



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

August 3, 2010

Mr. Thomas P. Joyce
President and Chief Nuclear Officer
PSEG Nuclear LLC - N09
P.O. Box 236
Hancocks Bridge, NJ 08038

SUBJECT: HOPE CREEK GENERATING STATION - NRC INTEGRATED INSPECTION
REPORT 05000354/2010003

Dear Mr. Joyce:

On June 30, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Hope Creek Generating Station. The enclosed inspection report documents the inspection results discussed on July 13, 2010, with Mr. Perry and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The report documents one self-revealing finding of very low safety significance (Green). This finding was not a violation of NRC requirements. Additionally, a licensee-identified violation that was determined to be of very low safety significance is listed in this report. Because of the very low safety significance and because it was entered into your corrective action program (CAP), the NRC is treating this violation as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest the NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Hope Creek Generating Station. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at the Hope Creek Generating Station.

In accordance with Title 10 of the Code of Federal Regulations (CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

A handwritten signature in black ink, appearing to read 'Arthur L. Burritt', with a long horizontal flourish extending to the right.

Arthur L. Burritt, Chief
Projects Branch 3
Division of Reactor Projects

Docket No: 50-354
License No: NPF-57

Enclosure: Inspection Report 05000354/2010003
w/Attachment: Supplemental Information

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Sincerely,
/RA/
Arthur L. Burritt, Chief
Projects Branch 3
Division of Reactor Projects

Docket No: 50-354
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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-354

License No: NPF-57

Report No: 05000354/2010003

Licensee: PSEG Nuclear LLC (PSEG)

Facility: Hope Creek Generating Station

Location: P.O. Box 236
Hancocks Bridge, NJ 08038

Dates: April 1, 2010 through June 30, 2010

Inspectors: B. Welling, Senior Resident Inspector
A. Patel, Resident Inspector
M. Patel, Reactor Inspector

Approved By: Arthur L. Burritt, Chief
Projects Branch 3
Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000354/2010003; 04/01/2010 - 06/30/2010; Hope Creek Generating Station; Post-Maintenance Testing.

This report covers a three-month period of inspection by resident inspectors and an announced inspection by a regional specialist inspector. One Green finding was identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The cross-cutting aspect of a finding is determined using the guidance in IMC 0310, "Components Within The Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

Cornerstone: Initiating Events

- Green. A self-revealing finding of very low safety significance was identified on February 26, 2010, because the A reactor recirculation pump (RRP) tripped. The pump trip caused a reactor coolant system transient and a decrease in reactor power. The RRP tripped due to low motor generator (MG) set lube oil pressure that occurred because PSEG had not refilled a MG set lube oil pump prior to RRP restoration after oil was drained to support lube oil pump maintenance.

The performance deficiency 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 those events that impact plant stability and challenge critical safety functions. Specifically, the failure to refill the lube oil pump with oil caused the A RRP to trip, which is defined as a transient in Hope Creek UFSAR, 15.3.1.1.2.1. As stated in the IMC 0612, Appendix E, more than minor example 4.b, a performance deficiency is, "not minor if: The error caused a reactor trip or other transient." The inspectors performed a Phase I screening of the finding in accordance with IMC 0609.04, "Phase I - Initial Screening and Characterizing of Findings." The finding screened as Green (very low safety significance) because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding had a cross-cutting aspect in the area of human performance, because PSEG did not appropriately coordinate work activities (H.3(b)). Specifically, PSEG maintenance did not coordinate the change to the work plan with PSEG operations. (Section 1R19)

Other Findings

- One violation of very low safety significance was identified by PSEG and has been reviewed by the inspectors. Corrective actions taken or planned by PSEG have been entered into PSEG's CAP. This violation and its corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

The Hope Creek Generating Station operated at or near full power for the duration of the inspection period with the following exceptions. On June 4, operators reduced load and took one RRP out of service for planned maintenance on a recirculation pump motor generator set. The minimum power level was approximately 32 percent. The unit was restored to full power on June 5. Additionally, operators made minor power reductions for planned testing, rod pattern adjustments, and during periods of hot weather because of condenser backpressure limitations.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R01 Adverse Weather Protection (71111.01 - 2 samples)

.1 Evaluate Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors completed one seasonal weather preparation sample for the onset of hot summer weather. The inspectors performed a review of PSEG's seasonal readiness procedures and reviews associated with hot weather conditions. System health reports were reviewed, and systems that could be subject to increased heat conditions were walked down to assess reliability and availability during periods of extreme heat. The inspectors focused on the readiness of the station service water system (SSWS), emergency diesel generators (EDG), and safety auxiliary cooling system (SACS). This inspection sample satisfied the inspection requirement to review two to four risk-significant systems prior to the onset of hot weather. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Evaluate Summer Readiness of Offsite and Alternate AC Power System

a. Inspection Scope

The inspectors completed one inspection sample to evaluate the readiness of PSEG's offsite and alternate AC power systems for adverse weather. Inspectors verified that plant features and procedures for operation and continued availability of offsite and alternate AC power systems during adverse weather were appropriate. The inspectors reviewed station procedures affecting these areas and communications protocols with the transmission system operator to verify that the appropriate information could be exchanged when issues arose that could impact the offsite power system. The inspectors also reviewed the material condition of offsite AC power systems and onsite

alternate AC power systems and performed a walkdown of the switchyard. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04 - 4 samples)

.1 Partial Walkdown

a. Inspection Scope

The inspectors completed four partial walkdown inspection samples. The inspectors performed partial system walkdowns for the four systems listed below to verify the operability of redundant or diverse trains and components when safety equipment was unavailable. The inspectors completed walkdowns to determine whether there were discrepancies in the system's alignment that could impact the function of the system, and therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, walked down system components, and verified that selected breakers, valves, and support equipment were in the correct position to support system operation. The inspectors also verified that PSEG had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP. The documents reviewed are listed in the Attachment.

- Reactor core isolation cooling (RCIC) system while the high pressure coolant injection (HPCI) system was out-of-service for planned maintenance on April 7
- A, B, C EDG while D EDG was out-of-service for corrective maintenance on April 19
- B and D core spray (CS) system while A and C CS system was out-of-service for planned maintenance on May 4
- B standby liquid control (SLC) system while A SLC system was out-of-service for planned maintenance on May 26 and May 27

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 5 samples)

.1 Fire Protection - Tours

a. Inspection Scope

The inspectors completed five quarterly fire protection inspection samples. The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that combustibles and ignition sources were controlled in accordance with PSEG's administrative procedures; fire detection and suppression equipment was available for use; that passive fire barriers were maintained in good material condition; and that compensatory

measures for out of service, degraded, or inoperable fire protection equipment were implemented in accordance with PSEG's fire plan. The areas toured are listed below with their associated pre-fire plan designator. The documents reviewed are listed in the Attachment.

- FRH-II-522, lower cable spreading room
- FRH-II-713, service water intake structure
- FRH-II-551, auxiliary building battery rooms and cable chases
- FRH-II-563, control area HVAC equipment rooms
- FRH-II-552, control room and control console pit

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 - 1 sample)

.1 Underground Bunkers/Manholes Subject to Flooding

a. Inspection Scope

The inspectors completed one underground cable inspection sample. The inspectors evaluated the condition of non safety-related cables located in underground manholes in the switchyard. Specifically, the inspectors examined photographic evidence of conditions of the station service transformer power cables in manhole vault AX501, AX502, BX501, and BX502. The inspectors observed the non safety-related cables submerged in water and verified that PSEG conducted an operability evaluation associated with the cables and identified appropriate corrective actions. The inspectors also verified the integrity of cables and splices and the condition of cable support structures. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07A - 1 sample)

a. Inspection Scope

The inspectors completed one heat sink performance annual inspection sample. The inspectors selected the B residual heat removal (RHR) heat exchanger (HX) for review. The inspectors observed that PSEG had identified a degraded condition involving a leak at the bottom flange of the HX. The inspectors verified that the leak was not pressure boundary leakage and that HX performance data demonstrated satisfactory performance. The inspectors walked down the B RHR HX to assess the leak. The inspectors also reviewed notifications in the CAP to verify that PSEG was identifying B RHR HX problems at the appropriate threshold and that corrective actions addressed the identified problem and were effective. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program (71111.11Q - 1 sample)

Regualification Activities Review by Resident Staff

a. Inspection Scope

The inspectors completed one quarterly licensed operator regualification program inspection sample. The inspectors observed a licensed operator annual regualification simulator scenario (SG-669) on June 15, 2010, to assess operator performance and training effectiveness. The scenario involved a loss of a 480V class 1E bus followed by a steam leak in the HPCI room. These events were followed by a loss of coolant accident. The inspectors assessed simulator fidelity and observed the simulator instructors' critique of operator performance. The inspectors also observed control room activities with emphasis on simulator identified areas for improvement. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q - 3 samples)

a. Inspection Scope

The inspectors completed three maintenance effectiveness inspection samples. For the three performance issues listed below, the inspectors evaluated items such as: appropriate work practices; identifying and addressing common cause failures; scoping in accordance with 10 CFR 50.65(b) of the Maintenance Rule; characterizing reliability issues for performance; trending key parameters for condition monitoring; charging unavailability for performance; classification and reclassification in accordance with 10 CFR 50.65(a)(1) or (a)(2); and appropriateness of performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified as (a)(1). The documents reviewed are listed in the Attachment.

- Class 1E inverter failures
- SACS to EDG HX relief valves
- EDG jacket water pump seal failures

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 6 samples)

a. Inspection Scope

The inspectors completed six maintenance risk assessment and emergent work control inspection samples. The inspectors reviewed on-line risk management evaluations through direct observation and document reviews for the following plant configurations.

- HPCI system out-of-service for planned maintenance on April 7 and 8
- D EDG out-of-service for emergent maintenance and 5015 offsite power line out-of-service for planned maintenance on April 19 through 20
- A RHR system out-of-service for planned maintenance with B RHR HX degraded on April 26
- A CS and C CS systems out-of-service for planned maintenance on May 4 and 5
- B station service water (SSW) and A SLC out-of-service for planned maintenance on May 25 and May 26
- RCIC system planned maintenance and B EDG out-of-service for emergent maintenance on June 9

The inspectors reviewed the applicable risk evaluations, work schedules, and control room logs for these configurations to verify that concurrent planned and emergent maintenance and test activities did not adversely affect the plant risk already incurred with these configurations. PSEG's risk management actions were reviewed during shift turnover meetings, control room tours, and plant walkdowns. The inspectors also used PSEG's on-line risk monitor (Equipment Out of Service workstation) to gain insights into the risk associated with these plant configurations. Finally, the inspectors reviewed notifications documenting problems associated with risk assessments and emergent work evaluations. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 5 samples)

a. Inspection Scope

The inspectors completed five operability evaluation inspection samples. The inspectors reviewed the operability determinations for the following degraded or non-conforming conditions:

- HPCI high lube oil particulates
- A EDG HX SACS relief (EGPSV-2409A) valve leakage
- D 4KV switchgear degraded room cooler
- DD481 inverter operability after fuse replacement
- RCIC operability after minimum flow valve failed to open

The inspectors reviewed the technical adequacy of the operability determinations to ensure the conclusions were justified. The inspectors also walked down accessible equipment to corroborate the adequacy of PSEG's operability determinations. Additionally, the inspectors reviewed other PSEG identified safety-related equipment deficiencies during this report period and assessed the adequacy of their operability screenings. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18 - 2 samples).1 Temporary Modificationsa. Inspection Scope

The inspectors completed two plant modification inspection samples by reviewing the key characteristics associated with the two temporary plant modifications described below. The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the temporary modifications. The inspectors also reviewed the 10 CFR 50.59 screen for each modification and verified that post-modification testing was adequate to ensure the affected SSCs would function properly. Documents reviewed for this inspection are listed in the Attachment.

- Temporary modification 10-017, Alternate cooling to the D EDG switchgear rooms. The modification provided temporary air conditioning units to cool the EDG switchgear room because the normal cooling coils were found to have degraded seismic supports.
- Temporary modification 10-018, Alternate seismic supports for the D-VH401 ventilation cooling coils. The modification provided eight lateral seismic shear connections to temporarily replace degraded seismic supports.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - 7 samples)a. Inspection Scope

The inspectors completed seven post-maintenance testing inspection samples. The inspectors reviewed the post-maintenance tests for the maintenance items listed below to verify that procedures and test activities ensured system operability and functional capability following completion of maintenance. The inspectors reviewed applicable test procedures to verify that they tested all safety functions potentially affected by the associated maintenance activities. The inspectors verified that for each potentially affected safety function the acceptance criteria stated in the procedure was consistent with the UFSAR and other design documentation. The inspectors also witnessed completion of the testing or reviewed the completed test results to verify satisfactory restoration of all safety functions affected by the maintenance activities. The documents reviewed are listed in the Attachment.

- HPCI system planned maintenance on May 5
- DD481 inverter blown fuse on April 16
- D EDG jacket water pump seal leakage on April 19
- A & C CS system planned maintenance on May 5
- A SLC system planned maintenance on May 27

- B SW system traveling water screen replacement on May 30
- A RRP lube oil pump seal replacement on February 26

b. Findings

Introduction: A self-revealing finding of very low safety significance was identified on February 26, 2010, because the A RRP tripped. The pump trip caused a reactor coolant system transient and a decrease in reactor power. The RRP tripped due to low motor generator (MG) set lube oil pressure that occurred because PSEG had not refilled a MG set lube oil pump prior to RRP restoration after oil was drained to support lube oil pump maintenance.

Description: At Hope Creek there are two non-safety related variable speed RRP's. The pumps recirculate water through the reactor vessel to ensure that sufficient cooling water is provided to the reactor core during high power operation. To support variable speed operation of these pumps they are each supplied power by a separate MG set. Each MG set has its own oil system supplied by two AC powered pumps. A loss of lubricating oil pressure for the MG set will result in a trip of the MG set and RRP.

On February 25, 2010, PSEG tagged the MG lube oil pump for a planned replacement of the pump seal, in accordance with procedure HC.MD-GP.ZZ-0004, General Instructions for Pump Disassembly Inspection and Reassembly. The maintenance work order specified the use of the pump disassembly procedure but did not specify the draining of oil to facilitate seal removal, which was necessary in order to replace the pump seal. Also, maintenance personnel drained the oil without communicating and receiving prior approval of the operations department as required by site administrative procedures. As a result, operations personnel were unaware that the pump was without oil after maintenance completed the seal replacement on February 26, 2010. When PSEG operations placed the pump in service, a low oil pressure trip relay actuated causing protective circuit to actuate, tripping the A RRP. The trip of one RRP is a transient event analyzed as part of the design of the plant and described in Hope Creek UFSAR, 15.3.1.1.2.1. The RRP trip caused a 30% reduction in power to about 70 percent, and operators manually inserted control rods to maintain stable plant operations.

PSEG performed a root cause evaluation for the event. PSEG identified two root causes: First, maintenance planning did not specify in the work order the draining of the pump to facilitate seal replacement. Secondly, maintenance personnel changed the configuration of the system by draining the oil without communicating or coordinating the change with operations personnel. For extent of condition related to work order adequacy, PSEG reviewed approximately 60 similar work orders and identified approximately 40 that did not include the detail required to complete the full scope of work. PSEG revised these work orders to add the required details." PSEG also conducted training with maintenance personnel to reinforce the administrative procedure requirements for communicating with and getting approval from the operations department when changes to the original work scope are necessary.

Analysis: On February 26, 2010, PSEG restored the A RRP to service without ensuring the MG set lube oil system was fully refilled in accordance with the procedures specified by the work plan for the lube oil pump seal replacement. This caused the A RRP to trip and resulted in a reactor coolant system transient and decrease in reactor power. The inspectors determined that this was a performance deficiency. The performance

deficiency 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 those events that impact plant stability and challenge critical safety functions. Specifically, the failure to refill the lube oil pump with oil caused the A RRP to trip, a transient defined in Hope Creek UFSAR, 15.3.1.1.2.1, and operators manually inserted control rods to maintain stable plant operations. As stated in the IMC 0612, Appendix E, more than minor example 4.b, a performance deficiency is, "not minor if: The error caused a reactor trip or other transient." The inspectors performed a Phase I screening of the finding in accordance with IMC 0609.04, "Phase I - Initial Screening and Characterizing of Findings." The finding screened as Green (very low safety significance) because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available.

The finding had a cross-cutting aspect in the area of human performance, because PSEG did not appropriately coordinate work activities (H.3(b)). Specifically, PSEG maintenance did not coordinate the change to the work plan with PSEG operations.

Enforcement: This finding does not involve enforcement action because no regulatory requirement violation was identified. Because this finding does not involve a violation and has very low safety significance, it is identified as a finding (**FIN 05000354/2010003-01, Reactor Recirculation Pump Trip**).

1R22 Surveillance Testing (71111.22 - 7 samples)

a. Inspection Scope

The inspectors completed seven surveillance testing (ST) inspection samples. The inspectors witnessed performance of and/or reviewed test data for the risk-significant STs listed below to assess whether the SSCs tested satisfied technical specifications, UFSAR, and procedure requirements. The inspectors verified that test acceptance criteria were clear, demonstrated operational readiness and were consistent with design documentation; that test instrumentation had current calibrations and the range and accuracy for the application; and that tests were performed, as written, with applicable prerequisites satisfied. Upon ST completion, the inspectors verified that equipment was returned to the status specified to perform its safety function. The documents reviewed are listed in the Attachment.

- B EDG 24-hour test run on April 14
- B primary containment instrument gas containment isolation valves stroke timing on May 14
- HPCI 2 yr comprehensive in-service test on May 27
- RCIC quarterly test on June 8
- HPCI F-001 valve stroke time test on June 8
- B SLC in-service test on June 10
- B RHR quarterly test on June 22

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06 - 1 sample)

a. Inspection Scope

The inspectors completed one drill evaluation inspection sample. The inspectors observed a licensed operator annual requalification simulator scenario (SG-669) on June 15, 2010. The inspectors verified that emergency classification declarations and notifications were completed in accordance with 10 CFR 50.72, 10 CFR 50, Appendix E, and the Hope Creek Emergency Plan Implementing Procedures.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification (71151 - 2 samples)

a. Inspection Scope

The inspectors reviewed PSEG's program for gathering, evaluating and reporting information for the PIs listed below. The inspectors used the definitions and guidance contained in Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, to assess the accuracy of PSEG's collection and reporting of PI data. The documents reviewed are listed in the Attachment.

Cornerstone: Barrier Integrity

- Reactor Coolant System Leakage
- Reactor Coolant System Activity

The inspectors reviewed the data reported for these PIs for the period April 1, 2009, through March 31, 2010. The records reviewed included PI data summary reports, licensee event reports, surveillance testing data, chemistry data, and operator narrative logs. The inspectors verified the accuracy of the PIs and discussed the results with the personnel responsible for data collection and evaluation.

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution (71152 - 1 annual sample; 1 semi-annual trend sample)

.1 Routine Review of Items Entered into the CAP

a. Inspection Scope

As required by IP 71152, "Problem Identification and Resolution," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of all items entered into PSEG's CAP. This was accomplished by reviewing the description of each new notification and attending management review committee meetings.

b. Findings

No findings of significance were identified.

.2 Annual Sample: Submerged Medium Voltage Underground Cable for SSWS

a. Inspection Scope

The inspectors reviewed PSEG's actions to investigate and correct a nonconforming condition related to the submerged condition of the medium voltage cables for the SSW pumps discovered during a cable vaults inspection on June 7, 2009. The inspectors reviewed PSEG's identification and completion of the corrective actions for the degraded or nonconforming condition. The inspectors reviewed PSEG procedures, vendor documents, notifications, orders, corrective actions, and operability evaluations to understand the equipment functions and operational history, as well as the identification, evaluation and corrective actions associated with the submerged cables of the SSWS. System engineers and other PSEG staff were interviewed to gain additional insights on the medium voltage cable testing and monitoring program. Documents reviewed are listed in the Attachment.

b. Findings and Observations

No findings of significance were identified.

The inspectors found that PSEG implemented a cable management program for the medium voltage SSW cables. Also, PSEG established a cable monitoring program to de-water the manholes to maintain the design requirements of the medium voltage SSW pump motor cables. PSEG established a weekly preventive maintenance program to monitor and pump down the affected cable vaults. Corrective actions included developing a more effective de-watering system for the vaults to ensure that the design requirements for the medium voltage cables are maintained. The inspectors observed the weekly preventive maintenance, reviewed the photographic evidence of submerged cables, and verified that PSEG conducted an operability evaluation. The inspectors determined that PSEG had made sufficient progress in the corrective actions for this condition.

.3 Semi-Annual Review to Identify Trends: Equipment Reliability

a. Inspection Scope

The inspectors performed a semi-annual review of notifications in PSEG's corrective action program to identify trends that may indicate a more significant safety issue. The inspectors also examined other sources of information, such as PSEG's station PIs, critical component failures, equipment problem lists, operator challenge lists, system

health reports, and quality assurance reports. Additionally, the inspectors discussed issues with plant staff and management. The inspectors' review covered the six-month period from January through June 2010.

The inspectors focused on potential trends in equipment-related deficiencies and equipment reliability. Documents reviewed are listed in the Attachment.

b. Findings and Observations

No findings of significance were identified.

The inspectors identified an adverse trend in equipment deficiencies that resulted in unavailability and degraded conditions of safety-related equipment. The trend was apparent in the corrective action program and in certain station PIs, such as the equipment reliability index.

Examples of equipment reliability issues included an EDG jacket water heater failure, an EDG breaker trip during surveillance testing, two EDG jacket water pump seal leaks, a blown fuse on a safety-related inverter, and increasing leakage from the B RHR HX. The inspectors noted that station had identified the adverse trend and had begun a number of initiatives to address it. PSEG's corrective actions to improve equipment reliability included the following:

- Enhancements to preventive maintenance templates;
- Improvements in the preventive maintenance program;
- Additional station focus on deficiencies affecting critical components; and
- Reviews of preventive maintenance and corrective maintenance on EDGs.

The inspectors concluded that PSEG was implementing appropriate corrective actions to address the adverse trend in equipment reliability.

4OA5 Other Activities

.1 Typographical Correction to NRC Inspection Report 05000354/2010007, Triennial Fire Protection Inspection

NRC Inspection Report 05000354/2010007, dated May 19, 2010, Attachment page A-1, contained a typographical error. Licensee Event Report (LER) 05000354/2009006 was listed incorrectly as LER 05000354/2009009. All other references to this LER in the inspection report were correct.

4OA6 Meetings, including Exit

On July 13, 2010, the inspectors presented inspection results to Mr. J. Perry and other members of his staff. The inspectors asked PSEG whether any materials examined during the inspection were proprietary. No proprietary information was identified.

4OA7 Licensee Identified Violations

The following violation of very low safety significance (Green) was identified by PSEG and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy for being dispositioned as a NCV:

10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Section (a)(4), requires, in part, that before performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. Contrary to this, on January 27, 2010, PSEG did not assess and manage the increase in risk before isolating the A SACS HX for maintenance activities. This condition resulted in an unplanned and unmanaged increase in plant risk. This issue was not greater than Green because PSEG identified the condition within two hours after it occurred, resulting in a short duration increase in risk. This issue was documented in PSEG's corrective action program as notification 20448794.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Perry, Hope Creek Site Vice President
L. Wagner, Hope Creek Plant Manager
E. Carr, Operations Director
E. Casulli, Shift Operations Superintendent
K. Chambliss, Work Management Director
P. Duca, Senior Engineer, Regulatory Assurance
M. Gaffney, Regulatory Assurance Manager
K. Knaide, Engineering Director
W. Kopchick, Plant Engineering Manager
F. Mooney, Maintenance Director
H. Trimble, Radiation Protection Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened/Closed

05000354/2010003-01	FIN	Reactor Recirculation Pump Trip (Section 1R19)
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LIST OF DOCUMENTS REVIEWED

In addition to the documents identified in the body of this report, the inspectors reviewed the following documents and records:

Hope Creek Generating Station UFSAR
Hope Creek Operations Narrative Logs
Technical Specification Action Statement Logs

Section 1R01: Adverse Weather Protection

Procedures

HC.OP-AB.BOP-0004, Grid Disturbances, Revision 17
OP-AA-101-112-1002, Online Risk Assessment, Revision 4
OP-AA-108-107-1001, Electric System Emergency Operations and Electrical Systems Operator Interface, Revision 3
WC-AA-107, Seasonal Readiness, Revision 10
HC.OP-AB.COOL-0001, Station Service Water, Revision 17
HC.OP-AB.COOL-0002, Safety/Turbine Auxiliaries Cooling System, Revision 6
HC.OP-AB.MISC-0001, Acts of Nature, Revision 15

Orders

80100290

Other Documents

Hope Creek Generating Station Site Summer Readiness Memo, dated May 20, 2010
System Summer Readiness Challenge Documents

Section 1R04: Equipment Alignment

Procedures

HC.OP-SO.KJ-0001, EDG Operation, Revision 54
HC.OP-SO.BE-0001, Core Spray System Operation, Revision 11
HC.OP-SO.BH-0001, SLC Operation, Revision 11
HC.OP-SO.BD-0001, RCIC Operation, Revision 36

Section 1R05: Fire Protection Measures

Procedures

FRH-II-522, Cable Spreading Room, Revision 6
FRH-II-551, Battery Room 146', Revision 6
FRH-II-552, Control Room & Electrical Panel Access, Revision 7
FRH-II-563, Control Area HVAC, Revision 6
FRH-II-713, Service Water Intake Structure, Revision 4

Notifications (*NRC identified)

20460917* 20468465*

Section 1R06: Flood Protection

Notifications (*NRC identified)

20457414

Orders

20460004 60075204 60083150 70108084 70108085 70108106

Section 1R07: Heat Sink Performance

Calculations

H-1-ZZ-MDC-1880, Post LOCA, EAB, LPZ, & CR Doses, Revision 3

Notifications (*NRC identified)

20457995 20457840 20468048 20464954* 20468321* 20443483

Other Documents

Technical Evaluations NUCR 70109076-0080, Post LOCA, EAB, LPZ, & CR Doses Exceed the
Design Basis ESF Leakage of 2.85 gpm, Revision 0

Section 1R11: Licensed Operator Regualification Program

Procedures

HC.OP-AB.CONT-0002, Primary Containment, Revision 9

HC.OP-AB.CONT-0001, Drywell Pressure, Revision 1

Other Documents

SG-669, Loss of 480V 1E USS 10B430/Steam leak in HPCI Room/LOCA, 6/1/2010

Section 1R12: Maintenance Effectiveness

Drawings

PE154Q-0022, Schematic Inverter Model 120/24IB1, 8/15/2007

Procedures

HC.OP-ST.KJ-0004, Emergency Diesel Generator 1DG400 Operability Test, Revision 69

HC.OP-SO.PN-0001, 120 VAC Electrical Distribution, Revision 23

HC.OP-SO.EG-0001, Safety & Turbine Auxiliary Cooling System Operation, Revision 42

Notifications (*NRC identified)

20466119 20407831* 20459397 20458990 20376171

Orders

70109417 70084495

Other Documents

HCEP 10-004, Hope Creek Expert Panel Meeting Minutes, 5/25/10

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

OP-AA-101-112-1002, On-Line Risk Assessment, Revision 4

Other Documents

HCGS PRA Risk Evaluation for Work Week 1015 (4/4/10 – 4/10/10), Revisions 0, 1, 2

HCGS PRA Risk Evaluation for Work Week 1017 (4/18/10 – 4/24/10), Revisions 0, 1, 2

HCGS PRA Risk Evaluation for Work Week 1018 (4/25/10 – 5/1/10), Revisions 0,1,2,3

HCGS PRA Risk Evaluation for Work Week 1019 (5/2/10 – 5/8/10), Revision 1

HCGS PRA Risk Evaluation for Work Week 1022 (5/23/10 – 5/29/10), Revision 0

HCGS PRA Risk Evaluation for Work Week 1024 (6/6/10 – 6/12/10), Revisions 0, 1

Section 1R15: Operability Evaluations

Procedures

HC.OP-IS.BD-0001, RCIC In-Service Test, Revision 46

HC.OP-FT.BD-0002, RCIC System Functional Test – 18 month, Revision 7

Calculations

H-1-ZZ-MDC-1880, Post-LOCA EAB, LPZ, and CR Doses, Revision 3

EG-0046, SACS Hydraulic, Revision 6

Notifications (*NRC-identified)

20468053*	20464954*	20466793*	20463904	20463901	20414457
20457650	20458639	20457995	20434064	20465562	20466185
20468486*	20461760*	20461756*	20461790*	20461761*	20466587

Orders

70108785 70110701 60090685 70109076

Other Documents

Technical Evaluations NUCR 70109076-0080, Post LOCA, EAB, LPZ, & CR Doses Exceed the Design Basis ESF Leakage of 2.85 gallons per minute (gpm), Revision 0
 Adverse Condition Monitoring and Contingency Plan for B' RHR Leakage Monitoring Plan, Revision 0, 1, 2

Section 1R18: Plant ModificationsDesign Change Package

TCCP 10-018, Alternate Seismic Supports for the D-VH401 Ventilation Cooling Coils, 5/28/10
 TCCP 10-017, Alternate Cooling to the D EDG Switchgear Rooms, Revision 0

50.59 Reviews, Screenings and Evaluations

HC 10-089, TCCP 10-017/80101707, Revision 0

Notifications

20463904

Orders

80101727 8010707

Section 1R19: Post-Maintenance TestingCalculations

BE-0016, Core Spray System Hydraulic Analysis – EPU, Revision 5
 GQ-4, Intake Structure – Traveling Screen Area, Revision 1

Completed Surveillances

HC.OP-ST.KJ-0004, EDG 1DG400 Operability Test – Monthly, Revision 69
 HC.OP-IS.BE-0001, A & C Core Spray Pumps – In-service Test, Revision 40
 HC.OP-IS.BH-0003, SLC In-Service Test, Revision 7
 HC.OP-IS.BJ-0101, HPCI – In-Service Test, Revision 58

Drawings

PE154Q-0022, Schematic Inverter Model 120/24IB1, 8/15/2007

Procedures

HC.OP-SO.PN-0001, 120 VAC Electrical Distribution, Revision 23
 HC.OP-ST.KJ-0004, Emergency Diesel Generator 1DG400 Operability Test, Revision 69
 MA-AA-716-010, Maintenance Planning Process, Revision 13
 OP-AA-108-101-1002, Component Configuration Control, Revision 1
 HC.OP-AB.RPV-0004, Reactor Level Control, Revision 8
 HC.MD-GP.ZZ-0004, General Instructions for Pump Disassembly Inspection and Reassembly, Revision 4

Notifications (*NRC identified)

20459834	20466119	20407831*	20459397	20079336	20467549*
20459397	20458990	20376171	20466119	20407831*	

Orders

60082740 80043186 70107651 60085024

Other Documents

Vendor Manual De Laval Pump Series 3NB-550

Section 1R22: Surveillance TestingProcedures

HC.OP-ST.KJ-0015, EDG 1BG400 – 24 Hour Operability Run & Hot Restart Test, Revision 30
 HC.OP-IS.BD-0001, Reactor Core Isolation Cooling Pump – In-service Test, Revision 46
 HC.OP-IS.BH-0004, SLC In-Service Test, Revision 7
 HC.OP-IS.BC-0003, B RHR Pump In-Service Test, Revision 41
 HC.OP-IS.BJ-0101, HPCI In-Service Test, Revision 58

Notifications (*NRC identified)

20468934*

Section 40A1: Performance Indicator VerificationProcedures

LS-AA-2001, Collection and Reporting of NRC Performance Indicator Data, Revision 11
 LS-AA-2100, Monthly Data Elements for NRC Reactor Coolant System Leakage, Revision 6

Other Documents

Daily Surveillance Log Data
 Daily Dose Equivalent Iodine-131 Sample Data

Section 40A2: Problem Identification and ResolutionProcedures

HC.MD-PM.ZZ-0022(Q), SSW Electrical Manhole Water Inspection, Revision 1
 ER-AA-1300, Equipment Reliability Index, Revision 2

Notifications (*NRC identified)

20376190	20420237	20423751	20440470	20443913	20466667*
20467538*	20466365	20456174	20416966	20448277	20453343
20455935	20450574	20462641	20463901	20459397	20460175
20454033	20465820	20443483	20469121	20448991	

Orders

30191219 30194062 30194360 30194642 60089141 70099153

Other Documents

System Performance Team Update - Emergency Diesel Generators Improvement Plan Strategy
 Hope Creek 2010 Top 10 Equipment Issues List, dated 5/24/10
 Hope Creek Completed Top 10 Equipment Issues List, dated 5/24/10
 Hope Creek Mitigating Systems Performance Index Data Sheet
 Hope Creek Maintenance Rule Status and Projections, dated June 3, 2010

LIST OF ACRONYMS

ADAMS	Agency-wide Documents Access and Management System
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CS	Core Spray
EDG	Emergency Diesel Generator
HPCI	High Pressure Coolant Injection
HX	Heat Exchanger
IMC	Inspection Manual Chapter
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PI	Performance Indicator
PSEG	Public Service Enterprise Group Nuclear LLC
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Remover
RRP	Reactor Recirculation Pump
SACS	Safety Auxiliary Cooling System
SDP	Significance Determination Process
SLC	Standby Liquid Control
SSC	Structures, Systems, and Components
SSW	Station Service Water
SSWS	Station Service Water System
ST	Surveillance Testing
SW	Service Water
UFSAR	Updated Final Safety Analysis Report