

November 1, 2001

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

SUBJECT: HOPE CREEK NUCLEAR GENERATING STATION - NRC INSPECTION  
REPORT 50-354/01-09

Dear Mr. Keiser:

On September 30, 2001, the NRC completed an inspection of your Hope Creek facility. The enclosed report documents the inspection findings which were discussed on October 2, 2001, with Mr. Dave Garchow 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 seven weeks of resident inspection and one region-based inspection of occupational radiation safety.

Based on the results of this inspection, the inspectors identified two issues of very low safety significance (Green). Both 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, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Hope Creek facility.

Since September 11, 2001, Hope Creek Nuclear Generating Station has assumed a heightened level of security based on a series of threat advisories issued by the NRC. Although the NRC is not aware of any specific threat against nuclear facilities, the heightened level of security was recommended for all nuclear power plants and is being maintained due to the uncertainty about the possibility of additional terrorist attacks. The steps recommended by the NRC include increased patrols, augmented security forces and capabilities, additional security posts, heightened coordination with local law enforcement and military authorities, and limited access of personnel and vehicles to the site.

Mr. Harold W. Keiser

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The NRC continues to interact with the Intelligence Community and to communicate information to PSEG Nuclear. In addition, the NRC has monitored maintenance and other activities which could relate to the site's security posture.

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 R. Barkley for/***

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

Enclosure: Inspection Report 50-354/01-09  
Attachment: Supplemental 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: 50-354/01-09

Licensee: PSEG Nuclear LLC

Facility: Hope Creek Nuclear Generating Station

Location: P.O. Box 236  
Hancocks Bridge, NJ 08038

Dates: August 13 - September 30, 2001

Inspectors: J. G. Schoppy, Jr., Senior Resident Inspector  
C. G. Cahill, PE, Resident Inspector  
J. D. Orr, Senior Resident Inspector, TMI  
J. T. Furia, Senior Health Physicist  
T. H. Fish, Operations Engineer  
S. M. Pindale, Reactor Inspector

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

## Summary of Findings

IR 05000354-01-09, on 08/13 - 09/30/2001, Public Service Electric Gas Nuclear LLC, Hope Creek Generating Station. Equipment Alignment, Refueling and Outage Activities.

The inspection was conducted by resident inspectors, a regional radiation specialist, and two region-based inspectors. This inspection identified two Green issues, both 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). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.

### A. Inspector Identified Findings

#### **Cornerstone: Barrier Integrity**

- ! Green. The inspectors identified that reactor engineers were not following the new fuel inspection procedure with respect to tripped accelerometer guidance.

The safety significance of this finding was very low because of the documented inspection of accelerometer condition during initial new fuel receipt, control of the transport of the storage containers within the reactor building, and satisfactory fuel inspection results. This finding represented a non-cited violation for failure to comply with a procedure controlling a safety-related activity. (Section 1R20)

#### **Cornerstone: Mitigating Systems**

- ! Green. The inspectors identified that PSEG Nuclear did not establish adequate measures to identify and trace the part number to the B core spray suction relief valve to preclude installation of an unqualified relief valve.

The safety significance of this finding was very low because the resultant investigation determined that the valve was fully qualified for use in the core spray system. This finding represented a non-cited violation for failure to comply with 10CFR50, Appendix B, Criterion VIII, *Identification and Control of Materials, Parts, and Components*, requirements. (Section 1R04.1)

### B. Licensee Identified Violations

The inspectors reviewed a violation of very low significance which was identified by PSEG Nuclear. Corrective actions, taken or planned by PSEG Nuclear, appeared reasonable. This violation is described in Section 40A7 of this report.

## 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 the following power maneuvers: (1) planned maintenance power reductions on August 24 and August 30 for rod pattern adjustments; (2) a power reduction to 70 percent on September 2 to identify the source of a minor steam leak in the turbine building steam tunnel; (3) a power reduction to 95 percent on September 5 in response to the trip of the 5C feedwater heater; (4) a planned power reduction to 70 percent on September 9 to conduct turbine valve and control rod scram time testing; (5) a planned reduction to 85 percent on September 14 for maintenance on the C reactor feed pump; (6) a planned reduction to 70 percent on September 17 to conduct repairs to the B condenser waterbox; (7) a planned power reduction to 93 percent on September 18 to conduct a control rod pattern adjustment; and (8) a planned power reduction to 71 percent on September 30 to conduct another control rod pattern adjustment. At the end of the period, operators maintained the unit at 95 percent power as the A feedwater heater string was out of service for planned maintenance.

#### **1. REACTOR SAFETY**

##### **Initiating Events, Mitigating Systems, and Barrier Integrity [REACTOR - R]**

#### R01 Adverse Weather Protection

##### a. Inspection Scope

The inspectors reviewed several corrective action notifications involving preparation for adverse weather (20078318, 20078320, 20078326, 20078352, and 20078355).

##### b. Findings

No findings of significance were identified.

#### R04 Equipment Alignment

##### .1 Core Spray Suction Relief Valve Qualification

##### a. Inspection Scope

The inspectors performed independent visual inspections of accessible safety-related relief valve nameplate data as a corrective action follow-up to a safety auxiliaries cooling system (SACS) relief valve issue (see NRC Inspection Report 50-354/01-07 Section 4OA3.1).

##### b. Findings

The inspectors identified that PSEG Nuclear did not establish adequate measures to identify and trace the part number to the B core spray suction relief valve to preclude installation of an unqualified relief valve. The finding was of very low safety significance

and resulted in a non-cited violation for failure to comply with 10CFR50, Appendix B, Criterion VIII requirements.

On August 23 inspectors identified that the B core spray suction relief valve had a nameplate temperature rating of 170°F whereas the A, C, and D relief valves had a rating of 212°F. The inspectors noted that the Hope Creek Updated Final Safety Analysis Report (UFSAR) states that the suppression chamber maximum calculated accident temperature is 212°F and the core spray suction piping is rated for 212°F. The on-shift control room supervisor initiated notification 20075366 to evaluate the condition.

Component engineering contacted the valve vendor (Crosby) and reviewed the valve test records. Component engineering determined that the four core spray relief valves had the same cold set, same pressure and temperature ratings, same capacity, and same materials. The vendor had stamped the individual valves with the temperature rating as specified in the purchase order (as long as the valve design satisfied all purchase order conditions). In 1997 engineering conducted a folio consolidation that combined a number of Crosby relief valves with the same lift setpoint and with the same model number into a common material master (Y40-5847). However, the temperature rating was not addressed in this 1997 evaluation. In January 2001 maintenance replaced the B core spray suction relief valve using this material master list with a valve with a different nameplate temperature rating. In this case it was fortuitous that the relief valve (with the 170°F nameplate rating) was identical, interchangeable with the 212°F rated relief valves, and qualified for use in the core spray system. Engineering determined that the material masters need to reflect the correct temperature rating and planned to include this in their corrective actions for this issue. The inspectors noted that the corrective actions for the June 2001 SACS relief valve issue would not have precluded the installation of the B core spray relief valve (with the 170°F nameplate rating), however, a more extensive extent of condition review could have identified this issue sooner.

If left uncorrected, the inability to adequately control safety-related parts and components could result in a more significant safety concern, in this case a primary containment integrity concern. The safety significance of this finding was very low because the resultant investigation determined that the valve was fully qualified for use in the core spray system.

10CFR50, Appendix B, Criterion VIII, *Identification and Control of Materials, Parts, and Components*, requires that measures be established for the identification and control of parts and components. These measures shall assure that identification of the item is maintained by heat number, part number, serial number, or other appropriate means, either on the item or traceable to the item, as required throughout fabrication, erection, installation, and use of the item. These identification and control measures shall be designed to prevent the use of incorrect or defective material, parts, and components. Contrary to the above, PSEG Nuclear did not establish adequate measures to identify and trace the part number to the proper relief valve (qualified to 212°F) to prevent use of an incorrect relief valve (qualified to 170°F, based on nameplate data). However, because the violation is of very low significance and PSEG Nuclear entered the deficiency into their corrective action system (notification 20075366), 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 50-354/01-09-01)**

.2 Equipment Alignment Verifications

a. Inspection Scope

The inspectors performed equipment alignment verifications on redundant equipment during a planned outage on the B emergency diesel generator (EDG) and an extended outage of the D service water (SW) pump. The inspectors verified by plant walkdowns and main control room tours that the outages for these systems did not adversely affect redundant components. In particular, the inspectors performed walkdowns of the following equipment and areas:

- A, C, and D EDGs
- Control room instrumentation and control panels
- Safety-related switchgear room supply air units
- 4160 V vital switchgear rooms and 480V vital motor control centers
- Safety-related 125Vdc battery rooms
- A and C SW intake bay

Additionally, the inspectors reviewed various corrective action notifications associated with equipment alignment deficiencies (20074400, 20074656, 20074687, 20074995, 20075091, 20076327, and 20076425).

b. Findings

No findings of significance were identified.

R05 Fire Protection

a. Inspection Scope

The inspectors performed walkdowns of the EDG fuel oil tank rooms, EDG rooms, EDG recirculation fan rooms, and the control equipment room mezzanine (cable spreading room). Plant walkdowns included observations of combustible material control, fire detection and suppression equipment availability, and compensatory measures. The inspectors performed fire protection inspections in these areas due to the potential to impact mitigating systems. Additionally, the inspectors reviewed several notifications associated with fire protection deficiencies (20074625, 20075030, 20075097, 20075196, 20075347, 20075663, 20077118, and 20078236).

b. Findings

No findings of significance were identified.

R06 Flood Protection Measures



a. Inspection Scope

The inspectors reviewed two corrective action notifications involving flood protection issues (20077401 and 20078002).

b. Findings

No findings of significance were identified.

R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors reviewed all corrective action notifications initiated May 16, 2001, to June 30, 2001, for maintenance rule screening. The inspectors further reviewed six notifications that included system engineer functional failure determinations (20066565, 20067616, 20068485, 20068659, 20069091, and 20069749) and two notifications involving PSEG Nuclear's implementation of their Maintenance Rule program (20075384 and 20076882). The inspectors also reviewed an (a)(2) system health report on the standby liquid control system and the PSEG Nuclear (a)(1) system goals database.

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.

R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated on-line risk management for the following configurations: (1) increased steam leakage from several steam drain valve packing leaks in the high pressure coolant injection room (notification 20076450); (2) planned maintenance on the B EDG jacket water keepwarm pump that resulted in a short duration B EDG unavailability; (3) inservice testing of A and C residual heat removal (RHR) system valves concurrent with an inoperable D SW pump; (4) the unexpected initiation of main steam isolation valve (MSIV) isolation logic channel C due to a main steam line flow trip unit failure (making up one half of the trip logic needed for a MSIV isolation); and (5) the planned outage of the

1CVH401 switchgear room cooling unit concurrent with an inoperable D SW pump. 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 due to the emergent work or out of service components. 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 (20074540, 20074787, 20075001, 20075236, 20075668, 20076450, 20077581, 20077825, and 20078210).

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

- *HCGS Event Shutdown Logic Diagrams* (Drawing J-E0001-17)
- *System Function Level Maintenance Rule vs Risk Reference* (SE.MR.HC.02)
- HCGS PSA Risk Evaluation Forms for Work Week Nos. 32 - 38
- *On-Line Risk Assessment* (SH.OP-AP.ZZ-108)
- 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.

R14 Personnel Performance During Nonroutine Plant Evolutions

a. Inspection Scope

The inspectors observed control room operator actions in response to an unexpected trip of the 5C feedwater heater on September 5. Operators entered HC.OP-AB.ZZ-0118, *Loss of Feedwater Heating*, and reduced power to 95 percent. The inspectors reviewed the operations logs, abnormal procedure HC.OP-AB.ZZ-0118, and notification 20076393.

b. Findings

No findings of significance were identified.

R15 Operability Evaluationsa. Inspection Scope

The inspectors reviewed the PSEG Nuclear identified safety-related equipment deficiencies documented in corrective action notifications during this report period and assessed the adequacy of the operability screenings.

b. Findings

No findings of significance were identified.

R16 Operator Workaroundsa. 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.

R19 Post Maintenance Testinga. Inspection Scope

The inspectors reviewed the post maintenance test (PMT) data for work performed on the DVH401 safety-related switchgear cooling ventilation unit, the 1A-D-414 safety-related battery charger, the A RHR pump room cooler, LPRM 1B-32-49, and the refueling bridge. 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 (20074912, 20074961, 20075728, 20076803, 20077560, 20077593, and 20077744).

The inspectors reviewed the following documents:

- Work Order 30040546, *6 MO/ 1D-VH401/FAN MOTOR/MISC-LUBE*
- Work Order 3004427, *Class 1E, Channel A, 125V Battery Charger*
- Work Order 50013974
- Work Order 60018268
- *Refueling Platform Operational Check* (HC.MD-PM.KE-003)
- *Refueling Platform and Fuel Grapple Operability Test* (HC.OP-FT.KE-001)
- *Refueling Platform and Grapple Operation* (HC.OP-SO.KE-0001)
- *18 Month 125 Volt Battery Charger Service Test Using BCT-2000* (HC.IC-ST.PK-003)
- *Safety Auxiliaries Cooling System - Subsystem A Valves - Inservice Test* (HC.OP-IS.EG-0101)

b. Findings

No findings of significance were identified.

R20 Refueling and Outage Activities

a. Inspection Scope

In preparation for their Fall refueling outage (RF10), PSEG Nuclear received, transported, and inspected new fuel. The inspectors discussed fueling handling activities with reactor engineers and witnessed several fuel bundle inspections and moves from the refuel floor to the new fuel vault. The inspectors verified that the fuel inspections and handling operations were performed in accordance with approved procedures and that foreign material exclusion was maintained in the refueling area. The inspectors also reviewed corrective action notifications concerning problems related to fuel handling or outage preparation (20075151, 20076029, 20076052, 20076338, 20077131, 20077253, and 20077763).

The inspectors reviewed the following documents:

- *Conduct of Fuel Handling* (NC.NA-AP.ZZ-0049)
- *Refueling Platform and Fuel Grapple Operation* (HC.OP-SO.KE-0001)
- *New Fuel Inspection, Channeling and Storage* (HC.RE-FR.ZZ-0014)
- *New Fuel Handling and Storage* (HC.MD-FR.KE-0008)

b. Findings

The inspectors identified that reactor engineers were not following the new fuel inspection procedure with respect to tripped accelerometer guidance. The finding was of very low safety significance (Green) and resulted in a non-cited violation for failure to comply with a procedure controlling a safety-related activity.

PSEG Nuclear uses accelerometers on their new fuel metal shipping containers (MSCs) as indicators of potentially significant impacts to the MSC in transport. The accelerometer trips if the MSC encounters an acceleration force sufficient in magnitude to dislodge the accelerometer spring system. Each MSC can contain two new fuel assemblies. On August 22 the inspectors identified that reactor engineers, in their role as new fuel inspection leads, did not ensure full implementation of procedure HC.RE-FR.ZZ-0014 requirements with respect to MSC accelerometers. Specifically, procedure HC.RE-FR.ZZ-0014 Step 5.4 required maintenance to verify that the MSC accelerometer was not tripped prior to and following movement from the MSC refuel floor storage area (reactor building elevation 201') to the MSC up-ending area. If the accelerometer was tripped, maintenance was required to document the condition on HC.RE-FR.ZZ-0014 Attachment 5, *Guidance Following a Tripped Accelerometer*, for reactor engineering review and disposition following fuel assembly inspection. Reactor engineers had properly documented MSC accelerometer conditions during their initial new fuel receipt inspection under procedure HC.MD-FR.KE-0008, *New Fuel Handling and Storage*, as the MSCs were offloaded from the truck to the reactor building truck bay (elevation 102'). Although the storage and transport of the MSCs (from the truck bay to the refueling floor) was controlled by procedures, the potential still existed to bump a MSC and adversely impact a fuel assembly. Reactor engineering initiated notification 20075066 to address this deficiency. In accordance with procedure HC.RE-FR.ZZ-0014, maintenance technicians inspected all new fuel assemblies and found no fuel damage or discrepancies.

The issue had a credible impact on safety because fuel receipt and handling procedures are essential to maintaining fuel cladding integrity. The safety significance of this finding was very low because of the documented inspection of accelerometer condition during initial new fuel receipt, control of the transport of the MSCs within the reactor building, and satisfactory fuel inspection results.

Technical Specification 6.8.1 requires, in part, that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33. Regulatory Guide 1.33 requires, in part, that procedures be developed for preparation for refueling. Reactor engineers did not adequately implement all the new fuel inspection requirements specified in PSEG Nuclear procedure HC.RE-FR.ZZ-0014, *New Fuel Inspection, Channeling and Storage*. However, because the violation is of very low significance and PSEG Nuclear entered the deficiency into their corrective action system (notification 20075066), 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 50-354/01-09-02)**

## R22 Surveillance Testing

### a. Inspection Scope

The inspectors observed portions of and reviewed the results of the test and trip point calibration of automatic depressurization system (ADS) permissive inputs. The inspectors also reviewed the results of the core spray system piping and flow path verification and the standby liquid control system valves inservice test. 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 Technical Specifications and UFSAR requirements, and the systems were capable of performing their intended safety functions. The inspectors performed a walkdown of the A and C core spray subsystems to independently verify the flowpath. The inspectors also reviewed notifications concerning problems encountered during surveillance testing (20074801, 20074996, 20075300, 20075709, 20075984, 20076002, 20077271, 20077520, and 20078268).

The inspectors reviewed the following documents:

- *Functional Test, ADS Division 4, Channels E21-N655D, E11-N655D and E11-N656D, Core Spray Pump A and RHR Pumps A and C Discharge Pressure ADS Permissive* (HC.IC-FT.BE-0009)
- *Core Spray System Piping and Flow Path Verification* (HC.OP-ST.BE-001)
- *Standby Liquid Control System Valves - Inservice Test* (HC.OP-IS.BH-0101)
- UFSAR Drawing M-52-1, *Core Spray*

b. Findings

No findings of significance were identified.

R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed one corrective action notification involving a temporary modification issue (20075882).

b. Findings

No findings of significance were identified.

**Cornerstone: Emergency Preparedness [EP]**

EP1 Drill, Exercise, and Actual Events

a. Inspection Scope

The inspectors observed two PSEG Nuclear evaluated training evolutions on the simulator. The inspectors observed the evaluation team's critique to evaluate the adequacy of PSEG Nuclear's assessment of operator performance to identify weaknesses and deficiencies. The inspectors reviewed the simulator scenarios and operators' performance with a primary focus on proper event classification.

The inspectors reviewed the following documents during this inspection:

- *HCGS Event Classification Guide*
- *Operations Standards (SH.OP-AS.ZZ-001)*

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY**

**Occupation Radiation Safety [OS]**

OS1 Access Control

a. Inspection Scope

The inspector determined exposure significant work areas, high radiation areas, and airborne radioactivity areas in the plant and reviewed 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 all radiological job requirements and attended job briefings; determined if radiological conditions in the work area were adequately communicated to workers through briefings and postings; verified radiological controls, radiological job coverage and contamination controls; and verified the accuracy of surveys and applicable posting and barricade requirements. 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 that air samplers were properly located. The inspector reviewed RWPs used to access these and other high radiation areas and to identify specified work control instructions or control barriers. Observation of work activities inside the radiologically controlled area occurred in the reactor, turbine, service, and radwaste buildings. Plant Technical Specification 6.12 and 10 CFR 20, Subpart G, were utilized as the standard for necessary barriers. The inspector reviewed electronic pocket dosimeter alarm set points (both integrated dose and dose rate) for conformity with survey indications and plant policy. The inspector also reviewed portions of PSEG Nuclear's training and qualifications program for radiation protection technicians to ensure that the technician's performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

b. Findings

No findings of significance were identified.

## OS2 ALARA Planning and Controls

### a. Inspection Scope

The inspector reviewed work to be performed during the upcoming refueling outage (RF1O). Areas reviewed included a 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. The inspector also reviewed an evaluation of engineering controls utilized to achieve dose reductions and analysis of PSEG Nuclear's source term reduction plans. PSEG Nuclear's outage goals was for less than 140 person-rem (stretch goal of 125 person-rem).

The inspector observed radiation worker and radiation protection technician performance during high dose rate or high exposure jobs and determined if workers demonstrated the ALARA philosophy in practice. The inspector observed radiation worker performance to determine whether the training/skill level was sufficient with respect to the radiological hazards and the work involved.

The inspector reviewed ALARA job evaluations, exposure estimates and exposure mitigation requirements and compared ALARA plans with the results achieved. The inspector also reviewed the integration of ALARA requirements into work procedures and RWP documents, the accuracy of person-hour estimates and person-hour tracking, and generated shielding requests and their effectiveness to dose rate reduction.

The inspector reviewed actual exposure results versus initial exposure estimates for current work, 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 compliance with the requirements contained in 10 CFR 20.1101(b). The inspector reviewed the planning of five high exposure jobs scheduled for RF1O, and their associated ALARA packages, including: In-service inspection (33 rem); radiation protection (18.99 rem); reactor reassembly (17.5 rem); drywell support (10.106 rem); and cavity decontamination (6.735 rem).

### b. Findings

No findings of significance were identified.

## OS3 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 conducted a review of instruments observed, specifically verification of proper function and certification of



appropriate source checks, which were utilized to ensure that occupational exposures were maintained in accordance with 10 CFR 20.1201. The inspector reviewed randomly selected calibration records for radiological survey instruments and also verified that sources utilized to calibrate survey instruments were traceable to the National Institute of Standards and Technology. The inspector also reviewed records for the calibration of two different types of air samplers, eight portable radiation detection devices, and for personal electronic dosimeters.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES [OA]**

OA1 Performance Indicator Verification

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 for the period July 1, 2000, through June 30, 2001. The inspectors reviewed PSEG Nuclear event reports, monthly operating reports, NRC inspection reports, and PSEG Nuclear's Sky Line power history charts.

b. Findings

No findings of significance were 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:

- a. Section 1R04.1 - Failure to establish adequate measures to identify and trace the part number to the proper relief valve to prevent use of an incorrect relief valve. This demonstrated weak identification of a configuration control problem. In addition, a more extensive extent of condition review for the June 2001 SACS relief valve issue could have identified this issue sooner.
- b. Section 1R20 - Failure to adequately implement all the new fuel inspection requirements. This demonstrated weak identification of an procedure compliance deficiency.

Additional items associated with PSEG Nuclear's corrective action program were reviewed without findings and are listed in Sections 1R01, 1R04.2, 1R05, 1R06, 1R12, 1R13, 1R14, 1R15, 1R16, 1R019, 1R20, 1R22, 1R23, and 4OA3 of this report.

OA3 Event Follow-up

.1 Salem Switchyard Electrical Transient

a. Inspection Scope

At 10:43 p.m. on September 24, Salem switchyard bus section No. 1 experienced an electrical fault. The electrical transient resulted in several control room overhead alarms and the trip of the inservice off gas train at Hope Creek. Reactor power, pressure, and level were unaffected by the transient. Operators entered HC.OP-AB.ZZ-0128, *Off Gas System Malfunction*, and promptly placed the standby off gas train in service.

The inspectors reviewed control room operator actions in response to the electrical transient. The inspectors reviewed the operations logs, abnormal procedure HC.OP-AB.ZZ-0128, the associated Hope Creek Transient Assessment Response Plan (TARP) report, and notification 20078119. In addition, the inspectors performed main control room instrumentation panel and plant electrical distribution panel walkdowns to independently verify that the electrical transient did not adversely affect electrical components.

b. Findings

No findings of significance were identified.

- .2 (Closed) LER 354/2001-002: Both Trains of Control Room Emergency Filtration System Inoperable. On June 22, 2001, operators identified that SACS relief valve 1EGPSV-2409C had unexpectedly lifted during operation with two SACS pumps running in the A SACS loop. At the time of discovery, the B control room emergency filtration (CREF) system was out of service for scheduled maintenance and the A SACS loop relief valve issue adversely impacted the A CREF system. The inspectors description, follow-up, and assessment of this event was documented in NRC Inspection Report 354/01-07 Sections 1R14, 1R15.1, and 4OA3.1. The inspectors reviewed this LER and identified no additional findings of significance.

OA6 Management Meetings

Exit Meeting Summary

On October 2 the inspectors presented their overall findings to members of PSEG Nuclear management led by Mr. Dave Garchow. PSEG Nuclear management stated that none of the information reviewed by the inspectors was considered proprietary.

- OA7 Licensee Identified Violations. 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 Non-Cited Violations (NCV).

**NCV 50-354/01-09-03:** Technical Specification 6.8.1 requires, in part, that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33. Regulatory Guide 1.33 requires, in part, that procedures be developed to conduct load changes. PSEG Nuclear procedure HC.OP-IO.ZZ-0006(Q), *Power Changes During Operations*, requires, in part, that power changes shall be done with directions provided by reactor engineering. On September 19, 2001, plant operators failed to follow the reactivity plan, provided by reactor engineering, during a reactor power change. PSEG Nuclear entered this issue into their problem identification and corrective action system as notification 20077752. This is being treated as a Non-Cited Violation.

**ATTACHMENT 1****SUPPLEMENTAL INFORMATION**a. Key Points of Contact

Terry Cellmer, Radiation Protection Manager  
 Matt Conroy, Maintenance Rule Supervisor  
 Mike Dammann, Maintenance Manager - Controls & Power Distribution  
 Robert Gary, Radiation Protection Operations Superintendent  
 David Kelly, Support Supervisor - Calibration  
 Kurt Krueger, Operations Manager  
 Kevin O'Hare, ALARA Superintendent  
 Devon Price, Assistant Operations Manager  
 Gabor Salamon, Nuclear Safety & Licensing Manager  
 Larry Wagner, Director - Site Work Integration & Management  
 Suzanne Ziegler, ALARA Supervisor

b. List of Items Opened, Closed, and DiscussedOpened/Closed

50-354/01-09-01	NCV	Failure to establish adequate measures to identify and trace the part number to the proper relief valve to prevent use of an incorrect relief valve. (Section 1R04.1)
50-354/01-09-02	NCV	Failure to adequately implement all the new fuel inspection requirements. (Section 1R20)
50-354/01-09-03	NCV	Plant operators failed to follow the reactivity plan, provided by reactor engineering, during a reactor power change. (Section 4OA7)
50-354/2001-002	LER	Both Trains of Control Room Emergency Filtration System Inoperable. (Section 4OA3.2)

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  
*A & C Core Spray Pumps - AP206 and CP206 - In-service Test (HC.OP-IS.BE-0001)*  
*Power Changes During Operation (HC.OP-IO.ZZ-0006)*

d. List of Acronyms

ADS	Automatic Depressurization System
ALARA	As Low As Is Reasonably Achievable
CFR	Code of Federal Regulations
CREF	Control Room Emergency Filtration
EDG	Emergency Diesel Generator
HCGS	Hope Creek Generating Station
LPRM	Local Power Range Monitor
MSC	Metal Shipping Container
MSIV	Main Steam Isolation Valve
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PMT	Post Maintenance Testing
PSEG	Public Service Electric Gas
RF10	Refueling Outage
RHR	Residual Heat Removal
RWP	Radiation Work Permit
SACS	Safety Auxiliaries Cooling System
SDP	Significance Determination Process
SW	Service Water
TARP	Transient Assessment Response Plan
UFSAR	Updated Final Safety Analysis Report