



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I**  
2100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

November 14, 2012

EA 12-123

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 UNIT 1 – NRC INTEGRATED  
INSPECTION REPORT AND EXERCISE OF ENFORCEMENT DISCRETION  
05000354/2012004**

Dear Mr. Joyce:

On September 30, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Hope Creek Generating Station. The enclosed inspection report documents the inspection results, which were discussed on October 11, 2012, with Mr. J. Perry, Site Vice President of Hope Creek, 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.

No findings were identified during this inspection.

A violation involving a failure to set secondary containment during an operation with the potential to drain the reactor vessel (OPDRV) was identified. Specifically, on October 4, 2011, Hope Creek replaced eight local power range monitor strings without setting secondary containment, which is a violation of technical specification (TS) 3/4.6.5.1. NRC issued EGM 11-003, "Enforcement Guidance Memorandum on Dispositioning Boiling Water Reactor Licensee Noncompliance with Technical Specification Containment Requirements During Operations with a Potential for Draining the Reactor Vessel," on October 4, 2011, allowing for the exercise of enforcement discretion for such OPDRV-related TS violations, when certain criteria are met. The NRC concluded that Hope Creek met these criteria. Therefore, I have been authorized, after consultation with the Director, Office of Enforcement, and the Regional Administrator, to exercise enforcement discretion and refrain from issuing enforcement for the violation.

In accordance with 10 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 the

NRC's document system (ADAMS). ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Darrell J. Roberts, Director  
Division of Reactor Projects  
Region I

Docket No.: 50-354

License No.: NPF-57

Enclosure: Inspection Report 05000354/2012004  
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

NRC's document system (ADAMS). ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**  
 Darrell J. Roberts, Director  
 Division of Reactor Projects  
 Region I

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

Enclosure: Inspection Report 05000354/2012004  
 w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

Distribution w/encl:

Distribution w/encl:  
 W. Dean, RA  
 D. Lew, DRA  
 D. Roberts, DRP  
 J. Clifford, DRP  
 C. Miller, DRS  
 P. Wilson, DRS

A. Burritt, DRP  
 L. Cline, DRP  
 A. Turilin, DRP  
 F. Bower, DRP, SRI  
 B. Scrabeck, DRP, Acting RI  
 R. Montgomery, DRP

D. Holody, ORA  
 M. McLaughlin, ORA  
 K. McKenzie, DRP, AA  
 C. Santos, RI, OEDO  
 RidsNrrPMHopeCreek Resource  
 RidsNrrDorLp1-2 Resource  
 ROPreports Resource

DOCUMENT NAME: G:\DRP\BRANCH3\INSPECTION\REPORTS\ISSUED\2012 (ROP 13)\HC 1204.DOCX  
 ADAMS Accession No.: **ML12319A247**

<input checked="" type="checkbox"/> <b>SUNSI Review</b>		<input checked="" type="checkbox"/> <b>Non-Sensitive</b> <input type="checkbox"/> Sensitive		<input checked="" type="checkbox"/> <b>Publicly Available</b> <input type="checkbox"/> Non-Publicly Available	
OFFICE <i>mmt</i>	RI/DRP	RI/DRP	RI/DRP	RI/ORA	RI/DRP
NAME	FBower/LC for	LCline/ LC	ABurritt/ LC for	DHolody/MMM for	DRoberts/ DJR
DATE	11/05/12	11/05/12	11/05/12	11/ 14/12	11/14/12

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-354

License No: NPF-57

Report No.: 05000354/2012004

Licensee: PSEG Nuclear LLC (PSEG)

Facility: Hope Creek Generating Station

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

Dates: July 1, 2012 through September 30, 2012

Inspectors: F. Bower, Senior Resident Inspector  
C. Williams, Resident Inspector  
R. Montgomery, Acting Resident Inspector  
E. H. Gray, Senior Reactor Inspector  
R. L. Nimitz, Senior Health Physicist  
J. Brand, Reactor Inspector

Approved by: Arthur Burritt, Chief  
Reactor Projects Branch 3  
Division of Reactor Projects

## TABLE OF CONTENTS

SUMMARY OF FINDINGS .....	3
REPORT DETAILS .....	4
1. REACTOR SAFETY .....	4
1R01 Adverse Weather Protection .....	4
1R04 Equipment Alignment .....	4
1R05 Fire Protection .....	5
1R06 Flood Protection Measures .....	6
1R07 Heat Sink Performance .....	6
1R11 Licensed Operator Requalification Program .....	7
1R12 Maintenance Effectiveness .....	7
1R13 Maintenance Risk Assessments and Emergent Work Control .....	8
1R15 Operability Determinations and Functionality Assessments .....	9
1R18 Plant Modifications .....	9
1R19 Post-Maintenance Testing .....	10
1R22 Surveillance Testing .....	10
1EP6 Drill Evaluation .....	11
2. RADIATION SAFETY .....	11
2RS1 Access Control to Radiologically Significant Areas .....	11
2RS2 Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls .....	15
2RS3 In-Plant Airborne Radioactivity Control and Mitigation .....	17
2RS4 Occupational Dose Assessment .....	18
2RS5 Radiation Monitoring Instrumentation .....	19
2RS6 Radioactive Gaseous and Liquid Effluent Treatment .....	21
2RS7 Radiological Environmental Monitoring Program (REMP) .....	22
4. OTHER ACTIVITIES .....	25
4OA1 Performance Indicator Verification .....	25
4OA2 Problem Identification and Resolution .....	25
4OA3 Follow-Up of Events and Notices of Enforcement Discretion .....	27
4OA5 Other Activities .....	30
4OA6 Meetings, Including Exit .....	30
ATTACHMENT: SUPPLEMENTARY INFORMATION .....	30
SUPPLEMENTARY INFORMATION .....	A-1
KEY POINTS OF CONTACT .....	A-1
LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED .....	A-1
LIST OF DOCUMENTS REVIEWED .....	A-1
LIST OF ACRONYMS .....	A-15

**SUMMARY OF FINDINGS**

IR 05000354/2012004; 07/01/2012 - 09/30/2012; Hope Creek Generating Station; Routine Integrated Inspection Report.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. 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.

No findings were identified.

## REPORT DETAILS

### Summary of Plant Status

The Hope Creek Generating Station began the inspection period at or near full rated thermal power (RTP) where it generally remained until the end of the inspection period with the following exceptions:

- On September 8, power was reduced to approximately 16 percent RTP to support planned maintenance on the main generator voltage regulator. Additional planned and contingency corrective maintenance activities were performed and the unit was returned to full power on September 9, 2012.
- On September 30, power was reduced to approximately 74 percent RTP following a trip of the A reactor feed pump and an associated reactor recirculation pump runback. The unit was at 80 percent RTP at the end of the inspection period.

### 1. REACTOR SAFETY

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

#### 1R01 Adverse Weather Protection (71111.01 – 1 sample)

##### Readiness for Impending Adverse Weather Conditions

##### a. Inspection Scope

The inspectors reviewed PSEG's preparations for the onset of a severe thunderstorm warning for Salem County, New Jersey on September 18, 2012. The inspectors reviewed the abnormal procedure, HC.OP-AB.MISC-0001, "Acts of Nature," for responding to adverse weather conditions. The inspectors walked down the service water intake structure on September 18, 2012, to ensure system availability. The inspectors also verified that operator actions defined in PSEG's adverse weather procedure maintained the readiness of essential systems. Documents reviewed for each section of this inspection report are listed in the Attachment.

##### b. Findings

No findings were identified.

#### 1R04 Equipment Alignment

##### .1 Partial System Walkdowns (71111.04Q – 3 samples)

##### a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- A, B, C emergency diesel generators (EDGs) with D EDG out-of-service on July 26, 2012

- A loop core spray (CS) system with B CS loop out-of-service on August 20, 2012
- A loop standby liquid control (SLC) system with B SLC loop out-of-service on September 11 - 12, 2012

The inspectors selected these systems based on their risk-significance for the current plant configuration or following realignment. The inspectors reviewed applicable procedures, system diagrams, the updated final safety analysis report (UFSAR), technical specifications (TSs), work orders, notifications, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable.

b. Findings

No findings were identified.

.2 Full System Walkdown (71111.04S – 1 sample)

a. Inspection Scope

On August 2 and 6, 2012, the inspectors performed a complete system walkdown of accessible portions of the reactor core isolation cooling (RCIC) system to verify the equipment lineup was correct. The inspectors reviewed operating procedures, surveillance tests, drawings, equipment lineup procedures, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, component lubrication and equipment cooling, hangar and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether PSEG staff had properly identified equipment issues and entered them into the corrective action program for resolution with the appropriate significance characterization. Additionally, the inspectors reviewed a sample of related notifications and work orders to ensure PSEG appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident Inspector Quarterly Walkdowns (71111.05Q – 5 samples)

a. Inspection Scope

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 PSEG controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression

equipment was available for use as specified in the area pre-fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- FRH-II-412, RCIC pump and turbine room, residual heat removal (RHR) pump room, and electrical equipment room on July 5, 2012
- FRH-II-422, RHR heat exchanger (HX) room and motor control center area on July 10, 2012
- FRH-II-461, SLC area on July 19, 2012
- FRH-II-511, Diesel fuel oil storage tanks area on July 19, 2012
- FRH-II-571, Diesel area HVAC equipment room on August 30, 2012

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

.1 Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the UFSAR, the site internal flooding analysis, and plant procedures to verify that the PSEG's flooding mitigation plans and equipment are consistent with the design requirements and the risk analysis assumptions. The inspectors also reviewed the corrective action program to determine if PSEG identified and corrected flooding problems and whether operator actions for coping with flooding were adequate. The inspectors also focused on the CS pump rooms (4104, 4105, 4118) and the RHR pump room (4107) areas to verify the adequacy of penetration seals located below the flood line, watertight door seals, floor drain line check valves, and room level alarms.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07A – 2 samples)

a. Inspection Scope

The inspectors reviewed the B1 and B2 safety auxiliary cooling system (SACS) HXs to determine their readiness and availability to perform their safety functions. The inspectors reviewed the design basis for the components and verified PSEG's commitments to NRC Generic Letter (GL) 89-13. The inspectors reviewed the results of tests performed to validate flow through the two SACS HXs. The inspectors discussed the GL 89-13 program with PSEG engineering staff and reviewed the reports of the reported results of the as-found conditions for the most recent inspections of these two SACS HXs. The inspectors verified that PSEG initiated appropriate corrective actions

for identified deficiencies. The inspectors also verified that the number of tubes plugged within the HX did not exceed the maximum amount allowed.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11 – 3 samples)

.1 Quarterly Review of Licensed Operator Regualification Testing and Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on July 24, 2012 and August 7, 2012, which included an earthquake and aftershocks, an anticipated transient without a scram, and a breach of the primary containment. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager and the technical specification action statements entered by the shift technical advisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room

a. Inspection Scope

The inspectors observed reactivity manipulations associated with a planned down power on September 8, 2012. Additionally, the inspectors observed reactivity manipulations and crew turnover to verify that procedure use, crew communications, human performance tool use, supervisory oversight and coordination of activities between work groups met PSEG's established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12 – 2 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, and component (SSC) performance and reliability. The inspectors reviewed corrective action program documents, maintenance

work orders, and maintenance rule basis documents to ensure that PSEG was identifying and properly evaluating performance problems within the scope of the maintenance rule. For each sample selected, the inspectors verified that the SSC was properly scoped into the maintenance rule in accordance with 10 CFR 50.65 and verified that the (a)(2) performance criteria established by PSEG staff was reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2). As applicable, the inspectors independently verified that appropriate work practices were followed for the SSCs reviewed. Additionally, the inspectors ensured that PSEG staff was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

- Maintenance Rule (a)(3) periodic assessment on July 23 - August 6, 2012 (Order 70132085)
- A control area chilled water system (AK400) trip on July 11, 2012 (Notification 20567269)

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that PSEG performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance. As applicable for each activity, the inspectors verified that PSEG personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and applicable station procedures, and that the assessments were accurate and complete. When PSEG performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- Emergent inoperability of the 22-27 control rod drive accumulator when accumulator pressure found at zero on July 17, 2012 (Notification 20567715)
- Emergent inoperability, troubleshooting, and corrective maintenance for the 10K107 instrument air compressor due to surging during July 6 - 11, 2012 (Order 60100408)
- Planned maintenance on the A control room emergency filtration system/A control room air conditioning system during July 11 - 13, 2012 (Order 60104567)
- Abnormal procedure entry, troubleshooting, and maintenance in response to a trip of the B reactor protection system power supply during August 11 - 15, 2012 (Order 60105049)
- Emergent inoperability, troubleshooting, and corrective maintenance following the failure of the high pressure coolant injection (HPCI) turbine steam supply valve (F001) to open on demand on September 4, 2012 (Notification 20573442)

- Emergent trip and inoperability of A and B control room emergency filtration system/control room air conditioning systems resulting in TS 3.0.3 entry on September 6, 2012 (Notifications 20573615 & 20573680)

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 2 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions:

- Trip of the A control area chilled water system on August 2, 2012 (Notification 20569718)
- HPCI turbine governor control valve 1FD-FV-4879 failed to close on September 5, 2012 (Notification 20573547)

The inspectors selected these issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the operability determinations to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to PSEG's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by PSEG. The inspectors determined, where appropriate, compliance with assumptions in the evaluations.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

Temporary Modifications

a. Inspection Scope

The inspectors completed a review of the temporary plant modification packages for the diesel recirculation fans (temporary configuration change package (TCCP) Nos. 4HT-12-010 through 4HT-12-015) to determine whether the modifications affected the safety functions of systems that are important to safety. The TCCP installed an existing breaker auxiliary switch contact (b contact) in series with the closing coil internal to the circuit breaker. Wiring the auxiliary switch contact in series with the closing coil allowed the closing coil to be de-energized after the breaker was closed. The previous configuration resulted in the closing coil being continuously energized resulting in intermittent failure. The inspectors reviewed 10 CFR 50.59 documentation, observed

the installation of the auxiliary switch, and reviewed post-modification testing results to verify that the temporary modifications did not degrade the design bases, licensing bases, and performance capability of the affected systems.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 6 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure was consistent with the information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data to verify that the test results adequately demonstrated restoration of the affected safety functions.

- Control rod drive accumulator 22-27 emergent maintenance on July 17 - 19, 2012 (Order 60104640)
- C EDG planned maintenance on July 9 - 12, 2012 (Order 50150508)
- D EDG air start piping maintenance performed to correct fitting leaks on August 2 - 3, 2012 (Order 60105006)
- D CS pump suction valve 1BEHV-F0001D breaker maintenance on August 21, 2012 (Order 40001325)
- EG-HV-2398B piston seal ring replacement on August 23 - 29, 2012 (Order 60105210)
- B control room emergency air filtering system planned maintenance on September 20 - 21, 2012 (Order 30169568)

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 5 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs to assess whether test results satisfied TSs, the UFSAR, and PSEG procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results

supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

- HC.OP-IS.BC-0004, D RHR pump - DP202 - in-service test on July 24, 2012
- HC.OP-IS.BH-0003, SLC pump - AP208 surveillance test on August 29, 2012
- HC.OP-IS.BJ-0001, HPCI main and booster pump set - OP204 and OP217 - surveillance test on September 4, 2012
- HC.CH-RC.ZZ-0002, Determine reactor coolant specific activity of gross beta and tritium by liquid scintillation on September 10, 2012
- HC.OP-IS.BD-0001, RCIC pump - OP203 - in-service test on September 11 - 12, 2012

b. Findings

No findings were identified.

**Cornerstone: Emergency Preparedness**

1EP6 Drill Evaluation (71114.06 – 2 samples)

Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on July 30, 2012, and August 7, 2012, which required emergency plan implementation by an operations crew. PSEG planned for this evolution to be evaluated and included in performance indicator (PI) data regarding drill and exercise performance. The inspectors observed event classification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that PSEG evaluators noted the same issues and entered them into the corrective action program.

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

**Cornerstone: Occupational Radiation Safety**

2RS1 Access Control to Radiologically Significant Areas (71124.01 – 1 sample)

This area was inspected: (1) to review and assess PSEG's performance in assessing the radiological hazards in the workplace associated with licensed activities and the implementation of appropriate radiation monitoring and exposure control measures for both individual and collective exposures; (2) to verify that PSEG is properly identifying and reporting Occupational Radiation Safety cornerstone PIs; and (3) to identify those

performance deficiencies that were reportable as a PI and which may have represented a substantial potential for overexposure of the worker.

During the week of September 10, 2012, the inspectors interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors performed walkdowns of various portions of the plant, performed independent radiation dose rate measurements, observed work activities in radiological controlled areas (RCAs), and reviewed PSEG documents. The inspectors used the requirements contained in 10 CFR Part 20 and Hope Creek's TSs and procedures as criteria for determining compliance.

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed PIs for the Occupational Exposure cornerstone. The inspectors also reviewed the results of recent radiation protection program audits and assessments, as available, and any reports of operational occurrences, related to occupational radiation safety since the last inspection.

b. Findings

No findings were identified.

.2 Radiological Hazard Assessment

a. Inspection Scope

The inspectors discussed plant operations during and following the last refueling outage to identify any significant new radiological hazards for onsite workers or members of the public. The inspectors assessed the potential impact of any changes and monitoring, as appropriate, to detect and quantify the radiological hazards.

The inspectors toured and conducted walkdowns of various RCAs and reviewed radiological surveys from selected plant areas (e.g., Refueling floor and Reactor Building areas) to verify that the thoroughness and frequency of the surveys were appropriate for the given radiological hazard. The inspectors also evaluated material conditions and potential radiological conditions. The inspectors made independent radiation measurements to verify radiological conditions.

The inspectors selected and discussed various radiological risk-significant work activities (e.g., reactor cavity work, in-vessel work activities, drywell work activities, condenser work, reactor cavity platform work, turbine work, and suppression pool work) conducted during the outage to identify any new or unexpected radiological risk important issues. The discussion included: identification of discrete particles, the presence of alpha emitters, airborne radioactive materials, potential changes in radiological conditions, and non-uniform exposures of the body. The inspectors also reviewed ongoing work activities within the spent fuel pool.

b. Findings

No findings were identified.

.3 Instructions to Workers

a. Inspection Scope

The inspectors toured the RCAs and reviewed labeling of containers of radioactive materials to verify labeling was consistent with requirements and was informative to workers.

The inspectors selectively reviewed occurrences where a worker's electronic personal dosimeter malfunctioned or alarmed to verify appropriate actions were taken to evaluate condition as well as dose.

b. Findings

No findings were identified.

.4 Contamination and Radioactive Material Control

a. Inspection Scope

The inspectors observed locations where PSEG monitors potentially contaminated material leaving the RCA and inspected and evaluated the methods used for control, survey, and release from these areas. The inspectors observed the performance of personnel surveying and the releasing of material for unrestricted use to verify that it was performed in accordance with plant procedures and the procedures were sufficient to control the spread of contamination and prevent unintended release of radioactive materials from the site. The inspectors selectively evaluated the radiation monitoring instrumentation sensitivity for the type(s) of radiation present.

The inspectors selectively reviewed PSEG's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters including application of alarm setpoints based on the instrument's typical sensitivity. The inspectors reviewed and discussed alarm setpoints, typical detection capabilities, and calibration methodology and sources with cognizant PSEG personnel. The inspectors also reviewed survey and release methods and criteria.

b. Findings

No findings were identified.

.5 Radiological Hazards Control and Work Coverage

a. Inspection Scope

The inspectors toured the facility and reviewed ongoing work and evaluated ambient radiological conditions (e.g., radiation levels or potential radiation levels). The inspectors observed ongoing work activities and verified the adequacy of radiological controls.

The inspectors conducted selective inspections of postings and physical controls for high radiation areas (HRAs) and very high radiation areas (VHRAs) to verify conformance with the Occupational PI. The inspectors evaluated down-postings of areas from HRAs.

b. Findings

No findings were identified.

.6 Risk-Significant HRA and VHRA Controls

a. Inspection Scope

The inspectors selectively discussed any changes with the radiation protection manager and supervisors in the controls and procedures for high-risk HRAs and VHRAs and any procedural changes since the last inspection. The inspectors also selectively verified locking of HRA doors during plant tours.

b. Findings

No findings were identified.

.7 Radiation Worker Performance

a. Inspection Scope

The inspectors toured RCAs and observed radiation worker performance with respect to stated radiation protection work requirements to determine if performance reflected the level of radiological hazards present.

The inspectors selectively reviewed radiological problem reports since the last inspection to identify human performance errors and determine if there were any observable patterns. The inspectors discussed corrective actions for identified concerns with PSEG personnel.

b. Findings

No findings were identified.

.8 Radiation Protection Technician Proficiency

a. Inspection Scope

The inspectors toured RCAs and observed the performance of radiation protection technicians with respect to radiation protection work requirements to determine if technicians were aware of the radiological conditions in their workplace and the radiation work permit controls/limits and if their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities. The inspectors reviewed technician performance during ongoing spent fuel pool work.

The inspectors selectively reviewed radiological problem reports to identify those that indicate the cause of events due to radiation protection technician error and to evaluate corrective action approach taken by PSEG to resolve the reported problems.

b. Findings

No findings were identified.

.9 Problem Identification and Resolution

a. Inspection Scope

The inspectors determined if problems associated with radiation monitoring and exposure control were being identified by PSEG at an appropriate threshold and were properly addressed for resolution in the corrective action program. The inspectors discussed corrective actions for identified concerns.

b. Findings

No findings were identified.

2RS2 Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls (71124.02)

This area was inspected during the week of September 10, 2012, to assess performance with respect to maintaining occupational individual and collective radiation exposures as low as reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR Part 20, applicable Regulatory Guides, and the station's TSs and procedures as criteria for determining compliance.

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors also reviewed ALARA performance during the 2012 refueling outage.

The inspectors evaluated and determined the site-specific trends in collective exposures using various methods, such as plant historical data, including outage work activity dose, evaluation of ALARA data, and source term data.

The inspectors reviewed site-specific procedures associated with maintaining occupational exposures ALARA including the processes used to estimate and track exposures from specific work activities.

b. Findings

No findings were identified.

.2 Radiological Work Planning

a. Inspection Scope

The inspectors obtained a list of work activities from PSEG ranked by actual or estimated exposure that were conducted during the outage and selected work activities of the highest exposure significance. These included reactor disassembly, reactor cavity decontamination, scaffolding, in-service inspection, control rod drive work, and valve work.

The inspectors compared accrued results achieved (dose rate reductions, person-rem used), with the intended dose established in PSEG's ALARA planning for these work activities including person-hour estimates. The inspectors determined the reasons for inconsistencies between intended and actual work activity doses, as necessary. The inspectors evaluated reasons for increased doses for work as compared to original estimates. As part of this review, the inspectors reviewed ALARA post-job reviews.

b. Findings

No findings were identified.

.3 Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The inspectors verified that PSEG established measures to track, trend, and if necessary reduce occupational doses for ongoing work activities including criteria to prompt additional reviews and/or controls. The inspectors evaluated the adequacy of PSEG's method for adjusting exposure estimates, re-planning work, when unexpected changes in scope or emergent work are encountered. Tasks reviewed included safety relief valve work and reactor disassembly.

b. Findings

No findings were identified.

#### .4 Source Term Reduction and Control

##### a. Inspection Scope

The inspectors discussed the effectiveness of the Chemistry Plan and long term plans for source term reduction (e.g., Cobalt reduction). The inspectors discussed source term reduction efforts including system flushing, management of any leaking fuel, and use of additional demineralization and filtration systems. The inspectors discussed current chemistry controls for exposure reduction.

##### b. Findings

No findings were identified.

#### .5 Radiation Worker and Radiation Protection Technician Performance

##### a. Inspection Scope

The inspectors observed both radiation workers' and radiation protection technicians' performance during work activities (i.e., removal of equipment from the fuel storage pool) being performed. The inspectors determined if workers demonstrated the ALARA philosophy in practice and whether there were any procedure compliance issues. The inspectors observed performance to determine whether the training and skill level were sufficient with respect to the radiological hazards and the work involved.

##### b. Findings

No findings were identified.

#### .6 Problem Identification and Resolution

##### a. Inspection Scope

The inspectors determined if problems associated with ALARA planning and controls were being identified by PSEG at an appropriate threshold and were properly addressed for resolution in the corrective action program. The inspectors discussed corrective actions for identified ALARA concerns with the health physics staff.

##### b. Findings

No findings were identified.

#### 2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

This area was inspected during the week of September 10, 2012. The inspectors reviewed the plant UFSAR to identify areas of the plant designed as potential airborne radiation areas and any associated ventilation systems or airborne monitoring instrumentation. The inspectors also reviewed the UFSAR for overview of the respiratory protection program and a description of the types of devices used. The inspectors reviewed the reported PIs to identify any related to unintended dose resulting from personnel intakes of radioactive materials.

.1 Engineering Controls

a. Inspection Scope

The inspectors evaluated the use of selected ventilation systems to control airborne radioactivity including any ventilation system performance issues associated with worker protection (e.g., portable ventilation systems and vacuum cleaners). The inspectors discussed verification of plant ventilation systems during reactor cavity work.

b. Findings

No findings were identified.

.2 Use of Respiratory Protection Devices

a. Inspection Scope

The inspectors evaluated PSEG's use of respiratory protective devices to maintain occupational doses ALARA during the outage.

b. Findings

No findings were identified.

.3 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed and discussed problems associated with the control and mitigation of in-plant airborne radioactivity to evaluate PSEG's identification and resolution in the corrective action program.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment

This area was inspected during the week of September 10, 2012. The inspectors reviewed the occupational dose assessment program to: (1) determine the accuracy and operability of personal monitoring equipment, (2) determine the accuracy and effectiveness of PSEG's methods for determining total effective dose equivalent, and (3) ensure that occupational dose is appropriately monitored. The inspectors used the requirements in 10 CFR Part 20, applicable Regulatory Guides, and the station's TSs and procedures as criteria for determining compliance.

.1 Inspection Planning

a. Inspection Scope

The inspectors discussed occupational dose assessment performance for the past outage including intake assessments as well as shallow and deep dose assessments including dose assessments for radiological incidents. The inspectors evaluated procedure guidance for personnel monitoring.

b. Findings

No findings were identified.

.2 Internal Dosimetry

a. Inspection Scope

The inspectors evaluated the routine whole body counting program, including use of passive monitoring provided, for detection and measurement of intakes of radioactive materials. The inspectors evaluated documented instances of personnel intake of airborne radioactivity.

b. Findings

No findings were identified.

.3 Problem Identification and Resolution

a. Inspection Scope

The inspectors selectively reviewed corrective action documents to verify that problems associated with occupational dose assessment were being identified by PSEG at an appropriate threshold and were properly addressed for resolution in the corrective action program.

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation (71124.05)

This area was inspected during the week of September 10, 2012. The inspectors reviewed the radiation instrument monitoring program to verify PSEG was ensuring the accuracy and operability of radiation monitoring instruments that were used to monitor areas, materials, and workers to ensure a radiologically safe work environment. The instrumentation subject to this review included equipment used to monitor radiological conditions incident to normal plant operations, including anticipated operational occurrences, and conditions resulting from postulated accidents. The inspectors used the requirements in 10 CFR Part 20, applicable Regulatory Guides, and station TSs and procedures as criteria for determining compliance.

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the plant UFSAR and station procedures to identify radiation instruments associated with monitoring of personnel contamination.

b. Findings

No findings were identified.

.2 Walkdowns and Observations

a. Inspection Scope

The inspectors reviewed personnel contamination and equipment monitoring instruments used for release of personnel and equipment from the RCA.

b. Findings

No findings were identified.

.3 Calibration and Testing Program

a. Inspection Scope

The inspectors reviewed calibration and alarm setpoint data for various personnel and equipment monitors at RCA exits to verify that the alarm setpoint values were reasonable under the circumstances to ensure that licensed material was not released from the site.

b. Findings

No findings were identified.

.4 Calibration and Check Sources

a. Inspection Scope

The inspectors reviewed PSEG's latest 10 CFR Part 61 waste stream report to determine if the calibration sources used were representative of the types and energies of radiation encountered in the plant.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution

a. Inspection Scope

The inspectors selectively reviewed corrective action documents associated with radiation monitoring instrumentation to determine if PSEG identified issues at an appropriate threshold and placed the issues in the corrective action program for resolution.

b. Findings

No findings were identified.

**Cornerstone: Public Radiation Safety**

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

This area was inspected during the week of July 23, 2012, and September 10, 2012. The inspectors reviewed aspects of PSEG's gaseous and liquid effluent control program in the below listed areas.

.1 Inspection Planning and In-Office Inspection

Event Report and Effluent Report Reviews

a. Inspection Scope

The inspectors reviewed the Radiological Effluent Release Reports issued, since the last inspection, to determine if the reports were submitted as required by the offsite dose calculation manual (ODCM)/TSSs. The inspectors reviewed the reports for any anomalous results, unexpected trends, or abnormal releases identified by PSEG for further inspection.

The inspectors reviewed the reports to identify radioactive effluent monitor operability issues reported by PSEG as provided in effluent release reports. The inspectors also reviewed groundwater remediation reports.

b. Findings

No findings were identified.

ODCM and UFSAR Reviews

a. Inspection Scope

The inspectors reviewed the UFSAR descriptions of the radioactive effluent monitoring systems, treatment systems, and effluent flow paths to verify during inspection walkdowns.

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (REMP) (71124.07)

This area was inspected during the week of July 23, 2012, and September 10, 2012, to verify that: (1) the radiological environmental monitoring program (REMP) accurately quantifies the impact of radioactive effluent releases to the environment and sufficiently validates the integrity of the radioactive gaseous and liquid effluent release program, and (2) that the REMP is implemented consistent with regulatory requirements contained in TSs, the ODCM, and the design objective in Appendix I to 10 CFR Part 50. This area was also inspected to ensure that the REMP: (1) monitors non-effluent exposure pathways (e.g., onsite spills or leaks, exposures from direct and scattered (skyshine) radiation from plant facilities and components), (2) is based on sound principles and assumptions, and (3) validates that doses to members of the public were within the dose limits of 10 CFR Part 20, "Standards for Protection Against Radiation," and 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations."

The inspectors used the requirements in 10 CFR Part 20, 40 CFR Part 190, 10 CFR 50 Appendix I, the sites TSs, ODCM, and station procedures as criteria for determining compliance.

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the annual radiological environmental and effluent operating reports (2010, 2011) and the results of PSEG's assessments, since the last inspection, to verify that the REMP was implemented in accordance with the TS and ODCM. The inspectors reviewed the reports for changes to the ODCM with respect to environmental monitoring, commitments in terms of sampling locations, monitoring and measurement frequencies, land use census, inter-laboratory comparison program, and analysis of data.

The inspectors reviewed the ODCM and associated maps to identify locations of environmental monitoring stations. The inspectors also reviewed the UFSAR for information regarding the environmental monitoring program and meteorological monitoring instrumentation.

The inspectors reviewed quality assurance audit results of the program to assist in selection of samples. The inspectors reviewed available audits and technical evaluations performed on the vendor's program, as applicable, if used to analyze REMP samples.

The inspectors reviewed the annual effluent release report and the 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," report to determine if PSEG was sampling, as appropriate, for the predominant and dose-causing radionuclides likely to be released in effluents.

b. Findings

No findings were identified.

.2 Site Inspection

a. Inspection Scope

The inspectors walked down and observed sample collection, as applicable, for air sampling stations (5S1, 5S2, 5D1, 1F1, 2F6), thermoluminescent dosimeter (TLD) monitoring stations (5S1/2, 5D1, 3E1, 1F1, 2F6), and well water station (3E1) to determine whether they were located as described in the ODCM. The inspectors also reviewed PSEG garden placement and fodder crop sampling. The inspectors reviewed material conditions of monitoring equipment, as appropriate. Consistent with smart sampling, the inspectors selected air sampling station locations based on the locations with the highest X/Q, D/Q wind sectors, and the inspectors selected the TLDs based on the most risk-significant locations.

For the air samplers and TLDs, the inspectors reviewed the calibration and maintenance records/data (orifices, vacuum gauge) to verify that they demonstrate adequate operability of these components.

The inspectors evaluated PSEG criteria, as appropriate, for sampling of other media upon loss of a required sampling station.

The inspectors observed the collection and preparation of various environmental samples from different environmental media (particulate and iodine air monitoring stations, and one well water sample). The inspectors evaluated the environmental sampling to ensure it was representative of the release pathways as specified in the ODCM and that sampling techniques were in accordance with controlled procedures.

Based on direct observation and review of records, the inspectors verified that the meteorological instruments were operable, calibrated, and maintained in accordance with guidance contained in the UFSAR, NRC Regulatory Guide 1.23, "Meteorological Monitoring Programs for Nuclear Power Plants," and PSEG procedures. The inspectors verified that the meteorological data readout and recording instruments in the control room and, if applicable, at the tower were operable. The inspectors toured the meteorological tower and reviewed meteorological data readouts. The inspectors reviewed monthly meteorological monitoring reports, including availability. The inspectors evaluated potential impact of trees or other foliage on instrument readouts.

The inspectors verified that missed and/or anomalous environmental samples were identified and reported in the annual environmental monitoring report. As available, the inspectors selected events that involved a missed sample, inoperable sampler, lost TLD, or anomalous measurement and verified that PSEG has identified the cause and has implemented corrective actions. The inspectors reviewed and discussed PSEG's assessment of any positive sample results (i.e., licensed radioactive material detected above the lower limits of detection). The inspectors reviewed, as appropriate, the associated radioactive effluent release data that was the source of the released material.

The inspectors selected SSCs that involve or could reasonably involve licensed material for which there is a credible mechanism for licensed material to reach groundwater, and verified that PSEG had implemented a sampling and monitoring program sufficient to detect leakage of these SSCs to groundwater. The inspectors reviewed Radiological Ground Water Protection Program reports and also reviewed various Quarterly Ground Water Remedial Action Progress reports.

The inspectors discussed and reviewed records to verify that records, as required by 10 CFR 50.75(g), of leaks, spills, and remediation since the previous inspection were being retained in a retrievable manner.

The inspectors reviewed any significant changes made by PSEG to the ODCM as the result of changes to the land use census, long-term meteorological conditions (e.g., three-year average), or modifications to the sampler stations. The inspectors reviewed technical justifications for any changed sampling location. The inspectors verified that PSEG performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment.

The inspectors verified that appropriate detection sensitivities with respect to TS/ODCM were used for counting samples (i.e., the samples meet the TS/ODCM required lower limits of detection). The inspectors reviewed quality control charts for maintaining radiation measurement instrument status and actions taken for degrading detector performance, as applicable. For vendor laboratory analysis results for REMP samples, the inspectors reviewed the results of the vendor's quality control program, including the inter- and intra-laboratory comparison program, to verify the adequacy of the vendor's program.

The inspectors reviewed, as available, the results of PSEG's inter-laboratory comparison program to verify the adequacy of environmental sample analyses performed by PSEG. The inspectors verified that the inter-laboratory comparison test included the media/nuclide mix appropriate for the facility. The inspectors reviewed, as applicable, PSEG's determination of any bias to the data and the overall effect on the REMP.

b. Findings

No findings were identified.

.3 Problem Identification and Resolution

a. Inspection Scope

The inspectors determined if problems associated with the REMP were being identified by PSEG at an appropriate threshold and were properly addressed for resolution in the corrective action program. In addition to the above, the inspectors verified the appropriateness of the corrective actions for a selected sample of problems documented by PSEG that involve the REMP.

b. Findings

No findings were identified.

#### 4. OTHER ACTIVITIES

##### 4OA1 Performance Indicator Verification (71151)

###### Reactor Coolant System (RCS) Specific Activity and RCS Leak Rate (2 samples)

###### a. Inspection Scope

The inspectors reviewed PSEG's submittal for the reactor coolant system (RCS) specific activity and RCS leak rate PIs for Hope Creek for the period of April 1, 2011, through June 30, 2012. To determine the accuracy of the PI data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors also reviewed RCS sample analysis and control room logs of daily measurements for RCS leakage, and compared that information to the data reported by the PI. Additionally, the inspectors observed completion of surveillance activities that determined the RCS identified leakage rate, and chemistry personnel taking and analyzing an RCS sample.

###### b. Inspection Findings

No findings were identified.

##### 4OA2 Problem Identification and Resolution (71152 – 1 sample)

###### .1 Routine Review of Problem Identification and Resolution Activities

###### a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that PSEG entered issues into the corrective action program at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the corrective action program.

###### b. Findings

No findings were identified.

###### .2 Annual Sample: Safety Relief Valve (SRV) Setpoint Drift and Seat Leakage

###### a. Inspection Scope

The inspectors reviewed PSEG's identification, evaluation, and resolution of long standing deficiencies regarding the Hope Creek Generating Station (HCGS) main steam safety relief valves (SRVs). Specifically, at HCGS, SRV pilot valve setpoints have exceeded the TS allowable tolerance during as-found lift setpoint testing since the first operating cycle (1988). Additionally, SRV seat leakage rates caused a maintenance

outage in February 2012, after the leak rate exceeded administrative operating limits imposed by PSEG. HCGS uses Target Rock two-stage SRVs. The inspectors noted industry operating experience has shown two-stage SRVs to exhibit periodic leakage and setpoint drift, as documented in numerous NRC Generic Communications such as NRC Regulatory Issue Summary 2000-012, NRC Information Notices 86-12 and 2003-01, and NRC Bulletin 80-25. This inspection was performed to determine if PSEG was appropriately identifying and evaluating SRV issues at HCGS and taking appropriate corrective actions to ensure that SRVs remain operable.

The inspectors reviewed condition reports, corrective actions, and surveillance test results to evaluate the adequacy of PSEG's performance in the areas of problem identification, evaluation, extent-of-condition, and corrective actions. The inspectors also reviewed work practices and the station maintenance rule program regarding the SRVs for identification and addressing common cause failures; scoping in accordance with 10 CFR 50.65(b) of the maintenance rule; classification and reclassification in accordance with 10 CFR 50.65(a)(1) or (a)(2); and appropriateness of performance criteria.

The inspectors also used the guidance in NUREG-1022 to evaluate PSEG's event reporting, as required by 10 CFR 50.73, associated with SRV as-found lift setpoints that exceeded TS allowable tolerances. The inspectors reviewed applicable procedures to ensure that testing was being performed in accordance with the current licensing basis requirements. Additionally, the inspectors reviewed operator surveillance log entries, calculations, and engineering evaluations to evaluate the adequacy of PSEG's administrative controls for SRV seat leakage. The inspectors also interviewed engineering, licensing, operations, and design engineering staff to discuss SRV performance issues and associated corrective actions.

b. Findings and Observations

No findings were identified.

The inspectors noted HCGS continues to experience repetitive issues associated with main steam SRVs lift as-found settings outside specified TS allowance tolerances and repetitive SRV seat leakage. Specifically, as-found testing determined six SRVs had pilot valve setpoints outside the TS allowed tolerance in each of the last three operating cycles (cycle 15, 16, and 17). The actual relief pressures of the as-found tests ranged between +3.2 percent and +9.4 percent of the nominal specified setpoint pressure. In addition, seat leakage was observed in one SRV during cycle 16 and two SRVs during cycle 17.

Fourteen SRV's are installed in the HCGS main steam system to provide reactor pressure vessel overpressure protection and provide for automatic/manual depressurization function. TS 3.4.2.1, "Safety/Relief Valves," requires that 13 of the 14 SRVs be operable to ensure the safety function. TS surveillance requirement 4.4.2.2 requires verification that the safety function lift setpoints of the SRVs are within +/- 3 percent of the nominal setpoint. This surveillance testing is conducted during refueling outages when the SRVs are accessible during reactor shutdown conditions. The inspectors noted PSEG has issued several Licensee Event Reports (LERs) over the

years for exceeding the SRV setpoint tolerance due to setpoint drift, reporting the issue in accordance with 10 CFR 50.73 (a)(2)(i)(B) as any operation or condition prohibited by the plant TS.

A cross-functional root cause team evaluation (70128407), completed February 17, 2012, determined the root cause of the HCGS SRVs exceeding the design tolerance was due to corrosion bonding that forms between the mating surfaces of the pilot disc and the seat in the pilot body. HCGS also determined these failures were consistent with known chronic industry experience with the two-stage SRVs. The industry and PSEG have identified and implemented numerous mitigating strategies including different pilot disc materials/coatings, critical pilot disc and seat dimensions, and increased TS setpoint margin to mitigate the problems associated with the design. Nonetheless, the inspectors noted HCGS has not achieved improved performance, even after implementing several of the Boiling Water Reactor Owner Group recommended corrective actions.

The inspectors noted the SRVs are currently in the a(2) category of the maintenance rule and questioned the technical justification of the established performance criteria based on industry operating experience and overall system performance. Additionally, the inspectors noted that in 2003, the SRVs had been placed in the a(1) category of the maintenance rule, and specific goals and performance monitoring of the SRVs were properly initiated per 10 CFR 50.65 (a)(1). The inspectors interviewed the HCGS maintenance rule coordinator, the main steam system engineer and design engineer who stated that a new a(1) evaluation was not required for the SRVs setpoint drift that occurred in the last three cycles, because the setpoint drift did not constitute a maintenance rule functional failure. Specifically, in all cases, the as-found lift settings did not exceed PSEG's established maintenance rule performance criteria for the SRVs. The inspectors also reviewed the applicable PSEG maintenance rule procedures (ER-AA-310, ER-AA-310-1004, and ER-AA-310-1005).

The inspectors determined that for each of the identified SRV setpoint drift and seat leakage cases at HCGS the deficiencies were appropriately entered into the corrective action program, the causes of the deficiencies were identified, and corrective actions were taken to bring the SRVs into compliance with TS 3.4.2.1 and 4.4.2.2. PSEG's evaluations for the failed SRVs as-found lift setpoint tests concluded that each test failure was bounded by the plant overpressure analysis and that no safety limits were exceeded. The inspectors noted one long-term corrective action effort was ongoing at the time of inspection: replacement of the Target Rock two-stage SRVs with a completely different design and manufacturer. PSEG's current plan is to complete the new design in time to allow installation to begin during the Spring 2015 refueling outage. The inspectors considered this proposed corrective action to be reasonable to address the longstanding problem with SRV setpoint drift.

#### 40A3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 3 samples)

##### .1 (Closed) LER 05000354/2012-003-00: Operation with the Potential to Drain the Reactor Vessel

On April 22, 2012, at 5:30 p.m., Hope Creek Generating Station commenced an operation with the potential to drain the reactor vessel (OPDRV) without establishing secondary containment integrity. An OPDRV is an activity that could result in the

draining or siphoning of the reactor pressure vessel (RPV) water level below the top of fuel, without crediting the use of mitigating measures to terminate the uncovering of fuel. Based on TS applicability requirements, an OPDRV is a change to the applicability as related to the limiting condition of operation, and therefore was treated by PSEG much like a mode change. Secondary containment is required by TS 3/4.6.5.1 in Operational Condition \*, which is a condition during OPDRV. The required action for this specification is to suspend OPDRV operations. Therefore, entering the OPDRV without establishing secondary containment integrity was considered a condition prohibited by TSs as defined by 10 CFR 50.73(a)(2)(i)(B).

In this case, the specific OPDRV was the replacement of eight local power range monitor (LPRM) strings. The OPDRV activity commenced when the instrument handling tool was engaged on the first LPRM string to be removed and continued until the last LPRM string was reinserted into the core and had an acceptable seal as verified by minimal water leakage at the water seal tube drain line. The OPDRV was completed in accordance with PSEG procedure OP-HC-108-102, "Management of Operations with the Potential to Drain the Reactor Vessel." The OPDRV was completed and exited at 1:04 p.m., on April 23, 2012.

NRC Enforcement Guidance Memorandum (EGM) 11-03, "Enforcement Guidance Memorandum On Dispositioning Boiling Water Reactor Licensee Noncompliance With Technical Specification Containment Requirements During Operations With A Potential For Draining The Reactor Vessel," provides, in part, for the exercise of enforcement discretion only if the licensee demonstrates that it has met four specific criteria during an OPDRV activity. The inspectors' assessments of PSEG's implementation of these four criteria during the LPRM replacement activity are described below.

- 1) The inspectors observed that, as required by the EGM, the OPDRV activity was logged in the control room narrative logs and that the log entry appropriately recorded that the C RHR pump was the standby source of makeup designated for the evolution.
- 2) The inspectors noted that the reactor vessel water level was maintained at least 22 feet and 2 inches over the top of the RPV flange. Although this did not meet the specific requirement of at least 23 feet as listed in EGM 11-003, which was based on the BWR/4 Standard TS LCO 3.9.8 applicability, the inspectors concluded that the water level maintained by PSEG was acceptable because it was in compliance with the minimum water level allowed by HC TS LCO 3.9.8 applicability. The inspectors also noted that at least one safety-related pump (the C RHR pump) was the standby source of makeup designated in the control room narrative logs for the evolution. PSEG reported that the worst case estimated time to drain the reactor cavity to the RPV flange was 102.7 hours, which met the EGM criteria of >72 hours).
- 3) The inspectors verified that the OPDRV was not conducted in Mode 4 and that PSEG did not move irradiated fuel during the OPDRV. The inspectors noted that PSEG had in place a contingency plan for isolating the potential leakage path, which was to use an incore housing plug to seal the opening (LPRM dry tube), should difficulty arise during the LPRM replacement activities. The inspectors verified that two independent means of measuring RPV water level (one alarming) were available for identifying the onset of loss of inventory events.

- 4) In preparation for taking the plant to Operational Condition \* (OPDRV), PSEG performed a risk assessment and invoked TS 3.0.4.b for the following inoperable equipment: B filtration recirculation ventilation system (FRVS) vent fan; B & F FRVS recirculation fans; and the B control room air conditioning. With the exception of not setting secondary containment, the inspectors did not identify any other equipment where PSEG did not follow the TS applicability and action requirements for Operational Condition \*.

TS 3.6.5.1 is applicable in Operational Conditions 1, 2, 3 and \* requires that secondary containment integrity shall be maintained. Operational Condition \* is defined, in part, as being during OPDRV. TS 3.6.5.1, action b, states, in part, in operational condition, \* suspend operations with a potential for draining the reactor vessel. Contrary to the above, between 5:30 p.m. on April 22, 2012, and 1:04 p.m. on April 23, 2012, Hope Creek Generating Station did not maintain secondary containment integrity while conducting an OPDRV. Because the violation was identified during the discretion period described in EGM 11-003, the NRC is exercising enforcement discretion in accordance with Section 3.5, "Violations Involving Special Circumstances," of the NRC Enforcement Policy and, therefore, will not issue enforcement action for this violation.

In accordance with EGM 11-003, each licensee that receives discretion must submit a license amendment request within 4 months of the NRC staff's publication in the Federal Register of the notice of availability for a generic change to the Standard Technical Specifications to provide more clarity to the term OPDRV. The inspectors observed that PSEG is tracking the need to submit a license amendment request in its corrective action program as notification 205595547. This LER is closed.

- .2 (Closed) LER 05000354/2011-004-00: Retraction - HPCI Operation Credit in UFSAR Scenario not Supported by Existing Documentation

In August of 2011, Hope Creek Engineering identified a condition in which the HPCI system potentially could be prevented from fulfilling its safety function. The HPCI room ventilation delta- temperature trip of 70°F, which isolates HPCI in the event of a steam leak, had the potential to isolate HPCI prematurely in extreme winter conditions. This would impact the ability of HPCI to fulfill its design function during the accident scenario listed in UFSAR Table 6.3-6 where one of the assumed single failures listed is the loss of an EDG coincident with a loss of coolant accident (LOCA) and a loss of offsite power (LOOP). This would result in the loss of the HPCI room coolers.

Subsequent to submittal of LER 2011-001, PSEG conducted a winter time reactor building ventilation system analysis and this analysis provided realistic low values of temperature time history of FRVS supply temperature to the HPCI room. The analysis was performed using a GOTHIC model of the reactor building under winter conditions. The results of this analysis showed that the HPCI room ventilation outlet to inlet temperature would not exceed 65°F.

The inspectors reviewed PSEG's analysis and confirmed that the condition originally identified in August 2011 would not have prevented the fulfillment of the HPCI system safety function; therefore, the condition was not reportable and this LER is closed.

#### 4OA5 Other Activities

##### .1 Buried Piping, Temporary Instruction 2515/182, Phase 1

###### a. Inspection Scope

PSEG's buried piping and underground piping and tanks program was inspected in accordance with paragraphs 03.01 through 03.01.c of Temporary Instruction 2515/182 and was found to meet all applicable aspects of the NEI document 09-14, Revision 1, as set forth in Table 1 of Temporary Instruction 2515/182.

###### b. Findings

No findings were identified.

##### .2 Temporary Instruction 2515/187 - Inspection of Near-Term Task Force Recommendation 2.3 - Flooding Walkdowns

On October 1, 2012, PSEG expects to commence external flood protection walkdown activities using an NRC-endorsed walkdown methodology. These flooding walkdowns are being performed at all sites in response to Enclosure 4 of a letter from the NRC to licensees entitled, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," dated March 12, 2012 (ADAMS Accession No. ML12053A340). The results of this temporary instruction will be documented in a future inspection report.

##### .3 Temporary Instruction 2515/188 - Inspection of Near-Term Task Force Recommendation 2.3 - Seismic Walkdowns

On October 3, 2012, PSEG expects to commence seismic walkdown activities using an NRC-endorsed seismic walkdown methodology. These seismic walkdowns are being performed at all sites in response to Enclosure 3 of a letter from the NRC to licensees entitled, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," dated March 12, 2012 (ADAMS Accession No. ML12053A340). When complete, the results of this temporary instruction will be documented in a future inspection report.

#### 4OA6 Meetings, Including Exit

On October 11, 2012, the inspectors presented the inspection results to Mr. J. Perry, Site Vice President of Hope Creek, and other members of the Hope Creek staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

### **ATTACHMENT: SUPPLEMENTARY INFORMATION**

**SUPPLEMENTARY INFORMATION****KEY POINTS OF CONTACT**PSEG Personnel

J. Perry, Site Vice President  
 E. Carr, Plant Manager  
 W. Kopchick, Operations Director  
 M. Dior, Work Management Director  
 K. Knaide, Engineering Director  
 F. Mooney, Maintenance Director  
 P. Duca, Senior Engineer, Regulatory Assurance  
 F. Possessky, Acting Regulatory Assurance Manager  
 H. Trimble, Radiation Protection Manager  
 D. Boyle, Operations Support Manager  
 J. Melchionna, Corporate Underground Piping Supervisor  
 J. Ridgeway, Engineer, Cathodic Protection  
 M. Murray, Underground Piping and Tanks Program Engineer  
 F. Leeser, Chemistry Manager  
 J. Pantazes, Manager, Nuclear Environmental Affairs  
 J. Russell, Nuclear Environmental Specialist  
 M. Conroy, Senior Program Engineer  
 C. Johnson, Senior MOV Program Engineer

**LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED**Closed

05000354/2012-003-00	LER	Operation with the Potential to Drain the Reactor Vessel (Section 4OA3.2)
05000354/2011-004-00	LER	Retraction - HPCI Operation Credit in UFSAR Scenario not Supported by Existing Documentation (Section 4OA3.3)

**LIST OF DOCUMENTS REVIEWED****Section 1R01: Adverse Weather Protection**Notifications

20575018, HC.OP-AB.MISC-0001 Entered Due to Storm

**Section 1R04: Equipment Alignment**Procedures

HC.OP-SO.KJ-0001, Emergency Diesel Generator Operations, Revision 64  
 HC.OP-SO.BD-0001, Reactor Core Isolation Cooling System Operation, Revision 40

HC.OP-ST.BD-0001, RCIC Piping and Flow Path Verification - Monthly, Revision 12  
HC.OP-SO.BE-0001, Core Spray System Operations, Revision 15  
HC.OP-ST.BE-0001, A Core Spray Loop System Piping and Flow Path Verification - Monthly,  
Revision 13

Notifications

20558525, Pressure Low Out-of-Specification  
20563579, 1KJPI-7799B, Pressure Out of Specification Low  
20567310, C EDG LO Strainer Trending High  
20550408, HC.OP-IS.BD-0001 Revision Request  
20558854, IST Re-Baseline Evaluation Request  
20563596, RCIC Inboard Gland Seal Reading Zero  
20570556, HC.OP-SO.BD-0001 Revision Request  
20571740, RCIC Lube Oil Relay Failed  
20555333, C CS Room Possible Leak  
20561520, HC.OP-IS.BE-0101 Revision Request  
20565724, Core Spray IST Flow Indications

Work Orders

70142159, RCIC Lube Oil Relay Failed

Drawings

M-30-1, Diesel Engine Auxiliary Systems, Sheets 1, 2, 3, Revisions 26, 20, 19  
M-49-1, Reactor Core Isolation Cooling, Revision 29  
M-52-1, Core Spray, Revision 31

Other Documents

HC.OP-ST.KJ-0001, EDG 1AG400 Operability Test, Revision 77, dated 5/29/2012  
HC.OP-ST.KJ-0002, EDG 1BG400 Operability Test, Revision 76, dated 6/11/2012  
HC.OP-ST.KJ-0003, EDG 1CG400 Operability Test, Revision 75, dated 6/4/2012  
HC.OP-IS.BD-0001, Reactor Core Isolation Cooling Pump - OP203 - Inservice Test,  
Revision 54, completed 6/12/2012  
HC.OP-IS.BD-0101, Reactor Core Isolation Cooling System Valves - Inservice Test,  
Revision 58, completed 6/15/2012  
HC.OP-ST.BD-0001 - RCIC Piping and Flow Path Verification - Monthly, Revision 12,  
completed 7/17/2012  
RCIC System Health Report, Q2/2012  
HC.OP-IS.BE-0001, A and C Core Spray Pumps - AP206 and CP206 - Inservice Test,  
Revision 41, completed 7/10/2012  
HC.OP-IS.BE-0101, CS Subsystem A Valves - Inservice Test, Revision 28, completed 7/11/12

**Section 1R05: Fire Protection**

Procedures

FP-AA-011, Control of Transient Combustible Material, Revision 2  
FRH-II-412, RCIC Pump and Turbine Room, RHR Pump and Heat Exchanger Rooms, and  
Electrical Equipment Room Elevation: 54', Revision 3  
FRH-II-422, RHR Heat Exchanger Room & MCC Area Elevation: 77'-0", Revision 3  
FRH-II-461, SLC Area: 162'-0", Revision 3  
FRH-II-511, Diesel Fuel Oil Storage Tanks Area: 54'-0", Revision 6  
FRH-II-571, HVAC Equipment Rooms, Elevation: 178' and 199', Revision 6

Other Documents

Hope Creek Temporary Combustible Permit Logbook

**Section 1R06: Flood Protection Measures**

Procedures

HC.FP-SV.ZZ-0026, Flood and Fire Barrier Penetration Seal Inspection, Revision 6

Notifications

20561238, Pump Running Noisy

20573139, XZBI-S-4107-001 Rx Bldg Flange Pene

20573104, CDBI-S-4107-002 Rx Bldg Flange Pene

Drawings

M-97-1, Building and Equipment Drain - Reactor Building, Revision 16

A-0201-0, General Plant Floor Plant, Level 1 - Elevation 54'-0", Revision 11

Calculations

11-92, Reactor Building Flooding - Elevation 54' and 77', Revision 5

Other Documents

Hope Creek PSA (HC PSA)-17, Internal Flood Walkdown Notebook, April 2008

Hope Creek PSA (HC PSA)-12, Internal Flood Evaluation Summary and Notebook,  
August 2008

**Section 1R07: Heat Sink Performance**

Procedures

ER-AA-340-1002, Service Water Heat Exchanger and Component Inspection Guide, Revision 5

Notifications

20571583, Engineering Problems Qualification Vulnerability

20571603, M&TE Omitted from PRT in SACS in Heat Exchanger Tests

20571604, Heat Exchanger Test Procedure Steps Not Documented

20571605, SACS Heat Exchanger Results Not Trended

20571606, GL 89-13 Program Report Error

20571607, GL 89-13 Program Enhancement

20571608, Enhancement to GL 89-13 Maintenance Items

Completed Surveillances

HC.OP-FT.EA-0001, Validating SSWS Flow through SACS HXs, Revision 13 (B1E201 test record dated 3/13/2012; Order 30218792)

HC.OP-FT.EA-0001, Validating SSWS Flow through SACS HXs, Revision 13 (B2E201 test record dated 3/19/2012; Order 30219048)

HC.OP-FT.EA-0001, Validating SSWS Flow through SACS HXs, Revision 13 (B1E201 test record dated 6/11/2012; Order 30224169)

HC.OP-FT.EA-0001, Validating SSWS Flow through SACS HXs, Revision 13 (B2E201 test record dated 6/17/2012; Order 30224529)

Calculations

EG-0047, HCGS Ultimate Heat Sink Temperature Limits - EPU, Revision 5

EA-0033, Biofouling Monitoring and Trending Calculation, Revision 0

Other Documents

PSEG Letter LR-N97411 (E.C. Simpson) to NRC regarding Update on the Implementation of Commitments Made in Response to Generic Letter 89-13, Hope Creek Generating Station, Facility Operating License NPF-57, Docket No. 50-354, dated 8/1/1997

NRC Letter (D.H. Jaffe) to PSEG (L. R. Eliason) regarding Change to Commitments Associated with Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," July 18, 1989, for Hope Creek Generating Station (TAC No. M99369), dated 9/19/1997

HX/Component Data Sheet, SACS-B1 (Bottom) HX, dated 5/6/2012 (Order 30214172; Records Management DEH120176)

HX/Component Data Sheet, SACS B-2 (Top) HX, dated 5/6/2012 (Order 30214171; Records Management DEH120176)

Outage System/Program Scope Selection and Review Checklist, GL 89-13 Program, R18 Refueling Outage, dated 6/19/2012

**Section 1R11: Licensed Operator Regualification Program**

Procedures

HC.OP-IO.ZZ-0004, Shutdown from Rated Power to Cold Shutdown, Revision 95

Notifications

20569495, Hope Creek Simulator

20567999, Crew Failure During Simulator Evaluation - HC

20573774, C RFP Thrust Bearing Displacement Alarm

Other Documents

Scenario Guide (SG)-688, Seismic Events/Shear of B PCP/Loss of AD482/Torus Break/Low Power ATWS, dated 7/2/2012

DEP Observation Checklist, EP-AA-125-1002-F01, Revision 2, completed in simulated main control room for Scenario Guide Reference Number SG-688, dated 7/24/2012

DEP Observation Checklist, EP-AA-125-1002-F01, Revision 2, completed in simulated main control room for Scenario Guide Reference Number SG-688, dated 8/7/2012

Main Control Room Operator Narrative Logs for Night Shift, 9/8/2012

Reactivity Management Plan 2012-0072 for September Down Power to 16%

Integrated Daily Work Schedule for Work Week 236/237, Friday 9/7/2012 to Tuesday, 9/11/2012

**Section 1R12: Maintenance Effectiveness**

Procedures

ER-AA-310, Implementation of the Maintenance Rule, Revision 10

ER-HC-310-1009, Maintenance Rule System Function and Risk Significant Guide, Revision 8

HC.OP-FT.GJ-0001, AK400 Control Area Chilled Water System Venting - Monthly, Revision 3

HC.OP-SO.GJ-0001, A(B) K400 Control Area Chilled Water System Operation, Revision 56

Notifications (\*NRC-identified)

20536815, Maintenance Rule Periodic (a)(3) Self Assessment

20516990, AP400 Chillwater Circ Pump Tripped

20541146, Guide Vane Icing on AK400

20546945, AK400 Low Oil Level

20551811, AK400 Control Rm Chiller Oil Level High

20560946, AP400 Tripped on Start  
20560948, Request for Tech/Op Evaluation  
20562193, Chilled Water Pump  
20565562, Control Room Chilled Water Pump Tripped  
20566499, Chilled Water Requires Troubleshooting  
20567269, A Control Area Chilled Water System Trip  
20569718, A Control Area Ventilation Tripped  
20570629\*, NRC Questions about Chiller WGE

Work Orders

70132085, Maintenance Rule Periodic (a)(3) Self Assessment  
60105009, TS A MCR Ventilation Tripped  
70140751, A Control Room Chiller Trip

Other Documents

10 CFR 50.65(a)(3) Periodic Assessment Report for 9/1/2010 - 3/31/2012 (Order 70132085)  
System Health Report, Control Area Chilled Water, Q2-2012

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

Procedures

OP-AA-101-112-1002, On-Line Risk Assessment, Revision 6  
OP-AA-108-116, Protected Equipment Program, Revision 6  
OP-HC-108-115-1001, Operability Assessment and Equipment Control Program, Revision 20

Notifications

20567715, 10-U-2022227 Leak Pressure at 0 psig  
20566499, H1GJ-1A-P-400 Control Room (CR) Chill Water (CW) Pump Tripped  
20566620, 10K107 Service Air Compressor Surging  
20567358, 00K107 Failure to Auto Start  
20570677, Trip of B RPS Power Supply  
20573615, AK400 Trip Resulting in TS 3.0.3 Entry  
20573680, BK400 Trip Resulting in TS 3.0.3 Entry  
20573701, Obtain Resistance Readings for HS-F001  
20573697, Perform Technical Evaluation for Burnishing Contacts  
20574438, Revise HPCI STs for F001 Testing  
20574505, Extent of Condition Review of HPCI MOV

Work Orders

60104640, Reactivity Risk Evaluation, 10-U-2022227 Leak Pressure at 0 psig  
60104567, CR CW Pump Trip Requires Troubleshooting  
60100408, 10K107 Station Air Compressor Surging  
60105049, Trip of B RPS Power Supply

Other Documents

HCGS-WW-1228, HCGS PRA Risk Evaluation Form, Revision 1 and Revision 3  
Prompt Investigation Report (Notification 20570677), B RPS Bus Lost Power

## **Section 1R15: Operability Determinations and Functionality Assessments**

### Procedures

OP-HC-108-115-1001, Operability Assessment and Equipment Control Program, Revision 15  
HC.OP-SO.GJ-0001, A(B) K400 Control Area Chilled Water System Operation, Revision 56  
HC.OP-SO.BJ-0001, High Pressure Coolant Injection System Operation, Revisions 46 & 47  
HC.OP-IS.BJ-0001, HPCI Main and Booster Pump Set - OP204 and OP217 - Inservice Test, Revision 59

### Notifications (\*NRC-identified)

20569718, AK400 Chiller Trip  
20570257, LTA Preps for AK400 Troubleshooting  
20570414, HC.OP-DL.ZZ-0006 Revision Request  
20570530, HC.OP-SO.GJ-0001 Revision Request  
20570547, AK400 Chiller Oil Sight Glass Tilted  
20570629\*, NRC - Questions About Chiller WGE  
20570624, OTSC for HC.OP-SO.GJ-0001  
20570805, Oil Level High in AK400  
20571888, Oil Level Exceeds Maximum Start Level  
20573547, 1FD-FV-4879 - Failed to Close  
20573508, HC.OP-SO.BJ-0001 Change

### Work Orders

60071213, Technical Evaluation AK400  
60100581, Troubleshoot Determine Flows to AK400 Loads  
60104597, Revise Setpoints  
70093203, HC Emergent Investigate and Repair  
80107096, A Control Room Chiller Evaluation  
80107161, 1FD-FV-4879 Failed to Close Evaluation

### Other Documents

PM723Q-0121, Instruction Manual Centrifugal Refrigeration Machine, Revision 29  
PN1-E41-C002-0054, HPCI Woodward Governor Technical Manual, Revision 23

## **Section 1R18: Plant Modifications**

### Procedures

CC-AA-112, Temporary Configuration Change, Revision 12  
HC.MD-ST.ZZ-0012, Master Pact Low Voltage Air Circuit Breaker Inspection and Preventive Maintenance, Revision 9  
HC.OP-SO.GM-0001, Diesel Area Ventilation System Operation, Revision 17

### Notifications

20562578, BV412 Fan Low Flow Trip  
20565504, HC.MD-ST.ZZ-0012 Revision Request

### Work Orders

60104285, TCCP 4HT12-010 Install Contact  
60104286, TCCP 4HT12-011 Install Contact  
60104297, TCCP 4HT12-012 Install Contact  
60104300, TCCP 4HT12-013 Install Contact

60104301, TCCP 4HT12-014 Install Contact  
60104362, TCCP 4HT10-015 Install Contact

Drawings

E-0486-0, Electrical Schematic Diagram Diesel Gen Rm Recirc System Fan, Revision 12

Other Documents

TCCP No. 4HT-12-010 (NUCP Order No. 80106825), Auxiliary Contact for Closing Coil Circuit for H1GM-1A-V-412, Revision 0  
TCCP No. 4HT-12-011 (NUCP Order No. 80106828), Auxiliary Contact for Closing Coil Circuit for H1GH-1E-V-412, Revision 0  
TCCP No. 4HT-12-012 (NUCP Order No. 80106869), Auxiliary Contact for Closing Coil Circuit for H1GM-1B-V-412, Revision 0  
TCCP No. 4HT-12-013 (NUCP Order No. 80106870), Auxiliary Contact for Closing Coil Circuit for H1GM-1F-V-412, Revision 0  
TCCP No. 4HT-12-014 (NUCP Order No. 80106871), Auxiliary Contact for Closing Coil Circuit for H1GM-1C-V-412, Revision 0  
TCCP No. 4HT-12-015 (NUCP Order No. 80106872), Auxiliary Contact for Closing Coil Circuit for H1GM-1G-V-412, Revision 0

**Section 1R19: Post-Maintenance Testing**

Procedures

MA-AA-716-012, Post-Maintenance Testing, Revision 18  
HC.MD-CM.KJ-0001, Diesel Engine Overhaul, Revision 22  
HC.MD-CM.KJ-0009, Diesel Generator Fuel Oil System Maintenance, Revision 9  
HC.IC-GP.ZZ-0080, Bettis Actuator Maintenance, Revision 5  
HC.OP-SO.GK-0001, Control Area Ventilation System Operation, Revision 19

Completed Surveillances

HC.OP-ST.BF-0002, Control Rod Drive Accumulator Operability Check - Weekly (Unsat.), dated 7/17/2012  
HC.OP-ST.BF-0002, Control Rod Drive Accumulator Operability Check - Weekly (Retest 22-27 only), dated 7/17/2012  
HC.OP-ST.KJ-0003, Emergency Diesel Generator 1CG400 Operability Test, dated 7/12/2012  
HC.MD-ST.ZZ-0009, Motor Operated Valve Thermal Overload Protection Surveillance, dated 8/21/2012  
HC.OP-IS.BE-0102, Core Spray Subsystem B Valves Inservice Test, dated 8/21/2012  
HC.OP-IS.EG-0102, Safety Auxiliaries Cooling System - Subsystem B Valves, dated 8/29/2012

Notifications

20575801\*, NRC Question BK400 outage  
20567715, 10-U-2022227 Leak Pressure at 0 psig  
20566974, 1KJTS-6610C Failed Calibration  
20567271, C EDG Rocker Arm Push Rod Assembly Cap  
20567301, C EDG Crankcase Level Low Alarm  
20567310, C EDG Lube Oil Strainer Trending High  
20569619, Air Leaks Control Side Under Decking  
20569941, Evaluate for Possible Maintenance Rework  
20571910, Energy Within the Tagging Boundary  
20572201, EG-HV-2398B Failed IST Time  
20572945, EG-HV-2398B Failed IST

20572960, IST Re-Baseline Evaluation Required  
20575662, Tech Spec Related to Control Room Vent

Work Orders

60104640-0020, Retest, 10-U-2022227 Leak Pressure at 0 psig  
30177230, C EDG Turbo Chargers and Generator  
30191272, C EDG Local Control Panel Preventive Maintenance  
30198948, Replace Engine Driven Fuel Oil Pump  
50060838, Remove/Install EDG Jacket Water Relief Valve  
50150508, C EDG Operability Run  
60100089, C EDG Gasket Leaks  
60100172, Replace Switch  
60104640-0020, Air Leaks Control Side Under Decking  
40001325, Replace Transient Suppressors  
60077106, Replace MCC H1BE-52-242012  
60105210, EG-HV-2398B Failed IST  
70142706, EG-HV-2398B Failed IST  
30169568, 48 Month, 1-B-K-400, Tune Controller

**Section 1R22: Surveillance Testing**

Procedures

HC.OP-IS.BC-0004, DP202, D Residual Heat Removal Pump In-Service Test, Revision 38  
HC.CH-RC.ZZ-0002, Gross Beta and Tritium by Liquid Scintillation, Revision 19  
HC.CH-SA.RC-0002, Operation of the Reactor Building/RHR Sample Stations, Revision 17  
HC.CH-TI.ZZ-0021, Gamma Spectroscopy Sample Preparation, Revision 8  
HC.CH-SA-ZZ-0001, Chemistry Sampling Techniques, Revision 13  
HC.CH-RC.ZZ-2525, Gamma Spectroscopy Analysis using CAS, Revision 4

Work Orders

50150304, D RHR Pump 1DP202 Quarterly In-Service Test  
50150520, OP-IS.BH-0003 A SLC Pump Surveillance  
30194623, IA-P-208 SLC Pump Comprehensive Test  
60105349, Failure of the HV-F001  
60105574, 1FCPI-4287-E51 Gauge Not Reading

Notifications

20524287, Visible Boron on A SLC Pump  
20573442, HPCI HV-F001 Never Opened  
20573547, 1FD-FV-4879 Failed to Close  
20573508, Revision to SO.BJ-0001 to Include HPCI Governor Information  
20574190, Gauge Not Reading

Completed Surveillances

HC.OP-IS.BH-0003, Standby Liquid Control - AP-208 - Inservice Test, dated 8/29/2012  
HC.OP-IS.BH-0003, Standby Liquid Control - AP-208 - Inservice Test, dated 5/31/2012  
HC.OP-IS.BJ-0001, Main and Booster Pump Set - OP204 and OP217 - Inservice Test, dated 9/4/2012  
HC.OP-IS.BJ-0001, Main and Booster Pump Set - OP204 and OP217 - Inservice Test, dated 9/5/2012

Other Documents

Reactor Water Cleanup Influent Solubles Analysis Data Sheet, dated 9/10/2012

**Section 1EP6: Drill Evaluation**Other Documents

Scenario Guide (SG)-688, Seismic Events/Shear of B PCP/Loss of AD482/Torus Break/Low Power ATWS, dated 7/2/2012

DEP Observation Checklist, EP-AA-125-1002-F01, Revision 2, completed in simulated main control room for Scenario Guide Reference Number SG-688, dated 7/31/2012

DEP Observation Checklist, EP-AA-125-1002-F01, Revision 2, completed in simulated main control room for Scenario Guide Reference Number SG-688, dated 8/7/2012

**Section 2RS1 Radiological Hazard Assessment and Exposure Controls**Procedures

HC.RP-TI.XX-0003, Reactor Cavity, Fuel Pool, and Drywell Special Evolutions, Revision 25

NC.RS-TI.ZZ-0550, Calibration of the Bicron NE technology IPM 8 and IPM 9 Installed Personnel Monitors, Revision 2

NC.RS-TI.ZZ-0560, Calibration and Source Check of the SPM-906 Portal Monitor, Revision 3

NC.RS-TI.ZZ-0558, Calibration of the Eberline and Bicron NE HFM7 Hand and Foot Monitor, Revision 3

NC.RS-TI.ZZ-0518, Calibration of the Bicron NE Article Monitor, Revision 5

RP-AA-503, Unconditional Release Survey Method, Revision 7

Notifications

20570809	20571967	20572204	20574789	20574179	20574499
20574611	20574791				

Other Documents

Formal Benchmarking Plan Template

Focused Area Self-Assessment -SAP 70133970

Apparent Cause Evaluation Template – CR 2056692/70140637

Apparent Cause Evaluation Template LS-AA-125-1003-F1, Rev. 0

Check-in Self-Assessment Report –SAP 70140284

Common cause Analysis Report SAP 70140390 EPD Alarm

Instrument Calibration and Source Check Reviews (SAM-9- 105,118; SPM-906- 906100, 906128; IPM-8-108, 109; IPM8/9 -109, Bicron NE HFMT 474; Bicron NE -475)

Technical basis Document- HRP-12-006, Plant Nuclide Mix Evaluation, Revision 0

**Section 2RS2 Occupational ALARA Planning and Controls**Procedures

HC.RP-TI.XX-0003, Reactor Cavity, Fuel Pool, and Drywell Special Evolutions, Revision 25

Other Documents

ALARA Plan –RWP No. 1/Task 4777 – Co-60 Pin Extraction

Dose Contingency Plans

**Section 2RS3 In-Plant Airborne Radioactivity Control and Mitigation**

Procedures

HC.RP-TI.XX-0003, Reactor Cavity, Fuel Pool, and Drywell Special Evolutions, Revision 25

Notifications

20574446    20574447    20574388    20574403

**Section 2RS4 Occupational Dose Assessment**

Procedures

RP-AA-215-1001, Electronic Dosimeter Alarm Investigation, Revision 0  
RP-AA-350, Response to Potentially Contaminated Personnel, Revision 10  
RP-AA-274, Evaluation of Bioassay Data, Revision 0

Other Documents

EPD/TLD –Error Resolution Report  
2012 Annual Bioassay Program Review  
Positive Whole Body Count Data (various)  
Positive Skin Contamination Data (various)

**Section 2RS5 Radiation Monitoring Instrumentation**

Procedures

HC.CH-TI.ZZ-0021, Gamma Spectroscopy Sample Preparation, Revision 8  
NC.CH-RC.ZZ-2525, Gamma Spectroscopy Using CAS, Revision 4  
RP-AA-503, Unconditional Release Survey Method, Revision 7  
NC.RS-TI.ZZ-0550, calibration of the Bicron NE technology IPM 8 and IPM 9 Installed Personnel Monitors, Revision 2  
NC.RS-TI.ZZ-0560, Calibration and Source Check of the SPM-906 Portal Monitor, Revision 3  
NC.RS-TI-ZZ-0558, Calibration of the Eberline and Bicron NE HFM7 Hand and Foot Monitor, Revision 3  
NC.RS-TI.ZZ-0518, Calibration of the Bicron NE Article Monitor, Revision 5

**Section 2RS6 Radioactive Gaseous and Liquid Effluent Treatment**

Procedures

HC.RA-ST.6U-0001, FRVS Recirculation ESF Atmosphere Clean-up Surveillance, Revision 6  
CY-AA-170-4000, Radiological Ground Water Protection program Implementation, Revision 8  
CY-AA-170-2100, Estimated Errors of Effluent Measurements, Revision 1  
CY-AA-170-3100, Offsite Dose Calculation manual Revisions, Revision 1  
CY-AA-170-2000, Annual Radioactive Effluent Release Report, Revision 4  
CY-AA-170-1000, Radiological Environmental Monitoring Program (REMP) and Meteorological Program Implementation, Revision 5  
CY-AA-170-501, Metrological Monitoring program Administration, Revision 0  
CY-AA-170-400, Radiological Ground Water Protection Program, Revision 4  
CY-AA-200, Radioactive Effluent Controls Program, Revision 2  
CY-AA-170-300, Offsite Dose Calculation Manual Administration, Revision 2  
CY-AA-170-000, Radioactive Effluent and Environmental Monitoring Programs, Revision 5  
CY-AA-170-100, Radiological Environmental Monitoring Program, Revision 5  
CY-AA-130-200, Chemistry Quality Control, Revision 9  
CY-AA-130-150, Chemistry Quality Assurance, Revision 0

Other Documents

Hope Creek Offsite Dose Calculation Manual, Rev. 26OD  
FRVS Performance Trend Data  
Corrective Action Documents (Notifications) – 20574681  
Meteorological Data  
Recommendations for New REMP Sampling Locations, dated September 10, 2012  
A Review of Gaseous Effluent Release Points and Dispersion Assumptions at the Salem and Hope Creek Nuclear Generating Stations, dated September 7, 2012

**Section 2RS7 Radiological Environmental Monitoring Program**

Procedures

CY-AA-170-4000, Radiological Ground Water Protection Program Implementation, Revision 8  
CY-AA-170-2100, Estimated Errors of Effluent Measurements, Revision 1  
CY-AA-170-3100, Offsite Dose Calculation manual Revisions, Revision 1  
CY-AA-170-2000, Annual Radioactive Effluent Release Report, Revision 4  
CY-AA-170-1000, Radiological Environmental Monitoring Program (REMP) and Meteorological Program Implementation, Revision 5  
CY-AA-170-501, Metrological Monitoring Program Administration, Revision 0  
CY-AA-170-400, Radiological Ground Water Protection Program, Revision 4  
CY-AA-200, Radioactive Effluent Controls Program, Revision 2  
CY-AA-170-300, Offsite Dose Calculation Manual Administration, Revision 2  
CY-AA-170-000, Radioactive Effluent and Environmental Monitoring Programs, Revision 5  
CY-AA-170-100, Radiological Environmental Monitoring Program, Revision 5  
CY-AA-130-200, Chemistry Quality Control, Revision 9  
CY-AA-130-150, Chemistry Quality Assurance, Revision 0  
CY-AA-500, Meteorological Tower Calibration

Other Documents

2010, 2011 Annual Radioactive Effluent Release Reports  
2010, 2011 Annual Radiological Environmental Operating Reports  
Marine Bivalve Shell Fish Report  
Update of Annual Average Metrological Parameters at Salem and Hope Creek Station, December 2011  
Land Use Census  
Quarterly Remedial Action Progress Reports- various  
REMP/RETS Action Tracking Matrix  
Recommendations for New REMP Sampling Locations, dated September 10, 2012  
A Review of Gaseous Effluent Release Points and Dispersion Assumptions at the Salem and Hope Creek Nuclear Generating Stations, dated September 7, 2012

**Section 4OA1: Performance Indicator Verification**

Procedures

HC.OP-DI.ZZ-0026, Surveillance Log, Revision 134  
LS-AA-2001, Collection and Reporting of NRC Performance Indicator Data, Revision 11  
LS-AA-2009, Monthly Data Elements for NRC Reactor Coolant System Activity, Revision 5  
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

Monthly Data Elements for NRC Reactor Coolant System Leakage Data Sheets

**Section 40A2: Problem Identification and Resolution**

Procedures

HC.OP-SO-SN-0001(Q), Nuclear Pressure Relief and Automatic Depressurization System Operation, Rev. 10

HC.MD-CM.AB-0006(Q), Main Steam Safety/Relief Valve Removal and Installation, Rev. 24

Drawings

7567F-010, Target Rock Model 7567F 6x10 Relief Valve, Rev. 9

Calculations

C-0121, Main Steam Line "B", MSRV Lines B, F, K, & P, Piping and Equipment Loads, Rev. 8

Other Documents

DEH110169, SRV-R, High Tail Pipe Temperature, Rev. 0, dated 7/22/11

DEH120045, SRV Setpoint Drift Root Cause Evaluation, Rev. 0, dated 9/13/11

Licensee Event Report 2009-002, dated 6/3/2009

Licensee Event Report 2010-002, dated 12/2/2010

Licensee Event Report 2010-002-01, dated 4/7/2011

Licensee Event Report 2012-004, dated 7/3/2012

HC-2011-03, OTDM-Operation with Elevated SRV Tailpipe Temperature on SRV-R, Rev. 3, dated 3/2/12

HCEP 03-005, Hope Creek Expert Panel Meeting Minutes, dated 8/29/2003

HCEP 06-006, Hope Creek Expert Panel Meeting Minutes, dated 9/12/2006

HCEP 08-002, Hope Creek Expert Panel Meeting Minutes, dated 1/24/2008

Purchase Order 4500561375, Main Steam Safety Relief Valve, dated 5/6/11

NRC Regulatory Issue Summary 2000-12, Resolution of Generic Safety Issue B-55, Improved Reliability of Target Rock Safety Relief Valves

NRC Safety Evaluation Report, Safety Relief Valve Setpoint Tolerance Change (TAC No. MA1674, dated 2/10/1999

NRC Resolution of Generic Safety Issue B-55, Improved Reliability of Target Rock Safety Relief Valves, dated 8/7/00

NRC Information Notice 2003-01, Supplement 1, Failure of a Boiling Water Reactor Target Rock Main Steam Safety Relief Valve, dated 1/15/03

NRC Information Notice 2006-24, Recent Operating Experience Associated with Pressurizer and Main Steam Safety Relief Valve Lift Setpoints, dated 11/14/06

NRC Closure Memorandum, Issue Resolution 2005-048, Evaluation-Palisades, MSSV's Exceeded Lift Setpoints Outside Technical Specification, dated 6/1/06

Second Quarter 2009 Main Steam System Health Report

Third Quarter 2009, Main Steam System Health Report

Third Quarter 2011, Main Steam System Health Report

Fourth Quarter 2011, Main Steam System Health Report

First Quarter 2012, Main Steam System Health Report

Second Quarter 2012, Main Steam System Health Report

Third Quarter 2012, Main Steam System Health Report

VTD 324450, Steam Safety Relief Valves Disassembly and Inspection, Rev. 6, dated 2/9/09

VTD 328266, Main Steam Relief Valves, Evaluation of the Propensity for Pilot Disc and Seat Corrosion Bonding and Pilot Performance Correlation Analysis for Two-Stage Target Rock Main Steam Relief Valves, Rev. 1, dated 8/22/06

VTD 328280, Steam Safety Relief Valves Disassembly and Inspection, Rev. 2, dated 10/25/11  
10CFR 50.65 (a)(3), Periodic Assessment for Period 09/1/2010-3/31/2012, dated 6/25/12

UFSAR Section 7.6.1.6, Main Steam Safety/Relief Valves-Relief Function, Rev.14

Work Orders

70096933      70115711      70138789

Notifications (\*written as a result of this inspection)

20411823      20525076      20532175      20545901      20559112      20575763\*

**Section 40A3: Follow-up of Events and Notices of Enforcement Discretion**

Procedures

OP-HC-108-102, Management of Operations with the Potential to Drain the Reactor Vessel, Revision 0

Notifications

20487335, Restore DW Air Gap Drain Functionality  
20570312, DCP Needed for License Commitments  
20538142, Create Order for OPDRV Procedure Revisions  
20536886, Integrate Rigging Requirements for OPDRVs  
20529254, NRC Enforcement Guidance (ML11251A230)  
20559547, OPDRV LAR Submittal Tracking

Work Orders

80106392, Drywell Air Gap Drain Line Permanent Use-As-Is Disposition Technical Evaluation  
70138857, OPDRV LAR Submittal Tracking  
70116793, Technical Evaluation Disposition for HPCI Room Temperature and Ventilation Air Temperature Difference across the Room

Other Documents

Letter (LR-N12-0212) from John F. Perry (PSEG) to Document Control Desk (USNRC), regarding License Renewal Commitment Implementation, dated 7/19/2012 (ML12228A388)  
Hope Creek Narrative Log for Dayshift on 4/22/2012  
Hope Creek Narrative Log for Dayshift on 4/23/2012  
OP-HC-108-102, Management of Operations with the Potential to Drain the Reactor Vessel, record of completed procedure, dated 4/23/2012 (Order 80105570)  
Technical Evaluation 80105570-0010 (DEH120014), Reactor Vessel Drain Down Time During Control Rod Drive Maintenance Window of Refueling Outage of April 2012  
Technical Evaluation 80105570-0020 (DEH120017), Reactor Vessel Drain Down Time During LPRM Maintenance Window of Refueling Outage of April 2012  
LR-N12-0114, Licensee Event Report Retraction of Hope Creek Licensee Event Report 2011-001, Revision 0  
NRC Regulatory Issue Summary (RIS) 2012-11, "NRC Staff Position On Dispositioning Boiling-Water Reactor Licensee Noncompliance with Technical Specification Requirements during Operations with a Potential for Draining the Reactor Vessel, dated September 26, 2012

**Section 40A5: Other Activities**Procedures

ER-AA-1102, Engineering Programs Health Reporting and Performance Indicators, Revision 1

ER-AA-5400-1002, Underground Piping Examination Guide

ER-AA-5400, Underground Piping Program (UPP) Guide

HC.MD-PM.QH-0001, Hope Creek Cathodic Protection System P.M., Revision 9

Notifications

20516744	20516775	20517030	20526339	20523185	20532362
20532464	20536115	20532660	20532668	20542522	20543426
20548123	20547618	20543410	20547097	20547323	20541312
20541313	20541712	20541727	20524649	20552196	20552197
20552198	20552199	20552200	20552298	20552393	20555552
20566502	20568052	20568188			

Other Documents

ER-AA-1102, Figure 8, Underground Piping Program-Specific Performance Indicators  
 Salem, Hope Creek Self Assessment for NRC Buried Piping TI Inspection - Phase 1, due  
 6/30/2012 per LS-AA-126-105, Notification/Order 20547097/70134766

Engineering Training Certification Guide for Buried Piping Program (BPP) Manager, Revision 0

NOS Audit/Assessments on Buried Pipe Program, NOSA-SLM-10-06, NOSA-HPC-10-06

H-12-0010, Cathodic Protection Scope Project Initiative for Hope Creek, dated 2/15/2012

TS 4.8.1.1.4 on buried fuel oil piping cathodic protection

Operability Document No. 60091378-0270-0010, Backfill Materials including flowable (CLSM)  
 Controlled Low Strength Material

**LIST OF ACRONYMS**

ADAMS	Agencywide Documents Access and Management System
ALARA	as low as reasonably achievable
CFR	Code of Federal Regulations
CS	core spray
DCP	design change package
EDG	emergency diesel generator
EGM	Enforcement Guidance Memorandum
FRVS	filtration recirculation ventilation system
GL	Generic Letter
HCGS	Hope Creek Generating Station
HPCI	high pressure coolant injection
HRA	high radiation area
HX	heat exchanger
LER	licensee event report
LOCA	loss of coolant accident
LOOP	loss of offsite power
LPRM	local power range monitor
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OPDRV	operation with the potential to drain the reactor vessel
PARS	Publicly Available Records
PI	performance indicator
PSEG	Public Service Enterprise Group Nuclear LLC
RCA	radiological controlled area
RCIC	reactor core isolation cooling
RCS	reactor coolant system
REMP	Radiological Environmental Monitoring Program
RHR	residual heat removal
RPV	reactor pressure vessel
RTP	rated thermal power
SACS	safety auxiliary cooling system
SLC	standby liquid control
SRV	safety relief valve
SSC	structure, system, or component
TCCP	temporary configuration change package
TLD	thermoluminescent dosimeter
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
VHRA	very high radiation area