U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No:	50-354
License No:	NPF-57
Report No:	50-354/99-04
Licensee:	PSEG Nuclear LLC.
Facility:	Hope Creek Nuclear Generating Station
Location:	P.O. Box 236 Hancocks Bridge, NJ 08038
Dates:	May 30, 1999 - July 11, 1999
Inspector(s):	J. D. Orr, Senior Resident Inspector N. Della Greca, Senior Reactor Engineer S.M. Pindale, Reactor Engineer
Approved By:	Glenn W. Meyer, Chief, Reactor Projects Branch 3 Division of Reactor Projects

SUMMARY OF FINDINGS

Hope Creek Generating Station
NRC Inspection Report 50-354/99-04

The report covers a 6-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 *green* findings, which were indicative of issues that, while not necessarily desirable, 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 safe performance 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.

Cornerstone: Mitigating Systems

- Green. The inspectors identified poor risk management administration during a risk significant B station service water (SSW) loop outage. PSEG appropriately determined that the B SSW loop outage was in Hope Creek's highest risk significant category (red) for out-of-service equipment. However, PSEG did not address this higher risk condition properly, in that schedulers did not develop administrative controls and operators did not plan any contingency actions or implement any controls regarding possible adverse equipment actions. There were no actual consequences in that the loop outage was completed as planned. (Section 1R13)

Performance Indicator Verification

- The inspectors identified a reporting error in historical data for the *Safety System Unavailability, Heat Removal System* performance indicator (PI). The error related to an inaccurate estimate of the time the system was required to be available in 1997. The error caused a small increase in this white PI and did not result in the yellow threshold being exceeded. PSEG corrected the error in the next PI submittal. (Section 4OA2)

Other

- The inspectors concluded that PSEG had previously implemented appropriate corrective actions for white performance indicators in *Safety System Unavailability, Heat Removal System* and *Protected Area Security Equipment Performance Index* when the applicable events occurred in 1996 and 1998, respectively. No additional NRC inspection is warranted or planned. (Section 4OA4)

Report Details

Summary of plant status

Hope Creek was operated at or near full power for the duration of the inspection period.

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

1R13 Maintenance Work Prioritization and Control

a. Inspection Scope (71111-13)

The inspectors evaluated PSEG Nuclear's on-line risk assessment for the B station service water (SSW) loop outage conducted on June 14, 1999.

b. Observations and Findings

The inspectors determined that poor risk management had existed when PSEG isolated the B SSW loop on June 14, 1999 to repair the D SSW pump discharge valve. The discharge valve was leaking by and precluded any future repairs on the D SSW pump or strainer without a complete B SSW loop outage. PSEG schedulers and managers recognized that the B SSW loop outage presented a significant increase in plant risk, and proceeded with the outage because the discharge valve maintenance was necessary and beneficial. Nonetheless, appropriate administrative controls were not implemented to address this risk significant plant condition. Specifically, no LCO (limiting condition for operation) maintenance plan was implemented.

The risk matrix color during the SSW loop outage was red, the highest category of risk significance. Hope Creek operators and maintenance schedulers use the risk matrix to evaluate increased plant risk for various system outages. The matrix assigns a color code, green, yellow or red, for particular system outage configurations. The red matrix color was not necessarily unallowed, but needed an increased level of review and planning to minimize any unnecessary contributors to plant risk. Typically, PSEG has prepared an LCO maintenance plan to administratively control the risk review, maintenance planning, and work control for plant conditions categorized as red. In fact, the inspectors had reviewed similar preparations for an A SSW loop outage on April 7, 1999. The inspectors noted that the LCO maintenance plan provided for the previous A SSW loop outage was detailed and provided the operators with contingency plans and relevant risk information.

The inspectors discussed the lack of an LCO maintenance plan for the risk significant B SSW loop outage with the assistant operations manager. The assistant operations manager agreed that an LCO maintenance plan was appropriate and should have been provided. PSEG initiated corrective actions to improve its process for developing and implementing LCO maintenance plans. PSEG also promptly trained the control room supervisors on expectations for approving risk significant maintenance and LCO maintenance plans. The inspectors concluded that the poor risk management had not

constituted a violation but had potential significance to the human performance related to risk management. As such this represented a green finding.

OTHER ACTIVITIES

4OA2 Performance Indicator Verification

a. Inspection Scope (71151)

The inspectors verified the accuracy of and methods used to calculate the *Safety System Unavailability, Heat Removal System* performance indicator (PI).

b. Observations and Findings

The inspectors identified one instance of incorrect historical data used for *the Safety System Unavailability, Heat Removal System* PI. The historical data was supplied by PSEG on a best faith effort consistent with the pilot program guidelines. The error related to the estimate of hours that the RCIC (reactor core isolation cooling) system had been required to be available in the fourth quarter 1997. The corrected unavailability remained white and changed to 6.1% from 5.7% but did not approach the yellow threshold (12%). The inspectors noted that PSEG had implemented administrative controls to ensure accurate data would be submitted to the NRC in the future. PSEG corrected the PI data in the subsequent PI package submittal.

4OA4 Other

.1 White Performance Indicators: The inspectors reviewed the causes leading to and followup corrective actions for white performance indicators in *Safety System Unavailability, Heat Removal System* and *Protected Area (PA) Security Equipment Performance Index*. The inspectors determined that the heat removal system unavailability PI was white for RCIC system mostly due to a surveillance test failure that occurred in 1996, and the root cause of that failure was resolved by PSEG in 1997. (NRC Inspection Reports 50-354/96-11 Section M2 and 50-354/97-10 Section M2.1 provided a detailed explanation of the RCIC system problems.) The inspectors concluded that RCIC system performance problems had been addressed and that PSEG had already completed appropriate corrective actions.

The security equipment PI was white due to compensatory measures implemented during planned security system upgrades during the fall of 1998. These compensatory actions were implemented during the planned system outages and did not represent responses to emerging equipment problems. As such, corrective actions were not applicable.

Based on above review of the two white PIs, the inspectors concluded that the applicable concerns had occurred in 1996 and 1998, that appropriate actions had been taken by PSEG, and that no additional NRC inspection was warranted or planned.

.2 (Open/Closed) LER 99-006-00: B Channel Primary Containment Isolation Signal Actuation. This event was described in NRC Inspection Report 50-354/99-03. The inspectors verified that the LER was consistent with the original event followup. This LER is closed.

OA5 Management Meetings

a. Exit Meeting Summary

On July 16, 1999, the inspectors presented their overall findings to members of PSEG Nuclear management led by Mark Bezilla, General Manager of Hope Creek Operations. PSEG Nuclear management 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.

b. PSEG Nuclear/NRC Management Meeting

On June 29, 1999, members of NRC Region I management led by Randy Blough, Director of the Division of Reactor Projects, met with members of PSEG Nuclear management led by Dave Garchow at the John B. Campbell Family and Fitness Center of Salem County in Salem, NJ. The meeting was open to public observation. PSEG managers presented the status of several current issues of mutual PSEG and NRC interest during the meeting. Slides used in PSEG's presentation are included as Appendix A to this report.

ITEMS OPENED AND CLOSED

Opened/Closed

50-354/99-006-00	LER	Engineered Safety Function Actuation - B Channel Primary Containment Isolation Signal Actuation. (Section 4OA4)

LIST OF BASELINE INSPECTIONS PERFORMED

The following baseline inspection procedures were implemented during the report period. Documented findings are contained in the body of the report.

Procedure Number	Title	Report Section
71111-03	Emergent Work (B SW Loop Outage)	1R03
71111-04	Equipment Alignment (B SSW Loop & C SSW Pump Outages)	1R04
71111-05	Fire Protection (EDG Room Fire Suppression Systems)	1R05
71111-07	Heat Sink Performance (A2 SACS HX Performance Monitoring)	1R07
71111-09	Inservice Testing of Pumps and Valves (D SSW & B&D CS PPs)	1R09
71111-10	Large Containment Isolation Valve Leak Rate & Status Verification (Primary Cnmt Vacuum Bkr Surveillance Testing)	1R10
71111-11	Licensed Operator Requalification (Simulator Observation 6/16/99)	1R11
71111-12	Maintenance Rule Implementation (11/15/99 SCRAM & SRVs)	1R12
71111-13	Maintenance Work Prioritization & Control (B SSW Loop Outage)	1R13
71111-15	Operability Evaluations (Review of all outstanding & HPCI 11 valve)	1R15
71111-16	Operator Workarounds (Reviewed all outstanding)	1R16
71111-22	Surveillance Testing (SCRAM time testing & CS Interfacing LOCA PS)	1R22
71151	Performance Indicator Verification (SSU, Heat Removal)	4OA2

The Power of Commitment

PSE&G

June 29, 1999 NRC Presentation

Salem Community Center

AGENDA

Introduction	Dave Powell
Performance Indicators	Gabe Salamon
Human Performance Improvement Initiatives	Dave Garchow
Corrective Action Program Changes	Jerry McMahon
SAP & Y2K Status	Dave Powell
Hope Creek Fuel Vendor Change	Don Notigan

Performance Indicators

NBU Implementation of the New NRC Oversight Process

Major Activities

- *Initial Data Acquisition*
- *Stakeholder Communications*
- *Formalized Process*
- *Training & Education*
- *Where Are We?*

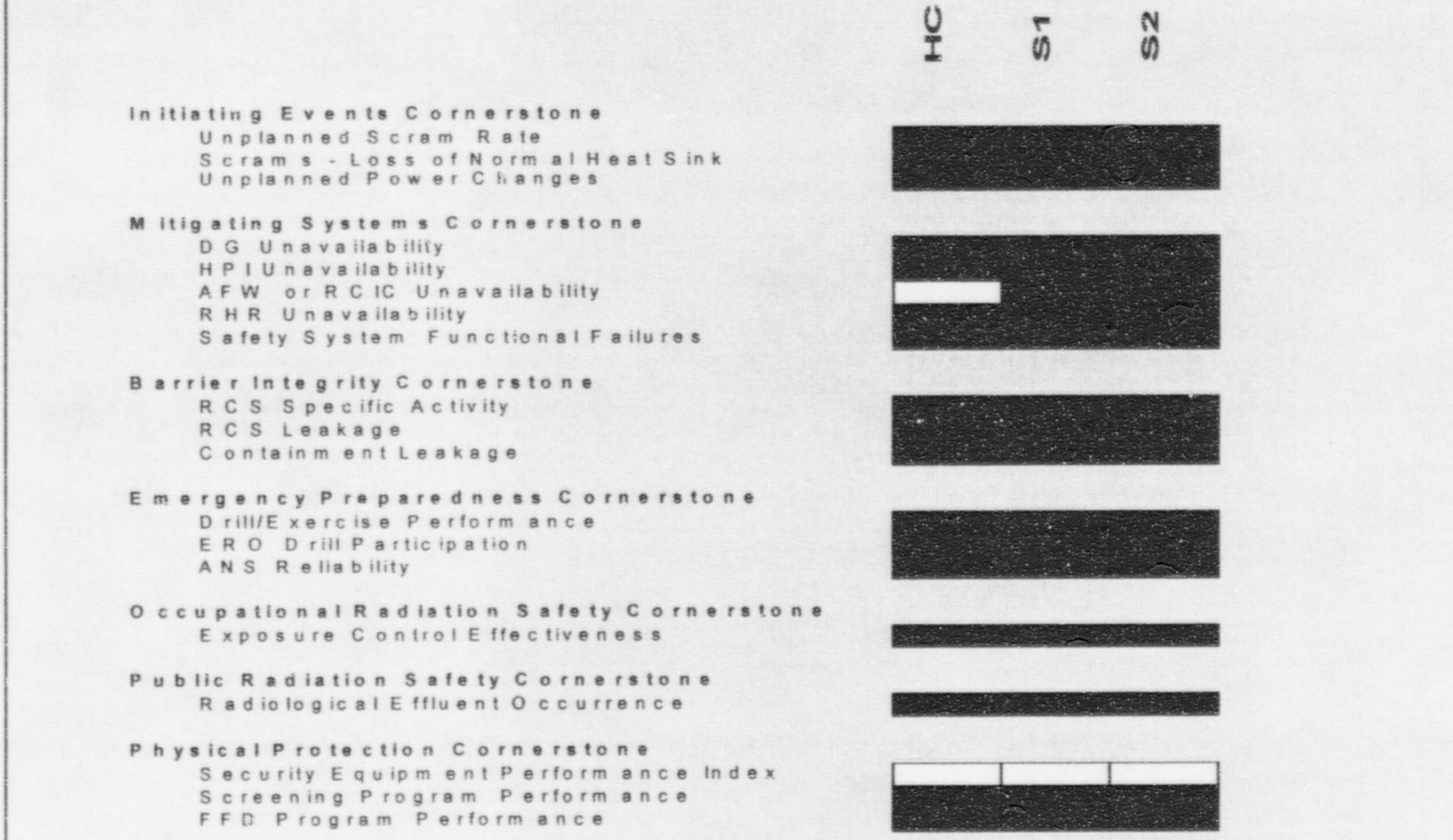
The Power of Commitment

PSE&G

June 29, 1999 NRC Presentation

Performance Indicators

Performance Indicator Summary
Data Date: June 14, 1999



Human Performance Improvement Initiatives

Managing Human Performance To Top Quartile Performance

- **REINFORCEMENT OF SAFETY**
- **TRAINING OF STAFF**
- **MANAGEMENT/SUPERVISORY OVERSIGHT**
- **SELF ASSESSMENT AND CORRECTIVE ACTION**

CORRECTIVE ACTION PROGRAM CHANGES

REFOCUSING THE CORRECTIVE ACTION PROGRAM

- Streamline the corrective action program
- Maintain Current High Volume Low Threshold
- Cornerstone to improved plant and personnel performance.
- Focus on risk-significant issues.

SCAQ & CAQ are 10CFR50 Appendix B related issues.

New term "Quality Condition" used to identify and address all other conditions.

SAP Status

SAP Implementation

Modules being implemented (7/6/99)

- PM - Plant maintenance - Work Clearance
- PS - Project Systems
- MM/QM - Materials management

V&V

Implementation

Contingencies

DCRMS

Y2K Status

Y2K Status

- Inventory and Initial Assessment
- Detailed assessment
- Resolution and Contingency Planning
- Change Management and Validation
- Implementation
- Closeout

Y2K Status

- PSEG
  - Quality Assurance
  - Internal Audit Services
  - Self Assessment
- Nuclear Regulatory Commission
- Industry Peer Review
- Contingency Planning

Year 2000 Readiness Disclosure

PSE&G Fuel Vendor Transition Status

- **Changing Fuel Vendors**
- **Safety Margin Improvements, Fuel Economics**
- **Process Computer Replacement, Robust Fuel Design**
- **Implementation in Hope Creek Cycle 10**

NEAR TERM ACTIONS

- Complete Licensing Analysis Models
- New Core Monitoring System Delivered in July 1999
- Initiate ABB Manufacturing Campaign