



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

November 12, 2008

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

SUBJECT: HOPE CREEK GENERATING STATION – NRC INTEGRATED INSPECTION
REPORT 05000354/2008004

Dear Mr. Joyce:

On September 30, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Hope Creek Generating Station. The enclosed integrated inspection report documents the inspection results discussed on October 15, 2008, with Mr. George Barnes and other members of your staff.

The inspections 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.

The report documents one self-revealing finding of very low safety significance (Green) that was also determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this finding as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest the NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Hope Creek Generating Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) 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 by Leonard Cline Acting for/

Arthur L. Burrirt, Chief
Projects Branch 3
Division of Reactor Projects

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

Enclosure: Inspection Report 05000354/2008004
w/Attachment: Supplemental Information

cc w/encl:

W. Levis, President and Chief Operating Officer, PSEG Power
G. Barnes, Site Vice President
P. Davison, Director, Nuclear Oversight
E. Johnson, Director of Finance
J. Perry, Plant Manager, Hope Creek
J. Keenan, General Solicitor, PSEG
M. Wetterhahn, Esquire, Winston and Strawn, LLP
Consumer Advocate, Office of Consumer Advocate, Commonwealth of PA
L. Peterson, Chief of Police and Emergency Management Coordinator
P. Baldauf, Assistant Director, NJ Radiation Protection Programs
P. Mulligan, Chief, NJ Bureau of Nuclear Engineering
H. Otto, Ph.D., Administrator, DE Division of Water Resources
N. Cohen, Coordinator Unplug Salem Campaign
E. Zobian, Coordinator - Jersey Shore Anti Nuclear Alliance

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Sincerely,
/RA by Leonard Cline Acting for/
 Arthur L. Burritt, Chief
 Projects Branch 3
 Division of Reactor Projects

Distribution w/encl.

S. Collins, RA	A. Burritt, DRP	A. Patel, DRP, RI	H. Chernoff, NRR
M. Dapas, DRA	L. Cline, DRP	K. Venuto, DRP, OA	R. Ennis, PM, NRR
D. Lew, DRP	J. Bream, DRP	S. Williams, RI OEDO	J. Shea, NRR, Backup
J. Clifford, DRP	B. Welling, DRP, SRI	R. Nelson, NRR	ROPreports@nrc.gov

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U.S NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-354

License No: NPF-57

Report No: 05000354/2008004

Licensee: PSEG Nuclear LLC

Facility: Hope Creek Generating Station

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

Dates: July 1, 2008 through September 30, 2008

Inspectors: B. Welling, Senior Resident Inspector
A. Patel, Resident Inspector
J. Furia, Senior Health Physicist
J. Schoppy, Senior Reactor Inspector
D. Tiff, Reactor Inspector
J. Nicholson, Health Physicist

Approved By: Arthur L. Burritt, Chief
Projects Branch 3
Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS	3
REPORT DETAILS.....	4
REACTOR SAFETY	4
1R01 Adverse Weather Protection.....	4
1R04 Equipment Alignment	5
1R05 Fire Protection.....	5
1R06 Flood Protection Measures.....	6
1R07 Heat Sink Performance	6
1R11 Licensed Operator Requalification Program	7
1R12 Maintenance Effectiveness.....	8
1R13 Maintenance Risk Assessments and Emergent Work Control	8
1R15 Operability Evaluations.....	9
1R18 Permanent Plant Modifications.....	10
1R19 Post-Maintenance Testing.....	10
1R22 Surveillance Testing	12
1EP6 Drill Evaluation	13
1EP7 Emergency Preparedness Component of the Force-On-Force (FOF) Exercise Evaluation	13
RADIATION SAFETY	14
2OS1 Access Control to Radiologically Significant Areas.....	14
2OS2 ALARA Planning and Controls.....	15
2OS3 Radiation Monitoring Instrumentation and Protective Equipment.....	16
OTHER ACTIVITIES	16
4OA1 Performance Indicator Verification.....	16
4OA2 Identification and Resolution of Problems.....	17
4OA3 Event Followup.....	18
4OA5 Other Activities	19
4OA6 Meetings, Including Exit.....	20
ATTACHMENT: SUPPLEMENTAL INFORMATION	A-1
KEY POINTS OF CONTACT	A-1
LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED.....	A-1
LIST OF DOCUMENTS REVIEWED	A-1
LIST OF ACRONYMS	A-12

SUMMARY OF FINDINGS

IR 05000354/2008004; 07/01/2008 - 09/30/2008; Hope Creek Generating Station; Post-Maintenance Testing.

The report covered a three-month period of inspection by resident inspectors and announced inspections by regional reactor inspectors and regional health physics specialists. One Green non-cited violation (NCV) was identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter (IMC) 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 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. A self-revealing, non-cited violation of Technical Specification 6.8.1, "Procedures and Programs," was identified because, during performance of post-modification testing for the high pressure coolant injection (HPCI) feedwater injection valve, PSEG inadvertently injected feedwater into the reactor vessel through the HPCI and core spray systems. Specifically, PSEG did not ensure that the post-modification test procedure established a system configuration appropriate for the plant's operating condition. This resulted in an unanticipated reactor pressure and power transient. PSEG's corrective actions included revising the test procedure and re-performing the test.

The finding is more than minor because it is associated with the procedure quality attribute of the Initiating Events cornerstone, and it affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, an inadequate procedure resulted in an injection of feedwater through the HPCI core spray injection valve, which caused a pressure and power transient. The finding screened as Green (very low safety significance) because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding has a cross-cutting aspect in the area of human performance because PSEG did not define and effectively communicate expectations regarding procedural compliance, and PSEG personnel did not follow procedures. Specifically, PSEG did not adequately implement the new procedure review process defined by PSEG procedure AD-AA-102-1001, "Station Qualified Reviewer's Guide," and, as a result, did not identify the adverse impact of the sequence of valve operations specified by the test procedure. (H.4(b)) (Section 1R19)

B. Licensee Identified Violations

None.

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REPORT DETAILS

Summary of Plant Status

The Hope Creek Generating Station (HCGS) operated continuously for the duration of the inspection period. From July 1 through August 22, the plant operated at approximately 97% power consistent with PSEG's planned implementation of an extended power uprate (EPU). On August 22, operators increased reactor power to approximately 99% in accordance with the EPU test plan, and on August 26, operators increased reactor power to full rated thermal power (3840 megawatts thermal). On September 20, operators reduced power to 86% per direction from the transmission system operator in order to alleviate a high voltage condition on the transmission grid. Operators restored the plant to full power later that day. On September 26, operators performed a planned power reduction to approximately 76% for testing and maintenance. The plant was restored to full power on September 27.

1. **REACTOR SAFETY**

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 - 2 samples).1 Readiness for Impending Adverse Weather Conditionsa. Inspection Scope

The inspectors completed one adverse weather protection sample for PSEG's response to a site-specific weather-related condition of severe weather. Specifically, the inspectors verified that adverse weather conditions, thunderstorms and high winds that occurred on August 10 and 11, 2008, did not adversely impact mitigating systems or increase the likelihood of an initiating event. Inspectors discussed readiness with operations and work control personnel readiness and availability for adverse weather response.

b. Findings

No findings of significance were identified.

.2 Readiness to Cope with External Floodinga. Inspection Scope

The inspectors completed one adverse weather protection sample for PSEG's response to a site-specific weather-related condition of severe weather that posed a risk of flooding on July 23, 2008. The inspectors walked down the station service water system and reactor building flood barriers to assure readiness. The inspectors also monitored various plant parameters that could be affected by the potential flooding condition using a computerized plant monitoring system. The inspectors verified that the adverse

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weather conditions did not adversely impact mitigating systems or increase the likelihood of an initiating event. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04 - 3 samples)

.1 Partial Walkdown

a. Inspection Scope

The inspectors completed partial system walkdown inspection samples for the three systems listed below to verify the operability of redundant or diverse trains and components when safety equipment was unavailable. The inspectors completed walkdowns to determine whether there were discrepancies in the system's alignment that could impact the function of the system, and therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, walked down control system components, and verified that selected breakers, valves, and support equipment were in the correct position to support system operation. The inspectors also verified that PSEG had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program. Documents reviewed are listed in the Attachment.

- High pressure coolant injection (HPCI), reactor core isolation cooling (RCIC), and control rod drive systems during digital feedwater control system issues on July 17, 2008
- C service water (SW) pump during D SW pump outage on August 8, 2008
- B standby liquid control (SLC) during A SLC in-service test on August 26, 2008

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q - 6 samples)

.1 Fire Protection - Tours

a. Inspection Scope

The inspectors completed six quarterly fire protection inspection samples. The inspectors conducted tours of the six areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that combustibles and ignition sources were controlled in accordance with PSEG's administrative procedures; fire detection and suppression equipment was available for use; that passive fire barriers were maintained in good material condition; and that compensatory measures for out-of-service, degraded, or inoperable fire protection

equipment were implemented in accordance with PSEG's fire plan. The six areas toured are listed below with their associated pre-fire plan designator. Other documents reviewed are listed in the Attachment.

- FRH-II-351, Remote shutdown panel room
- FRH-II-552, Control room & control console pit
- FRH-III-151, A recirculation motor generator (MG) set room
- FRH-III-151, B recirculation MG set room
- FRH-II-412, D residual heat removal (RHR) Pump Room
- FRH-II-413, C RHR Pump Room

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 - 1 sample)

a. Inspection Scope

The inspectors completed one flood protection measure inspection sample. The inspectors reviewed selected risk-important plant design features and PSEG procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors focused on mitigation strategies and equipment in the B safety auxiliaries cooling system room. The inspectors reviewed flood analysis and design documents, including the Individual Plant Examination, updated final safety analysis report (UFSAR), engineering calculations, and abnormal operating procedures. The inspectors observed the condition of wall penetrations, watertight doors, flood alarm switches, and drains to assess their readiness to contain flow from an internal flooding event in accordance with the design basis.

Additionally, the inspectors reviewed flood protection related aspects of a declared Unusual Event for flooding in the service water intake structure. This event and NRC inspection activities are discussed in Section 4OA3 of this report.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07T - 3 samples)

a. Inspection Scope

Based on a plant specific risk assessment and previous inspections, the inspectors selected three samples to review heat sink performance: A emergency diesel generator (EDG) lube oil heat exchanger (HX), A EDG jacket water HX, and performance of the ultimate heat sink (UHS) and its subcomponents. The safety auxiliaries cooling system (SACS) provides cooling to the EDG HXs and transfers its heat load to the SW system via the SACS HXs. The SW system supplies cooling water from the Delaware River (the UHS).

The inspectors reviewed the EDG HX and SW system material condition, testing, and operation to ensure that PSEG maintained these risk-significant components consistent with design assumptions in heat transfer calculations and the UFSAR. The inspectors reviewed PSEG evaluations and operational controls associated with the potential for water hammer, HX degradation due to excessive flow induced vibration, and system leakage. The inspectors also reviewed PSEG's inspection program for buried or inaccessible piping to verify that structural integrity and any leakage or degradation had been appropriately identified and dispositioned.

The inspectors reviewed the eddy current test methodology and results to verify that the number of plugged EDG HX tubes was bounded by assumptions in the engineering analyses. The inspectors reviewed the design fouling factor assumptions for the EDG HXs and the engineering analyses of minimum calculated SACS flowrate to the EDG HXs. This review was performed to verify that the minimum calculated SACS flowrate, in conjunction with the heat transfer capability of the EDG HXs, supported the minimum heat transfer rates assumed during accident and transient conditions. The inspectors reviewed EDG HX modeling analyses against the HX specification sheets to ensure the analysis was valid. This included calculations related to minimum allowable SACS flowrate to the HXs. The inspectors also reviewed SW silt survey results and engineering's associated trending data and action plans.

The inspectors compared surveillance test and inspection data to the established acceptance criteria to verify that the results were acceptable and that operation was consistent with design. The inspectors walked down the EDG HXs, control room instrumentation panels, SACS HXs, the chlorination system, and the SW intake to assess the material condition and configuration control of these structures, systems and components (SSCs).

The inspectors also reviewed a sample of corrective action notifications related to the selected HXs, SACS, and the SW system to ensure that PSEG appropriately identified, characterized, and corrected problems related to these essential systems and components. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11Q - 1 sample)

.1 Requalification Activities Review by Resident Staff

a. Inspection Scope

The inspectors completed one requalification activities review inspection sample. The inspectors observed a licensed operator annual requalification simulator scenario on August 12, 2008, to assess operator performance and training effectiveness. The scenario involved a reactor recirculation pump trip, reactor water cleanup system leak, loss of main condenser vacuum, an anticipated transient without scram, and event classification. The inspectors verified that control room staff correctly identified and

declared emergency action levels in a timely manner. The inspectors assessed simulator fidelity and observed the simulator instructor's critique of operator performance. The inspectors also observed control room activities with emphasis on simulator identified areas for improvement. Finally, the inspectors reviewed applicable documents associated with licensed operator requalification as listed in the Attachment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q - 2 samples)

a. Inspection Scope

The inspectors completed two maintenance effectiveness inspection samples. The inspectors evaluated items such as: appropriate work practices; identifying and addressing common cause failures; scoping in accordance with 10 CFR 50.65(b) of the maintenance rule (MR); characterizing reliability issues for performance; trending key parameters for condition monitoring; charging unavailability for performance; classification and reclassification in accordance with 10 CFR 50.65(a)(1) or (a)(2); and appropriateness of performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified as (a)(1). Documents reviewed are listed in the Attachment.

- A control room chilled water pump trips
- CD 482 inverter failures

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 5 samples)

a. Inspection Scope

The inspectors completed five maintenance risk assessment and emergent work control inspection samples. The inspectors reviewed on-line risk management evaluations through direct observation and document reviews for the following five configurations:

- L safety relief valve (SRV) acoustic monitor failure and B SW pump out of service on July 17, 2008;
- HPCI jockey pump and L SRV acoustic monitor out of service during adverse weather on August 10, 2008;
- B control room ventilation train and CD 481 inverter out of service during CD 481 inverter fan replacement on August 21, 2008;
- L SRV acoustic monitor and C reactor building ventilation supply out of service during power ascension August 22, 2008; and

- D EDG supply fan and L SRV acoustic monitor out of service during an unusual event declaration due to B and D SW bay internal flooding on August 28, 2008.

The inspectors reviewed the applicable risk evaluations, work schedules and control room logs for these configurations to verify that concurrent planned and emergent maintenance and test activities did not adversely affect the plant risk already incurred with these configurations. PSEG's risk management actions were reviewed during shift turnover meetings, control room tours, and plant walkdowns. The inspectors also used PSEG's on-line risk monitor (Equipment Out-Of-Service workstation) to gain insights into the risk associated with these plant configurations. Finally, the inspectors reviewed notifications documenting problems associated with risk assessments and emergent work evaluations to verify that problems in this area were identified and corrected. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 6 samples)

a. Inspection Scope

The inspectors completed six operability evaluation inspection samples. The inspectors reviewed the operability determinations for degraded or non-conforming conditions associated with:

- CD482 inverter failure on on July 6, 2008;
- Gas intrusion that affected the A control room chilled water pump on July 9, 2008;
- SW bay high silt levels on August 22, 2008;
- D EDG SACS outlet cooling water valve failure on August 22, 2008;
- HPCI/RCIC room temperatures above the temperature assumed in station blackout (SBO) calculation on September 9, 2008; and
- D SRV tailpipe temperature fluctuations on September 13, 2008.

The inspectors reviewed the technical adequacy of the operability determinations to ensure the conclusions were justified. The inspectors walked down accessible equipment to corroborate the adequacy of PSEG's operability determinations. Additionally, the inspectors reviewed other PSEG identified safety-related equipment deficiencies during this report period and assessed the adequacy of their operability screenings. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R18 Permanent Plant Modifications (71111.18 - 1 sample)a. Inspection Scope

The inspectors completed a review of one permanent plant modification design change package for service water strainer differential pressure indication. This modification was installed to allow monitoring of strainer differential pressure over a wider range, where the existing transmitter may have gone offscale during high grassing events. The inspectors verified that the design bases, licensing bases, and performance capability of the SW system was not degraded by the modification. The inspectors also verified that the new configuration was accurately reflected in the design documentation, and that post-modification testing was adequate to ensure that the affected structures, systems, and components would function properly after modification installation. The inspectors interviewed plant staff, and reviewed issues entered into the corrective action program to verify that PSEG was effective at identifying and resolving problems associated with plant modifications. The 10 CFR 50.59 evaluation associated with the SW differential pressure modification was also reviewed. Other documents reviewed for this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - 6 samples)a. Inspection Scope

The inspectors completed six post-maintenance testing inspection samples. The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed test procedures to verify that the procedure adequately tested safety functions that may have been affected by the maintenance activity and that the acceptance criteria in the procedure were consistent with the UFSAR and other design documentation. The inspectors witnessed the test or reviewed the test data to verify that test results adequately demonstrated restoration of the affected safety functions. Documents reviewed are listed in the Attachment.

- D RHR pump planned maintenance on July 23, 2008
- HPCI feedwater injection valve post-modification testing on June 24, 2008
- HPCI isolation relay replacement after failed high area room temperature channel calibration on August 1, 2008
- SW strainer differential pressure planned maintenance on August 13, 2008
- Remote shutdown panel instrumentation planned maintenance on August 14, 2008
- SW sump pump planned maintenance on September 9, 2008

b. Findings

Introduction: A Green self-revealing, non-cited violation of Technical Specification 6.8.1, "Procedures and Programs," was identified because, during performance of post-modification testing for the HPCI feedwater injection valve, PSEG inadvertently injected feedwater into the reactor vessel through the HPCI and core spray systems. Specifically, PSEG did not ensure that the post-modification test procedure established a system configuration appropriate for the plant's operating condition. This resulted in an unanticipated reactor pressure and power transient.

Description: At HCGS, the HPCI system was designed to respond to a small or large break loss of coolant accident by injecting water into the reactor core using two flow paths: a feedwater injection line and a core spray injection line. On June 24, 2008, while performing a post modification test on the HPCI feedwater injection line isolation valve, BJ-HV-8278, operators inadvertently injected feedwater into the reactor vessel through the HPCI core spray injection line isolation valve, BJ-HV-F006. The procedure used to complete the post modification test directed operators to open both the core spray and feedwater HPCI system injection valves. Due to the plant operating condition on June 24, when both injection valves were opened feedwater flow was diverted from the feedwater injection line through the HPCI core spray injection line into the reactor vessel. This resulted in an unanticipated reactor pressure and power transient.

PSEG performed a root cause evaluation of the event and determined that the root cause of the inadvertent feedwater injection was an inadequate procedure, HC.OP-ST.BJ-0003, "HPCI System Valve Actuation Functional Test." This procedure was written on June 20, 2008, to revise the test methodology for HPCI system valves. PSEG's procedure, AD-AA-101, "Processing of Procedures and T&RM's," established guidance for writing and revising procedures. PSEG stated in its root cause that the test procedure was not reviewed using the guidance in AD-AA-102-1001, "Station Qualified Reviewer's Guide," as directed by AD-AA-101. For example, the procedure stated that when reviewing the evolution for the potential adverse impact on plant operation, reviewers should consider the sequence of valve operations to verify that it did not result in cross-connecting with undesired systems or portions of systems. However, the configuration was not fully reviewed using this guidance; therefore, PSEG did not identify the unintended consequence of the procedure steps that directed both the HPCI feedwater injection valve and the HPCI core spray injection valve to be opened at the same time. PSEG's corrective actions for the event included revising the procedure and re-performing the test. Additionally, PSEG initiated actions to improve the procedure technical review process.

The inspectors reviewed the event and PSEG's cause analysis and determined that PSEG did not maintain an adequate procedure for performing post-modification testing for the HPCI feedwater injection valve. Specifically, PSEG created procedure HC.OP-ST.BJ-0003, "HPCI System Valve Actuation Functional Test," but did not identify the unintended injection path established by the procedure. As a result, implementation of the procedure caused an inadvertent injection of feedwater through the HPCI core spray injection valve that caused an inadvertent reactor power and pressure transient. The inspectors determined that this was a performance deficiency because the procedure change process defined by procedure AD-AA-1001, "Processing of Procedures and

T&RM's," directed that the procedure be reviewed to identify undesired system interactions.

Analysis: The finding is more than minor because it is associated with the procedure quality attribute of the Initiating Events cornerstone, and it affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the inadequate procedure resulted in feedwater injection through the HPCI core spray injection valve, which caused a pressure and power transient. The inspectors performed a Phase I screening of the finding in accordance with Inspection Manual Chapter 0609.04, "Phase I - Initial Screening and Characterizing of Findings." The finding screened as Green (very low safety significance) because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available.

The finding had a cross-cutting aspect in the area of human performance because PSEG did not define and effectively communicate expectations regarding procedural compliance, and PSEG personnel did not follow procedures. Specifically, PSEG did not adequately implement the procedure review process defined by PSEG procedure AD-AA-102-1001, "Station Qualified Reviewer's Guide," and, as a result, did not identify the adverse impact of the sequence of valve operations specified by the test procedure. (H.4(b))

Enforcement: Hope Creek Technical Specification 6.8.1, "Procedures and Programs," requires, in part, that written procedures shall be established, implemented, and maintained covering test activities for safety-related equipment. Contrary to the above, on June 20, 2008, PSEG did not adequately maintain written procedures covering test activities associated with the HPCI feedwater injection valve. Specifically, on June 20, 2008, PSEG created procedure HC.OP-ST.BJ-0003, "HPCI System Valve Actuation Functional Test," but did not identify that the procedure directed both the HPCI feedwater injection valve and the HPCI core spray injection valve to be opened at the same time. On June 24, 2008, implementation of the procedure caused an inadvertent injection of feedwater through the HPCI core spray injection valve that caused an inadvertent power and pressure transient. Because this finding was of very low safety significance and was entered into the corrective action program in notification 20374972, this violation is being treated as an NCV, consistent with section VI.A.1 of the NRC Enforcement Policy. **(NCV 05000354/2008004-01, Inadvertent Feedwater Injection Through the High Pressure Coolant Injection System Due to an Inadequate Test Procedure)**

1R22 Surveillance Testing (71111.22 - 6 samples)

a. Inspection Scope

The inspectors completed six surveillance testing (ST) inspection samples. The inspectors witnessed performance of and/or reviewed test data for the risk-significant STs to assess whether the SSCs tested satisfied TS, UFSAR, and procedure requirements. The inspectors verified that test acceptance criteria were clear, demonstrated operational readiness and were consistent with design documentation; that test instrumentation had current calibrations and the range and accuracy for the

application; and that tests were performed, as written, with applicable prerequisites satisfied. Upon ST completion, the inspectors verified that the equipment was returned to the status that was required for the system to perform its safety function. Documents reviewed for the inspection are listed in the Attachment.

- A residual heat removal pump 2-year comprehensive test on July 1, 2008
- Standby liquid control system sodium pentaborate analysis on July 17, 2008
- D EDG monthly test on July 21, 2008
- Reactor building to torus vacuum breaker test on July 23, 2008
- Drywell sump leak detection on July 22, 2008
- HPCI in-service test on September 5, 2008

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 - 1 sample)

a. Inspection Scope

The inspectors completed one drill evaluation inspection sample. The inspectors observed control room operator emergency plan response actions during an evaluated licensed operator requalification scenario on August 12, 2008. The inspectors verified that emergency classification declarations and notifications were completed in accordance with 10 CFR 50.72, 10 CFR 50, Appendix E, and the Hope Creek emergency plan implementing procedures. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1EP7 Emergency Preparedness Component of the Force-On-Force (FOF) Exercise Evaluation (71114.07 - 1 sample)

a. Inspection Scope

The inspectors observed PSEG's performance during the site emergency preparedness component of the FOF exercise. The inspectors observed communications, event classification, and event notification activities by the simulated shift manager. The inspectors also observed portions of the post-exercise critique to determine whether their observations were also identified by PSEG's evaluators. The inspectors verified that minor issues identified during this inspection were entered into PSEG's corrective action program. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

2. **RADIATION SAFETY**

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01 - 11 samples)

a. Inspection Scope

The inspectors identified exposure-significant work areas within radiation areas, high radiation areas (<1 R/hr), or airborne radioactivity areas in the plant and reviewed associated PSEG controls and surveys of these areas to verify that controls were acceptable.

Using a survey instrument, the inspectors walked down these areas or their perimeters to verify: that prescribed radiation work permits, procedure, and engineering controls were in place; that PSEG surveys and postings were complete and accurate; and that air samplers were properly located.

The inspectors reviewed radiation work permits used to access these and other high radiation areas to identify the specified work control instructions or control barriers. The inspectors compared the specified barriers to the plant-specific technical specification high radiation area barrier requirements. The inspectors reviewed electronic personal dosimeter alarm set points to verify conformity with survey indications and plant policy and interviewed workers to verify their knowledge regarding actions required for electronic personal dosimeter malfunctions and alarms.

The inspectors reviewed radiation work permits for airborne radioactivity areas with the potential to cause individual worker internal exposures of more than 50 mrem committed effective dose equivalent. For these selected airborne radioactive material areas, the inspectors assessed barrier integrity and engineering controls performance.

The inspectors selected two to three scheduled jobs that were performed in radiation areas, airborne radioactivity areas, or high radiation areas. The inspectors then observed work that was: estimated to result in the highest collective doses; involved diving activities in or around spent fuel or highly activated material; or that involved potentially deteriorating radiological conditions. For the selected jobs, the inspectors reviewed all radiological job requirements and assessed job performance with respect to these requirements including whether radiological conditions at the job site were adequately communicated to workers through briefings and postings.

During job performance observations the inspectors assessed the adequacy of radiological controls, including surveys, radiation protection technician job coverage, and contamination controls.

For high radiation work areas with significant dose rate gradients, the inspectors assessed the adequacy of the dosimetry used to monitor personnel exposure.

During job performance observations, the inspectors observed radiation worker performance to verify adherence to radiation protection work requirements and that job performance took into consideration the level of radiological hazards present at the job site. The inspectors interviewed workers to verify that they were aware of significant radiological conditions at the job site and the radiation work permit controls and limits that were in place.

During job performance observations, the inspectors also observed radiation protection technician performance to verify adherence to radiation protection work requirements and that technician performance was consistent with their training and qualifications. The inspectors also interviewed the technicians to verify that they were aware of significant radiological conditions at the job site and the radiation work permit controls and limits that were in place.

The inspectors discussed, with the radiation protection manager, procedure changes completed since the last inspection that affected high dose rate high radiation area and very high radiation area controls to verify that the changes did not negatively impact the effectiveness and level of worker radiation protection at HCGS.

The inspectors discussed, with health physics supervisors, the controls in place for plant areas that had the potential to become very high radiation areas during certain plant conditions to verify that communication with the health physics group was required prior to entering those plant conditions to allow proper posting and control of the radiation hazards.

The inspectors evaluated PSEG performance in the above areas against the requirements contained in 10 CFR 20.1601, TS 6.12, "High Radiation Area," and UFSAR Section 12, "Radiation Protection."

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02 - 2 samples)

a. Inspection Scope

The inspectors assessed radiation worker and radiation protection technician performance by observing work activities performed in radiation areas, airborne radioactivity areas, or high radiation areas that presented the greatest radiological risk to the workers and technicians involved. The inspectors assessed worker and technician performance with respect to the ALARA principles and compliance with procedure requirements. The inspectors also assessed the effectiveness of training related to the radiological hazards present and the work involved based on worker performance.

The inspectors determined that there were four declared pregnant workers during the assessment period. The inspectors reviewed the exposure results and monitoring

controls employed by the licensee for these workers to verify compliance with the requirements of 10 CFR 20.

The inspectors evaluated PSEG performance in these areas against the requirements contained in 10 CFR 20.1101 and UFSAR Section 12.1.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03 - 1 sample)

a. Inspection Scope

The inspectors identified the types of portable radiation detection instrumentation used for job coverage of high radiation area work, temporary area radiation monitors currently used in the plant, and continuous air monitors associated with jobs with the potential for workers to receive 50 mrem committed effective dose equivalent.

The inspectors evaluated PSEG performance in this area against the requirements contained in 10 CFR 20.1501, 10 CFR 20.1703 and 10 CFR 20.1704.

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151 - 1 sample)

a. Inspection Scope

Cornerstone: Mitigating Systems

The inspectors reviewed PSEG's submittal for the safety system functional failure (SSFF) performance indicator. The inspectors verified the accuracy and completeness of reported SSFFs during the period of July 1, 2007, through June 30, 2008, using guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 5. The inspectors reviewed all PSEG licensee event reports issued during the referenced time frame to independently verify that SSFFs were correctly reflected in the performance indicator data.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152 - 2 samples)

.1 Review of Items Entered into the Corrective Action Program:

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of all items entered into PSEG's corrective action program. This was accomplished by reviewing the description of each new notification and attending daily management review committee meetings.

.2 Annual Sample: Containment Vacuum Breaker Issues

a. Inspection Scope

The inspectors reviewed PSEG's actions to address multiple reactor building/torus and torus/drywell vacuum breaker testing issues over the past few years. PSEG had observed instances in which a vacuum breaker would not open as expected during surveillance testing. More recently, issues were identified during surveillance testing where the limit switch would not change state when opening or closing a vacuum breaker. The issues were selected for review based on their repetitive nature and potential risk significance. The inspectors reviewed notifications, orders, procedures, and corrective actions associated with the vacuum breaker issues. Additionally, the inspectors interviewed the system engineer and control room operators to gain additional insights on the issues.

b. Findings and Observations

No findings of significance were identified.

The inspectors determined that PSEG appropriately identified the issues and entered them into the corrective action program. The inspectors noted two separate repeating issues, one in 2005 and 2006 and the other in 2006 and 2007.

In 2005 and 2006, PSEG had difficulties with the vacuum breakers failing to open during surveillance testing. Corrective actions included a change to the test procedure to relieve pressure in the line prior to testing so the test actuator could open. The inspectors concluded that the corrective actions were appropriate and effective.

In 2006 and 2007, there were repeat issues with vacuum breaker limit switches failing. These limit switches were used during surveillance testing to ensure the vacuum breakers were fully closed. The inspectors concluded that PSEG took appropriate corrective actions to replace vacuum breaker limit switches and used, as needed, an alternative method to verify that the vacuum breakers were closed.

.3 Annual Sample: Operator Workarounds

a. Inspection Scope

The inspectors performed a cumulative review of PSEG's identified operator workaround conditions. The inspectors reviewed PSEG's list of operator burdens and concerns, temporary modifications, and operability determinations to assess the potential for these issues to impact the operators' ability to properly respond to plant transients or postulated accident conditions. In addition, the inspectors reviewed PSEG's list of deficient control room computer points and locked-in overhead annunciators to determine whether operators could adequately identify degraded plant equipment. The inspectors also reviewed operator logs and control room instrument panels to evaluate potential impacts on operator ability to implement abnormal and emergency operating procedures. Finally, the inspectors toured the plant and control room to identify potential workaround conditions not previously identified by PSEG. Documents reviewed for this inspection activity are listed in the Attachment.

b. Findings and Observations

No findings of significance were identified.

The inspectors determined that PSEG appropriately identified the issues and entered them into the corrective action program. Operations personnel reviewed the impact of operator burdens, concerns, and workarounds on a periodic basis.

4OA3 Event Followup (71153 - 1 sample)

.1 Service Water Intake Structure Flooding Unusual Event

a. Inspection Scope

On August 28, 2008, at 4:47 am, PSEG declared an unusual event for flooding in the service water intake structure, based upon receipt of the B and D service water intake structure flooded alarm and visual verification of water on the room floor. PSEG exited the unusual event at 7:36 am on August 28, 2008, pumped out the water using a portable sump pump, and repaired the switches. The inspectors responded to the service water intake structure to assess plant conditions and to observe operator performance during the event.

b. Findings

PSEG determined that the service water intake structure flooded because of a degraded sump float switch and a failed sump alarm switch, combined with increased packing leakage on the D service water pump. PSEG initiated three causal evaluations to determine the apparent causes of various conditions related to this Unusual Event. The inspectors will review these causal evaluations upon completion. The inspectors consider this issue unresolved pending PSEG's completion of the causal evaluations and review by the inspectors. **(URI 05000354/2008004-02, Service Water Intake Structure Flooding Unusual Event)**

4OA5 Other Activities

.1 Operation of an Independent Spent Fuel Storage Installation at Operating Plants (60855.1 - 1 sample)

a. Inspection Scope

The inspectors observed selected activities associated with the loading of a dry cask fuel storage canister to ensure that TS were met, equipment operated properly, and personnel were properly trained. The inspectors reviewed radiological surveys of the cask work area with the lead radiation protection technician. The inspectors interviewed a training coordinator regarding the crew training and qualifications, and examined the personnel qualification logs. The inspectors interviewed an engineer with the ALARA group and reviewed the target and actual cumulative doses for the first three casks of the current campaign. The inspectors discussed the procedural, personnel, and equipment changes with the dry cask manager and reviewed the readiness review document that was created prior to the start of the second loading campaign. The inspectors observed equipment improvements made to the blow down, vacuum drying, and helium back filling processes.

b. Findings

No findings of significance were identified.

.2 Power Uprate (71004 - 2 samples)

a. Inspection Scope

Power Ascension Activities

During the period August 22 through 26, 2008, PSEG conducted power ascension activities in accordance with an extended power uprate (EPU) test plan. The inspectors performed portions of NRC procedure 71004, "Power Uprate," during this period to verify that equipment performance, procedures, and processes were adequate to support operations at the increased power level. On August 26, the station reached 100% of the new maximum power level (3840 megawatts thermal).

Actions for New or More Likely Initiating Events

The inspectors reviewed PSEG's safety evaluation report regarding the potential for new or more likely initiating events. The inspectors also interviewed operations and training department staff, and performed simulator reviews to determine PSEG's actions for addressing new or likely initiating events for the EPU. Emergency operating procedures and computer alarm setpoint changes were reviewed. Additionally, the inspectors reviewed risk assessments for power ascension and the potential for new or more likely initiating events.

b. Findings

No findings of significance were identified.

.3 Quarterly Resident Inspector Observations of Security Personnel and Activitiesa. Inspection Scope

During the inspection period the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours. These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

The resident inspectors presented the inspection results to Mr. George Barnes and other members of PSEG staff on October 15, 2008. PSEG stated that none of the material reviewed by the inspectors during this period was proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

G. Barnes, Site Vice President
B. Booth, Operations Director
R. Canziani, Maintenance Director
E. Casulli, Shift Operations Superintendent
K. Chambliss, Assistant Plant Manager
K. Knaide, Engineering Director
M. Gaffney, Regulatory Assurance Manager
J. Perry, Plant Manager
H. Trimble, Radiation Protection Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened/Closed

05000354/2008004-01	NCV	Inadvertent Feedwater Injection Through the High Pressure Coolant Injection System Due to an Inadequate Test Procedure (Section 1R19)
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Opened

05000354/2008004-02	URI	Service Water Intake Structure Flooding Unusual Event (Section 4OA3)
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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 Narrative Logs
HCGS Plant Status Reports
Weekly Reactor Engineering Guidance to Hope Creek Operations
Hope Creek Operations Night Orders and Temporary Standing Orders

Section 1R01: Adverse Weather Protection

Procedures

HC.OP-AB.BOP-0004(Q), Grid Disturbances, Revision 16
OP-SH-108-107-1001, Electric System Emergency Operations and Electrical Systems Operator Interface, Revision 0
OP-SH-108-111-1001, Severe Weather and Natural Disaster Guidelines, Revision 0
OP-AA-108-111-1001, Severe Weather and Natural Disaster Guidelines, Revision 2
HC.OP-AB.MISC-0001(Q), Acts of Nature, Revision 12
OP-AA-101-112-1002, On-Line Risk Assessment, Revision 2
WC-AA-101, On-Line Work Management Process, Revision 16

Notifications

20379951

Section 1R04: Equipment Alignment

Procedures

HC.OP-AB.RPV-0004, Reactor Level Control, Revision 5
HC.OP-SO.BJ-0001, HPCI System Operation, Revision 35
HC.OP-SO.BD-0001, RCIC System Operation, Revision 34
HC.OP-SO.EA-0001, Service Water System, Revision 34
HC.OP-SO.BH-0001, Standby Liquid Control System Operation, Revision 10

Drawings

93F09435-CD-0001, Panel Display Wiring and Fieldbus Cabling Diagram CP3001, Revision 2
93F09435-CD-0001, Panel Display Wiring and Fieldbus Cabling Diagram CP3002, Revision 2

Notifications

20374015

Orders

60077493

Other Documents

H08-14, Adverse Condition Monitoring and Contingency Plan for Intermittent Loss of Digital Feedwater PDS Indications, 7/16/2008

Section 1R05: Fire Protection

Procedures

NC.FP-AP.ZZ-0005, Fire Protection Surveillance and Periodic Test Program, Revision 14
NC.FP-AP.ZZ-0025, Operational Fire Protection Program, Revision 7
OP-AA-201-009, Control of Transient Combustible Material, Revision 1
HC.FP-SV.ZZ-0026(F), Flood and Fire Barrier Penetration Seal Inspection, Revision 4

Other Documents

Hope Creek Generating Station Pre Fire plan, M10-FRH-II-552, Control Room & Electrical Access Area
Hope Creek Generating Station Pre Fire plan, M10-FRH-II-412, RCIC Pump & Turbine Room, RHR Pump and Heat Exchanger Rooms & Electrical Equipment Room

Hope Creek Generating Station Pre Fire plan, M10-FRH-II-351, Service & Radwaste Area
Hope Creek Generating Station Pre Fire plan, M10-FRH-II-413, HPCI Pump & Turbine Room,
RHR Pump & Heat Exchanger Room
Hope Creek Generating Station Pre Fire plan, M10-FRH-III-151, Turbine Building

Section 1R06: Flood Protection Measures

Procedures

HC.OP-AB.COOL-0002, Safety/Turbine Auxiliary Cooling System, Revision 3
HC.OP-AB.COOL-0003, Reactor Auxiliary Cooling, Revision 3
HC.OP-AB.CONT-0003, Reactor Building, Revision 4
HC.OP-AR.ZZ-0001, Window A1-B5, SACS Pump Room Flooded, Revision 18

Calculations

SC-LF-0501, Loop Tolerance Calculations for Switch O-LF-LSHH 4855 A, C, E & G, Revision 2

Notifications

20383249	20382009	20381936	20381960	20381778	20337309
20379575	20381482				

Other Documents

Hope Creek Generating Station Individual Plant Examination
Prompt Investigation of B/D SSW Pump Bay Uncontrolled Flooding UE, 8/28/08
Hope Creek Event Classification Guide, 9.0, Hazards – Internal/External, Flooding, Revision 1
Hope Creek EAL/RAL Technical Basis, Hope Creek Generating Station Emergency Action
Level/Reporting Action Level Technical Basis Document, Revision 8

Section 1R07: Heat Sink Performance

Audits and Self-Assessments

FASA AT#: 80088801, Salem & Hope Creek Generic Letter 89-13 Program Focused Area Self-
Assessment Report, dated 8/28/06

Calculations

EG-0020, STACS - Required Flows and Heat Loads - EPU, Revision 10
EG-0047, HCGS Ultimate Heat Sink Temperature Limits - EPU, Revision 5

Completed Surveillances

HC.OP-IS.EA-0001, A Service Water Pump-AP502 - Inservice Test, dated 7/3/08
HC.OP-IS.EA-0002, B Service Water Pump-BP502 - Inservice Test, dated 7/17/08
HC.OP-IS.EA-0003, C Service Water Pump-CP502 - Inservice Test, dated 6/3/08
HC.OP-IS.EA-0004, D Service Water Pump-DP502 - Inservice Test, dated 2/22/08
HC.OP-IS.EA-0101, Service Water Subsystem A Valves - Inservice Test, dated 4/5/08
HC.OP-IS.EA-0102, Service Water Subsystem B Valves - Inservice Test, dated 6/16/08
HC.OP-IS.EG-0001, A SACS Pump-AP210 - Inservice Test, dated 7/4/08
HC.OP-IS.EG-0002, B SACS Pump-BP210 - Inservice Test, dated 9/11/08
HC.OP-IS.EG-0003, C SACS Pump-CP210 - Inservice Test, dated 8/8/08
HC.OP-IS.EG-0004, D SACS Pump-DP210 - Inservice Test, dated 8/22/08
HC.OP-IS.EG-0101, Safety Auxiliaries Cooling System - Subsystem A Valves - Inservice Test,
dated 7/11/08

HC.OP-IS.EG-0102, Safety Auxiliaries Cooling System - Subsystem B Valves - Inservice Test, dated 8/22/08
 HC.OP-IS.EP-0001, A Spray Water Pump-AP507 - Inservice Test, dated 7/4/08
 HC.OP-IS.EP-0002, B Spray Water Pump-BP507 - Inservice Test, dated 7/17/08
 HC.OP-IS.EP-0003, C Spray Water Pump-CP507 - Inservice Test, dated 6/5/08
 HC.OP-IS.EP-0004, D Spray Water Pump-DP507 - Inservice Test, dated 5/31/08
 HC.OP-IS.EP-0101, Service Water Screen Wash Subsystem A Valves - Inservice Test, dated 4/16/08
 HC.OP-IS.EP-0102, Service Water Screen Wash Subsystem B Valves - Inservice Test, dated 9/16/08
 HC.OP-ST.KJ-0001, Emergency Diesel Generator 1AG400 Operability Test - Monthly, dated 8/25/08, 7/28/08, 6/30/08, and 5/30/08
 HC.OP-ST.KJ-0002, Emergency Diesel Generator 1BG400 Operability Test - Monthly, dated 9/8/08
 HC.OP-ST.KJ-0003, Emergency Diesel Generator 1CG400 Operability Test - Monthly, dated 9/1/08
 HC.OP-ST.KJ-0004, Emergency Diesel Generator 1DG400 Operability Test - Monthly, dated 9/15/08
 HC.OP-ST.KJ-0005, Integrated Emergency Diesel Generator 1AG400 Test – 18 Months, dated 10/15/07
 HC.OP-ST.KJ-0014, EDG 1AG400 - 24 Hour Operability Run and Hot Restart Test, dated 6/27/07 and 4/5/07
 HC.OP-ST.KJ-0015, EDG 1BG400 - 24 Hour Operability Run and Hot Restart Test, dated 4/22/07
 HC.OP-ST.KJ-0016, EDG 1CG400 - 24 Hour Operability Run and Hot Restart Test, dated 4/14/07
 HC.OP-ST.KJ-0017, EDG 1DG400 - 24 Hour Operability Run and Hot Restart Test, dated 9/19/07
 HC.OP-ST.EA-0001, Service Water Flow Path Verification - Monthly, dated 9/6/08
 HC.OP-ST.EG-0001, SACS Flow Path Verification - Monthly, dated 8/24/08

Corrective Action Notifications

20043781	20096957	20209700	20278937	20280736	20282753
20284092	20286564	20288360	20291679	20291750	20292430
20292644	20292798	20293502	20293503	20293551	20295206
20295858	20295875	20296422	20297941	20298753	20299698
20302579	20302956	20308811	20309083	20311028	20312304
20313296	20313419	20313537	20313590	20314672	20315267
20313750	20315995	20320071	20323208	20323211	20324839
20326106	20328770	20330966	20331725	20334061	20334107
20340704	20346444	20352358	20361703	20367553	20370390
20354588	20361592	20370540	20370591	20370684	20371153
20373840	20375546	20375607	20376888	20378146	20379431
20380714	20381778	20383778*	20383779*	20383780*	20383837*
20383649	20383761*	20383773*	20383912*	20383915*	20383916*
20383940	20384024*	20384025*	20384026*	20384086*	20384087*
20384090*	20384121*				

*NRC Identified During Inspection

Design Basis Documents

10855-D3.10, Design, Installation and Test Specification for Safety and Turbine Auxiliaries Cooling System for the Hope Creek Generating Station, Revision 8
DE-CB.EA-0052 \ DE-CB.EP-0052 \, DE-CB.EQ-0052, Configuration Baseline Documentation for Service Water, Traveling Screens / Screen Wash and Service Water Hypochlorination Systems, Revision 1
DE-CB.EG-0054, Configuration Baseline Documentation for Safety and Turbine Auxiliaries Cooling System, Revision 2
DE-CB.KJ-0083 \ DE-CB.PE-0083, Configuration Baseline Documentation for Emergency Diesel Generator System, Revision 1

Drawings

11909605, Jacket Water Heat Exchanger ASME Sect III, Revision 5
11909606, Lube Oil Heat Exchanger ASME Sect III, Revision 4
M-11-1 Sh. 1, Safety Auxiliaries Cooling Reactor Building, Revision 29
M-12-1 Sh. 1, Safety Auxiliaries Cooling Auxiliary Building, Revision 31

Evaluations

70070362, Technical Evaluation of Another Leak on SSW Lube Water Tank 10-T-544, dated 7/12/07
70077169, Service Water Screen and Backwash (a)(1) Action Plan, dated 3/13/08
E-95-9045, ASCO Model NP8316B74V Solenoid Valve Equivalency Evaluation, Revision 0
Engineering Evaluation Orders: 70024303, 70042336, 70056200, 70060054, 70060428, 70060054, 70060079, 70061053, 70061350, 70061365, 70063823, 70066741, 70071847, 70072079, 70075133, 70076242, 70085628, 70088599, 80018496, 80066471, 80073474, 80089957
H-1-EG-MEE-1301, 100°F SACS Design Temperature Limit Evaluation, Revision 2
H-1-EG-MEE-1555, Maximum Plugged Tubes for EDG Coolers, Revision 0

Miscellaneous

CD-276Y, FSAR Commitment, dated 12/19/84
Diesel Generator Jacket Water HX (H1KJ-1B-E-405) Eddy Current Inspections Results, dated 10/30/07
Diesel Generator Jacket Water HX (H1KJ-1C-E-405) Eddy Current Inspections Results, dated 8/25/04
Diesel Generator Lube Oil HX (H1KJ-1D-E-404) Eddy Current Inspections Results, dated 4/23/08
HCGS Risk Assessment Results for WWK# 838 (9/14 - 20/08), Revision 0
HC.OP-GP.EA-0001, Service Water Emergency Makeup Deadleg Flushing, dated 10/23/07
HC.OP-SO.EA-0001 Attachment 1, Independent Verification Service Water System Operation, dated 9/16/08
Heat Exchanger Performance Monitoring Guidelines, EPRI NP-7552M Project 3052-1 Final Report, December 1991
Hope Creek Event Classification Guide, Revision 78
O-P-EA-013, A SW Loop Inspection PM 36/MO (Video), dated 10/18/07
Operator Challenges Report, dated 9/18/08
Risk-Informed Inspection Notebook for Hope Creek Generating Station, Revision 2.1a
SACS Intersystem Leakage Investigation, dated 6/29/08
Standing Order Master Log, dated 9/18/08
Work Clearance Documents 4220691, 4227772, 4228556, 4228834, and 4229652

Operating Experience

Generic Service Water System Risk-Based Inspection Guide, NUREG/CR-5865 EGG-2674
 NRC 10CFR 50 Part 21 Notification 9505 Regarding Automatic Switch Company (ASCO) Pilot
 Solenoid Valve Model # NP8323A20V, Revision 0
 NRC Information Notice 85-17 Supplement 1: Possible Sticking of ASCO Solenoid Valves,
 dated 10/1/85
 NRC Information Notice 91-46: Degradation of Emergency Diesel Generator Fuel Oil Delivery
 Systems, dated 7/18/91
 NRC Information Notice 93-76: Inadequate Control of Paint and Cleaners for Safety-Related
 Equipment, dated 9/21/93
 NRC Information Notice 98-25: Loss of Inventory from Safety-Related, Closed-Loop Cooling
 Water Systems, dated 7/8/98
 NRC Information Notice 2006-17: Recent Operating Experience of Service Water Systems Due
 to External Conditions, dated 7/31/06
 NRC Information Notice 2007-06: Potential Common Cause Vulnerabilities in Essential Service
 Water Systems, dated 2/9/07
 Operating Experience Feedback Report - Service Water System Failures and Degradations,
 NUREG-1275 Vol. 3

Procedures

CY-AA-120-400, Closed Cooling Water Chemistry, Revision 11
 ER-AA-340-1002, Service Water Heat Exchanger and Component Inspection Guide, Revision 3
 HC.CH-SO.EQ-0001, Service Water Chlorination System Operation, Revision 21
 HC.CH-TI.ZZ-0012, Chemistry Sampling Frequencies, Specifications, and Surveillances,
 Revision 54
 HC.MD-PM.EA-0002, Service Water Intake Silt Survey and Silt Removal, Revision 17
 HC.OP-AB.COOL-0001, Station Service Water, Revision 15
 HC.OP-AB.COOL-0002, Safety/Turbine Auxiliaries Cooling System, Revision 3
 HC.OP-AB.COOL-0005, Total Loss of Station Service Water, Revision 2
 HC.OP-AB.MISC-0001, Acts of Nature, Revision 12
 HC.OP-AR.KJ-0001, Diesel Generator Remote Engine Control Panel 1AC423, Revision 19
 HC.OP-AR.ZZ-0001, Overhead Annunciator Window Box A1, Revision 18
 HC.OP-AR.ZZ-0002, Overhead Annunciator Window Box A2, Revision 12
 HC.OP-DL.ZZ-0026, Surveillance Log, Revision 113
 HC.OP-SO.EA-0001, Service Water System Operation, Revision 34
 HC.OP-SO.EG-0001, Safety and Turbine Auxiliaries Cooling Water System Operation,
 Revision 39
 HC.OP-SO.EP-0001, Service Water Traveling Screens System Operation, Revision 15
 HC.OP-SO.GQ-0001, Service Water Intake Structure Ventilation System Operation, Revision 7
 HC.OP-SO.KJ-0001, Emergency Diesel Generators Operation, Revision 45
 OP-AA-102-103, Operator Work-Around Program, Revision 1
 OP-SH-108-111-1001, Severe Weather and Natural Disaster Guidelines, Revision 0
 SH.MD-SP.ZZ-0001, Cosmetic Painting, Revision 1

System Health Reports and Trending Data

Generic Letter 89-13 Program Health Report, 2nd Qtr 2008
 H1EA - Service Water Quarterly Ship System Report, 2nd Qtr 2008
 H1EG - SACS/TACS Quarterly Ship System Report, 2nd Qtr 2008
 H1EP - Service Water Quarterly Ship System Report, 2nd Qtr 2008
 H1KJ - Diesel Generators Quarterly Ship System Report, 2nd Qtr 2008

A EDG Jacket Water and Lube Oil Heat Exchangers Temperature Trending, dated 1/2/02 - 7/2/08

River Level and Temperature Trend, dated 9/3/08 – 9/5/08

SW Bay Silt Survey Trend Data, dated 10/4/99 – 8/18/08

Vendor Manuals and Specification Sheets

10855-M-018 SH. C-6, Jacket Water Cooling Heat Exchanger Data Sheet, Revision 1

10855-M-018 SH. C-8, Lube Oil Cooling Heat Exchanger Data Sheet, Revision 1

PM018Q-0499, Operation and Maintenance Manual for Emergency Diesel Generator

Work Orders

30015433	30040552	30040553	30040556	30040560	30115737
30115988	30116517	30119379	30123025	30128867	30158842
30163419	30164471	30164855	30166837	60014491	60019726
60040539	60040953	60064111	60065433	60067529	60067529
60068130	60068314	60070505	60071076	60071492	60075749
60076588	60076708	60077963			

Section 1R11: Licensed Operator Requalification Program

Procedures

HC.OP-EO.ZZ-0101A, ATWS – RPV Control, Revision 3

HC.OP-EO.ZZ-0101, Reactor Pressure Vessel Control, Revision 11

HC.OP-AB.RPV-0001, Reactor Power, Revision 10

HC.OP-AB.CONT-0004, Radioactive Gas Release, Revision 3

HC.OP-AB.CONT-0002, Primary Containment, Revision 6

HC.OP-EO.ZZ-0320, Defeating ARI and RPS Interlocks, Revision 3

Other Documents

Hope Creek Generating Station Emergency Classification Guide

Simulator Scenario Guide SG-644, Reactor Recirc Pump Trip / RWCU Leak / Loss of Main Condenser Vacuum / ATWS

Section 1R12: Maintenance Effectiveness

Procedures

OP-HC-108-115-1001, T/S Implementation Allowable Outage Times (LAOTs), Revision 2

HC.OP-AB.ZZ-0136, Loss of 120 VAC Inverter, Revision 11

HC.OP-ST.ZZ-0001, Power Distribution Lineup – Weekly, Revision 29

HC.OP-SO.GK-0001, Control Area Ventilation System Operation, Revision 13

Notifications

20379705	20379183	20378078	20376488	20371315	20376171
20376444	20376522	20222457	20225777	20355427	20376886

Orders

30167461	70087284
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Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

HC.OP-AB.BOP-0004(Q), Grid Disturbances, Revision 16
OP-SH-108-107-1001, Electric System Emergency Operations and Electrical Systems Operator Interface, Revision 0
OP-SH-108-111-1001, Severe Weather and Natural Disaster Guidelines, Revision 0
OP-AA-108-111-1001, Severe Weather and Natural Disaster Guidelines, Revision 2
HC.OP-AB.MISC-0001(Q), Acts of Nature, Revision 12
OP-AA-101-112-1002, On-Line Risk Assessment, Revision 2
WC-AA-101, On-Line Work Management Process, Revision 16
HC.OP-FT.ZZ-0004, Extended Power Uprate Power Ascension Testing, Revision 5

Notifications

20377150 20377515

Section 1R15: Operability Evaluations

Procedures

HC.MD-PM.EA-0002, Service Water Intake Bay Silt Survey and Silt Removal, Rev. 16
OP-AA-101-112-1002, On-Line Risk Assessment, Revision 2
HC.OP-SO.GK-0001, Control Area Ventilation System Operation, Revision 13
HC.OP-AB.RPV-0006, Safety/Relief Valve, Revision 2
HC.OP-SO.SN-0001, Nuclear Pressure Relief and Automatic Depressurization System Operation, Revision 7
HC.OP-DL.ZZ-0003, Log 3 Control Console Log Condition 1, 2, and 3, Revision 66
OP-AA-108-115, Operability Determinations, Revision 1

Drawings

M-90-1, Auxiliary Building Control Area Chilled Water System - Control Area Chillers, Revision 16
M-55-1, High Pressure Coolant Injection, Revision 39
M-49-1, Reactor Core Isolation Cooling, Revision 29
M-10-1, Service Water System, Revision 39
1-P-BC-04, System Isometric\Reactor Building RHR Suction Pumps A, B, C & D, Revision 16

Calculations

GR-0022, Loss of Ventilation during Station Blackout (SBO), Revision 3
EA-0003, Service Water System Hydraulic Analysis, Revision 10

Notifications

20376888 20379184 20381129 20355427 20376444 20383432

Orders

70087369 70087284 70088599 70088565 70089240

Other Documents

H-1-GK-MDC-0734, Loss of Ventilation during Station Blackout, Revision 2
Plant Issue Resolution Documentation HC-2008-0012, D safety relief valve tailpipe temperature

Section 1R18: Permanent Plant Modifications

Procedures

LS-AA-104, Exelon 50.59 Review Process, Revision 5
LS-AA-104-1001, 50.59 Review Coversheet Form, Revision 2

Drawings

M-10-1, Service Water, Revision 39

Orders

80095444

Other Documents

80095444, Increase Calibrated Range for 1EAPDT-2194A-D, Revision 0

Section 1R19: Post-Maintenance Testing

Procedures

MA-AA-716-004, Conduct of Troubleshooting, Revision 7
MA-AA-716-012, Post Maintenance Testing, Revision 11
HC.OP-AB.COOL-0001, Station Service Water, Revision 14
HC.IC-DC.ZZ-0088, Rosemount Differential Pressure Transmitter Models 1151, 1152, and
1153, Revision 11
HC.OP-ST.SV-0001, Remote Shutdown Monitoring Instrumentation Channel Check, Revision
22
HC.OP-ST.BJ-0003, HPCI System Valve Actuation Functional Test, Revision 0
HC.OP-IS.BJ-0101, HPCI System Valves – In-service Test, Revision 54

Drawings

M-55-1, HPCI P&ID Mech/Cont, Revision 39

Notifications

20374972 20374973

Orders

30098685 50102625 60076329 60076007 60075922 50115672
70086869

Other Documents

80095554, Removal of Auto-Close Function for HPCI to FW Discharge Valve HV-8278,
Revision 0

Section 1R22: Surveillance Testing

Completed Surveillances

HC.IC-FT.SK-0016, Radiation Monitoring – Channel D, Monitor H1SK LY-4930, Drywell Leak
Detection Sump Monitoring System (DLD-SMS), 7/22/2008
HC.OP-ST.GS-0003, Reactor Building/Suppression Chamber Vacuum Breaker Operability Test
Monthly, 7/23/2008
HC.OP-ST.GS-0004, Suppression Chamber/Drywell Vacuum Breaker Operability Test Monthly,
7/23/2008

HC.CH-CA.ZZ-0026, Boron by Mannitol Titration, 7/17/2008
HC.CH-SA.BH-0001, Sampling the Standby Liquid Control System, 7/17/2008
HC.OP-IS.BC-0001, AP202 A Residual Heat Removal Pump In-Service Test, 7/1/2008
HC.OP-ST.KJ-0004, Emergency Diesel Generator 1DG400 Operability Test, 7/21/2008
HC.OP-IS.BJ-0001, HPCI Main and Booster Pump Set In-Service Test, 9/5/2008

Notifications

20383071 20383163

Orders

50115244 50114898 30162806

Section 1EP6: Drill Evaluation

See Section 1R11

Section 1EP7: Emergency Preparedness Component of the Force-on-Force (FOF) Exercise Evaluation

Procedures

ECG ATT 2, Alert at Hope Creek, Revision 6
ECG ATT 3, Site Area Emergency at Hope Creek, Revision 7

Other Documents

Hope Creek Event Classification Guide, 9.1, Hazards – Internal/External, Security Threats, Revision 8
Hope Creek EAL/RAL Technical Basis, Hope Creek Generating Station Emergency Action Level/Reporting Action Level Technical Basis Document, Revision 8

Sections 2OS1: Access Control to Radiologically Significant Areas; 2OS2: ALARA Planning and Controls; 2OS3: Radiation Monitoring Instrumentation

Other Documents

ALARA Plan 2008-88, Dry Cask Storage Cask #7
Instrument Calibration Records: E-520 (SN 3918; 4194); Teletector (SN 1753)
Monthly ISFSI surveys (May 2007 – July 2008)
Quarterly Hi-Storm surveys (July 2007-July 2008)

Section 4OA2: Identification and Resolution of Problems

Procedures

HC.OP-ST.GS-0003(Q), Rev 6, Reactor Building/Suppression Chamber Vacuum Breaker Operability Test – Monthly
HC.OP-ST.GS-0004(Q), Rev 13, Suppression Chamber/Drywell Vacuum Breaker Operability Test – Monthly
MD-PM.GS-002(Q), Rev 1, Drywell to Torus Vacuum Relief Valve P.M.
HC.OP-ST.ZZ-0006(Q), Rev 14, Drywell to Suppression Chamber Leak Rate Test – 18 Months
HC.MD-CM.GS-0002(Q), Rev 13, Drywell to Torus and Torus to Reactor Building Vacuum Relief Valve Overhaul
HC.OP-ST.ZZ-0007(Q), Rev 2, Suppression Chamber – Drywell Vacuum Breaker Position Verification

OP-AA-102-103, Operator Workaround Program, Revision 1

Miscellaneous

LER 354/05-008-00, Technical Specification Shutdown Due to 'B' Torus to Drywell Vacuum Breaker Not Closed, October 27, 2005

IN 86-16, Failures to Identify Containment Leakage Due to Inadequate Local Testing of BWR Vacuum Relief System Valves, March 11, 1986

Drawings

M-57-1, Rev 25, Containment Atmosphere Control

Notifications

20308741	20308540	20262063	20267024	20266590	20246345
20239521	20263191	20290609	20288391	20266590	20267024
20343433	20357321	20342385	20339953	20336824	20321740
20314962	20293320				

Orders

70064948	60066859	80086890	70052848	70049308	70048021
70052075	70061599	70056604	70058861	70052848	70076380
60074731	70075066	50095658	30150941	80090905	

Section 4OA3: Event Followup

Calculation

SC-LF-0501, Loop Tolerance Calculations for Switch O-LF-LSHH 4855 A, C, E & G, Revision 2

Notifications

20383249	20382009	20381936	20381960	20381778	20337309
20379575	20381482				

Other Documents

Prompt Investigation of B/D SSW Pump Bay Uncontrolled Flooding UE, 8/28/08

Hope Creek Event Classification Guide, 9.0, Hazards – Internal/External, Flooding, Revision 1

Hope Creek EAL/RAL Technical Basis, Hope Creek Generating Station Emergency Action Level/Reporting Action Level Technical Basis Document, Revision 8

Section 4OA5: Other Activities

Procedures

HC.OP-FT.ZZ-0004, Extended Power Uprate Power Ascension Testing, Revision 5

HC.MD-FR.DCS-005(Q), Handling and Loading MPC, Revision 0

HC.MD-FR.DCS-006(Q), Sealing, Drying, and Backfilling of a Loaded MPC, Revision 1

HC.MD-FR.DCS-007(Q), Stack-Up and Transfer of Loaded MPC, Revision 0

Notification

20378465

Other Documents

Hope Creek Dry cask Storage Training Matrix – 2008 Campaign

Hope Creek NOS Assessment reports on Qualification of Dry Cask Storage Personnel, dated

07/01/2008

PCI Procedures and NDE Personnel Certifications & Qualifications, dated 07/01/2008
 Material Certifications and M&TE, dated 07/07/08
 Dry Cask Storage ALARA Performance, as of 07/30/08

LIST OF ACRONYMS

ALARA	As Low As Reasonably Achievable
DCP	Design Change Package
DP	Differential Pressure
EDG	Emergency Diesel Generator
EPU	Extended Power Uprate
FOF	Force-On-Force
HCGS	Hope Creek Generating Station
HEPA	High Efficiency Particulate Air
HPCI	High Pressure Coolant Injection
HX	Heat Exchanger
ISFSI	Independent Spent Fuel Storage Installation
MG	Motor Generator
MR	Maintenance Rule
NCV	Non-cited Violation
NRC	Nuclear Regulatory Commission
PMT	Post-maintenance Testing
PSEG	Public Service Enterprise Group Nuclear LLC
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
SACS	Safety Auxiliaries Cooling System
SBO	Station Blackout
SDP	Significance Determination Process
SER	Safety Evaluation Report
SLC	Standby Liquid Control
SRV	Safety Relief Valve
SSCs	Structures, Systems, and Components
SSFF	Safety System Functional Failure
ST	Surveillance Testing
STACS	Safety and Turbine Auxiliaries Cooling System
SW	Service Water
UFSAR	Updated Final Safety Analysis Report
UHS	Ultimate Heat Sink