did not verify the proper operation of the 23 chiller before removing the 21 and 22 chillers from service.

Inspection Report# : 2008002 (pdf)

Mitigating Systems

Significance: Jun 30, 2008 Identified By: Self-Revealing Item Type: NCV NonCited Violation SALEM UNIT 2 LOSS OF REACTOR VESSEL LEVEL INDICATION SYSTEM A self-revealing non-cited violation of Technical Specification (TS) 6.8.1.a, "Procedures and Programs," was identified because PSEG did not adequately maintain the calibration of the Unit 2 reactor vessel level indication system (RVLIS). Specifically, scaling for both RVLIS dynamic range channels was not completed when required. This resulted in Unit 2 RVLIS being inoperable for 13-days.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and because it affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, operators were not aware that both channels of RVLIS were inoperable and could have taken non-conservative actions during an inadequate core cooling or loss of coolant inventory event. 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).

This finding has a cross-cutting aspect in the area of human performance because PSEG did not appropriately coordinate work activities as necessary to keep personnel apprised of work status and the operational impact of work activities [H.3(b)]. Specifically, PSEG did not ensure RVLIS scaling was completed per the established work control process because engineering did not adequately communicate the importance of entering the new dynamic range coefficients to the operability of the RVLIS system.

Inspection Report# : 2008003 (pdf)

Significance: ^G Mar 31, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

25SW24 FAILURE CAUSED 25 SERVICE WATER PUMP UNAVAILABILITY

The inspectors identified a self-revealing non-cited violation of Technical Specification 6.8.1.a, "Procedures and Programs." The inspectors determined that maintenance procedures for the 25 service water strainer (SWS) blow down valve (25SW24) were inadequate because they did not ensure proper alignment of the valve and actuator. This resulted in the 25 service water pump (SWP) being inoperable for approximately 35 hours. PSEG returned the 25 SW train to service following completion of corrective maintenance on the blow down valve and verification of proper alignment of the valve and actuator. PSEG also revised the applicable maintenance procedures for future maintenance activities.

The finding is more than minor because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability 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 screen and determined that this finding was of very low safety significance.

The finding has a cross-cutting aspect in the area of problem identification and resolution because PSEG did not implement and institutionalize operating experience, including internally generated lessons learned, through changes to station processes, procedures, equipment, and training programs [P.2(b)]. Specifically, PSEG procedures did not

incorporate internal operating experience to ensure proper alignment between the service water strainer blow down valve actuator and valve stem.

Inspection Report# : 2008002 (pdf)

Barrier Integrity

Significance: Jun 30, 2008 Identified By: Self-Revealing Item Type: NCV NonCited Violation **SALEM UNIT 2 22 CFCU VALVES MISPOSITIONED**

A self-revealing non-cited violation of TS 6.8.1.a, "Procedures and Programs" was identified because the 22 Containment Fan Coil Unit (CFCU) had cooling water flow to the motor cooler inadvertently isolated during a routine surveillance test. Specifically, the surveillance procedure did not include steps to operate specific gage isolation valves to place a test gage in service, and as a result technicians repositioned the wrong valves.

This finding is more than minor because it is associated with the system, structure, and component (SSC) and barrier performance attribute of the Barrier Integrity cornerstone and it affects the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, unavailability of the 22 CFCU represented an actual loss of defense in depth of a system that controls containment pressure. Per inspection manual chapter (IMC) 0609, Attachment 0609.04, "Determining the Significance of Reactor Inspection Findings for at-power Situations," the inspectors conducted a Phase 1 screen and determined the finding to be of very low safety significance (Green) because the finding did not represent an actual open pathway in the physical integrity of reactor containment isolation system and heat removal components, did not involve an actual reduction in function of hydrogen igniters in containment, and did not screen as potentially risk significant due to external initiating events.

This finding has a cross-cutting aspect in the area of human resources because PSEG did not provide complete and accurate procedures for the performance of this surveillance test [H.2(c)]. Specifically, the continuous use procedure "Service Water Fouling Monitoring Containment Fan Coil Units", revised on May 31, 2008, did not contain procedure steps to direct the opening and closing of valves that must be manipulated to successfully perform the procedure.

Inspection Report# : <u>2008003</u> (pdf)

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 <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : August 29, 2008

Salem 2 **3Q/2008 Plant Inspection Findings**

Initiating Events



Identified By: Self-Revealing Item Type: NCV NonCited Violation

SALEM UNIT 2 LOSS OF ALL THREE CHILLERS

A self-revealing non-cited violation of Technical Specification (TS) 6.8.1.a, "Procedures and Programs," was identified because PSEG did not maintain adequate control of the system configuration for the Unit 2 chill water system during maintenance on the 21 chiller. Specifically, on May 27, 2008, all three Unit 2 chill water system chillers tripped due to an error in the safety tagging sequence specified by the work control documents for maintenance on the 21 chiller.

This finding is more than minor because it is associated with the configuration control attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, unavailability of all three chillers increased the likelihood of a loss of control air that could result in a complicated plant trip. Per Inspection Manual Chapter (IMC) 0609, Attachment 0609.04, initial screening and characterization of findings, the inspectors conducted a Phase 1 analysis and determined that this finding required a Phase 2 analysis because the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The inspector determined that the finding was of very low safety significance (Green) using the Salem plant specific Phase 2 pre-solved worksheets in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations."

This finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow procedures [H.4(b)]. Specifically, revisions to the work control document for tagging the 21 chiller did not comply with the requirements of PSEG procedure SH.OP-AP.ZZ-0051, "Safety Tagging Operations."

Inspection Report# : 2008003 (pdf)



G Mar 31, 2008 Significance: Identified By: Self-Revealing Item Type: NCV NonCited Violation SALEM UNIT 2 LOSS OF ALL THREE CHILLERS

The inspectors identified a self-revealing non-cited violation of Technical Specification 6.8.1.a, "Procedures and Programs" when the 23 chiller failed to start on January 22, 2008. PSEG personnel did not start the 23 chiller and verify proper operation before removing the 21 and 22 chillers from service. This resulted in the plant operating for five hours with all three chillers out of service. The inspectors determined that the procedure for chiller operation was inadequate because it did not provide sufficient guidance to operators when removing two chillers from service. PSEG's corrective actions included revising the chiller operating procedure and replacement of the solenoid valve that caused the 23 chiller not to start.

The finding is more than minor because it is associated with the configuration control attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, unavailability of all three chillers increased the likelihood of a loss of control air. The inspectors determined that the finding was of very low safety significance using the Salem plant-specific Phase 2 pre-solved worksheets in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations."

This performance deficiency has a cross-cutting aspect in the area of human performance because PSEG personnel did not effectively communicate human error prevention techniques, such as holding pre-job briefings, self checking, and peer checking, and these techniques were not used commensurate with the risk of the assigned task [H.4(a)]. Specifically, PSEG personnel did not verify the proper operation of the 23 chiller before removing the 21 and 22 chillers from service. Inspection Report# : 2008002 (pdf)

Mitigating Systems



A self-revealing non-cited violation of Technical Specification (TS) 6.8.1.a, "Procedures and Programs," was identified because PSEG did not adequately maintain the calibration of the Unit 2 reactor vessel level indication system (RVLIS). Specifically, scaling for both RVLIS dynamic range channels was not completed when required. This resulted in Unit 2 RVLIS being inoperable for 13-days.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and because it affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, operators were not aware that both channels of RVLIS were inoperable and could have taken non-conservative actions during an inadequate core cooling or loss of coolant inventory event. 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).

This finding has a cross-cutting aspect in the area of human performance because PSEG did not appropriately coordinate work activities as necessary to keep personnel apprised of work status and the operational impact of work activities [H.3(b)]. Specifically, PSEG did not ensure RVLIS scaling was completed per the established work control process because engineering did not adequately communicate the importance of entering the new dynamic range coefficients to the operability of the RVLIS system.

Inspection Report# : 2008003 (pdf)



Significance: Mar 31, 2008 Identified By: Self-Revealing Item Type: NCV NonCited Violation 25SW24 FAILURE CAUSED 25 SERVICE WATER PUMP UNAVAILABILITY

The inspectors identified a self-revealing non-cited violation of Technical Specification 6.8.1.a, "Procedures and Programs." The inspectors determined that maintenance procedures for the 25 service water strainer (SWS) blow down valve (25SW24) were inadequate because they did not ensure proper alignment of the valve and actuator. This resulted in the 25 service water pump (SWP) being inoperable for approximately 35 hours. PSEG returned the 25 SW train to service following completion of corrective maintenance on the blow down valve and verification of proper alignment of the valve and actuator. PSEG also revised the applicable maintenance procedures for future maintenance activities.

The finding is more than minor because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability 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 screen and determined that this finding was of very low safety significance.

The finding has a cross-cutting aspect in the area of problem identification and resolution because PSEG did not implement and institutionalize operating experience, including internally generated lessons learned, through changes to station processes, procedures, equipment, and training programs [P.2(b)]. Specifically, PSEG procedures did not incorporate internal operating experience to ensure proper alignment between the service water strainer blow down valve actuator and valve stem.

Inspection Report# : 2008002 (pdf)

Barrier Integrity

Significance: Jun 30, 2008 Identified By: Self-Revealing Item Type: NCV NonCited Violation SALEM UNIT 2 22 CFCU VALVES MISPOSITIONED

A self-revealing non-cited violation of TS 6.8.1.a, "Procedures and Programs" was identified because the 22 Containment Fan Coil Unit (CFCU) had cooling water flow to the motor cooler inadvertently isolated during a routine surveillance test. Specifically, the surveillance procedure did not include steps to operate specific gage isolation valves to place a test gage in service, and as a result technicians repositioned the wrong valves.

This finding is more than minor because it is associated with the system, structure, and component (SSC) and barrier performance attribute of the Barrier Integrity cornerstone and it affects the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, unavailability of the 22 CFCU represented an actual loss of defense in depth of a system that controls containment pressure. Per inspection manual chapter (IMC) 0609, Attachment 0609.04,

"Determining the Significance of Reactor Inspection Findings for at-power Situations," the inspectors conducted a Phase 1 screen and determined the finding to be of very low safety significance (Green) because the finding did not represent an actual open pathway in the physical integrity of reactor containment isolation system and heat removal components, did not involve an actual reduction in function of hydrogen igniters in containment, and did not screen as potentially risk significant due to external initiating events.

This finding has a cross-cutting aspect in the area of human resources because PSEG did not provide complete and accurate procedures for the performance of this surveillance test [H.2(c)]. Specifically, the continuous use procedure "Service Water Fouling Monitoring Containment Fan Coil Units", revised on May 31, 2008, did not contain procedure steps to direct the opening and closing of valves that must be manipulated to successfully perform the procedure. Inspection Report# : 2008003 (pdf)

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 <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : November 26, 2008

Salem 2 **4Q/2008 Plant Inspection Findings**

Initiating Events

G Jun 30, 2008 Significance: Identified By: Self-Revealing Item Type: NCV NonCited Violation SALEM UNIT 2 LOSS OF ALL THREE CHILLERS

A self-revealing non-cited violation of Technical Specification (TS) 6.8.1.a, "Procedures and Programs," was identified because PSEG did not maintain adequate control of the system configuration for the Unit 2 chill water system during maintenance on the 21 chiller. Specifically, on May 27, 2008, all three Unit 2 chill water system chillers tripped due to an error in the safety tagging sequence specified by the work control documents for maintenance on the 21 chiller.

This finding is more than minor because it is associated with the configuration control attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, unavailability of all three chillers increased the likelihood of a loss of control air that could result in a complicated plant trip. Per Inspection Manual Chapter (IMC) 0609, Attachment 0609.04, initial screening and characterization of findings, the inspectors conducted a Phase 1 analysis and determined that this finding required a Phase 2 analysis because the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The inspector determined that the finding was of very low safety significance (Green) using the Salem plant specific Phase 2 pre-solved worksheets in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations."

This finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow procedures [H.4(b)]. Specifically, revisions to the work control document for tagging the 21 chiller did not comply with the requirements of PSEG procedure SH.OP-AP.ZZ-0051, "Safety Tagging Operations."

Inspection Report# : 2008003 (pdf)

Significance: Mar 31, 2008 Identified By: Self-Revealing Item Type: NCV NonCited Violation SALEM UNIT 2 LOSS OF ALL THREE CHILLERS

The inspectors identified a self-revealing non-cited violation of Technical Specification 6.8.1.a, "Procedures and Programs "when the 23 chiller failed to start on January 22, 2008. PSEG personnel did not start the 23 chiller and verify proper operation before removing the 21 and 22 chillers from service. This resulted in the plant operating for five hours with all three chillers out of service. The inspectors determined that the procedure for chiller operation was inadequate because it did not provide sufficient guidance to operators when removing two chillers from service. PSEG's corrective actions included revising the chiller operating procedure and replacement of the solenoid valve that caused the 23 chiller not to start.

The finding is more than minor because it is associated with the configuration control attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, unavailability of all three chillers increased the likelihood of a loss of control air. The inspectors determined that the finding was of very low safety significance using the Salem plant-specific Phase 2 pre-solved worksheets in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations."

This performance deficiency has a cross-cutting aspect in the area of human performance because PSEG personnel did not effectively communicate human error prevention techniques, such as holding pre-job briefings, self checking, and peer checking, and these techniques were not used commensurate with the risk of the assigned task [H.4(a)]. Specifically, PSEG personnel did not verify the proper operation of the 23 chiller before removing the 21 and 22 chillers from service.

Inspection Report# : 2008002 (pdf)

Mitigating Systems



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)



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 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)



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-todate in accordance with the valve's design basis documentation.

Inspection Report# : 2008005 (pdf)



G Aug 08, 2008 Significance: Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL FOR MOTOR OPERATED VALVE CAPABILITY ASSESSMENTS The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, in that PSEG had used non-conservative inputs and methodologies in calculating terminal voltages to safety related motor operated valve (MOV) motors during design basis events. Specifically, PSEG had not evaluated the effect of lower transient voltages which would exist for safety injection (SI) actuated MOVs prior to voltage recovery on the upstream 4Kv buses. PSEG entered the issue into their corrective action program and performed a review of all SI actuated valves to determine the impact on their margin to operate when considering transient voltage conditions.

The finding is more than minor because the deficiency represented reasonable doubt on the operability of several charging safety injection system valves which had minimal margin. The finding was associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the

availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. The team determined the finding was of very low safety significance (Green) because it was a design deficiency confirmed not to result in the loss of the charging system safety function.

Inspection Report# : 2008007 (pdf)

G Aug 08, 2008 Significance: Identified By: NRC Item Type: NCV NonCited Violation **INADEQUATE DESIGN CONTROL FOR MOTOR OPERATED VALVE THERMAL OVERLOAD PROTECTION DEVICES**

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, in that PSEG had not implemented measures to verify that thermal overloads (TOLs) on safety-related MOV circuits were sized properly and periodically tested to verify the adequacy of the design. PSEG entered the issue into their corrective action program, completed an operability assessment for the affected equipment and will evaluate implementing testing or bypassing the TOLs during accident conditions to verify the adequacy of the design.

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The finding is more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team determined that the failure to assure that TOLs would not needlessly prevent safety related valves from performing their function, could affect the ability of MOVs to respond to initiating events. The team determined the finding was of very low safety significance (Green) because it was a design deficiency confirmed not to result in a loss of safety related valve operability.

Inspection Report# : 2008007 (pdf)



Significance: G Aug 08, 2008 Identified By: NRC Item Type: NCV NonCited Violation **INADEQUATE DESIGN CONTROL FOR UNIT 2 CONTAINMENT SUMP VALVE DESIGN DP DETERMINATION**

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, in that PSEG had not validated a key design input regarding the assumed RHR pump operation time during a small break loss of coolant accident (SBLOCA) scenario. This design input was used to establish a new design basis differential pressure for the Unit 2 containment sump suction valves. PSEG entered the issue into the corrective action program, completed an operability assessment for the sump valves, and will evaluate long term actions to further evaluate design margin for the valves.

The finding is more than minor because the deficiency represented reasonable doubt on the operability of the containment sump valves with respect to a SBLOCA scenario. The finding is associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team 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 containment sump suction valve operability. The finding had a cross-cutting aspect in the area of Human Performance, Resources, which requires licensees to ensure personnel, equipment, procedures, and other resources are available and adequate to assure nuclear safety. This issue is related to a design calculation not being complete in that PSEG had not verified that design inputs were conservative when establishing a revised design differential pressure for the Unit 2 containment sump suction valves.


Identified By: Self-Revealing Item Type: NCV NonCited Violation

SALEM UNIT 2 LOSS OF REACTOR VESSEL LEVEL INDICATION SYSTEM

A self-revealing non-cited violation of Technical Specification (TS) 6.8.1.a, "Procedures and Programs," was identified because PSEG did not adequately maintain the calibration of the Unit 2 reactor vessel level indication system (RVLIS). Specifically, scaling for both RVLIS dynamic range channels was not completed when required. This resulted in Unit 2 RVLIS being inoperable for 13-days.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and because it affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, operators were not aware that both channels of RVLIS were inoperable and could have taken non-conservative actions during an inadequate core cooling or loss of coolant inventory event. 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).

This finding has a cross-cutting aspect in the area of human performance because PSEG did not appropriately coordinate work activities as necessary to keep personnel apprised of work status and the operational impact of work activities [H.3(b)]. Specifically, PSEG did not ensure RVLIS scaling was completed per the established work control process because engineering did not adequately communicate the importance of entering the new dynamic range coefficients to the operability of the RVLIS system.

Inspection Report# : 2008003 (pdf)



G Mar 31, 2008 Significance: Identified By: Self-Revealing Item Type: NCV NonCited Violation 25SW24 FAILURE CAUSED 25 SERVICE WATER PUMP UNAVAILABILITY

The inspectors identified a self-revealing non-cited violation of Technical Specification 6.8.1.a, "Procedures and Programs." The inspectors determined that maintenance procedures for the 25 service water strainer (SWS) blow down valve (25SW24) were inadequate because they did not ensure proper alignment of the valve and actuator. This resulted in the 25 service water pump (SWP) being inoperable for approximately 35 hours. PSEG returned the 25 SW train to service following completion of corrective maintenance on the blow down valve and verification of proper alignment of the valve and actuator. PSEG also revised the applicable maintenance procedures for future maintenance activities.

The finding is more than minor because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability 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 screen and determined that this finding was of very low safety significance.

The finding has a cross-cutting aspect in the area of problem identification and resolution because PSEG did not implement and institutionalize operating experience, including internally generated lessons learned, through changes to station processes, procedures, equipment, and training programs [P.2(b)]. Specifically, PSEG procedures did not incorporate internal operating experience to ensure proper alignment between the service water strainer blow down valve actuator and valve stem.

Inspection Report# : 2008002 (pdf)

Barrier Integrity



Significance: Jun 30, 2008 Identified By: Self-Revealing Item Type: NCV NonCited Violation SALEM UNIT 2 22 CFCU VALVES MISPOSITIONED

A self-revealing non-cited violation of TS 6.8.1.a, "Procedures and Programs" was identified because the 22 Containment Fan Coil Unit (CFCU) had cooling water flow to the motor cooler inadvertently isolated during a routine surveillance test. Specifically, the surveillance procedure did not include steps to operate specific gage isolation valves to place a test gage in service, and as a result technicians repositioned the wrong valves.

This finding is more than minor because it is associated with the system, structure, and component (SSC) and barrier performance attribute of the Barrier Integrity cornerstone and it affects the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, unavailability of the 22 CFCU represented an actual loss of defense in depth of a system that controls containment pressure. Per inspection manual chapter (IMC) 0609, Attachment 0609.04, "Determining the Significance of Reactor Inspection Findings for at-power Situations," the inspectors conducted a Phase 1 screen and determined the finding to be of very low safety significance (Green) because the finding did not represent an actual open pathway in the physical integrity of reactor containment isolation system and heat removal components, did not involve an actual reduction in function of hydrogen igniters in containment, and did not screen as potentially risk significant due to external initiating events.

This finding has a cross-cutting aspect in the area of human resources because PSEG did not provide complete and accurate procedures for the performance of this surveillance test [H.2(c)]. Specifically, the continuous use procedure "Service Water Fouling Monitoring Containment Fan Coil Units", revised on May 31, 2008, did not contain procedure steps to direct the opening and closing of valves that must be manipulated to successfully perform the procedure.

Inspection Report# : 2008003 (pdf)

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 <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : April 07, 2009

Salem 2 1Q/2009 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2008 Identified By: Self-Revealing Item Type: NCV NonCited Violation SALEM UNIT 2 LOSS OF ALL THREE CHILLERS

A self-revealing non-cited violation of Technical Specification (TS) 6.8.1.a, "Procedures and Programs," was identified because PSEG did not maintain adequate control of the system configuration for the Unit 2 chill water system during maintenance on the 21 chiller. Specifically, on May 27, 2008, all three Unit 2 chill water system chillers tripped due to an error in the safety tagging sequence specified by the work control documents for maintenance on the 21 chiller.

This finding is more than minor because it is associated with the configuration control attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, unavailability of all three chillers increased the likelihood of a loss of control air that could result in a complicated plant trip. Per Inspection Manual Chapter (IMC) 0609, Attachment 0609.04, initial screening and characterization of findings, the inspectors conducted a Phase 1 analysis and determined that this finding required a Phase 2 analysis because the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The inspector determined that the finding was of very low safety significance (Green) using the Salem plant specific Phase 2 pre-solved worksheets in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations."

This finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow procedures [H.4(b)]. Specifically, revisions to the work control document for tagging the 21 chiller did not comply with the requirements of PSEG procedure SH.OP-AP.ZZ-0051, "Safety Tagging Operations."

Inspection Report# : 2008003 (pdf)

Mitigating Systems

Significance: **G** 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-todate 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: ^G 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 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-todate in accordance with the valve's design basis documentation.

Inspection Report# : 2008005 (pdf)

Significance: G Aug 08, 2008 Identified By: NRC Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL FOR MOTOR OPERATED VALVE CAPABILITY ASSESSMENTS The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, in that PSEG had used non-conservative inputs and methodologies in calculating terminal voltages to safety related motor operated valve (MOV) motors during design basis events. Specifically, PSEG had not evaluated the effect of lower transient voltages which would exist for safety injection (SI) actuated MOVs prior to voltage recovery on the upstream 4Kv buses. PSEG entered the issue into their corrective action program and performed a review of all SI actuated valves to determine the impact on their margin to operate when considering transient voltage conditions.

The finding is more than minor because the deficiency represented reasonable doubt on the operability of several charging safety injection system valves which had minimal margin. The finding was associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. The team determined the finding was of very low safety significance (Green) because it was a design deficiency confirmed not to result in the loss of the charging system safety function.

Inspection Report# : 2008007 (pdf)

Significance: Aug 08, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL FOR MOTOR OPERATED VALVE THERMAL OVERLOAD PROTECTION DEVICES

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, in that PSEG had not implemented measures to verify that thermal overloads (TOLs) on safety-related MOV circuits were sized properly and periodically tested to verify the adequacy of the design. PSEG entered the issue into their corrective action program, completed an operability assessment for the affected equipment and will evaluate implementing testing or bypassing the TOLs during accident conditions to verify the adequacy of the design.

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The finding is more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team determined that the failure to assure that TOLs would not needlessly prevent safety related valves from performing their function, could affect the ability of MOVs to respond to initiating events. The team determined the finding was of very low safety significance (Green) because it was a design deficiency confirmed not to result in a loss of safety related valve operability.

Inspection Report# : 2008007 (pdf)

Significance: G Aug 08, 2008 Identified By: NRC Item Type: NCV NonCited Violation INADEQUATE DESIGN CONTROL FOR UNIT 2 CONTAINMENT SUMP VALVE DESIGN DP DETERMINATION

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, in that PSEG had not validated a key design input regarding the assumed RHR pump operation time during a small break loss of coolant accident (SBLOCA) scenario. This design input was used to establish a new design basis differential pressure for the Unit 2 containment sump suction valves. PSEG entered the issue into the corrective action program, completed an operability assessment for the sump valves, and will evaluate long term actions to further evaluate design margin for the valves.

The finding is more than minor because the deficiency represented reasonable doubt on the operability of the containment sump valves with respect to a SBLOCA scenario. The finding is associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team 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 containment sump suction valve operability. The finding had a cross-cutting aspect in the area of Human Performance, Resources, which requires licensees to ensure personnel, equipment, procedures, and other resources are available and adequate to assure nuclear safety. This issue is related to a design calculation not being complete in that PSEG had not verified that design inputs were conservative when establishing a revised design differential pressure for the Unit 2 containment sump suction valves.

Significance: G Jun 30, 2008

Identified By: Self-Revealing Item Type: NCV NonCited Violation

SALEM UNIT 2 LOSS OF REACTOR VESSEL LEVEL INDICATION SYSTEM

A self-revealing non-cited violation of Technical Specification (TS) 6.8.1.a, "Procedures and Programs," was identified because PSEG did not adequately maintain the calibration of the Unit 2 reactor vessel level indication system (RVLIS). Specifically, scaling for both RVLIS dynamic range channels was not completed when required. This resulted in Unit 2 RVLIS being inoperable for 13-days.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and because it affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, operators were not aware that both channels of RVLIS were inoperable and could have taken non-conservative actions during an inadequate core cooling or loss of coolant inventory event. 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).

This finding has a cross-cutting aspect in the area of human performance because PSEG did not appropriately coordinate work activities as necessary to keep personnel apprised of work status and the operational impact of work activities [H.3(b)]. Specifically, PSEG did not ensure RVLIS scaling was completed per the established work control process because engineering did not adequately communicate the importance of entering the new dynamic range coefficients to the operability of the RVLIS system.

Inspection Report# : 2008003 (pdf)

Barrier Integrity



Identified By: Self-Revealing Item Type: NCV NonCited Violation SALEM UNIT 2 22 CFCU VALVES MISPOSITIONED

A self-revealing non-cited violation of TS 6.8.1.a, "Procedures and Programs" was identified because the 22 Containment Fan Coil Unit (CFCU) had cooling water flow to the motor cooler inadvertently isolated during a routine surveillance test. Specifically, the surveillance procedure did not include steps to operate specific gage isolation valves to place a test gage in service, and as a result technicians repositioned the wrong valves.

This finding is more than minor because it is associated with the system, structure, and component (SSC) and barrier performance attribute of the Barrier Integrity cornerstone and it affects the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, unavailability of the 22 CFCU represented an actual loss of defense in depth of a system that controls containment pressure. Per inspection manual chapter (IMC) 0609, Attachment 0609.04, "Determining the Significance of Reactor Inspection Findings for at-power Situations," the inspectors conducted a Phase 1 screen and determined the finding to be of very low safety significance (Green) because the finding did not represent an actual open pathway in the physical integrity of reactor containment isolation system and heat removal components, did not involve an actual reduction in function of hydrogen igniters in containment, and did not screen as potentially risk significant due to external initiating events.

This finding has a cross-cutting aspect in the area of human resources because PSEG did not provide complete and accurate procedures for the performance of this surveillance test [H.2(c)]. Specifically, the continuous use procedure "Service Water Fouling Monitoring Containment Fan Coil Units", revised on May 31, 2008, did not contain

procedure steps to direct the opening and closing of valves that must be manipulated to successfully perform the procedure. Inspection Report# : 2008003 (pdf)

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 <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : May 28, 2009

Salem 2 2Q/2009 Plant Inspection Findings

Initiating Events

Mitigating Systems

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)

Feb 13, 2009 Significance:

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)



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-todate 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: G 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 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)



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)



Significance: Aug 08 Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL FOR MOTOR OPERATED VALVE CAPABILITY ASSESSMENTS The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, in that PSEG had used non-conservative inputs and methodologies in calculating terminal voltages to safety related motor operated valve (MOV) motors during design basis events. Specifically, PSEG had not evaluated the effect of lower transient voltages which would exist for safety injection (SI) actuated MOVs prior to voltage recovery on the upstream 4Kv buses. PSEG entered the issue into their corrective action program and performed a review of all SI actuated valves to determine the impact on their margin to operate when considering transient voltage conditions.

The finding is more than minor because the deficiency represented reasonable doubt on the operability of several charging safety injection system valves which had minimal margin. The finding was associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. The team determined the finding was of very low safety significance (Green) because it was a design deficiency confirmed not to result in the loss of the charging system safety function.

Significance: G Aug 08, 2008 Identified By: NRC Item Type: NCV NonCited Violation **INADEQUATE DESIGN CONTROL FOR MOTOR OPERATED VALVE THERMAL OVERLOAD PROTECTION DEVICES**

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, in that PSEG had not implemented measures to verify that thermal overloads (TOLs) on safety-related MOV circuits were sized properly and periodically tested to verify the adequacy of the design. PSEG entered the issue into their corrective action program, completed an operability assessment for the affected equipment and will evaluate implementing testing or bypassing the TOLs during accident conditions to verify the adequacy of the design.

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The finding is more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team determined that the failure to assure that TOLs would not needlessly prevent safety related valves from performing their function, could affect the ability of MOVs to respond to initiating events. The team determined the finding was of very low safety significance (Green) because it was a design deficiency confirmed not to result in a loss of safety related valve operability.

Inspection Report# : 2008007 (pdf)



Significance: Aug 08, 2008 Identified By: NRC Item Type: NCV NonCited Violation **INADEOUATE DESIGN CONTROL FOR UNIT 2 CONTAINMENT SUMP VALVE DESIGN DP** DETERMINATION

The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, in that PSEG had not validated a key design input regarding the assumed RHR pump operation time during a small break loss of coolant accident (SBLOCA) scenario. This design input was used to establish a new design basis differential pressure for the Unit 2 containment sump suction valves. PSEG entered the issue into the corrective action program, completed an operability assessment for the sump valves, and will evaluate long term actions to further evaluate design margin for the valves.

The finding is more than minor because the deficiency represented reasonable doubt on the operability of the containment sump valves with respect to a SBLOCA scenario. The finding is associated with the design control attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team 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 containment sump suction valve operability. The finding had a cross-cutting aspect in the area of Human Performance, Resources, which requires licensees to ensure personnel, equipment, procedures, and other resources are available and adequate to assure nuclear safety. This issue is related to a design calculation not being complete in that PSEG had not verified that design inputs were conservative when establishing a revised design differential pressure for the Unit 2 containment sump suction valves.

Inspection Report# : 2008007 (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 <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : August 31, 2009

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: G 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)



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)

G Dec 30, 2008 Significance:

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)



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 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: G 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 <u>cover letters</u> 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

Salem 2 4Q/2009 Plant Inspection Findings

Initiating Events

Mitigating Systems

G Dec 31. 2009 Significance:

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)

G Dec 31, 2009 Significance: 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)



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: G 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)



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 <u>cover letters</u> 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

Salem 2 **1Q/2010 Plant Inspection Findings**

Initiating Events

Mitigating Systems

G Dec 31. 2009 Significance:

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)

G Dec 31, 2009 Significance: 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)



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: G 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)

Barrier Integrity

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 <u>cover letters</u> 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 : May 26, 2010

Salem 2 **2Q/2010 Plant Inspection Findings**

Initiating Events



G Jun 30, 2010 Significance: Identified By: Self-Revealing Item Type: FIN Finding 21 Steam Generator Feed Pump Trip Due to Failure to Follow Procedures

A self-revealing finding of very low safety significance was identified on January 21, 2010, because a control system short circuit caused the 21 steam generator feed pump (SGFP) to trip. This caused a turbine runback and ultimately an automatic Unit 2 reactor trip due to low water level in one of four steam generators (SGs). The short circuit occurred because technicians did not use the correct procedure to repair degraded insulation on the barrel of a connector lug that was identified in the 21 SGFP control system in November 2009. PSEG repaired the short circuit prior to restart of Unit 2 on January 23, 2010. The issue was entered into the corrective action program as notification 20448229. PSEG's immediate corrective actions for this issue included repairing the degraded insulation, fixing lug alignment, and performing extent of condition inspections on the other Unit 2 SGFP panels for degraded insulation. No other deficiencies were identified.

This performance deficiency is more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. Specifically, not following PSEG procedure SC.DE-TS.ZZ-2039 on November 11, 2009, caused the 21 SGFP trip and subsequent automatic reactor trip due to low SG water level on January 21, 2010. The finding was evaluated under IMC 0609, Attachment 4. The inspectors determined that the finding is of very low safety significance because it does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow procedure requirements while repairing plant equipment. Specifically, technicians applied electrical tape to the 21 SGFP pressure switch connector lug barrel on November 11, 2009, which did not meet PSEG procedure SC.DE-TS.ZZ-2039 requirements.

Inspection Report# : 2010003 (pdf)

Mitigating Systems

Significance: ^G 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. This finding has a cross cutting aspect in the area of Human Performance because maintenance on 22SW356 was performed in 2002 with an inadequate procedure and work instructions [H.2(c)]. Inspection Report# : 2009005 (pdf)



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

Inspection Report# : 2009007 (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 <u>cover letters</u> 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

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 : September 02, 2010

Salem 2 **3Q/2010 Plant Inspection Findings**

Initiating Events



G Jun 30, 2010 Significance: Identified By: Self-Revealing Item Type: FIN Finding 21 Steam Generator Feed Pump Trip Due to Failure to Follow Procedures

A self-revealing finding of very low safety significance was identified on January 21, 2010, because a control system short circuit caused the 21 steam generator feed pump (SGFP) to trip. This caused a turbine runback and ultimately an automatic Unit 2 reactor trip due to low water level in one of four steam generators (SGs). The short circuit occurred because technicians did not use the correct procedure to repair degraded insulation on the barrel of a connector lug that was identified in the 21 SGFP control system in November 2009. PSEG repaired the short circuit prior to restart of Unit 2 on January 23, 2010. The issue was entered into the corrective action program as notification 20448229. PSEG's immediate corrective actions for this issue included repairing the degraded insulation, fixing lug alignment, and performing extent of condition inspections on the other Unit 2 SGFP panels for degraded insulation. No other deficiencies were identified.

This performance deficiency is more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. Specifically, not following PSEG procedure SC.DE-TS.ZZ-2039 on November 11, 2009, caused the 21 SGFP trip and subsequent automatic reactor trip due to low SG water level on January 21, 2010. The finding was evaluated under IMC 0609, Attachment 4. The inspectors determined that the finding is of very low safety significance because it does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow procedure requirements while repairing plant equipment. Specifically, technicians applied electrical tape to the 21 SGFP pressure switch connector lug barrel on November 11, 2009, which did not meet PSEG procedure SC.DE-TS.ZZ-2039 requirements.

Inspection Report# : 2010003 (pdf)

Mitigating Systems

Significance: ^G 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: ^G 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. This finding has a cross cutting aspect in the area of Human Performance because maintenance on 22SW356 was performed in 2002 with an inadequate procedure and work instructions [H.2(c)]. Inspection Report# : 2009005 (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

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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 : November 29, 2010

Salem 2 **4Q/2010 Plant Inspection Findings**

Initiating Events



G Jun 30, 2010 Significance: Identified By: Self-Revealing Item Type: FIN Finding 21 Steam Generator Feed Pump Trip

A self-revealing finding of very low safety significance was identified on January 21, 2010, because a control system short circuit caused the 21 steam generator feed pump (SGFP) to trip. This caused a turbine runback and ultimately an automatic Unit 2 reactor trip due to low water level in one of four steam generators (SGs). The short circuit occurred because technicians did not use the correct procedure to repair degraded insulation on the barrel of a connector lug that was identified in the 21 SGFP control system in November 2009. PSEG repaired the short circuit prior to restart of Unit 2 on January 23, 2010. The issue was entered into the corrective action program as notification 20448229. PSEG's immediate corrective actions for this issue included repairing the degraded insulation, fixing lug alignment, and performing extent of condition inspections on the other Unit 2 SGFP panels for degraded insulation. No other deficiencies were identified.

This performance deficiency is more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. Specifically, not following PSEG procedure SC.DE-TS.ZZ-2039 on November 11, 2009, caused the 21 SGFP trip and subsequent automatic reactor trip due to low SG water level on January 21, 2010. The finding was evaluated under IMC 0609, Attachment 4. The inspectors determined that the finding is of very low safety significance because it does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow procedure requirements while repairing plant equipment. Specifically, technicians applied electrical tape to the 21 SGFP pressure switch connector lug barrel on November 11, 2009, which did not meet PSEG procedure SC.DE-TS.ZZ-2039 requirements.

Inspection Report# : 2010003 (pdf)

Mitigating Systems

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Physical Protection

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Miscellaneous

Last modified : March 03, 2011

Salem 2 **1Q/2011 Plant Inspection Findings**

Initiating Events



Significance: Jun 30, 2010 Identified By: Self-Revealing Item Type: FIN Finding **21 Steam Generator Feed Pump Trip**

A self-revealing finding of very low safety significance was identified on January 21, 2010, because a control system short circuit caused the 21 steam generator feed pump (SGFP) to trip. This caused a turbine runback and ultimately an automatic Unit 2 reactor trip due to low water level in one of four steam generators (SGs). The short circuit occurred because technicians did not use the correct procedure to repair degraded insulation on the barrel of a connector lug that was identified in the 21 SGFP control system in November 2009. PSEG repaired the short circuit prior to restart of Unit 2 on January 23, 2010. The issue was entered into the corrective action program as notification 20448229. PSEG's immediate corrective actions for this issue included repairing the degraded insulation, fixing lug alignment, and performing extent of condition inspections on the other Unit 2 SGFP panels for degraded insulation. No other deficiencies were identified.

This performance deficiency is more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. Specifically, not following PSEG procedure SC.DE-TS.ZZ-2039 on November 11, 2009, caused the 21 SGFP trip and subsequent automatic reactor trip due to low SG water level on January 21, 2010. The finding was evaluated under IMC 0609, Attachment 4. The inspectors determined that the finding is of very low safety significance because it does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance because PSEG personnel did not follow procedure requirements while repairing plant equipment. Specifically, technicians applied electrical tape to the 21 SGFP pressure switch connector lug barrel on November 11, 2009, which did not meet PSEG procedure SC.DE-TS.ZZ-2039 requirements.

Inspection Report# : 2010003 (pdf)

Mitigating Systems

Significance: **G** Feb 18, 2011

Identified By: NRC Item Type: NCV NonCited Violation

INADEQUATE CALCULATIONS FOR DEGRADED VOLTAGE RELAY VOLTAGE 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", because PSEG had not verified the adequacy of the design for the DVR voltage setpoint. Specifically, PSEG had not performed calculations for motor starting and running conditions, and for operation of other safety-related equipment based on voltages afforded by the degraded voltage relays. PSEG entered this issue into their corrective action program and performed preliminary calculations to demonstrate reasonable assurance of operability.

The finding is more than minor because it is 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. The team evaluated the finding in accordance with IMC 0609, Attachment 0609.04, Phase 1 - Initial Screening and Characterization of Findings, Table 4a for the Mitigating Systems Cornerstone. The team determined that the finding was of very low safety significance because it was a design deficiency confirmed not to result in loss of operability.

The team determined that this finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience Component, because PSEG did not ensure that relevant internal and external operating experience was collected, evaluated, and communicated to affected internal stakeholders in a timely manner. Specifically, PSEG did not adequately evaluate a similar finding documented in a Hope Creek Generating Station NRC component design bases inspection report in November 2009 (NCV 05000354/2009007-03) and missed an opportunity in their internal response to NRC Information Notice 2008-02, "Findings Identified During Component Design Bases Inspections", issued in March 2008.

Inspection Report# : 2011007 (pdf)

Barrier Integrity

Significance: ^G Feb 18, 2011 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY AFFECTING THE CREACS EXPANSION JOINTS

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", because PSEG did not identify and correct a condition adverse to quality. Specifically, PSEG did not identify and correct the degraded condition of the Unit 1 and Unit 2 control room emergency air conditioning system (CREACS) common suction expansion joints because they did not implement appropriate preventive maintenance (PM) per their performance-centered maintenance (PCM) template. PSEG placed the finding and the associated issues in its corrective action program. In response to the identified control room envelope (CRE) breach, operators promptly entered TS 3.7.6 and initiated mitigation actions. PSEG affected prompt repairs, performed an appropriate post maintenance test, declared the CRE fully operable, and exited the TS limiting condition for operation action statement.

The finding is more than minor because it is associated with the barrier performance attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the control room operators from radionuclide releases caused by accidents or events. The finding was evaluated in accordance with IMC 0609, Attachment 4, Table 4a for the containment barrier. Since the finding had the potential to impact more than the radiological barrier function, a Region I Senior Reactor Analyst (SRA) performed a Phase 3 analysis. The SRA determined that the dominant sequence involved a sufficient degradation of the CREACS barrier that would allow sufficient in-leakage to force an evacuation of the control room during a fire or toxic gas event. The areas with the degradation were in room 15615 and 25615 for Units 1 and 2, respectively. The SRA evaluated these areas and determined that the potential impact due to in-leakage through the degraded barrier from fire and toxic gas would be negligible. The SRA also reviewed the results of recent CRE in-leakage testing conducted in September 2010. The condition of the expansion joint tearing and wear could reasonably be assumed to have existed during the September testing. This testing also confirmed that the total in-leakage in these areas was small. Based on the above factors, the SRA determined the finding was of very low safety significance (Green).

The team determined that this finding has a cross-cutting aspect in the area of Human Performance, Work Control Component, because PSEG did not plan work activities to support long-term equipment reliability by ensuring that maintenance scheduling was more preventive than reactive. Specifically, PSEG did not implement appropriate PMs on the CREACS filter expansion joints necessitating several reactive corrective maintenance activities.

Inspection Report# : 2011007 (pdf)
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 <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : June 07, 2011

Salem 2 **2Q/2011 Plant Inspection Findings**

Initiating Events



Significance: G Jun 30, 2011 Identified By: Self-Revealing Item Type: FIN Finding **INADEQUATE CONTROL OF SWITCHYARD MAINTENANCE**

A self-revealing finding of very low safety significance was identified on April 1, 2011, because a 500 KV load break disconnect 3T60 failed to operate upon the restoration of switchyard maintenance. This caused a four-hour delay in the restoration from a single source of offsite power, the exit from a 72-hour limiting condition for operation (LCO), and the extension of a yellow probability risk assessment condition. PSEG investigation revealed that the vendor, who was conducting maintenance on the 3T60 disconnect, removed the motor control fuse holder that was not a part of the tagout for the maintenance. PSEG determined that the cause of the disconnect not closing was that PSEG did not adequately brief and control the maintenance evolution. PSEG entered this event into their CAP as notification 20503254. PSEG's immediate corrective actions were to reinstall the fuses and close the 3T60 disconnect.

The inspectors determined that the failure of PSEG to assign a supplemental workforce supervisor or task manager to provide in-field supervision of the 3T60 disconnect maintenance in accordance with AD-AA-2001, "Management and Oversight of Supplemental Workforce", was a performance deficiency. The inspectors determined that the performance deficiency was more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone and it adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. The finding was evaluated under IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings", and the inspectors concluded that a Phase 2 evaluation was required since the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigating systems would not have been available. This conclusion was based upon the potential for emergency diesel generator (EDG) operation to be challenged upon the loss of all offsite power. A regional Senior Reactor Analyst completed a Phase 3 evaluation under the SDP. The performance deficiency was characterized as of very low safety significance (Green) based upon the results of this evaluation. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance, because PSEG did not ensure supervisory and management oversight of the vendor work activity. Specifically, PSEG personnel did not did not assign a supervisor to provide in-field supervision, conduct an adequate pre-job brief with the vendor, and did not conduct an adequate post-maintenance restoration walkdown of the 3T60 switchyard maintenance. (H.4(c))

Inspection Report# : 2011003 (pdf)

Mitigating Systems

Significance: **G** Feb 18, 2011 Identified By: NRC Item Type: NCV NonCited Violation **INADEQUATE CALCULATIONS FOR DEGRADED VOLTAGE RELAY VOLTAGE 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", because PSEG had not verified the adequacy of the design for the DVR voltage setpoint. Specifically, PSEG had not performed calculations for motor starting and running conditions, and for operation of other safety-related equipment based on voltages afforded by the degraded voltage relays. PSEG entered this issue into their corrective action program and performed preliminary calculations to demonstrate reasonable assurance of operability.

The finding is more than minor because it is 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. The team evaluated the finding in accordance with IMC 0609, Attachment 0609.04, Phase 1 – Initial Screening and Characterization of Findings, Table 4a for the Mitigating Systems Cornerstone. The team determined that the finding was of very low safety significance because it was a design deficiency confirmed not to result in loss of operability.

The team determined that this finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience Component, because PSEG did not ensure that relevant internal and external operating experience was collected, evaluated, and communicated to affected internal stakeholders in a timely manner. Specifically, PSEG did not adequately evaluate a similar finding documented in a Hope Creek Generating Station NRC component design bases inspection report in November 2009 (NCV 05000354/2009007-03) and missed an opportunity in their internal response to NRC Information Notice 2008-02, "Findings Identified During Component Design Bases Inspections", issued in March 2008.

Inspection Report# : 2011007 (pdf)

Barrier Integrity

Significance: SL-IV Mar 31, 2011 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO SUBMIT AN LER FOR A CONDITION PROHIBITED BY TS ASSOCIATED WITH **CONTAINMENT ISOLATION**

The inspectors identified a Severity Level IV NCV of 10 CFR 50.73, "Licensee Event Reporting (LER) System", because PSEG personnel did not provide a written report to the NRC within 60 days after discovery of a condition prohibited by Technical Specification (TS) 3.6.1, "Containment Integrity". This was an NRC-identified violation of reporting requirements and potentially impacted the regulatory process. This type of violation is dispositioned using the traditional enforcement process defined in the NRC Enforcement Policy. In accordance with Section 6.9.d of the Enforcement Policy, this violation is categorized as a Severity Level IV violation.

PSEG documented the issue in their CAP and conducted an evaluation to determine why the assignment to submit an LER was missed. The inspectors determined that this traditional enforcement violation did not involve a Reactor Oversight Process (ROP) finding, therefore, no cross-cutting issue was assigned.

Inspection Report# : 2011002 (pdf)



Significance: **G** Feb 18, 2011

Identified By: NRC

Item Type: NCV NonCited Violation FAILURE TO IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY AFFECTING THE

CREACS EXPANSION JOINTS

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", because PSEG did not identify and correct a condition adverse to quality. Specifically, PSEG did not identify and correct the degraded condition of the Unit 1 and Unit 2 control room emergency air conditioning system (CREACS) common suction expansion joints because they did not implement appropriate preventive maintenance (PM) per their performance-centered maintenance (PCM) template. PSEG placed the finding and the associated issues in its corrective action program. In response to the identified control room envelope (CRE) breach, operators promptly entered TS 3.7.6 and initiated mitigation actions. PSEG affected prompt repairs, performed an appropriate post maintenance test, declared the CRE fully operable, and exited the TS limiting condition for operation action statement.

The finding is more than minor because it is associated with the barrier performance attribute of the Barrier Integrity

Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the control room operators from radionuclide releases caused by accidents or events. The finding was evaluated in accordance with IMC 0609, Attachment 4, Table 4a for the containment barrier. Since the finding had the potential to impact more than the radiological barrier function, a Region I Senior Reactor Analyst (SRA) performed a Phase 3 analysis. The SRA determined that the dominant sequence involved a sufficient degradation of the CREACS barrier that would allow sufficient in-leakage to force an evacuation of the control room during a fire or toxic gas event. The areas with the degradation were in room 15615 and 25615 for Units 1 and 2, respectively. The SRA evaluated these areas and determined that the potential impact due to in-leakage through the degraded barrier from fire and toxic gas would be negligible. The SRA also reviewed the results of recent CRE in-leakage testing conducted in September 2010. The condition of the expansion joint tearing and wear could reasonably be assumed to have existed during the September testing. This testing also confirmed that the total in-leakage in these areas was small. Based on the above factors, the SRA determined the finding was of very low safety significance (Green).

The team determined that this finding has a cross-cutting aspect in the area of Human Performance, Work Control Component, because PSEG did not plan work activities to support long-term equipment reliability by ensuring that maintenance scheduling was more preventive than reactive. Specifically, PSEG did not implement appropriate PMs on the CREACS filter expansion joints necessitating several reactive corrective maintenance activities.

Inspection Report# : 2011007 (pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

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Miscellaneous

Last modified : October 14, 2011

Salem 2 **3Q/2011 Plant Inspection Findings**

Initiating Events



Identified By: Self-Revealing Item Type: FIN Finding Failure to Evaluate Corrective Action Options for RCP Motor Cables

A self-revealing finding of very low safety significance was identified on June 26, 2011, as Salem Unit 2 tripped following a trip of the 23 reactor coolant pump (RCP) due to a ground fault inside the 23 RCP motor junction box. PSEG determined that the cause of the ground fault was RCP motor cable jacket cracking that was first identified in 2005. PSEG entered this event into the CAP as notification 20515977.

The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, action from notifications in January 2006 for the engineering department to determine various options to address RCP motor lead jacket cracking including an evaluation on whether to replace the cables during the June 2008 refueling outage (RFO) was not completed prior to the June 2008 motor replacement and continued to be an open action up to the point of the June 2011 RCP cable failure and reactor trip. The finding was evaluated under IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined that the finding is of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding had a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because PSEG did not take appropriate corrective action to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, PSEG did not ensure that the CAP assignment for the engineering department to evaluate long-term corrective action options for the RCP motor lead cables were completed timely and effectively in accordance with their CAP procedure. (P.1(d))

Inspection Report# : 2011004 (pdf)



Significance: Jun 30, 2011 Identified By: Self-Revealing Item Type: FIN Finding

INADEOUATE CONTROL OF SWITCHYARD MAINTENANCE

A self-revealing finding of very low safety significance was identified on April 1, 2011, because a 500 KV load break disconnect 3T60 failed to operate upon the restoration of switchyard maintenance. This caused a four-hour delay in the restoration from a single source of offsite power, the exit from a 72-hour limiting condition for operation (LCO), and the extension of a yellow probability risk assessment condition. PSEG investigation revealed that the vendor, who was conducting maintenance on the 3T60 disconnect, removed the motor control fuse holder that was not a part of the tagout for the maintenance. PSEG determined that the cause of the disconnect not closing was that PSEG did not adequately brief and control the maintenance evolution. PSEG entered this event into their CAP as notification 20503254. PSEG's immediate corrective actions were to reinstall the fuses and close the 3T60 disconnect.

The inspectors determined that the failure of PSEG to assign a supplemental workforce supervisor or task manager to provide in-field supervision of the 3T60 disconnect maintenance in accordance with AD-AA-2001, "Management and Oversight of Supplemental Workforce", was a performance deficiency. The inspectors determined that the performance deficiency was more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone and it adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. The finding was evaluated under IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings", and the inspectors concluded that a Phase 2 evaluation

was required since the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigating systems would not have been available. This conclusion was based upon the potential for emergency diesel generator (EDG) operation to be challenged upon the loss of all offsite power. A regional Senior Reactor Analyst completed a Phase 3 evaluation under the SDP. The performance deficiency was characterized as of very low safety significance (Green) based upon the results of this evaluation. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance, because PSEG did not ensure supervisory and management oversight of the vendor work activity. Specifically, PSEG personnel did not did not assign a supervisor to provide in-field supervision, conduct an adequate pre-job brief with the vendor, and did not conduct an adequate post-maintenance restoration walkdown of the 3T60 switchyard maintenance. (H.4(c))

Inspection Report# : 2011003 (pdf)

Mitigating Systems

Significance: Sep 30, 2011 Identified By: NRC Item Type: NCV NonCited Violation Inadequate IST Program Evaluation of a Pressure Relief Valve

The inspectors identified a NCV of Salem Technical Specification (TS) 6.8.4.j, "In Service Testing," that implements the in service testing program for American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components in accordance with the ASME Operations and Maintenance (OM) code. Specifically, PSEG did not complete an adequate ASME OM code required evaluation following the test of the Unit 2 Boron Injection Tank (BIT) relief, 2SJ10, which lifted outside of its acceptance criteria. This finding was determined to be of very low safety significance. PSEG entered this issue into their CAP as notifications 20523948 and 20518249. Corrective actions at that time included replacing the damaged seat and disk, rebuilding the valve, and performing a post maintenance test of the rebuilt valve.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and it impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, leakage of greater than 10 gpm through the 2SJ10 valve degraded the ability of the charging system to deliver design flow rates to the reactor following a safety injection signal that would un-isolate the BIT. The inspectors evaluated this finding using IMC 0609, Attachment 4. The finding was determined to be of very low safety significance because it was not a design or qualification deficiency, did not represent an actual loss of system safety function, and was not potentially risk significant for external events. This finding had a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because PSEG did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions, as necessary. Specifically, PSEG's evaluation following the 2SJ10 failure in April 2011 did not meet the requirements of PSEG procedure ER-SA-321-1010. The evaluation contained incorrect information regarding valve refurbishment that prevented PSEG from identifying the cause of the 2SJ10 failure. (P.1 (c))

Inspection Report# : 2011004 (pdf)

Significance: Feb 18, 2011 Identified By: NRC Item Type: NCV NonCited Violation INADEOUATE CALCULATIONS FOR DEGRADED VOLTAGE RELAY VOLTAGE 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", because PSEG had not verified the adequacy of the design for the DVR voltage setpoint. Specifically, PSEG had not performed calculations for motor starting and running conditions, and for operation of other safety-related equipment based on voltages afforded by the degraded voltage relays. PSEG entered this issue into their corrective action program and performed preliminary calculations to demonstrate reasonable assurance of operability.

The finding is more than minor because it is 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. The team evaluated the finding in accordance with IMC 0609, Attachment 0609.04, Phase 1 – Initial Screening and Characterization of Findings, Table 4a for the Mitigating Systems Cornerstone. The team determined that the finding was of very low safety significance because it was a design deficiency confirmed not to result in loss of operability.

The team determined that this finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience Component, because PSEG did not ensure that relevant internal and external operating experience was collected, evaluated, and communicated to affected internal stakeholders in a timely manner. Specifically, PSEG did not adequately evaluate a similar finding documented in a Hope Creek Generating Station NRC component design bases inspection report in November 2009 (NCV 05000354/2009007-03) and missed an opportunity in their internal response to NRC Information Notice 2008-02, "Findings Identified During Component Design Bases Inspections", issued in March 2008.

Inspection Report# : 2011007 (pdf)

Barrier Integrity

Significance: SL-IV Mar 31, 2011 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO SUBMIT AN LER FOR A CONDITION PROHIBITED BY TS ASSOCIATED WITH **CONTAINMENT ISOLATION**

The inspectors identified a Severity Level IV NCV of 10 CFR 50.73, "Licensee Event Reporting (LER) System", because PSEG personnel did not provide a written report to the NRC within 60 days after discovery of a condition prohibited by Technical Specification (TS) 3.6.1, "Containment Integrity". This was an NRC-identified violation of reporting requirements and potentially impacted the regulatory process. This type of violation is dispositioned using the traditional enforcement process defined in the NRC Enforcement Policy. In accordance with Section 6.9.d of the Enforcement Policy, this violation is categorized as a Severity Level IV violation.

PSEG documented the issue in their CAP and conducted an evaluation to determine why the assignment to submit an LER was missed. The inspectors determined that this traditional enforcement violation did not involve a Reactor Oversight Process (ROP) finding, therefore, no cross-cutting issue was assigned.

Inspection Report# : 2011002 (pdf)



Significance: **G** Feb 18, 2011

Identified By: NRC

Item Type: NCV NonCited Violation FAILURE TO IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY AFFECTING THE

CREACS EXPANSION JOINTS

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", because PSEG did not identify and correct a condition adverse to quality. Specifically, PSEG did not identify and correct the degraded condition of the Unit 1 and Unit 2 control room emergency air conditioning system (CREACS) common suction expansion joints because they did not implement appropriate preventive maintenance (PM) per their performance-centered maintenance (PCM) template. PSEG placed the finding and the associated issues in its corrective action program. In response to the identified control room envelope (CRE) breach, operators promptly entered TS 3.7.6 and initiated mitigation actions. PSEG affected prompt repairs, performed an appropriate post maintenance test, declared the CRE fully operable, and exited the TS limiting condition for operation action statement.

The finding is more than minor because it is associated with the barrier performance attribute of the Barrier Integrity

Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the control room operators from radionuclide releases caused by accidents or events. The finding was evaluated in accordance with IMC 0609, Attachment 4, Table 4a for the containment barrier. Since the finding had the potential to impact more than the radiological barrier function, a Region I Senior Reactor Analyst (SRA) performed a Phase 3 analysis. The SRA determined that the dominant sequence involved a sufficient degradation of the CREACS barrier that would allow sufficient in-leakage to force an evacuation of the control room during a fire or toxic gas event. The areas with the degradation were in room 15615 and 25615 for Units 1 and 2, respectively. The SRA evaluated these areas and determined that the potential impact due to in-leakage through the degraded barrier from fire and toxic gas would be negligible. The SRA also reviewed the results of recent CRE in-leakage testing conducted in September 2010. The condition of the expansion joint tearing and wear could reasonably be assumed to have existed during the September testing. This testing also confirmed that the total in-leakage in these areas was small. Based on the above factors, the SRA determined the finding was of very low safety significance (Green).

The team determined that this finding has a cross-cutting aspect in the area of Human Performance, Work Control Component, because PSEG did not plan work activities to support long-term equipment reliability by ensuring that maintenance scheduling was more preventive than reactive. Specifically, PSEG did not implement appropriate PMs on the CREACS filter expansion joints necessitating several reactive corrective maintenance activities.

Inspection Report# : 2011007 (pdf)

Emergency Preparedness

Significance: G Sep 30, 2011

Identified By: NRC Item Type: NCV NonCited Violation Late State Notification of UE

The inspectors identified a NCV of 10 CFR 50.47, "Emergency Plans." Specifically, state officials were not notified within 15 minutes of the declaration of an Unusual Event (UE), a risk significant planning standard. PSEG has entered this issue into their CAP as notification 20518004. PSEG's corrective actions for this performance deficiency was to complete licensed operator training regarding classification and notification requirements for short duration emergency events terminated before classifications and notifications can be completed.

The inspectors determined that a performance deficiency was identified associated with timely notification to state and local government agencies during an actual event. PSEG did not notify Delaware and New Jersey state government agencies within the specified 15 minutes after declaring a UE. The finding was greater than minor because it is associated with the Emergency Planning cornerstone attribute of Emergency Response Organization performance during actual event response. The finding affected the cornerstone objective of ensuring 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 reviewed this finding using IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," Sheet 2, "Actual Event Implementation Problem." This finding was determined to be of very low safety significance because it was a failure to implement a risk significant planning standard during an actual event associated with the declaration of a UE. This finding had a cross-cutting aspect in the area of human performance, work practices, because PSEG personnel did not ensure supervisory and management oversight of work activities, such that nuclear safety is supported. Specifically, the Shift Manager was distracted from his supervisory oversight role and did not direct the communicators to perform state notifications within the required 15 minute time period. (H.4(c))

Inspection Report# : 2011004 (pdf)

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 <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Significance: N/A Jul 21, 2011 Identified By: NRC Item Type: FIN Finding Biennial PI&R Summary Assessment

The inspectors concluded that 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 and cause, generic issues, and previous occurrences. The inspectors also determined that PSEG typically implemented corrective actions to address identified problems in a timely manner. However, for one issue reviewed by the inspectors, the corrective actions completed by PSEG were not timely and the inspectors determined that this was a violation of NRC requirements, in the area of corrective action implementation.

The inspectors concluded that, in general, PSEG adequately identified, reviewed, and applied relevant industry operating experience to Salem operations and identified appropriate corrective actions. In addition, based on those items selected for review, the inspectors determined that PSEG self-assessments and audits were thorough and appropriately used the corrective action program to initiate corrective actions for identified issues.

With respect to safety conscious work environment, based on interviews and reviews of the corrective action program and the employees concerns program (ECP) the inspectors did not identify conditions that negatively impacted the site's safety conscious work environment and determined that site personnel were willing to raise safety issues through multiple means.

Inspection Report# : 2011009 (pdf)

Last modified : January 04, 2012

Salem 2 **4Q/2011 Plant Inspection Findings**

Initiating Events



Identified By: Self-Revealing Item Type: FIN Finding Failure to Evaluate Corrective Action Options for RCP Motor Cables

A self-revealing finding of very low safety significance was identified on June 26, 2011, as Salem Unit 2 tripped following a trip of the 23 reactor coolant pump (RCP) due to a ground fault inside the 23 RCP motor junction box. PSEG determined that the cause of the ground fault was RCP motor cable jacket cracking that was first identified in 2005. PSEG entered this event into the CAP as notification 20515977.

The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, action from notifications in January 2006 for the engineering department to determine various options to address RCP motor lead jacket cracking including an evaluation on whether to replace the cables during the June 2008 refueling outage (RFO) was not completed prior to the June 2008 motor replacement and continued to be an open action up to the point of the June 2011 RCP cable failure and reactor trip. The finding was evaluated under IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined that the finding is of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding had a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because PSEG did not take appropriate corrective action to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, PSEG did not ensure that the CAP assignment for the engineering department to evaluate long-term corrective action options for the RCP motor lead cables were completed timely and effectively in accordance with their CAP procedure. (P.1(d))

Inspection Report# : 2011004 (pdf)



Significance: Jun 30, 2011 Identified By: Self-Revealing Item Type: FIN Finding

INADEOUATE CONTROL OF SWITCHYARD MAINTENANCE

A self-revealing finding of very low safety significance was identified on April 1, 2011, because a 500 KV load break disconnect 3T60 failed to operate upon the restoration of switchyard maintenance. This caused a four-hour delay in the restoration from a single source of offsite power, the exit from a 72-hour limiting condition for operation (LCO), and the extension of a yellow probability risk assessment condition. PSEG investigation revealed that the vendor, who was conducting maintenance on the 3T60 disconnect, removed the motor control fuse holder that was not a part of the tagout for the maintenance. PSEG determined that the cause of the disconnect not closing was that PSEG did not adequately brief and control the maintenance evolution. PSEG entered this event into their CAP as notification 20503254. PSEG's immediate corrective actions were to reinstall the fuses and close the 3T60 disconnect.

The inspectors determined that the failure of PSEG to assign a supplemental workforce supervisor or task manager to provide in-field supervision of the 3T60 disconnect maintenance in accordance with AD-AA-2001, "Management and Oversight of Supplemental Workforce", was a performance deficiency. The inspectors determined that the performance deficiency was more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone and it adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. The finding was evaluated under IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings", and the inspectors concluded that a Phase 2 evaluation

was required since the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigating systems would not have been available. This conclusion was based upon the potential for emergency diesel generator (EDG) operation to be challenged upon the loss of all offsite power. A regional Senior Reactor Analyst completed a Phase 3 evaluation under the SDP. The performance deficiency was characterized as of very low safety significance (Green) based upon the results of this evaluation. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance, because PSEG did not ensure supervisory and management oversight of the vendor work activity. Specifically, PSEG personnel did not did not assign a supervisor to provide in-field supervision, conduct an adequate pre-job brief with the vendor, and did not conduct an adequate post-maintenance restoration walkdown of the 3T60 switchyard maintenance. (H.4(c))

Inspection Report# : 2011003 (pdf)

Mitigating Systems

Significance: Sep 30, 2011 Identified By: NRC Item Type: NCV NonCited Violation Inadequate IST Program Evaluation of a Pressure Relief Valve

The inspectors identified a NCV of Salem Technical Specification (TS) 6.8.4.j, "In Service Testing," that implements the in service testing program for American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components in accordance with the ASME Operations and Maintenance (OM) code. Specifically, PSEG did not complete an adequate ASME OM code required evaluation following the test of the Unit 2 Boron Injection Tank (BIT) relief, 2SJ10, which lifted outside of its acceptance criteria. This finding was determined to be of very low safety significance. PSEG entered this issue into their CAP as notifications 20523948 and 20518249. Corrective actions at that time included replacing the damaged seat and disk, rebuilding the valve, and performing a post maintenance test of the rebuilt valve.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and it impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, leakage of greater than 10 gpm through the 2SJ10 valve degraded the ability of the charging system to deliver design flow rates to the reactor following a safety injection signal that would un-isolate the BIT. The inspectors evaluated this finding using IMC 0609, Attachment 4. The finding was determined to be of very low safety significance because it was not a design or qualification deficiency, did not represent an actual loss of system safety function, and was not potentially risk significant for external events. This finding had a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because PSEG did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions, as necessary. Specifically, PSEG's evaluation following the 2SJ10 failure in April 2011 did not meet the requirements of PSEG procedure ER-SA-321-1010. The evaluation contained incorrect information regarding valve refurbishment that prevented PSEG from identifying the cause of the 2SJ10 failure. (P.1 (c))

Inspection Report# : 2011004 (pdf)

Significance: Feb 18, 2011 Identified By: NRC Item Type: NCV NonCited Violation INADEOUATE CALCULATIONS FOR DEGRADED VOLTAGE RELAY VOLTAGE 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", because PSEG had not verified the adequacy of the design for the DVR voltage setpoint. Specifically, PSEG had not performed calculations for motor starting and running conditions, and for operation of other safety-related equipment based on voltages afforded by the degraded voltage relays. PSEG entered this issue into their corrective action program and performed preliminary calculations to demonstrate reasonable assurance of operability.

The finding is more than minor because it is 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. The team evaluated the finding in accordance with IMC 0609, Attachment 0609.04, Phase 1 – Initial Screening and Characterization of Findings, Table 4a for the Mitigating Systems Cornerstone. The team determined that the finding was of very low safety significance because it was a design deficiency confirmed not to result in loss of operability.

The team determined that this finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience Component, because PSEG did not ensure that relevant internal and external operating experience was collected, evaluated, and communicated to affected internal stakeholders in a timely manner. Specifically, PSEG did not adequately evaluate a similar finding documented in a Hope Creek Generating Station NRC component design bases inspection report in November 2009 (NCV 05000354/2009007-03) and missed an opportunity in their internal response to NRC Information Notice 2008-02, "Findings Identified During Component Design Bases Inspections", issued in March 2008.

Inspection Report# : 2011007 (pdf)

Barrier Integrity

Significance: SL-IV Mar 31, 2011 Identified By: NRC Item Type: NCV NonCited Violation FAILURE TO SUBMIT AN LER FOR A CONDITION PROHIBITED BY TS ASSOCIATED WITH **CONTAINMENT ISOLATION**

The inspectors identified a Severity Level IV NCV of 10 CFR 50.73, "Licensee Event Reporting (LER) System", because PSEG personnel did not provide a written report to the NRC within 60 days after discovery of a condition prohibited by Technical Specification (TS) 3.6.1, "Containment Integrity". This was an NRC-identified violation of reporting requirements and potentially impacted the regulatory process. This type of violation is dispositioned using the traditional enforcement process defined in the NRC Enforcement Policy. In accordance with Section 6.9.d of the Enforcement Policy, this violation is categorized as a Severity Level IV violation.

PSEG documented the issue in their CAP and conducted an evaluation to determine why the assignment to submit an LER was missed. The inspectors determined that this traditional enforcement violation did not involve a Reactor Oversight Process (ROP) finding, therefore, no cross-cutting issue was assigned.

Inspection Report# : 2011002 (pdf)



Significance: **G** Feb 18, 2011

Identified By: NRC

Item Type: NCV NonCited Violation FAILURE TO IDENTIFY AND CORRECT A CONDITION ADVERSE TO QUALITY AFFECTING THE

CREACS EXPANSION JOINTS

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", because PSEG did not identify and correct a condition adverse to quality. Specifically, PSEG did not identify and correct the degraded condition of the Unit 1 and Unit 2 control room emergency air conditioning system (CREACS) common suction expansion joints because they did not implement appropriate preventive maintenance (PM) per their performance-centered maintenance (PCM) template. PSEG placed the finding and the associated issues in its corrective action program. In response to the identified control room envelope (CRE) breach, operators promptly entered TS 3.7.6 and initiated mitigation actions. PSEG affected prompt repairs, performed an appropriate post maintenance test, declared the CRE fully operable, and exited the TS limiting condition for operation action statement.

The finding is more than minor because it is associated with the barrier performance attribute of the Barrier Integrity

Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the control room operators from radionuclide releases caused by accidents or events. The finding was evaluated in accordance with IMC 0609, Attachment 4, Table 4a for the containment barrier. Since the finding had the potential to impact more than the radiological barrier function, a Region I Senior Reactor Analyst (SRA) performed a Phase 3 analysis. The SRA determined that the dominant sequence involved a sufficient degradation of the CREACS barrier that would allow sufficient in-leakage to force an evacuation of the control room during a fire or toxic gas event. The areas with the degradation were in room 15615 and 25615 for Units 1 and 2, respectively. The SRA evaluated these areas and determined that the potential impact due to in-leakage through the degraded barrier from fire and toxic gas would be negligible. The SRA also reviewed the results of recent CRE in-leakage testing conducted in September 2010. The condition of the expansion joint tearing and wear could reasonably be assumed to have existed during the September testing. This testing also confirmed that the total in-leakage in these areas was small. Based on the above factors, the SRA determined the finding was of very low safety significance (Green).

The team determined that this finding has a cross-cutting aspect in the area of Human Performance, Work Control Component, because PSEG did not plan work activities to support long-term equipment reliability by ensuring that maintenance scheduling was more preventive than reactive. Specifically, PSEG did not implement appropriate PMs on the CREACS filter expansion joints necessitating several reactive corrective maintenance activities.

Inspection Report# : 2011007 (pdf)

Emergency Preparedness

Significance: G Sep 30, 2011

Identified By: NRC Item Type: NCV NonCited Violation Late State Notification of UE

The inspectors identified a NCV of 10 CFR 50.47, "Emergency Plans." Specifically, state officials were not notified within 15 minutes of the declaration of an Unusual Event (UE), a risk significant planning standard. PSEG has entered this issue into their CAP as notification 20518004. PSEG's corrective actions for this performance deficiency was to complete licensed operator training regarding classification and notification requirements for short duration emergency events terminated before classifications and notifications can be completed.

The inspectors determined that a performance deficiency was identified associated with timely notification to state and local government agencies during an actual event. PSEG did not notify Delaware and New Jersey state government agencies within the specified 15 minutes after declaring a UE. The finding was greater than minor because it is associated with the Emergency Planning cornerstone attribute of Emergency Response Organization performance during actual event response. The finding affected the cornerstone objective of ensuring 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 reviewed this finding using IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," Sheet 2, "Actual Event Implementation Problem." This finding was determined to be of very low safety significance because it was a failure to implement a risk significant planning standard during an actual event associated with the declaration of a UE. This finding had a cross-cutting aspect in the area of human performance, work practices, because PSEG personnel did not ensure supervisory and management oversight of work activities, such that nuclear safety is supported. Specifically, the Shift Manager was distracted from his supervisory oversight role and did not direct the communicators to perform state notifications within the required 15 minute time period. (H.4(c))

Inspection Report# : 2011004 (pdf)

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 <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Significance: N/A Jul 21, 2011 Identified By: NRC Item Type: FIN Finding Biennial PI&R Summary Assessment

The inspectors concluded that 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 and cause, generic issues, and previous occurrences. The inspectors also determined that PSEG typically implemented corrective actions to address identified problems in a timely manner. However, for one issue reviewed by the inspectors, the corrective actions completed by PSEG were not timely and the inspectors determined that this was a violation of NRC requirements, in the area of corrective action implementation.

The inspectors concluded that, in general, PSEG adequately identified, reviewed, and applied relevant industry operating experience to Salem operations and identified appropriate corrective actions. In addition, based on those items selected for review, the inspectors determined that PSEG self-assessments and audits were thorough and appropriately used the corrective action program to initiate corrective actions for identified issues.

With respect to safety conscious work environment, based on interviews and reviews of the corrective action program and the employees concerns program (ECP) the inspectors did not identify conditions that negatively impacted the site's safety conscious work environment and determined that site personnel were willing to raise safety issues through multiple means.

Inspection Report# : 2011009 (pdf)

Last modified : March 02, 2012

Salem 2 **1Q/2012 Plant Inspection Findings**

Initiating Events



Identified By: Self-Revealing Item Type: FIN Finding Failure to Evaluate Corrective Action Options for RCP Motor Cables

A self-revealing finding of very low safety significance was identified on June 26, 2011, as Salem Unit 2 tripped following a trip of the 23 reactor coolant pump (RCP) due to a ground fault inside the 23 RCP motor junction box. PSEG determined that the cause of the ground fault was RCP motor cable jacket cracking that was first identified in 2005. PSEG entered this event into the CAP as notification 20515977.

The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, action from notifications in January 2006 for the engineering department to determine various options to address RCP motor lead jacket cracking including an evaluation on whether to replace the cables during the June 2008 refueling outage (RFO) was not completed prior to the June 2008 motor replacement and continued to be an open action up to the point of the June 2011 RCP cable failure and reactor trip. The finding was evaluated under IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined that the finding is of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding had a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because PSEG did not take appropriate corrective action to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, PSEG did not ensure that the CAP assignment for the engineering department to evaluate long-term corrective action options for the RCP motor lead cables were completed timely and effectively in accordance with their CAP procedure. (P.1(d))

Inspection Report# : 2011004 (pdf)



Significance: Jun 30, 2011 Identified By: Self-Revealing Item Type: FIN Finding

INADEOUATE CONTROL OF SWITCHYARD MAINTENANCE

A self-revealing finding of very low safety significance was identified on April 1, 2011, because a 500 KV load break disconnect 3T60 failed to operate upon the restoration of switchyard maintenance. This caused a four-hour delay in the restoration from a single source of offsite power, the exit from a 72-hour limiting condition for operation (LCO), and the extension of a yellow probability risk assessment condition. PSEG investigation revealed that the vendor, who was conducting maintenance on the 3T60 disconnect, removed the motor control fuse holder that was not a part of the tagout for the maintenance. PSEG determined that the cause of the disconnect not closing was that PSEG did not adequately brief and control the maintenance evolution. PSEG entered this event into their CAP as notification 20503254. PSEG's immediate corrective actions were to reinstall the fuses and close the 3T60 disconnect.

The inspectors determined that the failure of PSEG to assign a supplemental workforce supervisor or task manager to provide in-field supervision of the 3T60 disconnect maintenance in accordance with AD-AA-2001, "Management and Oversight of Supplemental Workforce", was a performance deficiency. The inspectors determined that the performance deficiency was more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone and it adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. The finding was evaluated under IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings", and the inspectors concluded that a Phase 2 evaluation

was required since the finding contributed to both the likelihood of a reactor trip and the likelihood that mitigating systems would not have been available. This conclusion was based upon the potential for emergency diesel generator (EDG) operation to be challenged upon the loss of all offsite power. A regional Senior Reactor Analyst completed a Phase 3 evaluation under the SDP. The performance deficiency was characterized as of very low safety significance (Green) based upon the results of this evaluation. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance, because PSEG did not ensure supervisory and management oversight of the vendor work activity. Specifically, PSEG personnel did not did not assign a supervisor to provide in-field supervision, conduct an adequate pre-job brief with the vendor, and did not conduct an adequate post-maintenance restoration walkdown of the 3T60 switchyard maintenance. (H.4(c))

Inspection Report# : 2011003 (pdf)

Mitigating Systems

Significance: G Sep 30, 2011 Identified By: NRC Item Type: NCV NonCited Violation Inadequate IST Program Evaluation of a Pressure Relief Valve

The inspectors identified a NCV of Salem Technical Specification (TS) 6.8.4.j, "In Service Testing," that implements the in service testing program for American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components in accordance with the ASME Operations and Maintenance (OM) code. Specifically, PSEG did not complete an adequate ASME OM code required evaluation following the test of the Unit 2 Boron Injection Tank (BIT) relief, 2SJ10, which lifted outside of its acceptance criteria. This finding was determined to be of very low safety significance. PSEG entered this issue into their CAP as notifications 20523948 and 20518249. Corrective actions at that time included replacing the damaged seat and disk, rebuilding the valve, and performing a post maintenance test of the rebuilt valve.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and it impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, leakage of greater than 10 gpm through the 2SJ10 valve degraded the ability of the charging system to deliver design flow rates to the reactor following a safety injection signal that would un-isolate the BIT. The inspectors evaluated this finding using IMC 0609, Attachment 4. The finding was determined to be of very low safety significance because it was not a design or qualification deficiency, did not represent an actual loss of system safety function, and was not potentially risk significant for external events. This finding had a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because PSEG did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions, as necessary. Specifically, PSEG's evaluation following the 2SJ10 failure in April 2011 did not meet the requirements of PSEG procedure ER-SA-321-1010. The evaluation contained incorrect information regarding valve refurbishment that prevented PSEG from identifying the cause of the 2SJ10 failure. (P.1 (c))

Inspection Report# : 2011004 (pdf)

Barrier Integrity

Emergency Preparedness

Significance: Sep 30, 2011

Identified By: NRC Item Type: NCV NonCited Violation Late State Notification of UE

The inspectors identified a NCV of 10 CFR 50.47, "Emergency Plans." Specifically, state officials were not notified within 15 minutes of the declaration of an Unusual Event (UE), a risk significant planning standard. PSEG has entered this issue into their CAP as notification 20518004. PSEG's corrective actions for this performance deficiency was to complete licensed operator training regarding classification and notification requirements for short duration emergency events terminated before classifications and notifications can be completed.

The inspectors determined that a performance deficiency was identified associated with timely notification to state and local government agencies during an actual event. PSEG did not notify Delaware and New Jersey state government agencies within the specified 15 minutes after declaring a UE. The finding was greater than minor because it is associated with the Emergency Planning cornerstone attribute of Emergency Response Organization performance during actual event response. The finding affected the cornerstone objective of ensuring 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 reviewed this finding using IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," Sheet 2, "Actual Event Implementation Problem." This finding was determined to be of very low safety significance because it was a failure to implement a risk significant planning standard during an actual event associated with the declaration of a UE. This finding had a cross-cutting aspect in the area of human performance, work practices, because PSEG personnel did not ensure supervisory and management oversight of work activities, such that nuclear safety is supported. Specifically, the Shift Manager was distracted from his supervisory oversight role and did not direct the communicators to perform state notifications within the required 15 minute time period. (H.4(c))

Inspection Report# : 2011004 (pdf)

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 <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Significance: N/A Jul 21, 2011 Identified By: NRC Item Type: FIN Finding Biennial PI&R Summary Assessment

The inspectors concluded that 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 and cause, generic issues, and previous occurrences. The inspectors also determined that PSEG typically implemented corrective actions

to address identified problems in a timely manner. However, for one issue reviewed by the inspectors, the corrective actions completed by PSEG were not timely and the inspectors determined that this was a violation of NRC requirements, in the area of corrective action implementation.

The inspectors concluded that, in general, PSEG adequately identified, reviewed, and applied relevant industry operating experience to Salem operations and identified appropriate corrective actions. In addition, based on those items selected for review, the inspectors determined that PSEG self-assessments and audits were thorough and appropriately used the corrective action program to initiate corrective actions for identified issues.

With respect to safety conscious work environment, based on interviews and reviews of the corrective action program and the employees concerns program (ECP) the inspectors did not identify conditions that negatively impacted the site's safety conscious work environment and determined that site personnel were willing to raise safety issues through multiple means.

Inspection Report# : 2011009 (pdf)

Last modified : May 29, 2012

Salem 2 2Q/2012 Plant Inspection Findings

Initiating Events



Significance: Sep 30, 2011 Identified By: Self-Revealing Item Type: FIN Finding

Failure to Evaluate Corrective Action Options for RCP Motor Cables

A self-revealing finding of very low safety significance was identified on June 26, 2011, as Salem Unit 2 tripped following a trip of the 23 reactor coolant pump (RCP) due to a ground fault inside the 23 RCP motor junction box. PSEG determined that the cause of the ground fault was RCP motor cable jacket cracking that was first identified in 2005. PSEG entered this event into the CAP as notification 20515977.

The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Initiating Events cornerstone, and it adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, action from notifications in January 2006 for the engineering department to determine various options to address RCP motor lead jacket cracking including an evaluation on whether to replace the cables during the June 2008 refueling outage (RFO) was not completed prior to the June 2008 motor replacement and continued to be an open action up to the point of the June 2011 RCP cable failure and reactor trip. The finding was evaluated under IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors determined that the finding is of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding had a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because PSEG did not take appropriate corrective action to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, PSEG did not ensure that the CAP assignment for the engineering department to evaluate long-term corrective action options for the RCP motor lead cables were completed timely and effectively in accordance with their CAP procedure. (P.1(d))

Inspection Report# : 2011004 (pdf)

Mitigating Systems

Significance: Sep 30, 2011 Identified By: NRC Item Type: NCV NonCited Violation

Inadequate IST Program Evaluation of a Pressure Relief Valve

The inspectors identified a NCV of Salem Technical Specification (TS) 6.8.4.j, "In Service Testing," that implements the in service testing program for American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components in accordance with the ASME Operations and Maintenance (OM) code. Specifically, PSEG did not complete an adequate ASME OM code required evaluation following the test of the Unit 2 Boron Injection Tank (BIT) relief, 2SJ10, which lifted outside of its acceptance criteria. This finding was determined to be of very low safety significance. PSEG entered this issue into their CAP as notifications 20523948 and 20518249. Corrective actions at that time included replacing the damaged seat and disk, rebuilding the valve, and performing a post maintenance test of the rebuilt valve.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating

Systems cornerstone, and it impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, leakage of greater than 10 gpm through the 2SJ10 valve degraded the ability of the charging system to deliver design flow rates to the reactor following a safety injection signal that would un-isolate the BIT. The inspectors evaluated this finding using IMC 0609, Attachment 4. The finding was determined to be of very low safety significance because it was not a design or qualification deficiency, did not represent an actual loss of system safety function, and was not potentially risk significant for external events. This finding had a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because PSEG did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions, as necessary. Specifically, PSEG's evaluation following the 2SJ10 failure in April 2011 did not meet the requirements of PSEG procedure ER-SA-321-1010. The evaluation contained incorrect information regarding valve refurbishment that prevented PSEG from identifying the cause of the 2SJ10 failure. (P.1 (c))

Inspection Report# : 2011004 (pdf)

Barrier Integrity

Emergency Preparedness

Significance: Sep 30, 2011

Identified By: NRC Item Type: NCV NonCited Violation Late State Notification of UE

The inspectors identified a NCV of 10 CFR 50.47, "Emergency Plans." Specifically, state officials were not notified within 15 minutes of the declaration of an Unusual Event (UE), a risk significant planning standard. PSEG has entered this issue into their CAP as notification 20518004. PSEG's corrective actions for this performance deficiency was to complete licensed operator training regarding classification and notification requirements for short duration emergency events terminated before classifications and notifications can be completed.

The inspectors determined that a performance deficiency was identified associated with timely notification to state and local government agencies during an actual event. PSEG did not notify Delaware and New Jersey state government agencies within the specified 15 minutes after declaring a UE. The finding was greater than minor because it is associated with the Emergency Planning cornerstone attribute of Emergency Response Organization performance during actual event response. The finding affected the cornerstone objective of ensuring 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 reviewed this finding using IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," Sheet 2, "Actual Event Implementation Problem." This finding was determined to be of very low safety significance because it was a failure to implement a risk significant planning standard during an actual event associated with the declaration of a UE. This finding had a cross-cutting aspect in the area of human performance, work practices, because PSEG personnel did not ensure supervisory and management oversight of work activities, such that nuclear safety is supported. Specifically, the Shift Manager was distracted from his supervisory oversight role and did not direct the communicators to perform state notifications within the required 15 minute time period. (H.4(c))

Inspection Report# : 2011004 (pdf)

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Significance: N/A Jul 21, 2011 Identified By: NRC Item Type: FIN Finding Biennial PI&R Summary Assessment

The inspectors concluded that 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 and cause, generic issues, and previous occurrences. The inspectors also determined that PSEG typically implemented corrective actions to address identified problems in a timely manner. However, for one issue reviewed by the inspectors, the corrective actions completed by PSEG were not timely and the inspectors determined that this was a violation of NRC requirements, in the area of corrective action implementation.

The inspectors concluded that, in general, PSEG adequately identified, reviewed, and applied relevant industry operating experience to Salem operations and identified appropriate corrective actions. In addition, based on those items selected for review, the inspectors determined that PSEG self-assessments and audits were thorough and appropriately used the corrective action program to initiate corrective actions for identified issues.

With respect to safety conscious work environment, based on interviews and reviews of the corrective action program and the employees concerns program (ECP) the inspectors did not identify conditions that negatively impacted the site's safety conscious work environment and determined that site personnel were willing to raise safety issues through multiple means.

Inspection Report# : 2011009 (pdf)

Last modified : September 12, 2012

Salem 2 3Q/2012 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: Sep 30, 2012 Identified By: Self-Revealing Item Type: NCV NonCited Violation

Inadvertent Injection of Auxiliary Feedwater into the 23 Steam Generator

A self-revealing NCV of Technical Specification (TS) 3.7.1.2.a, "Auxiliary Feedwater System," was identified because the 23 steam generator flow control valve from the 21 auxiliary feedwater (AFW) pump went open unexpectedly during the in-service test of the 21 AFW pump. Specifically, the air supply to the 23AF21 valve was found closed, resulting in the valve opening when the pump was started and the inability to close this valve from the control room using the valve flow controller.

The inspectors determined that the 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 (i.e., core damage). Using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that the finding was of very low safety significance (Green) because the system maintained the ability to inject water into each of the steam generators. Senior reactor analyst review determined that the valve failure to close is not modeled in sequences which could lead to core damage. Prompt corrective actions included labeling and tagging the adjacent air supply regulator that was used to supply air for other instrumentation calibration and testing. Corrective actions planned include revisions to the Maintenance Alteration Process procedure to require that all alterations to positionable components are reviewed and approved by a licensed senior reactor operator, and a revision to the Control of Equipment and System Status procedure to prohibit the operation of unlabeled equipment in the power block. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance, work practices, because PSEG did not adequately communicate human error prevention techniques, such as holding pre-job briefs and self and peer checking. Specifically, flagging and robust barriers were not used in a situation where multiple similar components existed within close proximity to each other, which resulted in the isolation of the air regulator valve for valve 23AF21, located next to an unmarked air regulator valve that had been utilized for testing of instrumentation. (H.4(a))

Inspection Report# : 2012004 (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : January 07, 2013

Salem 2 4Q/2012 Plant Inspection Findings

Initiating Events

Mitigating Systems



Identified By: Self-Revealing Item Type: NCV NonCited Violation

Inadvertent Injection of Auxiliary Feedwater into the 23 Steam Generator

A self-revealing NCV of Technical Specification (TS) 3.7.1.2.a, "Auxiliary Feedwater System," was identified because the 23 steam generator flow control valve from the 21 auxiliary feedwater (AFW) pump went open unexpectedly during the in-service test of the 21 AFW pump. Specifically, the air supply to the 23AF21 valve was found closed, resulting in the valve opening when the pump was started and the inability to close this valve from the control room using the valve flow controller.

The inspectors determined that the 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 (i.e., core damage). Using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that the finding was of very low safety significance (Green) because the system maintained the ability to inject water into each of the steam generators. Senior reactor analyst review determined that the valve failure to close is not modeled in sequences which could lead to core damage. Prompt corrective actions included labeling and tagging the adjacent air supply regulator that was used to supply air for other instrumentation calibration and testing. Corrective actions planned include revisions to the Maintenance Alteration Process procedure to require that all alterations to positionable components are reviewed and approved by a licensed senior reactor operator, and a revision to the Control of Equipment and System Status procedure to prohibit the operation of unlabeled equipment in the power block. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance, work practices, because PSEG did not adequately communicate human error prevention techniques, such as holding pre-job briefs and self and peer checking. Specifically, flagging and robust barriers were not used in a situation where multiple similar components existed within close proximity to each other, which resulted in the isolation of the air regulator valve for valve 23AF21, located next to an unmarked air regulator valve that had been utilized for testing of instrumentation.

Inspection Report# : 2012004 (pdf)

Barrier Integrity

Emergency Preparedness

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : February 28, 2013

Salem 2 1Q/2013 Plant Inspection Findings

Initiating Events



Inadequate Relay Testing Instructions Cause Loss of One Offsite Power Source

(Green) A self-revealing finding was identified because the work instructions used to perform relay testing on January 21, 2013, did not include the level of detail required by site work planning standards. Specifically, they did not specify the test switches that needed to be open to isolate the transformer for the testing. This caused the loss of #4 station power transformer (SPT), which caused both units to align the 4160 Vac vital buses to a single source of offsite power and Unit 2 to reduce power to 95 percent when it lost half of its running circulating water pumps. Planned corrective actions include updating relay procedures and reevaluating the risk assignment of relay work.

The performance deficiency was determined to be more than minor because it is associated with the procedure quality attribute of the Initiating Events cornerstone and affected the cornerstone 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. Specifically, PSEG work instructions did not include which test switches were required to be opened prior to testing, which led to the loss of one source of offsite power at each unit and Unit 2 down-powering due to the loss of circulating water pumps. In accordance with IMC 0609.04, "Initial Screening and Characterization," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not cause both a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. This finding had a cross-cutting aspect in the area of Human Performance, Work Control, because PSEG did not plan and coordinate work activities consistent with nuclear safety. Specifically, PSEG did not plan and coordinate work activities to minimize the probability or consequences of the loss of off-site power. [H.3(a)] Inspection Report# : 2013002 (pdf)

Significance: Mar 31, 2013

Identified By: NRC Item Type: FIN Finding

Failure to Implement Feedwater Control Valve Corrective Actions

(Green) A self-revealing finding was identified because PSEG did not implement timely and effective corrective actions to address feedwater control valve (FCV) positioner malfunctions that occurred between 2004 and 2012, The inspectors determined that minor malfunctions between 2007 and 2012 provided PSEG indication that the ability of FCVs to properly respond to plant transients remained adversely affected and that actions completed to date may not have been effective. As a result of PSEG's ineffective and untimely action, on November 25, 2012, Unit 2 tripped from 92 percent power due to a malfunction of FCV 24BF19. Planned corrective actions include replacing the FCV positioners with digital controllers during the next refueling outage at each unit.

The performance deficiency was determined to be more than minor because it affected the equipment performance

attribute of the Initiating Events cornerstone objective and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as at power operations. Specifically, the failure of the FCV to reposition as demanded resulted in a low steam generator level and subsequent plant trip. In accordance with IMC 0609.04, "Initial Screening and Characterization," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not cause both a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. This finding has a cross-cutting aspect in the area of Human Performance, Decision Making, because PSEG decisions did not demonstrate that nuclear safety was an overriding priority. Specifically, PSEG did not demonstrate conservative assumptions in decision making by postponing corrective actions to prevent recurrence over an eight year time span, despite numerous issues with the feed water regulating valves that culminated in the plant tripping [H.1(b)]

Inspection Report# : 2013002 (pdf)

Mitigating Systems

Significance: Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Inadvertent Isolation of Service Water to all EDGs in Mode 6

(Green) A self-revealing NCV of Technical Specification (TS) 6.8.1, "Procedures and Programs," was identified because PSEG personnel did not use the documentation required by site procedures to verify component position during removal of a clearance tagout. As a result, on November 4, 2012, PSEG personnel isolated SW to all emergency diesel generators (EDGs) at Unit 2 while in Mode 6 with fuel movement in progress. As corrective actions, PSEG conducted valve line-up training for field operators and initiated additional field oversight of in-plant activities.

The performance deficiency was determined to be more than minor because it affected the configuration control attribute of the Mitigating Systems cornerstone to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, a SW valve was incorrectly positioned, isolating all cooling water to the EDGs. The inspectors evaluated the finding using IMC 0609.04, "Initial Characterization of Findings," Attachment 1 of IMC 0609, and Appendix G, "Shutdown Operations Significance Determination Process Phase 1 Operational Checklists for Both PWRs and BWRs – Attachment 4 PWR Refueling Operation: RCS level >23' or PWR Shutdown Operation with Time to Boil >2 hours and Inventory in the Pressurizer." Because no loss of control occurred and all mitigating capabilities were available, a Phase 2 quantitative assessment was not required. Therefore, the inspectors determined the finding to be of very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Work Practices, in that PSEG did not effectively communicate human error prevention techniques commensurate with the risk of the assigned task. Specifically, the pre-job brief did not enforce the expectation to contact supervision when an unexpected condition was identified, personnel did not perform self-checking prior to component manipulation, and personnel proceeded in the face of uncertainty. [H.4(a)]

Inspection Report# : 2013002 (pdf)



Item Type: NCV NonCited Violation

Inadvertent Injection of Auxiliary Feedwater into the 23 Steam Generator

A self-revealing NCV of Technical Specification (TS) 3.7.1.2.a, "Auxiliary Feedwater System," was identified because the 23 steam generator flow control valve from the 21 auxiliary feedwater (AFW) pump went open unexpectedly during the in-service test of the 21 AFW pump. Specifically, the air supply to the 23AF21 valve was found closed, resulting in the valve opening when the pump was started and the inability to close this valve from the control room using the valve flow controller.

The inspectors determined that the 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 (i.e., core damage). Using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that the finding was of very low safety significance (Green) because the system maintained the ability to inject water into each of the steam generators. Senior reactor analyst review determined that the valve failure to close is not modeled in sequences which could lead to core damage. Prompt corrective actions included labeling and tagging the adjacent air supply regulator that was used to supply air for other instrumentation calibration and testing. Corrective actions planned include revisions to the Maintenance Alteration Process procedure to require that all alterations to positionable components are reviewed and approved by a licensed senior reactor operator, and a revision to the Control of Equipment and System Status procedure to prohibit the operation of unlabeled equipment in the power block. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance, work practices, because PSEG did not adequately communicate human error prevention techniques, such as holding pre-job briefs and self and peer checking. Specifically, flagging and robust barriers were not used in a situation where multiple similar components existed within close proximity to each other, which resulted in the isolation of the air regulator valve for valve 23AF21, located next to an unmarked air regulator valve that had been utilized for testing of instrumentation.

Inspection Report# : 2012004 (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : June 04, 2013

Salem 2 2Q/2013 Plant Inspection Findings

Initiating Events



Inadequate Relay Testing Instructions Cause Loss of One Offsite Power Source

(Green) A self-revealing finding was identified because the work instructions used to perform relay testing on January 21, 2013, did not include the level of detail required by site work planning standards. Specifically, they did not specify the test switches that needed to be open to isolate the transformer for the testing. This caused the loss of #4 station power transformer (SPT), which caused both units to align the 4160 Vac vital buses to a single source of offsite power and Unit 2 to reduce power to 95 percent when it lost half of its running circulating water pumps. Planned corrective actions include updating relay procedures and reevaluating the risk assignment of relay work.

The performance deficiency was determined to be more than minor because it is associated with the procedure quality attribute of the Initiating Events cornerstone and affected the cornerstone 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. Specifically, PSEG work instructions did not include which test switches were required to be opened prior to testing, which led to the loss of one source of offsite power at each unit and Unit 2 down-powering due to the loss of circulating water pumps. In accordance with IMC 0609.04, "Initial Screening and Characterization," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not cause both a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. This finding had a cross-cutting aspect in the area of Human Performance, Work Control, because PSEG did not plan and coordinate work activities consistent with nuclear safety. Specifically, PSEG did not plan and coordinate work activities to minimize the probability or consequences of the loss of off-site power. [H.3(a)] Inspection Report# : 2013002 (pdf)

Significance: Mar 31, 2013

Identified By: NRC Item Type: FIN Finding

Failure to Implement Feedwater Control Valve Corrective Actions

(Green) A self-revealing finding was identified because PSEG did not implement timely and effective corrective actions to address feedwater control valve (FCV) positioner malfunctions that occurred between 2004 and 2012, The inspectors determined that minor malfunctions between 2007 and 2012 provided PSEG indication that the ability of FCVs to properly respond to plant transients remained adversely affected and that actions completed to date may not have been effective. As a result of PSEG's ineffective and untimely action, on November 25, 2012, Unit 2 tripped from 92 percent power due to a malfunction of FCV 24BF19. Planned corrective actions include replacing the FCV positioners with digital controllers during the next refueling outage at each unit.

The performance deficiency was determined to be more than minor because it affected the equipment performance

attribute of the Initiating Events cornerstone objective and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as at power operations. Specifically, the failure of the FCV to reposition as demanded resulted in a low steam generator level and subsequent plant trip. In accordance with IMC 0609.04, "Initial Screening and Characterization," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not cause both a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. This finding has a cross-cutting aspect in the area of Human Performance, Decision Making, because PSEG decisions did not demonstrate that nuclear safety was an overriding priority. Specifically, PSEG did not demonstrate conservative assumptions in decision making by postponing corrective actions to prevent recurrence over an eight year time span, despite numerous issues with the feed water regulating valves that culminated in the plant tripping [H.1(b)]

Inspection Report# : 2013002 (pdf)

Mitigating Systems

Significance: Jun 30, 2013 Identified By: Self-Revealing Item Type: NCV NonCited Violation

Failure to Evaluate Unit 2 Service Water Accumulator Discharge Valve IST Not Meeting Acceptance Criteria A self revealing NCV of Salem TS 6.8.4.j, "Inservice Testing (IST)," that implements the IST program for American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components in accordance with the ASME Operations and Maintenance (OM) code was identified. Specifically, the opening stroke time for a Unit 2 service water (SW) accumulator discharge valve (22SW535) exceeded the IST acceptance criteria of 1.0 seconds on four occasions during the 92 day test interval, after the acceptance criteria was incorrectly changed on December 21, 2010. The PSEG corrective action for the IST results not meeting the acceptance criteria was to perform an engineering evaluation which reduced the margin of the SW pressure decrease in the SW system downstream of the containment fan cooling units (CFCUs) while changing the IST 45 degree opening stroke time to 1.25 seconds. PSEG also entered this issue into their corrective action program (CAP) under Notification 20607549.

The PD was determined to be more than minor because it is similar to IMC 0612, Appendix E, Example 2.a, in that, in the performance of reviewing a completed IST, it was discovered that the acceptance criteria was incorrect and that the recorded stroke time of 22SW535 exceeded the correct acceptance criteria to meet action range limits. The PD is also 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, the 45 degree opening time of 22SW535 was greater than its acceptance criteria of 1.0 seconds to meet the TS 6.8.4.j, "IST Program," requirements. The inspectors evaluated the finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations (IMC 0609A)." The inspectors determined that the finding was of very low safety significance (Green) because the deficiency did not affect the design or qualification of the SW system and it did not represent a loss of system or train safety function. This finding has a cross-cutting aspect in the area of Human Performance, Resources, because PSEG did not ensure that complete, accurate, and up-to-date design documentation, procedures, and work packages. Specifically, PSEG made a non-conservative revision to the IST acceptance criteria to the SW accumulator discharge valves without evaluating this change was adequate to assure nuclear safety. [H.2(c)] (Section 1R15)

Inspection Report# : 2013003 (pdf)



Item Type: NCV NonCited Violation

Inadvertent Isolation of Service Water to all EDGs in Mode 6

(Green) A self-revealing NCV of Technical Specification (TS) 6.8.1, "Procedures and Programs," was identified because PSEG personnel did not use the documentation required by site procedures to verify component position during removal of a clearance tagout. As a result, on November 4, 2012, PSEG personnel isolated SW to all emergency diesel generators (EDGs) at Unit 2 while in Mode 6 with fuel movement in progress. As corrective actions, PSEG conducted valve line-up training for field operators and initiated additional field oversight of in-plant activities.

The performance deficiency was determined to be more than minor because it affected the configuration control attribute of the Mitigating Systems cornerstone to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, a SW valve was incorrectly positioned, isolating all cooling water to the EDGs. The inspectors evaluated the finding using IMC 0609.04, "Initial Characterization of Findings," Attachment 1 of IMC 0609, and Appendix G, "Shutdown Operations Significance Determination Process Phase 1 Operational Checklists for Both PWRs and BWRs - Attachment 4 PWR Refueling Operation: RCS level >23' or PWR Shutdown Operation with Time to Boil >2 hours and Inventory in the Pressurizer." Because no loss of control occurred and all mitigating capabilities were available, a Phase 2 quantitative assessment was not required. Therefore, the inspectors determined the finding to be of very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Work Practices, in that PSEG did not effectively communicate human error prevention techniques commensurate with the risk of the assigned task. Specifically, the pre-job brief did not enforce the expectation to contact supervision when an unexpected condition was identified, personnel did not perform self-checking prior to component manipulation, and personnel proceeded in the face of uncertainty. [H.4(a)]

Inspection Report# : 2013002 (pdf)



Significance: ^G Sep 30, 2012 Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadvertent Injection of Auxiliary Feedwater into the 23 Steam Generator

A self-revealing NCV of Technical Specification (TS) 3.7.1.2.a, "Auxiliary Feedwater System," was identified because the 23 steam generator flow control valve from the 21 auxiliary feedwater (AFW) pump went open unexpectedly during the in-service test of the 21 AFW pump. Specifically, the air supply to the 23AF21 valve was found closed, resulting in the valve opening when the pump was started and the inability to close this valve from the control room using the valve flow controller.

The inspectors determined that the 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 (i.e., core damage). Using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that the finding was of very low safety significance (Green) because the system maintained the ability to inject water into each of the steam generators. Senior reactor analyst review determined that the valve failure to close is not modeled in sequences which could lead to core damage. Prompt corrective actions included labeling and tagging the adjacent air supply regulator that was used to supply air for other instrumentation calibration and testing. Corrective actions planned include revisions to the

Maintenance Alteration Process procedure to require that all alterations to positionable components are reviewed and approved by a licensed senior reactor operator, and a revision to the Control of Equipment and System Status procedure to prohibit the operation of unlabeled equipment in the power block. The inspectors determined that this finding has a cross-cutting aspect in the area of human performance, work practices, because PSEG did not adequately communicate human error prevention techniques, such as holding pre-job briefs and self and peer checking. Specifically, flagging and robust barriers were not used in a situation where multiple similar components existed within close proximity to each other, which resulted in the isolation of the air regulator valve for valve 23AF21, located next to an unmarked air regulator valve that had been utilized for testing of instrumentation.

Inspection Report# : 2012004 (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance: G Jun 30, 2013 Identified By: NRC Item Type: NCV NonCited Violation Failure to Follow Radiation Protection Procedures to Identify and Control Access to a Locked High Radiation Area

The inspectors identified a self-revealing finding of very low safety significance associated with failure to implement TS 6.8 procedures. Specifically, the inspectors identified that PSEG did not implement radiation protection procedure requirements associated with survey and access control to the Unit 2 reactor cavity on November 7, 2012, resulting in lack of identification and control of a TS 6.12, "Locked High Radiation Area (LHRA)." PSEG entered this issue into their CAP as Notification 20582871.

The failure to implement TS required radiation protection procedures is a PD. The PD was determined to be more than minor because it was related to the programs and process attribute of the occupational radiation safety cornerstone, and adversely affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation from radioactive material during routine reactor operation. Further, if left uncorrected, the PD had the potential to lead to a more significant safety concern if the LHRA was undetected. The finding was assessed using IMC 0609, Appendix C, 2 Enclosure, "Occupational Radiation Safety SDP," dated August 19, 2008, and was determined to be of very low safety significance (Green) because it was not related to as low as reasonably achievable (ALARA), did not result in an overexposure or a substantial potential for overexposure, and did not compromise PSEG's ability to assess dose. This finding has a cross-cutting aspect in the area of Human Performance, Work Control. Specifically, PSEG did not effectively coordinate this work activity by incorporating actions to address the impact of the work on different job activities, and the need for work groups to maintain interfaces and communicate, coordinate, and cooperate with each other during activities in which interdepartmental coordination is necessary to assure plant and human performance. [H.3(b)] (Section 2RS1)

Inspection Report# : 2013003 (pdf)

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : September 03, 2013

Salem 2 3Q/2013 Plant Inspection Findings

Initiating Events



Inadequate Relay Testing Instructions Cause Loss of One Offsite Power Source

(Green) A self-revealing finding was identified because the work instructions used to perform relay testing on January 21, 2013, did not include the level of detail required by site work planning standards. Specifically, they did not specify the test switches that needed to be open to isolate the transformer for the testing. This caused the loss of #4 station power transformer (SPT), which caused both units to align the 4160 Vac vital buses to a single source of offsite power and Unit 2 to reduce power to 95 percent when it lost half of its running circulating water pumps. Planned corrective actions include updating relay procedures and reevaluating the risk assignment of relay work.

The performance deficiency was determined to be more than minor because it is associated with the procedure quality attribute of the Initiating Events cornerstone and affected the cornerstone 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. Specifically, PSEG work instructions did not include which test switches were required to be opened prior to testing, which led to the loss of one source of offsite power at each unit and Unit 2 down-powering due to the loss of circulating water pumps. In accordance with IMC 0609.04, "Initial Screening and Characterization," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not cause both a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. This finding had a cross-cutting aspect in the area of Human Performance, Work Control, because PSEG did not plan and coordinate work activities consistent with nuclear safety. Specifically, PSEG did not plan and coordinate work activities to minimize the probability or consequences of the loss of off-site power. [H.3(a)] Inspection Report# : 2013002 (pdf)

Significance: Mar 31, 2013

Identified By: NRC Item Type: FIN Finding

Failure to Implement Feedwater Control Valve Corrective Actions

(Green) A self-revealing finding was identified because PSEG did not implement timely and effective corrective actions to address feedwater control valve (FCV) positioner malfunctions that occurred between 2004 and 2012, The inspectors determined that minor malfunctions between 2007 and 2012 provided PSEG indication that the ability of FCVs to properly respond to plant transients remained adversely affected and that actions completed to date may not have been effective. As a result of PSEG's ineffective and untimely action, on November 25, 2012, Unit 2 tripped from 92 percent power due to a malfunction of FCV 24BF19. Planned corrective actions include replacing the FCV positioners with digital controllers during the next refueling outage at each unit.

The performance deficiency was determined to be more than minor because it affected the equipment performance

attribute of the Initiating Events cornerstone objective and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as at power operations. Specifically, the failure of the FCV to reposition as demanded resulted in a low steam generator level and subsequent plant trip. In accordance with IMC 0609.04, "Initial Screening and Characterization," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not cause both a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. This finding has a cross-cutting aspect in the area of Human Performance, Decision Making, because PSEG decisions did not demonstrate that nuclear safety was an overriding priority. Specifically, PSEG did not demonstrate conservative assumptions in decision making by postponing corrective actions to prevent recurrence over an eight year time span, despite numerous issues with the feed water regulating valves that culminated in the plant tripping [H.1(b)]

Inspection Report# : 2013002 (pdf)

Mitigating Systems

Significance: Jun 30, 2013 Identified By: Self-Revealing Item Type: NCV NonCited Violation

Failure to Evaluate Unit 2 Service Water Accumulator Discharge Valve IST Not Meeting Acceptance Criteria A self revealing NCV of Salem TS 6.8.4.j, "Inservice Testing (IST)," that implements the IST program for American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components in accordance with the ASME Operations and Maintenance (OM) code was identified. Specifically, the opening stroke time for a Unit 2 service water (SW) accumulator discharge valve (22SW535) exceeded the IST acceptance criteria of 1.0 seconds on four occasions during the 92 day test interval, after the acceptance criteria was incorrectly changed on December 21, 2010. The PSEG corrective action for the IST results not meeting the acceptance criteria was to perform an engineering evaluation which reduced the margin of the SW pressure decrease in the SW system downstream of the containment fan cooling units (CFCUs) while changing the IST 45 degree opening stroke time to 1.25 seconds. PSEG also entered this issue into their corrective action program (CAP) under Notification 20607549.

The PD was determined to be more than minor because it is similar to IMC 0612, Appendix E, Example 2.a, in that, in the performance of reviewing a completed IST, it was discovered that the acceptance criteria was incorrect and that the recorded stroke time of 22SW535 exceeded the correct acceptance criteria to meet action range limits. The PD is also 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, the 45 degree opening time of 22SW535 was greater than its acceptance criteria of 1.0 seconds to meet the TS 6.8.4.j, "IST Program," requirements. The inspectors evaluated the finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations (IMC 0609A)." The inspectors determined that the finding was of very low safety significance (Green) because the deficiency did not affect the design or qualification of the SW system and it did not represent a loss of system or train safety function. This finding has a cross-cutting aspect in the area of Human Performance, Resources, because PSEG did not ensure that complete, accurate, and up-to-date design documentation, procedures, and work packages. Specifically, PSEG made a non-conservative revision to the IST acceptance criteria to the SW accumulator discharge valves without evaluating this change was adequate to assure nuclear safety. [H.2(c)] (Section 1R15)
Inspection Report# : 2013003 (pdf)



Item Type: NCV NonCited Violation

Inadvertent Isolation of Service Water to all EDGs in Mode 6

(Green) A self-revealing NCV of Technical Specification (TS) 6.8.1, "Procedures and Programs," was identified because PSEG personnel did not use the documentation required by site procedures to verify component position during removal of a clearance tagout. As a result, on November 4, 2012, PSEG personnel isolated SW to all emergency diesel generators (EDGs) at Unit 2 while in Mode 6 with fuel movement in progress. As corrective actions, PSEG conducted valve line-up training for field operators and initiated additional field oversight of in-plant activities.

The performance deficiency was determined to be more than minor because it affected the configuration control attribute of the Mitigating Systems cornerstone to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, a SW valve was incorrectly positioned, isolating all cooling water to the EDGs. The inspectors evaluated the finding using IMC 0609.04, "Initial Characterization of Findings," Attachment 1 of IMC 0609, and Appendix G, "Shutdown Operations Significance Determination Process Phase 1 Operational Checklists for Both PWRs and BWRs – Attachment 4 PWR Refueling Operation: RCS level >23' or PWR Shutdown Operation with Time to Boil >2 hours and Inventory in the Pressurizer." Because no loss of control occurred and all mitigating capabilities were available, a Phase 2 quantitative assessment was not required. Therefore, the inspectors determined the finding to be of very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Work Practices, in that PSEG did not effectively communicate human error prevention techniques commensurate with the risk of the assigned task. Specifically, the pre-job brief did not enforce the expectation to contact supervision when an unexpected condition was identified, personnel did not perform self-checking prior to component manipulation, and personnel proceeded in the face of uncertainty. [H.4(a)]

Inspection Report# : 2013002 (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance: **G** Jun 30, 2013 Identified By: NRC Item Type: NCV NonCited Violation Failure to Follow Radiation Protection Procedures to Identify and Control Access to a Locked High Radiation Area The inspectors identified a self-revealing finding of very low safety significance associated with failure to implement TS 6.8 procedures. Specifically, the inspectors identified that PSEG did not implement radiation protection procedure requirements associated with survey and access control to the Unit 2 reactor cavity on November 7, 2012, resulting in lack of identification and control of a TS 6.12, "Locked High Radiation Area (LHRA)." PSEG entered this issue into their CAP as Notification 20582871.

The failure to implement TS required radiation protection procedures is a PD. The PD was determined to be more than minor because it was related to the programs and process attribute of the occupational radiation safety cornerstone, and adversely affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation from radioactive material during routine reactor operation. Further, if left uncorrected, the PD had the potential to lead to a more significant safety concern if the LHRA was undetected. The finding was assessed using IMC 0609, Appendix C, 2 Enclosure, "Occupational Radiation Safety SDP," dated August 19, 2008, and was determined to be of very low safety significance (Green) because it was not related to as low as reasonably achievable (ALARA), did not result in an overexposure or a substantial potential for overexposure, and did not compromise PSEG's ability to assess dose. This finding has a cross-cutting aspect in the area of Human Performance, Work Control. Specifically, PSEG did not effectively coordinate this work activity by incorporating actions to address the impact of the work on different job activities, and the need for work groups to maintain interfaces and communicate, coordinate, and cooperate with each other during activities in which interdepartmental coordination is necessary to assure plant and human performance. [H.3(b)] (Section 2RS1)

Inspection Report# : 2013003 (pdf)

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : December 03, 2013

Salem 2 4Q/2013 Plant Inspection Findings

Initiating Events



Failure to Evaluate Performance Deficiency for FIN 2011004-02

The inspectors identified a Green finding (FIN) for PSEG's failure to evaluate the performance deficiency documented for FIN 2011004-02 in accordance with procedure LSAA-1003, "NRC Inspection Preparation and Response." Specifically, PSEG failed to initiate a notification to review FIN 2011004-02 and develop appropriate corrective actions. The original finding, FIN 201100402, was associated with untimely corrective actions for degraded reactor coolant pump motor cables. In addition to not addressing the performance deficiency, the failure to initiate a notification creates the potential for future untimely corrective actions in similar cases. This issue was entered into PSEG's corrective action program as notification 20616485.

This finding is more than minor because if left uncorrected the issue has the potential to lead to a more significant safety concern. Specifically, PSEG has not corrected the performance deficiency which resulted in untimely corrective actions with regards to FIN 2011004-02. If similar untimely corrective actions were taken on a safety system this could result in a more significant safety concern. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, this finding is of very low safety significance (Green) because it did not involve the complete or partial loss of a support system that contributes to the likelihood of, or cause, an initiating event and did not affect mitigation equipment. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because PSEG did not completely and accurately identify the issue for FIN 2011004-02. Specifically, PSEG did not initiate a notification to review FIN 2011004-02 to ensure corrective actions properly address the finding. [P.1(a)]

Inspection Report# : 2013008 (pdf)

Significance: Mar 31, 2013

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Relay Testing Instructions Cause Loss of One Offsite Power Source

A self-revealing finding was identified because the work instructions used to perform relay testing on January 21, 2013, did not include the level of detail required by site work planning standards. Specifically, they did not specify the test switches that needed to be open to isolate the transformer for the testing. This caused the loss of #4 station power transformer (SPT), which caused both units to align the 4160 Vac vital buses to a single source of offsite power and Unit 2 to reduce power to 95 percent when it lost half of its running circulating water pumps. Planned corrective actions include updating relay procedures and reevaluating the risk assignment of relay work.

The performance deficiency was determined to be more than minor because it is associated with the procedure quality attribute of the Initiating Events cornerstone and affected the cornerstone 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. Specifically, PSEG work instructions did not include which test switches were required to be opened prior to testing, which led to the loss of one source of offsite power at each unit and Unit 2 down-powering due to the loss of circulating water pumps. In accordance with IMC 0609.04, "Initial Screening and Characterization," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not cause both a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. This finding had a cross-cutting aspect in the area of Human Performance, Work Control, because PSEG did not plan and coordinate work activities consistent with nuclear safety. Specifically, PSEG did not incorporate risk insights on the potential impact on offsite power during #4 SPT maintenance. As a result, PSEG did not plan and coordinate work activities to minimize the probability or consequences of the loss of off-site power. [H.3(a)]

Inspection Report# : 2013002 (pdf)



Significance: ^G Mar 31, 2013

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to Implement Feedwater Control Valve Corrective Actions

A self-revealing finding was identified because PSEG did not implement timely and effective corrective actions to address feedwater control valve (FCV) positioner malfunctions that occurred between 2004 and 2012, The inspectors determined that minor malfunctions between 2007 and 2012 provided PSEG indication that the ability of FCVs to properly respond to plant transients remained adversely affected and that actions completed to date may not have been effective. As a result of PSEG's ineffective and untimely action, on November 25, 2012, Unit 2 tripped from 92 percent power due to a malfunction of FCV 24BF19. Planned corrective actions include replacing the FCV positioners with digital controllers during the next refueling outage at each unit.

The performance deficiency was determined to be more than minor because it affected the equipment performance attribute of the Initiating Events cornerstone objective and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as at power operations. Specifically, the failure of the FCV to reposition as demanded resulted in a low steam generator level and subsequent plant trip. In accordance with IMC 0609.04, "Initial Screening and Characterization," and Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency did not cause both a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. This finding has a cross-cutting aspect in the area of Human Performance, Decision Making, because PSEG decisions did not demonstrate that nuclear safety was an overriding priority. Specifically, PSEG did not demonstrate conservative assumptions in decision making by postponing corrective actions to prevent recurrence over an eight year time span, despite numerous issues with the feed water regulating valves that culminated in the plant tripping [H.1(b)]

Inspection Report# : 2013002 (pdf)

Mitigating Systems



Identified By: NRC Item Type: NCV NonCited Violation

Inadequate Assessment of Fire Brigade Performance during an Unannounced Drill

The inspectors identified a Green NCV of Unit 2 license condition 2.C.(10), Fire Protection, when PSEG did not adequately assess fire brigade performance during an unannounced drill on November 18, 2013, as required by the fire protection program. Specifically, PSEG did not adequately assess the selection, placement and use of equipment and fire-fighting strategies, conformance with established plant fire-fighting procedures, and the use of fire-fighting equipment, including communication equipment.

PSEG entered this into their CAP as notification 20632422 and chartered an apparent cause evaluation.

The inspectors determined that the issue was more than minor since it was associated with the protection against external events (fire) attribute of the Mitigating Systems cornerstone and impacts its objective of ensuring the availability, reliability, and capability of systems, such as the fire brigade, that respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety Significance (Green) in accordance with D.1 of IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." Because the finding involved fire brigade training requirements, the fire brigade demonstrated the ability to meet the required times for fire extinguishment for the fire drill scenarios, and the finding did not significantly affect the fire brigade's ability to respond to a fire, the finding was of very low safety significance (Green). The finding was determined to have a cross-cutting aspect in the area of Problem Identification and Resolution, Self and Independent Assessments, in that licensees conduct assessments of their activities to assess performance and identify areas of improvement. Specifically, the PSEG self-evaluation of fire brigade performance was not of sufficient depth, appropriately objective, and selfcritical. [P.3(a)] (Section 1R05)

The inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs", as described in Regulatory Guide (RG) 1.33, Revision 2, when PSEG did not properly implement high energy line break (HELB) barrier controls in accordance with CC-AA-201, Plant Barrier Control, during maintenance activities that affected the performance of safety-related equipment on October 1, 2 and 17, 2013. PSEG entered the issue into the CAP under notifications 20623371 and 20633614.

This finding was more than minor because it was associated with the configuration control attribute of the Mitigating System cornerstone, and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, improper barrier controls could potentially affect the operating equipment in the case of a HELB. This performance deficiency required a detailed risk evaluation (DRE) in accordance with IMC 0609, Appendix A, screening questions in Exhibits 2, "Mitigating Systems," because of an assumed loss of the AFW system decay heat removal safety function. The inspectors and a Region I Senior Reactor Analyst (SRA) conducted a bounding DRE and determined this finding to be of very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Work Control, in that licensees plan and coordinate work activities by incorporating the need for planned contingencies, compensatory actions, and abort criteria. Specifically, PSEG did not properly plan and coordinate compensatory actions via station procedures for HELB barrier impairments. [H.3(a)] (Section 1R18)

Inspection Report# : 2013005 (pdf)

Significance: Dec 31, 2013 Identified By: NRC Item Type: NCV NonCited Violation

Inadequate HELB Barrier Controls

The inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs", as described in Regulatory Guide (RG) 1.33, Revision 2, when PSEG did not properly implement high energy line break (HELB) barrier controls in accordance with CC-AA-201, Plant Barrier Control, during maintenance activities that affected the performance of safety-related equipment on October 1, 2 and 17, 2013. PSEG entered the issue into the CAP under notifications 20623371 and 20633614.

This finding was more than minor because it was associated with the configuration control attribute of the Mitigating System cornerstone, and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, improper barrier controls could potentially affect the operating equipment in the case of a HELB. This performance deficiency required a detailed risk evaluation (DRE) in accordance with IMC 0609, Appendix A, screening questions in Exhibits 2, "Mitigating Systems," because of an assumed loss of the AFW system decay heat removal safety function. The inspectors and a Region I Senior Reactor Analyst (SRA) conducted a bounding DRE and determined this finding to be of very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Work Control, in that licensees plan and coordinate work activities by incorporating the need for planned contingencies, compensatory actions, and abort criteria. Specifically, PSEG did not properly plan and coordinate compensatory actions via station procedures for HELB barrier impairments. [H.3(a)] (Section 1R18) Inspection Report# : 2013005 (pdf)

Significance: G Aug 01, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

13 Switchgear and penetration Area Ventilation Supply Fan Motor Bearing Failure due to Deletion of Preventative Maintenance Requirement

A self-revealing Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified because PSEG did not complete a change to a preventative maintenance requirement for the Switchgear and Penetration Area Ventilation (SPAV) fan motors in accordance with PSEG procedure MA-AA-716-210-1005, "Predefine Change Processing." PSEG failed to perform an adequate engineering review of the Preventative Maintenance Change Request (PMCR) when bearing replacements were deleted from the SPAV fan motor maintenance plans in September, 2009. This resulted in the bearing not being lubricated and subsequent failure of the 13 SPAV supply fan motor on February 4, 2013. PSEG entered the issue into the corrective action program as notification 20594424.

The inspectors determined that the performance deficiency was more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone, and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, because PSEG failed to investigate a difference in bearing type documented in a 1998 NRC commitment letter and the SPAV fan motor material master, they did not resolve conflicting information on the type of bearing installed in the SPAV fan motors before a preventive maintenance change to delete periodic bearing replacements took effect. This resulted in bearing and fan motor failure. The inspectors evaluated the finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations" (IMC 0609A). The inspectors determined that the finding was of very low safety significance (Green) because the deficiency did not affect the design or qualification; did not represent a loss of system safety function; did not screen as potentially risk significance in the licensee's maintenance rule program. There is

no cross-cutting aspect assigned because the performance deficiency is not indicative of current performance. Specifically, the performance deficiency involves an issue that occurred greater than three years ago and is not indicative of current performance.

Inspection Report# : 2013008 (pdf)



Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Evaluate Unit 2 Service Water Accumulator Discharge Valve IST Not Meeting Acceptance Criteria A self revealing NCV of Salem TS 6.8.4.j, "Inservice Testing (IST)," that implements the IST program for American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components in accordance with the ASME Operations and Maintenance (OM) code was identified. Specifically, the opening stroke time for a Unit 2 service water (SW) accumulator discharge valve (22SW535) exceeded the IST acceptance criteria of 1.0 seconds on four occasions during the 92 day test interval, after the acceptance criteria was incorrectly changed on December 21, 2010. The PSEG corrective action for the IST results not meeting the acceptance criteria was to perform an engineering evaluation which reduced the margin of the SW pressure decrease in the SW system downstream of the containment fan cooling units (CFCUs) while changing the IST 45 degree opening stroke time to 1.25 seconds. PSEG also entered this issue into their corrective action program (CAP) under Notification 20607549.

The PD was determined to be more than minor because it is similar to IMC 0612, Appendix E, Example 2.a, in that, in the performance of reviewing a completed IST, it was discovered that the acceptance criteria was incorrect and that the recorded stroke time of 22SW535 exceeded the correct acceptance criteria to meet action range limits. The PD is also associated with the equipment performance attribute of the mitigating systems cornerstone, and it adversely affected the corrects to prevent undesirable consequences. Specifically, the 45 degree opening time of 22SW535 was greater than its acceptance criteria of 1.0 seconds to meet the TS 6.8.4.j, "IST Program," requirements. The inspectors evaluated the finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations (IMC 0609A)." The inspectors determined that the finding was of very low safety significance (Green) because the deficiency did not affect the design or qualification of the SW system and it did not represent a loss of system or train safety function. This finding has a cross-cutting aspect in the area of Human Performance, Resources, because PSEG did not ensure that complete, accurate, and up-to-date design documentation, procedures, and work packages. Specifically, PSEG made a non-conservative revision to the IST acceptance criteria to the SW accumulator discharge valves without evaluating this change was adequate to assure nuclear safety. [H.2(c)] (Section 1R15)

Inspection Report# : 2013003 (pdf)

Significance: Mar 31, 2013

Identified By: Self-Revealing Item Type: NCV NonCited Violation

Inadvertent Isolation of Service Water to all EDGs in Mode 6

A self-revealing NCV of Technical Specification (TS) 6.8.1, "Procedures and Programs," was identified because PSEG personnel did not use the documentation required by site procedures to verify component position during removal of a clearance tagout. As a result, on November 4, 2012, PSEG personnel isolated SW to all emergency diesel generators (EDGs) at Unit 2 while in Mode 6 with fuel movement in progress. As corrective actions, PSEG conducted valve line-up training for field operators and initiated additional field oversight of in-plant activities.

The performance deficiency was determined to be more than minor because it affected the configuration control attribute of the Mitigating Systems cornerstone to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, a SW valve was incorrectly positioned, isolating all cooling water to the EDGs. The inspectors evaluated the finding using IMC 0609.04, "Initial Characterization of Findings," Attachment 1 of IMC 0609, and Appendix G, "Shutdown Operations Significance Determination Process Phase 1 Operational Checklists for Both PWRs and BWRs – Attachment 4 PWR Refueling Operation: RCS level >23' or PWR Shutdown Operation with Time to Boil >2 hours and Inventory in the Pressurizer." Because no loss of control occurred and all mitigating capabilities were available, a Phase 2 quantitative assessment was not required. Therefore, the inspectors determined the finding to be of very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Work Practices, in that PSEG did not effectively communicate human error prevention techniques commensurate with the risk of the assigned task. Specifically, the pre-job brief did not enforce the expectation to contact supervision when an unexpected condition was identified, personnel did not perform self-checking prior to component manipulation, and personnel proceeded in the face of uncertainty. [H.4(a)]

Inspection Report# : 2013002 (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety



G Jun 30, 2013 Significance: Identified By: NRC Item Type: NCV NonCited Violation

Failure to Follow Radiation Protection Procedures to Identify and Control Access to a Locked High Radiation Area

The inspectors identified a self-revealing finding of very low safety significance associated with failure to implement TS 6.8 procedures. Specifically, the inspectors identified that PSEG did not implement radiation protection procedure requirements associated with survey and access control to the Unit 2 reactor cavity on November 7, 2012, resulting in lack of identification and control of a TS 6.12, "Locked High Radiation Area (LHRA)." PSEG entered this issue into their CAP as Notification 20582871.

The failure to implement TS required radiation protection procedures is a PD. The PD was determined to be more than minor because it was related to the programs and process attribute of the occupational radiation safety cornerstone, and adversely affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation from radioactive material during routine reactor operation. Further, if left uncorrected, the PD had the potential to lead to a more significant safety concern if the LHRA was undetected. The finding was assessed using IMC 0609, Appendix C, 2 Enclosure, "Occupational Radiation Safety SDP," dated August 19, 2008, and was determined to be of very low safety significance (Green) because it was not related to as low as reasonably achievable (ALARA), did not result in an overexposure or a substantial potential for overexposure, and did not compromise

PSEG's ability to assess dose. This finding has a cross-cutting aspect in the area of Human Performance, Work Control. Specifically, PSEG did not effectively coordinate this work activity by incorporating actions to address the impact of the work on different job activities, and the need for work groups to maintain interfaces and communicate, coordinate, and cooperate with each other during activities in which interdepartmental coordination is necessary to assure plant and human performance. [H.3(b)] (Section 2RS1)

Inspection Report# : 2013003 (pdf)

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : February 24, 2014

Salem 2 **1Q/2014 Plant Inspection Findings**

Initiating Events

Significance: Mar 31, 2014 Identified By: Self-Revealing Item Type: NCV NonCited Violation

Inadequate Online Risk Assessment for an Adverse Change in Grid Conditions

The inspectors identified a Green NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50.65(a)(4) when PSEG inadequately assessed risk during a period of adverse grid conditions. On January 7, 2014, the regional transmission organization declared a Maximum Emergency Generation Action, a condition that PSEG was procedurally required to consider a high risk evolution (HRE) for a loss of offsite power (LOOP). Specifically, PSEG was to elevate online risk to a Yellow condition; however, PSEG did not assess risk as Yellow. PSEG subsequently elevated their risk condition, protected equipment, took other risk management actions (RMAs), and entered the issue in their CAP.

The issue was more than minor since it was associated with the Protection Against External Factors attribute of the Initiating Events cornerstone and adversely affected its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the extreme cold weather conditions indirectly were affecting grid stability and required risk assessment and management. Additionally, it was similar to IMC 0612, Appendix E, example 7.e, in that an inadequate risk assessment is not minor if the overall plant risk would put the plant into a higher licensee-established risk category. In this case, plant risk was reclassified from Green to Yellow when properly assessed. Specifically, the extreme cold weather conditions indirectly were affecting grid stability. The inspectors evaluated the finding using IMC 0612, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." Since the incremental core damage probability deficit was less than 1 E-6 and the incremental large early release probability deficit was less than 1 E-7, this finding was determined to be of very low safety significance (Green). The finding was determined to have a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG staff in the Electric System Operations Center (ESOC), Salem control room, and Hope Creek control room did not appropriately communicate across organizational boundaries to ensure that risk was appropriately assessed.

Inspection Report# : 2014002 (pdf)



Significance: Mar 31, 2014

Identified By: NRC Item Type: NCV NonCited Violation

Inadequate Risk Assessment and Risk Management Actions for UV Testing

Inspectors identified a Green NCV of 10 CFR 50.65(a)(4) when PSEG did not properly assess Unit 2 risk and implement RMAs in accordance with station procedures. PSEG conducted undervoltage (UV) surveillance testing on a 4 kilovolt (kV) vital bus without considering plant conditions to include operations without a redundant offsite power source and work in the vicinity of protected equipment. PSEG entered this in their CAP and completed a crew clock reset.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely affected its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, UV testing of a vital bus when powered by a single offsite power source had the potential to result in a loss of vital bus power or a LOOP. Additionally, the issue was more than minor based on similarity to IMC 0612, Appendix E, examples 7.e and 7.f. Specifically, the overall elevated plant risk placed the plant into a higher licensee-established risk category and required, under plant procedures, RMAs that were not implemented. The inspectors evaluated the finding using IMC 0612, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." A senior reactor analyst considered the base condition of an increased probability of a LOOP and the lack of RMAs as two order of magnitude increases. Since the incremental core damage probability deficit was less than 1 E-6 and the incremental large early release probability deficit was not applicable for this issue, this finding was determined to be of very low safety significance (Green). The finding was determined to have a cross-cutting aspect in the area of Human Performance, Conservative Bias, in that individuals use decision making-practices that emphasize prudent choices over those that are simply allowable. Specifically, PSEG did not implement procedurally driven decisionmaking that would have emphasized prudent choices regarding UV testing under different plant conditions. Inspection Report# : 2014002 (pdf)



Significance: ^G Mar 31, 2014

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Inspection of Isolated Phase Main Bus Duct Cooling Fan Sheave

A self-revealing Green FIN was identified against PSEG procedure MA-AA-716-009, "Use of Maintenance Procedures," Revision 5, when PSEG staff did not follow "the rules of usage for Maintenance Department procedures" as applied to work on a Unit 2 isolated phase bus cooling fan. Specifically, PSEG staff did not perform inspection and testing as required. Subsequently, the 2B fan belts broke causing high temperatures in the bus enclosure, control room alarms, and an unplanned reduction to 51 percent reactor thermal power. As interim corrective actions, PSEG entered this in their corrective action program (CAP), initiated a prompt investigation, installed fan belts and swapped operations to the 2A motor, and established weekly readings to monitor drive belt conditions.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure of the drive belts resulted in an unplanned downpower. The finding was evaluated in accordance with IMC 0609, Attachment 4, and Appendix A where it screened as very low safety significance (Green) as a support system initiator. Specifically, the finding did contribute to the likelihood of, or cause, both an initiating event and affect mitigation equipment. The finding had a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG operations, maintenance, and engineering staff did not coordinate to ensure that inspections and testing were completed appropriately or that decisions not to complete steps as required were reviewed by the appropriate departments.

Inspection Report# : 2014002 (pdf)

Significance: G Aug 01, 2013 Identified By: NRC Item Type: FIN Finding Failure to Evaluate Performance Deficiency for FIN 2011004-02 The inspectors identified a Green finding (FIN) for PSEG's failure to evaluate the performance deficiency documented for FIN 2011004-02 in accordance with procedure LSAA- 1003, "NRC Inspection Preparation and Response." Specifically, PSEG failed to initiate a notification to review FIN 2011004-02 and develop appropriate corrective actions. The original finding, FIN 201100402, was associated with untimely corrective actions for degraded reactor coolant pump motor cables. In addition to not addressing the performance deficiency, the failure to initiate a notification creates the potential for future untimely corrective actions in similar cases. This issue was entered into PSEG's corrective action program as notification 20616485.

This finding is more than minor because if left uncorrected the issue has the potential to lead to a more significant safety concern. Specifically, PSEG has not corrected the performance deficiency which resulted in untimely corrective actions with regards to FIN 2011004-02. If similar untimely corrective actions were taken on a safety system this could result in a more significant safety concern. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, this finding is of very low safety significance (Green) because it did not involve the complete or partial loss of a support system that contributes to the likelihood of, or cause, an initiating event and did not affect mitigation equipment. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because PSEG did not completely and accurately identify the issue for FIN 2011004-02. Specifically, PSEG did not initiate a notification to review FIN 2011004-02 to ensure corrective actions properly address the finding. [P.1(a)]

Inspection Report# : 2013008 (pdf)

Mitigating Systems

Significance: Mar 31, 2014 Identified By: Self-Revealing Item Type: NCV NonCited Violation Failure to Follow Fire Protection Test Procedure Resulted in Fuel Oil Spill

The inspectors determined there was a Green, self-revealing violation of Technical Specification (TS) 6.8.1, "Procedures and Programs," as described in Regulatory Guide 1.33, Revision 2, February 1978, when PSEG failed to adequately implement procedure steps associated with fire protection hose flow verification testing on March 6, 2014. Consequently, a fuel oil day tank was overfilled, resulting in approximately 3000 gallons of fuel oil on the pump house roof, leaks through the roof onto the fire pumps, and Salem fire water suppression system unavailability for approximately two days. PSEG stopped the leak, entered this issue in their CAP, and completed a Prompt Investigation.

The inspectors determined that the performance deficiency was more than minor because it was associated with the Protection Against External Factors attribute of the Mitigating System cornerstone and adversely its cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events (fire) to prevent undesirable consequences. The inspectors determined that the finding was of very low safety significance (Green) because it did not impact the ability of Salem Units 1 or 2 to achieve and maintain safe shutdown. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Avoid Complacency, because PSEG fire protection operators did not recognize and plan for the possibly of mistakes, latent issues, and inherent risk, even while expecting successful outcomes of procedure steps to refill the fuel oil day tank. Further, they did not implement appropriate error reduction tools.

Inspection Report# : 2014002 (pdf)



Significance: Mar 31, 2014 Identified By: Self-Revealing Item Type: NCV NonCited Violation

Inadequate Post-Maintenance Testing of a Chiller

A self-revealing, Green NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," was identified when PSEG did not perform adequate post-maintenance testing (PMT) of the 22 chiller. The chillers cool safety-related loads in the auxiliary building during normal and emergency conditions. After failing to pump-down, corrective maintenance, and restoration, the chiller failed to pump-down again three days later. PSEG entered this in their CAP, backdated inoperability, performed a crew clock reset, and investigated the issue.

The finding was more than minor since it affected the Equipment Performance attribute of the Mitigating Systems cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the inadequate PMT resulted in additional inoperability and unavailability of the 22 chiller. The finding was evaluated in accordance with IMC 0609, Appendix A, and screened to Green since it was not a design or qualification deficiency, not a loss of function, and did not involve equipment or function designed to mitigate a seismic, flooding, or severe weather initiating event. The finding was determined to have a cross-cutting aspect in the area of Human Performance, Consistent Process, in that individuals use a consistent, systematic approach to make decisions. Specifically, PSEG did not use a systematic approach to make decisions regarding the proper PMT.

Inspection Report# : 2014002 (pdf)



Significance: G Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Assessment of Fire Brigade Performance during an Unannounced Drill

The inspectors identified a Green NCV of Unit 2 license condition 2.C.(10), Fire Protection, when PSEG did not adequately assess fire brigade performance during an unannounced drill on November 18, 2013, as required by the fire protection program. Specifically, PSEG did not adequately assess the selection, placement and use of equipment and fire-fighting strategies, conformance with established plant fire-fighting procedures, and the use of fire-fighting equipment, including communication equipment.

PSEG entered this into their CAP as notification 20632422 and chartered an apparent cause evaluation.

The inspectors determined that the issue was more than minor since it was associated with the protection against external events (fire) attribute of the Mitigating Systems cornerstone and impacts its objective of ensuring the availability, reliability, and capability of systems, such as the fire brigade, that respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety Significance (Green) in accordance with D.1 of IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." Because the finding involved fire brigade training requirements, the fire brigade demonstrated the ability to meet the required times for fire extinguishment for the fire drill scenarios, and the finding did not significantly affect the fire brigade's ability to respond to a fire, the finding was of very low safety significance (Green). The finding was determined to have a crosscutting aspect in the area of Problem Identification and Resolution, Self and Independent Assessments, in that licensees conduct assessments of their activities to assess performance and identify areas of improvement. Specifically, the PSEG self-evaluation of fire brigade performance was not of sufficient depth, appropriately objective, and selfcritical. [P.3(a)] (Section 1R05)

The inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs", as described in Regulatory Guide

(RG) 1.33, Revision 2, when PSEG did not properly implement high energy line break (HELB) barrier controls in accordance with CC-AA-201, Plant Barrier Control, during maintenance activities that affected the performance of safety-related equipment on October 1, 2 and 17, 2013. PSEG entered the issue into the CAP under notifications 20623371 and 20633614.

This finding was more than minor because it was associated with the configuration control attribute of the Mitigating System cornerstone, and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, improper barrier controls could potentially affect the operating equipment in the case of a HELB. This performance deficiency required a detailed risk evaluation (DRE) in accordance with IMC 0609, Appendix A, screening questions in Exhibits 2, "Mitigating Systems," because of an assumed loss of the AFW system decay heat removal safety function. The inspectors and a Region I Senior Reactor Analyst (SRA) conducted a bounding DRE and determined this finding to be of very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Work Control, in that licensees plan and coordinate work activities by incorporating the need for planned contingencies, compensatory actions, and abort criteria. Specifically, PSEG did not properly plan and coordinate compensatory actions via station procedures for HELB barrier impairments. [H.3(a)] (Section 1R18)

Inspection Report# : 2013005 (pdf)



Identified By: NRC Item Type: NCV NonCited Violation Inadequate HELB Barrier Controls

The inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs", as described in Regulatory Guide (RG) 1.33, Revision 2, when PSEG did not properly implement high energy line break (HELB) barrier controls in accordance with CC-AA-201, Plant Barrier Control, during maintenance activities that affected the performance of safety-related equipment on October 1, 2 and 17, 2013. PSEG entered the issue into the CAP under notifications 20623371 and 20633614.

This finding was more than minor because it was associated with the configuration control attribute of the Mitigating System cornerstone, and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, improper barrier controls could potentially affect the operating equipment in the case of a HELB. This performance deficiency required a detailed risk evaluation (DRE) in accordance with IMC 0609, Appendix A, screening questions in Exhibits 2, "Mitigating Systems," because of an assumed loss of the AFW system decay heat removal safety function. The inspectors and a Region I Senior Reactor Analyst (SRA) conducted a bounding DRE and determined this finding to be of very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Work Control, in that licensees plan and coordinate work activities by incorporating the need for planned contingencies, compensatory actions, and abort criteria. Specifically, PSEG did not properly plan and coordinate compensatory actions via station procedures for HELB barrier impairments. [H.3(a)] (Section 1R18) Inspection Report# : 2013005 (pdf)

Significance: Aug 01, 2013
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
13 Switchgear and penetration Area Ventilation Supply Fan Motor Bearing Failure due to Deletion of
Preventative Maintenance Requirement
A self-revealing Green NCV of 10 CFR Part 50, Appendix B, Criterion V,

"Instructions, Procedures and Drawings," was identified because PSEG did not complete a change to a preventative maintenance requirement for the Switchgear and Penetration Area Ventilation (SPAV) fan motors in accordance with PSEG procedure MA-AA-716-210-1005, "Predefine Change Processing." PSEG failed to perform an adequate engineering review of the Preventative Maintenance Change Request (PMCR) when bearing replacements were deleted from the SPAV fan motor maintenance plans in September, 2009. This resulted in the bearing not being lubricated and subsequent failure of the 13 SPAV supply fan motor on February 4, 2013. PSEG entered the issue into the corrective action program as notification 20594424.

The inspectors determined that the performance deficiency was more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone, and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, because PSEG failed to investigate a difference in bearing type documented in a 1998 NRC commitment letter and the SPAV fan motor material master, they did not resolve conflicting information on the type of bearing installed in the SPAV fan motors before a preventive maintenance change to delete periodic bearing replacements took effect. This resulted in bearing and fan motor failure. The inspectors evaluated the finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations" (IMC 0609A). The inspectors determined that the finding was of very low safety significance (Green) because the deficiency did not affect the design or qualification; did not represent a loss of system safety function; did not screen as potentially risk significant due to external initiating events; and SPAV fans are not designated as high safety-significance in the licensee's maintenance rule program. There is no cross-cutting aspect assigned because the performance deficiency is not indicative of current performance. Specifically, the performance deficiency involves an issue that occurred greater than three years ago and is not indicative of current performance.

Inspection Report# : 2013008 (pdf)



Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Evaluate Unit 2 Service Water Accumulator Discharge Valve IST Not Meeting Acceptance Criteria A self revealing NCV of Salem TS 6.8.4.j, "Inservice Testing (IST)," that implements the IST program for American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components in accordance with the ASME Operations and Maintenance (OM) code was identified. Specifically, the opening stroke time for a Unit 2 service water (SW) accumulator discharge valve (22SW535) exceeded the IST acceptance criteria of 1.0 seconds on four occasions during the 92 day test interval, after the acceptance criteria was incorrectly changed on December 21, 2010. The PSEG corrective action for the IST results not meeting the acceptance criteria was to perform an engineering evaluation which reduced the margin of the SW pressure decrease in the SW system downstream of the containment fan cooling units (CFCUs) while changing the IST 45 degree opening stroke time to 1.25 seconds. PSEG also entered this issue into their corrective action program (CAP) under Notification 20607549.

The PD was determined to be more than minor because it is similar to IMC 0612, Appendix E, Example 2.a, in that, in the performance of reviewing a completed IST, it was discovered that the acceptance criteria was incorrect and that the recorded stroke time of 22SW535 exceeded the correct acceptance criteria to meet action range limits. The PD is also associated with the equipment performance attribute of the mitigating systems cornerstone, and it adversely affected the corrects to prevent undesirable consequences. Specifically, the 45 degree opening time of 22SW535 was

greater than its acceptance criteria of 1.0 seconds to meet the TS 6.8.4.j, "IST Program," requirements. The inspectors evaluated the finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations (IMC 0609A)." The inspectors determined that the finding was of very low safety significance (Green) because the deficiency did not affect the design or qualification of the SW system and it did not represent a loss of system or train safety function. This finding has a cross-cutting aspect in the area of Human Performance, Resources, because PSEG did not ensure that complete, accurate, and up-to-date design documentation, procedures, and work packages. Specifically, PSEG made a non-conservative revision to the IST acceptance criteria to the SW accumulator discharge valves without evaluating this change was adequate to assure nuclear safety. [H.2(c)] (Section 1R15)

Inspection Report# : 2013003 (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance: ^G Jun 30, 2013 Identified By: NRC Item Type: NCV NonCited Violation Failure to Follow Radiation Protection Procedures to Identify and Control Access to a Locked High Radiation Area

The inspectors identified a self-revealing finding of very low safety significance associated with failure to implement TS 6.8 procedures. Specifically, the inspectors identified that PSEG did not implement radiation protection procedure requirements associated with survey and access control to the Unit 2 reactor cavity on November 7, 2012, resulting in lack of identification and control of a TS 6.12, "Locked High Radiation Area (LHRA)." PSEG entered this issue into their CAP as Notification 20582871.

The failure to implement TS required radiation protection procedures is a PD. The PD was determined to be more than minor because it was related to the programs and process attribute of the occupational radiation safety cornerstone, and adversely affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation from radioactive material during routine reactor operation. Further, if left uncorrected, the PD had the potential to lead to a more significant safety concern if the LHRA was undetected. The finding was assessed using IMC 0609, Appendix C, 2 Enclosure, "Occupational Radiation Safety SDP," dated August 19, 2008, and was determined to be of very low safety significance (Green) because it was not related to as low as reasonably achievable (ALARA), did not result in an overexposure or a substantial potential for overexposure, and did not compromise PSEG's ability to assess dose. This finding has a cross-cutting aspect in the area of Human Performance, Work Control. Specifically, PSEG did not effectively coordinate this work activity by incorporating actions to address the impact of the work on different job activities, and the need for work groups to maintain interfaces and communicate, coordinate, and cooperate with each other during activities in which interdepartmental coordination is necessary to

assure plant and human performance. [H.3(b)] (Section 2RS1)

Inspection Report# : 2013003 (pdf)

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Significance: N/A Mar 31, 2009 Identified By: NRC Item Type: AV Apparent Violation Apparent Violation for Exclon Plants - 1 (2009 Findings)

For apparent violation #1:

Contrary to the above, on March 31, 2009 Exelon Generation Company, LLC (Exelon) provided incomplete and inaccurate information on the status of its decommissioning funding, as required by 10 CFR 50.75 when it submitted the decommissioning funding status report. Specifically, the March 31, 2009, decommissioning funding status (DFS) report contained inaccurate and incomplete information regarding Exelon's compliance with the requirements of 10 CFR 50.75. The report stated that the amount listed for each of the reactors was determined in accordance with 10 CFR 50.75(b) and the applicable formulas of 10 CFR 50.75(c). However, for each of the 23 reactors, the amount reported was a discounted value that was less than the minimum required amount specified by 10 CFR 50.75(b) and (c). The report was material to the NRC because Exelon under-reported its certified decommissioning funds based on the inaccurate reports. After identifying the inaccurate information, the NRC required parent company guarantees before the staff could make its determination that there was reasonable assurance that funds will be available for the decommissioning process.

Inspection Report# : <u>2012012</u> (*pdf*) Inspection Report# : <u>2013201</u> (*pdf*)

Significance: N/A Mar 31, 2009 Identified By: NRC Item Type: AV Apparent Violation Apparent Violation for Exelon Plants - 2 (2009 Findings) For apparent violation #2: Contrary to the above, on March 31, 2007, and March 31, 2005, Exelon Generation Company, LLC (Exelon) provided incomplete and inaccurate information on the status of its decommissioning funding, as required by 10 CFR 50.75 when it submitted the decommissioning funding status reports. Specifically, the March 31, 2007, and March 31, 2005, decommissioning funding status (DFS) reports contained inaccurate and incomplete information regarding Exelon's compliance with the requirements of 10 CFR 50.75. The reports stated that the amount listed for each of the reactors was determined in accordance with 10 CFR 50.75(b) and the applicable formulas of 10 CFR 50.75(c). However, in multiple instances, the amount reported was a discounted value that was less than the minimum required amount specified by 10 CFR 50.75(b) and (c). The reports were material to the NRC because Exelon under-reported its certified decommissioning amounts, and the NRC staff evaluated the status of Exelon's decommissioning funds based on the inaccurate reports. After identifying the inaccurate information, the NRC required parent company guarantees before the staff could make its determination that there was reasonable assurance that funds will be available for the decommissioning process.

Inspection Report# : <u>2012012</u> (pdf) Inspection Report# : <u>2013201</u> (pdf)

Last modified : May 30, 2014

Salem 2 2Q/2014 Plant Inspection Findings

Initiating Events

Significance: Jun 30, 2014 Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Maintain Shutdown Margin Calculation Procedure to Cover certain Mispositioned Control Rod Events

The inspectors determined there was a Green, self-revealing violation of TS 6.8.1, "Procedures and Programs," as described in Regulatory Guide 1.33, Revision 2, February 1978, when PSEG did not maintain procedure SC.RE-ST.ZZ-0002, "Shutdown Margin Calculation," to cover certain mispositioned control rod events. Consequently, PSEG performed unnecessary rapid boration, and a subsequent manual reactor trip, in response to a control rod drop event on January 31, 2014. PSEG entered this in their corrective action program (CAP), implemented compensatory measures for calculating shutdown margin, performed an apparent cause evaluation, and initiated actions to correct the cause of the problem, extent of condition, and extend of cause.

The issue was more than minor because it was associated with the procedure quality attribute of the initiating events cornerstone, and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the finding resulted in unnecessary rapid boration and a manual reactor trip. Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and IMC 0609, Appendix A, "The SDP for Findings At-Power," the inspectors determined that this finding was of very low safety significance (Green) because it did not cause the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Teamwork, because PSEG work groups did not communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained [H.4]. Specifically, PSEG reactor engineering and operations services did not communicate and coordinate as change to the shutdown margin calculation procedure that was conducted in response to vendor-issued guidance. Inspection Report# : 2014003 (*pdf*)



Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Online Risk Assessment for an Adverse Change in Grid Conditions

The inspectors identified a Green NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50.65(a)(4) when PSEG inadequately assessed risk during a period of adverse grid conditions. On January 7, 2014, the regional transmission organization declared a Maximum Emergency Generation Action, a condition that PSEG was procedurally required to consider a high risk evolution (HRE) for a loss of offsite power (LOOP). Specifically, PSEG was to elevate online risk to a Yellow condition; however, PSEG did not assess risk as Yellow. PSEG subsequently elevated their risk condition, protected equipment, took other risk management actions (RMAs), and entered the issue in their CAP.

The issue was more than minor since it was associated with the Protection Against External Factors attribute of the Initiating Events cornerstone and adversely affected its objective to limit the likelihood of events that upset plant

stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the extreme cold weather conditions indirectly were affecting grid stability and required risk assessment and management. Additionally, it was similar to IMC 0612, Appendix E, example 7.e, in that an inadequate risk assessment is not minor if the overall plant risk would put the plant into a higher licensee-established risk category. In this case, plant risk was reclassified from Green to Yellow when properly assessed. Specifically, the extreme cold weather conditions indirectly were affecting grid stability. The inspectors evaluated the finding using IMC 0612, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." Since the incremental core damage probability deficit was less than 1 E-6 and the incremental large early release probability deficit was less than 1 E-7, this finding was determined to be of very low safety significance (Green). The finding was determined to have a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG staff in the Electric System Operations Center (ESOC), Salem control room, and Hope Creek control room did not appropriately communicate across organizational boundaries to ensure that risk was appropriately assessed.

Inspection Report# : 2014002 (pdf)



Significance: ^G Mar 31, 2014 Identified By: NRC Item Type: NCV NonCited Violation

Inadequate Risk Assessment and Risk Management Actions for UV Testing

Inspectors identified a Green NCV of 10 CFR 50.65(a)(4) when PSEG did not properly assess Unit 2 risk and implement RMAs in accordance with station procedures. PSEG conducted undervoltage (UV) surveillance testing on a 4 kilovolt (kV) vital bus without considering plant conditions to include operations without a redundant offsite power source and work in the vicinity of protected equipment. PSEG entered this in their CAP and completed a crew clock reset.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely affected its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, UV testing of a vital bus when powered by a single offsite power source had the potential to result in a loss of vital bus power or a LOOP. Additionally, the issue was more than minor based on similarity to IMC 0612, Appendix E, examples 7.e and 7.f. Specifically, the overall elevated plant risk placed the plant into a higher licensee-established risk category and required, under plant procedures, RMAs that were not implemented. The inspectors evaluated the finding using IMC 0612, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." A senior reactor analyst considered the base condition of an increased probability of a LOOP and the lack of RMAs as two order of magnitude increases. Since the incremental core damage probability deficit was less than 1 E-6 and the incremental large early release probability deficit was not applicable for this issue, this finding was determined to be of very low safety significance (Green). The finding was determined to have a cross-cutting aspect in the area of Human Performance, Conservative Bias, in that individuals use decision making-practices that emphasize prudent choices over those that are simply allowable. Specifically, PSEG did not implement procedurally driven decisionmaking that would have emphasized prudent choices regarding UV testing under different plant conditions. Inspection Report# : 2014002 (pdf)



Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Inspection of Isolated Phase Main Bus Duct Cooling Fan Sheave

A self-revealing Green FIN was identified against PSEG procedure MA-AA-716-009, "Use of Maintenance Procedures," Revision 5, when PSEG staff did not follow "the rules of usage for Maintenance Department

procedures" as applied to work on a Unit 2 isolated phase bus cooling fan. Specifically, PSEG staff did not perform inspection and testing as required. Subsequently, the 2B fan belts broke causing high temperatures in the bus enclosure, control room alarms, and an unplanned reduction to 51 percent reactor thermal power. As interim corrective actions, PSEG entered this in their corrective action program (CAP), initiated a prompt investigation, installed fan belts and swapped operations to the 2A motor, and established weekly readings to monitor drive belt conditions.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure of the drive belts resulted in an unplanned downpower. The finding was evaluated in accordance with IMC 0609, Attachment 4, and Appendix A where it screened as very low safety significance (Green) as a support system initiator. Specifically, the finding did contribute to the likelihood of, or cause, both an initiating event and affect mitigation equipment. The finding had a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG operations, maintenance, and engineering staff did not coordinate to ensure that inspections and testing were completed appropriately or that decisions not to complete steps as required were reviewed by the appropriate departments.

Inspection Report# : 2014002 (pdf)



Identified By: NRC Item Type: FIN Finding

Failure to Evaluate Performance Deficiency for FIN 2011004-02

The inspectors identified a Green finding (FIN) for PSEG's failure to evaluate the performance deficiency documented for FIN 2011004-02 in accordance with procedure LSAA-1003, "NRC Inspection Preparation and Response." Specifically, PSEG failed to initiate a notification to review FIN 2011004-02 and develop appropriate corrective actions. The original finding, FIN 201100402, was associated with untimely corrective actions for degraded reactor coolant pump motor cables. In addition to not addressing the performance deficiency, the failure to initiate a notification creates the potential for future untimely corrective actions in similar cases. This issue was entered into PSEG's corrective action program as notification 20616485.

This finding is more than minor because if left uncorrected the issue has the potential to lead to a more significant safety concern. Specifically, PSEG has not corrected the performance deficiency which resulted in untimely corrective actions with regards to FIN 2011004-02. If similar untimely corrective actions were taken on a safety system this could result in a more significant safety concern. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, this finding is of very low safety significance (Green) because it did not involve the complete or partial loss of a support system that contributes to the likelihood of, or cause, an initiating event and did not affect mitigation equipment. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because PSEG did not completely and accurately identify the issue for FIN 2011004-02. Specifically, PSEG did not initiate a notification to review FIN 2011004-02 to ensure corrective actions properly address the finding. [P.1(a)]

Inspection Report# : 2013008 (pdf)

Mitigating Systems

Significance: Mar 31, 2014 Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Fire Protection Test Procedure Resulted in Fuel Oil Spill

The inspectors determined there was a Green, self-revealing violation of Technical Specification (TS) 6.8.1, "Procedures and Programs," as described in Regulatory Guide 1.33, Revision 2, February 1978, when PSEG failed to adequately implement procedure steps associated with fire protection hose flow verification testing on March 6, 2014. Consequently, a fuel oil day tank was overfilled, resulting in approximately 3000 gallons of fuel oil on the pump house roof, leaks through the roof onto the fire pumps, and Salem fire water suppression system unavailability for approximately two days. PSEG stopped the leak, entered this issue in their CAP, and completed a Prompt Investigation.

The inspectors determined that the performance deficiency was more than minor because it was associated with the Protection Against External Factors attribute of the Mitigating System cornerstone and adversely its cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events (fire) to prevent undesirable consequences. The inspectors determined that the finding was of very low safety significance (Green) because it did not impact the ability of Salem Units 1 or 2 to achieve and maintain safe shutdown. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Avoid Complacency, because PSEG fire protection operators did not recognize and plan for the possibly of mistakes, latent issues, and inherent risk, even while expecting successful outcomes of procedure steps to refill the fuel oil day tank. Further, they did not implement appropriate error reduction tools. Inspection Report# : 2014002 (pdf)



Significance: ^G Mar 31, 2014 Identified By: Self-Revealing Item Type: NCV NonCited Violation

Inadequate Post-Maintenance Testing of a Chiller

A self-revealing, Green NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," was identified when PSEG did not perform adequate post-maintenance testing (PMT) of the 22 chiller. The chillers cool safety-related loads in the auxiliary building during normal and emergency conditions. After failing to pump-down, corrective maintenance, and restoration, the chiller failed to pump-down again three days later. PSEG entered this in their CAP, backdated inoperability, performed a crew clock reset, and investigated the issue.

The finding was more than minor since it affected the Equipment Performance attribute of the Mitigating Systems cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the inadequate PMT resulted in additional inoperability and unavailability of the 22 chiller. The finding was evaluated in accordance with IMC 0609, Appendix A, and screened to Green since it was not a design or qualification deficiency, not a loss of function, and did not involve equipment or function designed to mitigate a seismic, flooding, or severe weather initiating event. The finding was determined to have a cross-cutting aspect in the area of Human Performance, Consistent Process, in that individuals use a consistent, systematic approach to make decisions. Specifically, PSEG did not use a systematic approach to make decisions regarding the proper PMT.

Inspection Report# : 2014002 (pdf)



Identified By: NRC Item Type: NCV NonCited Violation

Inadequate Assessment of Fire Brigade Performance during an Unannounced Drill

The inspectors identified a Green NCV of Unit 2 license condition 2.C.(10), Fire Protection, when PSEG did not adequately assess fire brigade performance during an unannounced drill on November 18, 2013, as required by the fire protection program. Specifically, PSEG did not adequately assess the selection, placement and use of equipment and fire-fighting strategies, conformance with established plant fire-fighting procedures, and the use of fire-fighting equipment, including communication equipment.

PSEG entered this into their CAP as notification 20632422 and chartered an apparent cause evaluation.

The inspectors determined that the issue was more than minor since it was associated with the protection against external events (fire) attribute of the Mitigating Systems cornerstone and impacts its objective of ensuring the availability, reliability, and capability of systems, such as the fire brigade, that respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety Significance (Green) in accordance with D.1 of IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." Because the finding involved fire brigade training requirements, the fire brigade demonstrated the ability to meet the required times for fire extinguishment for the fire drill scenarios, and the finding did not significantly affect the fire brigade's ability to respond to a fire, the finding was of very low safety significance (Green). The finding was determined to have a cross-cutting aspect in the area of Problem Identification and Resolution, Self and Independent Assessments, in that licensees conduct assessments of their activities to assess performance and identify areas of improvement. Specifically, the PSEG self-evaluation of fire brigade performance was not of sufficient depth, appropriately objective, and selfcritical. [P.3(a)] (Section 1R05)

The inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs", as described in Regulatory Guide (RG) 1.33, Revision 2, when PSEG did not properly implement high energy line break (HELB) barrier controls in accordance with CC-AA-201, Plant Barrier Control, during maintenance activities that affected the performance of safety-related equipment on October 1, 2 and 17, 2013. PSEG entered the issue into the CAP under notifications 20623371 and 20633614.

This finding was more than minor because it was associated with the configuration control attribute of the Mitigating System cornerstone, and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, improper barrier controls could potentially affect the operating equipment in the case of a HELB. This performance deficiency required a detailed risk evaluation (DRE) in accordance with IMC 0609, Appendix A, screening questions in Exhibits 2, "Mitigating Systems," because of an assumed loss of the AFW system decay heat removal safety function. The inspectors and a Region I Senior Reactor Analyst (SRA) conducted a bounding DRE and determined this finding to be of very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Work Control, in that licensees plan and coordinate work activities by incorporating the need for planned contingencies, compensatory actions, and abort criteria. Specifically, PSEG did not properly plan and coordinate compensatory actions via station procedures for HELB barrier impairments. [H.3(a)] (Section 1R18)

Inspection Report# : 2013005 (pdf)

Significance: Dec 31, 2013 Identified By: NRC Item Type: NCV NonCited Violation

Inadequate HELB Barrier Controls

The inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs", as described in Regulatory Guide (RG) 1.33, Revision 2, when PSEG did not properly implement high energy line break (HELB) barrier controls in accordance with CC-AA-201, Plant Barrier Control, during maintenance activities that affected the performance of safety-related equipment on October 1, 2 and 17, 2013. PSEG entered the issue into the CAP under notifications 20623371 and 20633614.

This finding was more than minor because it was associated with the configuration control attribute of the Mitigating System cornerstone, and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, improper barrier controls could potentially affect the operating equipment in the case of a HELB. This performance deficiency required a detailed risk evaluation (DRE) in accordance with IMC 0609, Appendix A, screening questions in Exhibits 2, "Mitigating Systems," because of an assumed loss of the AFW system decay heat removal safety function. The inspectors and a Region I Senior Reactor Analyst (SRA) conducted a bounding DRE and determined this finding to be of very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Work Control, in that licensees plan and coordinate work activities by incorporating the need for planned contingencies, compensatory actions, and abort criteria. Specifically, PSEG did not properly plan and coordinate compensatory actions via station procedures for HELB barrier impairments. [H.3(a)] (Section 1R18) Inspection Report# : 2013005 (*pdf*)



Identified By: Self-Revealing

Item Type: NCV NonCited Violation

13 Switchgear and penetration Area Ventilation Supply Fan Motor Bearing Failure due to Deletion of Preventative Maintenance Requirement

A self-revealing Green NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," was identified because PSEG did not complete a change to a preventative maintenance requirement for the Switchgear and Penetration Area Ventilation (SPAV) fan motors in accordance with PSEG procedure MA-AA-716-210-1005, "Predefine Change Processing." PSEG failed to perform an adequate engineering review of the Preventative Maintenance Change Request (PMCR) when bearing replacements were deleted from the SPAV fan motor maintenance plans in September, 2009. This resulted in the bearing not being lubricated and subsequent failure of the 13 SPAV supply fan motor on February 4, 2013. PSEG entered the issue into the corrective action program as notification 20594424.

The inspectors determined that the performance deficiency was more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone, and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, because PSEG failed to investigate a difference in bearing type documented in a 1998 NRC commitment letter and the SPAV fan motor material master, they did not resolve conflicting information on the type of bearing installed in the SPAV fan motors before a preventive maintenance change to delete periodic bearing replacements took effect. This resulted in bearing and fan motor failure. The inspectors evaluated the finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations" (IMC 0609A). The inspectors determined that the finding was of very low safety significance (Green) because the deficiency did not affect the design or qualification; did not represent a loss of system safety function; did not screen as potentially risk significant due to external initiating events; and SPAV fans are not designated as high safety-significance in the licensee's maintenance rule program. There is

no cross-cutting aspect assigned because the performance deficiency is not indicative of current performance. Specifically, the performance deficiency involves an issue that occurred greater than three years ago and is not indicative of current performance.

Inspection Report# : 2013008 (pdf)

Barrier Integrity



G Jun 30, 2014 Significance: Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Solid Pressurizer Control Resulted in Low Temperature Overpressure Relief Lifting A self-revealing, Green non-cited violation (NCV) of TS 6.8.1, "Procedures and Programs," was identified when PSEG did not control reactor coolant system (RCS) pressure in accordance with a procedure. Consequently, on April 13, 2014, this resulted in lifting a low temperature over-pressure protection valve during solid pressurizer operations. PSEG completed a prompt investigation, an apparent cause evaluation, entered this in their CAP, and submitted a

Special Report to the NRC in accordance with TS 6.9.2.

Non-compliance with an operating procedure was a performance deficiency that was more than minor because it was associated with the human performance attribute of the Barrier Integrity cornerstone and affected its objective to provide reasonable assurance that physical design barriers (reactor coolant system) protect the public from radionuclide releases caused by accidents or events. It was also similar to IMC 0612, Appendix E, example 4.b in that not accomplishing activities in accordance with procedures is more than minor if it results in a trip or transient. Specifically, not following the procedure resulted in a reactor coolant system pressure transient that caused a protective relief valve to lift. The issue was evaluated using IMC 0609, Attachment 4, and determined to be associated with the Barrier Integrity cornerstone based on the PORV acting as an RCS boundary mitigator. Since the finding was associated with a shutdown event, IMC 0609, Appendix G, Attachment 1, Exhibit 4.A was used to determine significance. Since the finding was not associated with a freeze seal, nozzle dam, criticality drain-down path, leakage path, or safety injection actuation and did not involve or result in PORV unavailability or a setpoint issue, it screened to Green. The finding had a cross-cutting aspect in the area of Human Performance, Challenge the Unknown, in that individuals stop when faced with uncertain conditions. Specifically, a PSEG operator did not stop his activity after his first attempt to control pressure, communicate the unexpected RCS pressure response to supervision, and resolve the issue prior to resuming activities.

Inspection Report# : 2014003 (pdf)

Emergency Preparedness

Occupational Radiation Safety

May 04, 2014 Significance: Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Establish and Implement Adequate Radiation Protection Procedures

A self-revealing NCV of very low safety significance was identified for failure to establish and implement TS 6.8 required procedures. Specifically, PSEG did not establish and implement adequate procedures for transfer and control of radioactive material within the Unit 2 fuel transfer canal that resulted in an unrecognized loss of location of radioactive material. As a result, PSEG did not recognize a loss of the location of radioactive material and, on May 4, 2014, did not establish and implement adequate radiological controls to provide for prompt identification and exposure control of elevated radiation dose rates to workers caused by radiation emanating from the radioactive material as water shielding was drained from the unexpected location. PSEG suspended the draining evolution, controlled the affected area, and entered this issue into their CAP (Notifications 20582871, 20649575, 20649581).

The failure to implement TS required radiation protection procedures is a performance deficiency (PD). The PD was determined to be more than minor because it was related to the programs and process attribute of the occupational radiation safety cornerstone, and adversely affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation from radioactive material during routine reactor operation. Further, if left uncorrected, the PD had the potential to lead to a more significant safety concern if undetected. The finding was assessed using IMC 0609, Appendix C, 2 Enclosure, "Occupational Radiation Safety SDP," dated August 19, 2008, and was determined to be of very low safety significance (Green) because: 1) it was not related to the as low as reasonably achievable (ALARA) program; 2) did not result in an overexposure or a substantial potential for overexposure; and 3) did not compromise PSEG's ability to assess dose. This finding has a cross-cutting aspect of Work Management of the Human Performance cross-cutting component. Specifically, PSEG did not implement adequate planning, control and execution of work activities associated with transfer of radioactive material to ensure the identification and management of risk commensurate to the work such that nuclear safety was an overriding priority.

Inspection Report# : 2014003 (pdf)

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : August 29, 2014

Salem 2 3Q/2014 Plant Inspection Findings

Initiating Events

Significance: Jun 30, 2014 Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Maintain Shutdown Margin Calculation Procedure to Cover certain Mispositioned Control Rod Events

The inspectors determined there was a Green, self-revealing violation of TS 6.8.1, "Procedures and Programs," as described in Regulatory Guide 1.33, Revision 2, February 1978, when PSEG did not maintain procedure SC.RE-ST.ZZ-0002, "Shutdown Margin Calculation," to cover certain mispositioned control rod events. Consequently, PSEG performed unnecessary rapid boration, and a subsequent manual reactor trip, in response to a control rod drop event on January 31, 2014. PSEG entered this in their corrective action program (CAP), implemented compensatory measures for calculating shutdown margin, performed an apparent cause evaluation, and initiated actions to correct the cause of the problem, extent of condition, and extend of cause.

The issue was more than minor because it was associated with the procedure quality attribute of the initiating events cornerstone, and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the finding resulted in unnecessary rapid boration and a manual reactor trip. Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and IMC 0609, Appendix A, "The SDP for Findings At-Power," the inspectors determined that this finding was of very low safety significance (Green) because it did not cause the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Teamwork, because PSEG work groups did not communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained [H.4]. Specifically, PSEG reactor engineering and operations services did not communicate and coordinate a change to the shutdown margin calculation procedure that was conducted in response to vendor-issued guidance. Inspection Report# : 2014003 (*pdf*)



Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Online Risk Assessment for an Adverse Change in Grid Conditions

The inspectors identified a Green NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50.65(a)(4) when PSEG inadequately assessed risk during a period of adverse grid conditions. On January 7, 2014, the regional transmission organization declared a Maximum Emergency Generation Action, a condition that PSEG was procedurally required to consider a high risk evolution (HRE) for a loss of offsite power (LOOP). Specifically, PSEG was to elevate online risk to a Yellow condition; however, PSEG did not assess risk as Yellow. PSEG subsequently elevated their risk condition, protected equipment, took other risk management actions (RMAs), and entered the issue in their CAP.

The issue was more than minor since it was associated with the Protection Against External Factors attribute of the Initiating Events cornerstone and adversely affected its objective to limit the likelihood of events that upset plant

stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the extreme cold weather conditions indirectly were affecting grid stability and required risk assessment and management. Additionally, it was similar to IMC 0612, Appendix E, example 7.e, in that an inadequate risk assessment is not minor if the overall plant risk would put the plant into a higher licensee-established risk category. In this case, plant risk was reclassified from Green to Yellow when properly assessed. Specifically, the extreme cold weather conditions indirectly were affecting grid stability. The inspectors evaluated the finding using IMC 0612, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." Since the incremental core damage probability deficit was less than 1 E-6 and the incremental large early release probability deficit was less than 1 E-7, this finding was determined to be of very low safety significance (Green). The finding was determined to have a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG staff in the Electric System Operations Center (ESOC), Salem control room, and Hope Creek control room did not appropriately communicate across organizational boundaries to ensure that risk was appropriately assessed.

Inspection Report# : 2014002 (pdf)



Significance: ^G Mar 31, 2014 Identified By: NRC Item Type: NCV NonCited Violation

Inadequate Risk Assessment and Risk Management Actions for UV Testing

Inspectors identified a Green NCV of 10 CFR 50.65(a)(4) when PSEG did not properly assess Unit 2 risk and implement RMAs in accordance with station procedures. PSEG conducted undervoltage (UV) surveillance testing on a 4 kilovolt (kV) vital bus without considering plant conditions to include operations without a redundant offsite power source and work in the vicinity of protected equipment. PSEG entered this in their CAP and completed a crew clock reset.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely affected its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, UV testing of a vital bus when powered by a single offsite power source had the potential to result in a loss of vital bus power or a LOOP. Additionally, the issue was more than minor based on similarity to IMC 0612, Appendix E, examples 7.e and 7.f. Specifically, the overall elevated plant risk placed the plant into a higher licensee-established risk category and required, under plant procedures, RMAs that were not implemented. The inspectors evaluated the finding using IMC 0612, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." A senior reactor analyst considered the base condition of an increased probability of a LOOP and the lack of RMAs as two order of magnitude increases. Since the incremental core damage probability deficit was less than 1 E-6 and the incremental large early release probability deficit was not applicable for this issue, this finding was determined to be of very low safety significance (Green). The finding was determined to have a cross-cutting aspect in the area of Human Performance, Conservative Bias, in that individuals use decision making-practices that emphasize prudent choices over those that are simply allowable. Specifically, PSEG did not implement procedurally driven decisionmaking that would have emphasized prudent choices regarding UV testing under different plant conditions. Inspection Report# : 2014002 (pdf)



Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Inspection of Isolated Phase Main Bus Duct Cooling Fan Sheave

A self-revealing Green FIN was identified against PSEG procedure MA-AA-716-009, "Use of Maintenance Procedures," Revision 5, when PSEG staff did not follow "the rules of usage for Maintenance Department

procedures" as applied to work on a Unit 2 isolated phase bus cooling fan. Specifically, PSEG staff did not perform inspection and testing as required. Subsequently, the 2B fan belts broke causing high temperatures in the bus enclosure, control room alarms, and an unplanned reduction to 51 percent reactor thermal power. As interim corrective actions, PSEG entered this in their corrective action program (CAP), initiated a prompt investigation, installed fan belts and swapped operations to the 2A motor, and established weekly readings to monitor drive belt conditions.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure of the drive belts resulted in an unplanned downpower. The finding was evaluated in accordance with IMC 0609, Attachment 4, and Appendix A where it screened as very low safety significance (Green) as a support system initiator. Specifically, the finding did contribute to the likelihood of, or cause, both an initiating event and affect mitigation equipment. The finding had a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG operations, maintenance, and engineering staff did not coordinate to ensure that inspections and testing were completed appropriately or that decisions not to complete steps as required were reviewed by the appropriate departments.

Inspection Report# : 2014002 (pdf)

Mitigating Systems

Significance: Jul 24, 2014 Identified By: NRC Item Type: NCV NonCited Violation

Salem Nuclear Generating Station, Unit Nos. 1 and 2 - NRC Component Design Bases Inspection Report The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because PSEG did not promptly identify and correct conditions adverse to quality. Specifically, PSEG did not promptly identify and correct degraded conditions associated with the Unit 1 and Unit 2 auxiliary feedwater storage tank (AFWST) and refueling water storage tank (RWST) instrumentation panels. PSEG entered the associated issues into their corrective action program (CAP) as notifications 20654991, 20654996, 20656136, 20657114, 20657115, and 20657117. PSEG's short-term corrective actions included installing bolts/plugs on the Unit 1 RWST panel 378-1 and unplugging the failed fan in Unit 1 AFWST panel 802-1.

The team determined that the inadequate identification and resolution of the conditions adverse to quality is a performance deficiency that was within PSEG's ability to foresee and correct. The finding is associated with the Mitigating Systems cornerstone and is more than minor because if left uncorrected it could lead to a more significant safety concern. Specifically, if left uncorrected, the continued exposure to external environmental elements and/or existing internal degraded conditions could potentially result in loss of level indication, non-conservative level indication, and/or loss of low level alarm functions. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the team determined that the finding is of very low safety significance (Green), because the finding was a deficiency affecting the design or qualification of a mitigating system,

structure, or component (SSC), where the SSC maintained its operability. Inspection Report# : 2014007 (pdf)



Identified By: Self-Revealing Item Type: NCV NonCited Violation

Failure to Follow Fire Protection Test Procedure Resulted in Fuel Oil Spill

The inspectors determined there was a Green, self-revealing violation of Technical Specification (TS) 6.8.1, "Procedures and Programs," as described in Regulatory Guide 1.33, Revision 2, February 1978, when PSEG failed to adequately implement procedure steps associated with fire protection hose flow verification testing on March 6, 2014. Consequently, a fuel oil day tank was overfilled, resulting in approximately 3000 gallons of fuel oil on the pump house roof, leaks through the roof onto the fire pumps, and Salem fire water suppression system unavailability for approximately two days. PSEG stopped the leak, entered this issue in their CAP, and completed a Prompt Investigation.

The inspectors determined that the performance deficiency was more than minor because it was associated with the Protection Against External Factors attribute of the Mitigating System cornerstone and adversely its cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events (fire) to prevent undesirable consequences. The inspectors determined that the finding was of very low safety significance (Green) because it did not impact the ability of Salem Units 1 or 2 to achieve and maintain safe shutdown. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Avoid Complacency, because PSEG fire protection operators did not recognize and plan for the possibly of mistakes, latent issues, and inherent risk, even while expecting successful outcomes of procedure steps to refill the fuel oil day tank. Further, they did not implement appropriate error reduction tools. Inspection Report# : 2014002 (pdf)



Significance: ^G Mar 31, 2014 Identified By: Self-Revealing Item Type: NCV NonCited Violation **Inadequate Post-Maintenance Testing of a Chiller**

A self-revealing, Green NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," was identified when PSEG did not perform adequate post-maintenance testing (PMT) of the 22 chiller. The chillers cool safety-related loads in the auxiliary building during normal and emergency conditions. After failing to pump-down, corrective maintenance, and restoration, the chiller failed to pump-down again three days later. PSEG entered this in their CAP, backdated inoperability, performed a crew clock reset, and investigated the issue.

The finding was more than minor since it affected the Equipment Performance attribute of the Mitigating Systems cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the inadequate PMT resulted in additional inoperability and unavailability of the 22 chiller. The finding was evaluated in accordance with IMC 0609, Appendix A, and screened to Green since it was not a design or qualification deficiency, not a loss of function, and did not involve equipment or function designed to mitigate a seismic, flooding, or severe weather initiating event. The finding was determined to have a cross-cutting aspect in the area of Human Performance, Consistent Process, in that individuals use a consistent, systematic approach to make decisions. Specifically, PSEG did not use a systematic approach to make decisions regarding the proper PMT.

Inspection Report# : 2014002 (pdf)



Identified By: NRC Item Type: NCV NonCited Violation

Inadequate Assessment of Fire Brigade Performance during an Unannounced Drill

The inspectors identified a Green NCV of Unit 2 license condition 2.C.(10), Fire Protection, when PSEG did not adequately assess fire brigade performance during an unannounced drill on November 18, 2013, as required by the fire protection program. Specifically, PSEG did not adequately assess the selection, placement and use of equipment and fire-fighting strategies, conformance with established plant fire-fighting procedures, and the use of fire-fighting equipment, including communication equipment.

PSEG entered this into their CAP as notification 20632422 and chartered an apparent cause evaluation.

The inspectors determined that the issue was more than minor since it was associated with the protection against external events (fire) attribute of the Mitigating Systems cornerstone and impacts its objective of ensuring the availability, reliability, and capability of systems, such as the fire brigade, that respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety Significance (Green) in accordance with D.1 of IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." Because the finding involved fire brigade training requirements, the fire brigade demonstrated the ability to meet the required times for fire extinguishment for the fire drill scenarios, and the finding did not significantly affect the fire brigade's ability to respond to a fire, the finding was of very low safety significance (Green). The finding was determined to have a cross-cutting aspect in the area of Problem Identification and Resolution, Self and Independent Assessments, in that licensees conduct assessments of their activities to assess performance and identify areas of improvement. Specifically, the PSEG self-evaluation of fire brigade performance was not of sufficient depth, appropriately objective, and selfcritical. [P.3(a)] (Section 1R05)

The inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs", as described in Regulatory Guide (RG) 1.33, Revision 2, when PSEG did not properly implement high energy line break (HELB) barrier controls in accordance with CC-AA-201, Plant Barrier Control, during maintenance activities that affected the performance of safety-related equipment on October 1, 2 and 17, 2013. PSEG entered the issue into the CAP under notifications 20623371 and 20633614.

This finding was more than minor because it was associated with the configuration control attribute of the Mitigating System cornerstone, and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, improper barrier controls could potentially affect the operating equipment in the case of a HELB. This performance deficiency required a detailed risk evaluation (DRE) in accordance with IMC 0609, Appendix A, screening questions in Exhibits 2, "Mitigating Systems," because of an assumed loss of the AFW system decay heat removal safety function. The inspectors and a Region I Senior Reactor Analyst (SRA) conducted a bounding DRE and determined this finding to be of very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Work Control, in that licensees plan and coordinate work activities by incorporating the need for planned contingencies, compensatory actions, and abort criteria. Specifically, PSEG did not properly plan and coordinate compensatory actions via station procedures for HELB barrier impairments. [H.3(a)] (Section 1R18)

Inspection Report# : 2013005 (pdf)

Significance: Dec 31, 2013 Identified By: NRC Item Type: NCV NonCited Violation Inadequate HELB Barrier Controls The inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs", as described in Regulatory Guide (RG) 1.33, Revision 2, when PSEG did not properly implement high energy line break (HELB) barrier controls in accordance with CC-AA-201, Plant Barrier Control, during maintenance activities that affected the performance of safety-related equipment on October 1, 2 and 17, 2013. PSEG entered the issue into the CAP under notifications 20623371 and 20633614.

This finding was more than minor because it was associated with the configuration control attribute of the Mitigating System cornerstone, and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, improper barrier controls could potentially affect the operating equipment in the case of a HELB. This performance deficiency required a detailed risk evaluation (DRE) in accordance with IMC 0609, Appendix A, screening questions in Exhibits 2, "Mitigating Systems," because of an assumed loss of the AFW system decay heat removal safety function. The inspectors and a Region I Senior Reactor Analyst (SRA) conducted a bounding DRE and determined this finding to be of very low safety significance (Green). This finding had a cross-cutting aspect in the area of Human Performance, Work Control, in that licensees plan and coordinate work activities by incorporating the need for planned contingencies, compensatory actions, and abort criteria. Specifically, PSEG did not properly plan and coordinate compensatory actions via station procedures for HELB barrier impairments. [H.3(a)] (Section 1R18) Inspection Report# : 2013005 (*pdf*)

Barrier Integrity



Identified By: Self-Revealing Item Type: NCV NonCited Violation

Inadequate Solid Pressurizer Control Resulted in Low Temperature Overpressure Relief Lifting

A self-revealing, Green non-cited violation (NCV) of TS 6.8.1, "Procedures and Programs," was identified when PSEG did not control reactor coolant system (RCS) pressure in accordance with a procedure. Consequently, on April 13, 2014, this resulted in lifting a low temperature over-pressure protection valve during solid pressurizer operations. PSEG completed a prompt investigation, an apparent cause evaluation, entered this in their CAP, and submitted a Special Report to the NRC in accordance with TS 6.9.2.

Non-compliance with an operating procedure was a performance deficiency that was more than minor because it was associated with the human performance attribute of the Barrier Integrity cornerstone and affected its objective to provide reasonable assurance that physical design barriers (reactor coolant system) protect the public from radionuclide releases caused by accidents or events. It was also similar to IMC 0612, Appendix E, example 4.b in that not accomplishing activities in accordance with procedures is more than minor if it results in a trip or transient. Specifically, not following the procedure resulted in a reactor coolant system pressure transient that caused a protective relief valve to lift. The issue was evaluated using IMC 0609, Attachment 4, and determined to be associated with the Barrier Integrity cornerstone based on the PORV acting as an RCS boundary mitigator. Since the finding was associated with a shutdown event, IMC 0609, Appendix G, Attachment 1, Exhibit 4.A was used to determine significance. Since the finding was not associated with a freeze seal, nozzle dam, criticality drain-down path, leakage path, or safety injection actuation and did not involve or result in PORV unavailability or a setpoint issue, it screened to Green. The finding had a cross-cutting aspect in the area of Human Performance, Challenge the Unknown, in that individuals stop when faced with uncertain conditions. Specifically, a PSEG operator did not stop his activity after his first attempt to control pressure, communicate the unexpected RCS pressure response to supervision, and resolve the issue prior to resuming activities.

Inspection Report# : 2014003 (pdf)

Emergency Preparedness

Occupational Radiation Safety

Significance: May 04, 2014 Identified By: Self-Revealing Item Type: NCV NonCited Violation

Failure to Establish and Implement Adequate Radiation Protection Procedures

A self-revealing NCV of very low safety significance was identified for failure to establish and implement TS 6.8 required procedures. Specifically, PSEG did not establish and implement adequate procedures for transfer and control of radioactive material within the Unit 2 fuel transfer canal that resulted in an unrecognized loss of location of radioactive material. As a result, PSEG did not recognize a loss of the location of radioactive material and, on May 4, 2014, did not establish and implement adequate radiological controls to provide for prompt identification and exposure control of elevated radiation dose rates to workers caused by radiation emanating from the radioactive material as water shielding was drained from the unexpected location. PSEG suspended the draining evolution, controlled the affected area, and entered this issue into their CAP (Notifications 20582871, 20649575, 20649581).

The failure to implement TS required radiation protection procedures is a performance deficiency (PD). The PD was determined to be more than minor because it was related to the programs and process attribute of the occupational radiation safety cornerstone, and adversely affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation from radioactive material during routine reactor operation. Further, if left uncorrected, the PD had the potential to lead to a more significant safety concern if undetected. The finding was assessed using IMC 0609, Appendix C, 2 Enclosure, "Occupational Radiation Safety SDP," dated August 19, 2008, and was determined to be of very low safety significance (Green) because: 1) it was not related to the as low as reasonably achievable (ALARA) program; 2) did not result in an overexposure or a substantial potential for overexposure; and 3) did not compromise PSEG's ability to assess dose. This finding has a cross-cutting aspect of Work Management of the Human Performance cross-cutting component. Specifically, PSEG did not implement adequate planning, control and execution of work activities associated with transfer of radioactive material to ensure the identification and management of risk commensurate to the work such that nuclear safety was an overriding priority.

Inspection Report# : 2014003 (pdf)

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : November 26, 2014

Salem 2 4Q/2014 Plant Inspection Findings

Initiating Events

Significance: Jun 30, 2014 Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Maintain Shutdown Margin Calculation Procedure to Cover certain Mispositioned Control Rod Events

The inspectors determined there was a Green, self-revealing violation of TS 6.8.1, "Procedures and Programs," as described in Regulatory Guide 1.33, Revision 2, February 1978, when PSEG did not maintain procedure SC.RE-ST.ZZ-0002, "Shutdown Margin Calculation," to cover certain mispositioned control rod events. Consequently, PSEG performed unnecessary rapid boration, and a subsequent manual reactor trip, in response to a control rod drop event on January 31, 2014. PSEG entered this in their corrective action program (CAP), implemented compensatory measures for calculating shutdown margin, performed an apparent cause evaluation, and initiated actions to correct the cause of the problem, extent of condition, and extend of cause.

The issue was more than minor because it was associated with the procedure quality attribute of the initiating events cornerstone, and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the finding resulted in unnecessary rapid boration and a manual reactor trip. Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and IMC 0609, Appendix A, "The SDP for Findings At-Power," the inspectors determined that this finding was of very low safety significance (Green) because it did not cause the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Teamwork, because PSEG work groups did not communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained [H.4]. Specifically, PSEG reactor engineering and operations services did not communicate and coordinate a change to the shutdown margin calculation procedure that was conducted in response to vendor-issued guidance. Inspection Report# : 2014003 (*pdf*)



Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Online Risk Assessment for an Adverse Change in Grid Conditions

The inspectors identified a Green NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50.65(a)(4) when PSEG inadequately assessed risk during a period of adverse grid conditions. On January 7, 2014, the regional transmission organization declared a Maximum Emergency Generation Action, a condition that PSEG was procedurally required to consider a high risk evolution (HRE) for a loss of offsite power (LOOP). Specifically, PSEG was to elevate online risk to a Yellow condition; however, PSEG did not assess risk as Yellow. PSEG subsequently elevated their risk condition, protected equipment, took other risk management actions (RMAs), and entered the issue in their CAP.

The issue was more than minor since it was associated with the Protection Against External Factors attribute of the Initiating Events cornerstone and adversely affected its objective to limit the likelihood of events that upset plant

stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the extreme cold weather conditions indirectly were affecting grid stability and required risk assessment and management. Additionally, it was similar to IMC 0612, Appendix E, example 7.e, in that an inadequate risk assessment is not minor if the overall plant risk would put the plant into a higher licensee-established risk category. In this case, plant risk was reclassified from Green to Yellow when properly assessed. Specifically, the extreme cold weather conditions indirectly were affecting grid stability. The inspectors evaluated the finding using IMC 0612, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." Since the incremental core damage probability deficit was less than 1 E-6 and the incremental large early release probability deficit was less than 1 E-7, this finding was determined to be of very low safety significance (Green). The finding was determined to have a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG staff in the Electric System Operations Center (ESOC), Salem control room, and Hope Creek control room did not appropriately communicate across organizational boundaries to ensure that risk was appropriately assessed.

Inspection Report# : 2014002 (pdf)



Significance: ^G Mar 31, 2014 Identified By: NRC Item Type: NCV NonCited Violation

Inadequate Risk Assessment and Risk Management Actions for UV Testing

Inspectors identified a Green NCV of 10 CFR 50.65(a)(4) when PSEG did not properly assess Unit 2 risk and implement RMAs in accordance with station procedures. PSEG conducted undervoltage (UV) surveillance testing on a 4 kilovolt (kV) vital bus without considering plant conditions to include operations without a redundant offsite power source and work in the vicinity of protected equipment. PSEG entered this in their CAP and completed a crew clock reset.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely affected its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, UV testing of a vital bus when powered by a single offsite power source had the potential to result in a loss of vital bus power or a LOOP. Additionally, the issue was more than minor based on similarity to IMC 0612, Appendix E, examples 7.e and 7.f. Specifically, the overall elevated plant risk placed the plant into a higher licensee-established risk category and required, under plant procedures, RMAs that were not implemented. The inspectors evaluated the finding using IMC 0612, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." A senior reactor analyst considered the base condition of an increased probability of a LOOP and the lack of RMAs as two order of magnitude increases. Since the incremental core damage probability deficit was less than 1 E-6 and the incremental large early release probability deficit was not applicable for this issue, this finding was determined to be of very low safety significance (Green). The finding was determined to have a cross-cutting aspect in the area of Human Performance, Conservative Bias, in that individuals use decision making-practices that emphasize prudent choices over those that are simply allowable. Specifically, PSEG did not implement procedurally driven decisionmaking that would have emphasized prudent choices regarding UV testing under different plant conditions. Inspection Report# : 2014002 (pdf)



Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Inspection of Isolated Phase Main Bus Duct Cooling Fan Sheave

A self-revealing Green FIN was identified against PSEG procedure MA-AA-716-009, "Use of Maintenance Procedures," Revision 5, when PSEG staff did not follow "the rules of usage for Maintenance Department
procedures" as applied to work on a Unit 2 isolated phase bus cooling fan. Specifically, PSEG staff did not perform inspection and testing as required. Subsequently, the 2B fan belts broke causing high temperatures in the bus enclosure, control room alarms, and an unplanned reduction to 51 percent reactor thermal power. As interim corrective actions, PSEG entered this in their corrective action program (CAP), initiated a prompt investigation, installed fan belts and swapped operations to the 2A motor, and established weekly readings to monitor drive belt conditions.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure of the drive belts resulted in an unplanned downpower. The finding was evaluated in accordance with IMC 0609, Attachment 4, and Appendix A where it screened as very low safety significance (Green) as a support system initiator. Specifically, the finding did contribute to the likelihood of, or cause, both an initiating event and affect mitigation equipment. The finding had a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG operations, maintenance, and engineering staff did not coordinate to ensure that inspections and testing were completed appropriately or that decisions not to complete steps as required were reviewed by the appropriate departments.

Inspection Report# : 2014002 (pdf)

Mitigating Systems

Significance: Dec 31, 2014 Identified By: NRC Item Type: NCV NonCited Violation

Failure to Promptly Correct Reactor Coolant Pump Turning Vane Bolt Failures

The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because PSEG staff did not promptly correct a condition adverse to quality related to failed Unit 2 reactor coolant pump (RCP) turning vane bolts. Specifically, PSEG staff's "use as is" evaluation in 2012 was not technically adequate to support their conclusion that contact between the pump turning vane and rotating impeller was acceptable in the event all turning vane bolts failed. As a result, PSEG did not complete corrective actions to perform a pump specific technical analysis or replace the bolts until this issue was identified in July 2014. PSEG completed corrective actions to replace all Unit 2 RCP turning vane bolts with an improved material and measured pump internal dimensions to determine that, for each pump, turning vane to impeller contact would not have prevented proper RCP coast down, invalidate their locked rotor analysis, or result in debris that could impact the reactor coolant system. PSEG staff entered this issue into their CAP (notifications 20660176, 20660177, 20660191, 20660175 and 20660173).

Failure to promptly correct a condition adverse to quality was a performance deficiency. The finding was evaluated in accordance with IMC 0612, Appendix B, and determined to be more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the dropped turning vanes adversely affected the operating RCP lineup, and the supporting documentation errors brought into question their effect on the RCP locked rotor accident analysis and resulted in additional field work. The finding was then evaluated using IMC 0609, Attachment 4 and Appendix A, where it was screened to Green because it was a qualification deficiency of a mitigating component, the RCP as related to its coast down capability that ultimately retained its functionality. The finding was determined to have a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because PSEG, in addition to

prior operating experience-related reports, had two opportunities in 2011 and 2012 when broken bolts were discovered, to thoroughly evaluate the technical basis for their conclusion that RCP turning vane dislodgement and contact with rotating pump components was acceptable. When PSEG thoroughly considered the problem in 2014, they determined that there was not adequate pump specific internal clearance information to support their prior technical conclusions that turning vane contact was acceptable.

Inspection Report# : 2014005 (pdf)



Identified By: NRC Item Type: NCV NonCited Violation

Salem Nuclear Generating Station, Unit Nos. 1 and 2 - NRC Component Design Bases Inspection Report The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because PSEG did not promptly identify and correct conditions adverse to quality. Specifically, PSEG did not promptly identify and correct degraded conditions associated with the Unit 1 and Unit 2 auxiliary feedwater storage tank (AFWST) and refueling water storage tank (RWST) instrumentation panels. PSEG entered the associated issues into their corrective action program (CAP) as notifications 20654991, 20654996, 20656136, 20657114, 20657115, and 20657117. PSEG's short-term corrective actions included installing bolts/plugs on the Unit 1 RWST panel 378-1 and unplugging the failed fan in Unit 1 AFWST panel 802-1.

The team determined that the inadequate identification and resolution of the conditions adverse to quality is a performance deficiency that was within PSEG's ability to foresee and correct. The finding is associated with the Mitigating Systems cornerstone and is more than minor because if left uncorrected it could lead to a more significant safety concern. Specifically, if left uncorrected, the continued exposure to external environmental elements and/or existing internal degraded conditions could potentially result in loss of level indication, non-conservative level indication, and/or loss of low level alarm functions. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the team determined that the finding is of very low safety significance (Green), because the finding was a deficiency affecting the design or qualification of a mitigating system, structure, or component (SSC), where the SSC maintained its operability. Inspection Report# : 2014007 (pdf)



Significance: Mar 31, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Fire Protection Test Procedure Resulted in Fuel Oil Spill

The inspectors determined there was a Green, self-revealing violation of Technical Specification (TS) 6.8.1, "Procedures and Programs," as described in Regulatory Guide 1.33, Revision 2, February 1978, when PSEG failed to adequately implement procedure steps associated with fire protection hose flow verification testing on March 6, 2014. Consequently, a fuel oil day tank was overfilled, resulting in approximately 3000 gallons of fuel oil on the pump house roof, leaks through the roof onto the fire pumps, and Salem fire water suppression system unavailability for approximately two days. PSEG stopped the leak, entered this issue in their CAP, and completed a Prompt Investigation.

The inspectors determined that the performance deficiency was more than minor because it was associated with the

Protection Against External Factors attribute of the Mitigating System cornerstone and adversely its cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events (fire) to prevent undesirable consequences. The inspectors determined that the finding was of very low safety significance (Green) because it did not impact the ability of Salem Units 1 or 2 to achieve and maintain safe shutdown. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Avoid Complacency, because PSEG fire protection operators did not recognize and plan for the possibly of mistakes, latent issues, and inherent risk, even while expecting successful outcomes of procedure steps to refill the fuel oil day tank. Further, they did not implement appropriate error reduction tools. Inspection Report# : <u>2014002</u> (pdf)



Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Post-Maintenance Testing of a Chiller

A self-revealing, Green NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," was identified when PSEG did not perform adequate post-maintenance testing (PMT) of the 22 chiller. The chillers cool safety-related loads in the auxiliary building during normal and emergency conditions. After failing to pump-down, corrective maintenance, and restoration, the chiller failed to pump-down again three days later. PSEG entered this in their CAP, backdated inoperability, performed a crew clock reset, and investigated the issue.

The finding was more than minor since it affected the Equipment Performance attribute of the Mitigating Systems cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the inadequate PMT resulted in additional inoperability and unavailability of the 22 chiller. The finding was evaluated in accordance with IMC 0609, Appendix A, and screened to Green since it was not a design or qualification deficiency, not a loss of function, and did not involve equipment or function designed to mitigate a seismic, flooding, or severe weather initiating event. The finding was determined to have a cross-cutting aspect in the area of Human Performance, Consistent Process, in that individuals use a consistent, systematic approach to make decisions. Specifically, PSEG did not use a systematic approach to make decisions regarding the proper PMT.

Inspection Report# : 2014002 (pdf)

Barrier Integrity



Identified By: Self-Revealing Item Type: NCV NonCited Violation

Inadequate Solid Pressurizer Control Resulted in Low Temperature Overpressure Relief Lifting

A self-revealing, Green non-cited violation (NCV) of TS 6.8.1, "Procedures and Programs," was identified when PSEG did not control reactor coolant system (RCS) pressure in accordance with a procedure. Consequently, on April 13, 2014, this resulted in lifting a low temperature over-pressure protection valve during solid pressurizer operations. PSEG completed a prompt investigation, an apparent cause evaluation, entered this in their CAP, and submitted a Special Report to the NRC in accordance with TS 6.9.2.

Non-compliance with an operating procedure was a performance deficiency that was more than minor because it was associated with the human performance attribute of the Barrier Integrity cornerstone and affected its objective to provide reasonable assurance that physical design barriers (reactor coolant system) protect the public from

radionuclide releases caused by accidents or events. It was also similar to IMC 0612, Appendix E, example 4.b in that not accomplishing activities in accordance with procedures is more than minor if it results in a trip or transient. Specifically, not following the procedure resulted in a reactor coolant system pressure transient that caused a protective relief valve to lift. The issue was evaluated using IMC 0609, Attachment 4, and determined to be associated with the Barrier Integrity cornerstone based on the PORV acting as an RCS boundary mitigator. Since the finding was associated with a shutdown event, IMC 0609, Appendix G, Attachment 1, Exhibit 4.A was used to determine significance. Since the finding was not associated with a freeze seal, nozzle dam, criticality drain-down path, leakage path, or safety injection actuation and did not involve or result in PORV unavailability or a setpoint issue, it screened to Green. The finding had a cross-cutting aspect in the area of Human Performance, Challenge the Unknown, in that individuals stop when faced with uncertain conditions. Specifically, a PSEG operator did not stop his activity after his first attempt to control pressure, communicate the unexpected RCS pressure response to supervision, and resolve the issue prior to resuming activities.

Inspection Report# : 2014003 (pdf)

Emergency Preparedness

Occupational Radiation Safety



G May 04, 2014 Significance: Identified By: Self-Revealing Item Type: NCV NonCited Violation

Failure to Establish and Implement Adequate Radiation Protection Procedures

A self-revealing NCV of very low safety significance was identified for failure to establish and implement TS 6.8 required procedures. Specifically, PSEG did not establish and implement adequate procedures for transfer and control of radioactive material within the Unit 2 fuel transfer canal that resulted in an unrecognized loss of location of radioactive material. As a result, PSEG did not recognize a loss of the location of radioactive material and, on May 4, 2014, did not establish and implement adequate radiological controls to provide for prompt identification and exposure control of elevated radiation dose rates to workers caused by radiation emanating from the radioactive material as water shielding was drained from the unexpected location. PSEG suspended the draining evolution, controlled the affected area, and entered this issue into their CAP (Notifications 20582871, 20649575, 20649581).

The failure to implement TS required radiation protection procedures is a performance deficiency (PD). The PD was determined to be more than minor because it was related to the programs and process attribute of the occupational radiation safety cornerstone, and adversely affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation from radioactive material during routine reactor operation. Further, if left uncorrected, the PD had the potential to lead to a more significant safety concern if undetected. The finding was assessed using IMC 0609, Appendix C, 2 Enclosure, "Occupational Radiation Safety SDP," dated August 19, 2008, and was determined to be of very low safety significance (Green) because: 1) it was not related to the as low as reasonably achievable (ALARA) program; 2) did not result in an overexposure or a substantial potential for overexposure; and 3) did not compromise PSEG's ability to assess dose. This finding has a cross-cutting aspect of Work Management of the Human Performance cross-cutting component. Specifically, PSEG did not implement adequate planning, control and execution of work activities associated with transfer of radioactive material to ensure the identification and management of risk commensurate to the work such that nuclear safety was an overriding priority.

Inspection Report# : 2014003 (pdf)

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : February 26, 2015

Salem 2 1Q/2015 Plant Inspection Findings

Initiating Events

Significance: Jun 30, 2014 Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Maintain Shutdown Margin Calculation Procedure to Cover certain Mispositioned Control Rod Events

The inspectors determined there was a Green, self-revealing violation of TS 6.8.1, "Procedures and Programs," as described in Regulatory Guide 1.33, Revision 2, February 1978, when PSEG did not maintain procedure SC.RE-ST.ZZ-0002, "Shutdown Margin Calculation," to cover certain mispositioned control rod events. Consequently, PSEG performed unnecessary rapid boration, and a subsequent manual reactor trip, in response to a control rod drop event on January 31, 2014. PSEG entered this in their corrective action program (CAP), implemented compensatory measures for calculating shutdown margin, performed an apparent cause evaluation, and initiated actions to correct the cause of the problem, extent of condition, and extend of cause.

The issue was more than minor because it was associated with the procedure quality attribute of the initiating events cornerstone, and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the finding resulted in unnecessary rapid boration and a manual reactor trip. Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and IMC 0609, Appendix A, "The SDP for Findings At-Power," the inspectors determined that this finding was of very low safety significance (Green) because it did not cause the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, Teamwork, because PSEG work groups did not communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained [H.4]. Specifically, PSEG reactor engineering and operations services did not communicate and coordinate a change to the shutdown margin calculation procedure that was conducted in response to vendor-issued guidance. Inspection Report# : 2014003 (*pdf*)

Significance: Mar 31, 2014

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Inspection of Isolated Phase Main Bus Duct Cooling Fan Sheave

A self-revealing Green FIN was identified against PSEG procedure MA-AA-716-009, "Use of Maintenance Procedures," Revision 5, when PSEG staff did not follow "the rules of usage for Maintenance Department procedures" as applied to work on a Unit 2 isolated phase bus cooling fan. Specifically, PSEG staff did not perform inspection and testing as required. Subsequently, the 2B fan belts broke causing high temperatures in the bus enclosure, control room alarms, and an unplanned reduction to 51 percent reactor thermal power. As interim corrective actions, PSEG entered this in their corrective action program (CAP), initiated a prompt investigation, installed fan belts and swapped operations to the 2A motor, and established weekly readings to monitor drive belt conditions.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating

Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure of the drive belts resulted in an unplanned downpower. The finding was evaluated in accordance with IMC 0609, Attachment 4, and Appendix A where it screened as very low safety significance (Green) as a support system initiator. Specifically, the finding did contribute to the likelihood of, or cause, both an initiating event and affect mitigation equipment. The finding had a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG operations, maintenance, and engineering staff did not coordinate to ensure that inspections and testing were completed appropriately or that decisions not to complete steps as required were reviewed by the appropriate departments.

Inspection Report# : 2014002 (pdf)

Mitigating Systems

Significance: Mar 31, 2015 Identified By: NRC Item Type: NCV Non-Cited Violation Inadequate Corrective Actions for HELB Barrier Controls

Inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, when PSEG did not implement adequate corrective actions from a previous Green NCV in a timeframe commensurate with its safety significance. Specifically, inadequate corrective actions resulted in high energy line break (HELB) and moderate energy line break (MELB) barriers being unsecured without implementing the associated station process. PSEG immediate corrective actions were to secure the affected barriers and enter these examples in their CAP as 20677643, 20683127, 20680283, and 20680680.

The issue was evaluated in accordance with IMC 0612, Appendix B, and determined to be more than minor since it was associated with the configuration control attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The issue was then evaluated using IMC 0609, Appendix A, where it screened to Green since it was not associated with a design or qualification deficiency or loss of system or function. The issue had a cross-cutting issue in Problem Identification and Resolution, Evaluation, in that organizations thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, PSEG did not thoroughly investigate and evaluate the previous NCV issues in order to understand the bases for staff decisions and the underlying organizational and safety culture contributors.

Inspection Report# : 2015001 (pdf)



Identified By: NRC Item Type: NCV Non-Cited Violation

Failure to Promptly Correct Reactor Coolant Pump Turning Vane Bolt Failures

The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because PSEG staff did not promptly correct a condition adverse to quality related to failed Unit 2 reactor coolant pump (RCP) turning vane bolts. Specifically, PSEG staff's "use as is" evaluation in 2012 was not technically adequate to support their conclusion that contact between the pump turning vane and rotating impeller was acceptable in the event all turning vane bolts failed. As a result, PSEG did not complete corrective actions to perform a pump specific technical

analysis or replace the bolts until this issue was identified in July 2014. PSEG completed corrective actions to replace all Unit 2 RCP turning vane bolts with an improved material and measured pump internal dimensions to determine that, for each pump, turning vane to impeller contact would not have prevented proper RCP coast down, invalidate their locked rotor analysis, or result in debris that could impact the reactor coolant system. PSEG staff entered this issue into their CAP (notifications 20660176, 20660177, 20660191, 20660175 and 20660173).

Failure to promptly correct a condition adverse to quality was a performance deficiency. The finding was evaluated in accordance with IMC 0612, Appendix B, and determined to be more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the dropped turning vanes adversely affected the operating RCP lineup, and the supporting documentation errors brought into question their effect on the RCP locked rotor accident analysis and resulted in additional field work. The finding was then evaluated using IMC 0609, Attachment 4 and Appendix A, where it was screened to Green because it was a qualification deficiency of a mitigating component, the RCP as related to its coast down capability that ultimately retained its functionality. The finding was determined to have a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because PSEG, in addition to prior operating experience-related reports, had two opportunities in 2011 and 2012 when broken bolts were discovered, to thoroughly evaluate the technical basis for their conclusion that RCP turning vane dislodgement and contact with rotating pump components was acceptable. When PSEG thoroughly considered the problem in 2014, they determined that there was not adequate pump specific internal clearance information to support their prior technical conclusions that turning vane contact was acceptable.

Inspection Report# : 2014005 (pdf)



Identified By: NRC Item Type: NCV Non-Cited Violation

Salem Nuclear Generating Station, Unit Nos. 1 and 2 - NRC Component Design Bases Inspection Report The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because PSEG did not promptly identify and correct conditions adverse to quality. Specifically, PSEG did not promptly identify and correct degraded conditions associated with the Unit 1 and Unit 2 auxiliary feedwater storage tank (AFWST) and refueling water storage tank (RWST) instrumentation panels. PSEG entered the associated issues into their corrective action program (CAP) as notifications 20654991, 20654996, 20656136, 20657114, 20657115, and 20657117. PSEG's short-term corrective actions included installing bolts/plugs on the Unit 1 RWST panel 378-1 and unplugging the failed fan in Unit 1 AFWST panel 802-1.

The team determined that the inadequate identification and resolution of the conditions adverse to quality is a performance deficiency that was within PSEG's ability to foresee and correct. The finding is associated with the Mitigating Systems cornerstone and is more than minor because if left uncorrected it could lead to a more significant safety concern. Specifically, if left uncorrected, the continued exposure to external environmental elements and/or existing internal degraded conditions could potentially result in loss of level indication, non-conservative level indication, and/or loss of low level alarm functions. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the team determined that the finding is of very low safety significance (Green), because the finding was a deficiency affecting the design or qualification of a mitigating system, structure, or component (SSC), where the SSC maintained its operability. Inspection Report# : 2014007 (pdf)

Barrier Integrity

Significance: Jun 30, 2014 Identified By: Self-Revealing Item Type: NCV Non-Cited Violation Inadequate Solid Pressurizer Control Resulted in Low Temperature Overpressure Relief Lifting A self-revealing, Green non-cited violation (NCV) of TS 6.8.1, "Procedures and Programs," was identified when PSEG did not control reactor coolant system (RCS) pressure in accordance with a procedure. Consequently, on April 13, 2014, this resulted in lifting a low temperature over-pressure protection valve during solid pressurizer operations. PSEG completed a prompt investigation, an apparent cause evaluation, entered this in their CAP, and submitted a Special Report to the NRC in accordance with TS 6.9.2.

Non-compliance with an operating procedure was a performance deficiency that was more than minor because it was associated with the human performance attribute of the Barrier Integrity cornerstone and affected its objective to provide reasonable assurance that physical design barriers (reactor coolant system) protect the public from radionuclide releases caused by accidents or events. It was also similar to IMC 0612, Appendix E, example 4.b in that not accomplishing activities in accordance with procedures is more than minor if it results in a trip or transient. Specifically, not following the procedure resulted in a reactor coolant system pressure transient that caused a protective relief valve to lift. The issue was evaluated using IMC 0609, Attachment 4, and determined to be associated with the Barrier Integrity cornerstone based on the PORV acting as an RCS boundary mitigator. Since the finding was associated with a shutdown event, IMC 0609, Appendix G, Attachment 1, Exhibit 4.A was used to determine significance. Since the finding was not associated with a freeze seal, nozzle dam, criticality drain-down path, leakage path, or safety injection actuation and did not involve or result in PORV unavailability or a setpoint issue, it screened to Green. The finding had a cross-cutting aspect in the area of Human Performance, Challenge the Unknown, in that individuals stop when faced with uncertain conditions. Specifically, a PSEG operator did not stop his activity after his first attempt to control pressure, communicate the unexpected RCS pressure response to supervision, and resolve the issue prior to resuming activities.

Inspection Report# : 2014003 (pdf)

Emergency Preparedness

Occupational Radiation Safety

Significance: May 04, 2014 Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Establish and Implement Adequate Radiation Protection Procedures

A self-revealing NCV of very low safety significance was identified for failure to establish and implement TS 6.8 required procedures. Specifically, PSEG did not establish and implement adequate procedures for transfer and control

of radioactive material within the Unit 2 fuel transfer canal that resulted in an unrecognized loss of location of radioactive material. As a result, PSEG did not recognize a loss of the location of radioactive material and, on May 4, 2014, did not establish and implement adequate radiological controls to provide for prompt identification and exposure control of elevated radiation dose rates to workers caused by radiation emanating from the radioactive material as water shielding was drained from the unexpected location. PSEG suspended the draining evolution, controlled the affected area, and entered this issue into their CAP (Notifications 20582871, 20649575, 20649581).

The failure to implement TS required radiation protection procedures is a performance deficiency (PD). The PD was determined to be more than minor because it was related to the programs and process attribute of the occupational radiation safety cornerstone, and adversely affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation from radioactive material during routine reactor operation. Further, if left uncorrected, the PD had the potential to lead to a more significant safety concern if undetected. The finding was assessed using IMC 0609, Appendix C, 2 Enclosure, "Occupational Radiation Safety SDP," dated August 19, 2008, and was determined to be of very low safety significance (Green) because: 1) it was not related to the as low as reasonably achievable (ALARA) program; 2) did not result in an overexposure or a substantial potential for overexposure; and 3) did not compromise PSEG's ability to assess dose. This finding has a cross-cutting aspect of Work Management of the Human Performance cross-cutting component. Specifically, PSEG did not implement adequate planning, control and execution of work activities associated with transfer of radioactive material to ensure the identification and management of risk commensurate to the work such that nuclear safety was an overriding priority.

Inspection Report# : 2014003 (pdf)

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : June 16, 2015

Salem 2 2Q/2015 Plant Inspection Findings

Initiating Events



Inadequate Inspection of Isolated Phase Main Bus Duct Cooling Fan Sheave

A self-revealing Green FIN was identified against PSEG procedure MA-AA-716-009, "Use of Maintenance Procedures," Revision 5, when PSEG staff did not follow "the rules of usage for Maintenance Department procedures" as applied to work on a Unit 2 isolated phase bus cooling fan. Specifically, PSEG staff did not perform inspection and testing as required. Subsequently, the 2B fan belts broke causing high temperatures in the bus enclosure, control room alarms, and an unplanned reduction to 51 percent reactor thermal power. As interim corrective actions, PSEG entered this in their corrective action program (CAP), initiated a prompt investigation, installed fan belts and swapped operations to the 2A motor, and established weekly readings to monitor drive belt conditions.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure of the drive belts resulted in an unplanned downpower. The finding was evaluated in accordance with IMC 0609, Attachment 4, and Appendix A where it screened as very low safety significance (Green) as a support system initiator. Specifically, the finding did contribute to the likelihood of, or cause, both an initiating event and affect mitigation equipment. The finding had a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG operations, maintenance, and engineering staff did not coordinate to ensure that inspections and testing were completed appropriately or that decisions not to complete steps as required were reviewed by the appropriate departments.

Inspection Report# : 2014002 (pdf)

Mitigating Systems

Significance: May 22, 2015

Identified By: NRC Item Type: NCV Non-Cited Violation

Failure to Correct a Condition Adverse to the Quality of the Chillers

The inspectors identified a Green NCV of 10 CFR, Part 50, Appendix B, Criterion XVI, because PSEG did not assure that an identified condition adverse to quality was corrected. The condition adverse to quality was associated with improper maintenance of the 12 chiller which led to the chiller failure on August 23, 2014. Specifically, a procedure related to compressor rebuilds was not effectively updated to address the improper maintenance practice. PSEG entered this violation into the CAP as notification 20690927, has placed compressor rebuilds that would require use of this procedure on hold, and has purchased new compressors for contingent replacement pending completion of the

compressor maintenance procedure changes. The inspectors determined this performance deficiency was more than minor because it was associated with the procedure quality attribute of the Mitigating System cornerstone, and adversely affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, improper torqueing of the No. 4 discharge valve plate bolts for the 12 chiller caused the trip of that chiller on August 23, 2014, and, absent the procedural change, the vulnerability continued to exist for the occurrence of future improper torqueing and subsequent chiller failure. The inspectors determined that this finding screened to Green in accordance with IMC 0609, Appendix A, because the finding did not represent an actual loss of function of at least a single train for greater than its technical specification allowed outage time. The inspectors determined that this finding had a cross-cutting aspect in evaluation, because PSEG Root Cause 70169007 did not identify the improper torqueing of the discharge plate bolts as a condition adverse to quality. Consequently, PSEG assigned an action (ACIT) to address the problem, rather than a corrective action (CA) which, per LS-AA-125, requires additional reviews that verify the quality of completed corrective actions before closure. [P.2]

Inspection Report# : 2015008 (pdf)



Identified By: NRC Item Type: NCV Non-Cited Violation

Inadequate Corrective Actions for HELB Barrier Controls

Inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, when PSEG did not implement adequate corrective actions from a previous Green NCV in a timeframe commensurate with its safety significance. Specifically, inadequate corrective actions resulted in high energy line break (HELB) and moderate energy line break (MELB) barriers being unsecured without implementing the associated station process. PSEG immediate corrective actions were to secure the affected barriers and enter these examples in their CAP as 20677643, 20683127, 20680283, and 20680680.

The issue was evaluated in accordance with IMC 0612, Appendix B, and determined to be more than minor since it was associated with the configuration control attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The issue was then evaluated using IMC 0609, Appendix A, where it screened to Green since it was not associated with a design or qualification deficiency or loss of system or function. The issue had a cross-cutting issue in Problem Identification and Resolution, Evaluation, in that organizations thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, PSEG did not thoroughly investigate and evaluate the previous NCV issues in order to understand the bases for staff decisions and the underlying organizational and safety culture contributors.

Inspection Report# : 2015001 (pdf)



Identified By: NRC Item Type: NCV Non-Cited Violation

Failure to Promptly Correct Reactor Coolant Pump Turning Vane Bolt Failures

The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because PSEG staff did not promptly correct a condition adverse to quality related to failed Unit 2 reactor coolant pump (RCP) turning vane bolts. Specifically, PSEG staff's "use as is" evaluation in 2012 was not technically adequate to support their conclusion that contact between the pump turning vane and rotating impeller was acceptable in the event all turning vane bolts failed. As a result, PSEG did not complete corrective actions to perform a pump specific technical analysis or replace the bolts until this issue was identified in July 2014. PSEG completed corrective actions to replace all Unit 2 RCP turning vane bolts with an improved material and measured pump internal dimensions to determine

that, for each pump, turning vane to impeller contact would not have prevented proper RCP coast down, invalidate their locked rotor analysis, or result in debris that could impact the reactor coolant system. PSEG staff entered this issue into their CAP (notifications 20660176, 20660177, 20660191, 20660175 and 20660173).

Failure to promptly correct a condition adverse to quality was a performance deficiency. The finding was evaluated in accordance with IMC 0612, Appendix B, and determined to be more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the dropped turning vanes adversely affected the operating RCP lineup, and the supporting documentation errors brought into question their effect on the RCP locked rotor accident analysis and resulted in additional field work. The finding was then evaluated using IMC 0609, Attachment 4 and Appendix A, where it was screened to Green because it was a qualification deficiency of a mitigating component, the RCP as related to its coast down capability that ultimately retained its functionality. The finding was determined to have a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because PSEG, in addition to prior operating experience-related reports, had two opportunities in 2011 and 2012 when broken bolts were discovered, to thoroughly evaluate the technical basis for their conclusion that RCP turning vane dislodgement and contact with rotating pump components was acceptable. When PSEG thoroughly considered the problem in 2014, they determined that there was not adequate pump specific internal clearance information to support their prior technical conclusions that turning vane contact was acceptable.

Inspection Report# : 2014005 (pdf)



Significance: ^G Jul 24, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Salem Nuclear Generating Station, Unit Nos. 1 and 2 - NRC Component Design Bases Inspection Report The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because PSEG did not promptly identify and correct conditions adverse to quality. Specifically, PSEG did not promptly identify and correct degraded conditions associated with the Unit 1 and Unit 2 auxiliary feedwater storage tank (AFWST) and refueling water storage tank (RWST) instrumentation panels. PSEG entered the associated issues into their corrective action program (CAP) as notifications 20654991, 20654996, 20656136, 20657114, 20657115, and 20657117. PSEG's short-term corrective actions included installing bolts/plugs on the Unit 1 RWST panel 378-1 and unplugging the failed fan in Unit 1 AFWST panel 802-1.

The team determined that the inadequate identification and resolution of the conditions adverse to quality is a performance deficiency that was within PSEG's ability to foresee and correct. The finding is associated with the Mitigating Systems cornerstone and is more than minor because if left uncorrected it could lead to a more significant safety concern. Specifically, if left uncorrected, the continued exposure to external environmental elements and/or existing internal degraded conditions could potentially result in loss of level indication, non-conservative level indication, and/or loss of low level alarm functions. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the team determined that the finding is of very low safety significance (Green), because the finding was a deficiency affecting the design or qualification of a mitigating system, structure, or component (SSC), where the SSC maintained its operability. Inspection Report# : 2014007 (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : August 07, 2015

Salem 2 3Q/2015 Plant Inspection Findings

Initiating Events



Inadequate Inspection of Isolated Phase Main Bus Duct Cooling Fan Sheave

A self-revealing Green FIN was identified against PSEG procedure MA-AA-716-009, "Use of Maintenance Procedures," Revision 5, when PSEG staff did not follow "the rules of usage for Maintenance Department procedures" as applied to work on a Unit 2 isolated phase bus cooling fan. Specifically, PSEG staff did not perform inspection and testing as required. Subsequently, the 2B fan belts broke causing high temperatures in the bus enclosure, control room alarms, and an unplanned reduction to 51 percent reactor thermal power. As interim corrective actions, PSEG entered this in their corrective action program (CAP), initiated a prompt investigation, installed fan belts and swapped operations to the 2A motor, and established weekly readings to monitor drive belt conditions.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure of the drive belts resulted in an unplanned downpower. The finding was evaluated in accordance with IMC 0609, Attachment 4, and Appendix A where it screened as very low safety significance (Green) as a support system initiator. Specifically, the finding did contribute to the likelihood of, or cause, both an initiating event and affect mitigation equipment. The finding had a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG operations, maintenance, and engineering staff did not coordinate to ensure that inspections and testing were completed appropriately or that decisions not to complete steps as required were reviewed by the appropriate departments.

Inspection Report# : 2014002 (pdf)

Mitigating Systems

Significance: G Sep 30, 2015

Identified By: NRC Item Type: NCV Non-Cited Violation

Inadequate Operability Determination of Auxiliary Feedwater Flow Rate Indicator

The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when PSEG did not adequately implement procedure OP-AA-108-115, "Operability Determinations & Functionality Assessments." Specifically, PSEG did not properly evaluate and document an adequate basis for operability of an AFW flow rate indicator prior to restoring it to an operable status. PSEG re-declared the channel inoperable, vented air from the transmitter, took satisfactory voltage readings prior to declaring the channel operable, and entered this issue in their CAP.

The issue was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was evaluated in accordance with IMC 0609, Attachment 4 and Appendix A, where it screened to Green since it did not affect the design or qualification of a mitigating structure, system, and component (SSC), did not represent a loss of system and/or function, and did not represent an actual loss of at least a single train for greater than its technical specification (TS) allowed outage time. The finding had a cross-cutting aspect in the area of Human Performance, Conservative Bias, in that licensee staff use decision making-practices that emphasize prudent choices over those that are simply allowable. Specifically, PSEG did not take a conservative approach to decision making, particularly when information was incomplete and conditions were unusual. Further, PSEG management did not take timely action to address degraded conditions commensurate with their safety significance.

Inspection Report# : 2015003 (pdf)



Identified By: NRC Item Type: NCV Non-Cited Violation

Inadequate Chiller Maintenance Procedure

The inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs," as described in Regulatory Guide (RG) 1.33, Revision 2, February 1978, when PSEG performed chiller water system maintenance activities that were not properly preplanned in accordance with documented instructions, resulting in multiple chiller system trips on both units. Specifically, PSEG maintenance procedure SC.MD-PM.CH-0001, "ACME Chiller Compressor Inspection and Repair," did not incorporate documented instructions from the vendor technical document. PSEG performed an apparent cause evaluation (ACE) 70171934, and revised the maintenance procedure that included detailed vendor instructions.

This finding was more than minor because it was associated with the equipment performance attribute of the Mitigating System cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failure to install the chiller evaporator gasket in accordance with written instructions from the vendor manual resulted in multiple chiller failures. Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance

Determination Process for Findings At-Power," dated June 19, 2012, the inspectors determined that this finding was of very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of safety system function, did not represent the loss of function for any TS system, train, or component beyond the allowed TS outage time, and it did not represent an actual loss of function of any non TS trains of equipment designated as high safety significance in accordance with PSEG's maintenance rule program. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, in that licensees thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their significance. Specifically, PSEG did not thoroughly evaluate chiller divider plate head gasket failures in 2012, such that the resolution addressed the inadequate maintenance procedure instructions.

Inspection Report# : 2015002 (pdf)

Significance: May 22, 2015 Identified By: NRC Item Type: NCV Non-Cited Violation

Failure to Correct a Condition Adverse to the Quality of the Chillers

The inspectors identified a Green NCV of 10 CFR, Part 50, Appendix B, Criterion XVI, because PSEG did not assure that an identified condition adverse to quality was corrected. The condition adverse to quality was associated with improper maintenance of the 12 chiller which led to the chiller failure on August 23, 2014. Specifically, a procedure related to compressor rebuilds was not effectively updated to address the improper maintenance practice. PSEG entered this violation into the CAP as notification 20690927, has placed compressor rebuilds that would require use of this procedure on hold, and has purchased new compressors for contingent replacement pending completion of the compressor maintenance procedure changes. The inspectors determined this performance deficiency was more than minor because it was associated with the procedure quality attribute of the Mitigating System cornerstone, and adversely affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, improper torqueing of the No. 4 discharge valve plate bolts for the 12 chiller caused the trip of that chiller on August 23, 2014, and, absent the procedural change, the vulnerability continued to exist for the occurrence of future improper torqueing and subsequent chiller failure. The inspectors determined that this finding screened to Green in accordance with IMC 0609, Appendix A, because the finding did not represent an actual loss of function of at least a single train for greater than its technical specification allowed outage time. The inspectors determined that this finding had a cross-cutting aspect in evaluation, because PSEG Root Cause 70169007 did not identify the improper torqueing of the discharge plate bolts as a condition adverse to quality. Consequently, PSEG assigned an action (ACIT) to address the problem, rather than a corrective action (CA) which, per LS-AA-125, requires additional reviews that verify the quality of completed corrective actions before closure. [P.2]

Inspection Report# : 2015008 (pdf)



Significance: Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation **Inadequate Corrective Actions for HELB Barrier Controls**

Inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, when PSEG did not implement adequate corrective actions from a previous Green NCV in a timeframe commensurate with its safety significance. Specifically, inadequate corrective actions resulted in high energy line break (HELB) and moderate energy line break (MELB) barriers being unsecured without implementing the associated station process. PSEG immediate corrective actions were to secure the affected barriers and enter these examples in their CAP as 20677643, 20683127, 20680283, and 20680680.

The issue was evaluated in accordance with IMC 0612, Appendix B, and determined to be more than minor since it was associated with the configuration control attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The issue was then evaluated using IMC 0609, Appendix A, where it screened to Green since it was not associated with a design or qualification deficiency or loss of system or function. The issue had a cross-cutting issue in Problem Identification and Resolution, Evaluation, in that organizations thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, PSEG did not thoroughly investigate and evaluate the previous NCV issues in order to understand the bases for staff decisions and the underlying organizational and safety culture contributors.

Inspection Report# : 2015001 (pdf)

Significance: ^G Dec 31, 2014 Identified By: NRC Item Type: NCV Non-Cited Violation Failure to Promptly Correct Reactor Coolant Pump Turning Vane Bolt Failures The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because PSEG staff did not promptly correct a condition adverse to quality related to failed Unit 2 reactor coolant pump (RCP) turning vane bolts. Specifically, PSEG staff's "use as is" evaluation in 2012 was not technically adequate to support their conclusion that contact between the pump turning vane and rotating impeller was acceptable in the event all turning vane bolts failed. As a result, PSEG did not complete corrective actions to perform a pump specific technical analysis or replace the bolts until this issue was identified in July 2014. PSEG completed corrective actions to replace all Unit 2 RCP turning vane bolts with an improved material and measured pump internal dimensions to determine that, for each pump, turning vane to impeller contact would not have prevented proper RCP coast down, invalidate their locked rotor analysis, or result in debris that could impact the reactor coolant system. PSEG staff entered this issue into their CAP (notifications 20660176, 20660177, 20660191, 20660175 and 20660173).

Failure to promptly correct a condition adverse to quality was a performance deficiency. The finding was evaluated in accordance with IMC 0612, Appendix B, and determined to be more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the dropped turning vanes adversely affected the operating RCP lineup, and the supporting documentation errors brought into question their effect on the RCP locked rotor accident analysis and resulted in additional field work. The finding was then evaluated using IMC 0609, Attachment 4 and Appendix A, where it was screened to Green because it was a qualification deficiency of a mitigating component, the RCP as related to its coast down capability that ultimately retained its functionality. The finding was determined to have a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, because PSEG, in addition to prior operating experience-related reports, had two opportunities in 2011 and 2012 when broken bolts were discovered, to thoroughly evaluate the technical basis for their conclusion that RCP turning vane dislodgement and contact with rotating pump components was acceptable. When PSEG thoroughly considered the problem in 2014, they determined that there was not adequate pump specific internal clearance information to support their prior technical conclusions that turning vane contact was acceptable.

Inspection Report# : 2014005 (pdf)

Barrier Integrity

Significance: Jun 30, 2015 Identified By: Self-Revealing Item Type: NCV Non-Cited Violation **Untimely Corrective Actions For Service Water Outlet Valve**

A self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified when PSEG did not implement corrective actions in a timely manner. Specifically, PSEG identified a degrading trend in the stroke time for the 25 containment fan cooling unit (CFCU) service water (SW) outlet valve, 25SW72, but failed to implement corrective actions to address the trend prior to its failure to stroke in the required time. PSEG troubleshooting identified that air pressure on its air regulator had been set too low for the air volume required to stroke the valve. PSEG adjusted the regulator air and entered this issue in their corrective action program (CAP) as notifications 20661667, 20661710, and 20662206.

The issue was determined to be more than minor since it was associated with the system, structure, or component and barrier performance attribute of the Barrier Integrity cornerstone, and adversely affected its objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the lack of timely corrective actions ultimately resulted in exceeding the valve's capability to

reposition in the in-service test (IST) and Updated Final Safety Analysis Report (UFSAR) required stroke time for containment isolation. The finding was evaluated in accordance with Exhibit 3 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, where it screened to very low safety significance (Green) since it was did not represent an actual open pathway in the physical integrity of reactor containment, containment isolation system, and heat removal components, nor did it involve the hydrogen igniter function. The inspectors determined this finding has a cross-cutting aspect in Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG staff did not collaborate during operational activities such as CAP implementation, work management, and trend analyses to ensure the degrading stroke time was addressed.

Inspection Report# : 2015002 (pdf)

Emergency Preparedness

Significance: Jun 30, 2015 Identified By: NRC Item Type: NCV Non-Cited Violation Inadequate Seismic EAL Scheme

The inspectors identified a Green NCV of 10 CFR 50.54(q)(2) when PSEG did not maintain an adequate emergency classification and action level scheme that met the planning standards of 10 CFR 50.47(b). Specifically, PSEG did not establish an effective emergency plan with respect to declaring an Alert for seismic activity in excess of an operating basis earthquake (OBE), specifically vertical acceleration. PSEG entered this issue into their CAP as notification 20691160 and developed a temporary Operations standing order.

The issue was determined to be more than minor since it was associated with the procedure quality attribute of the Emergency Preparedness cornerstone, and adversely affected its objective to ensure that licensees are capable of implementing adequate measures to protect the health and safety of the public in the event of radiological emergency. Specifically, PSEG would not declare on Alert based on exceeding their OBE without actuation of the Hope Creek seismic switch. The issue was reviewed in accordance with

IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," issued September 26, 2014, where it screened to very low safety significance (Green) since the seismic Alert emergency action level (EAL) had been rendered ineffective such that it would not be declared for seismic activity for the OBE vertical acceleration level. The inspectors determined this finding has a cross-cutting aspect in the area in Problem Identification and Resolution, Operating Experience, in that the organization systematically and effectively collects, evaluates and implements relevant external operating experience in a timely manner. The inspectors determined that PSEG staff did not thoroughly evaluate NRC Information Notice (IN) 2012-25, Performance Issues with Seismic Instrumentation and Associated Systems for Operating Reactors, published on February 1, 2013. Specifically, PSEG initiated CAP notification 20594195 in response to IN 2012-025, and took credit for previous actions completed to adjust SC.OP-AB.ZZ-0004, "Earthquake," but did not account for the vertical direction ground motion acceleration differences between Salem and Hope Creek.

Inspection Report# : 2015002 (pdf)

Occupational Radiation Safety



Identified By: NRC Item Type: NCV Non-Cited Violation Inadequate HRA Controls

The inspectors identified a Green NCV of TS 6.12, 'High Radiation Area," when PSEG did not apply appropriate controls to high radiation areas. Specifically, the Unit 1 and 2 reactor cavities in containment, which are areas that exceed 1.0 rem/hour at 30 centimeters, were not properly controlled to prevent unauthorized personnel access. PSEG entered this issue in their CAP as notification 20682903 and installed six foot high scissor fences around each reactor cavity.

The issue was determined to be more than minor since it was associated with the program and process attribute of the Occupational Radiation Safety cornerstone, and adversely affected its 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. Specifically, high radiation areas with dose rates greater than 1.0 rem/hour at 30 centimeters were not properly controlled to prevent unauthorized personnel access. It was also similar to IMC 0612, Appendix E, example 6.g, in that access to a posted high radiation area (HRA) was not controlled in accordance with site TSs, a HRA actually existed, and it was not properly barricaded. The finding was then evaluated using IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," issued August 19, 2008, where it screened to very low safety significance (Green) since it was not associated with an as low as is reasonably achievable (ALARA) issue, did not involve an overexposure, did not constitute a substantial potential for overexposure, and did not compromise PSEG's ability to assess dose. The inspectors determined this finding has a cross-cutting aspect in the area of Human Performance, Avoid Complacency, in that individuals recognize and plan for the possibility of latent problems, even while expecting successful outcomes. Specifically, PSEG was not sufficiently aware of latent deficiencies in HRA access control given opportunities to identify the inadequate HRA controls when performing containment entries during normal plant operation and when routinely establishing the reactor cavities as locked high radiation areas following refueling outages.

Inspection Report# : 2015002 (pdf)

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Significance: N/A May 22, 2015

Identified By: NRC Item Type: FIN Finding **Biennel PI&R Overall Assessment**

The inspectors concluded that PSEG was generally effective in identifying, evaluating, and resolving problems. PSEG personnel identified problems, entered them into the corrective action program (CAP) at a low threshold, and prioritized issues commensurate with their safety significance. The inspectors concluded that PSEG adequately identified, reviewed, and applied relevant industry operating experience to Salem operations, and completed self-assessments and audits as required. PSEG adequately screened issues for operability and reportability, and generally performed causal analyses that appropriately considered extent of condition, generic issues, and previous occurrences. The inspectors also determined that PSEG typically implemented corrective actions (CAs) that addressed problems identified in the CAP in a timely manner. However, the inspectors identified a violation of NRC requirements in the area of effectiveness of corrective actions.

Based on interviews the inspectors conducted over the course of the inspection, observations of plant activities, and reviews of individual CAP and employee concerns program issues, the inspectors did not identify any indications that site personnel were unwilling to raise safety issues through various available means. Inspection Report# : 2015008 (pdf)

Last modified : December 15, 2015

Salem 2 4Q/2015 Plant Inspection Findings

Initiating Events



Inadequate Inspection of Isolated Phase Main Bus Duct Cooling Fan Sheave

A self-revealing Green FIN was identified against PSEG procedure MA-AA-716-009, "Use of Maintenance Procedures," Revision 5, when PSEG staff did not follow "the rules of usage for Maintenance Department procedures" as applied to work on a Unit 2 isolated phase bus cooling fan. Specifically, PSEG staff did not perform inspection and testing as required. Subsequently, the 2B fan belts broke causing high temperatures in the bus enclosure, control room alarms, and an unplanned reduction to 51 percent reactor thermal power. As interim corrective actions, PSEG entered this in their corrective action program (CAP), initiated a prompt investigation, installed fan belts and swapped operations to the 2A motor, and established weekly readings to monitor drive belt conditions.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure of the drive belts resulted in an unplanned downpower. The finding was evaluated in accordance with IMC 0609, Attachment 4, and Appendix A where it screened as very low safety significance (Green) as a support system initiator. Specifically, the finding did contribute to the likelihood of, or cause, both an initiating event and affect mitigation equipment. The finding had a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG operations, maintenance, and engineering staff did not coordinate to ensure that inspections and testing were completed appropriately or that decisions not to complete steps as required were reviewed by the appropriate departments.

Inspection Report# : <u>2014002</u> (pdf)

Mitigating Systems



Identified By: Self-Revealing Item Type: NCV Non-Cited Violation

Inadequate Post Maintenance Testing on OTDT Channels

A self-revealing, Green NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," and associated NCV of TS 3.3.1.1 was identified, with two examples, for not ensuring that all testing required to demonstrate that nuclear instrumentation (NI) would perform satisfactorily in service was identified and performed. As a result, inoperable Over-Temperature Delta-Temperature (OTDT) channels were not placed in the tripped condition within the timeframe required by TS LCO 3.3.1.1, on January 20 and April 21, 2015 respectively. PSEG entered this issue in their CAP and developed corrective actions to provide improved retest requirements for all maintenance performed on the NI system.

The inspectors determined that the failure to ensure the NI channels were operable upon restoration to service was a performance deficiency. The performance deficiency is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected its cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. Inspectors evaluated the finding's significance in accordance with IMC 0609, Attachment 4 and Appendix A, and determined that the finding did not affect a single reactor protection system (RPS) trip signal to initiate a reactor scram AND the function of other redundant trips or diverse methods of reactor shutdown, did not involve control manipulations that unintentionally added positive reactivity and did not result in a mismanagement of reactivity by operator(s). Therefore, the finding screened to Green, or very low safety significance. The finding has a cross-cutting aspect in the area of Human Performance, Documentation, because PSEG did not ensure that plant activities were effectively governed by comprehensive, high-quality, programs, processes and procedures. Specifically, subsequent to completion of calibration and replacement work and PMT per I&C surveillance procedures, work packages did not adequately address or specify activities related to verifying potentially affected RPS indications.

Inspection Report# : 2015004 (pdf)



Identified By: NRC Item Type: NCV Non-Cited Violation

Inadequate Operability Determination of Auxiliary Feedwater Flow Rate Indicator

The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when PSEG did not adequately implement procedure OP-AA-108-115, "Operability Determinations & Functionality Assessments." Specifically, PSEG did not properly evaluate and document an adequate basis for operability of an AFW flow rate indicator prior to restoring it to an operable status. PSEG re-declared the channel inoperable, vented air from the transmitter, took satisfactory voltage readings prior to declaring the channel operable, and entered this issue in their CAP.

The issue was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was evaluated in accordance with IMC 0609, Attachment 4 and Appendix A, where it screened to Green since it did not affect the design or qualification of a mitigating structure, system, and component (SSC), did not represent a loss of system and/or function, and did not represent an actual loss of at least a single train for greater than its technical specification (TS) allowed outage time. The finding had a cross-cutting aspect in the area of Human Performance, Conservative Bias, in that licensee staff use decision making-practices that emphasize prudent choices over those that are simply allowable. Specifically, PSEG did not take a conservative approach to decision making, particularly when information was incomplete and conditions were unusual. Further, PSEG management did not take timely action to address degraded conditions commensurate with their safety significance.

Inspection Report# : 2015003 (pdf)

Significance: Jun 30, 2015 Identified By: NRC Item Type: NCV Non-Cited Violation **Inadequate Chiller Maintenance Procedure**

The inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs," as described in Regulatory Guide (RG) 1.33, Revision 2, February 1978, when PSEG performed chiller water system maintenance activities that were

not properly preplanned in accordance with documented instructions, resulting in multiple chiller system trips on both units. Specifically, PSEG maintenance procedure SC.MD-PM.CH-0001, "ACME Chiller Compressor Inspection and Repair," did not incorporate documented instructions from the vendor technical document. PSEG performed an apparent cause evaluation (ACE) 70171934, and revised the maintenance procedure that included detailed vendor instructions.

This finding was more than minor because it was associated with the equipment performance attribute of the Mitigating System cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failure to install the chiller evaporator gasket in accordance with written instructions from the vendor manual resulted in multiple chiller failures. Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance

Determination Process for Findings At-Power," dated June 19, 2012, the inspectors determined that this finding was of very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of safety system function, did not represent the loss of function for any TS system, train, or component beyond the allowed TS outage time, and it did not represent an actual loss of function of any non TS trains of equipment designated as high safety significance in accordance with PSEG's maintenance rule program. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, in that licensees thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their significance. Specifically, PSEG did not thoroughly evaluate chiller divider plate head gasket failures in 2012, such that the resolution addressed the inadequate maintenance procedure instructions.

Inspection Report# : 2015002 (pdf)



Identified By: NRC Item Type: NCV Non-Cited Violation

Failure to Correct a Condition Adverse to the Quality of the Chillers

The inspectors identified a Green NCV of 10 CFR, Part 50, Appendix B, Criterion XVI, because PSEG did not assure that an identified condition adverse to quality was corrected. The condition adverse to quality was associated with improper maintenance of the 12 chiller which led to the chiller failure on August 23, 2014. Specifically, a procedure related to compressor rebuilds was not effectively updated to address the improper maintenance practice. PSEG entered this violation into the CAP as notification 20690927, has placed compressor rebuilds that would require use of this procedure on hold, and has purchased new compressors for contingent replacement pending completion of the compressor maintenance procedure changes. The inspectors determined this performance deficiency was more than minor because it was associated with the procedure quality attribute of the Mitigating System cornerstone, and adversely affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, improper torqueing of the No. 4 discharge valve plate bolts for the 12 chiller caused the trip of that chiller on August 23, 2014, and, absent the procedural change, the vulnerability continued to exist for the occurrence of future improper torqueing and subsequent chiller failure. The inspectors determined that this finding screened to Green in accordance with IMC 0609, Appendix A, because the finding did not represent an actual loss of function of at least a single train for greater than its technical specification allowed outage time. The inspectors determined that this finding had a cross-cutting aspect in evaluation, because PSEG Root Cause 70169007 did not identify the improper torqueing of the discharge plate bolts as a condition adverse to quality. Consequently, PSEG assigned an action (ACIT) to address the problem, rather than a corrective action (CA) which, per LS-AA-125, requires additional reviews that verify the quality of completed corrective actions before closure. [P.2]

Inspection Report# : 2015008 (pdf)



Identified By: NRC Item Type: NCV Non-Cited Violation

Inadequate Corrective Actions for HELB Barrier Controls

Inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, when PSEG did not implement adequate corrective actions from a previous Green NCV in a timeframe commensurate with its safety significance. Specifically, inadequate corrective actions resulted in high energy line break (HELB) and moderate energy line break (MELB) barriers being unsecured without implementing the associated station process. PSEG immediate corrective actions were to secure the affected barriers and enter these examples in their CAP as 20677643, 20683127, 20680283, and 20680680.

The issue was evaluated in accordance with IMC 0612, Appendix B, and determined to be more than minor since it was associated with the configuration control attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The issue was then evaluated using IMC 0609, Appendix A, where it screened to Green since it was not associated with a design or qualification deficiency or loss of system or function. The issue had a cross-cutting issue in Problem Identification and Resolution, Evaluation, in that organizations thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, PSEG did not thoroughly investigate and evaluate the previous NCV issues in order to understand the bases for staff decisions and the underlying organizational and safety culture contributors.

Inspection Report# : 2015001 (pdf)

Barrier Integrity

Significance: Dec 31, 2015 Identified By: NRC Item Type: NCV Non-Cited Violation Inadequate Auxiliary Building Barrier Controls

Inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs," when PSEG improperly implemented barrier controls in accordance with procedure, CC-AA-201, "Plant Barrier Control," Revision 5, during modification activities that impacted the flooding and radiological barrier design functions of the Unit 2 auxiliary building's external boundary. In response, PSEG properly implemented appropriate plant barrier impairments for the area to include compensatory actions for the flooding and occupational radiation barrier aspects of the program, entered this in their CAP, and performed an apparent cause analysis.

This finding was more than minor because it was associated with the configuration control attribute of the Barrier Integrity cornerstone, and adversely affected the associated cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding was evaluated in accordance with IMC 0609, Attachment 4 and Appendix A, Exhibit 3, and determined to be Green since it did not represent a degradation of the control room barrier function despite representing a degradation of multiple barrier functions of the auxiliary building. This finding had a cross-cutting aspect in the area of Human Performance, Work Management, in that licensees implement a process of planning, controlling, and executing work to include the identification and management of risk and need for coordination such that nuclear safety is the overriding priority. Specifically, PSEG did not properly plan and control work involving an impaired auxiliary building barrier to include coordinating with and ensuring awareness of different groups as well as incorporating risk insights, compensatory actions, and contingency plans. Inspection Report# : 2015004 (pdf)



Significance: Jun 30, 2015 Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Untimely Corrective Actions For Service Water Outlet Valve

A self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified when PSEG did not implement corrective actions in a timely manner. Specifically, PSEG identified a degrading trend in the stroke time for the 25 containment fan cooling unit (CFCU) service water (SW) outlet valve, 25SW72, but failed to implement corrective actions to address the trend prior to its failure to stroke in the required time. PSEG troubleshooting identified that air pressure on its air regulator had been set too low for the air volume required to stroke the valve. PSEG adjusted the regulator air and entered this issue in their corrective action program (CAP) as notifications 20661667, 20661710, and 20662206.

The issue was determined to be more than minor since it was associated with the system, structure, or component and barrier performance attribute of the Barrier Integrity cornerstone, and adversely affected its objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the lack of timely corrective actions ultimately resulted in exceeding the valve's capability to reposition in the in-service test (IST) and Updated Final Safety Analysis Report (UFSAR) required stroke time for containment isolation. The finding was evaluated in accordance with Exhibit 3 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, where it screened to very low safety significance (Green) since it was did not represent an actual open pathway in the physical integrity of reactor containment, containment isolation system, and heat removal components, nor did it involve the hydrogen igniter function. The inspectors determined this finding has a cross-cutting aspect in Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG staff did not collaborate during operational activities such as CAP implementation, work management, and trend analyses to ensure the degrading stroke time was addressed.

Inspection Report# : 2015002 (pdf)

Emergency Preparedness

Significance: **G** Jun 30, 2015 Identified By: NRC Item Type: NCV Non-Cited Violation **Inadequate Seismic EAL Scheme**

The inspectors identified a Green NCV of 10 CFR 50.54(q)(2) when PSEG did not maintain an adequate emergency classification and action level scheme that met the planning standards of 10 CFR 50.47(b). Specifically, PSEG did not establish an effective emergency plan with respect to declaring an Alert for seismic activity in excess of an operating basis earthquake (OBE), specifically vertical acceleration. PSEG entered this issue into their CAP as notification 20691160 and developed a temporary Operations standing order.

The issue was determined to be more than minor since it was associated with the procedure quality attribute of the Emergency Preparedness cornerstone, and adversely affected its objective to ensure that licensees are capable of implementing adequate measures to protect the health and safety of the public in the event of radiological emergency. Specifically, PSEG would not declare on Alert based on exceeding their OBE without actuation of the Hope Creek

seismic switch. The issue was reviewed in accordance with

IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," issued September 26, 2014, where it screened to very low safety significance (Green) since the seismic Alert emergency action level (EAL) had been rendered ineffective such that it would not be declared for seismic activity for the OBE vertical acceleration level. The inspectors determined this finding has a cross-cutting aspect in the area in Problem Identification and Resolution, Operating Experience, in that the organization systematically and effectively collects, evaluates and implements relevant external operating experience in a timely manner. The inspectors determined that PSEG staff did not thoroughly evaluate NRC Information Notice (IN) 2012-25, Performance Issues with Seismic Instrumentation and Associated Systems for Operating Reactors, published on February 1, 2013. Specifically, PSEG initiated CAP notification 20594195 in response to IN 2012-025, and took credit for previous actions completed to adjust SC.OP-AB.ZZ-0004, "Earthquake," but did not account for the vertical direction ground motion acceleration differences between Salem and Hope Creek.

Inspection Report# : 2015002 (pdf)

Occupational Radiation Safety

Significance: Jun 30, 2015 Identified By: NRC Item Type: NCV Non-Cited Violation **Inadequate HRA Controls**

The inspectors identified a Green NCV of TS 6.12, 'High Radiation Area," when PSEG did not apply appropriate controls to high radiation areas. Specifically, the Unit 1 and 2 reactor cavities in containment, which are areas that exceed 1.0 rem/hour at 30 centimeters, were not properly controlled to prevent unauthorized personnel access. PSEG entered this issue in their CAP as notification 20682903 and installed six foot high scissor fences around each reactor cavity.

The issue was determined to be more than minor since it was associated with the program and process attribute of the Occupational Radiation Safety cornerstone, and adversely affected its 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. Specifically, high radiation areas with dose rates greater than 1.0 rem/hour at 30 centimeters were not properly controlled to prevent unauthorized personnel access. It was also similar to IMC 0612, Appendix E, example 6.g, in that access to a posted high radiation area (HRA) was not controlled in accordance with site TSs, a HRA actually existed, and it was not properly barricaded. The finding was then evaluated using IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," issued August 19, 2008, where it screened to very low safety significance (Green) since it was not associated with an as low as is reasonably achievable (ALARA) issue, did not involve an overexposure, did not constitute a substantial potential for overexposure, and did not compromise PSEG's ability to assess dose. The inspectors determined this finding has a cross-cutting aspect in the area of Human Performance, Avoid Complacency, in that individuals recognize and plan for the possibility of latent problems, even while expecting successful outcomes. Specifically, PSEG was not sufficiently aware of latent deficiencies in HRA access control given opportunities to identify the inadequate HRA controls when performing containment entries during normal plant operation and when routinely establishing the reactor cavities as locked high radiation areas following refueling outages.

Inspection Report# : 2015002 (pdf)

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : March 01, 2016

Salem 2 **1Q/2016 Plant Inspection Findings**

Initiating Events

Mar 31, 2016 Significance: Identified By: Self-Revealing Item Type: FIN Finding **Inadequate Digital Feedwater Design Change Evaluation** DRAFT Inspection Report# : 2016001 (pdf)



Identified By: Self-Revealing Item Type: FIN Finding

Inadequate Inspection of Isolated Phase Main Bus Duct Cooling Fan Sheave

A self-revealing Green FIN was identified against PSEG procedure MA-AA-716-009, "Use of Maintenance Procedures," Revision 5, when PSEG staff did not follow "the rules of usage for Maintenance Department procedures" as applied to work on a Unit 2 isolated phase bus cooling fan. Specifically, PSEG staff did not perform inspection and testing as required. Subsequently, the 2B fan belts broke causing high temperatures in the bus enclosure, control room alarms, and an unplanned reduction to 51 percent reactor thermal power. As interim corrective actions, PSEG entered this in their corrective action program (CAP), initiated a prompt investigation, installed fan belts and swapped operations to the 2A motor, and established weekly readings to monitor drive belt conditions.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure of the drive belts resulted in an unplanned downpower. The finding was evaluated in accordance with IMC 0609, Attachment 4, and Appendix A where it screened as very low safety significance (Green) as a support system initiator. Specifically, the finding did contribute to the likelihood of, or cause, both an initiating event and affect mitigation equipment. The finding had a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG operations, maintenance, and engineering staff did not coordinate to ensure that inspections and testing were completed appropriately or that decisions not to complete steps as required were reviewed by the appropriate departments.

Inspection Report# : 2014002 (pdf)

Mitigating Systems



Item Type: NCV Non-Cited Violation **Failure to Correct Chiller Failures due to Gasket Leakage** Draft Inspection Report# : 2016001 (pdf)



Identified By: Self-Revealing Item Type: NCV Non-Cited Violation Inadequate Post Maintenance Testing on OTDT Channels

Inadequate Post Maintenance Testing on OTDT Channels

A self-revealing, Green NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," and associated NCV of TS 3.3.1.1 was identified, with two examples, for not ensuring that all testing required to demonstrate that nuclear instrumentation (NI) would perform satisfactorily in service was identified and performed. As a result, inoperable Over-Temperature Delta-Temperature (OTDT) channels were not placed in the tripped condition within the timeframe required by TS LCO 3.3.1.1, on January 20 and April 21, 2015 respectively. PSEG entered this issue in their CAP and developed corrective actions to provide improved retest requirements for all maintenance performed on the NI system.

The inspectors determined that the failure to ensure the NI channels were operable upon restoration to service was a performance deficiency. The performance deficiency is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected its cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. Inspectors evaluated the finding's significance in accordance with IMC 0609, Attachment 4 and Appendix A, and determined that the finding did not affect a single reactor protection system (RPS) trip signal to initiate a reactor scram AND the function of other redundant trips or diverse methods of reactor shutdown, did not involve control manipulations that unintentionally added positive reactivity and did not result in a mismanagement of reactivity by operator(s). Therefore, the finding screened to Green, or very low safety significance. The finding has a cross-cutting aspect in the area of Human Performance, Documentation, because PSEG did not ensure that plant activities were effectively governed by comprehensive, high-quality, programs, processes and procedures. Specifically, subsequent to completion of calibration and replacement work and PMT per I&C surveillance procedures, work packages did not adequately address or specify activities related to verifying potentially affected RPS indications.

Inspection Report# : 2015004 (pdf)

Significance: Sep 30, 2015 Identified By: NRC Item Type: NCV Non-Cited Violation

Inadequate Operability Determination of Auxiliary Feedwater Flow Rate Indicator

The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when PSEG did not adequately implement procedure OP-AA-108-115, "Operability Determinations & Functionality Assessments." Specifically, PSEG did not properly evaluate and document an adequate basis for operability of an AFW flow rate indicator prior to restoring it to an operable status. PSEG re-declared the channel inoperable, vented air from the transmitter, took satisfactory voltage readings prior to declaring the channel operable, and entered this issue in their CAP.

The issue was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was evaluated in accordance with IMC 0609, Attachment 4 and Appendix A, where it screened to Green since it did not affect the design or qualification of a mitigating structure, system, and component (SSC), did not represent a loss of system

and/or function, and did not represent an actual loss of at least a single train for greater than its technical specification (TS) allowed outage time. The finding had a cross-cutting aspect in the area of Human Performance, Conservative Bias, in that licensee staff use decision making-practices that emphasize prudent choices over those that are simply allowable. Specifically, PSEG did not take a conservative approach to decision making, particularly when information was incomplete and conditions were unusual. Further, PSEG management did not take timely action to address degraded conditions commensurate with their safety significance.

Inspection Report# : 2015003 (pdf)

Significance: Jun 30, 2015

Identified By: NRC Item Type: NCV Non-Cited Violation

Inadequate Chiller Maintenance Procedure

The inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs," as described in Regulatory Guide (RG) 1.33, Revision 2, February 1978, when PSEG performed chiller water system maintenance activities that were not properly preplanned in accordance with documented instructions, resulting in multiple chiller system trips on both units. Specifically, PSEG maintenance procedure SC.MD-PM.CH-0001, "ACME Chiller Compressor Inspection and Repair," did not incorporate documented instructions from the vendor technical document. PSEG performed an apparent cause evaluation (ACE) 70171934, and revised the maintenance procedure that included detailed vendor instructions.

This finding was more than minor because it was associated with the equipment performance attribute of the Mitigating System cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failure to install the chiller evaporator gasket in accordance with written instructions from the vendor manual resulted in multiple chiller failures. Using IMC 0609, Attachment 4, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance

Determination Process for Findings At-Power," dated June 19, 2012, the inspectors determined that this finding was of very low safety significance (Green) because the finding was not a design or qualification deficiency, did not represent a loss of safety system function, did not represent the loss of function for any TS system, train, or component beyond the allowed TS outage time, and it did not represent an actual loss of function of any non TS trains of equipment designated as high safety significance in accordance with PSEG's maintenance rule program. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, in that licensees thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their significance. Specifically, PSEG did not thoroughly evaluate chiller divider plate head gasket failures in 2012, such that the resolution addressed the inadequate maintenance procedure instructions.

Inspection Report# : 2015002 (pdf)



Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Correct a Condition Adverse to the Quality of the Chillers

The inspectors identified a Green NCV of 10 CFR, Part 50, Appendix B, Criterion XVI, because PSEG did not assure that an identified condition adverse to quality was corrected. The condition adverse to quality was associated with improper maintenance of the 12 chiller which led to the chiller failure on August 23, 2014. Specifically, a procedure related to compressor rebuilds was not effectively updated to address the improper maintenance practice. PSEG entered this violation into the CAP as notification 20690927, has placed compressor rebuilds that would require use of

this procedure on hold, and has purchased new compressors for contingent replacement pending completion of the compressor maintenance procedure changes. The inspectors determined this performance deficiency was more than minor because it was associated with the procedure quality attribute of the Mitigating System cornerstone, and adversely affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, improper torqueing of the No. 4 discharge valve plate bolts for the 12 chiller caused the trip of that chiller on August 23, 2014, and, absent the procedural change, the vulnerability continued to exist for the occurrence of future improper torqueing and subsequent chiller failure. The inspectors determined that this finding screened to Green in accordance with IMC 0609, Appendix A, because the finding did not represent an actual loss of function of at least a single train for greater than its technical specification allowed outage time. The inspectors determined that this finding had a cross-cutting aspect in evaluation, because PSEG Root Cause 70169007 did not identify the improper torqueing of the discharge plate bolts as a condition adverse to quality. Consequently, PSEG assigned an action (ACIT) to address the problem, rather than a corrective action (CA) which, per LS-AA-125, requires additional reviews that verify the quality of completed corrective actions before closure. [P.2]

Inspection Report# : 2015008 (pdf)

Barrier Integrity

Significance: Dec 31, 2015 Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Auxiliary Building Barrier Controls

Inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs," when PSEG improperly implemented barrier controls in accordance with procedure, CC-AA-201, "Plant Barrier Control," Revision 5, during modification activities that impacted the flooding and radiological barrier design functions of the Unit 2 auxiliary building's external boundary. In response, PSEG properly implemented appropriate plant barrier impairments for the area to include compensatory actions for the flooding and occupational radiation barrier aspects of the program, entered this in their CAP, and performed an apparent cause analysis.

This finding was more than minor because it was associated with the configuration control attribute of the Barrier Integrity cornerstone, and adversely affected the associated cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding was evaluated in accordance with IMC 0609, Attachment 4 and Appendix A, Exhibit 3, and determined to be Green since it did not represent a degradation of the control room barrier function despite representing a degradation of multiple barrier functions of the auxiliary building. This finding had a cross-cutting aspect in the area of Human Performance, Work Management, in that licensees implement a process of planning, controlling, and executing work to include the identification and management of risk and need for coordination such that nuclear safety is the overriding priority. Specifically, PSEG did not properly plan and control work involving an impaired auxiliary building barrier to include coordinating with and ensuring awareness of different groups as well as incorporating risk insights, compensatory actions, and contingency plans.

Inspection Report# : 2015004 (pdf)

Significance: Jun 30, 2015 Identified By: Self-Revealing Item Type: NCV Non-Cited Violation Untimely Corrective Actions For Service Water Outlet Valve A self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified when PSEG did not implement corrective actions in a timely manner. Specifically, PSEG identified a degrading trend in the stroke time for the 25 containment fan cooling unit (CFCU) service water (SW) outlet valve, 25SW72, but failed to implement corrective actions to address the trend prior to its failure to stroke in the required time. PSEG troubleshooting identified that air pressure on its air regulator had been set too low for the air volume required to stroke the valve. PSEG adjusted the regulator air and entered this issue in their corrective action program (CAP) as notifications 20661667, 20661710, and 20662206.

The issue was determined to be more than minor since it was associated with the system, structure, or component and barrier performance attribute of the Barrier Integrity cornerstone, and adversely affected its objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the lack of timely corrective actions ultimately resulted in exceeding the valve's capability to reposition in the in-service test (IST) and Updated Final Safety Analysis Report (UFSAR) required stroke time for containment isolation. The finding was evaluated in accordance with Exhibit 3 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, where it screened to very low safety significance (Green) since it was did not represent an actual open pathway in the physical integrity of reactor containment isolation system, and heat removal components, nor did it involve the hydrogen igniter function. The inspectors determined this finding has a cross-cutting aspect in Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG staff did not collaborate during operational activities such as CAP implementation, work management, and trend analyses to ensure the degrading stroke time was addressed.

Inspection Report# : 2015002 (pdf)

Emergency Preparedness

Significance: Jun 30, 2015 Identified By: NRC Item Type: NCV Non-Cited Violation Inadequate Seismic EAL Scheme

The inspectors identified a Green NCV of 10 CFR 50.54(q)(2) when PSEG did not maintain an adequate emergency classification and action level scheme that met the planning standards of 10 CFR 50.47(b). Specifically, PSEG did not establish an effective emergency plan with respect to declaring an Alert for seismic activity in excess of an operating basis earthquake (OBE), specifically vertical acceleration. PSEG entered this issue into their CAP as notification 20691160 and developed a temporary Operations standing order.

The issue was determined to be more than minor since it was associated with the procedure quality attribute of the Emergency Preparedness cornerstone, and adversely affected its objective to ensure that licensees are capable of implementing adequate measures to protect the health and safety of the public in the event of radiological emergency. Specifically, PSEG would not declare on Alert based on exceeding their OBE without actuation of the Hope Creek seismic switch. The issue was reviewed in accordance with

IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," issued September 26, 2014, where it screened to very low safety significance (Green) since the seismic Alert emergency action level (EAL) had been rendered ineffective such that it would not be declared for seismic activity for the OBE vertical acceleration level. The inspectors determined this finding has a cross-cutting aspect in the area in Problem Identification and Resolution, Operating Experience, in that the organization systematically and effectively collects, evaluates and implements relevant external operating experience in a timely manner. The inspectors determined that PSEG staff did

not thoroughly evaluate NRC Information Notice (IN) 2012-25, Performance Issues with Seismic Instrumentation and Associated Systems for Operating Reactors, published on February 1, 2013. Specifically, PSEG initiated CAP notification 20594195 in response to IN 2012-025, and took credit for previous actions completed to adjust SC.OP-AB.ZZ-0004, "Earthquake," but did not account for the vertical direction ground motion acceleration differences between Salem and Hope Creek.

Inspection Report# : 2015002 (pdf)

Occupational Radiation Safety



Significance: Jun 30, 2015 Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate HRA Controls

The inspectors identified a Green NCV of TS 6.12, 'High Radiation Area," when PSEG did not apply appropriate controls to high radiation areas. Specifically, the Unit 1 and 2 reactor cavities in containment, which are areas that exceed 1.0 rem/hour at 30 centimeters, were not properly controlled to prevent unauthorized personnel access. PSEG entered this issue in their CAP as notification 20682903 and installed six foot high scissor fences around each reactor cavity.

The issue was determined to be more than minor since it was associated with the program and process attribute of the Occupational Radiation Safety cornerstone, and adversely affected its 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. Specifically, high radiation areas with dose rates greater than 1.0 rem/hour at 30 centimeters were not properly controlled to prevent unauthorized personnel access. It was also similar to IMC 0612, Appendix E, example 6.g, in that access to a posted high radiation area (HRA) was not controlled in accordance with site TSs, a HRA actually existed, and it was not properly barricaded. The finding was then evaluated using IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," issued August 19, 2008, where it screened to very low safety significance (Green) since it was not associated with an as low as is reasonably achievable (ALARA) issue, did not involve an overexposure, did not constitute a substantial potential for overexposure, and did not compromise PSEG's ability to assess dose. The inspectors determined this finding has a cross-cutting aspect in the area of Human Performance, Avoid Complacency, in that individuals recognize and plan for the possibility of latent problems, even while expecting successful outcomes. Specifically, PSEG was not sufficiently aware of latent deficiencies in HRA access control given opportunities to identify the inadequate HRA controls when performing containment entries during normal plant operation and when routinely establishing the reactor cavities as locked high radiation areas following refueling outages. Inspection Report# : 2015002 (pdf)

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : July 11, 2016

Salem 2 2Q/2016 Plant Inspection Findings

Initiating Events

Significance: Mar 31, 2016 Identified By: Self-Revealing Item Type: FIN Finding

Inadequate Digital Feedwater Design Change Evaluation

A self-revealing Green finding against procedure CC-AA-103, Configuration Change Control for Permanent Physical Plant Changes, Revision 15, was identified when PSEG did not adequately evaluate a modification's effect on existing design and operating margins. Specifically, an Advanced Digital Feedwater Control System (ADFCS) modification introduced a steam generator feedwater pump (SGFP) over-acceleration trip feature that was not evaluated and resulted in a SGFP trip and auxiliary feedwater (AFW) actuation. PSEG corrective actions included re-establishing main feedwater, making a report to the NRC via ENS 51738 for the AFW actuation, and entering this in their Corrective Action Program (CAP) as 20718519.

The inadequate evaluation of the ADFCS modification's effect on existing design and operating margins was a performance deficiency. The issue was determined to be more than minor since it was similar to IMC 0612, Appendix E, example 3b in that the design was not correctly translated and resulted in system operation being adversely affected by a SGFP trip and an AFW system actuation. It was also more than minor since it was associated with the design control attribute (plant modification) of the Initiating Events cornerstone and adversely affected its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. The finding was evaluated in accordance with IMC 0609, Attachment 4 and Appendix A, where it was screened to Green since the transient did not result in both a reactor trip and loss of mitigation equipment relied upon to transition the plant from the onset of a trip to a stable shutdown condition (loss of feedwater). The finding had a cross-cutting aspect in the area of Human Performance, Change Management, in that, PSEG did not anticipate, manage, and communicate the effects of the over-acceleration trip change in the ADFCS modification to ensure unintended consequences were avoided.

Inspection Report# : 2016001 (pdf)

Significance: Mar 31, 2014

Identified By: Self-Revealing Item Type: FIN Finding

Inadequate Inspection of Isolated Phase Main Bus Duct Cooling Fan Sheave

A self-revealing Green FIN was identified against PSEG procedure MA-AA-716-009, "Use of Maintenance Procedures," Revision 5, when PSEG staff did not follow "the rules of usage for Maintenance Department procedures" as applied to work on a Unit 2 isolated phase bus cooling fan. Specifically, PSEG staff did not perform inspection and testing as required. Subsequently, the 2B fan belts broke causing high temperatures in the bus enclosure, control room alarms, and an unplanned reduction to 51 percent reactor thermal power. As interim corrective actions, PSEG entered this in their corrective action program (CAP), initiated a prompt investigation, installed fan belts and swapped operations to the 2A motor, and established weekly readings to monitor drive belt conditions.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating
Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure of the drive belts resulted in an unplanned downpower. The finding was evaluated in accordance with IMC 0609, Attachment 4, and Appendix A where it screened as very low safety significance (Green) as a support system initiator. Specifically, the finding did contribute to the likelihood of, or cause, both an initiating event and affect mitigation equipment. The finding had a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG operations, maintenance, and engineering staff did not coordinate to ensure that inspections and testing were completed appropriately or that decisions not to complete steps as required were reviewed by the appropriate departments.

Inspection Report# : 2014002 (pdf)

Mitigating Systems

Significance: Mar 31, 2016 Identified By: Self-Revealing Item Type: NCV Non-Cited Violation Failure to Correct Chiller Failures due to Gasket Leakage

A self-revealing Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, was identified when PSEG did not assure that an identified condition adverse to quality was corrected. Specifically, PSEG closed a corrective action to address chiller gasket leakage without performing the designated action. This resulted in four subsequent chiller trips due to gasket failures. PSEG entered this issue in the CAP under notification 20708693, and completed ACE 70181604 on December 21, 2015. Corrective actions from the ACE were completed on February 25, 2016, and included: obtaining the proper gasket material; testing an alternative gasket material (Teflon); and establishing interim performance monitoring under Order 80115963.

The inspectors determined that closing a corrective action to correct a condition adverse to quality evaluated by an ACE without implementing the corrective action was a performance deficiency. This performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating System cornerstone, and adversely affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences, in that safety-related chillers were subsequently rendered inoperable as a result of not having the proper gasket material. The inspectors determined that this finding screened to Green in accordance with IMC 0609, Appendix A, because the finding did not represent an actual loss of function of at least a single train for greater than its technical specification allowed outage time. The inspectors determined that this finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Resolution, because PSEG did not take effective corrective action to address recurring chiller evaporator head gasket leaks in a timely manner.

Inspection Report# : 2016001 (pdf)



Item Type: NCV Non-Cited Violation

Inadequate Post Maintenance Testing on OTDT Channels

A self-revealing, Green NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," and associated NCV of TS 3.3.1.1 was identified, with two examples, for not ensuring that all testing required to demonstrate that nuclear instrumentation (NI) would perform satisfactorily in service was identified and performed. As a result, inoperable

Over-Temperature Delta-Temperature (OTDT) channels were not placed in the tripped condition within the timeframe required by TS LCO 3.3.1.1, on January 20 and April 21, 2015 respectively. PSEG entered this issue in their CAP and developed corrective actions to provide improved retest requirements for all maintenance performed on the NI system.

The inspectors determined that the failure to ensure the NI channels were operable upon restoration to service was a performance deficiency. The performance deficiency is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected its cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. Inspectors evaluated the finding's significance in accordance with IMC 0609, Attachment 4 and Appendix A, and determined that the finding did not affect a single reactor protection system (RPS) trip signal to initiate a reactor scram AND the function of other redundant trips or diverse methods of reactor shutdown, did not involve control manipulations that unintentionally added positive reactivity and did not result in a mismanagement of reactivity by operator(s). Therefore, the finding screened to Green, or very low safety significance. The finding has a cross-cutting aspect in the area of Human Performance, Documentation, because PSEG did not ensure that plant activities were effectively governed by comprehensive, high-quality, programs, processes and procedures. Specifically, subsequent to completion of calibration and replacement work and PMT per I&C surveillance procedures, work packages did not adequately address or specify activities related to verifying potentially affected RPS indications.

Inspection Report# : 2015004 (pdf)



Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Operability Determination of Auxiliary Feedwater Flow Rate Indicator

The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when PSEG did not adequately implement procedure OP-AA-108-115, "Operability Determinations & Functionality Assessments." Specifically, PSEG did not properly evaluate and document an adequate basis for operability of an AFW flow rate indicator prior to restoring it to an operable status. PSEG re-declared the channel inoperable, vented air from the transmitter, took satisfactory voltage readings prior to declaring the channel operable, and entered this issue in their CAP.

The issue was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was evaluated in accordance with IMC 0609, Attachment 4 and Appendix A, where it screened to Green since it did not affect the design or qualification of a mitigating structure, system, and component (SSC), did not represent a loss of system and/or function, and did not represent an actual loss of at least a single train for greater than its technical specification (TS) allowed outage time. The finding had a cross-cutting aspect in the area of Human Performance, Conservative Bias, in that licensee staff use decision making-practices that emphasize prudent choices over those that are simply allowable. Specifically, PSEG did not take a conservative approach to decision making, particularly when information was incomplete and conditions were unusual. Further, PSEG management did not take timely action to address degraded conditions commensurate with their safety significance.

Inspection Report# : 2015003 (pdf)

Barrier Integrity



Identified By: NRC Item Type: NCV Non-Cited Violation

Inadequate Auxiliary Building Barrier Controls

Inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs," when PSEG improperly implemented barrier controls in accordance with procedure, CC-AA-201, "Plant Barrier Control," Revision 5, during modification activities that impacted the flooding and radiological barrier design functions of the Unit 2 auxiliary building's external boundary. In response, PSEG properly implemented appropriate plant barrier impairments for the area to include compensatory actions for the flooding and occupational radiation barrier aspects of the program, entered this in their CAP, and performed an apparent cause analysis.

This finding was more than minor because it was associated with the configuration control attribute of the Barrier Integrity cornerstone, and adversely affected the associated cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding was evaluated in accordance with IMC 0609, Attachment 4 and Appendix A, Exhibit 3, and determined to be Green since it did not represent a degradation of the control room barrier function despite representing a degradation of multiple barrier functions of the auxiliary building. This finding had a cross-cutting aspect in the area of Human Performance, Work Management, in that licensees implement a process of planning, controlling, and executing work to include the identification and management of risk and need for coordination such that nuclear safety is the overriding priority. Specifically, PSEG did not properly plan and control work involving an impaired auxiliary building barrier to include coordinating with and ensuring awareness of different groups as well as incorporating risk insights, compensatory actions, and contingency plans.

Inspection Report# : 2015004 (pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

2Q/2016 Inspection Findings - Salem 2

Miscellaneous

Last modified : August 29, 2016

Salem 2 3Q/2016 Plant Inspection Findings

Initiating Events

Significance: Sep 30, 2016 Identified By: Self-Revealing Item Type: FIN Finding

Misclassification of and Lack of Preventative Maintenance for SWC Valve 2GW75 and Relay S62-C1 The inspectors documented a self-revealing, Green finding (FIN) because PSEG did not classify plant equipment in accordance with procedure ER-AA-1001, "Component Classification," Revision 0, step 4.5. Specifically, PSEG did not appropriately classify a valve and relay within the stator water cooling (SWC) system, and subsequently did not perform the appropriate periodic maintenance. As a result of the absence of maintenance, the valve developed a packing leak, which dripped onto the trip relay and caused the relay to internally fill with water. On February 14, 2016, the trip relay contacts experienced an electrical short, which led to a turbine trip and a reactor trip from 100 percent power. PSEG entered this issue into the corrective action program (CAP) under notifications 20720566 and 20745264, performed apparent cause evaluation (ACE) 70184453, replaced the failed relay, and repaired the packing leak on the SWC valve.

The inspectors determined that a performance deficiency existed because PSEG did not properly classify the SWC relay and valve in accordance with station procedures to ensure the components would receive the appropriate preventive maintenance (PM). The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability (main generator and turbine trip) and challenge critical safety functions. Using IMC 0609, Attachment 4 and Appendix A, Exhibit 1, the inspectors determined that this finding was of very low safety significance, or Green, since mitigating equipment relied up to transition the plant to stable shutdown remained available. The inspectors determined there was no cross-cutting aspect associated with this finding since it was not representative of current PSEG performance.

Inspection Report# : 2016003 (pdf)

Significance: Jun 30, 2016

Identified By: Self-Revealing Item Type: FIN Finding

Item Type. FIN Finding

Inadequate Work Order Planning Results in Main Generator AVR STV Relay Trip

A Green, self-revealing finding (FIN) was identified against MA-AA-716-010, "Maintenance Planning Process," Revision 18, when PSEG work orders (WOs) did not specify the appropriate procedure to perform satisfactory modification testing of the main generator automatic voltage regulator (AVR) protective relay (model STV1). Consequently, the relay actuated below its design setpoint on February 4, 2016, resulting in an automatic trip of the Unit 2 main turbine and reactor. PSEG entered the issue in their Corrective Action Program (CAP) and performed a root cause evaluation (RCE), replaced the failed STV1 relay with a properly tested relay, verified other STV relays were appropriately tested as an extent of condition, and initiated an action to revise Laboratory Testing Services (LTS) department relay test procedures to ensure all applicable acceptance criteria will be incorporated.

The inspectors determined that a performance deficiency existed because PSEG WOs did not specify the appropriate

procedure to perform satisfactory modification testing of the main generator AVR protection relay. This issue was more than minor since it was associated with the procedure quality attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability (turbine and reactor trip) and challenge critical safety functions. Using IMC 0609, Attachment 4 and Appendix A, Exhibit 1, the inspectors determined that this finding was of very low safety significance, or Green, since mitigating equipment relied up to transition the plant to stable shutdown remained available. The finding had a cross-cutting aspect in the area of Human Performance, Work Management, in that the PSEG did not adequately implement the work process to coordinate with engineering and maintenance departments as needed to appropriately plan the STV1 relay modification test WO

Inspection Report# : 2016002 (pdf)



Significance: Mar 31, 2016

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Digital Feedwater Design Change Evaluation

A self-revealing Green finding against procedure CC-AA-103, Configuration Change Control for Permanent Physical Plant Changes, Revision 15, was identified when PSEG did not adequately evaluate a modification's effect on existing design and operating margins. Specifically, an Advanced Digital Feedwater Control System (ADFCS) modification introduced a steam generator feedwater pump (SGFP) over-acceleration trip feature that was not evaluated and resulted in a SGFP trip and auxiliary feedwater (AFW) actuation. PSEG corrective actions included re-establishing main feedwater, making a report to the NRC via ENS 51738 for the AFW actuation, and entering this in their Corrective Action Program (CAP) as 20718519.

The inadequate evaluation of the ADFCS modification's effect on existing design and operating margins was a performance deficiency. The issue was determined to be more than minor since it was similar to IMC 0612, Appendix E, example 3b in that the design was not correctly translated and resulted in system operation being adversely affected by a SGFP trip and an AFW system actuation. It was also more than minor since it was associated with the design control attribute (plant modification) of the Initiating Events cornerstone and adversely affected its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. The finding was evaluated in accordance with IMC 0609, Attachment 4 and Appendix A, where it was screened to Green since the transient did not result in both a reactor trip and loss of mitigation equipment relied upon to transition the plant from the onset of a trip to a stable shutdown condition (loss of feedwater). The finding had a cross-cutting aspect in the area of Human Performance, Change Management, in that, PSEG did not anticipate, manage, and communicate the effects of the over-acceleration trip change in the ADFCS modification to ensure unintended consequences were avoided.

Inspection Report# : 2016001 (pdf)

Significance: Mar 31, 2014

Identified By: Self-Revealing Item Type: FIN Finding

Inadequate Inspection of Isolated Phase Main Bus Duct Cooling Fan Sheave

A self-revealing Green FIN was identified against PSEG procedure MA-AA-716-009, "Use of Maintenance Procedures," Revision 5, when PSEG staff did not follow "the rules of usage for Maintenance Department procedures" as applied to work on a Unit 2 isolated phase bus cooling fan. Specifically, PSEG staff did not perform inspection and testing as required. Subsequently, the 2B fan belts broke causing high temperatures in the bus enclosure, control room alarms, and an unplanned reduction to 51 percent reactor thermal power. As interim corrective actions, PSEG entered this in their corrective action program (CAP), initiated a prompt investigation, installed fan belts and swapped operations to the 2A motor, and established weekly readings to monitor drive belt

conditions.

The issue was more than minor since it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure of the drive belts resulted in an unplanned downpower. The finding was evaluated in accordance with IMC 0609, Attachment 4, and Appendix A where it screened as very low safety significance (Green) as a support system initiator. Specifically, the finding did contribute to the likelihood of, or cause, both an initiating event and affect mitigation equipment. The finding had a cross-cutting aspect in the area of Human Performance, Teamwork, in that individuals and work groups communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. Specifically, PSEG operations, maintenance, and engineering staff did not coordinate to ensure that inspections and testing were completed appropriately or that decisions not to complete steps as required were reviewed by the appropriate departments.

Inspection Report# : 2014002 (pdf)

Mitigating Systems

Significance: G Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Follow Operability Determination Procedure for Unit 2 Baffle-Former Bolts

The inspectors identified a Green non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because, from June 15, 2016 until July 26, 2016, PSEG did not accomplish actions necessary to provide adequate confidence that a structure, system, and component (SSC) would perform satisfactorily in service (an activity affecting quality) as prescribed by a documented procedure. Specifically, although PSEG had concluded Salem Unit 2 is susceptible to baffle bolt failure due to its design and operating life (but less susceptible than Salem Unit 1), PSEG inadequately implemented Procedure OP AA-108-115, "Operability Determinations & Functionality Assessments," Sections 4.7.14 followed by Sections 4.7.18 4.7.20 to perform an operability evaluation (OpEval) to justify continued operation of the unit until the next refueling outage. PSEG's immediate corrective actions included entering the issue into its corrective action program (NOTF 20736630) and documenting an operability evaluation to support the basis for functionality of the baffle structure and the operability of the emergency core cooling system (ECCS) and reactivity control systems.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, in that degradation of a significant number of baffle bolts could result in baffle plates dislodging following an accident. This issue was dispositioned as more than minor because it was also similar to example 3.j of IMC 0612, Appendix E, "Examples of Minor Issues," in that the condition resulted in reasonable doubt of operability of the ECCS and additional analysis was necessary to verify operability. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors screened the finding for safety significance and determined it to be of very low safety significance (Green), since the finding did not represent an actual loss of system or function. After inspector questioning, PSEG performed OpEval 2016-015, which provided sufficient bases to conclude the Unit 2 baffle assembly would support ECCS and control rod system operability until the next refueling outage. This finding is related to the cross-cutting aspect of Operating Experience because PSEG did not effectively evaluate relevant internal and external operating experience. Specifically, PSEG did not adequately evaluate the impact of degraded baffle bolts in Unit 2 when directly relevant

operating experience was identified at Unit 1.

Inspection Report# : 2016002 (pdf)



Identified By: Self-Revealing Item Type: NCV Non-Cited Violation Failure to Correct Chiller Failures due to Gasket Leakage

A self-revealing Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, was identified when PSEG did not assure that an identified condition adverse to quality was corrected. Specifically, PSEG closed a corrective action to address chiller gasket leakage without performing the designated action. This resulted in four subsequent chiller trips due to gasket failures. PSEG entered this issue in the CAP under notification 20708693, and completed ACE 70181604 on December 21, 2015. Corrective actions from the ACE were completed on February 25, 2016, and included: obtaining the proper gasket material; testing an alternative gasket material (Teflon); and establishing interim performance monitoring under Order 80115963.

The inspectors determined that closing a corrective action to correct a condition adverse to quality evaluated by an ACE without implementing the corrective action was a performance deficiency. This performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating System cornerstone, and adversely affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences, in that safety-related chillers were subsequently rendered inoperable as a result of not having the proper gasket material. The inspectors determined that this finding screened to Green in accordance with IMC 0609, Appendix A, because the finding did not represent an actual loss of function of at least a single train for greater than its technical specification allowed outage time. The inspectors determined that this finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Resolution, because PSEG did not take effective corrective action to address recurring chiller evaporator head gasket leaks in a timely manner.

Inspection Report# : 2016001 (pdf)



Significance: G Dec 31, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Inadequate Post Maintenance Testing on OTDT Channels

A self-revealing, Green NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," and associated NCV of TS 3.3.1.1 was identified, with two examples, for not ensuring that all testing required to demonstrate that nuclear instrumentation (NI) would perform satisfactorily in service was identified and performed. As a result, inoperable Over-Temperature Delta-Temperature (OTDT) channels were not placed in the tripped condition within the timeframe required by TS LCO 3.3.1.1, on January 20 and April 21, 2015 respectively. PSEG entered this issue in their CAP and developed corrective actions to provide improved retest requirements for all maintenance performed on the NI system.

The inspectors determined that the failure to ensure the NI channels were operable upon restoration to service was a performance deficiency. The performance deficiency is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected its cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. Inspectors evaluated the finding's significance in accordance with IMC 0609, Attachment 4 and Appendix A, and determined that the finding did not affect a single reactor protection system (RPS) trip signal to initiate a reactor scram AND the function of other redundant trips or diverse methods of reactor shutdown, did not involve control manipulations that unintentionally added positive reactivity and did not result in a mismanagement of reactivity by operator(s). Therefore, the finding

screened to Green, or very low safety significance. The finding has a cross-cutting aspect in the area of Human Performance, Documentation, because PSEG did not ensure that plant activities were effectively governed by comprehensive, high-quality, programs, processes and procedures. Specifically, subsequent to completion of calibration and replacement work and PMT per I&C surveillance procedures, work packages did not adequately address or specify activities related to verifying potentially affected RPS indications.

Inspection Report# : <u>2015004</u> (pdf)

Barrier Integrity



Identified By: NRC Item Type: NCV Non-Cited Violation

Inadequate Auxiliary Building Barrier Controls

Inspectors identified a Green NCV of TS 6.8.1, "Procedures and Programs," when PSEG improperly implemented barrier controls in accordance with procedure, CC-AA-201, "Plant Barrier Control," Revision 5, during modification activities that impacted the flooding and radiological barrier design functions of the Unit 2 auxiliary building's external boundary. In response, PSEG properly implemented appropriate plant barrier impairments for the area to include compensatory actions for the flooding and occupational radiation barrier aspects of the program, entered this in their CAP, and performed an apparent cause analysis.

This finding was more than minor because it was associated with the configuration control attribute of the Barrier Integrity cornerstone, and adversely affected the associated cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding was evaluated in accordance with IMC 0609, Attachment 4 and Appendix A, Exhibit 3, and determined to be Green since it did not represent a degradation of the control room barrier function despite representing a degradation of multiple barrier functions of the auxiliary building. This finding had a cross-cutting aspect in the area of Human Performance, Work Management, in that licensees implement a process of planning, controlling, and executing work to include the identification and management of risk and need for coordination such that nuclear safety is the overriding priority. Specifically, PSEG did not properly plan and control work involving an impaired auxiliary building barrier to include coordinating with and ensuring awareness of different groups as well as incorporating risk insights, compensatory actions, and contingency plans.

Inspection Report# : <u>2015004</u> (pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : December 08, 2016

Salem 2 4Q/2016 Plant Inspection Findings

Initiating Events

Significance: Sep 30, 2016 Identified By: Self-Revealing Item Type: FIN Finding

Misclassification of and Lack of Preventative Maintenance for SWC Valve 2GW75 and Relay S62-C1 The inspectors documented a self-revealing, Green finding (FIN) because PSEG did not classify plant equipment in accordance with procedure ER-AA-1001, "Component Classification," Revision 0, step 4.5. Specifically, PSEG did not appropriately classify a valve and relay within the stator water cooling (SWC) system, and subsequently did not perform the appropriate periodic maintenance. As a result of the absence of maintenance, the valve developed a packing leak, which dripped onto the trip relay and caused the relay to internally fill with water. On February 14, 2016, the trip relay contacts experienced an electrical short, which led to a turbine trip and a reactor trip from 100 percent power. PSEG entered this issue into the corrective action program (CAP) under notifications 20720566 and 20745264, performed apparent cause evaluation (ACE) 70184453, replaced the failed relay, and repaired the packing leak on the SWC valve.

The inspectors determined that a performance deficiency existed because PSEG did not properly classify the SWC relay and valve in accordance with station procedures to ensure the components would receive the appropriate preventive maintenance (PM). The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability (main generator and turbine trip) and challenge critical safety functions. Using IMC 0609, Attachment 4 and Appendix A, Exhibit 1, the inspectors determined that this finding was of very low safety significance, or Green, since mitigating equipment relied up to transition the plant to stable shutdown remained available. The inspectors determined there was no cross-cutting aspect associated with this finding since it was not representative of current PSEG performance.

Inspection Report# : 2016003 (pdf)

Significance: Jun 30, 2016

Identified By: Self-Revealing Item Type: FIN Finding

Item Type. FIN Finding

Inadequate Work Order Planning Results in Main Generator AVR STV Relay Trip

A Green, self-revealing finding (FIN) was identified against MA-AA-716-010, "Maintenance Planning Process," Revision 18, when PSEG work orders (WOs) did not specify the appropriate procedure to perform satisfactory modification testing of the main generator automatic voltage regulator (AVR) protective relay (model STV1). Consequently, the relay actuated below its design setpoint on February 4, 2016, resulting in an automatic trip of the Unit 2 main turbine and reactor. PSEG entered the issue in their Corrective Action Program (CAP) and performed a root cause evaluation (RCE), replaced the failed STV1 relay with a properly tested relay, verified other STV relays were appropriately tested as an extent of condition, and initiated an action to revise Laboratory Testing Services (LTS) department relay test procedures to ensure all applicable acceptance criteria will be incorporated.

The inspectors determined that a performance deficiency existed because PSEG WOs did not specify the appropriate

procedure to perform satisfactory modification testing of the main generator AVR protection relay. This issue was more than minor since it was associated with the procedure quality attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability (turbine and reactor trip) and challenge critical safety functions. Using IMC 0609, Attachment 4 and Appendix A, Exhibit 1, the inspectors determined that this finding was of very low safety significance, or Green, since mitigating equipment relied up to transition the plant to stable shutdown remained available. The finding had a cross-cutting aspect in the area of Human Performance, Work Management, in that the PSEG did not adequately implement the work process to coordinate with engineering and maintenance departments as needed to appropriately plan the STV1 relay modification test WO

Inspection Report# : 2016002 (pdf)



G Mar 31, 2016 Significance:

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Digital Feedwater Design Change Evaluation

A self-revealing Green finding against procedure CC-AA-103, Configuration Change Control for Permanent Physical Plant Changes, Revision 15, was identified when PSEG did not adequately evaluate a modification's effect on existing design and operating margins. Specifically, an Advanced Digital Feedwater Control System (ADFCS) modification introduced a steam generator feedwater pump (SGFP) over-acceleration trip feature that was not evaluated and resulted in a SGFP trip and auxiliary feedwater (AFW) actuation. PSEG corrective actions included re-establishing main feedwater, making a report to the NRC via ENS 51738 for the AFW actuation, and entering this in their Corrective Action Program (CAP) as 20718519.

The inadequate evaluation of the ADFCS modification's effect on existing design and operating margins was a performance deficiency. The issue was determined to be more than minor since it was similar to IMC 0612, Appendix E, example 3b in that the design was not correctly translated and resulted in system operation being adversely affected by a SGFP trip and an AFW system actuation. It was also more than minor since it was associated with the design control attribute (plant modification) of the Initiating Events cornerstone and adversely affected its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. The finding was evaluated in accordance with IMC 0609, Attachment 4 and Appendix A, where it was screened to Green since the transient did not result in both a reactor trip and loss of mitigation equipment relied upon to transition the plant from the onset of a trip to a stable shutdown condition (loss of feedwater). The finding had a cross-cutting aspect in the area of Human Performance, Change Management, in that, PSEG did not anticipate, manage, and communicate the effects of the over-acceleration trip change in the ADFCS modification to ensure unintended consequences were avoided.

Inspection Report# : 2016001 (pdf)

Mitigating Systems

Significance: Jun 30, 2016 Identified By: NRC Item Type: NCV Non-Cited Violation Failure to Follow Operability Determination Procedure for Unit 2 Baffle-Former Bolts The inspectors identified a Green non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because, from June 15, 2016 until July

26, 2016, PSEG did not accomplish actions necessary to provide adequate confidence that a structure, system, and component (SSC) would perform satisfactorily in service (an activity affecting quality) as prescribed by a documented procedure. Specifically, although PSEG had concluded Salem Unit 2 is susceptible to baffle bolt failure due to its design and operating life (but less susceptible than Salem Unit 1), PSEG inadequately implemented Procedure OP AA-108-115, "Operability Determinations & Functionality Assessments," Sections 4.7.14 followed by Sections 4.7.18 4.7.20 to perform an operability evaluation (OpEval) to justify continued operation of the unit until the next refueling outage. PSEG's immediate corrective actions included entering the issue into its corrective action program (NOTF 20736630) and documenting an operability evaluation to support the basis for functionality of the baffle structure and the operability of the emergency core cooling system (ECCS) and reactivity control systems.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, in that degradation of a significant number of baffle bolts could result in baffle plates dislodging following an accident. This issue was dispositioned as more than minor because it was also similar to example 3.j of IMC 0612, Appendix E, "Examples of Minor Issues," in that the condition resulted in reasonable doubt of operability of the ECCS and additional analysis was necessary to verify operability. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors screened the finding for safety significance and determined it to be of very low safety significance (Green), since the finding did not represent an actual loss of system or function. After inspector questioning, PSEG performed OpEval 2016-015, which provided sufficient bases to conclude the Unit 2 baffle assembly would support ECCS and control rod system operability until the next refueling outage. This finding is related to the cross-cutting aspect of Operating Experience because PSEG did not effectively evaluate relevant internal and external operating experience. Specifically, PSEG did not adequately evaluate the impact of degraded baffle bolts in Unit 2 when directly relevant operating experience was identified at Unit 1.

Inspection Report# : 2016002 (pdf)



Item Type: NCV Non-Cited Violation

Failure to Correct Chiller Failures due to Gasket Leakage

A self-revealing Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, was identified when PSEG did not assure that an identified condition adverse to quality was corrected. Specifically, PSEG closed a corrective action to address chiller gasket leakage without performing the designated action. This resulted in four subsequent chiller trips due to gasket failures. PSEG entered this issue in the CAP under notification 20708693, and completed ACE 70181604 on December 21, 2015. Corrective actions from the ACE were completed on February 25, 2016, and included: obtaining the proper gasket material; testing an alternative gasket material (Teflon); and establishing interim performance monitoring under Order 80115963.

The inspectors determined that closing a corrective action to correct a condition adverse to quality evaluated by an ACE without implementing the corrective action was a performance deficiency. This performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating System cornerstone, and adversely affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences, in that safety-related chillers were subsequently rendered inoperable as a result of not having the proper gasket material. The inspectors determined that this finding screened to Green in accordance with IMC 0609, Appendix A, because the finding did not represent an actual loss of function of at least a single train for greater than its technical specification allowed outage time. The inspectors determined that this finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Resolution, because PSEG did not take effective corrective action to address recurring chiller evaporator head gasket

leaks in a timely manner. Inspection Report# : <u>2016001</u> (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security

Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the <u>cover letters</u> to security inspection reports may be viewed.

Miscellaneous

Last modified : February 01, 2017



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Salem 2 – Quarterly Plant Inspection Findings

2Q/2017 – Plant Inspection Findings

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Initiating Events

Significance: Dec 31, 2016

Identified By: Self-Revealing Item Type: NCV Non-Cited Violation

Inadequate Surveillance Test Procedure Results in Water Hammer and Reactor Trip

The inspectors determined there was a self-revealing Green non-cited violation (NCV) of Technical Specification (TS) 6.8.1.c, "Surveillance and test activities of safety-related equipment," when PSEG did not establish adequate procedures for restoring service water (SW) to a drained section of discharge piping from the containment fan coil unit (CFCU) following surveillance test activities. Consequently, during restoration of SW to 22 CFCU following testing on August 31, 2016, refilling the voided SW piping created a pressure pulse sufficient to extrude the motor cooler cover plate spacer gasket inside primary containment, resulting in leakage that caused a 21 reactor coolant pump (RCP) cable fault and subsequent reactor trip. PSEG entered the issue in the corrective action program (CAP), performed a root cause evaluation (RCE), and revised applicable procedures for filling and venting SW to the CFCUs on September 19, 2016.

This issue was more than minor since it was associated with the procedure quality attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. Using IMC 0609, Attachment 4 and Appendix A, Exhibit 1, the inspectors determined that this finding was of very low safety significance, or Green, since mitigating equipment relied upon to transition the plant to stable shutdown remained available. The finding had a cross cutting aspect in the area of Problem Identification and Resolution, Evaluation, because PSEG did not thoroughly evaluate previous CFCU motor cooler gasket leaks such that the resolution addressed the cause.

Inspection Report# : 2016004 (pdf)



Item Type: FIN Finding

Misclassification of and Lack of Preventative Maintenance for SWC Valve 2GW75 and Relay S62-C1 The inspectors documented a self-revealing, Green finding (FIN) because PSEG did not classify plant equipment in accordance with procedure ER-AA-1001, "Component Classification," Revision 0, step 4.5. Specifically, PSEG did not appropriately classify a valve and relay within the stator water cooling (SWC) system, and subsequently did not perform the appropriate periodic maintenance. As a result of the absence of maintenance, the valve developed a packing leak, which dripped onto the trip relay and caused the relay to internally fill with water. On February 14, 2016, the trip relay contacts experienced an electrical short, which led to a turbine trip and a reactor trip from 100 percent power. PSEG entered this issue into the corrective action program (CAP) under notifications 20720566 and 20745264, performed apparent cause evaluation (ACE) 70184453, replaced the failed relay, and repaired the packing leak on the SWC valve.

The inspectors determined that a performance deficiency existed because PSEG did not properly classify the SWC relay and valve in accordance with station procedures to ensure the components would receive the appropriate preventive maintenance (PM). The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability (main generator and turbine trip) and challenge critical safety functions. Using IMC 0609, Attachment 4 and Appendix A, Exhibit 1, the inspectors determined that this finding was of very low safety significance, or Green, since mitigating equipment relied up to transition the plant to stable shutdown remained available. The inspectors determined there was no cross-cutting aspect associated with this finding since it was not representative of current PSEG performance.

Inspection Report# : 2016003 (pdf)





Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Work Order Planning Results in Main Generator AVR STV Relay Trip

A Green, self-revealing finding (FIN) was identified against MA-AA-716-010, "Maintenance Planning Process," Revision 18, when PSEG work orders (WOs) did not specify the appropriate procedure to perform satisfactory modification testing of the main generator automatic voltage regulator (AVR) protective relay (model STV1). Consequently, the relay actuated below its design setpoint on February 4, 2016, resulting in an automatic trip of the Unit 2 main turbine and reactor. PSEG entered the issue in their Corrective Action Program (CAP) and performed a root cause evaluation (RCE), replaced the failed STV1 relay with a properly tested relay, verified other STV relays were appropriately tested as an extent of condition, and initiated an action to revise Laboratory Testing Services (LTS) department relay test procedures to ensure all applicable acceptance criteria will be incorporated.

The inspectors determined that a performance deficiency existed because PSEG WOs did not specify the appropriate procedure to perform satisfactory modification testing of the main generator AVR protection relay. This issue was more than minor since it was associated with the procedure quality attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability (turbine and reactor trip) and challenge critical safety functions. Using IMC 0609, Attachment 4 and Appendix A, Exhibit 1, the inspectors determined that this finding was of very low safety significance, or Green, since mitigating equipment relied up to transition the plant to stable shutdown remained available. The finding had a cross-cutting aspect in the area of Human Performance, Work Management, in that the PSEG did not adequately implement the work process to coordinate with

engineering and maintenance departments as needed to appropriately plan the STV1 relay modification test WO.

Inspection Report# : 2016002 (pdf)

Mitigating Systems Barrier Integrity Emergency Preparedness Occupational Radiation Safety Public Radiation Safety Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

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Salem 2 – Quarterly Plant Inspection Findings

2Q/2017 – Plant Inspection Findings

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Initiating Events

Significance: ^G Dec 31, 2016

Identified By: Self-Revealing Item Type: NCV Non-Cited Violation

Inadequate Surveillance Test Procedure Results in Water Hammer and Reactor Trip

The inspectors determined there was a self-revealing Green non-cited violation (NCV) of Technical Specification (TS) 6.8.1.c, "Surveillance and test activities of safety-related equipment," when PSEG did not establish adequate procedures for restoring service water (SW) to a drained section of discharge piping from the containment fan coil unit (CFCU) following surveillance test activities. Consequently, during restoration of SW to 22 CFCU following testing on August 31, 2016, refilling the voided SW piping created a pressure pulse sufficient to extrude the motor cooler cover plate spacer gasket inside primary containment, resulting in leakage that caused a 21 reactor coolant pump (RCP) cable fault and subsequent reactor trip. PSEG entered the issue in the corrective action program (CAP), performed a root cause evaluation (RCE), and revised applicable procedures for filling and venting SW to the CFCUs on September 19, 2016.

This issue was more than minor since it was associated with the procedure quality attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. Using IMC 0609, Attachment 4 and Appendix A, Exhibit 1, the inspectors determined that this finding was of very low safety significance, or Green, since mitigating equipment relied upon to transition the plant to stable shutdown remained available. The finding had a cross cutting aspect in the area of Problem Identification and Resolution, Evaluation, because PSEG did not thoroughly evaluate previous CFCU motor cooler gasket leaks such that the resolution addressed the cause.

Inspection Report# : 2016004 (pdf)



Item Type: FIN Finding

Misclassification of and Lack of Preventative Maintenance for SWC Valve 2GW75 and Relay S62-C1 The inspectors documented a self-revealing, Green finding (FIN) because PSEG did not classify plant equipment in accordance with procedure ER-AA-1001, "Component Classification," Revision 0, step 4.5. Specifically, PSEG did not appropriately classify a valve and relay within the stator water cooling (SWC) system, and subsequently did not perform the appropriate periodic maintenance. As a result of the absence of maintenance, the valve developed a packing leak, which dripped onto the trip relay and caused the relay to internally fill with water. On February 14, 2016, the trip relay contacts experienced an electrical short, which led to a turbine trip and a reactor trip from 100 percent power. PSEG entered this issue into the corrective action program (CAP) under notifications 20720566 and 20745264, performed apparent cause evaluation (ACE) 70184453, replaced the failed relay, and repaired the packing leak on the SWC valve.

The inspectors determined that a performance deficiency existed because PSEG did not properly classify the SWC relay and valve in accordance with station procedures to ensure the components would receive the appropriate preventive maintenance (PM). The finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability (main generator and turbine trip) and challenge critical safety functions. Using IMC 0609, Attachment 4 and Appendix A, Exhibit 1, the inspectors determined that this finding was of very low safety significance, or Green, since mitigating equipment relied up to transition the plant to stable shutdown remained available. The inspectors determined there was no cross-cutting aspect associated with this finding since it was not representative of current PSEG performance.

Inspection Report# : 2016003 (pdf)





Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Work Order Planning Results in Main Generator AVR STV Relay Trip

A Green, self-revealing finding (FIN) was identified against MA-AA-716-010, "Maintenance Planning Process," Revision 18, when PSEG work orders (WOs) did not specify the appropriate procedure to perform satisfactory modification testing of the main generator automatic voltage regulator (AVR) protective relay (model STV1). Consequently, the relay actuated below its design setpoint on February 4, 2016, resulting in an automatic trip of the Unit 2 main turbine and reactor. PSEG entered the issue in their Corrective Action Program (CAP) and performed a root cause evaluation (RCE), replaced the failed STV1 relay with a properly tested relay, verified other STV relays were appropriately tested as an extent of condition, and initiated an action to revise Laboratory Testing Services (LTS) department relay test procedures to ensure all applicable acceptance criteria will be incorporated.

The inspectors determined that a performance deficiency existed because PSEG WOs did not specify the appropriate procedure to perform satisfactory modification testing of the main generator AVR protection relay. This issue was more than minor since it was associated with the procedure quality attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability (turbine and reactor trip) and challenge critical safety functions. Using IMC 0609, Attachment 4 and Appendix A, Exhibit 1, the inspectors determined that this finding was of very low safety significance, or Green, since mitigating equipment relied up to transition the plant to stable shutdown remained available. The finding had a cross-cutting aspect in the area of Human Performance, Work Management, in that the PSEG did not adequately implement the work process to coordinate with

engineering and maintenance departments as needed to appropriately plan the STV1 relay modification test WO.

Inspection Report# : 2016002 (pdf)

Mitigating Systems Barrier Integrity Emergency Preparedness Occupational Radiation Safety Public Radiation Safety Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

Current data as of : September 05, 2017

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Salem 2 – Quarterly Plant Inspection Findings

3Q/2017 – Plant Inspection Findings

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Initiating Events

Significance: Dec 31, 2016

Identified By: Self-Revealing Item Type: NCV Non-Cited Violation

Inadequate Surveillance Test Procedure Results in Water Hammer and Reactor Trip

The inspectors determined there was a self-revealing Green non-cited violation (NCV) of Technical Specification (TS) 6.8.1.c, "Surveillance and test activities of safety-related equipment," when PSEG did not establish adequate procedures for restoring service water (SW) to a drained section of discharge piping from the containment fan coil unit (CFCU) following surveillance test activities. Consequently, during restoration of SW to 22 CFCU following testing on August 31, 2016, refilling the voided SW piping created a pressure pulse sufficient to extrude the motor cooler cover plate spacer gasket inside primary containment, resulting in leakage that caused a 21 reactor coolant pump (RCP) cable fault and subsequent reactor trip. PSEG entered the issue in the corrective action program (CAP), performed a root cause evaluation (RCE), and revised applicable procedures for filling and venting SW to the CFCUs on September 19, 2016.

This issue was more than minor since it was associated with the procedure quality attribute of the Initiating Events cornerstone and adversely impacted its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. Using IMC 0609, Attachment 4 and Appendix A, Exhibit 1, the inspectors determined that this finding was of very low safety significance, or Green, since mitigating equipment relied upon to transition the plant to stable shutdown remained available. The finding had a cross cutting aspect in the area of Problem Identification and Resolution, Evaluation, because PSEG did not thoroughly evaluate previous CFCU motor cooler gasket leaks such that the resolution addressed the cause.

Inspection Report# : 2016004 (pdf)

Mitigating Systems

Significance: Jul 14, 2017

Identified By: NRC Item Type: NCV Non-Cited Violation

Inadequate Design Verification that Inter-Cabinet Bolts were Installed Between SEC and Bailey Cabinets The team identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," because between May 1995 to July 2017, PSEG did not verify that bolts, or other suitable connections, were installed to connect the safeguard equipment control (SEC) cabinets to the Bailey termination cabinets to satisfy the Seismic Qualification Utilities Group (SQUG) recommended method to resolve effects of potential cabinet interaction during a seismic event. PSEG's immediate corrective actions included initiating several corrective action notifications (NOTFs) to evaluate operability, extent-of-condition, and long-term resolution.

This issue is more than minor because it is associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, PSEG performed a SQUG evaluation in response to unresolved safety issue (USI) A-46, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors," and submitted the results to the NRC detailing a potential for SEC cabinet seismic interaction with the adjacent Bailey termination cabinet. The evaluation results recommended bolting the SEC cabinet to the Bailey cabinet to eliminate the interaction. However, PSEG did not ensure and verify that the SQUG recommended bolts were installed, which resulted in a reasonable doubt on the operability of the SEC to reliably perform its intended function during and following a design basis seismic event. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The SDP for Findings At-Power," the team determined that this finding was Green because it was a design deficiency that potentially affected the design or qualification of a mitigating system, however, the mitigating system maintained its operability. The team determined there was no cross-cutting aspect associated with this finding since it was not representative of current PSEG performance.

Inspection Report# : 2017007 (pdf)

Significance: Jul 14, 2017

Identified By: NRC Item Type: NCV Non-Cited Violation

Inadequate PM for the EDG Room Ventilation System

The team identified a Green non-cited violation of Technical Specification (TS) 6.8.1, "Procedures and Programs," because since January 2007, PSEG did not establish an appropriate preventive maintenance (PM) schedule for the emergency diesel generator (EDG) ventilation dampers. Specifically, PSEG cancelled a pre-existing 36-month lubrication/clean/inspect PM in 2007 but failed to add the lubrication task to an existing 6-year damper PM as intended. As a result, since January 2007, the intended lubrication PM was cancelled for the inlet, recirculation, and exhaust ventilation dampers on all six Unit 1 and Unit 2 EDG ventilation systems. PSEG's immediate corrective actions included initiating a corrective action NOTF to address the PM inadequacy and extent-of-condition.

The issue is more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, the removal of the EDG ventilation damper lubrication PM had the potential to adversely impact EDG reliability. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The SDP for Findings At-Power," the team determined that this finding was Green because it was not a design or qualification deficiency, did not involve an actual loss of safety function, did not represent the actual loss of a safety function of a single train for greater than its TS allowed outage time, and did not represent an actual loss of function of one or more non-TS trains of equipment designated as high safety-significant in PSEG's Maintenance Rule

program for greater than 24 hours. The team determined there was no cross-cutting aspect associated with this finding since it was not representative of current PSEG performance. Inspection Report# : 2017007 (pdf)



G Jul 14, 2017 Significance: Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Corrective Action Regarding Missed Periodic Inspections of 2C EDG AVR Card

The team identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," because between April 2008 and July 2017, PSEG failed to promptly identify and correct a condition adverse to quality associated with an automatic voltage regulator (AVR) card installed in the 2C EDG. Specifically, PSEG corrective actions in response to a 2007 MPR Associates Part 21 report did not ensure that the 2C EDG was not susceptible to undesired voltage fluctuations associated with an aged-related defect in the installed AVR card. PSEG's immediate corrective actions included initiating a corrective action NOTF to evaluate operability and prioritize scheduling AVR card replacement.

The issue is more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, without further inspection of the 2C EDG AVR card solder joints, cracks could form in the solder joint connections resulting in undesired voltage fluctuations and potentially preclude the 2C EDG from performing its safety function. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 2 of IMC 0609, Appendix A, "The SDP for Findings At-Power," the team determined that this finding was Green because it was not a design or qualification deficiency, did not involve an actual loss of safety function, did not represent the actual loss of a safety function of a single train for greater than its TS allowed outage time, and did not represent an actual loss of function of one or more non-TS trains of equipment designated as high safety-significant in PSEG's Maintenance Rule program for greater than 24 hours. The team determined the finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Self Assessment, because PSEG did not conduct selfcritical and objective assessments of its programs and practices. Specifically, PSEG's pre-inspection self-assessment in May 2017 reviewed PSEG's corrective actions for the MPR Associates Part 21 Report, but did not identify the missed periodic refueling cycle inspections of the 2C EDG AVR card.

Inspection Report# : 2017007 (pdf)

Barrier Integrity Emergency Preparedness Occupational Radiation Safety Public Radiation Safety Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

Current data as of : November 29, 2017

Page Last Reviewed/Updated Monday, November 06, 2017



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Salem 2 – Quarterly Plant Inspection Findings

4Q/2017 - Plant Inspection Findings

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Initiating Events Mitigating Systems

Significance: G Jul 14, 2017

Identified By: NRC Item Type: NCV Non-Cited Violation

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Inspection Report# : 2017007 (pdf)



Identified By: NRC

Item Type: NCV Non-Cited Violation

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Significance: G Jul 14, 2017

Identified By: NRC Item Type: NCV Non-Cited Violation

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Miscellaneous

Current data as of : February 01, 2018

Page Last Reviewed/Updated Monday, November 06, 2017