

Hope Creek 1

1Q/2010 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2009

Identified By: Self-Revealing

Item Type: FIN Finding

AUTOMATIC REACTOR SCRAM DUE TO LEAK ON SCRAM AIR HEADER

A finding was self-revealed because PSEG discovered an air leak at a soldered joint on the scram air header in September 2008, but did not enter the degraded condition in the corrective action program. As a result, PSEG did not evaluate the leak or take corrective actions prior to the joint separating, causing an automatic reactor scram. Following the event, PSEG repaired the affected joint, performed an extent-of-condition inspection of the corresponding joints on all other hydraulic control units, and placed this issue in the corrective action program.

This issue was more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions. Specifically, by not identifying the air leak in the corrective action program, PSEG did not evaluate the degraded condition and its impact on the reliability of the scram air header. The inspectors determined that the finding was of very low safety significance (Green) based on a Phase I analysis. The finding increased the likelihood of a reactor scram, but did not contribute to the likelihood that mitigating equipment would not be available. The finding had a cross-cutting aspect in the area of problem identification and resolution because the station did not identify the scram air header leak completely, accurately, and in a timely manner commensurate with its safety significance. (P.1(a))

Inspection Report# : [2009003](#) (*pdf*)

Mitigating Systems

Significance:  Mar 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Control Room Chiller Trip

A self-revealing NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," was identified because the B control room chiller tripped when it was started on November 18, 2009. This reduced the cooling capability of the control area chilled water system. The inspectors determined that the cause of the trip was that PSEG did not identify and correct a condition adverse to quality associated with a safety-related breaker for the B control room chiller. Specifically, PSEG did not identify a loose wiring connection on the breaker during preventive maintenance inspections following refurbishment by a vendor. PSEG's corrective actions included repair of the affected breaker, inspections of other breakers, and a revision to a preventive maintenance procedure.

The finding was more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone. The loose wiring connection affected the reliability and availability of the B control room chiller, which provides cooling for the main control room, emergency switchgear rooms, and the safety auxiliaries cooling system pump rooms. The inspectors performed a Phase I screening of the finding using IMC 0609, Attachment 0609.04, Table 4a, Mitigating Systems cornerstone. The inspectors determined the issue was of very low safety significance (Green) because the finding was not a design or qualification deficiency, did not result in an actual loss of safety function because the A chiller was available, and was not potentially risk significant for external events. The finding had a cross-cutting aspect in the area of human performance, because PSEG's breaker preventive

maintenance procedure was not complete, accurate, and up-to-date. Specifically, the procedure did not include steps to check for loose wiring connections on key components. (H.2(c)) (Section 1R12)

Inspection Report# : [2010002](#) (pdf)

Significance:  Mar 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

High Pressure Coolant Injection (HPCI) Booster Pump Outboard Bearing low Oil Level and Leak

The inspectors identified a NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," because PSEG failed to identify and correct a condition adverse to quality. Specifically, PSEG did not identify that the high pressure coolant injection (HPCI) booster pump outboard bearing housing oil level was below the minimum level mark, and the housing was actively leaking. Corrective actions performed by PSEG included restoring the proper oil level, repairing the leak, conducting training for equipment operators, and performing observations of equipment operator rounds.

The inspectors determined that not identifying a condition adverse to quality, the lowering oil level in the HPCI booster pump outboard bearing that could have prevented the HPCI system from performing its safety function, was a performance deficiency. The performance deficiency was more than minor because, if left uncorrected, the condition adverse to quality would lead to a more significant safety concern. The inspectors performed a Phase I screening of the finding using IMC 0609, Attachment 0609.04, Table 4a, Mitigating Systems cornerstone. The inspectors determined the issue was of very low safety significance (Green) because the finding was not a design or qualification deficiency, did not result in an actual loss of safety function, and was not potentially risk significant for external events. The finding had a cross-cutting aspect in the area of problem identification and resolution (PI&R), because PSEG did not identify the HPCI booster pump bearing low oil level condition and leak completely, accurately, and in a timely manner commensurate with its safety significance. (P.1(a)) (Section 1R15)

Inspection Report# : [2010002](#) (pdf)

Significance:  Oct 09, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

NON-CONSERVATIVE INPUT USED IN DESIGN CALCULATION FOR DC CONTROL VOLTAGE FOR 4KV SWITCHGEAR

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 properly verified that the safety-related 'B' 4 kV switchgear had adequate DC control voltage to operate under all design conditions. Specifically, PSEG did not use the maximum DC control current to the 'B' 4 kV switchgear to calculate the worst case voltage drop between the battery and the switchgear. PSEG relied on this calculation to verify the adequacy of their design and ensure the minimum voltage at the switchgear satisfied design requirements. In response, PSEG entered the issue into their corrective action program and performed a calculation to ensure that there was sufficient margin to assure operability of the 4kV switchgear.

The finding was more than minor because it 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 subsequently confirmed not to result in a loss of operability or functionality. This finding did not have a cross-cutting aspect because the issue was not considered to be indicative of current licensee performance.

Inspection Report# : [2009007](#) (pdf)

Significance:  Oct 09, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

EDG OVERHEAD CRANES NOT SEISMICALLY RESTRAINED

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 design control measures had not verified the adequacy of design with respect to ensuring adequate two-over-one seismic protection existed for the emergency diesel generators (EDG). Specifically, PSEG had not performed design reviews, calculations or testing to ensure the existing field crane configuration would not adversely impact the EDG function for a design basis safe shutdown earthquake (SSE) event. PSEG entered this issue into their corrective action program, performed Technical Evaluation (TE) 70102445-0050, Diesel Generator Underhung Crane Seismic II/I Evaluation, to calculate the seismic response of the diesel cranes and assess the as-found condition (e.g., crane seismic restraints not installed) and implemented appropriate compensatory measures.

The finding was more than minor because it 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 subsequently confirmed not to result in a loss of operability or functionality. This finding did not have a cross-cutting aspect because the issue was not considered to be indicative of current licensee performance.

Inspection Report# : [2009007](#) (pdf)

Significance:  Oct 09, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE DESIGN CONTROL FOR 4KV BUS DEGRADED VOLTAGE RELAY BASES

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 verified the adequacy of design with respect to establishing the bases for the degraded voltage relay (DVR) setpoint. Specifically, PSEG's calculation to verify the DVR setpoint utilized a non-conservative voltage input to analyze motor starting during accident load sequencing and assumed an inappropriate modeling technique for running motors that minimized the voltage dips during motor starting. Additionally, PSEG's analyses had not analyzed the capability of motor starting during steady state conditions following load sequencing. PSEG entered the issue into their corrective action program and prepared preliminary calculations to assess the cumulative effect of the non-conservative assumptions on the voltage available to motors starting during load sequencing. The calculations showed that although margins were substantially reduced, the motors would still be afforded their minimum required starting voltage.

The finding was more than minor because it 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 a loss of the electrical distribution system operability or functionality. This finding did not have a cross-cutting aspect because the issue was not considered to be indicative of current licensee performance.

Inspection Report# : [2009007](#) (pdf)

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE WORK INSTRUCTIONS FOR IMPAIRING THE FLOOD PROTECTION FUNCTION OF THE SAFETY AUXILIARY COOLING SYSTEM WATER-TIGHT DOOR

The inspectors identified a non-cited violation of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and

Drawings,” because safety auxiliary cooling system (SACS) water-tight door 4309A was blocked open without necessary compensatory measures, as a result of inadequate work instructions. Consequently, flood protection measures for the SACS system were degraded, which affected the capability of both SACS trains to perform their safety function during a flooding event. PSEG entered this issue into the corrective action program and promptly closed the water-tight door.

The issue was more than minor because it is associated with the external factors attribute of the Mitigating Systems cornerstone, and it affected the cornerstone objective of ensuring the capability and reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, not having the required flooding compensatory measures in place when the water-tight door 4309A was open affected the reliability and capability of the SACS system during a postulated internal flooding event. The inspectors used Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," to determine the significance of the finding. Based upon the finding not involving a loss of control or thermal margin, this finding does not require a quantitative assessment and screens as having very low safety significance (Green). This 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 PSEG personnel did not follow procedures. Specifically, PSEG did not adequately follow PSEG procedure CC-AA-201, "Plant Barrier Control Program," to impair the water-tight door. (H.4(b))

Inspection Report# : [2009003](#) (pdf)

Significance:  Jun 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

UNPLANNED HIGH PRESSURE COOLANT INJECTION UNAVAILABILITY DUE TO TROUBLESHOOTING

A self-revealing, non-cited violation of 10 CFR Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified because technicians did not have adequate work instructions for troubleshooting a high pressure coolant injection (HPCI) system instrumentation drawer. The instructions did not include appropriate steps to prevent or bypass a HPCI turbine trip signal, thereby leading to an unplanned period of unavailability of the HPCI system. PSEG's corrective actions included providing communications to all supervisors on adequate technical rigor when preparing for troubleshooting and revising a reference document used for the work instructions.

The issue was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems cornerstone, and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events. Specifically, the inadequate work instructions resulted in unplanned unavailability of the HPCI system. The finding was of very low safety significance (Green) based on a Phase 2 analysis. The finding had a cross-cutting aspect in the area of human performance because PSEG did not appropriately plan work activities by incorporating the need for compensatory actions. Specifically, PSEG's work instructions did not incorporate the need for compensatory actions to preclude a HPCI turbine trip. (H.3(a))

Inspection Report# : [2009003](#) (pdf)

Barrier Integrity

Significance:  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

TRAVERSING IN-CORE PROBE CONTAINMENT ISOLATION VALVES FOUND OPEN

The inspectors identified a non-cited violation of Technical Specification 3.6.3, "Primary Containment Isolation Valves," because PSEG did not properly secure the TIP system following a TIP system ST performed on May, 6, 2009; and the error was not identified until May 8, 2009. As a result between May 6 and 8, 2009, four TIP system containment isolation valves remained open without automatic closure capability for greater than the TS 3.6.3 allowed outage time (4 hours). In response to this discovery, operations promptly closed the valves to restore primary

containment in accordance with TS 3.6.3, "Primary Containment Isolation Valves." PSEG entered this issue into their corrective action program and corrective actions included conducting a thorough extent of condition review related to the proper use of independent verification related to containment isolation valves and reactor engineering procedures.

This finding was more than minor because it was associated with the human performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers provided protection against radionuclide releases caused by accidents or events. Specifically, station personnel did not ensure that containment isolation valves of the TIP system were restored to their normal shut position after completion of a routine surveillance, which would have prevented fulfillment of the safety function for primary containment. The inspectors performed a Phase I Significance Determination Process (SDP) using IMC 0609, Appendix H, "Containment Integrity SDP," and determined that the finding was of very low risk significance because it would not contribute significantly to large early release frequency (LERF) because the TIP tubing penetrations were small lines (< 2 inches in diameter). The finding had a cross-cutting aspect in the area of human performance because PSEG did not provide a complete, accurate, and up-to-date procedure for operating the TIP system. Specifically, the procedure, TIP System Operation, did not contain steps for independent verification of the TIP containment isolation valves, contrary to a PSEG configuration control procedure. (H.2(c))

Inspection Report# : [2009004](#) (*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 [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : May 26, 2010