November 15, 1999

Mr. Harold W. Keiser
President and Chief Nuclear Officer
PSEG Nuclear LLC
Post Office Box 236
Hancocks Bridge, NJ 08038

SUBJECT: NRC INTEGRATED INSPECTION REPORT 50-354/99-06

Dear Mr. Keiser:

On October 10, 1999, the NRC completed an integrated inspection of your Hope Creek reactor facility. The enclosed report presents the results of that inspection. The preliminary findings were presented to PSEG Nuclear management led by Mr. Mark Bezilla in an exit meeting on October 20, 1999.

This inspection was an examination of activities conducted under your license as they related to reactor safety and compliance with the Commission's rules and regulations, and with the conditions of your license. The attached report documents the results of six weeks of resident inspection and three discrete region-based reviews of site physical protection, safety evaluations, and radiological environmental monitoring. Within these areas the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel. There were no findings identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be placed in the NRC Public Document Room (PDR).

Sincerely,

Original Signed By:

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

Enclosure: Inspection Report 50-354/99-06

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E. Simpson, Senior Vice President and Chief Administrative Officer
M. Bezilla, Vice President - Nuclear Operations
D. Garchow, Vice President - Technical Support
M. Trum, Vice President - Maintenance
T. O'Connor, Vice President - Plant Support
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G. Salamon, Manager - Licensing
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R. Kankus, Joint Owner Affairs
A. Tapert, Program Administrator
J. J. Keenan, Esquire
Consumer Advocate, Office of Consumer Advocate
W. Conklin, Public Safety Consultant, Lower Alloways Creek Township
M. Wetterhahn, Esquire
State of New Jersey
State of Delaware

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No:	50-354
License No:	NPF-57
Report No:	50-354/99-06
Licensee:	PSEG Nuclear LLC.
Facility:	Hope Creek Nuclear Generating Station
Location:	P.O. Box 236 Hancocks Bridge, NJ 08038
Dates:	August 30 - October 10, 1999
Inspectors:	J. D. Orr, Resident Inspector J. G. Schoppy, Sr. Resident Inspector G. C. Smith, Sr. Physical Security Specialist P. R. Frechette, Physical Security Specialist L. A. Peluso, Radiation Specialist L. J. Prividy, Senior Reactor Engineer A. L. Della Greca, Senior Reactor Engineer
Approved By:	Glenn W. Meyer, Chief, Projects Branch 3 Division of Reactor Projects

SUMMARY OF FINDINGS

Hope Creek Generating Station
NRC Integrated Inspection Report 50-354/99-06

The report covers a six-week period of resident inspection using the guidance contained in NRC Inspection Manual Chapter 2515*.

Inspection findings were assessed according to potential risk significance and were assigned colors of *green, white, yellow, or red.* The inspection found only *non-colored* findings. *Green* findings, while not necessarily desirable, would have represented little risk to safety. *White* findings would have indicated issues with some increased risk to safety and which may have required additional NRC inspections. *Yellow* findings would have indicated more serious issues with higher potential risk to safety and would have required the NRC to take additional actions. *Red* findings would have represented an unacceptable loss of margin to safety and would have resulted in the NRC taking significant actions that could have included ordering the plant to shut down. The findings, considered in total with other inspection findings and performance indicators, will be used to determine overall plant performance.

- **!** There were no findings.

Performance Indicator Verification

- **!** PSEG submitted accurate data for the *Fitness-for-Duty*, *Personnel Screening*, *Protected Area Security Equipment, 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 based on a verification of submitted data .

TABLE OF CONTENTS

Report Details

SUMMARY OF PLANT STATUS

Hope Creek was shutdown at the end of August for a maintenance outage. On September 1, Hope Creek was brought back on line, and reached 100% reactor power on September 3. Hope Creek remained at full power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather

a. Inspection Scope

The inspectors reviewed PSEG's corrective actions for temporary flooding in a switchyard relay house sump that occurred during tropical storm Floyd. Flooding in the relay house was potentially risk significant because it could have resulted in a loss of offsite power.

b. Observations and Findings

The inspectors concluded that flooding in the relay house was not risk significant based on PSE&G's determination that water level inside the sump would not have risen above the relay house floor, because the floor is several inches above grade. The offsite power protective relays are also a few inches above the floor.

Specifically, on September 16, 1999, heavy rains from tropical storm Floyd passed over Hope Creek. The Hope Creek control room received a fire alarm for its switchyard relay house during the storm. Operators responded to the alarm and discovered that a protective relaying cable vault was filled with water within about 18 inches of the relay house floor. Submerged smoke detectors had caused the fire alarm. Operators and maintenance personnel installed a temporary sump pump and were able to pump out the cable vault.

PSEG initiated a corrective action notification (20005663) to followup on the water intrusion in the relay house. PSEG engineers determined that water most likely filled the cable vault based on leakage past cable penetration seals and a vulnerable sump pump design. The cable vault sump pump, without a discharge check valve, was susceptible to backflow from an outside pit that was exposed to the storm. The pump in the outside pit and its power supply failed during the storm. Although the failure of the relay house sump system was not risk significant, PSEG initiated corrective action items to improve the reliability of the sump pump system and to repair degraded cable penetration seals.

Through interviews and photographs the inspectors also verified that the storm drain system adequately protected the switchyard house during tropical storm Floyd. The inspectors walked down the relay house and the switchyard and determined that the water intrusion on September 16 did not create any additional risk to offsite power.

1R02 Changes to License Conditions and Safety Analysis Reports

a. Inspection Scope

Ten nuclear safety evaluations (SEs) from the past two years were reviewed to determine if the associated changes resulted in more than a minimal increase in risk without prior NRC approval. All SEs reviewed were associated with mitigation systems. PSEG's identification and resolution of problems related to these SEs were also reviewed.

97-053 - Motor-Operated Valve Thermal Overload Protection Modification in Response to Information Notice 92-18
98-006 - Maximum Post Accident Temperature for Rooms Cooled by the Equipment Area Cooling System
99-016 - A&B Control Rod Drive System Pump Monitoring for Low Suction Pressure
99-024 - Incorrect Relay in Fuel Oil Transfer Control Circuit
99-035 - Setpoint Change for Chilled Water System
99-036 - Setpoint Change for HPCI/RCIC Condensate Storage Tank Auto Swapover
99-026 - Safety and Turbine Auxiliary Cooling System - Required Flow Rates & Heat Loads (Calculation EG-0020, Rev.7)
97-086 - Safety and Turbine Auxiliary Cooling System - Required Flow Rates & Heat Loads (Calculation EG-0020, Rev.6)
99-030 - Reactor Building Room Cooler Capacities
98-028 - Engineering Evaluation - Safety Related Chiller Operation & River Water Temperature

The inspectors also reviewed several minor plant modifications where PSEG had not performed safety evaluations based on 10 CFR 50.59 applicability reviews. This review was performed to verify that PSEG's threshold for performing safety evaluations met the requirements of 10 CFR 50.59.

b. Observations and Findings

There were no findings identified.

1R03 Emergent Work

a. Inspection Scope

The inspectors reviewed PSEG's corrective actions and risk management controls associated with a residual heat removal system motor operated valve (EGHV - 2512A) failure and the B control area chiller freon leak.

b. Observations and Findings

There were no findings identified.

1R04 Equipment Alignments

a. The inspectors performed partial redundant equipment alignment verifications during system outages on the B emergency diesel generator, the A & C residual heat removal subsystem, and the B & D core spray subsystem.

b. Observations and Findings

There were no findings identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors performed a walkdown of the safety-related battery rooms, the reactor core isolation cooling battery room, and the 4160V vital switchgear rooms. The inspectors also reviewed fire impairments and compensatory measures associated with these rooms.

b. Observations and Findings

There were no findings identified.

1R09 Inservice Testing

a. Inspection Scope

The inspectors observed, reviewed the results of, and verified the adequacy of the A residual heat removal pump and the high pressure coolant injection pump inservice tests.

b. Observations and Findings

There were no findings identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed licensed operator simulator training to verify that training scenarios were challenging, included risk significant operator actions, and incorporated emergency plan implementation.

b. Observations and Findings

There were no findings identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors reviewed maintenance rule implementation for three potentially risk significant equipment failures: Notification 20000477/Main Control Room Humidity, Notification 20000629/Intermediate Range Monitor G Failure, and Notification 20000537/A Main Steam Line Radiation Monitor.

b. Observations and Findings

There were no findings identified.

1R13 Maintenance Work Prioritization

a. The inspectors evaluated PSEG's on-line risk management for an A & C residual heat removal subsystem outage.

b. Observations and Findings

There were no findings identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspector reviewed three operability determinations initiated or updated during the report period which impacted mitigating systems. The inspector reviewed operability determinations associated with:

- Safety auxiliaries cooling system to fuel pool cooling and cleanup system cross connect leak-by
- Turbine stop valve testing failed to generate an input into the reactor protection system.
- The residual heat removal heat exchanger safety auxiliaries cooling valve failure to remotely stroke open.

b. Observations and Findings

There were no findings identified.

1R16 Operator Work-Arounds

a. Inspection Scope

The inspectors reviewed the operator work around list and other equipment deficiencies to evaluate potential impacts on the operators' ability to implement abnormal or emergency operating procedures.

b. Observations and Findings

There were no findings identified.

1R19 Postmaintenance Testing

a. Inspection Scope

The inspectors reviewed the results and adequacy of post maintenance tests associated with A & C residual heat removal subsystem motor operated valve and starter preventative maintenance, B control room chiller freon repairs, and the B emergency diesel generator isochronous/droop relay replacement.

b. Observations and Findings

There were no findings identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed the performance and reviewed the adequacy of three technical specification surveillance tests: *Functional Test Nuclear Boiler - Division 4 Channel B21-N707H Safety Relief Valve B21-F013P Low-Low Set, Logic System Functional Test Containment High Pressure/Reactor Low Water Level/Reactor High Water Level HPCI Actuation,* and *RHR - Division 1 Channel E11-652A Pump Discharge Flow* (a sensor calibration).

b. Observations and Findings

There were no findings identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety [PS]

2PS3 Radiological Environmental Monitoring

a. Inspection Scope

The inspector reviewed the radiological environmental monitoring program (REMP), including the meteorological monitoring program (MMP) by examining technical specification and Updated Final Safety Analysis Report requirements; associated procedures of the REMP and MMP; the 1997 and 1998 Annual Environmental Operating Reports; frequency and type of samples and analysis; annual land use census; interlaboratory comparison program; calibration and maintenance of REMP sampling equipment; calibration and maintenance of meteorological instrumentation; self-assessments; and quality assurance audits.

b. Observations and Findings

There we no findings identified.

3. SAFEGUARDS

Cornerstone: Physical Protection [PP]

3PP1 Site Access Authorization Program

a. Inspection Scope

The inspectors verified that PSEG was properly implementing the behavior observation portion of their personnel screening and fitness-for-duty program. Representatives of PSEG management and escort personnel were interviewed concerning their understanding of their behavior observation responsibilities and ability to recognize aberrant behavior traits. Access Authorization and Fitness-for-Duty self-assessments, event reports, audits and loggable events were also reviewed.

b. Observations and Findings

There were no findings identified.

3PP2 Site Access Control

a. Inspection Scope

The inspectors verified that PSEG maintained effective access controls and equipment to detect and prevent the introduction of contraband (firearms, explosives, incendiary devices) into the protected area that could be used to commit radiological sabotage.

Verification of the identification and authorization process is used to confirm that only those who have been properly screened are granted unescorted access to the protected and vital areas. Access control activities were observed, including observation of personnel processing through the search equipment during peak ingress periods and testing of all access control equipment. Access control event logs, audits and maintenance work requests were also reviewed.

b. Observations and Findings

There were no findings identified.

4. OTHER ACTIVITIES [OA]

4OA1 Identification and Resolution of Problems

a. Inspection Scope

The inspector reviewed self-assessments, audits, equipment logbooks, and corrective action notifications involving environmental sampling, sample analysis, and meteorological monitoring instrumentation.

b. Observations and Findings

A program deviation during a review of the contractor's (Maplewood Testing Services) equipment logbook was observed. An air sampler was inoperable for approximately 7 days in March 1999 and had not been entered into the corrective action program as a notification. In addition, it was noted that this had not been identified during a recent quality assurance audit. PSEG entered this problem into the corrective action program as Notification #20004816.

4OA2 Performance Indicator Verification

a. Inspection Scope

The resident 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 7000 Critical Hours* performance indicators (PI). All calendar quarters of submitted data were reviewed, four or twelve calendar quarters as appropriate. Licensee event reports, monthly operating reports and control room logs were reviewed. The region based physical security inspectors verified the accuracy of *PA Security Equipment Performance Index, Personnel Screening Program Performance, and FFD/Personnel Reliability Program Performance.* Fitness for duty, access authorization, and security event logs from second quarter 1997 to second quarter 1999 were reviewed.

b. Observations and Findings

There were no findings identified.

4OA3 Event Follow-up

a. Inspection Scope

The inspectors evaluated PSEG's response to an uncontrolled freon leak inside the control building on September 29, 1999. (In large quantities freon is a toxic gas.) The freon leak issued from the B control area chiller. The inspectors verified timely and proper emergency plan implementation. The inspectors also observed that the main control room remained unaffected and that the control building atmospheres and access were promptly restored.

b. Observations and Findings

There were no findings identified.

4OA4 Other

.1 (Closed) Inspector Followup Item 50-354/97-06-01: Safety auxiliary cooling system (SACS) heat exchanger performance monitoring. PSEG had not completed the monitoring of SACS heat exchanger performance and inspections of this equipment as committed to in their original response to Generic Letter 89-13, “Service Water System Problems Affecting Safety-Related Equipment.” PSEG completed the inspections in refuel outages (RFOs) 7 and 8 with acceptable results but did not obtain meaningful performance data (heat exchanger service water side pressure drop) to establish an appropriate frequency for SACS heat exchanger inspections and cleanings. In a letter to the NRC dated May 10, 1999, PSEG updated their commitment to obtain this information by the end of RFO9. The inspectors found PSEG's actions acceptable and considered this item closed.

.2 (Open/Closed) LER 354/99-010-00: Engineered safety feature actuation - reactor core isolation cooling system isolation. This LER was a minor issue. The inspectors verified that appropriate corrective actions were completed. This LER was closed.

.3 Year 2000 (Y2K) readiness: The inspectors verified that remaining work orders for correcting Hope Creek Y2K deficiencies were completed. This included four Hope Creek systems: fire detection and alarm system, the safety parameter display system, the emergency response data system, and the plant training simulator.

4OA5 Management Meetings

a. Exit Meeting Summary

On October 20, 1999, the inspectors presented their overall findings to members of PSEG Nuclear management led by Mr. Bezilla. The PSEG managers acknowledged the findings presented and did not contest any of the inspectors’ conclusions. Additionally, they stated that none of the information reviewed by the inspectors was considered proprietary.

ITEMS OPENED AND CLOSED

Open/Closed

50-354/97-06-01	IFI	SACS Heat Exchanger Performance Monitoring (Section 4OA4)
50-354/99-010-00	LER	Engineered safety feature actuation - reactor core isolation cooling system isolation. (Section 4OA4)