

Salem 2

1Q/2014 Plant Inspection Findings

Initiating Events

Significance: G 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: 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 decision-making that would have emphasized prudent choices regarding UV testing under different plant conditions.

Inspection Report# : [2014002](#) (*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*)

Significance:  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: 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)

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 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:  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)

Significance: G 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*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance:  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 [cover letters](#) 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 Exelon 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 amounts by approximately \$4 billion, 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# : [2012012](#) (*pdf*)

Inspection Report# : [2013201](#) (*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# : [2012012](#) (*pdf*)

Inspection Report# : [2013201](#) (*pdf*)

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