Hope Creek 1
2Q/2008 Plant Inspection Findings

Initiating Events

Significance: G Dec 29, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
INADVERTENT LOSS OF REACTOR COOLANT SYSTEM INVENTORY DUE TO INADEQUATE TEST PROCEDURE
A self-revealing non-cited violation of Technical Specification 6.8.1, "Procedures and Programs," was identified when control room operators inadvertently drained water from the reactor pressure vessel (RPV) during safety relief valve solenoid testing. PSEG determined that the work order and procedure used for the test did not establish the plant conditions necessary to test ADS SRV logic without causing an inadvertent opening of an SRV. PSEG's corrective actions included changing the associated work order to contain specific instructions for the system alignments required prior to performing the test. Additionally, PSEG planned to enhance the surveillance procedure to include precautions and instructions to prevent inadvertent draining of the reactor vessel.

The finding was greater than minor because it was associated with the procedure quality attribute of the Initiating Events cornerstone and impacted 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, the inadequate procedure resulted in an unexpected loss of RPV water inventory of approximately 2100 gallons. Using IMC 0609 Appendix G for shutdown operations, the inspectors determined that the finding was of very low safety significance (Green). The finding had a cross-cutting aspect in the area of human performance, resources, because the controlling work order and surveillance test procedure were inadequate. Specifically, these documents did not establish appropriate plant conditions for testing a valve capable of rapidly draining RPV inventory. H.2(c)

Inspection Report# : 2007005 *(pdf)*

Significance: G Dec 29, 2007
Identified By: Self-Revealing
Item Type: FIN Finding
REACTOR WATER LEVEL TRANSIENT DUE TO DIGITAL FEEDWATER CONTROL SYSTEM TROUBLESHOOTING
A self-revealing finding was identified when PSEG did not provide adequate work instructions for complex troubleshooting activities associated with the digital feedwater control system (DFCS) that subsequently caused a reactor level transient during plant startup. PSEG's immediate corrective actions included restoring reactor water level and suspending troubleshooting activities. PSEG is conducting a root cause evaluation of the entire DFCS modification implementation activity to identify additional corrective actions for this and other problems encountered during testing.

The finding was determined to be greater 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 those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, inadequate troubleshooting instructions resulted in an unanticipated overfeeding condition requiring prompt operator action to prevent a high reactor water level trip of the feed pumps and a subsequent reactor scram. Using IMC 0609 Appendix A for power operations, the inspectors determined that the finding was of very low safety significance (Green). The finding had a cross-cutting aspect in the area of human performance, resources, because PSEG did not provide complete, accurate and up-to-date procedures and work packages. Specifically, PSEG did not develop adequate troubleshooting instructions in accordance with their troubleshooting procedure to limit plant impact. H.2(c)

Inspection Report# : 2007005 *(pdf)*

Significance: G Dec 29, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
INADVERTENT LOSS OF REACTOR COOLANT SYSTEM INVENTORY DUE TO LOSS OF CONFIGURATION CONTROL
A self-revealing non-cited violation of Technical Specification 6.8.1, “Procedures and Processes,” was identified when PSEG did not include special instructions in three related work clearance documents. As a result, PSEG inadvertently drained reactor vessel water inventory through reactor core isolation cooling (RCIC) steam line drains to the primary containment. PSEG's immediate corrective actions included stopping the leak by closing the RCIC steam line drains. PSEG entered this problem into their corrective action program.

The finding was greater than minor because it was associated with the configuration control attribute of the Initiating Events cornerstone and 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, the loss of configuration control resulted in the inadvertent draining of reactor vessel water inventory from the reactor pressure vessel. Using IMC 0609 Appendix G for shutdown operations, the inspectors determined the finding was of very low safety significance (Green). The finding had a cross-cutting aspect in the area of human performance, work practices, because workers did not adequately follow the safety tagging operations procedure in the development of a main steam line plug clearance. H.4(b)

Inspection Report# : 2007005 *(pdf)*

Significance: G Dec 29, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO PROMPTLY IDENTIFY AND CORRECT INTER GRANULAR STRESS CORROSION CRACKING IN DISSIMILAR METAL WELDS IN REACTOR VESSEL NOZZLE N2A
The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," because PSEG did not promptly identify and correct an 89% through wall circumferential flaw in a dissimilar metal weld in reactor recirculation system nozzle N2A. This nozzle is directly connected to the reactor vessel. PSEG entered this issue into their corrective action program.

This finding was greater than minor because it was associated with the equipment performance attribute of the Initiating Events cornerstone and affected the cornerstone’s objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using IMC 0609 Appendix A for power operations, the inspectors determined the finding to be of very low safety significance (Green). 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 actions to address safety issues in a timely manner commensurate with their safety significance. Specifically, PSEG did not implement corrective actions specified by its corrective action program and deferred recirculation nozzle inspections originally scheduled for April 2006 to October 2007 without adequate technical justification. P.1(d)

Inspection Report# : 2007005 *(pdf)*

Mitigating Systems

Significance: G Jun 30, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
INADEQUATE CORRECTIVE ACTIONS FOR TRAVELING WATER SCREEN SUPPORT STRUCTURE
The inspectors identified a non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, for inadequate corrective actions to address previously identified corrosion of service water traveling screen seismic class 1 support structures. The actions were insufficient to address the corrosion on the D traveling water screen support structure, such that a seismic support I-beam was determined to be inoperable in May 2008. PSEG’s corrective actions included replacing

corroded I-beams and inspecting other support structure components.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and it affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the corrective actions did not assure operability of a seismic support for the D service water traveling water screen. The inspectors determined that the finding was of very low safety significance (Green). This 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 in a timely manner commensurate with their safety significance and complexity (P.1.(d)). Specifically, PSEG did not take adequate corrective actions to ensure that the operability of the degraded D TWS structural support steel was maintained.

Inspection Report# : 2008003 *(pdf)*

Significance: G Mar 31, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
IMPROPER MANAGEMENT OF WORKING HOURS DURING REFUELING OUTAGE
The inspectors identified a non-cited violation of Technical Specification (TS) 6.2.2.d, “Unit Staff,” because four individuals worked beyond the TS limit of 72 hours in a 7-day period without proper authorization. Additionally, PSEG did not approve the work hour deviations of 20 individuals prior to them working the hours. PSEG entered this issue into their corrective action program in notification 20357323.

The finding was determined to be more than minor because, if left uncorrected, exceeding TS work hour limits would increase the likelihood of a fatigue-related human performance error during normal plant operations or plant events. The inspectors used Inspection Manual Chapter 0609 Appendix M, "Significance Determination Process Using Qualitative Criteria," because other significance determination process guidance was not suited to provide reasonable estimates of the significance of this inspection finding. With the assistance of Region 1 management and a Senior Risk Analyst, the inspectors determined that the finding was of very low safety significance (Green) because there were no human performance issues that were linked directly to worker fatigue. The finding had a cross-cutting aspect in the area of human performance because PSEG did not follow procedure LS-AA-119 to authorize deviations from working hour limits described in Technical Specification 6.2.2.d. H.4(b)

Inspection Report# : 2008002 *(pdf)*

Significance: G Dec 29, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
INADEQUATE RISK ASSESSMENT FOR MAINTENANCE ON A WATERTIGHT DOOR
The inspectors identified a non-cited violation of 10 CFR 50.65 (a)(4), “Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” when PSEG disassembled a water-tight door in the reactor building without assessing the resulting increase in risk to safety-related systems due to internal flooding. Following identification, PSEG assessed the condition and implemented compensatory measures to mitigate internal flooding risk. PSEG entered the problem into their corrective action program.

The finding was greater than minor because PSEG's risk assessment did not consider the uncompensated removal of plant internal flood barriers. Using IMC 0609 Appendix M, “SDP Process Using Qualitative Criteria,” the inspectors and a Region 1 Senior Risk Analyst determined the finding to be of very low safety significance (Green). The finding had a cross-cutting aspect in the area of human performance, work control, because PSEG did not plan work activities on door 4302 using risk insights associated with internal flooding and they did not identify the need for planned contingencies or compensatory actions. H.3(a)
Inspection Report# : 2007005 *(pdf)*

Significance: G Sep 28, 2007
Identified By: NRC
Item Type: NCV NonCited Violation

DEGRADED REACTOR CORE ISOLATION COOLING SYSTEM FLOW CONTROLLER AT THE REMOTE SHUTDOWN PANEL NOT CORRECTED
The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," because PSEG did not identify and correct a condition adverse to quality involving a degraded reactor core isolation cooling system (RCIC) flow controller at the remote shutdown panel (RSP). PSEG's corrective actions included replacing a defective circuit card and creating an administrative tool to periodically check and record the status of RSP controls and indications.

The finding was determined to be more than minor because it resulted in RCIC not able to perform its safety function from the RSP. This finding was determined to be of very low safety significance (Green). The finding had a cross-cutting aspect in the area of problem identification and resolution because PSEG did not identify the degraded RSP RCIC flow controller completely, accurately, and in a timely manner commensurate with its potential safety significance. P.1(a). Specifically, PSEG did not identify the leaking capacitors that caused the controller's setpoint to drift.
Inspection Report# : 2007004 *(pdf)*

Significance:  Sep 28, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
INADEQUATE OPERATING PROCEDURE FOR THE SERVICE WATER STRAINERS
The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, criterion V, "Instructions, Procedures, and Drawings," because PSEG did not have adequate procedures to operate the service water strainer baskets under conditions of high differential pressure. This resulted in PSEG not detecting severe damage to the D service water strainer basket on April 25, 2007, which caused the B1 and B2 safety auxiliaries cooling system (SACS) heat exchangers to become fouled with river grass. PSEG's immediate corrective actions included cleaning the SACS heat exchangers and replacing the D service water strainer basket. Other corrective actions include improving the strainer basket strength and evaluating other improvements to the service water system to minimize susceptibility to river grass.

The finding was determined to be more than minor because it resulted in degradation of the B1 and B2 SACS heat exchangers' capability due to macrofouling. The inspectors determined that the finding was of very low safety significance (Green). The finding had a cross-cutting aspect in the area of problem identification and resolution because PSEG did not evaluate problems such that the resolution addressed the causes. P.1(c). Specifically, PSEG's evaluations did not identify procedural weaknesses related to the operating limitations of the service water strainer baskets.
Inspection Report# : 2007004 *(pdf)*

Significance:  Sep 28, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
FOREIGN MATERIAL RESULTS IN UNAVAILABILITY OF D SERVICE WATER TRAIN
A self-revealing non-cited violation of Technical Specification 6.8.1 was identified when PSEG did not remove foreign material from the D service water bay following desilting activities that subsequently caused the D service water strainer to seize. The D service water train was unavailable for approximately 45 hours to implement repairs. PSEG's immediate corrective actions included removing foreign material from the D service water bay, repairing the D service water strainer, reviewing potential design improvements for the service water traveling screens, and enhancing the desilting procedures to verify that foreign material was removed from the bay prior to system restoration.

The finding was determined to be more than minor because it resulted in approximately 45 hours of unavailability for the D service water train. The inspectors determined that the finding was of very low safety significance (Green). The finding had a cross-cutting aspect in the area of human performance because workers did not follow procedures. H.4 (b). Specifically in accordance with PSEG procedure MA-AA-716-008, divers did not remove all foreign material that was identified in the D service water bay.

Inspection Report# : 2007004 *(pdf)*

Significance: G Sep 28, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
ABB 4kV HK CIRCUIT BREAKER FOR D VITAL BUS FAILED DUE TO HARDENED GREASE
A self revealing non-cited violation of 10 CFR 50, Appendix B, criterion XVI, 'Corrective Action', occurred when a safety-related 4160 volt breaker did not operate as expected on July 24, 2007, due to hardened grease in the breaker mechanism. This was the third similar breaker failure in which PSEG did not identify or correct deficiencies that led to this nonconforming condition. PSEG subsequently replaced the breaker with a fully refurbished spare breaker, tested the breaker successfully, and revised the preventive maintenance tasks to address this issue in other similar breakers.

This issue was greater than minor because it affected 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). Specifically, not identifying and correcting this condition adverse to quality resulted in unplanned unavailability of various safety related equipment such as support equipment for the D emergency diesel generator, the B control room emergency filtration supply fan, and the D filtration, recirculation, and ventilation system recirculation fan. The finding was determined to be of very low safety significance (Green) based on a Phase 1 screening evaluation. The finding has a cross-cutting aspect in the area of operating experience review because PSEG did not take appropriate corrective action to address the breaker grease hardening condition in a timely manner.
P.2(b).

Inspection Report# : 2007006 *(pdf)*

Significance: G Sep 28, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
B CONTROL ROOM EMERGENCY FILTRATION FAILURE DUE TO DAMPER CONTROLLER POWER SUPPLY FAILURE
The inspectors identified, non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," occurred when on June 11, 2006, the "B" Control Room Emergency Filtration (CREF) damper flow controller did not meet its Technical Specification 3.7.2 required flow rate due to failure to implement corrective actions identified on October 1, 2004. The CREF failure resulted in high flow rate to the CREF Charcoal Filters and inoperability of the "B" CREF System. At the time of the event, PSEG repaired the affected power supply. During this inspection, replacement of 34 Westinghouse Model 75IC controller power supplies was incorporated into the Preventive Maintenance (PM) program.

The finding was greater than minor because it affected the barrier performance attribute of the Barrier Integrity cornerstone and adversely affected the objective to maintain the radiological barrier functionality of the control room. Specifically, the failure to implement corrective actions and correct a condition adverse to quality resulted in reduced effectiveness of the CREF Charcoal Filters to limit control room dose and over 19 hours unplanned unavailability of the "B" CREF System. The inspectors determined that 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 because the licensee did not take appropriate corrective actions to address safety issues in a timely manner. P.1(d).

Inspection Report# : 2007006 *(pdf)*

Barrier Integrity

Significance: G Dec 29, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
INADEQUATE DESIGN CONTROL OF SAFETY RELIEF VALVE DISCHARGE PIPING
The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," when a

pipe support was found disconnected from safety relief valve (SRV) piping during a drywell inspection. PSEG determined that the pipe support was likely disassembled during a previous refueling outage but not reassembled following the deferral of the remaining work to the next refueling outage. PSEG restored the pipe support to its proper configuration. PSEG entered this problem into their corrective action program.

The finding was more than minor because it was associated with the design control attribute of the barrier integrity cornerstone and affected the cornerstone's objective to provide reasonable assurance that physical design barriers protect the public from radio-nuclide releases caused by accidents or events. Specifically, the missing pipe support resulted in the pipe not meeting design basis stress requirements under some transient conditions. Using IMC 0609 Appendix A for at power operations, the inspectors determined the finding to be of very low safety significance (Green). The finding had a cross-cutting aspect in the area of human performance, work control, because PSEG inadequately managed the impact of changes to work scope on the plant. Specifically, PSEG did not ensure that maintenance was completed properly on SRV piping and,
as a result, did not maintain adequate configuration control of the piping supports. H.3(b)

Inspection Report# : 2007005 *(pdf)*

Emergency Preparedness

Significance: G Dec 29, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
TECHNICAL SUPPORT CENTER LOSS OF POWER WITHOUT COMPENSATORY ACTION
A self-revealing non-cited violation of 10 CFR 50.47(b)(8), “Emergency Plans,” was identified when power for the Hope Creek Technical Support Center (TSC) was inadvertently removed without compensatory actions for approximately three days. PSEG’s corrective actions included designating use of the Salem TSC as an alternate facility and plans to revise the applicable electrical bus outage procedure to include information about the impact to the Hope Creek TSC.

This finding was greater than minor because it was associated with the facilities and equipment attribute of the Emergency Preparedness cornerstone and adversely affected the cornerstone objective to ensure the capability to implement adequate measures to protect public health and safety in the event of a radiological emergency. Using IMC 0609 Appendix B, “Emergency Preparedness SDP,” the inspectors determined the finding was of very low safety significance (Green). The finding had a cross-cutting aspect in the area of human performance, resources, because PSEG did not ensure that emergency facilities were available and adequate to assure nuclear safety. Specifically, the inadequate impact review of a temporary modification and associated procedure for conducting an electrical bus outage resulted in the loss of power to, and inoperability of, the Hope Creek TSC. H.2(d)

Inspection Report# : 2007005 *(pdf)*

Occupational Radiation Safety

Significance: G Dec 29, 2007
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
INADEQUATE RADIOLOGICAL SURVEY OF A HIGH RADIATION AREA
A self-revealing non-cited violation of 10 CFR 20.1501, “Surveys and Monitoring – General,” was identified when PSEG did not adequately perform required radiological surveys in a High Radiation Area (HRA) prior to down-posting to a Radiation Area. Three workers' electronic dosimeters unexpectedly alarmed while in the main steam pipe chase while a reactor shutdown was in progress. PSEG's investigation determined that dose rates in excess of 100 millirem per hour were present at the work location and the room should not have been down-posted from a HRA. PSEG's corrective actions included procedure revisions to provide more specific instruction for de-posting HRA's,

improvement of radiological survey completion tracking mechanisms, and requirement for shift radiation protection supervisor to contact Operations for shutdown status prior to de-posting HRA's that are affected by steam.

The finding was greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute of exposure control and adversely affected the cornerstone objective to provide adequate protection for workers from exposure to radiation. Specifically, because PSEG did not perform adequate radiological surveys, three workers received unplanned and unintended dose. Using IMC 0609 Appendix C, “Occupational Radiation Safety SDP,” the finding was determined to be of very low safety significance. This finding had a cross-cutting aspect in the area of human performance, work control, because PSEG did not coordinate work activities with respect to job site conditions that affected radiological safety. H.3(a)

Inspection Report# : 2007005 *(pdf)*

Significance: G Dec 29, 2007
Identified By: Self-Revealing
Item Type: FIN Finding
OCCUPATIONAL RADIATION EXPOSURE NOT AS LOW AS REASONABLY ACHIEVABLE DURING REFUELING OUTAGE
A self-revealing finding was identified when PSEG did not maintain occupational radiation exposures as-low-as-reasonably-achievable (ALARA) for three different work activities during a refueling outage. Specifically, each job’s total dose accumulated was greater than 150% of the originally planned dose. PSEG entered this problem into their corrective action program.

The finding was greater than minor because it was associated with the plant facilities, programs and processes, and human performance attributes of the Occupational Radiation Safety cornerstone and adversely affected the cornerstone 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. Furthermore, each issue was comparable to the greater than minor ALARA example (6.a) described in MC 0612, Appendix E. The inspectors determined the finding to be of very low safety significance (Green). The finding had a cross-cutting aspect in the area of human performance, resources, because PSEG did not provide adequate resources in the form of plant equipment. Specifically, time delays caused by inadequate equipment provided to workers were the most significant contributors to the increased radiation dose received by plant workers. H.2(d)

Inspection Report# : 2007005 *(pdf)*

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 Sep 28, 2007
Identified By: NRC
Item Type: FIN Finding
HOPE CREEK BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION
The inspectors concluded that the implementation of the corrective action program (CAP) at Hope Creek was

effective. Hope Creek 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. In general, corrective actions were implemented in an effective manner. PSEG's audits and assessments were generally thorough and probing. The inspectors concluded that PSEG adequately identified, reviewed, and applied relevant industry operating experience. Based on interviews conducted during the inspection, workers at the site were willing to enter safety concerns into the CAP.
Inspection Report# : 2007006 *(pdf)*

Last modified : August 29, 2008