August 1, 2002

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

SUBJECT: HOPE CREEK NUCLEAR GENERATING STATION - NRC INSPECTION REPORT 50-354/2002-05

Dear Mr. Keiser:

On June 29, 2002, the NRC completed an inspection of your Hope Creek facility. The enclosed report documents the inspection findings which were discussed on July 3, 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 two region-based inspections of occupational radiation safety and the security program.

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

The NRC has increased security requirements at Hope Creek Nuclear Generating Station in response to terrorist acts on September 11, 2001. Although the NRC is not aware of any specific threat against nuclear facilities, the NRC issued an Order and several threat advisories to commercial power reactors to strengthen licensees' capabilities and readiness to respond to a potential attack. The NRC continues to monitor overall security controls and will issue temporary instructions in the near future to verify by inspection the licensees' compliance with the Order and current security regulations.

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

Sincerely,

/RA/

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

Enclosure: Inspection Report 50-354/02-05
Attachment: Supplementary Information

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

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No:	50-354
License No:	NPF-57
Report No:	50-354/2002-05
Licensee:	PSEG Nuclear LLC
Facility:	Hope Creek Nuclear Generating Station
Location:	P.O. Box 236 Hancocks Bridge, NJ 08038
Dates:	May 12 - June 29, 2002
Inspectors:	J. G. Schoppy, Jr., Senior Resident Inspector C. G. Cahill, PE, Resident Inspector J. T. Furia, Senior Health Physicist G. C. Smith, Sr. Physical Security Inspector R. S. Barkley, Senior Project Engineer
Approved By:	Glenn W. Meyer, Chief, Projects Branch 3 Division of Reactor Projects

Summary of Findings

IR 05000354-02-05, Public Service Electric Gas Nuclear LLC, Hope Creek Generating Station, on 5/12 - 6/29/02, Adverse Weather Protection, Personnel Performance During Nonroutine Plant Evolutions, Radiation Monitoring Instrumentation.

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

Cornerstone: Initiating Events

- Green. A lightning strike-induced plant electrical transient in May 2002 resulted in Hope Creek operation outside the licensed conditions for maximum power level and minimum feedwater temperature. This represented a recurrence of a similar electrical transient on August 1999.

  This violation of Hope Creek operating license conditions 2.C.(1) and 2.C.(11) is being treated as a non-cited violation. The safety significance of this finding was very low because of the short duration, mitigation equipment availability, and no apparent adverse impact on fuel barrier integrity. (Section 1R01.1)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a non-cited violation for inadequate corrective actions for the reactor operators' failure to promptly identify and initiate actions to correct a deficiency associated with an elevated turbine first stage pressure, which was indicating an overpower condition.

  The safety significance of this finding was very low, based on the small magnitude of the overpower condition, limited duration, and no apparent adverse impact on fuel barrier integrity. (Section 1R14.1)

Cornerstone: Occupational Radiation Safety

- Green. The inspector identified that two area radiation monitors had not been calibrated every 18 months as required by procedure NC.WM-AP.ZZ-0003, *Regular Maintenance Process*.

  This violation of Technical Specification (TS) 6.8.1.a is being treated as a non-cited violation. The safety significance of this finding was very low, because other radiological instrumentation, industry survey meters and electronic dosimeters were available. (Section 2OS3)

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Report Details

SUMMARY OF PLANT STATUS

The Hope Creek plant operated at full power at the start of the inspection period. On May 13 operators performed an emergent power reduction to 80 percent in response to a lightning strike in the Salem switchyard (see Section 1R01.1). On May 14 operators restored power to 100 percent. On May 17 operators commenced a planned power reduction to approximately 20 percent to support plant maintenance (see Section 1R14.1). Following the planned maintenance, on May 22 operators commenced a power ascension and on May 26 increased power to 100 percent. Due to uncertainties in the feedwater crossflow correction factor, operators reduced reactor power to 98.5 percent (3293 MWth) on May 27 (see Section 1R14.1). Following resolution of the feedwater crossflow uncertainties, operators increased reactor power to 100 percent on June 8. At 3:12 p.m. on June 10 the load dispatcher requested that Hope Creek operators reduce power to 800 MWe for grid stability due to an emergent need to remove a 500 KV line (Salem 5021 offsite power source) from service. Operators reduced power to 76 percent (800 MWe). The load dispatcher restored the 5021 line to service at 7:11 p.m. on June 10, and operators restored power to 100 percent on June 11. On June 14 operators commenced a planned power reduction to approximately 40 percent for B recirculation pump motor generator (MG) set brush replacement and turbine valve testing. On June 18 operators restored power to 100 percent. On June 22 the plant experienced a reactor scram that resulted from a turbine trip (see Section 1R14.2). Following successful completion of the forced outage repairs; operators established reactor criticality at 9:13 a.m. on June 25, entered Mode 1 at 3:37 a.m. on June 27, and synchronized the main generator to the grid at 9:44 a.m. on June 27 (see Section 1R20). Operators continued the power ascension and stabilized the unit at approximately 97 percent power on June 29.

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

R01 Adverse Weather Protection

.1 Plant Response to a Lightning Strike

a. Inspection Scope

On May 13 Hope Creek experienced an electrical transient caused by a lightning strike in the Salem switchyard. (The Hope Creek and Salem switchyards are normally tied through a 500 KV transmission line.) No Hope Creek electrical busses lost power, however the following equipment tripped: the operating electro-hydraulic control (EHC) pump, the high pressure feedwater heaters, all drywell unit coolers, the C emergency core cooling system (ECCS) jockey pump, and the A control room ventilation train. Reactor power peaked at approximately 105 percent and feedwater temperature dropped below 400°F.

Operators immediately reduced power back to 100 percent. Operators started the standby EHC pump before the lowering EHC pressure reached the standby pump's auto start setpoint. Within four minutes operators performed an emergent power reduction to 80 percent in response to the significant loss of feedwater heating. The shift technical advisor (STA) trended the increasing drywell pressure until operators restored drywell cooling (drywell pressure peaked at 0.9 psig). The C ECCS jockey pump auto restarted

and equipment operators performed a fill and vent procedure to verify that no air had entered the C ECCS trains. The B control room ventilation train auto started.

The inspectors independently performed control room panel and in-plant electrical distribution panel walkdowns to verify the status of potentially affected risk significant systems. The inspectors reviewed the operations logs, applicable abnormal operating procedures, and CRIDS alarm chronology to assess control room operators' response and mitigation measures. In addition, the inspectors reviewed PSEG Nuclear's corrective actions (root cause evaluations 70000770 and 70000775) for a similar event that had occurred in August 1999 (see NRC Inspection Report 50-354/99-05 Section 1R14).

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

b. Findings

A lightning strike-induced electrical transient in May 2002 resulted in Hope Creek operation outside the licensed conditions for maximum power level and minimum feedwater temperature. This represented a recurrence of a similar electrical transient in August 1999. The safety significance of this finding was very low because of the short duration, mitigation equipment availability, and no apparent adverse impact on fuel barrier integrity.

A Transient Assessment Response Plan (TARP) team reviewed the August 1999 transient and noted that a design change package (DCP) to install an uninterruptible power supply (UPS) to the feedwater heaters had not included all of the control power for the high pressure feedwater heaters. The TARP team identified that a subsequent DCP to correct this shortcoming had been approved but had not been prepared and implemented. The team determined that the May 2002 lightning strike would not have resulted in the loss of feedwater heating and operation outside the licensed conditions for power and feedwater temperature had this subsequent DCP been installed.

Although PSEG Nuclear identified this issue, it manifested itself through a self-revealing event. The finding affected the Initiating Events cornerstone objective of limiting the likelihood of those events that upset plant stability. The finding was associated with the protection against external factors (switchyard activities). The basis for the feedwater temperature limit is to protect the fuel barrier integrity due to core analysis uncertainties. Reactor coolant activity samples and offgas system activity during subsequent plant operation indicated that there had been no apparent adverse impact on fuel barrier integrity due to this transient. Reactor engineers evaluated core thermal values and determined that TS thermal limits had not been exceeded during the transient. Based on the limited impact on mitigation equipment and fuel cladding, the finding is characterized as Green by the SDP Phase 1 screening for the Initiating Events cornerstone.

Hope Creek operating license condition 2.C.(1) authorizes PSEG Nuclear to operate the unit at rated core power levels not in excess of 3339 megawatts thermal (100 percent

rated power). Hope Creek operating license condition 2.C.(11) prohibits operation with a feedwater heating capacity that would result in a rated power feedwater temperature less than 400°F without prior NRC approval. Contrary to these operating license conditions, reactor power increased above 100 percent and feedwater temperature dropped below 400°F for approximately three minutes following an electrical transient on May 13, 2002. However, because the violation is of very low significance (Green) and PSEG Nuclear entered the deficiency into their corrective action system (notification 20099916), this finding is being treated as a non-cited violation, consistent with Section VI.A of the Enforcement Policy, issued May 1, 2000 (65FR25368). **(NCV 50-354/02-05-01)**

.2 Tornado Warning Storm Preparations

a. Inspection Scope

At 5:18 p.m. on May 13 operators entered abnormal procedure HC.OP-AB.MISC-0001, *Acts of Nature*, in response to a tornado warning. The inspectors performed a protected area walkdown to verify the status of potentially affected risk significant systems. This walkdown included an independent verification of operator's closure of the external service water intake structure and power block watertight perimeter flood doors. The inspectors discussed potential missile hazards and integrity concerns with the control room supervisor. The inspectors also reviewed control room operators' logs, Technical Specification (TS) 3.7.3 (Flood Protection), abnormal procedure HC.OP-AB.MISC-0001, and two notifications associated with severe weather preparations (20099830 and 20099871).

b. Findings

No findings of significance were identified.

.3 Hot Weather Preparations

a. Inspection Scope

The inspectors reviewed Joint TARP Report N1-20070574, *Plant Reliability to Support Summer Operations*, as well as the *NBU 2002 Summer Readiness Assessment/Reliability Review* and its associated action item database. In addition, the inspectors reviewed a draft station seasonal readiness program for Salem and Hope Creek intended to improve readiness for hot weather operations. The inspectors toured many of the outlying building areas at Hope Creek, including the safety-related SW intake structure, during a hot day to identify any obvious deficiencies in ventilation and air conditioning. The inspectors also focused on balance of plant (BOP) equipment during plant walkdowns as documentation reviews indicated that a vast majority of the deficient equipment conditions necessary to support hot weather operations involved BOP equipment.

b. Findings

No findings of significance were identified.

R04 Equipment Alignment

.1 250V DC Electrical System Walkdown

a. Inspection Scope

The inspector performed a complete alignment check on the 250V DC system to verify that the system was properly configured and to identify any discrepancies that might impact the function of the system. The alignment check included a review of documents to determine the correct system lineup performance of a field walkdown to identify any discrepancies between the existing lineup and the prescribed lineup. Additionally, the inspectors interviewed the system performance engineer and reviewed the current system health reports.

The inspectors also reviewed the following documents:

- *250 VDC Electrical Distribution System Operation* (HC.OP-SO.PJ-0001)
- *Updated Final Safety Analysis Report,* Section 8.3.2

Additionally, the inspectors reviewed two corrective action notifications associated with equipment alignment deficiencies (20100372 and 20102059).

b. Findings

No findings of significance were identified.

.2 Partial System Walkdowns

a. Inspection Scope

The inspectors performed an equipment alignment verification on redundant equipment during a planned B emergency diesel generator (EDG) outage. The inspectors also performed an equipment alignment verification on redundant equipment following an unplanned A EDG lockout which resulted in the EDG becoming inoperable. The inspectors reviewed the technical specifications and performed plant walkdowns, in-field tagging verifications (WCD 4049665), and main control room tours to verify that these planned and emergent outages did not adversely affect the redundant ECCS and electrical power sources. In particular, the inspectors performed walkdowns of the following equipment and areas:

- A, B, C, and D EDGs.
- Service water (SW) intake pump rooms.
- 125 Vdc and 250 Vdc 1E battery rooms.
- 4160 V vital switchgear rooms and 480V vital motor control centers.
- ECCS pump rooms.

The inspectors also reviewed the following documents:

- *Emergency Diesel Generator BG400 Operability Test* - Monthly (HC.OP-ST.KJ-0002)

- *Power Distribution Lineup - Weekly* (HC.OP-ST.ZZ-0001)
- TARP Report dated May 28, 2002

The inspectors also verified that the B and A EDGs were restored to an operable condition after the maintenance was complete. Additionally, the inspectors reviewed various corrective action notifications associated with equipment alignment deficiencies (see Supplementary Information, Section C, for a complete listing).

b. Findings

No findings of significance were identified.

R05 Fire Protection

a. Inspection Scope

The inspectors performed walkdowns of the 1CD447, 1DD447, 1DD411, 1BD411, 1CD411, and 1AD411 125 Vdc 1E batteries. Plant walkdowns included observations of combustible material control, fire detection and suppression equipment availability, battery room ventilation, and compensatory measures. The inspectors performed fire protection inspections due to the potential to impact mitigating systems in these areas. The inspectors reviewed Hope Creek's Individual Plant Examination for External Events for risk insights concerning these areas. Additionally, the inspectors reviewed several notifications associated with fire protection deficiencies (see Supplementary Information, Section C, for a complete listing).

b. Findings

No findings of significance were identified.

R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors reviewed all corrective action notifications initiated between February 16, 2002, and March 31, 2002, for maintenance rule screening. The inspectors further reviewed (1) a functional failure determination involving a C SW pump inservice test (IST) issue (70023764), (2) a preventable system functional failure (PSFF) evaluation for a reactor core isolation cooling (RCIC) trip unit failure (70023865), and (3) an evaluation for an adverse trend in mitigation system unavailability (70022790). The inspectors reviewed the PSEG Nuclear (a)(1) system goals, Maintenance Rule system unavailability checkbook, the PSFF database, the most recent RCIC and SW system health reports, and Hope Creek Expert Panel Meeting Minutes (HCEP 02-005 and HCEP 02-006).

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:

- Concurrent planned outage of A residual heat removal (RHR) system, the extended planned outage of the RCIC jockey pump, and the unplanned outage of the A EDG (which resulted in the high pressure coolant injection jockey pump inoperability);

- Concurrent unavailability of the C switchgear room ventilation fan (planned), A control rod drive pump (planned), A EDG starting air compressor (extended carryover item from previous work week), and the 00K107 service air compressor (emergent);

- Emergent problems with the running EHC pump and the 500KV offsite power breaker 2-6 during main generator synchronization and power ascension.

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

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

- SE.MR.HC.02, *System Function Level Maintenance Rule VS Risk Reference*
- HCGS PSA Risk Evaluation Forms for Work Week Nos. 71 - 77
- SH.OP-AP.ZZ-108, *On-Line Risk Assessment*
- NRC Regulatory Guide 1.182, *Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants*
- Section 11, *Assessment of Risk Resulting from Performance of Maintenance Activities,* dated February 11, 2000, of NUMARC 93-01, *Industry Guideline For Monitoring the Effectiveness of Maintenance at Nuclear Power Plants*

- A EDG Lockout TARP Report, dated May 28, 2002

b. Findings

No findings of significance were identified.

R14 Personnel Performance During Nonroutine Plant Evolutions

.1 Single Loop Operations

a. Inspection Scope

On May 17, 2002, operators commenced a planned power reduction to approximately 20 percent reactor power to remove the main generator from line for master trip solenoid maintenance. In addition to this work, PSEG Nuclear also planned to enter single recirculation loop operations to perform maintenance on the A recirculation pump MG set. The inspector observed portions of the special evolutions training and observed operations in the control room. In addition, the inspectors reviewed PSEG Nuclear corrective actions for a feedwater crossflow (FWCF) indication anomaly (20101080) and other notifications involving special evolutions training and operations (20100409, 20100770, 20101415, and 20102013).

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

b. Findings

The inspectors identified that reactor operators did not promptly identify and initiate actions to correct a deficiency associated with an elevated turbine first stage pressure which was indicating an overpower condition. The safety significance of this finding was very low, based on the small magnitude of the overpower condition, limited duration, and no apparent adverse impact on fuel barrier integrity.

Following the planned maintenance, operators restored the unit to 100 percent power (3339 MWth as indicated by the plant computer) at 1:32 a.m. on May 26. Due to uncertainties in the FWCF correction factor, operators reduced reactor power to 98.5 percent (3293 MWth) at 2:28 a.m. on May 27. Subsequent FWCF troubleshooting confirmed that a failed FWCF transducer resulted in a non-conservative FWCF correction factor. The application of this non-conservative FWCF correction factor caused an inaccurate core thermal power (CTP) indication (lower than actual). Engineering determined that (1) HCGS operated above the licensed limit of 3339 MWth for approximately 8 hours, (2) HCGS operated at approximately 100.25 percent for greater than 2 hours, (3) the maximum power level achieved was 100.47 percent, and (4) the 12-hour shift average did not exceed 3339 MWth. On June 28 operations made a 24-Hour 10CFR50.72 notification to report the overpower condition.

The inspectors performed an independent extent of condition review of the unit's core operating parameters and power history for the month of May 2002. The inspectors identified that reactor operators had recorded an out of specification value for turbine first stage steam pressure numerous times over the applicable 24 hour period (2:00

a.m. on May 26 through 2:00 a.m. on May 27) without documenting or initiating actions to correct this deficiency. Specifically, *Weekly Reactor Engineering Guidance to Hope Creek Operations* for the week of May 26 specified a turbine first stage pressure limit of 696 psig. Reactor operators recorded turbine first stage pressure on HC.OP-DL.ZZ-0003 Attachment 3, *Control Room 2-Hour Readings.* Of the 12 readings recorded over the 24 hour period noted above, 4 recorded values were at 696 psig and 4 recorded values were above 696 psig. Prior to the May 22 downpower, turbine first stage pressure had been consistently at or below 691 psig with no known FWCF deficiencies. Accordingly, the inspectors determined that information was available to the operators to promptly identify the overpower problem and address it. The inspectors noted that as of June 29 PSEG Nuclear had not identified this human performance deficiency during their evaluation of this overpower condition.

The finding affected the Barrier Integrity Cornerstone objective of providing reasonable assurance that the fuel cladding barrier protects the public from radio nuclide release caused by accidents or events. The finding was associated with the human performance attribute of procedure adherence, reactor manipulation in particular. Reactor coolant activity samples and offgas system activity during subsequent plant operation indicated that there had been no apparent adverse impact on fuel barrier integrity due to this short duration overpower condition. Based on no apparent adverse impact on the fuel cladding, the finding is characterized as Green by the SDP Phase 1 screening for the Barrier Integrity Cornerstone.

Due to an equipment failure related to the FWCF correction factor, Hope Creek operated at power levels in excess of 100 percent of rated CTP as stated in License Condition 2.C (1). PSEG Nuclear determined that the magnitude of the overpower condition was limited to 100.47 percent CTP and that there was no impact on core operating limits. PSEG Nuclear captured this issue in their corrective action program as notification 20101080. This failure to ensure operation within License Condition 2.C (1) constitutes a violation of minor significance and is not subject to formal enforcement action in accordance with Section IV of the NRC's Enforcement Policy.

10 CFR 50, Appendix B, Criterion XVI, *Corrective Actions,* requires that measures shall be established to assure that conditions adverse to quality, such as deficiencies and malfunctions are promptly identified and corrected. Contrary to the above, reactor operators did not promptly identify and initiate actions to correct a deficiency associated with an elevated turbine first stage pressure, which was indicative of the overpower condition which existed at the time. However, because the violation is of very low significance (Green) and PSEG Nuclear entered the deficiency into their corrective action system (notification 20105285), this finding is being treated as a non-cited violation, consistent with Section VI.A of the Enforcement Policy, issued May 1, 2000 (65FR25368). **(NCV 50-354/02-05-02)**

.2 Reactor Scram Response

a. Inspection Scope

At 2:15 p.m. on June 22 the B secondary condensate pump tripped due to an overcurrent condition on the C phase. This resulted in an intermediate recirculation pump runback (45 percent speed, ~ 70 percent power) by design. During this transient

the levels fluctuated in the moisture separators and at 2:16 p.m. the level in the A moisture separator reached the high level trip point. This resulted in a turbine trip by design. On a turbine trip the turbine stop valves (TSVs), turbine control valves (TCVs) and combined intermediate valves go closed. With power above 30 percent, TSV closure and TCV fast closure results in a reactor scram by design. Immediately following the scram a control rod position indication anomaly resulted in the reactor operator's initiation of a manual scram and alternate rod insertion (ARI) in accordance with HC.OP-AB.ZZ-0001, *Transient Plant Conditions*. Prior to the ARI initiation, the STA observed that all control rods, with the exception of control rod 22-31, indicated "full in" on the core monitoring system OD-7 display. The STA's observation confirmed the successful completion of the original automatic scram (TCV fast closure above 30 percent power). The STA also noted that the indicated position of control rod 22-31 did not change immediately following the scram, but changed over a time consistent with a known problem with its position-indicating probe.

The inspectors evaluated PSEG Nuclear's response to the scram, associated 10CFR50.72 Four-Hour notification, and event classification. The inspectors reviewed the operations logs, applicable abnormal operating procedures, and CRIDS alarm chronology to assess control room operators' response and mitigation measures. The inspectors independently performed control room panel, in-plant electrical distribution panel, scram air header, hydraulic control unit, and ARI system walkdowns to verify the status of potentially affected risk significant systems.

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

b. Findings

No findings of significance were identified.

R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed all of the safety-related equipment deficiencies identified by PSEG Nuclear during this report period and assessed the adequacy of the operability screenings.

The inspectors reviewed the following documents:

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

b. Findings

No findings of significance were identified.

R16 Operator Workarounds

a. Inspection Scope

The inspectors reviewed corrective action notifications, operator logs, and instrument panel status to evaluate potential impacts on the operators' ability to implement abnormal or emergency operating procedures. The inspectors evaluated the cumulative effects of operator workarounds as related to (1) the reliability, availability, and potential for mis-operation of plant systems; (2) the potential to increase an initiating event frequency or to affect multiple mitigating systems; and (3) operator ability to respond in a correct and timely manner to plant transients and accidents. The inspectors also toured the plant and control room focused on identifying potential workarounds or deficiencies not previously identified by PSEG Nuclear.

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

b. Findings

No findings of significance were identified.

R19 Post Maintenance Testing

a. Inspection Scope

The inspectors witnessed post maintenance testing (PMT) and/or reviewed the test data on the No. 4 turbine control valve fast acting solenoid valve; the A RHR pump shutdown cooling suction valve (F006A); and the C filtration, recirculation and ventilation system (FRVS) recirculation fan flow control damper. The inspectors reviewed NC.NA-TS.ZZ-0050, *Maintenance Testing Program Matrix,* to verified that the PMTs were adequate for the scope of maintenance performed. The inspectors also reviewed notifications concerning problems associated with PMTs (see Supplementary Information, Section C, for a complete listing).

The inspectors reviewed the following documents:

- *Main Turbine Functional Test - Weekly* (HC.OP-FT.AC-0001)
- *PM 5 Year Diagnostic Test for Valve 1BCHV-F006A* (Work Order No. 30004812)
- Votes Test Data Review *for 1BCHV-F006A* (Notification 20101518)
- C FRVS Recirc Fan Trip on Low Flow (Work Order No. 60029363)
- *FRVS Operability Test - Monthly* (HC.OP-ST.GU-0005)

b. Findings

No findings of significance were identified.

R20 Refueling and Outage Activities

a. Inspection Scope

Following the June 22 reactor scram (see Section 1R14.2) the inspectors evaluated PSEG Nuclear's shutdown risk management, forced outage configuration control, reactor startup, and power ascension. The inspector also reviewed notifications concerning problems related to the forced outage (see Supplementary Information, Section C, for a complete listing).

The inspectors reviewed the following documents:

d. *Outage Management Program* (NC.NA-AP.ZZ-0055)
e. *Outage Risk Assessment* (NC.OM-AP.ZZ-0001)
f. *Startup From Cold Shutdown to Rated Power* (HC.OP-IO.ZZ-0003)
g. *Operations From Hot Standby* (HC.OP-IO.ZZ-0007)

b. Findings

No findings of significance were identified.

R22 Surveillance Testing

a. Inspection Scope

The inspectors observed portions of and reviewed the results of the A EDG monthly surveillance. The inspectors also reviewed the results of the containment atmospheric control system valve IST and the D spray water pump IST. The inspectors reviewed the test procedures to verify that applicable system requirements for operability were incorporated correctly into the test procedures, test acceptance criteria were consistent with the TS and UFSAR requirements, and the systems were capable of performing their intended safety functions. The inspectors also reviewed notifications concerning problems encountered during surveillance testing (see Supplementary Information, Section C, for a complete listing).

The inspectors reviewed the following documents:

- *Emergency Diesel Generator AG400 Operability Test* - Monthly (HC.OP-ST.KJ-0001)
- *Containment Atmospheric Control System Valves -Inservice Test* (HC.OP-IS.GS-0101)
- *D Spray Water Pump-DP507 - Inservice Test* (HC.OP-IS.EP-0004)

b. Findings

No findings of significance were identified.

R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed Hope Creek T-MOD 02-018, *A SRV Tailpipe Temperature Recorder Alarm Setpoint Change*. The objectives of this review were to verify that (1) the design bases, licensing bases, and performance capability of risk significant structures, systems, and components had not been degraded through this modification, and (2) that implementation of the modification did not place the plant in an unsafe condition. The inspectors used UFSAR Section 5.2.2 and TS 3.4.2, *Safety/Relief Valves*, to assess the adequacy of engineering's evaluation for T-MOD 02-018. The inspectors verified the modified equipment alignment through a control room instrumentation walkdown and a review of the instrument calibration data report for the safety relief valve (SRV) temperature recorder.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness [EP]

EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed an emergency preparedness (EP) drill from the control room simulator, emergency operations facility, and the technical support center on June 19, 2002. The inspectors evaluated the conduct of the drill; the classifications, notifications, and protective action recommendations; and the drill critique. The inspectors reviewed notification 80047308 associated with EP areas for improvement identified during the drill.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Occupation Radiation Safety [OS]

OS1 Access Control

a. Inspection Scope

During the period from May 28 - 31, 2002, the inspector identified exposure significant work areas (e.g., high radiation areas and potential airborne radioactivity areas) in the turbine, radwaste and reactor buildings and reviewed associated controls and surveys of these areas to determine if the controls (i.e., radiological surveys, postings, barricades) were adequate to identify and control radiation exposures. For these areas the inspector reviewed 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 the implementation of radiological job coverage and contamination controls; and verified the accuracy of surveys and applicable posting and barricade requirements. The inspector obtained this information via interviews with

PSEG Nuclear personnel; walkdown of systems, structures, and components; and examination of records, procedures, or other pertinent documents. The inspector determined if prescribed radiation work permit (RWPs) controls were in place, procedure and engineering controls were in place, whether surveys and postings were complete and accurate, and whether air samplers were properly located. The inspector reviewed electronic pocket dosimeter alarm set points (both integrated dose and dose rate) for conformity with survey indications and plant policy. Hope Creek TS 6.12 and the requirements contained in 10 CFR 20, Subpart G were utilized as the standard for necessary barriers.

The inspector reviewed a recent PSEG Nuclear Quality Assessment Report (2002-0040, dated March 22, 2002) and seven problem reports related to access control to radiologically significant areas (see Supplementary Information, Section C, for a complete listing).

b. Findings

No findings of significance were identified.

OS2 ALARA Planning and Controls

a. Inspection Scope

The inspector reviewed ALARA job evaluations, exposure estimates and exposure mitigation requirements, and ALARA plans. The inspector reviewed the integration of ALARA requirements into work procedures and RWP documents; the accuracy of person-hour estimates and person-hour tracking; and the generation of shielding requests including their effectiveness in dose rate reduction.

For the work areas identified in Section 2OS1 (above), the inspector evaluated PSEG Nuclear's use of engineering controls to achieve dose reductions; determined if workers utilized the low dose waiting areas and were effective in maintaining their doses ALARA; determined if workers received appropriate on-the-job supervision to ensure ALARA requirements were met; and reviewed individual exposures of selected work groups. The inspector obtained this information via interviews with personnel; walkdown of systems, structures, and components; and examination of records, procedures, or other pertinent documents.

The inspector reviewed actual exposure results versus initial exposure estimates, 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. The inspector also reviewed exposure goals established for 2002 (55.55 person-rem), and the plant's occupational exposures through mid-May 2002 (9.7 person-rem). The review was against requirements contained in 10 CFR 20.1101(b).

The inspector also reviewed five problem reports related to maintaining occupational radiation exposures ALARA (20090992, 20091396, 20091470, 20094700, and 20096242).

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 reviewed instruments observed, specifically verification of calibration, proper function and certification of appropriate source checks for these instruments, which were utilized to ensure that occupational exposures were maintained in accordance with 10 CFR 20.1201. The inspector obtained this information via interviews with PSEG Nuclear personnel; walkdown of systems, structures, and components; and examination of records, procedures, or other pertinent documents. The inspector also reviewed three problem reports related to radiation monitoring (20090978, 20093442, and 20098064).

The inspector conducted a visual inspection and reviewed the most recent calibration records for the following five randomly selected area radiation monitors, described in UFSAR Section 12.3 as part of the facility radiation protection program: 1SDRE-6603; 1SDRE-6640A; 1SDRE-6620; 0SDRE-6633; and, 0SDRE-6611.

b. Findings

The inspector identified that two area radiation monitors had not been calibrated every 18 months as required. The safety significance of this finding was very low, because other radiological instrumentation, including survey meters and electronic dosimeters, were available.

Twenty-nine area radiation monitors, described in Section 12 of the Hope Creek UFSAR support the on-site occupational radiation safety program by providing both local and remote location (radiological access control point and main control room) information on area dose rates. One of these area radiation monitors was used to meet the requirements of 10 CFR 50, Appendix A, General Design Criteria 63, Monitoring Fuel and Waste Storage. Specifically, 1SDRE-6603 monitors the spent fuel pool clean-up area to detect changes in radiation levels that may be indicative of deterioration in the integrity of stored spent fuel; and provides alarms to the control room, access control point, and locally. On May 31, 2002, the inspector selected five of the 29 radiation monitors for review, and examined the most recent calibration records for each instrument. Subsequently, the inspector determined that two of the five monitors, 1SDRE-6603 and 1SDRE-6640A had not been calibrated since January and March 1998, respectively.

This matter is considered a performance deficiency since PSEG Nuclear's instrument calibration program is expected to ensure that instruments utilized to measure radiation

dose rates are regularly calibrated in accordance with plant procedures in order to assure instrument reliability. The finding was considered more than minor in that the issue was associated with the Radiation Safety Cornerstone attribute pertaining to plant facilities, equipment and instrumentation, specifically, area radiation monitor calibration and availability; and affects the cornerstone objective of ensuring the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine nuclear reactor operation. Specifically, the radiological indication provided by area radiation monitors, that have not been maintained or calibrated in accordance with established standards and procedures, may not provide reliable indication of actual radiological conditions to which workers may be exposed; or provide warning of certain off-normal conditions that could adversely affect plant operations. Applying the SDP, the failure to calibrate the monitors did not involve ALARA planning or work control, result in personal exposure in excess of regulatory limits or a substantial potential for such exposure, or compromise PSEG Nuclear's ability to assess dose. Accordingly, this finding was considered as having very low safety significance (Green).

Hope Creek TS 6.8.1 a. requires that written procedures be established, implemented and maintained covering the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Paragraph 8.b.(2)(aa) of Regulatory Guide 1.33, Appendix A, Revision 2, states in part, that specific procedures for surveillance tests, inspections, and calibrations should be written for area radiation monitor calibration. Paragraph 5.3.3 of procedure NC.WM-AP.ZZ-0003, *Regular Maintenance Process*, requires calibration of area radiation monitors every 18 months. Contrary to this requirement, as of May 31, 2002, PSEG Nuclear failed to calibrate area radiation monitors 1SDRE-6603 and 1SDRE-6640A since January and March 1998, respectively. Following inspector identification PSEG Nuclear entered this issue in their corrective action system as notification 20101456. Short-term corrective measures included plans to calibrate the affected area radiation monitors and perform an extent of condition assessment for all other area radiation monitors. Root cause analysis and long-term corrective actions were in development. Consistent with Section VI.A of the NRC Enforcement Policy, this finding is considered a non-cited violation. **(NCV 50-354/02-05-03)**

3. SAFEGUARDS

Physical Protection [PP]

PP1 Access Authorization

a. Inspection Scope

The inspectors performed the following activities to determine the effectiveness of PSEG Nuclear's behavior observation portion of the personnel screening and fitness-for-duty (FFD) programs as measured against the requirements of 10 CFR 26.22 and PSEG Nuclear's FFD program documents.

On June 4 the inspectors interviewed five supervisors representing the fire protection, security, maintenance, operations, and technical support/design engineering departments regarding their understanding of behavior observation responsibilities and the ability to recognize aberrant behavior traits. The inspectors reviewed two Access

Authorization/FFD self-assessments, two semi-annual FFD performance data reports,an audit, event reports, and loggable events for the four previous quarters. On June 4 the inspectors interviewed five individuals who perform escort duties to establish their knowledge level of those duties. The inspectors also reviewed behavior observation training procedures and records.

b. Findings

No findings of significance were identified.

PP2 Access Control

a. Inspection Scope

The inspectors conducted the following activities to verify that PSEG Nuclear has effective site access controls, and equipment in place designed to detect and prevent the introduction of contraband (firearms, explosives, incendiary devices) into the protected area as measured against 10 CFR 73.55(d) and the Physical Security Plan and Procedures.

On June 4 and 5 the inspectors observed site access control activities, including personnel and package processing through the search equipment during peak ingress periods. On June 4 the inspectors observed testing of all access control equipment; including metal detectors, explosive material detectors, and X-ray examination equipment. The inspectors also reviewed the access control event log, an audit, and three self-assessments.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES [OA]

OA1 Performance Indicator Verification

a. Inspection Scope

The inspector reviewed PSEG Nuclear's programs for gathering, processing, evaluating and submitting data for the FFD, Personnel Screening, and Protected Area Security Equipment performance indicators (PIs). The review included the tracking and trending reports, personnel interviews, and security event reports for the PI data collected from the April 2001 through the March 2002. The inspector also reviewed the data supporting the safety system functional failure PI for Hope Creek (and Salem) for the period from May 2001 - April 2002.

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 1R01.1 - Failure to take timely corrective actions for an August 1999 electrical transient in order to preclude its recurrence in May 2002.

b. Section 1R14.1 - Failure to promptly identify and initiate actions to correct a deficiency associated with an elevated turbine first stage pressure, which was indicating an overpower condition.

Additional items associated with PSEG Nuclear's corrective action program were reviewed without findings and are listed in Sections 1R01.1, 1R01.2, 1R04.1, 1R04.2, 1R05, 1R12, 1R13, 1R14.2, 1R15, 1R16, 1R19, 1R22, 1EP6, 2OS1, 2OS2, and 2OS3 of this report.

OA3 Event Follow-up

.1 Lightning Strike Follow-Up

On May 13 Hope Creek experienced an electrical transient caused by a lightning strike in the Salem switchyard. The impact on plant equipment, operator response, and inspector follow-up are described in Section 1RO1.1 of this report.

.2 Reactor Scram Follow-Up

On June 22 Hope Creek experienced a plant scram resulting from a turbine trip. The impact on plant equipment, operator response, and inspector follow-up are described in Section 1R14.2 of this report.

.3 (Closed) LER 354/2002-001: B Residual Heat Removal Inoperability due to Mispositioned Minimum Flow Manual Isolation Valve. This LER discussed the failure to maintain configuration control for the B RHR system. This PSEG Nuclear identified issue was documented in NRC Inspection Report 354/02-02 Section 4OA7.1. The inspectors determined that this LER was complete and accurate.

.4 (Closed) LER 354/2002-002: Secondary Containment Breach due to Open 1-Inch Vent Line. This LER discussed the failure to maintain configuration control for secondary containment during maintenance. This PSEG Nuclear identified issue was documented in NRC Inspection Report 354/02-04 Section 4OA7.1. The inspectors determined that this LER was complete and accurate.

.5 (Closed) LER 354/2002-003: License Condition Violation - Reactor Power and Minimum Feedwater Temperature Limits. This LER discussed the operation outside of License Condition 2.C(1), which authorizes PSEG Nuclear LLC to operate the facility at reactor power levels not to exceed 3339 megawatts thermal and 2.C(11), which prohibits operation with feedwater heating capacity that would result in a rated feedwater

temperature less than 400 degrees unless analyses supporting operations are submitted by the licensee and approved by the staff. The inspectors documented this issue in Section 1R01.1 of this report and determined that this LER was complete and accurate.

OA4 Cross-cutting Issues

Reactor operators had recorded an out of specification value for turbine first stage steam pressure numerous times over a 24 hour period without documenting or initiating actions to correct this deficiency. Their failure to adhere to procedure guidance directly involved human performance. (Section 1R14.1)

OA6 Management Meetings

a. Exit Meeting Summary

On July 3 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.

SUPPLEMENTARY INFORMATION

a. Key Points of Contact

Matt Conroy, Maintenance Rule Supervisor
G. Cranfiled, QA Assessor
Robert Gary, Radiation Protection Operations Superintendent
R. Gaunt, Project Manager (the Wackenhut Company)
Dave Garchow, Vice President - Operations
Mike Ivanick, Security Technical Analyst
Kevin O'Hare, Acting Radiation Protection Manager
Devon Price, Assistant Operations Manager
Gabor Salamon, Nuclear Safety & Licensing Manager
Ted Straub, Manager, Nuclear Security

b. List of Items Opened, Closed, and Discussed

Opened/Closed

50-354/2002-05-01	NCV	Operation outside the licensed conditions for maximum power level and minimum feedwater temperature following an electrical transient. (Section 1R01.1)
50-354/2002-05-02	NCV	Failure to promptly identify and initiate actions to correct a deficiency associated with an elevated turbine first stage pressure indicative of a potential overpower condition. (Section 1R14.1)
50-354/2002-05-03	NCV	PSEG Nuclear failed to calibrate two area radiation monitors. (Section 2OS3)

Closed

50-354/2002-001-00	LER	B RHR inoperability due to mispositioned minimum flow manual isolation valve. (Section OA3.3)
50-354/2002-002-00	LER	Secondary containment breach due to open 1 inch vent line. (Section OA3.4)
50-354/2002-003-00	LER	License condition violation - reactor power and minimum feedwater temperature limits. (Section OA3.5)

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
PSEG Fitness-for-Duty Training Requirements
Fitness-for-Duty Performance Data Report, January - June 2001
Fitness-for-Duty Performance Data Report, June - December 2001
QA Assessment 2002-0034, 3/27/01
Behavior Observation Program (NC-NM-AP.22-0019)

Section 1R01.1 documents reviewed:

- *Hope Creek Electrical Transient TARP Report*, dated May 13, 2002
- *Grid Disturbances* (HC.OP-AB.BOP-0004)
- *Stuff Sheet Instructions*, (HC.RE-IO.ZZ-0001, Attachment 2)
- *Feedwater Heating* (HC.OP-AB.BOP-0001)
- *Reactor Power* (HC.OP-AB.RPV-0001)
- *HCGS SNSS/NSS Narrative*
- *Post-Event Data Package* (SH.OP-AP.ZZ-0101)
- *OD-3 Core Thermal Power Printout*
- *Power Changes During Operation* (HC.OP-IO.ZZ-0006)
- *Drywell Pressure* (HC.OP-AB.CONT-0001)
- *Turbine Hydraulic Pressure* (HC.OP-AB.BOP-0003)
- Hope Creek Updated Final Safety Evaluation Report (UFSAR), Section 15.1.1, *Loss of Feedwater Heating*

Section 1R04.2 corrective action notifications reviewed: 20099665, 20099924, 20100082, 20102315, 20102628, 20103384, and 20103417.

Section 1R05 corrective action notifications reviewed: 20099948, 20100224, 20100330, 20100387, 20100665, 20101932, and 20102313.

Section 1R13 corrective action notifications reviewed: 20099652, 20101233, 20101390, 20102317, 20102432, 20102614, 20102934, 20103590, and 20104247.

Section 1R14.1 documents reviewed:

- *Startup from Cold Shutdown to Rated Power* (HC.OP-IO.ZZ-0003)
- *Shutdown from Rated Power to Cold Shutdown* (HC.OP-IO.ZZ-0004)
- *Power Changes During Operation* (HC.OP-IO.ZZ-0006)
- *Operations From Hot Standby* (HC.OP-IO.ZZ-0007)
- *Jet Pump Data Acquisition* (HC.OP-FT.BB-0001)
- Single Loop Operations IPTE Plan
- INPO Just-In-Time Operating Experience
- SORC Report 2002-033

Section 1R14.2 documents reviewed:

- *Reactor Scram* (HC.OP-AB.ZZ-0000)
- *Transient Plant Conditions* (HC.OP-AB.ZZ-0001)
- *Shutdown from Rated Power to Cold Shutdown* (HC.OP-IO.ZZ-0004)
- *Operations From Hot Standby* (HC.OP-IO.ZZ-0007)
- *Hope Creek Reactor Scram TARP Report*, dated June 12, 2002
- *Reactor Power* (HC.OP-AB.RPV-0001)
- *Recirculation System* (HC.OP-AB.RPV-0003)
- *HCGS SNSS/NSS Narrative*
- *Post-Event Data Package* (SH.OP-AP.ZZ-0101)
- *HCGS Event Classification Guide*
- *Daily Chemistry Shift Summary Reports*
- *Shutdown from Rated Power to Cold Shutdown reactor Coolant System Temperature/Pressure Data* (HC.OP-IO.ZZ-0004, Attachment 4)

Section 1R16 documents reviewed:

- 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
- *Current Temporary Log Record* (HC.OP-DL.ZZ-0027, Attachment 2)
- *Hope Creek Generating Station Turnover Sheet*
- *Operator Burden Program* (SH.OP-AP.ZZ-0030)
- *CRIDS Alarm Summary*
- *Hope Creek Operations Night Orders and Temporary Standing Orders*
- *Temporary Modification Log* (NC.DE-AP.ZZ-0030)
- *SGS/HC Differences on CRI Process* (evaluation 70021182)
- *Control Rod Problem Summary Log* (HC.OP-ST.BF-0001, Attachment 3)

Section 1R19 corrective action notifications reviewed: 20100147, 20100524, 20100821, 20101508, 20101518, 20101666, 20101946, and 20102321.

Section 1R20 corrective action notifications reviewed: 20100355, 20103600, 20103625, 20103941, 20104247, 20104073, and 20104423.

Section 1R22 corrective action notifications reviewed: 20100221, 20100250, 20100526, 20100984, 20101112, 20101679, 20101733, 20101946, 20102633, and 20103374.

Section 2OS1 corrective action notifications reviewed: 20098085, 20091964, 20092824, 20094699, 20100558, 20101296, and 20100478.

d. List of Acronyms

ALARA	As Low As Is Reasonably Achievable
ARI	Alternate Rod Insertion

BOP	Balance of Plant
CFR	Code of Federal Regulations
CRI	Control Room Indicators
CRIDS	Control Room Integrated Display Computer System
CTP	Core Thermal Power
DBT	Design Basis Threat
DCP	Design Change Package
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EP	Emergency Preparedness
EHC	Electro-Hydraulic Control
FFD	Fitness-for-Duty
FRVS	Filtration, Recirculation and Ventilation System
FWCF	Feedwater Crossflow
HCEP	Hope Creek Expert Panel
HCGS	Hope Creek Generating Station
IST	Inservice Test
LER	Licensee Event Report
MG	Motor Generator
MWe	Megawatts Electrical
MWth	Megawatts Thermal
NCV	Non Cited Violation
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PI	Performance Indicator
PMT	Post Maintenance Testing
PSEG	Public Service Electric Gas
PSFF	Preventable System Functional Failure
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RWP	Radiation Work Permit
SDP	Significance Determination Process
SRO	Senior Reactor Operator
SRV	Safety Relief Valve
STA	Shift Technical Advisor
SW	Service Water
TARP	Transient Assessment Response Plan
TCV	Turbine Control Valve
TS	Technical Specification
TSV	Turbine Stop Valve
UFSAR	Updated Final Safety Evaluation Report
UPS	Uninterruptible Power Supply