November 13, 2002

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

SUBJECT: HOPE CREEK NUCLEAR GENERATING STATION - NRC INSPECTION REPORT 50-354/2002-06

Dear Mr. Keiser:

On September 30, 2002, the NRC completed an inspection of your Hope Creek facility. The enclosed report documents the inspection findings which were discussed on September 25, 2002, with Mr. Lon Waldinger 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. Specifically, this inspection involved thirteen weeks of resident inspection and two region-based inspections of occupational radiation safety and public radiation safety performance indicator verification.

Based on the results of this inspection, the inspectors identified four issues of very low safety significance (Green). All of these issues were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating these issues as non-cited violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny these non-cited violations, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, and the NRC Resident Inspector at the Hope Creek facility.

The NRC has increased security requirements at Hope Creek Nuclear Generating Station in response to terrorist acts on September 11, 2001. Although the NRC is not aware of any specific threat against nuclear facilities, the NRC issued an Order and several threat advisories to commercial power reactors to strengthen PSEG Nuclear's capabilities and readiness to respond to a potential attack. The NRC continues to inspect PSEG Nuclear's security controls and its compliance with the Order and current security regulations.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,
/RA/

Glenn W. Meyer, Chief
Projects Branch 3
Division of Reactor Projects

Enclosure: Inspection Report 50-354/02-06
Attachment: Supplementary Information

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

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No:	50-354
License No:	NPF-57
Report No:	50-354/2002-06
Licensee:	PSEG Nuclear LLC
Facility:	Hope Creek Nuclear Generating Station
Location:	P.O. Box 236 Hancocks Bridge, NJ 08038
Dates:	June 30 - September 30, 2002
Inspectors:	J. G. Schoppy, Jr., Senior Resident Inspector C. G. Cahill, PE, Resident Inspector M. S. Ferdas, Reactor Inspector S. M. Pindale, Reactor Inspector B. D. Welling, Resident Inspector, Limerick J. C. Jang, Senior Radiation Specialist K. Young, Reactor Inspector J. T. Furia, Senior Health Physicist E. W. Cobey, Senior Reactor Analyst
Approved By:	Glenn W. Meyer, Chief Projects Branch 3 Division of Reactor Projects

Summary of Findings

IR 05000354-02-06; Public Service Electric Gas Nuclear LLC; on 6/30 - 9/30/02; Hope Creek Generating Station; Equipment Alignment, Fire Protection, Flood Protection.

The inspection was performed by resident inspectors, regional radiation specialists, and some regional reactor inspectors. This inspection identified four Green issues, all of which were non-cited violations. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, “Significance Determination Process” (SDP). Findings for which the SDP does not apply may be “Green” or be assigned a severity level after NRC management review. The NRC’s program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, “Reactor Oversight Process,” Revision 3, dated July 2000.

A. Inspector Identified Findings

Cornerstone: Initiating Events

- **Green.** The inspectors identified a non-cited violation for the failure to comply with the transient combustible control requirements in the high pressure coolant injection (HPCI) pump room.

  The safety significance of this finding was very low because of the availability of safe shutdown capabilities that were physically independent of the fire area, area- wide smoke detection, and effective fire brigade performance. (Section 1R05.1)

Cornerstone: Mitigating Systems

- **Green.** The inspectors identified a non-cited violation for PSEG Nuclear’s failure to promptly identify and initiate actions to correct a configuration control deficiency associated with SW intake watertight flood doors.

  The safety significance of this finding was very low (Green) because: (1) the likelihood of a flooding event in the service water (SW) screen room that would challenge the equipment in the B/D SW bay was low; (2) one complete SW loop remained available to provide safety-related cooling water to the safety auxiliaries cooling system (SACS), if needed; and (3) the duration that the condition existed was very short, less than four hours. (Section 1R06.1)

Cornerstone: Barrier Integrity

- **Green.** A July 16 event revealed inadequate work control, in that technicians failed to conduct maintenance in accordance with NC.NA-AP.ZZ-0069, “Work Control Coordination,” resulting in the loss of both trains of control room ventilation.

The safety significance of this finding was very low (Green) because: (1) the likelihood of an initiating event that would challenge the control room barrier function was low; (2) the physical integrity of the control room barrier was maintained, which would minimize in-leakage into the control room; (3) the control room ventilation system was recoverable; (4) full faced, self-contained breathing apparatus and protective clothing were available for use by control room operators; and (5) the duration that the condition existed was very short, approximately 40 minutes. (Section 1R04.1)

- **Green.** The inspectors identified a non-cited violation for PSEG Nuclear's failure to take appropriate corrective actions to preclude recurrence of a filtration, recirculation and ventilation system (FRVS) configuration control deficiency, i.e., an incorrect operating setpoint for the B FRVS ventilation fan.

  The safety significance of this finding was very low, as the finding only represented a degradation of the radiological barrier function for FRVS, the A FRVS train remained available to control reactor building pressure, and secondary containment integrity was maintained (no open pathway existed). (Section 1R04.2)

B. Licensee Identified Violations

The inspectors reviewed one violation of very low significance which was identified by PSEG Nuclear. Corrective actions taken or planned by PSEG Nuclear have been entered into PSEG Nuclear's corrective action program. This violation and corrective action tracking number are listed in Section 40A7 of this report.

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Report Details

SUMMARY OF PLANT STATUS

The Hope Creek plant operated continuously at or near full power for the duration of the inspection period except for (1) a planned power reduction to 84 percent on July 14 for turbine valve testing (TVT); (2) a planned power reduction to approximately 40 percent commencing on August 17 for TVT, a control rod pattern adjustment, and single recirculation loop operations to support maintenance on the “A” recirculation pump motor generator (MG) set; (3) an unplanned power reduction to 92 percent on August 28, in response to a single control rod scram due to a blown fuse identified during testing (see section 1R14); (4) a planned power reduction to 84 percent on September 8 for TVT; and (5) a planned power reduction to approximately 50 percent commencing on September 28 for TVT and single recirculation loop operations to support maintenance on the B recirculation pump MG set. Following the B MG set brush replacements operators commenced a power ascension, and at the end of the period, reactor power was approximately 56 percent.

1. REACTOR SAFETY
Initiating Events, Mitigating Systems, and Barrier Integrity [REACTOR - R]

1R04 Equipment Alignment

.1 Adverse Impact on Control Room Ventilation

a. Inspection Scope

At 1:19 p.m. on July 16, Hope Creek experienced a trip of the B control room ventilation (CRV) train and the A CRV train started in automatic as designed. The A CRV train continued to run for approximately thirty seconds and then tripped on low chill water flow. The control room operators entered abnormal operating procedures HC.OP-AB.HVAC-0001, *HVAC*, and HC.OP-AB.HVAC-0002, “Control Room Environment.” Additionally operators entered Technical Specification (TS) 3.03 and TS 3.7.2, “Control Room Emergency Filtration System.”

Operators received a report from the field stating that a fill and vent of the D-VH-401 (switchgear room cooler) chill water coil was in progress and was likely the cause of the trip of the ventilation trains. The control room supervisor (CRS) directed that a fill and vent be completed on the B CRV train. Operators successfully returned the B CRV train to service at 2:00 p.m. and exited TS 3.0.3. Subsequently operators filled, vented, and returned the A CRV train to an operable status.

The inspectors observed the control room operators during the transient and the return of the B CRV train to service. The inspectors reviewed the operations logs, applicable abnormal operating procedures, and CRIDS alarm chronology to assess control room operators’ response and mitigation measures. The inspectors independently performed control room panel and switchgear room walkdowns to verify the status of potentially affected risk significant systems. In addition, the inspectors reviewed the associated Transient Assessment Response Plan (TARP) report, “Hope Creek B/A Control Room Chiller Trip.”

b. Findings

A July 16 event revealed inadequate work control, in that technicians failed to conduct maintenance in accordance with NC.NA-AP.ZZ-0069, “Work Control Coordination,” resulting in the loss of both CRV trains. The safety significance of this finding was very low (Green) because: (1) the likelihood of an initiating event that would challenge the control room barrier function was low; (2) the physical integrity of the control room barrier was maintained, which would minimize in-leakage into the control room; (3) the CRV system was recoverable; (4) full faced, self-contained breathing apparatus and protective clothing were available for use by control room operators; and (5) the duration that the condition existed was very short, approximately 40 minutes.

Operators had tagged the “D” switchgear room cooling unit for corrective maintenance (coil leak repair). During this activity, the maintenance technicians were unable to determine which coils were leaking and requested a temporary release of the tagging boundaries to pressurize the coils to locate the leaks. During the tagging release (restoration of the A and B coil pressure boundary) air was simultaneously introduced into the A and B chill water systems. These redundant chill water systems cool the switchgear ventilation coolers and CRV coolers. The introduction of air into the chill water systems caused the in-service (B) chill water pump to immediately trip and the standby (A) chill water pump to trip after it received an auto start signal.

Work package instructions (order 60020086) identified the option of removing the coils and identifying and repairing the leaks in the maintenance shop, or replacing the existing coils with new coils. NC.NA-AP.ZZ-0069, “Work Control Coordination,” Section 5.8.5 requires that the job supervisor shall complete the assigned work in accordance with the work package and applicable administrative instructions. The temporary tagging boundary release and pressurization of the coils for leak troubleshooting was not specified in the work order instructions. The maintenance supervisor did not request a peer review prior to deviating from the work package instructions. The work control supervisor did not verify and validate the appropriateness of pressurizing the coils to determine the location of the leaks. Additionally, the work control supervisor did not use the administrative template, as specified in SH.OP-AS.ZZ-0001, “Operations Standards.”

Although PSEG Nuclear identified this issue, it manifested itself through a self-revealing event. Consistent with examples 2.f and 2.g of Inspection Manual Chapter 0612, “Power Reactor Inspection Reports,” Appendix E, “Examples of Minor Issues,” this finding was considered more than minor, because it involved a failure to follow procedural requirements that resulted in both CRV trains being inoperable. Phase 1 of the At-Power Reactor Safety Significance Determination Process screened this finding to Phase 3 because the maintenance error resulted in a degradation of the radiological, toxic gas, and smoke barrier functions provided by the CRV system. The inspectors determined that the finding was of very low safety significance (Green) by conducting a Phase 3 analysis because: (1) the likelihood of an initiating event that would challenge the control room barrier function was low; (2) the physical integrity of the control room barrier was maintained, which would minimize in-leakage into the control room; (3) the CRV system was recoverable; (4) full faced, self-contained breathing apparatus and protective clothing were available for use by control room operators; and (5) the duration that the condition existed was very short, approximately 40 minutes.

Hope Creek TS 6.8.1.a requires that written procedures be established, implemented, and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Paragraph 9.a of Regulatory Guide 1.33, Appendix A, Revision 2, states that maintenance that can affect the performance of safety related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to the above maintenance took actions during the switchgear cooling coil repair that were not specified in the work order instructions and had an adverse impact on equipment operability. PSEG Nuclear entered this issue in their corrective action system as notification 20106150. Consistent with Section VI.A of the NRC Enforcement Policy, this finding is considered a non-cited violation. **(NCV 50-354/02-06-01)**

.2 Ventilation System Configuration Control

a. Inspection Scope

On October 8, 2001, reactor building pressure failed to meet the acceptance criteria during the reactor building integrity functional test. The acceptance criteria were selected to ensure that the minimum pressure difference across all locations of the reactor building wall would be greater than or equal to 0.25 inches of vacuum water gauge under all postulated environmental conditions. Both reactor building differential pressure controllers were found to be set incorrectly to 0.50 inches of vacuum water gauge. Per the system operating procedure, they should be set to 0.55 inches of vacuum water gauge. The controllers were reset to the correct setpoint and the reactor building integrity functional test was completed satisfactorily. Based on a review of maintenance records, PSEG Nuclear believed that the reactor building differential pressure controllers were set incorrectly during a maintenance or surveillance testing activity performed after the previous reactor building integrity functional test completed on April 21, 2000. (See LER 50-354/01-004-00)

During a plant status walkdown of the control/diesel building on August 21, 2002, the inspectors identified that the reactor building differential pressure controller for the B FRVS ventilation fan was set incorrectly to 0.50 inches of vacuum water gauge. The inspectors reviewed PSEG Nuclear's corrective actions for this deficiency and for a similar issue that impacted both FRVS trains in October 2001.

The inspectors reviewed the following documents:

- *Filtration, Recirculation and Ventilation System Operation* (HC.OP-SO.GU-0001)
- *FRVS Operability Test (Single Vent Fan Method) - Monthly* (HC.OP-ST.GU-0007)
- *Westinghouse Veritrak Indicating Controller, Model 75IC1,2,3, and 4* (HC.IC-DC.ZZ-0022)
- *Instrument Calibration Data Report* for GU-PDIC-9426B

b. Findings

The inspectors identified a non-cited violation for PSEG Nuclear's failure to take appropriate corrective actions to preclude recurrence of a FRVS configuration control deficiency, i.e., an incorrect operating setpoint for the B FRVS ventilation fan. The safety significance of this finding was very low, as the finding only represented a degradation of the radiological barrier function for FRVS, the A FRVS train remained available to control reactor building pressure, and secondary containment integrity was maintained (no open pathway existed).

On August 21 the inspectors identified that the reactor building differential pressure controller for the B FRVS ventilation fan (GU-PDIC-9426B) was set incorrectly to 0.50 inches of vacuum water gauge. The inspectors informed the operations superintendent who promptly initiated action to return the controller to the required position (0.55 inches of vacuum water gauge) and document the deficiency in corrective action notification 20110484. PSEG Nuclear's root cause analysis (Level 1 CR 70026521) identified the following: (1) maintenance technicians improperly set the B FRVS controller following a planned calibration of the controller on August 14, 2002; (2) technicians did not perform and document calibration procedure steps as required; and (3) PSEG Nuclear's corrective actions for the October 2001 event (Level 2 CR 70020228) were not correctly or effectively implemented.

The finding affected the Barrier Integrity cornerstone objective of providing reasonable assurance that the secondary containment barrier protects the public from radio nuclide release caused by accidents or events. The finding was associated with the configuration control and human performance attributes. The inspectors determined that the finding was of very low safety significance (Green) by the SDP Phase 1 screening because it only represented a degradation of the radiological barrier function for FRVS, the A FRVS train remained available to control reactor building pressure, and secondary containment integrity was maintained (no open pathway existed).

10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," requires that measures shall be established to assure that conditions adverse to quality, such as deficiencies and malfunctions are promptly identified and corrected. Contrary to the above, PSEG Nuclear did not take appropriate corrective actions to preclude recurrence of a deficiency associated with secondary containment integrity. Specifically, PSEG Nuclear did not take appropriate corrective action for a FRVS configuration control deficiency that occurred in October 2001 to preclude its recurrence in August 2002. However, because the violation is of very low significance (Green) and PSEG Nuclear entered the deficiency into their corrective action system (notification 20110484), this finding is being treated as a non-cited violation, consistent with Section VI.A of the Enforcement Policy, issued May 1, 2000 (65FR25368). **(NCV 50-354/02-06-02)**

.3 Partial Equipment Alignment Walkdowns

a. Inspection Scope

The inspectors performed equipment alignment verifications on redundant equipment during outages of the C SACS pump on July 5, the B emergency diesel generator (EDG) on July 8, and the reactor core isolation cooling (RCIC) system on August 5. The inspectors verified by plant walkdowns and main control room tours that the equipment outages did not adversely affect the redundant safety-related equipment. The inspectors also verified that the affected components were restored to an operable condition after the planned maintenance was complete. Additionally, the inspectors reviewed various corrective action notifications associated with equipment alignment deficiencies (see Supplementary Information, Section C, for a complete listing).

The inspectors reviewed the following documents:

- *Safety and Turbine Auxiliaries Cooling Water System Operation* (HC.OP-SO.EG-0001)
- *Emergency Diesel Generator System Operation* (HC.OP-SO.KJ-0001)
- *Reactor Core Isolation Cooling System Operation* (HC.OP-SO.BD-0001)
- *High pressure Coolant Injection System Operation* (HC.OP-SO.BJ-0001)
- *RCIC System Piping and Flow Path Verification - Monthly* (HC.OP-ST.BD-0001)
- *HPCI System Piping and Flow Path Verification - Monthly* (HC.OP-ST.BJ-0001)

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 High Pressure Coolant Injection and Reactor Core Isolation Cooling Walkdowns

a. Inspection Scope

The inspectors performed a walkdown of the HPCI pump room following the HPCI system outage on September 19. The walkdown included observations of combustible material control, fire detection and suppression equipment availability, and compensatory measures. The inspectors reviewed Hope Creek's Individual Plant Examination for External Events (IPEEE) for risk insights concerning this area.

b. Findings

The inspectors identified a non-cited violation for the failure to comply with the transient combustible control requirements in the HPCI pump room, room No. 4111, in fire area RB1. The safety significance of this finding was very low because of the availability of safe shutdown capabilities that were physically independent of the fire area, area-wide smoke detection, and effective fire brigade performance.

The inspectors performed fire protection inspections in the HPCI room due to previous issues associated with the control of combustible materials during and following maintenance activities (IR 50-354/01-11Section R05.1). The inspector identified a fifty-five gallon drum of oil in the HPCI pump room that was not controlled in accordance with the Hope Creek transient combustible control requirements. The inspectors evaluated the area defense-in-depth (DID) elements and also reviewed the fire loading and fire impairments. The inspector also identified that fire door 4111-B, that separates the HPCI electrical equipment room and HPCI pump room, was left open without a fire impairment.

The inspectors evaluated this finding in accordance with NRC Inspection Manual Chapter 0609, Appendix F. Based on the fire protection safe shutdown information described in Appendix 9A of the HCGS Updated Final Safety Evaluation Report (UFSAR) for the HPCI pump and turbine room, the screening criteria for Figure 4-4, protection scheme 1, was used. Since the HCGS UFSAR identified safe shutdown capabilities that were physically independent of the HPCI electrical equipment room and HPCI pump room, the finding screened out as Green.

Hope Creek Generating Station Facility Operating License Condition 2.C.7, requires PSEG Nuclear to implement and maintain all provisions of the approved fire protection program as described in the UFSAR. UFSAR Section 9.5.1.5.3, Administrative Controls, states in part that “Administrative controls will be implemented at Hope Creek for the purpose of controlling combustibles.” NC.NA-AP.ZZ-0025, *Operational Fire Protection Program* Section 5.3.3, states that “All work activities requiring the introduction of transient combustibles materials into safety-related areas / rooms shall be identified and administratively controlled.” Contrary to the above, PSEG Nuclear did not identify and administratively control transient combustibles materials in the HPCI pump and turbine room. However, because the violation is of very low significance and PSEG Nuclear entered the deficiency into their corrective action system (notification 20113480), this finding is being treated as a non-cited violation, consistent with Section VI.A of the Enforcement Policy, issued on May 1, 2000 (65FR25368). **(NCV 50-354/02-06-03)**

.2 Other Risk-Informed Fire Protection Walkdowns

a. Inspection Scope

The inspectors performed walkdowns of (1) the motor-driven fire pump, diesel-driven fire pump, and fire water storage tanks; (2) station service transformers; (3) the SW intake structure; (4) control/diesel building electrical access area room 5339; (5) the control equipment room mezzanine; (6) the cable spreading room; (7) the A/B residual heat removal (RHR) pump rooms; and (8) the core spray pump rooms. Plant walkdowns included observations of combustible material control, fire detection and suppression equipment availability, and compensatory measures. The inspectors performed fire protection inspections due to the potential to impact mitigating systems in these areas. The inspectors reviewed Hope Creek’s IPEEE for risk insights concerning these areas. Additionally, the inspectors reviewed several notifications associated with fire protection deficiencies (see Supplementary Information, Section C, for a complete listing).

The inspectors reviewed the following documents:

- *Pre-Fire Plan FRH-II-411, Torus Water Cleanup Pump Room, CS Pump Rooms, and CRW/DRW Pump and Sump Rooms Elevation 54'0"* (FDPFPH0033)
- *Class 1 Fire Hose Station Hydrostatic Test* (HC.FP-ST.KC-0025)
- *Class 1 Fire Hose Station Flow Verification* (HC.FP-ST.KC-0024)
- *Class 1 Fire Hose Station Detailed Inspection* (HC.FP-SV.KC-0023)
- *Class 1 Fire Hose Station Visual Inspection* (HC.FP-SV.KC-0022)

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

.1 Service Water Intake Structure Internal Flood Control

a. Inspection Scope

During a plant status walkdown of the SW intake structure, the inspectors identified an internal flooding concern associated with an open and unattended SW intake watertight flood door. The inspectors reviewed PSEG Nuclear's corrective actions for this deficiency and for previous flood protection issues identified in this area.

The inspectors reviewed the following documents:

- *Hope Creek Generating Station Individual Plant Examination for External Events*, dated July 1977
- *Hope Creek Generating Station Probabilistic Safety Assessment*, Revision 1.1, dated March 10, 2000
- *Flood Levels: Intake Structure* (Calculation No. 24-4), Revision 3, dated February 28, 1997

b. Findings

The inspectors identified that PSEG Nuclear failed to promptly identify and initiate actions to correct a configuration control deficiency associated with SW intake watertight flood doors. The safety significance of this finding was very low (Green) because: (1) the likelihood of a flooding event in the service water screen room that would challenge the equipment in the B/D SW bay was low; (2) one complete SW loop remained available to provide safety-related cooling water to the SACS, if needed; and (3) the duration that the condition existed was very short, less than four hours.

At 10:30 a.m. on September 2, 2002, the inspectors identified that the SW intake watertight flood door between the B/D SW bay and the SW traveling screen room was open, blocked by a temporary sump pump drainage hose, and unattended. A posting, clearly visible on both sides of the door, requires "*This door must remain closed except for normal passage. If required to be left open, department responsible shall continuously monitor.*" The inspectors promptly informed the CRS, a licensed senior reactor operator (SRO). Subsequently the field SRO observed the deficiency, independent of the inspector, and took action to remove the drainage hose and close the watertight door. On September 3 the inspectors noted that neither of the SROs, who were aware of the deficiency, initiated a corrective action notification to document the issue. The inspectors discussed the issue with the on-shift operations superintendent, who took prompt action to ensure that SROs initiated notification 20111780 to document the watertight door deficiency.

Previously the inspectors had identified two similar instances related to PSEG Nuclear's control of this flood barrier. On April 10, 2001, operators left the A/C SW flood barrier door open while draining SW piping for maintenance and on September 10, 2001, operators left the B/D SW flood barrier door open while draining SW piping for maintenance. On September 10, 2001, operators initiated corrective action notification 20076895. Notification 20076895 resulted in an operations action (NUTS order 80041674) to evaluate the condition. On August 23, 2002, operations closed order 80041674 stating "No additional work required - existing signs being used accurately reflect limitations on doors." Based on the SROs' failure to initiate corrective action notifications for the door deficiency identified on September 2, 2002, the inspectors did not consider these three inspector-identified issues as isolated cases.

This finding was considered to be more than minor, because it affected the Mitigating Systems cornerstone objective of ensuring the reliability of the SW system and it was associated with the attribute of providing protection against external factors, flooding in particular. Phase 1 of the At-Power Reactor Safety Significance Determination Process screened this finding to Phase 3 because the finding involved the loss of a flood barrier (the SW watertight door) specifically designed to mitigate a flooding initiating event and had the potential to degrade the B SW loop (B and D SW trains) that provide safety-related cooling to the SACS heat exchangers. The inspectors determined that the finding was of very low safety significance (Green) by conducting a Phase 3 analysis because: (1) the likelihood of a flooding event in the SW screen room that would challenge the equipment in the B/D SW bay was low; (2) one complete SW loop remained available to provide safety-related cooling water to SACS, if needed; and (3) the duration that the condition existed was very short, less than four hours.

10 CFR 50, Appendix B, Criterion XVI, *Corrective Actions,* requires that measures shall be established to assure that conditions adverse to quality, such as deficiencies and malfunctions are promptly identified and corrected. Contrary to the above, operators did not promptly identify and initiate actions to correct a deficiency associated with an open and unattended SW watertight flood door. Specifically, on September 2, 2002, operators left the B/D SW watertight door (1DOOR-N-0008) open and failed to promptly identify the condition or take appropriate corrective actions following identification of the deficiency. However, because the violation is of very low significance (Green) and PSEG Nuclear entered the deficiency into their corrective action system (notification 20111780), this finding is being treated as a non-cited violation, consistent with Section VI.A of the Enforcement Policy, issued May 1, 2000 (65FR25368). **(NCV 50-354/02-06-04)**

.2 Internal Flooding Walkdowns

a. Inspection Scope

The inspectors reviewed the UFSAR, the Probabilistic Safety Assessment, and plant procedures to verify that PSEG Nuclear's flooding mitigation plans and installed equipment were consistent with design bases and risk analysis assumptions. During the week of August 26 the inspectors walked down the SW intake structure room 110, which houses the B and D SW pumps; reactor building room 4114, which contains the C RHR system; and other areas of the reactor building 54' elevation. The inspectors toured the areas to determine whether flood vulnerabilities existed and to assess the physical condition of flood barriers, floor drains, and sump pumps. In addition, the inspectors reviewed procedures to determine whether operators could mitigate the consequences of an internal flood. Finally, the inspectors reviewed selected maintenance activities on reactor building sump pumps.

The inspectors reviewed numerous documents to assess PSEG Nuclear performance (see Supplementary Information, Section C, for a complete listing).

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The SW system provides cooling water from the Delaware River (which serves as the ultimate heat sink) to the SACS heat exchangers. The SACS is a closed loop cooling system that provides cooling water to the engineered safety features equipment. The plant may be shut down under normal conditions with an average river water temperature as high as 88.0 degrees and safely shut down under TSs permitted configurations with an average river water temperature as high as 89.0 degrees. On July 3 with river water temperatures approaching 85 degrees and on August 5 with river water temperatures approaching 88 degrees, the inspectors verified that PSEG Nuclear took appropriate actions in accordance with Technical Specifications (TSs 3.7.1.1, 3.7.1.2, 3.7.1.3, 4.7.1.3) and plant procedures to ensure the plant continued to operate within the design and licensing bases. On August 12 the inspectors reviewed the results of the B2E201 SACS heat exchanger performance monitoring functional test. In addition, the inspectors reviewed two corrective action notifications involving heat exchanger issues (20105139 and 201086980).

The inspectors reviewed the following documents:

- *Station Service Water* (HC.OP-AB.COOL-0001)
- *Service Water System Operation* (HC.OP-SO.EA-0001)
- Hope Creek Generating Station License Amendment No. 120, *Ultimate Heat Sink Temperature Limits*
- UFSAR Sections 9.2.1, 9.2.2, and 9.2.5
- *Service Water Flow Path Verification* - Monthly (HC.OP-ST.EA-0001)
- *Validating SSWS Flow Through SACS HXS* (HC.OP-FT.EA-0001)

b. <u>Findings</u>

No findings of significance were identified.

1R11 <u>Licensed Operator Requalification</u>

a. <u>Inspection Scope</u>

The inspectors observed one simulator training scenario to assess operator performance and training effectiveness. The scenario involved a seismic event, an emergency depressurization (a risk significant operator action), and the loss of reactor pressure vessel level indication. The inspectors assessed simulator fidelity and observed the simulator instructor's critique of operator performance. The inspectors reviewed several recent simulator training load reports (H-2002-7, H-2002-8, H-2002-9) and corrective action notifications (20112318 and 20112791) involving simulator training issues. The inspectors also observed control room activities with emphasis on simulator identified areas for improvement.

b. <u>Findings</u>

No findings of significance were identified.

1R12 <u>Maintenance Rule Implementation</u>

a. <u>Inspection Scope</u>

The inspectors reviewed the effectiveness of performance and condition monitoring, and maintenance activities performed to ensure reliable operation of the B EDG. Operators terminated a surveillance test of the B EDG on July 8, 2002, due to load fluctuations during a monthly surveillance. The inspectors reviewed PSEG Nuclear's corrective actions and evaluation for this condition (70025734). The inspectors reviewed additional B EDG documentation to determine whether PSEG Nuclear effectively controlled the performance of the B EDG through the performance of appropriate preventive maintenance. These documents included: corrective action documents, apparent cause evaluations, corrective and preventive maintenance history records, operating experience, vendor documentation, the most recent system health report, and system reliability and unavailability data (see Supplementary Information, Section C, for a complete listing). The inspectors also reviewed Hope Creek Expert Panel Meeting Minutes (HCEP 02-07, HCEP 02-08, and HCEP 02-09).
To assess PSEG Nuclear's implementation of 10CFR 50.65 *Maintenance Rule* requirements, the inspectors reviewed the following documents:

- SE.MR.HC.02, *System Function Level Maintenance Rule VS Risk Reference*
- NRC Regulatory Guide 1.160, *Monitoring the Effectiveness of Maintenance at Nuclear Power Plants*, Revision 2
- NUMARC 93-01, *Industry Guideline For Monitoring the Effectiveness of Maintenance at Nuclear Power Plants*, Revision 2

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated on-line risk management for the following configurations:

- emergent outage of the B EDG and A H_2O_2 analyzer concurrent with the planned outage of the B FRVS on July 9;

- emergent outage of the C SW pump concurrent with the planned outage of the RCIC system on August 5;

- concurrent planned outage of the B core spray pump, the BD414 1E battery charger, and the B standby liquid control pump during the week of September 2;

- emergent outage of the C EDG concurrent with the extended scope outage of the 10K107 station air compressor during the week of September 9 (a D channel work week);

- emergent unavailability of the D SW pump concurrent with a scheduled outage of the C SW pump during the week of September 23.

The inspectors reviewed maintenance risk evaluations, work schedules, recent corrective action notifications, and control room logs to verify that other concurrent planned and emergent maintenance or surveillance activities did not adversely affect the plant risk already incurred with the out-of-service components. The inspectors assessed PSEG Nuclear's risk management actions during shift turnover meetings, control room tours, and plant walkdowns. The inspectors also used PSEG Nuclear's on-line risk monitor (Equipment Out of Service workstation) to evaluate the risk associated with the plant configuration and to assess PSEG Nuclear's risk management. In addition, the inspectors reviewed other notifications involving risk assessment and emergent work (see Supplementary Information, Section C, for a complete listing).

To assess PSEG Nuclear's risk management, the inspectors reviewed the following documents:

- SE.MR.HC.02, *System Function Level Maintenance Rule VS Risk Reference*
- HCGS PSA Risk Evaluation Forms for Work Week Nos. 78 - 90

- SH.OP-AP.ZZ-108, *On-Line Risk Assessment*
- NRC Regulatory Guide 1.182, *Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants*
- Section 11, *Assessment of Risk Resulting from Performance of Maintenance Activities,* dated February 11, 2000, of NUMARC 93-01, *Industry Guideline For Monitoring the Effectiveness of Maintenance at Nuclear Power Plants*

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

a. Inspection Scope

The inspectors reviewed licensed operator performance following a minor power reduction transient caused by a single control rod scram that occurred on August 28, 2002. The inspectors discussed the transient with operations personnel, reviewed operator logs, and referred to abnormal operating procedure HC.OP-AB.IC-0001, *Control Rod.*

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the operability determinations for degraded conditions associated with an A EDG jacket water leak (20106890), reduced local power range monitor inputs for rod block monitor channel A (70025990), Agastat relay qualification (70026644), and FRVS recirculation fan temperature control (70026921). The inspectors also reviewed all other PSEG Nuclear identified safety-related equipment deficiencies during this report period and assessed the adequacy of the operability screenings.

The inspectors reviewed the following documents:

- *Operability Assessment and Equipment Control Program* (SH.OP-AP.ZZ-0108)
- *NRC Generic Letter No. 91-18, Revision 1*
- *Notification Process* (NC.WM-AP.ZZ-0000)

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds

a. Inspection Scope

The inspectors reviewed corrective action notifications, operator logs, and instrument panel status to evaluate potential impacts on the operators' ability to implement abnormal or emergency operating procedures.

The inspectors also reviewed the following documents:

- Condition Resolution Operability Determination Notebook
- Inoperable Instrument/Alarm/Indicators/Lamps/Device Log
- Inoperable Computer Point Log
- Hope Creek Operator Workarounds List
- Hope Creek Operator Concerns List

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed a design change package associated with a pressure transmitter for a safety-related reactor building to suppression chamber relief valve. The change package was an equivalency evaluation to allow replacement of an obsolete transmitter with an equivalent Rosemount transmitter. The inspectors reviewed design specifications and the installed component. The inspectors also reviewed or referred to the following documents:

- Design Change Package 80050192
- Work Order 60031163, Failed Tobar Transmitter
- Notification 20110335, Reactor Building to Suppression Chamber Pressure Relief HV-5029 Open

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

.1 Maintenance Activity Review

a. Inspection Scope

The inspectors witnessed post maintenance testing (PMT) and/or reviewed the test data for the C RHR full flow test valve (HV-F010A) on July 3, the RCIC system outage during the week of August 5, hydraulic control unit 34-03 on August 17, reactor building to suppression chamber relief valve (GSHV-5029) on August 22, and the C EDG engine-driven jacket water pump on September 10. The inspectors reviewed NC.NA-TS.ZZ-0050, *Maintenance Testing Program Matrix,* and verified that the PMTs were adequate for the scope of maintenance performed. The inspectors also reviewed notifications concerning problems associated with PMTs (see Supplementary Information, Section C, for a complete listing).

The inspectors reviewed the following documents:

- *Residual Heat Removal Subsystem C Valves - Inservice Test* (HC.OP-IS.BC-0103)
- *Reactor Core isolation Cooling Pump -OP203 - Inservice Test* (HC.OP-IS.BD-0001)
- *Reactor Core isolation Cooling System Valves - Inservice Test* (HC.OP-IS.BD-0101)
- *CRD Insertion and Withdrawal Speed Test, Adjustment and Stall Flows* (HC.OP-FT.BF-0001)
- *Containment Atmosphere Control System Valves - Inservice Test* (HC.OP-IS.GS-0101)

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed portions of and reviewed the results of the B EDG monthly surveillance test on July 8, the B RHR pump inservice test (IST) on July 9, the A SW pump IST on July 24, and the HPCI IST on September 19. The inspectors reviewed the test procedures to verify that applicable system requirements for operability were incorporated correctly into the test procedures, test acceptance criteria were consistent with the TS and UFSAR requirements, and the systems were capable of performing their intended safety functions. The inspectors also reviewed notifications concerning problems encountered during surveillance testing (see Supplementary Information, Section C, for a complete listing).

The inspectors reviewed the following documents:

- *Emergency Diesel Generator BG400 Operability Test* - Monthly (HC.OP-ST.KJ-0002)
- *BP202, B Residual Heat Removal Pump In-Service Test* (HC.OP-IS.BC-0003)
- *RHR Suppression Pool Spray Flow A to ERF* (SC-BC-0055)
- *A Service Water Pump - AP502 In-Service Test* (HC.OP-IS.EA-0001)
- *HPCI Main and Booster Pump Set-OP204 and OP217- Inservice Test*, (HC.OP-IS.BJ-0001)
- *HPCI System Piping and Flow Path Verification,* (HC.OP-ST.BJ-0001)

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed Hope Creek T-MOD 02-023, *Bypass Rod Position Indication for Control Rod 22-31*. The objectives of this review were to verify that (1) the design bases, licensing bases, and performance capability of risk significant structures, systems, and components had not been degraded through this modification, and (2) that implementation of the modification did not place the plant in an unsafe condition. The inspectors used UFSAR Section 7.7.1.1.2 and TS 3.1.3.7.a, *Control Rod Position Indication*, to assess the adequacy of engineering's evaluation for T-MOD 02-023. The inspectors verified the modified equipment alignment through a control room instrumentation and hydraulic control unit walkdown using the control rod drive (CRD) operating procedures and tagging document WCD 4009711. In addition, the inspectors reviewed corrective action notification 20106458 involving a temporary modification issue.

The inspectors reviewed the following documents:

- *CRD Hydraulic System Operation* (HC.OP-SO.BF-0001)
- *Individual CRD Operation* (HC.OP-SO.BF-0002)

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Occupation Radiation Safety [OS]

2OS1 Access Control to Radiologically Significant Areas

a. Inspection Scope

During the period from September 16-20, 2002, the inspector reviewed exposure significant work areas, high radiation areas, and airborne radioactivity areas in the plant and evaluated associated controls and surveys of these areas to determine if the controls (i.e., surveys, postings, barricades) were acceptable. For these areas, the inspector reviewed radiological job requirements and attended job briefings to determine if radiological conditions in the work area were adequately communicated to workers through briefings and postings. The inspector also verified radiological controls, radiological job coverage, and contamination controls to ensure the accuracy of surveys and applicable posting and barricade requirements. The inspector obtained this information via: interviews with personnel; walkdown of systems, structures, and components (SSCs); and examination of records, procedures, or other pertinent documents. The inspector determined if prescribed radiation work permits (RWPs), procedure and engineering controls were in place; whether surveys and postings were complete and accurate; and if air samplers were properly located. The inspector conducted reviews of RWPs used to access these and other high radiation areas to identify the acceptability of work control instructions or control barriers specified. The inspector reviewed electronic pocket dosimeter alarm set points (both integrated dose and dose rate) for conformity with survey indications and plant policy. Plant TS 6.12 and the requirements contained in 10 CFR 20, Subpart G, were utilized as the standard for access control to these areas.

The inspector reviewed a listing of PSEG Nuclear notifications (see Supplementary Information, Section C, for a complete listing) for issues related to occupational radiation safety, and determined if identified problems were entered into the corrective action system for resolution. The inspector also reviewed the tracking, evaluation, and resolution of these identified issues.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls

a. Inspection Scope

The inspector reviewed current ALARA job evaluations, exposure estimates, and exposure mitigation requirements and compared ALARA plans with the results achieved. The inspector obtained this information via: interviews with personnel; walkdown of SSCs; and examination of records, procedures, or other pertinent documents.

A review of actual exposure results versus initial exposure estimates for work was conducted including: comparison of estimated and actual dose rates and person-hours expended; determination of the accuracy of estimations to actual results; and determination of the level of exposure tracking detail, exposure report timeliness and exposure report distribution to support control of collective exposures to determine conformance with the requirements contained in 10 CFR 20.1101(b). Year-to-date exposures stood at approximately 15 person-rem at the time of the inspection, against an annual exposure goal of 27 person-rem.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation

a. Inspection Scope

The inspector reviewed field instrumentation utilized by health physics technicians and plant workers to measure radioactivity including; portable field survey instruments, friskers, portal monitors and small article monitors. The inspector obtained this information via: interviews with personnel; walkdown of SSCs; and examination of records, procedures, or other pertinent documents. The inspector conducted a review of instruments observed, specifically verification of proper function and certification of appropriate source checks for these instruments, which were utilized to ensure that occupational exposures were maintained in accordance with 10 CFR 20.1201. The inspector also reviewed calibration records of randomly selected radiological survey instrumentation.

b. Findings

No findings of significance were identified.

3. SAFEGUARDS

Physical Protection [PP]

3PP3 Response to Contingency Events

The Office of Homeland Security (OHS) developed a Homeland Security Advisory System (HSAS) to disseminate information regarding the risk of terrorist attacks. The HSAS implements five color-coded threat conditions with a description of corresponding actions at each level. NRC Regulatory Information Summary (RIS) 2002-12a, dated August 19, 2002, “NRC Threat Advisory and Protective Measures System,” discusses the HSAS and provides additional information on protective measures to licensees.

a. Inspection Scope

On September 10, 2002, the NRC issued a Safeguards Advisory to reactor licensees to implement the protective measures described in RIS 2002-12a in response to the Federal government declaration of threat level “orange.” Subsequently, on September 24, 2002, the OHS downgraded the national security threat condition to “yellow,” a corresponding reduction in the risk of a terrorist threat.

The inspector interviewed PSEG Nuclear personnel and security staff, observed the conduct of security operations, and assessed implementation of the threat level “orange” protective measures. Inspection results were communicated to the region and headquarters security staff for further evaluation.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification

.1 Initiating Events

a. Inspection Scope

The inspectors verified the accuracy of *Unplanned Scrams per 7,000 Critical Hours; Scrams with a Loss of Normal Heat Removal; and Unplanned Power Changes per 7,000 Critical Hours* performance indicators (PIs) for the period July 1, 2001, through June 30, 2002. The inspectors reviewed PSEG Nuclear event reports, monthly operating reports, NRC inspection reports, and PSEG Nuclear’s Sky Line power history charted. The inspectors used the guidance provided in NEI 99-02, Revision 2, *Regulatory Assessment Performance Indicator Guideline*, to assess PSEG Nuclear’s collection and reporting of PI data.

b. Findings

No findings of significance were identified.

.2 Residual Heat Removal System Unavailability

a. Inspection Scope

The inspectors verified the methods used to calculate the *Residual Heat Removal System Unavailability* PI and reviewed the data for the period July 1, 2001, through June 30, 2002. The inspectors reviewed limiting condition for operation logs, control room operating logs, corrective action program notifications, surveillance logs, and Maintenance Rule electronic data bases. The inspectors used the guidance provided in NEI 99-02, Revision 2, *Regulatory Assessment Performance Indicator Guideline*, to assess PSEG Nuclear’s collection and reporting of PI data.

b. Findings

No findings of significance were identified.

.3 Public Radiation Safety Cornerstone

a. Inspection Scope

The inspectors reviewed a listing of PSEG Nuclear event reports for the period January 1, 2002, through September 3, 2002, for issues related to the public radiation safety PI. This PI 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 also reviewed several corrective action system notifications associated with effluent monitoring issues (see Section 4OA7).

b. Findings

No findings of significance were identified.

.4 Occupational Radiation Safety Cornerstone

a. Inspection Scope

The inspector reviewed a listing of licensee event reports (LERs) for the period January 1, 2002, through September 18, 2002, for issues related to the *Occupational Exposure Control Effectiveness* PI, which measures non-conformances with high radiation areas greater than 1R/hr and unplanned personnel exposures greater than 100 mrem TEDE, 5 rem SDE, 1.5 rem LDE, or 100 mrem to the unborn child.

b. Findings

No significant findings or observations were identified.

4OA2 Identification and Resolution of Problems

.1 Problem Identification and Resolution

a. Inspection Scope

In accordance with the guidance provided in Inspection Procedure 71152, *Identification and Resolution of Problems*, the inspector selected quality assessment (QA) 2001-0449 and notification 20085623 regarding General Electric (GE) AKR 480 VAC and GE AKR 125/250 VDC for detailed review. These documents identified concerns that GE AKR 480 VAC and GE AKR 125/250 VDC breakers had not been overhauled or refurbished since their installation. Additionally, these documents identified that the GE AKR 125/250 VDC breakers were not tested with primary current injection (over-current trip) to verify that they would trip at the appropriate current level. The inspector reviewed the QA assessment and notification to ensure that the full extent of the issues were identified, that appropriate evaluations were performed, that appropriate extent of condition reviews were performed, and that appropriate corrective actions were specified and prioritized. The inspector also reviewed selected work orders and completed surveillances to ensure that preventive maintenance (PM) on breakers had been completed. Additionally, the inspector reviewed breaker maintenance history and maintenance frequency requirements to ensure that PSEG Nuclear accomplished breaker maintenance in an appropriate and timely manner. For selected breakers, the inspector reviewed PM procedures and compared maintenance frequency requirements with TS frequency requirements to verify that TS AC breakers received PMs at the required times.

The inspector reviewed PSEG Nuclear's integrated action plan to determine their plans for AKR breaker refurbishment and implementation of primary current injection (over-current trip) testing into the PM procedures for GE AKR DC breakers.

The inspector reviewed the PSEG Nuclear's GE maintenance manual for AKR breakers and AKR breaker maintenance procedures to verify that these documents were up-to-date and reflected the most recent guidance provided in the GE maintenance manual and Significant Operating Experience Report (SOER) 98-2. SOER 98-2 provides guidance to enhance breaker reliability. The inspector reviewed maintenance history of selected breakers and recent notifications to determine if any failures of GE AKR breakers had occurred.

The inspector reviewed PSEG Nuclear's recently implemented breaker trending program, which will track breaker failures and trend for common cause failures. The inspector also reviewed PSEG Nuclear's recently implemented component health report for circuit breakers. The health report assigns a color for component health status and trends progress for improvement. Additionally, the component health report provides information on significant breaker issues at the site and industry operating experience (OE). These efforts were part of the corrective actions to enhance PSEG Nuclear's breaker program.

The inspector toured the areas of the plant containing safety related GE AKR breakers to assess material condition of the switchgear. The inspector also toured the breaker maintenance shop for Hope Creek and Salem to witness breaker maintenance, review maintenance practices, and determine the knowledge of personnel performing maintenance on AKR breakers.

The inspector determined that the corrective actions associated with QA 2001 – 449 and notification 20085623 were appropriate, including detailed and thorough apparent cause evaluations. PSEG Nuclear appropriately conducted an extent of condition review. The inspector noted that there had been no failures (in-service or during surveillances) of AKR breakers at Hope Creek. Additionally, PSEG Nuclear planned to determine whether to replace or refurbish the GE AKR breakers. PSEG Nuclear had the appropriate steps in the GE AKR DC breaker maintenance procedures to perform primary current injection (over-current trip) testing during the spring 2003 outage.

b. Findings

No findings of significance were identified.

.2 Identification, Evaluation, and Resolution of Problems

Inspection findings in previous sections of this report also had implications regarding PSEG Nuclear's identification, evaluation, and resolution of problems, as follows:

a. Section 1RO4.2 - Failure to take appropriate corrective actions to preclude recurrence of a configuration control deficiency associated with secondary containment integrity.

b. Section 1RO5.1 - Failure to identify and administratively control transient combustibles materials in the HPCI pump and turbine room. This demonstrated weak identification of a fire protection deficiency. This also represented weak corrective actions from a previous occurrence in the same room (IR 50-354/01-11Section R05.1).

c. Section 1RO6.1 - Failure to promptly identify and initiate actions to correct a configuration control deficiency associated with SW intake watertight flood doors.

Additional items associated with PSEG Nuclear's corrective action program were reviewed without findings and are listed in Sections 1R04.3, 1RO5.2, 1R07, 1R11, 1R12, 1R13, 1R14, 1R15, 1R16, 1R17, 1R19, 1R22, 1R23, and 2OS1 of this report.

4OA3 Event Followup

.1 (Closed) LER 354/2002-004: Engineered Safety Feature Actuation - Reactor Scram Caused by Turbine Trip from Moisture Separator High Level following Intermediate Runback of Reactor Recirculation Pumps. This LER discussed a plant transient, reactor scram, and manual alternate rod insertion. The inspectors discussed this event in NRC Inspection Report 354/02-05 Section 1R14.2 and determined that this LER was complete and accurate.

.2 <u>(Closed) LER 354/2002-005:</u> Potential to Exceed Licensed Power Level Due to Malfunction of the Crossflow Correction Factor Instrumentation. This LER discussed the operation outside of License Condition 2.C(1), which authorizes PSEG Nuclear to operate the facility at reactor power levels not to exceed 3339 megawatts thermal. The inspectors documented this issue in NRC Inspection Report 354/02-05 Section 1R14.1 and determined that this LER was complete and accurate.

.3 <u>(Closed) LER 354/2002-006:</u> Operation with Offgas Rad Monitors Inoperable. This LER discussed the operation of the plant with less than the required number of radiation monitoring instrumentation channels as required by TS 3.3.7.1. PSEG Nuclear entered this into their corrective action system under notifications 20104423 and 20104783. The inspectors reviewed the LER and corrective actions and identified no findings of significance. The failure to properly sample and analyze this offgas pathway as required by TS 3.3.7.1-1 Action 74 constitutes a violation of minor safety significance and is not subject to formal enforcement action in accordance with Section IV of the NRC's Enforcement Policy.

4OA4 <u>Cross-cutting Issues</u>

Maintenance technicians failed to conduct maintenance in accordance with NC.NA-AP.ZZ-0069, *Work Control Coordination*, resulting in the loss of both trains of control room ventilation (Section RO4.1). Maintenance technicians did not perform and document calibration procedure steps as required resulting in a FRVS configuration control deficiency (Section 1R04.2). These maintenance technicians' failures to adhere to procedure guidance directly involved human performance.

4OA6 <u>Management Meetings</u>

.1 <u>Exit Meeting Summary</u>

On September 25 the inspectors presented their overall findings to members of PSEG Nuclear management led by Lon Waldinger. PSEG Nuclear management stated that none of the information reviewed by the inspectors was considered proprietary.

.2 <u>PSEG Nuclear/NRC Management Meeting</u>

On July 12 Hubert J. Miller, Regional Administrator, Region I, met with PSEG Nuclear management, discussed regulatory issues, and toured the Salem and Hope Creek units.

4OA7 <u>Licensee Identified Violations</u>

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

Cornerstone: Public Radiation Safety

On January 7 and February 19, 2002, PSEG Nuclear identified that the radioactive liquid effluent monitoring instrument for the turbine building circulating water dewatering sump discharge line to the cooling tower had not been channel checked on a daily basis, source checked on a monthly basis, nor functionally tested on a quarterly basis as required in Table 4.3.7.10-1 of the Offsite Dose Calculation Manual (ODCM). PSEG Nuclear failed to perform appropriate functional testing between March 15, 2001, and January 7, 2002; and appropriate channel checks and source checks between March 15, 2001, and February 19, 2002. This performance issue had no actual safety significance since no unmonitored discharges occurred during this period from this pathway. PSEG Nuclear entered this issue into their problem identification and corrective action system as notifications 20088107 and 20091845. This is being treated as a Non-Cited Violation.

ATTACHMENT 1
SUPPLEMENTARY INFORMATION

a. Key Points of Contact

Terry Cellmer, Radiation Protection Manager
Matt Conroy, Maintenance Rule Supervisor
David Davis, Program Manager (Breakers)
John D'Souza, Senior Engineer, Chemistry Technologies
Robert Gary, Radiation Protection Operations Superintendent - Hope Creek
Kurt Krueger, Operations Manager
Gabor Salamon, Nuclear Safety & Licensing Manager
Ronald Sambuca, Maintenance Supervisor
Benjamin Sproat, Component Engineer (Low Voltage)
Lon Waldinger, Director Site Operations

b. List of Items Opened, Closed, and Discussed

Opened/Closed

50-354/02-06-01	NCV	Maintenance technicians failed to conduct maintenance in accordance with NC.NA-AP.ZZ-0069, *Work Control Coordination*, resulting in the loss of both trains of control room ventilation. (Section 1R04.1)
50-354/02-06-02	NCV	PSEG Nuclear did not take appropriate corrective actions to preclude recurrence of a deficiency associated with secondary containment integrity. (Section 1R04.2)
50-354/02-06-03	NCV	PSEG Nuclear did not identify and administratively control transient combustibles materials in the HPCI pump and turbine room. (Section 1R05.1)
50-354/02-06-04	NCV	PSEG Nuclear did not promptly identify and initiate actions to correct a configuration control deficiency associated with SW intake watertight flood doors. (Section 1R06.1)

Closed

50-354/02-004-00	LER	Engineered safety feature actuation - reactor scram caused by turbine trip from moisture separator high level following intermediate runback of reactor recirculation pumps. (Section 4OA3.1)

50-354/02-005-00	LER	Potential to exceed licensed power level due to malfunction of the crossflow correction factor instrumentation. (Section 4OA3.2)
50-354/02-006-00	LER	Operation with Offgas Rad Monitors Inoperable. (Section 4OA3.3)

c. 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 (HCGS) Updated Final Safety Analysis Report
Technical Specification Action Statement Log (SH.OP-AP.ZZ-108)
HCGS NCO Narrative
HCGS Plant Status Report
Weekly Reactor Engineering Guidance to Hope Creek Operations
Hope Creek Operations Night Orders and Temporary Standing Orders
Reactor Recirculation System Operation (HC.OP-SO.BB-0002)
Recirculation System (HC.OP-AB.RPV-0003)
Station Operations Review Committee Meeting Minutes (02-029, 02-030, 02-035, 02-036, 02-040, 02-044)

Section 1R04.3 corrective action notifications reviewed: 20105080, 20108331, 20108796, 20110791, 20111637, 20111780, and 20113338.

Section 1R05 corrective action notifications reviewed: 20104623, 20105117, 20105166, 20105171, 20105471, 20107145, 20107242, 20108208, 20109234, 20109463, 20111940, and 20113287.

Section 1R06.2 documents reviewed:

- *Acts of Nature* (HC.OP-AB.MISC-0001)
- *Reactor Building and Radioactive Release Control* (HC.OP-EO.ZZ-0103/4)
- Notification 20110856, Service Water Intake Structure Sump Pump
- Notification 20110602, Ground Water Leakage
- *Overhead Annunciator Window Box A6* (HC.OP-AR.ZZ-0004)
- *Overhead Annunciator Window Box B1* (HC.OP-AR.ZZ-0014)
- *Overhead Annunciator Window Box D3* (HC.OP-AR.ZZ-0006)
- UFSAR Section 3.4, Water Level (Flood) Design

Section 1R12 documents reviewed:

- *Maintenance Rule System Checkbook*
- *Emergency Diesel Generators System Health Report - KJ for the Period 3/1/02 to 5/31/02*
- *2002 Targeted Equipment List*
- *PSEG Preventable System Functional Failures Database*

- Notifications 20076224, 20077731, 20080460, 20083237, 20083514, 20084231, 20085985, 20086356, 20089428, 20092040, 20096763, and 20100102
- Work orders 60017991, 60022449, 60026071, 60027078, and 60029803
- Evaluations 70019081, 70022594, and 70025355

Section 1R13 corrective action notifications reviewed: 20104595, 20104606, 20104699, 20105186, 20106150, 20106251, 20106740, 20107956, 20108418, 20108457, 20111151, 20111614, 20112254, 20112306, and 20114158.

Section 1R19 corrective action notifications reviewed: 20104643, 20109032, 20109153, 20109291, 20109970, 20112306, 20112551, 20112657, and 20113475.

Section 1R22 corrective action notifications reviewed: 20104630, 20105172, 20106535, 20106890, 20107241, 20108242, 20109660, 20111319, and 20111767.

Section 2OS1 corrective action notifications reviewed: 20113041, 20112989, 20111968, 20107829, 20107401, 20105793, 20105711, 20102251, 20097164, 20097066, and 20096251.

Section 4OA2.1 documents reviewed:

- Breaker Maintenance History (for selected breakers), January 1991 - May 2000
- Component Health Report - Circuit Breakers, Second Quarter, 2002
- Hope Creek Generating Station Technical Specifications
- Integrated Action Plan
- QA Assessment Report 2001 0 0449, January 2, 2002
- Notifications 20080409, 20080796, 20081949, 20081950, 20085623, 20088273, 20088578, and 20095252
- Drawings E-0009-1(Q), Sh. 1 - 5, *Single Line Meter & Relay Diagram 125 VDC System* and E-0018-1, Sh. 1 - 3, *Single Line Meter & Relay Diagram 480 Volt Class 1 E Unit Substa. 10B410, 10B420, 10B430, 10B440, 10B450, 10B460, 10B470, 10B480*
- *480 Volt MCC Starter Preventive Maintenance and Tech. Spec. Inspection, Rev. 19* (HC.MD-PM.PH-000)
- *DC Low Voltage Type AKR Air Circuit Breaker Inspection and Preventive Maintenance Manual, Rev. 4* (HC.MD-PM.PJ-0002)
- *Low Voltage Type AKR Air Circuit Breaker Inspection and Preventive Maintenance, Rev. 15* (HC.MD-ST.ZZ-0006)
- GE Vendor Manual GEK-64459D, *Maintenance Manual, Low Voltage Power Circuit Breakers - Types AKR-30/50 and AKRT- 50*
- *DC Low Voltage Type AKR Air Circuit Breaker Inspection and Preventive Maintenance Manual, Completed 10/15/01* (HC.MD-PM.PJ-0002)
- *AKR-480V BRKR/36 Month Surveillance 11/1A-P 20, Completed 1/17/2001* (MD-ST.ZZ 006)
- Work Order 30040778
- Evaluation 70021765
- PSEG Memorandum, QA Assessment 2001-0449, Breaker Preventive Maintenance, ½/02

- Significant Operating Experience Report (SOER) 98-2, Circuit Breaker Reliability, 9/18/98

d. List of Acronyms

ALARA	As Low As is Reasonably Achievable
CFR	Code of Federal Regulations
CRD	Control Rod Drive
CRIDS	Control Room Integrated Display Computer System
CRS	Control Room Supervisor
CRV	Control Room Ventilation
DID	Defense-in-Depth
EDG	Emergency Diesel Generator
FRVS	Filtration, Recirculation and Ventilation System
GE	General Electric
HCGS	Hope Creek Generating Station
HPCI	High Pressure Coolant Injection
HSAS	Homeland Security Advisory System
HVAC	Heating Ventilation and Air Conditioning
IPEEE	Individual Plant Examination for External Events
IST	Inservice Test
LDE	Lens Dose Equivalent
LER	Licensee Event Report
MG	Motor Generator
NCV	Non Cited Violation
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OE	Operating Experience
OHS	Office of Homeland Security
PARS	Publicly Available Records
PI	Performance Indicator
PM	Preventive Maintenance
PMT	Post Maintenance Testing
PSEG	Public Service Electric Gas
QA	Quality Assessment
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RIS	Regulatory Information Summary
RWP	Radiation Work Permit
SACS	Safety Auxiliaries Cooling System
SDE	Shallow Dose Equivalent
SDP	Significance Determination Process
SOER	Significant Operating Experience Report
SRO	Senior Reactor Operator
SSCs	Systems, Structures, and Components
SW	Service Water
TARP	Transient Assessment Response Plan
TEDE	Total Effective Dose Equivalent
TS	Technical Specification

Attachment 1 (Cont.)

TVT	Turbine Valve Testing
UFSAR	Updated Final Safety Evaluation Report
VAC	Volts Alternating Current
VDC	Volts Direct Current