September 5, 2000

Mr. Harold W. Keiser
President and Chief Nuclear Officer
PSEG Nuclear LLC - X04
Post Office Box 236
Hancocks Bridge, NJ 08038

SUBJECT: NRC's HOPE CREEK REPORT 05000354/2000-006

Dear Mr. Keiser:

On August 12, 2000, the NRC completed an inspection of your Hope Creek facility. The enclosed report presents the results of that inspection. The preliminary findings were presented to PSEG Nuclear management led by Mr. Larry Wagner in an exit meeting on August 24.

NRC inspectors examined numerous activities as they related to reactor safety and compliance with the Commission's rules and regulations, and with the conditions of your license. The inspection consisted of selective review of procedures and representative records, observations of activities, and interviews with personnel. Specifically, this inspection involved six weeks of resident inspection, and one region-based inspection of occupational radiation safety.

The inspector identified one finding that was evaluated under the risk significance determination process and was determined to be of very low safety significance (Green). This finding has been entered into your corrective action program, and is discussed in the summary of findings and in the body of the attached inspection report. Furthermore, the finding was determined to involve a violation of NRC requirements, but because of its very low safety significance, the violation is non-cited.

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/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,
/RA by
Richard S. Barkley
Acting For/

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

Docket No.: 05000354
License No.: NPF-57
Enclosure: Inspection Report 05000354/2000-006

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No:	50-354
License No:	NPF-57
Report No:	05000354/2000-006
Licensee:	PSEG Nuclear Limited Liability Company
Facility:	Hope Creek Nuclear Generating Station
Location:	P.O. Box 236 Hancocks Bridge, NJ 08038
Dates:	July 2 - August 12, 2000
Inspectors:	J. G. Schoppy, Jr., Senior Resident Inspector J. D. Orr, Resident Inspector J. T. Furia, Senior Health Physicist C. G. Cahill, Reactor Inspector
Approved By:	Glenn W. Meyer, Chief, Projects Branch 3 Division of Reactor Projects

Summary of Findings

Adams Template:
IR 05000354-00-06; on 07/02-08/12/2000; Public Service Electric and Gas Company; Hope Creek Generating Station; Occupational Radiation Safety.

The report covers a six-week period of resident inspection and one region-based inspection of occupational radiation exposure using the guidance contained in NRC Inspection Manual Chapter 2515*. The significance of issues is indicated by their color (Green, White, Yellow, or Red) and was determined by the Significance Determination Process (SDP) in Inspection Manual Chapter 0609 (see Attachment 1).

Cornerstone: Occupational Radiation Safety

- Green. On June 20, 2000, radiation protection (RP) technicians identified a high radiation area in the turbine building where dose rates were equal to 1 rem per hour 30 centimeters from the source of radiation, which was not posted or controlled in accordance with plant technical specifications for locked high radiation areas (Technical Specification 6.12.2). Identification of the dose rates was made following a worker entering the area and receiving a high dose rate alarm on his alarming dosimeter. Upon notification RP technicians promptly posted, barricaded and locked the area as required by Technical Specification 6.12.2. The event was subsequently added to PSEG Nuclear's corrective action system on July 25, 2000. (Section 2OS1)

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Report Details

SUMMARY OF PLANT STATUS

At the beginning of the period the Hope Creek plant operated at full power. On July 14 operators conducted a planned power reduction to approximately 60 percent for condensate system maintenance and a control rod pattern adjustment. During the subsequent power ascension on July 15, operators stabilized power at 80 percent to monitor an abnormal condition on the C main power transformer. On July 23 operators performed a planned power reduction to 15 percent power and removed the C main power transformer from service for installation of an on-line gas monitor and an additional transformer cooling unit. On July 26 operators returned the C main power transformer to service. Following planned power ascension monitoring of the transformer, operators restored the unit to full power on August 5, 2000. The plant operated at or near full power for the remainder of the period.

1. REACTOR SAFETY
(Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity)

1R05 Fire Protection

.1 Unannounced Fire Drill

a. Inspection Scope

The inspectors observed the fire brigade's performance during an unannounced fire drill in the auxiliary building, 77' elevation, cable spreading room.

b. Issues and Findings

There were no findings identified.

.2 Fire Protection Walkdowns

a. Inspection Scope

The inspectors performed walkdowns of the diesel generator fuel oil tank rooms, diesel generator rooms and control equipment room mezzanine. These areas combined represent about 20 percent of the total core damage frequency due to fire. The inspectors also reviewed the fire protection impairments for these areas against the requirements specified in HC.FP-AP.ZZ-0004 (Q), Revision 6, *Actions for Inoperable Fire Protection - Hope Creek Station*. Additionally, the inspectors reviewed several notifications associated with fire protection deficiencies (20025096, 20028756, 20029734 and 20029757).

b. Issues and Findings

There were no findings identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed two simulator training scenarios to assess operator performance and training effectiveness. The training scenarios included a plant shutdown, loss of a vital bus, small break loss of coolant accident, loss of offsite power, and an anticipated transient without scram. One scenario involved the risk significant operator action of reactor pressure vessel manual depressurization for low pressure injection. The inspectors assessed simulator fidelity and observed the simulator instructor's critique of operator performance. The inspectors also observed licensed operator training covering the topic of industry operating experience. The inspectors reviewed two notifications (20036225 and 20036669) that involved simulator training issues.

b. Issues and Findings

There were no findings identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors reviewed all corrective action notifications initiated from March 16 to April 30, 2000, for maintenance rule screening. The inspectors further reviewed several notifications that included system engineer functional failure determinations (20027454, 20027483, 20027734, 20027721, 20027294, 20026134, 20025949, 20028106, 20027398, 20027691, and 20029913).

b. Issues and Findings

There were no findings identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated on-line risk management for the planned A emergency diesel generator (EDG) outage, C phase main transformer high gas concentrations, and the C main steam line A high flow trip unit failure. In addition, the inspectors reviewed notifications involving risk assessment and emergent work (20033880, 20033954, 20034142, 20034847, 20034980, 20034993, 20035801, and 20036200).

b. Issues and Findings

There were no findings identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed an operability determination involving control rod withdrawal speeds in excess of control rod drive system functional test acceptance criteria. 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.

b. Issues and Findings

There were no findings identified.

1R16 Operator Workarounds

a. Inspection Scope

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

b. Issues and Findings

There were no findings identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed the adequacy and results of post maintenance tests associated with the directional control valve work for control rods Nos. 10-23 and 42-15, the C main steam line A high flow trip unit replacement, and a planned A EDG outage. The inspectors also reviewed notifications associated with post maintenance testing (20034596, 20035092, 20035974, 20036080, 20036653, and 20037197).

b. Issues and Findings

There were no findings identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed portions of and reviewed the results of the reactor core isolation cooling pump inservice test, a division 2 core spray pump start delay channel calibration, and the recirculation jet pump operability surveillance. The inspectors also compared test specifications to technical specification requirements. The inspectors also reviewed notifications concerning problems encountered during surveillance testing (20033903, 20034404, 20034800, 20035386, 20035733, 20036544, 20036996, and 20037128).

b. Issues and Findings

There were no findings identified.

Cornerstone: Emergency Preparedness [EP]

1EP1 Drill, Exercise, and Actual Events

a. Inspection Scope

The inspectors observed a Hope Creek emergency response organization drill from the main control room simulator and the emergency operations facility. The inspectors evaluated the emergency classifications, notifications and protective action recommendations.

b. Issues and Findings

There were no findings identified.

2. RADIATION SAFETY

Occupation Radiation Safety [OS]

OS1 Access Control

a. Inspection Scope

The inspector reviewed the access control program by examining the controls established for three exposure significant areas. Controls reviewed included: key control for locked high radiation areas; use of radiation work permits to control access to radiologically significant areas; survey frequency of posted areas; effects of changing plant conditions on dose rates; pre-job radiological briefings; postings; markings; dosimetry; and, surveys and alarm setpoints. These controls are used by PSEG Nuclear to meet the requirements of 10 CFR 20.1601 and plant technical specifications. Areas selected were located throughout the radiologically controlled area (RCA) and included: reactor water clean-up backwash transfer pump room (high radiation area); fuel pool water suction area (locked high radiation area); and, reactor water clean-up backwash receiver tank room (locked high radiation area/exclusion area) [An exclusion area is defined in procedures as an area where dose rates in excess of 10 rad per hour at 30 centimeters may be encountered].

The inspector observed jobs to evaluate radiation worker performance with respect to stated radiation protection work requirements. This also included verification of radiological controls, such as adequacy of surveys and RP technician coverage. The inspector reviewed the radiation work permits utilized for these entries; attended the pre-job briefings presented to the workers by the RP staff; observed controls present for access to these posted high radiation areas; and, reviewed alarm setpoints.

The inspector reviewed the following PM notifications to ensure that problems were being identified, characterized, prioritized, entered to a corrective action, and resolved: 20035885, 20029938, and 20029916.

b. Issues and Findings

On June 20, 2000, RP technicians identified a high radiation area in the turbine building where dose rates were equal to 1 rem per hour 30 centimeters from the source of radiation, which was not posted or controlled in accordance with plant technical specifications for locked high radiation areas (Technical Specification 6.12.2). The area, a cubicle on the 54 foot elevation, contained the backwash receiving tank from the condensate pre-filter system. The area had previously exhibited general area dose rates of not more than 10 millirem per hour, but no radiological survey was conducted immediately prior to the entry on June 20, 2000. Identification of the dose rates was made following a worker entering the area and receiving a high dose rate alarm on his alarming dosimeter (alarm set point of 10 millirem per hour). Upon receiving this alarm, the worker immediately exited the area and contacted radiation protection. Upon notification the RP technicians promptly posted, barricaded and locked the area as required by Technical Specification 6.12.2. However, the event was not entered into PSEG Nuclear's corrective action system until July 25, 2000, 35 days after the occurrence.

This issue is more than minor in that, if left uncorrected, it could become a more significant safety concern. The issue affects the Occupational Radiation Cornerstone since it involves the failure of a radiation barrier that could result in significant unintended dose. In this case, no personnel were overexposed, and there was no substantial potential for exposure in excess of regulatory limits. Further, all personnel who would have access to the area were provided with self-alarming electronic dosimetry. Accordingly, there was no compromise in PSEG Nuclear's ability to assess dose. Consequently, there was very low risk significance associated with this violation. In accordance with NRC Enforcement Policy and the Occupational Radiation Safety Significance Determination Process, this matter was determined to represent a Green finding and is considered to be a non-cited violation (Green). **(NCV 05000354/2000-006-001)**

OS2 ALARA Planning and Controls

a. Inspection Scope

The inspector reviewed work including an evaluation of the use of engineering controls to achieve dose reductions; review of the use of low dose waiting areas; review of on-job supervision provided to workers; and a review of individual exposures from selected work groups. An evaluation of engineering controls utilized to achieve dose reductions, and analysis of source term reduction plans was also conducted.

The inspector observed radiation worker and radiation protection technician performance during high dose rate and/or high exposure jobs to determine if the training/skill level was sufficient with respect to the radiological hazards. Additionally, the inspector reviewed of work completed during the last refueling outage (RF09) to examine the assumptions and basis for the various job estimates, including the methodology utilized for estimating job-specific exposures, review radiological data used to support the assumptions, and examine in-process and post-job reviews to ensure that a program for maintaining occupational exposures as low as is reasonably achievable was being implemented in accordance with 10 CFR 20.20.1101(b). The inspector identified five of the highest cumulative dose jobs accomplished during the outage, and reviewed the calculations, assumptions and work control plans established for these areas. The jobs identified were: reactor building pipe chase work (Room 4505); in-service inspection; reactor cavity decontamination; reactor reassembly; and reactor undervessel work.

b. Issues and Findings

There were no findings identified.

OS3 Radiation Monitoring Instrumentation

a. Inspection Scope

The inspector reviewed field instrumentation used by health physics technicians and plant workers to measure radioactivity, including portable field survey instruments, friskers, portal monitors and small article monitors. The inspector reviewed instruments observed in the reactor, turbine, and waste services buildings, specifically verification of proper function and certification of appropriate source checks for these instruments which are used to ensure that occupational exposures are maintained in accordance with 10 CFR 20.1201. The inspector also reviewed the annual calibration and periodic functional testing of the whole body counter used to determine if internal uptakes of radioactive materials exceed the limits specified in 10 CFR 20.1204.

The inspector reviewed the following notifications to ensure that problems were being identified, characterized, prioritized, entered to a corrective action, and resolved: 20033084, 20031792, 20030373, and 20029916.

b. Issues and Findings

There were no findings identified.

4. OTHER ACTIVITIES [OA]

OA1 Performance Indicator Verification

a. The inspectors verified the accuracy of the Safety System Unavailability, Residual Heat Removal performance indicator and reviewed data since the last verification inspection in August 1999. The inspectors reviewed the limiting condition for operation logs, control room logs, and the maintenance rule electronic data base.

b. Issues and Findings

There were no findings identified.

OA2 Identification 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:

- Section 2OS1 - Failure to promptly enter a RP deficiency into the corrective action program.

Additional items associated with PSEG Nuclear's corrective action program were reviewed without findings and are listed in Sections 1RO5.2, 1R11, 1R12, 1R13, 1R15, 1R16, 1R19, 1R22, and 2OS3 of this report.

OA6 Management Meetings

a. Exit Meeting Summary

On August 24 the inspectors presented their overall findings to members of PSEG Nuclear management led by Mr. Larry Wagner, who 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.

During this inspection one non-cited violation was identified as discussed in the report. If PSEG Nuclear contests this NCV, a response should be provided 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; and the NRC Resident Inspector at the Hope Creek facility.

b. PSEG Nuclear/NRC Management Meeting

On August 10 and 11, Mr. Hub Miller, Region I Administrator, met with members of PSEG Nuclear management, interviewed plant personnel, and toured the Salem and Hope Creek plants.

ITEMS OPENED AND CLOSED

Opened/Closed

05000354/2000-006-001	NCV	Licensee identified a high radiation area in the turbine building. (Section 2OS1)

LIST OF ACRONYMS USED

ALARA	As Low As is Reasonably Achievable
EDG	Emergency Diesel Generator
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
RCA	Radiologically Controlled Area
RP	Radiation Protection
SDP	Significance Determination Process

ATTACHMENT 1

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
● Initiating Events	● Occupational	● Physical Protection
● Mitigating Systems	● Public	
● Barrier Integrity		
● Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and

increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.