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

January 22, 2010

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

SUBJECT: HOPE CREEK GENERATING STATION - NRC INTEGRATED INSPECTION REPORT 05000354/2009005

Dear Mr. Joyce:

On December 31, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Hope Creek Generating Station. The enclosed inspection report documents the inspection results discussed on January 7, 2010, with Mr. Perry and other members of your staff.

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

Based on the results of this inspection no findings of significance were identified. However, a licensee-identified violation that was determined to be of very low safety significance is listed in this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy because of the very low safety significance of the violation and because it is entered into your corrective action program. If you contest this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Hope Creek Generating Station.

In accordance with Title 10 of the Code of Federal Regulations (CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the

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Sincerely,

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

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

Enclosure: Inspection Report 05000354/2009005
w/Attachment: Supplemental Information

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Sincerely,

/RA/

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

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

REGION I

Docket No:	50-354
License No:	NPF-57
Report No:	05000354/2009005
Licensee:	PSEG Nuclear LLC (PSEG)
Facility:	Hope Creek Generating Station
Location:	P.O. Box 236 Hancocks Bridge, NJ 08038
Dates:	October 1, 2009 through December 31, 2009
Inspectors:	B. Welling, Senior Resident Inspector A. Patel, Resident Inspector S. Pindale, Senior Reactor Inspector J. Furia, Senior Health Physicist D. Silk, Senior Operations Engineer
Approved By:	Arthur L. Burritt, Chief Projects Branch 3 Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000354/2009005; 10/01/2009 - 12/31/2009; Hope Creek Generating Station; Routine Integrated Inspection Report.

This report covers a three-month period of inspection by resident inspectors and announced inspections by regional specialist 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 August 2006.

No findings of significance were identified.

Other Findings

A violation of very low safety significance, which was identified by PSEG, has been reviewed by the inspectors. Corrective actions taken or planned by PSEG have been entered into PSEG's corrective action program. This violation and the corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

The Hope Creek Generating Station (HCGS) operated at or near full power for the duration of the inspection period with the following exceptions. On October 20, operators reduced power to approximately 50 percent due to a failure of the A circulating water pump discharge valve. The unit was restored to full power on the same day. On December 5, operators reduced power to approximately 76 percent for turbine valve testing. The unit was restored to full power on December 6.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01 - 1 sample)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors completed one adverse weather protection inspection sample. The inspectors reviewed the scope of PSEG's cold weather preparations to verify that station personnel adequately prepared equipment to operate reliably in freezing conditions. Specifically, the inspectors performed a detailed review of PSEG's adverse weather procedures for seasonal extremes, interviewed engineering and operations personnel, and walked down those portions of the service water, condensate storage, and fire protection systems that can be impacted by cold temperatures. The inspectors verified that heat tracing and insulation used to protect these systems were functional and that system conditions were adequate to support operation in cold weather. The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04 - 3 samples)

.1 Partial Walkdown

a. Inspection Scope

The inspectors completed three partial walkdown inspection samples. The inspectors performed partial system walkdowns for the three systems listed below to verify the operability of redundant or diverse trains and components when safety equipment was unavailable. The inspectors completed walkdowns to determine whether there were discrepancies in the system's alignment that could impact the function of the system, and therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, walked down system components, and verified that selected breakers,

valves, and support equipment were in the correct position to support system operation. The inspectors also verified that PSEG had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program (CAP). Documents reviewed are listed in the Attachment.

- Reactor core isolation cooling (RCIC) system while the high pressure coolant injection (HPCI) system was out-of-service (OOS) for planned maintenance on October 27, 2009;
- A emergency diesel generator (EDG) while the B EDG was OOS for planned maintenance on November 9, 2009; and
- A, B, and C EDGs while the D EDG was OOS for planned maintenance on December 7, 2009.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 6 samples)

.1 Fire Protection - Tours

a. Inspection Scope

The inspectors completed six quarterly fire protection inspection samples. The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that combustibles and ignition sources were controlled in accordance with PSEG's administrative procedures; fire detection and suppression equipment was available for use; that passive fire barriers were maintained in good material condition; and that compensatory measures for OOS, degraded, or inoperable fire protection equipment were implemented in accordance with PSEG's fire plan. The areas toured are listed below with their associated pre-fire plan designator. Other documents reviewed are listed in the Attachment.

- FRH-II-414, A core spray (CS) room
- FRH-II-411, B CS room
- FRH-II-414, C CS room
- FRH-II-411, D CS room
- FRH-II-412, RCIC room
- FRH-II-413, HPCI room

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors completed one heat sink performance inspection sample. The inspectors selected the B residual heat removal (RHR) heat exchanger (HX) for review. The inspectors verified that biofouling programs existed and were managed in accordance with PSEG procedures and that HX performance data demonstrated satisfactory performance. The inspectors walked down the B RHR HX to identify any evident leaks or degraded conditions. The inspectors also reviewed notifications in the CAP to verify that PSEG was identifying B RHR HX problems at the appropriate threshold and that corrective actions addressed the identified problem and were effective. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11Q, - 1 sample)

.1 Requalification Activities Review by Resident Staff

a. Inspection Scope

The inspectors completed one quarterly licensed operator requalification program inspection sample. The inspectors observed a licensed operator annual requalification simulator scenario on December 1, 2009, to assess operator performance and training effectiveness. The scenario involved an anticipated transient without scram event and a stuck open safety relief valve. The inspectors verified that control room staff correctly identified and declared emergency action levels in a timely manner. The inspectors assessed simulator fidelity and observed the simulator instructor's critique of operator performance. The inspectors also observed control room activities with emphasis on simulator identified areas for improvement. Finally, the inspectors reviewed applicable documents associated with licensed operator requalification as listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Review of PSEG Annual Operating Tests for 2009

a. Inspection Scope

On December 22, 2009, the inspectors conducted an in-office review of results of licensee-administered 2009 annual operating tests. The inspection items completed during this period did not represent the completion of an inspection sample. The inspectors assessed whether pass rates were consistent with the guidance of NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process (SDP)". The inspectors verified that:

- Crew failure rate was less than 20%. (Crew failure rate was 16.6%.)
- Individual failure rate on the dynamic simulator test was less than or equal to 20%. (Individual failure rate was 2.3%.)

- Individual failure rate on the walk-through test was less than or equal to 20%. (Individual failure rate was 0.0%.)
- Individual failure rate on the 2008 comprehensive written exam was less than or equal to 20%. (Individual failure rate was 4.8%.)
- Overall pass rate among individuals for all portions of the 2009 operating examination was greater than or equal to 75%. (Overall pass rate was 97.6%.)

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q - 2 samples)

a. Inspection Scope

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

- Control rod drive system
- Containment atmosphere control system

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 7 samples)

a. Inspection Scope

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

- D service water (SW) pump and C filtration recirculation and ventilation system OOS on October 8, 2009;
- A circulating water pump and HPCI system OOS on October 27, 2009;
- B SW pump and B EDG OOS on November 9, 2009;
- D SW pump and B control room emergency filtration system OOS on November 18, 2009;
- C EDG and C SW pump OOS on November 30, 2009;

- D EDG and A circulating water pump OOS on December 7, 2009; and
- Emergent unavailability of D EDG and A circulating water pump OOS on December 14, 2009.

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

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 3 samples)

a. Inspection Scope

The inspectors completed three operability evaluation inspection samples. The inspectors reviewed the operability determinations for degraded or non-conforming conditions associated with:

- M safety relief valve leakage;
- Potential mis-positioning of the safety auxiliaries cooling system (SACS) to RHR HX outlet valves, EG-V540 and EG-V541; and
- Unqualified valves installed on the B SACS HXs.

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

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18 - 2 samples)

.1 Temporary Modification

a. Inspection Scope

The inspectors completed one plant modifications inspection sample. The inspectors reviewed one temporary plant modification package that secured the A circulating water

(CW) pump discharge valve in the closed position. The CW pump discharge valve had separated from its valve stem and needed to be closed to ensure stable CW system operation. The CW system is not a safety-related system; however, a failure of the system could cause a plant transient. The inspectors verified that the design bases, licensing bases, and performance capability of the CW system was not degraded by the modification. The inspectors verified the new configuration was accurately reflected in the design documentation, and the post-modification testing was adequate to ensure the SSCs would function properly. The 10 CFR 50.59 evaluation associated with this temporary modification was also reviewed. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Permanent Modification

a. Inspection Scope

The inspectors completed one plant modifications inspection sample. The inspectors completed a review of a permanent plant modification associated with the safety and turbine auxiliaries cooling system (STACS). This modification was installed to change the closure logic for the four turbine auxiliaries cooling system (TACS) return isolation valves (HV-2496A/B/C/D) such that each TACS return isolation valve will automatically close if its associated TACS inlet isolation valve (HV-2522A/B/C/D) closed. PSEG implemented this modification to address a design vulnerability discovered as a result of a plant transient that occurred in January 2009. The inspectors' review verified that the design bases, licensing bases, and performance capability of the system were not degraded by the modification. The inspectors verified the new configuration was accurately reflected in the design documentation, and the post-modification testing was adequate to ensure the SSCs would function properly. The inspectors interviewed plant staff and reviewed issues that had been entered into the CAP to determine whether PSEG had been effective in identifying and resolving problems associated with permanent plant modifications. The 10 CFR 50.59 screen associated with this permanent plant modification was also reviewed. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - 7 samples)

a. Inspection Scope

The inspectors completed seven post-maintenance testing (PMT) inspection samples. The inspectors reviewed the post-maintenance tests for the maintenance listed below to verify that procedures and test activities ensured system operability and functional capability following completion of maintenance. The inspectors reviewed applicable test procedures to verify that they tested all safety functions potentially affected by the associated maintenance activities. The inspectors verified that for each potentially

affected safety function the acceptance criteria stated in the procedure was consistent with the Updated Final Safety Analysis Report (UFSAR) and other design documentation. The inspectors also witnessed completion of the testing or reviewed the completed test results to verify satisfactory restoration of all safety functions affected by the maintenance activities. Documents reviewed are listed in the Attachment.

- A SW pump/traveling screen, following traveling screen replacement on October 5, 2009
- C SW pump planned preventive maintenance on October 6, 2009
- HPCI system rupture diaphragm replacement on October 29, 2009
- A reactor protection system power supply replacement on November 5, 2009
- D EDG cylinder petcock valve replacement on December 7, 2009
- B SACS pump replacement on December 11, 2009
- D EDG troubleshooting for high voltage conditions during surveillance test on December 14, 2009

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 3 samples)

a. Inspection Scope

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

- B SACS pump inservice test on December 11, 2009
- Validating service water system flow through SACS HXs on December 7, 2009
- Drywell leak detection sump monitoring system on December 28, 2009

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06 - 1 sample)

a. Inspection Scope

The inspectors completed one drill evaluation inspection sample. The inspectors observed control room operator emergency plan response actions during a licensed operator requalification training scenario on December 1, 2009. The inspectors verified

that emergency classification declarations and notifications were completed in accordance with 10 CFR 50.72, 10 CFR 50, Appendix E, and the Hope Creek emergency plan implementing procedures. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01 - 7 samples)

a. Inspection Scope

The inspectors reviewed licensee performance indicators (PIs) for the occupational exposure cornerstone for follow-up.

The inspectors reviewed PSEG's self assessments, audits, licensee event reports (LERs), and special reports related to the access control program since the last inspection. The inspectors determined that identified problems were entered into the CAP for resolution.

The inspectors reviewed corrective action reports related to access controls. The inspectors interviewed staff and reviewed documents to determine if the follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk: Specifically for each corrective action report the inspectors reviewed the following:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of NCVs tracked in the corrective action system; and
- Implementation/consideration of risk significant operational experience feedback.

For repetitive deficiencies or significant individual deficiencies in problem identification and resolution (PI&R), the inspectors verified that PSEG's self-assessment activities were also identifying and addressing these deficiencies.

The inspectors reviewed PSEG documentation packages for all PI events occurring since the last inspection. The inspectors verified that none of these PI events involved dose rates >25 R/hr at 30 centimeters or >500 R/hr at 1 meter.

The inspectors reviewed radiological problem reports since the last inspection that found that the cause of the event was due to radiation worker errors. The inspectors verified

that there was no observable pattern traceable to a similar cause and that this perspective matched the corrective action approach taken by PSEG to resolve the reported problems. The inspectors discussed with the radiation protection manager any problems with the correction actions planned or taken.

The inspectors reviewed radiological problem reports since the last inspection that found that the cause of the event was a radiation protection technician error. The inspectors verified that there was no observable pattern traceable to a similar cause and that this perspective matched the corrective action approach taken by PSEG to resolve the reported problems.

The inspectors toured the Independent Spent Fuel Storage Installation (ISFSI), observed the performance of radiological surveys, and reviewed radiological surveys performed during the past twelve months.

The inspectors evaluated licensee performance against the requirements contained in 10 CFR 20.1601, Plant TSs 6.12, and UFSAR Chapter 12. Documents reviewed for this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02 - 2 samples)

a. Inspection Scope

The inspectors reviewed PSEG's self-assessments, audits, and special reports related to the as low as is reasonably achievable (ALARA) program since the last inspection. The inspectors verified that PSEG's overall audit program's scope and frequency, for areas under the Occupational Radiation Safety cornerstone, met the requirements of 10 CFR 20.1101(c).

The inspectors evaluated the interfaces between operations, radiation protection, maintenance, maintenance planning, scheduling and engineering groups for interface problems or missing program elements.

The inspectors evaluated licensee performance against the requirements contained in 10 CFR 20.1101 and UFSAR Section 12.1. Documents reviewed for this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation (71121.03 - 3 samples)

a. Inspection Scope

The inspectors reviewed licensee self-assessments, audits, and LERs and focused on radiological incidents that involved personnel contamination monitor alarms due to

personnel internal exposures. The inspectors verified that there were no internal exposures >50 mrem committed effective dose equivalent and that identified problems were entered into the CAP for resolution.

Based on UFSAR, TSs and emergency operating procedure requirements, the inspectors reviewed the status and surveillance records for self contained breathing apparatus (SCBA) units staged and ready for use in the plant. The inspectors reviewed PSEG's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center during emergency conditions. The inspectors verified that control room operators and other emergency response and radiation protection personnel were trained and qualified in the use of SCBA (including personal bottle change-out) and that personnel assigned to refill bottles were trained and qualified for that task.

The inspectors reviewed the qualification documentation for onsite personnel designated to perform maintenance on the vendor-designated vital components, and the vital component maintenance records for three SCBA units currently designated as "ready for service." For the same three units, the inspectors verified that the required, periodic air cylinder hydrostatic testing was documented and up to date, and that the Department of Transportation (DOT) required retest air cylinder markings were in place. The inspectors reviewed the onsite maintenance procedures governing vital component work in order to identify any inconsistencies between licensee procedures and the SCBA manufacturer's recommended practices.

The inspectors evaluated licensee performance against the requirements contained in 10 CFR 20.1501, 10 CFR 20.1703,10 CFR 20.1704, ANSI N323-1978, ANSI N323A-1997 and ANSI N42.17A-2004. Documents reviewed for this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS2 Radioactive Material Processing and Transportation (71122.02 - 6 samples)

a. Inspection Scope

The inspectors reviewed the solid radioactive waste system description in the UFSAR and the recent radiological effluent release report for information on the types and amounts of radioactive waste disposed. The inspectors reviewed the scope of PSEG's audit program to verify that it met the requirements of 10 CFR 20.1101(c).

The inspectors reviewed surveys of the liquid and solid radioactive waste processing systems to verify and assess whether the current system configuration and operation agree with the descriptions contained in the UFSAR and in the process control program (PCP). The inspectors reviewed the status of any radioactive waste process equipment that was not operational and/or was abandoned in place. The inspectors also reviewed PSEG's administrative and physical controls to ensure that the equipment will not

contribute to an unmonitored release path and/or affect operating systems or be a source of unnecessary personnel exposure.

The inspectors reviewed the adequacy of any changes made to the radioactive waste processing systems since the last inspection. The inspectors verified that the changes were reviewed and documented in accordance with 10 CFR 50.59, as appropriate. The inspectors reviewed the impact, if any, to radiation doses to members of the public. The inspectors reviewed current processes for transferring radioactive waste resin and sludge discharges into shipping/disposal containers to verify that appropriate waste stream mixing and/or sampling procedures and that the methodology for waste concentration averaging provide representative samples of the waste product for the purposes of waste classification as specified in 10 CFR 61.55 for waste disposal.

The inspectors reviewed the radio-chemical sample analysis results for each of PSEG's radioactive waste streams. The inspectors reviewed PSEG's use of scaling factors and calculations used to account for difficult-to-measure radionuclides. The inspectors verified that PSEG's program assures compliance with 10 CFR 61.55 and 10 CFR 61.56 as required by Appendix G of 10 CFR Part 20. The inspectors also reviewed PSEG's program to ensure that the waste stream composition data accounted for changing operational parameters and remained valid between the annual or biennial sample analysis update.

The inspectors observed shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and PSEG verification of shipment readiness. The inspectors verified that the requirements of any applicable transport cask Certificate of Compliance had been met. The inspectors verified that the receiving licensee was authorized to receive the shipment packages. The inspectors observed radiation workers during the conduct of radioactive waste processing and radioactive material shipment preparation activities. The inspectors verified that shippers were knowledgeable of the shipping regulations and demonstrated adequate skills to accomplish the package preparation requirements for public transport with respect to NRC Bulletin 79-19 and 49 CFR Part 172 Subpart H. The inspectors verified that PSEG's training program provided training to personnel responsible for the conduct of radioactive waste processing and radioactive material shipment preparation activities.

The inspectors sampled non-excepted package shipment records. The inspectors reviewed these records to verify compliance with NRC and DOT requirements.

The inspectors reviewed PSEG's LERs, special reports, audits, State agency reports, and self assessments related to the radioactive material and transportation programs performed since the last inspection. The inspectors verified that identified problems were entered into the CAP for resolution and reviewed corrective action reports written against the radioactive material and shipping programs since the previous inspection.

The inspectors interviewed staff and reviewed documents to verify that the following activities were conducted in an effective and timely manner commensurate with their importance to safety and risk:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;

- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of NCVs tracked in corrective action system(s); and
- Implementation/consideration of risk significant operational experience feedback.

For repetitive deficiencies or significant individual deficiencies in PI&R, the inspectors verified that PSEG's self assessment activities were also identifying and addressing these deficiencies.

Documents reviewed for this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 - 7 samples)

a. Inspection Scope

Cornerstone: Mitigating Systems

The inspectors reviewed PSEG submittals from the fourth quarter of 2008 through the third quarter of 2009 for the Hope Creek mitigating systems performance index (MSPI) performance indicators (PIs) listed below. The inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Indicator Guideline," Revision 5, to verify the basis in determining failure criteria for the applicable systems.

- Heat removal system (reactor core isolation cooling)
- Emergency AC power system (EDGs)
- RHR system
- HPCI system
- Support cooling water system (service water and safety auxiliary cooling)

The inspectors reviewed the consolidated data entry MSPI derivation reports for the unavailability and unreliability indexes (UAI and URI) for the monitored systems; the monitored component demands and demand failure data for the monitored systems; and the train and system unavailability data for the monitored systems. The inspectors verified the accuracy of the data by comparing it to corrective action program records, control room operators' logs, maintenance rule performance and scope reports, system performance/health reports, the reactor trips database, the equipment/operability issues database, the site operating history database, key performance indicator summary records, operating data reports and the MSPI basis document.

Cornerstone: Occupational Radiation Safety

- Occupational Exposure Control Effectiveness

The inspectors reviewed PSEG PIs for the Occupational Radiation Safety cornerstone. The inspectors reviewed a listing of PSEG corrective action reports for the period January 1, 2009, through December 7, 2009, for issues related to the occupational radiation safety PI, which measures non-conformances with high radiation areas greater than 1R/hr and unplanned personnel exposures greater than 100 mrem total effective dose equivalent (TEDE), 5 rem skin dose equivalent (SDE), 1.5 rem lens dose equivalent (LDE), or 100 mrem to the unborn child. The inspectors' review of the data for this period determined that no PI events had occurred during the assessment period.

Cornerstone: Public Radiation Safety

- RETS/ODCM Radiological Effluents Occurrences

The inspectors verified the accuracy of data reported for this PI by reviewing a listing of PSEG corrective action reports for the period January 1, 2009, through December 7, 2009, for issues related to the public radiation safety PI, which measures radiological effluent release occurrences per site that exceed 1.5 mrem/qtr whole body or 5 mrem/qtr organ dose for liquid effluents; or 5 mrads/qtr gamma air dose, 10 mrads/qtr beta air dose; or 7.5 mrems/qtr organ doses from I-131, I-133, H-3 and particulates for gaseous effluents. The inspectors' review of the data for this period determined that no PI events had occurred during the assessment period.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152 - 2 samples)

.1 Review of Items Entered into the Corrective Action Program

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

.2 Semi-Annual Review to Identify Trends: Human Performance - Procedure Compliance

a. Inspection Scope

The inspectors performed a semi-annual review of notifications and evaluations in PSEG's CAP to identify trends that may indicate a more significant safety issue.

The focus of the inspectors' review was on PSEG's progress in addressing a cross-cutting theme in procedure compliance, as discussed in the NRC's Mid-cycle Performance Review letter for Hope Creek, dated September 1, 2009 (ADAMS ML092440289). The inspectors examined PSEG's project management plan for addressing issues in procedure compliance, entries for the human performance Fundamentals Management System related to procedure compliance, self assessments, and causal evaluations. The inspectors also discussed procedure compliance issues with plant staff and management. The inspectors' review covered the six-month period

from July through December 2009, as well as selected activities in May and June 2009. Documents reviewed are listed in the Attachment.

b. Assessment and Observations

No findings of significance were identified.

PSEG determined the cause of the cross-cutting theme in procedure compliance was ineffective supervisory actions to correct behaviors and hold people accountable. PSEG's corrective action was the development of a project management plan to reinforce standards in this area.

The inspectors observed that the plan formed three teams to address the issue: an administrative procedure team, an implementing procedure team, and a performance monitoring team. The teams included members from all major departments and work groups. The plan also specified that the station focus on a particular critical procedure each week ("Procedure of the Week"). Additionally, supervisors were required to make frequent entries in the human performance Fundamentals Management System on procedure compliance by their staff, and specific managers were required to assess procedure compliance during their observations of work in the field.

PSEG evaluated the progress of the plan through metrics that recorded the number of findings, events, CAP issues, and precursors related to procedure compliance. PSEG also conducted an effectiveness evaluation of the progress in addressing the procedure compliance theme. Both the metrics and the effectiveness evaluation indicated that the station had improved standards in procedure compliance, based on numerous field observations and a reduction in the number of events, CAP issues, and precursors in this area.

The inspectors concluded that PSEG had made progress in addressing the procedure compliance cross-cutting theme, based on inspectors' independent reviews of CAP notifications and evaluations, Fundamentals Management System entries, procedure compliance metrics, and other supporting data. The inspectors also noted that there were no NRC inspection findings during the third and fourth quarters of 2009 that had a cross-cutting aspect in procedure compliance.

.3 Annual Sample: Corrective Actions for Digital Feedwater Control Problems

a. Inspection Scope

At the conclusion of Hope Creek's refueling outage RF14 in fall 2007, operators experienced problems in feedwater level control during the implementation and testing of a digital feedwater control system modification. Some minor challenges with feedwater control system components continued during the subsequent operating cycle.

The inspectors reviewed PSEG's causal evaluations and corrective actions for these issues. The inspectors discussed the corrective actions with plant personnel and reviewed associated corrective action notifications. Documents reviewed are listed in the Attachment.

b. Findings and Observations

No findings of significance were identified.

The inspectors determined that PSEG appropriately identified feedwater control system problems and operator challenges, and entered them into the CAP. PSEG performed detailed causal evaluations that led to component repair, replacement, and modification activities.

4OA3 Event Followup (71153 - 1 sample)

.1 (Closed) LER 05000354/2009-002-001, As-Found Values for Safety Relief Valve Lift Setpoints Exceed Technical Specification Allowable

On April 18, 2009, PSEG determined that the as-found lift setpoints for 6 of 14 main steam safety relief valves (SRVs) failed to open within the required technical specification (TS) actuation pressure setpoint tolerance. TS 3.4.2.1 provides an allowable pressure band of +/- 3 percent for each SRV. All six of the SRVs opened above the required pressure band. PSEG determined that the apparent cause for the C, F, G, K, and L SRV setpoint failures was corrosion bonding/sticking of the pilot disc. The apparent cause for the A SRV setpoint failure was related to a distorted bellows assembly. The pilot assembly for each of the failed SRVs was replaced with a fully tested spare assembly. The enforcement aspects of this finding are discussed in Section 4OA7. This LER is closed.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with PSEG security procedures and regulatory requirements related to nuclear plant security. These observations took place during both normal and off-normal plant working hours. These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

On January 7, 2010, the inspectors presented inspection results to Mr. J. Perry and other members of his staff. The inspectors asked PSEG whether any materials examined during the inspection were proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violations

The following violation of very low significance (Green) was identified by PSEG and is a violation of NRC requirements that meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a NCV.

- Hope Creek TS 3.4.2.1, "Safety Relief Valves," requires that 13 of the 14 SRVs open within a lift setpoint of +/- 3 percent of the specified code safety valve function lift setting. Contrary to this requirement, on April 18, 2009, PSEG identified that six of the 14 SRVs experienced setpoint drift outside of the TS limit. PSEG entered this issue into their CAP as notification 20411328. This finding is of very low safety significance, based on a Phase 1 SDP screening, because the SRVs would have functioned to prevent a reactor vessel over-pressurization. The finding resulted in the inoperability of six SRVs, but did not result in a loss of system safety function based on engineering analyses that showed that postulated piping stresses would not exceed allowable limits.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

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

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

05000354/2009-002-001	LER	As Found Values for Safety Relief Valve Lift Setpoints Exceed TS Allowable (Section 4OA3.1)

LIST OF DOCUMENTS REVIEWED

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

Hope Creek Generating Station UFSAR
TS Action Statement Log
Hope Creek Generating Station Narrative Logs

Section 1R01: Adverse Weather Protection

Procedures
SH.FP-TI.FP-0001, Freeze Prevention and Winter Readiness of Fire Protection Systems, Revision 4
HC.OP-GP.ZZ-0003, Station Preparations for Winter Conditions, Revision 21
WC-AA-107, Seasonal Readiness, Revision 8
HC.OP-SO.AP-0001, Condensate Storage and Transfer System Operation, Revision 32

Drawings
M-8-0, Condensate and Refueling Water Storage and Transfer, Revision 34
M-10-1, Service Water, Revision 52
M-22-0, Fire Protection System, Revision 27

Notifications (*NRC identified)
20437816* 20437817*

Orders
30172019

Section 1R04: Equipment Alignment

Procedures
HC.OP-SO.BD-0001, Reactor Core Isolation Cooling Operation, Revision 36
HC.OP-SO.KJ-0001, EDG Operation, Revision 50

Drawings
M-50-1, Reactor Core Isolation Cooling, Revision 29
M-30-1, Diesel Engine Auxiliary Systems Fuel Oil, Revision 26

Section 1R05: Fire Protection

Procedures
NC.FP-AP.ZZ-0005, Fire Protection Surveillance and Periodic Test Program, Revision 16
NC.FP-AP.ZZ-0009, Fire Protection Training Program, Revision 7
FP-AA-011, Control of Transient Combustible Material, Revision 2
HC.FP-SV.ZZ-0026, Flood and Fire Barrier Penetration Seal Inspection, Revision 5

Other Documents
FRH-II-411, CS Pump Rooms, Revision 3
FRH-II-412, RCIC Pump & Turbine Room, Revision 3
FRH-II-413, HPCI Pump & Turbine Room, Revision 3
FRH-II-414, CS Pump Rooms, Revision 3

Notifications (*NRC identified)
20442012* 20443736*

Section 1R07: Heat Sink Performance

Procedures
HC.OP-ST.BC-0009, RHR System RHR HX Flow Measurement, Revision 11
HC.OP-ST.BC-0009, RHR System RHR HX Flow Measurement, Revisions 8 and 9
HC.OP-IS.BC-0003, B RHR Pump In-Service Test, Revision 40

Calculations
EG-0043, STACS – Proto-Flo Thermal Hydraulic Model, Revision 6
EG-0020, STACS – Required Flows and Heat Loads - EPU, Revision 10

Drawings
M-51-1, HCGS Residual Heat Removal, Revision 38

Notifications (*NRC identified)

20438155	20428422	20430773	20433615	20408718	20272419
20440920*	20440495*	20273154	20289879	20442221*	

Orders

50110126	70054151	60061215	60061213	70053797	70104884

Other Documents
21A9227AN, HX – RHR, Revision 3

Section 1R11: Licensed Operator Requalification Program

Procedures
HC.OP-EO.ZZ-0101A, ATWS RPV Control, Revision 3
HC.OP-EO.ZZ-0101, Reactor Pressure Vessel Control, Revision 11

Other Documents
HCGS Emergency Classification Guide
Simulator Scenario Guide SG-609

Section 1R12: Maintenance Effectiveness

Procedures
ER-AA-310-1001, Maintenance Rule – Scoping, Revision 4
ER-AA-310-1003, Maintenance Rule – Performance Criteria Selection, Revision 4
ER-AA-310-1004, Performance Monitoring, Revision 7
ER-HC-310-1009, Maintenance Rule System Function and Risk Significant Guide, Revision 4
HC.OP-SO.BF-0001, CRD Hydraulic System, Revision 29
HC.OP-IS.GS-0101, Containment Atmosphere Control System Valves – In-service Test, Revision 41

Calculations
SC-EE-0001, HC Setpoint Calculation for Reactor Bldg/Torus Atmosphere Control, Revision 5
SC-GS-0101, Setpoint Calculation for Reactor Bldg Atmosphere Control, 10/4/86

Drawings
M-46-1, Control Rod Drive Hydraulic – Part A, Sh. 1, Revision 24
M-57-1, Containment Atmosphere Control, Revision 40

Notifications (*NRC identified)

20359800	20398290	20412711	20415621	20415079	20359783
20436974	20435378*	20440813*			

Orders

30144007	30144006	30144781	30144008

Other Documents
Red/Yellow Summary Report, October 6, 2009
Quarterly SHIP Report – Control Rod Drive, 3rd Quarter 2009
Quarterly SHIP Report – Containment Atmosphere Control, 3rd Quarter 2009

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures
OP-AA-101-112-1002, On-Line Risk Assessment, Revision 3
WC-AA-101, On-Line Work Management Process, Revision 16
Notifications (*NRC identified)
20443364*

Section 1R15: Operability Evaluations

Procedures
HC.OP-AB.RPV-0006, Safety/Relief Valve, Revision 3
OP-AA-108-115, Operability Determinations, Revision 44

Calculations
H-1-AB-MDC-2024, Main Steam SRV Tailpipe Temperature Monitoring Criteria, Revision 0
Report 3892, Engineering Test Report, Model 7567F SRV, Leakage Tolerance Test, 8/5/83

Drawings
M-11-1, Safety Auxiliaries Cooling – Reactor Building, Sh. 1/2/3, Revision 29
M-41-1, Nuclear Boiler, Sh. 1, Revision 18
M-41-1-SIMP, Nuclear Boiler, Revision 2

Notifications (*NRC-identified)

20433552	20440920*	20440929	20289879
20444021	20444949*	20442236*	20445094*
20445337*	20442190*		

Orders

70104382	70059267	60061213	60061215

Section 1R18: Permanent Plant Modifications

Procedures
LS-AA-104, 50.59 Review Process, Revision 6
HC.OP-SO.DA-0001, Circulating Water System Operation, Revision 46

Drawings
M-09-1, Circulating Water System, Revision 40
M-11-1, Safety Auxiliaries Cooling – Reactor Building, Sh. 1/2/3, Revision 29
240046, Circulating Water Structure, Revision 0

Notifications

20395158	20422606	20392746	20380784	20436682

Orders

60084190	60084191	60084192	60084193	80100144

Other Documents
80098513, STACS HC-2496 Closure Logic Change, Revision 0
HC.OP-IS.EG-0001/2/3/4, A/B/C/D SACS Pump In-service Test (completed 8/4/09, 8/11/09, 8/5/09, and 8/12/09)

80100144, Reactor Power Level when Three Circulating Water Pumps Run and One Trips with its Discharge Valve in Open Position, Revision 0

Section 1R19: Post-Maintenance Testing

Procedures
HC.OP-IS.EA-0001, A Service Water Pump In-service Test, Revision 45
HC.OP-IS.EA-0003, C Service Water Pump In-service Test, Revision 45
HC.OP-IS.BJ-0001, HPCI Main and Booster Pump Set – In-service Test, Revision 52
HC.OP-SO.EP-0001, Service Water Traveling Screens System Operation, Revision 16
MA-AA-716-012, Post-Maintenance Testing, Revision 14
HC.OP-IS.EG-0002, B SACS Pump, BP210, Inservice Test, Revision 36

Drawings
M-10-1, Service Water, Sh. 1, Revision 52
M-10-1, Service Water, Sh. 2, Revision 40
M-56-1, High Pressure Coolant Injection Pump Turbine, Revision 32

Notifications (*NRC identified)
20433867 20444021 20444194* 20444573* 20443172* 20442535

Orders
30103812 50126574 80098699 60087496 80100587

Other Documents
HVA Tan Delta Report Summary, 9/29/2009
Technical Evaluation 80098699, B EDG High Voltage Condition
Technical Evaluation 80100587, D EDG High Voltage Condition
Failure Mode and Causal Table for D EDG Failure

Section 1R22: Surveillance Testing

Procedures
HC.OP-FT.EA-0001, Validating SSWS Flow Through SACS HXs, Revision 10
HC.OP-IS.EG-0002, B SACS Pump, BP210, Inservice Test, Revision 36

Notifications
20444996 20443331

Calculations
EA-33, Biofouling Monitoring and Trending Calculation, Revision 0
EG-47, HCGS Ultimate Heat Sink Temperature Limits – EPU, Revision 5

Section 2OS1: Access Control to Radiologically Significant Areas

Other Documents
Check-In Self-Assessment # 70095742; 70093466
Nuclear Oversight Services Audit NOSA-HPC-07-06
Nuclear Oversight Performance Assessment Report NOSPA-HC-09-1C
Dry Cask Storage Surveys: 9/3/08; 10/7/08; 11/3/08; 12/2/08; 1/5/09; 3/2/09; 4/7/09; 5/12/09; 6/2/09; 7/9/09; 8/4/09; 9/1/09

Independent Spent Fuel Storage Installation Surveys: 9/2/08; 10/7/08; 11/6/08; 12/2/08; 1/6/09; 3/2/09; 4/7/09; 5/12/09; 6/2/09; 7/9/0; 8/4/09; 9/1/09
Quarterly Hi-Storm Routine Surveys: 10/7/08; 3/2/09; 5/12/09; 7/9/09

Section 2OS2: ALARA Planning and Controls

Other Documents
Functional Area Self-Assessment # 70093846
Station ALARA Committee Meeting Minutes: 4/19/09; 4/28/09; 5/6/09; 5/27/09; 6/24/09; 7/20/09; 9/10/09

Section 2OS3: Radiation Monitoring Instrumentation

Other Documents
Check-In Self-Assessment # 70095694
Tri Air Testing Compressed Air Certificate for Eagle KA12-E1B, # 85/3051/07

Section 2PS2: Radioactive Material Processing and Transportation

Other Documents
NUPIC Audit # 19871; 19901; 19838; 19841
Check-In Self-Assessment 70099504
Shipment Nos. 09-096; 09-003; 09-006; 09-002; 09-007
RW-AA-100, Rev 6, Process Control Program for Radioactive Wastes
Lesson Plan No. NRP9902RMATC-01, Radiation Protection Technician Training

Section 4OA1: Performance Indicator Verification

Other Documents
Hope Creek MSPI Basis Document
NEI 99-02, Regulatory Assessment PI Guideline, Revision 5
Hope Creek Control Room Narrative Logs dated 1/1/2009 - 9/30/2009
ROP PI data for 10/1/2008 - 10/30/2009

Section 4OA2: Identification and Resolution of Problems

Notifications (*NRC identified)

20413430	20413329	20344386	20344944	20348105	20347412
20346974	20346982	20345552	20345711	20344846	20413210
20441176	20438912*	20442488			

Orders

70097677	70076610	70078470	70097637

Other Documents
Procedure Use and Adherence Change Management Plan Documents
Procedure Use and Adherence Metric Data
Fundamentals Management System Entries
Administrative Procedures Team Action Plan
Procedure Backlog Data
Procedure of the Week Data

Section 4OA3: Event Followup

Orders
70096933

Other Documents
LER 05000354/2009-002-001, As Found Values for Safety Relief Valve Lift Setpoints Exceed TS Allowable, 8/18/09

LIST OF ACRONYMS

ADAMS	Agency-wide Documents Access and Management System
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CS	Core Spray
CW	Circulating Water
DOT	Department of Transportation
EDG	Emergency Diesel Generator
HPCI	High Pressure Coolant Injection
HX	Heat Exchanger
ISFSI	Independent Spent Fuel Storage Installation
LDE	Lens Dose Equivalent
LER	Licensee Event Report
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
OOS	Out-of-Service
PI	Performance Indicator
PI&R	Problem Identification and Resolution
PMT	Post-maintenance Testing
PSEG	Public Service Enterprise Group Nuclear LLC
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
SACS	Safety Auxiliaries Cooling System
SCBA	Self Contained Breathing Apparatus
STACS	Safety and Turbine Auxiliaries Cooling System
SDE	Skin Dose Equivalent
SDP	Significance Determination Process
SRV	Safety Relief Valve
SSCs	Structures, Systems and Components
ST	Surveillance Testing
SW	Service Water
TACS	Turbine Auxiliaries Cooling System
TEDE	Total Effective Dose Equivalent
TS	Technical Specification
UAI	Unavailability Index
UFSAR	Updated Final Safety Analysis Report
URI	Unreliability Index