

Hope Creek 1 4Q/2014 Plant Inspection Findings

Initiating Events

Significance: G Dec 31, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Identify and Correct a Condition Adverse to Quality Associated with Safety Relief Valve Discharge Piping Misalignment

A self-revealing Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified when PSEG did not promptly identify and correct a condition adverse to quality. Specifically, PSEG did not initiate a notification or perform an evaluation of a potential cold spring condition found in the 'H' safety relief valve (SRV) discharge piping during the valve's replacement in 2012. PSEG's corrective actions included replacing the 'H' SRV, providing training to all maintenance crews responsible for SRV work, and adding steps to the SRV removal and installation procedure to: 1) generate a notification for the identification of any piping misalignment, and 2) to pin the discharge piping spring prior to SRV removal.

The finding 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 an event that upsets plant stability. Also, if left uncorrected the performance deficiency had the potential to lead to more significant safety concern. The inspectors determined that this finding was of very low safety significance (Green) using Exhibit 1 of IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, because the finding 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 Problem Identification and Resolution, Identification, because the licensee did not identify issues completely, accurately and in a timely manner in accordance with the program. [P.1] (Section 1R15)

Inspection Report# : [2014005](#) (*pdf*)

Significance: G Jun 30, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Procedure Resulting in the Loss of a Vital 4kV Bus

A self-revealing Green NCV of TS 6.8.1.a, "Procedures and Programs," was identified for PSEG's failure to follow procedure MA-AA-1000, "Maintenance Standards and Practices," during the replacement of Bailey logic modules associated with the 'D' vital bus (10A404). Specifically, during the spring 2009 refueling outage (1R15), PSEG failed to follow a work order (WO) requiring the replacement of all Bailey logic modules listed in WO 60061175 with new logic modules. As a result, a logic module (H1PB-1PBXIS-DC652010302) for the 10A404 vital bus was not replaced during 1R15, and failed due to age on December 19, 2013, causing a loss of the 10A404 bus and an entry into the associated 8 hour TSAS 3.8.3.1 for Onsite Power Distribution Systems. PSEG's corrective actions included replacement of the failed logic module, performance of an extent of condition inspection to ensure other similar logic modules and relays were replaced, and reinforcement of proper maintenance practices with the individuals involved in the completion of WO 60061175.

The performance deficiency was determined to be more than minor because it was associated with the human

performance 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, not following the work order instructions resulted in an extended service duration and failure of a component that resulted in a loss of power to the 'D' vital bus on December 19, 2013. Similarly, this performance deficiency was also similar to examples 2.g and 4.b of NRC IMC 0612 Appendix E, in that the PSEG is required to follow their procedures per TS 6.8.1, and ultimately led to a safety impact given the failure of the logic module causing a loss of power to the 10A404 vital bus. The inspectors determined the finding to be of very low safety significance (Green) in accordance with Exhibit 1 of NRC IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power, dated June 19, 2012," because the finding involved the loss of a support system that contributes to the likelihood of an initiating event (Loss of an AC Bus), but did not affect mitigation equipment. The inspectors determined that there was no cross-cutting aspect associated with this finding because the cause of the performance deficiency occurred more than three years ago, and was not representative of present plant performance.

Inspection Report# : [2014003](#) (*pdf*)

Significance:  Jun 30, 2014

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to Evaluate an Identified Issue with the Moisture Separator Dump Valve Performance

A self-revealing finding of very low safety significance (Green) was identified for PSEG's failure to evaluate an identified deficiency in accordance with PSEG procedure LS-AA-125, Corrective Action Program." Specifically, PSEG failed to take self-recommended actions in notification 20447050 to evaluate the 'B' moisture separator (MS) dump valve performance after failing to operate as designed during 'B' MS drain valve troubleshooting on January 11, 2010. As a result, PSEG did not identify and correct a potential design flaw associated with thermal binding of the MS dump valves which was determined to be the cause of the 'A' MS dump valve failing to stroke open on December 1, 2013, causing a reactor scram from 100 percent power. PSEG's corrective actions include a design change to the MS emergency level control system that eliminates dump valve cycling on high MS level.

The performance deficiency was determined to be more than minor because it was associated with the equipment performance 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. The inspectors determined that this finding was of very low safety significance (Green) using Exhibit 1 of NRC IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, because the finding 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 (e.g. loss of condenser, loss of feed water). The inspectors determined that there was no cross-cutting aspect associated with this finding because the cause of the performance deficiency occurred more than three years ago, and was not representative of present plant performance.

Inspection Report# : [2014003](#) (*pdf*)

Significance:  Jun 30, 2014

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Implementation of Contingency Actions During Moisture Separator Emergency Level Controller Tuning

.A self-revealing finding of very low safety significance (Green) was identified when PSEG failed to ensure that appropriate contingency actions were in place prior to the performance of 'A' moisture separator (MS) emergency level controller tuning as required by WC-AA-105, "Work Activity Risk Management." Specifically, the decision to

tune the emergency level controller without appropriate contingencies in place led to a turbine trip on high 'A' MS level and subsequent reactor scram on December 5, 2013. PSEG's corrective actions included conducting performance management with the individuals involved with the tuning evolution and revising the moisture separator drain tank level tuning procedure to require an individual at the normal and emergency level controllers when performing emergency level controller tuning.

This finding was more than minor because it was associated with the human performance 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. The inspectors determined that this finding was of very low safety significance (Green) using Exhibit 1 of NRC IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, because the finding 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 (e.g. loss of condenser, loss of feed water). The inspectors determined that the finding had a cross cutting aspect in the Human Performance area associated with Work Management, because PSEG personnel did not implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, technicians were only stationed at the emergency level controller during the tuning, when having technicians at both controllers would have provided more time to recover from a high level condition in the 'A' MS, and may have prevented the turbine trip and subsequent reactor scram on December 5, 2013. [H.5]

Inspection Report# : [2014003](#) (pdf)

Significance: G Mar 31, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Preventative Maintenance for Safety-Related Circuit Cards

A self-revealing Green non-cited violation (NCV) of Technical Specification (TS) 6.8.1.a, "Procedures and Programs," was identified regarding PSEG failing to adequately establish, implement, and justify the initial replacement frequency for the 1DD481 inverter control circuit cards. As a result, an age-related failure of circuit cards for the safety-related 1E channel 'D' (1DD481) Inverter occurred on December 24, 2013, which caused PSEG to enter an unplanned 24 hour shutdown TS 3.8.3.1.a.4 for On-site Power Distribution Systems. PSEG's corrective actions include conducting an extensive extent of condition review of first-call preventive maintenances (PMs).

The performance deficiency was determined to be more than minor because it was associated with the equipment performance 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. The inspectors determined that this finding was of very low safety significance (Green) using NRC IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 1 – Initiating Events Screening Questions, dated June 19, 2012, because for findings involving support system initiators, i.e. the Loss of a DC [direct current] bus, the result did not involve the complete or partial loss of a support system that contributed to the likelihood of, or cause, an initiating event and affected mitigation equipment. The inspectors determined that there was no cross-cutting aspect associated with this finding because the cause of the performance deficiency occurred more than three years ago, and was not representative of present licensee performance.

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

Mitigating Systems

Significance: G Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedural Guidance for Responding to an Internal Flooding Event in the HPCI and RCIC Rooms

The inspectors identified a Green NCV of TS 6.8.1.a, "Procedures" because PSEG procedures HC.OP-AR.ZZ-0006 and HC.OP-AR.ZZ-0022 could potentially complicate an internal flooding event and adversely affect assumptions in Hope Creek's flood design. Specifically, the procedures did not ensure operator response would not communicate the high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) watertight rooms and potentially render two safety-significant single train systems inoperable. In addition to entering the issue into the corrective action program (CAP) as NOTFs 20646334, 20646335 and 20620653586, PSEG's corrective actions include a planned revision of the annunciator response procedures and issuance of a standing order to the Operations department staff. The performance deficiency is more than minor because it was 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 (i.e., core damage). Specifically, PSEG procedures HC.OP-AR.ZZ-0006 and HC.OP-AR.ZZ-0022 could potentially complicate an internal flooding event and adversely affect assumptions in Hope Creek's flood design, since the procedures did not ensure operator response would not communicate the HPCI and RCIC watertight rooms and potentially render multiple trains of safety-related SSCs inoperable. This performance deficiency was also similar to examples 3.j and 3.k of NRC IMC 0612, Appendix E, in that communicating the two watertight rooms created a reasonable doubt of operability of the HPCI and RCIC systems. PSEG plans to perform a detailed technical evaluation to evaluate the impact of internal flood propagation in the HPCI and RCIC rooms. The finding was evaluated in accordance with Exhibits 2 and 4 of NRC IMC 0609, Appendix A, "The SDP for Findings At-Power," dated June 19, 2012. Since opening the watertight door during an internal flooding event could bypass the flood protection feature and potentially degrade two or more trains of a multi-train system or function, a detailed risk assessment was performed. The finding was determined to be of very low safety significance (Green). Since the change in core damage frequency was sufficiently low, no further evaluation for large early release was required. The inspectors determined that the finding had a cross cutting aspect in the Human Performance area associated with Training, in that PSEG did not provide adequate training and ensure knowledge transfer to maintain a knowledgeable, technically competent workforce and instill nuclear safety values. Specifically, operator training did not ensure operator response to internal flooding would not result in communicating two watertight rooms containing safety significant single-train systems. [H.9]

Inspection Report# : [2014003](#) (pdf)

Significance: G Mar 31, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Untimely Identification and Corrective Actions for a Condition Adverse to Quality related to 480 VAC Masterpact Breakers

A self-revealing Green NCV of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified because PSEG failed to assure that a condition adverse to quality (CAQ) was promptly identified and corrected. Specifically, PSEG did not initiate a timely notification for a potential design flaw in the operation of some 480 volt alternating current (VAC) Masterpact breaker's control logic scheme. PSEG's corrective actions included an extensive operability evaluation, compensatory measures conducted every shift by operators to ensure the operability and reliability of these breakers in the short-term, and a proposed design change to remove the design flaw in the breaker control logic by 2015.

The performance deficiency was determined to be more than minor because it was associated with the equipment performance and design control attributes 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 (i.e., core damage). The inspectors determined that this finding was of very low

safety significance (Green) using NRC IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” Exhibit 2 – Mitigating Systems Screening Questions, dated June 19, 2012, because although the breakers’ design is affected, the operability of the breakers is maintained. The inspectors determined that the contributing cause that provided the most insight into the performance deficiency was associated with the cross-cutting aspect of Problem Identification and Resolution, Identification, because PSEG failed to identify issues completely, accurately, and in a timely manner in accordance with the corrective action program (CAP).

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

Significance: G Mar 31, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Procedure Resulting in the Potential Inoperability of a Safety-Related System

A self-revealing Green NCV of TS 6.8.1.a, “Procedures and Programs,” was identified for PSEG’s failure to follow procedure HC.OP-SO.BH-0001, “Standby Liquid Control (SLC) System Operation,” when restoring the SLC system after routine maintenance. Specifically, the licensee failed to adequately coordinate the restoration of the SLC system using the work control document (WCD) and the SLC system operating procedure which led to an incorrect SLC system lineup causing the inadvertent addition of demineralized (DI) water to the SLC storage tank. As a result, PSEG had to determine the immediate and prompt operability of the SLC system and enter the associated 8 hour SLC Technical Specification Action Statement (TSAS). PSEG’s corrective actions include restoring the SLC tank concentration, briefing the operating crews on proper WCD turnover process, and addressing operator gaps in the SLC system operation that may have adversely affected the timeline and the inaccuracy of the immediate operability calculation method.

The performance deficiency was determined to be more than minor because it was associated with the configuration control 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 (i.e., core damage). Specifically, failing to follow procedure leading to configuration control issues could have rendered a safety-related system inoperable. This performance deficiency was also similar to examples 3.j and 3.k of NRC IMC 0612, Appendix E, in that the addition of 80 gallons of DI water to the SLC tank created a reasonable doubt of operability of the SLC system. The inspectors determined the finding to be of very low safety significance (Green) in accordance with IMC 0609, Appendix A, “The Significance Determination Process for Findings At-Power,” dated June 19, 2012.” Using Exhibit 2, the inspectors determined that the finding screened as very low safety significance (Green) because although the SLC tank boron concentration was diluted, the SLC system was still capable of providing sufficient negative reactivity to shut down the reactor. The inspectors determined that the contributing cause that provided the most insight into the performance deficiency was associated with the cross-cutting aspect of Human Performance, Work Management, because PSEG failed to implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority.

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

Significance: G Mar 31, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Evaluation of 480 VAC Motor Control Center Design Change

A self-revealing Green NCV of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” was identified for PSEG’s failure to adequately evaluate a modification to the design change package for replacement buckets on the Class 1E 10B232 480 VAC motor control center (MCC) in accordance with PSEG procedure CC-AA-103-1001, “Implementation of Configuration Changes.” This resulted in damage to and de-energization of the 10B232 MCC during maintenance activities to install a new replacement bucket on October 28, 2013. PSEG’s corrective actions included a full extent of condition inspection of all installed modified MCC buckets and removing instructions to

install terminal block screws in future modifications.

This issue was more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone, and adversely affected the cornerstone's objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Because this finding occurred while the plant was shut down, the inspectors used IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," dated February 28, 2005. The inspectors determined the finding to be of very low safety significance (Green) using Checklist 7 of Attachment 1, "Boiling Water Reactor Refueling Operation with Reactor Coolant System (RCS) Level Greater Than 23 Feet," because qualitative assessment concluded that PSEG maintained adequate mitigation capability and the event was not characterized as a loss of control. The inspectors determined that the finding had a cross-cutting aspect in Human Performance, Procedure Adherence, because PSEG personnel did not follow site procedures.

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

Significance:  Mar 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Maintain B.5b Equipment in a State of Readiness to Support Mitigation Strategies per 10 CFR 50.54 (hh)(2)

The inspectors identified a Green NCV of 10 CFR 50.54(hh)(2), "Conditions of Licenses." Specifically, PSEG failed to adequately assess the functionality of the B.5.b portable gas generator on multiple occasions and implement adequate corrective actions in response to repeated failures of the B.5.b portable gas generator. This resulted in an unrecoverable and unavailable individual mitigating strategy associated with the remote operation of safety relief valves (SRV) with reactor pressure vessel (RPV) injection for approximately two and half months while the portable gas generator was unavailable. PSEG's corrective actions include repairing the B.5.b portable gas generator and returning it to an available, standby condition as well as performing a validation of all B.5.b equipment and associated mitigating strategies.

The inspectors determined the performance deficiency was more than minor because it was associated with the equipment performance 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 (i.e. core damage). The inspectors determined that this finding was of very low safety significance using NRC IMC 0609, Appendix L, "B.5.b Significance Determination Process," Table 2 - Significance Characterization, dated December 24, 2009, as specified for 10 CFR 50.54(hh) findings by IMC 0609, Attachment 4, "Initial Characterization of Findings," dated June 19, 2012, because the finding affected the Mitigating Systems cornerstone while the plant was at power and resulted in an unrecoverable unavailability of an individual mitigating strategy. Specifically, because the B.5.b portable gas generator was not functional for approximately 2.5 months with no compensatory actions in place, the RemoteOperation of SRVs with RPV Injection mitigation strategy per Hope Creek procedure HC.OP-AM.TSC-0024, Revision 8, was determined to be unrecoverable and unavailable during this time. The inspectors noted that the reactor core isolation cooling (RCIC) system remained functional during this time period and as such the finding did not represent an unrecoverable unavailability of multiple mitigating strategies such that injection to RPV could not have occurred. The inspectors determined that the contributing cause that provided the most insight into the performance deficiency was associated with the cross-cutting aspect of Problem Identification and Resolution, Evaluation, because PSEG failed to thoroughly evaluate equipment deficiencies related to the B.5.b portable gas generator to ensure that the resolutions addressed causes and extent of conditions commensurate with the B.5.b equipment's safety significance.

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

Significance:  Mar 31, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Use Approved Method of Post-Scram Reactor Pressure Control

A self-revealing Green NCV of TS 6.8.1, "Procedures and Programs," was identified for PSEG's failure to use procedures during scram recovery on December 5, 2013. Specifically, PSEG failed to use an approved method of post-scram reactor pressure control, causing the main turbine bypass valves (BPVs) to cycle rapidly resulting in a reactor pressure transient, reactor water level transient, and reactor protection system (RPS) actuation. PSEG entered this issue into their CAP under notification (NOTF) 20632369 and chartered a quick human performance investigation. As part of PSEG's corrective actions, the operators involved in the event were removed from shift and retrained, and each shift manager (SM) reviewed post-scram reactor pressure control methods with their crew and received training on this event, decision making, and procedural adherence.

The inspectors determined that the performance deficiency was more than minor because it is associated with the human 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 (i.e., core damage). Specifically, PSEG's failure to implement procedures resulted in an unplanned reactor pressure transient, reactor water level transient, and ultimately resulted in RPS actuation and a trip signal to standby safety injection systems during scram recovery. Using IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the finding was determined to be of very low safety significance (Green) because it was not a deficiency affecting the design or qualification of a mitigating structure, system or component; it did not represent a loss of system or function; it 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-significant in accordance with the PSEG's maintenance rule program. This finding was determined to have a cross-cutting aspect in Human Performance, Consistent Process, because PSEG failed to ensure that individuals use a consistent, systematic approach to make decisions and incorporate risk insights as appropriate. Specifically, operators did not use a systematic approach when making the decision to lower reactor pressure using the digital electro-hydraulic control (DEHC) system cooldown controller on December 5, 2013.

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

Barrier Integrity

Significance:  Jun 30, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Evaluation of a Main Control Room Chiller Design Change

The inspectors reviewed a Green self-revealing NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for PSEG's failure to effectively implement the design change process. Specifically, PSEG's design change package (DCP) 4EC-3662 failed to reclassify the purchase classification (PC) of the main control room (MCR) chiller pressure control valve (PCV) positioner from non-safety related (PC4) to safety related (PC1). Because of the incorrectly assigned PC, PSEG did not track the shelf life of replacement positioner diaphragms, which led to the failure of the 'A' MCR positioner on December 20, 2013. PSEG's corrective actions included replacement of the failed positioner and changing the purchase classification for the chiller PCV positioners to safety-related (PC1). Since the implementation of DCP 4EC-3662, the DCP procedures have been enhanced to ensure the completion of a purchase class evaluation of procured materials that are implemented in the design change process.

The inspectors determined that the performance deficiency was more than minor because it is associated with the design control attribute of the Barrier Integrity cornerstone, and adversely affected the cornerstone objective of

maintaining the radiological barrier functionality of the control room. In accordance with Exhibit 3 of NRC IMC 0609, Appendix A, "The Significance Determination Process (SDP) 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 represents a degradation of only the radiological barrier function provided for the control room. The inspectors determined that there was no cross-cutting aspect associated with this finding because the cause of the performance deficiency occurred more than three years ago, and was not representative of present plant performance.

Inspection Report# : [2014003](#) (*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 [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

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