UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

April 21, 2015

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

SUBJECT: HOPE CREEK GENERATING STATION UNIT 1 – NRC INTEGRATED INSPECTION REPORT 05000354/2015001

Dear Mr. Braun:

On March 31, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Hope Creek Generating Station (HCGS). The enclosed inspection report documents the inspection results, which were discussed on April 7, 2015, with Mr. P. Davison, Site Vice President of Hope Creek, 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.

This report documents two self-revealing findings of very low safety significance (Green). The findings were determined to involve violations of NRC requirements. However, because of the very low safety significance, and because they are entered into your corrective action program (CAP), the NRC is treating the finding as a non-cited violation (NCV) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any NCVs 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 HCGS. In addition, if you disagree with the cross-cutting aspects assigned to the findings, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at HCGS.

In accordance with Title 10 of the *Code of Federal Regulations* (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's Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Glenn T. Dentel, Chief
Reactor Projects Branch 3
Division of Reactor Projects

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

Enclosure: Inspection Report 05000354/2015001
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.	50-354
License No.	NPF-57
Report No.	05000354/2015001
Licensee:	Public Service Enterprise Group (PSEG) Nuclear LLC
Facility:	Hope Creek Generating Station (HCGS)
Location:	P.O. Box 236 Hancocks Bridge, NJ 08038
Dates:	January 1, 2015, through March 31, 2015
Inspectors:	J. Hawkins, Senior Resident Inspector S. Haney, Resident Inspector E. Burket, Emergency Preparedness Inspector R. Nimitz, Senior Health Physicist
Approved By:	Glenn T. Dentel, Chief Reactor Projects Branch 3 Division of Reactor Projects

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SUMMARY

IR 05000354/2015001; 01/01/2015 – 03/31/2015; Hope Creek Generating Station; Operability Determinations and Functionality Assessments and Post-Maintenance Testing.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Two findings of very low safety significance (Green) were identified. The findings were determined to be violations of NRC requirements. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP), dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Mitigating Systems

- Green. A self-revealing finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified because PSEG did not promptly identify and correct a condition adverse to quality (CAQ). Specifically, PSEG failed to identify a deficiency with the reactor core isolation cooling (RCIC) turbine thermal insulation on July 28, August 19, and November 18, 2014; and failed to initiate a notification (NOTF) identifying an adverse trend in RCIC oil moisture content and level on November 18, 2014 and in January 2015. The failure to identify and correct a CAQ resulted in high moisture content in the RCIC oil. PSEG's corrective actions included replacing the RCIC system oil on February 19, 2015 and repairing the non-conforming turbine insulation on February 25, 2015.

  The performance deficiency (PD) was determined to be more than minor because it affected the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). This PD was also similar to examples 3.j and 3.k of NRC IMC 0612, Appendix E, in that the increased moisture content in the RCIC oil created a reasonable doubt of operability of the RCIC system. The inspectors determined the finding to be of very low safety significance (Green) in accordance with Exhibit 2 of IMC 0609, Appendix A, The Significance Determination Process for Findings At-Power, dated June 19, 2012, because: it was not a deficiency affecting the design or qualification of the mitigating system; it did not represent a loss of system function; it did not represent the loss of function for any TS system, train, or component beyond the allowed TS outage time; and it did not represent an actual loss of function of any non TS trains of equipment designated as high safety significance in accordance with PSEG's maintenance rule program. The inspectors determined the finding had a cross-cutting aspect in the area of Problem Identification and Resolution (PI&R), Trending, because PSEG did not periodically analyze information from the corrective action program and other assessments in the aggregate to identify

programmatic and other common cause issues. Specifically, PSEG did not analyze multiple RCIC system oil sample results or RCIC system NOTFs in the aggregate to identify a CAQ. [P.4] (Section 1R15)

Cornerstone: Barrier Integrity

- Green. A self-revealing finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified for PSEG's failure to take timely corrective action to correct a CAQ. Specifically, PSEG failed to take timely corrective actions to replace a performer plug installed in the 'C' filtration recirculation and ventilation system (FRVS) recirculation fan motor breaker that was known to potentially cause inadvertent advanced protection breaker trips when closing motor starter breakers. PSEG's corrective actions include replacing the performer and sensor plugs and micrologic trip unit and changing the Masterpact breaker maintenance procedure to prevent the installation of breakers with the old performer plugs.

  The performance deficiency (PD) was determined to be more than minor because it was associated with the Structure, System or Component (SSC) and Barrier Performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to replace the 'C' FRVS recirculation fan motor breaker performer plug resulted in an inadvertent advanced protection breaker trip and emergent inoperability of the 'C' FRVS recirculation fan. The finding is of very low safety significance (Green) per IMC 0609, Appendix A, "Exhibit 3 – Barrier Integrity Screening Questions," because the finding only represented a degradation of the radiological barrier function provided for the reactor building by the FRVS system. The inspectors determined the finding had a cross-cutting aspect in the area of Human Performance, Resources, because PSEG did not ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety. Specifically, because of the deferral of the preventive maintenance (PM) work order (WO) with a corrective maintenance assignment, PSEG did not replace the 'C' FRVS recirculation fan breaker performer and sensor plugs during a 'C' FRVS work window in April 2014. [H.1]. (Section 1R19)

REPORT DETAILS

Summary of Plant Status

The Hope Creek Generating Station began the inspection period at full rated thermal power (RTP). On January 10, 2015, operators reduced power to 80 percent to perform a condenser manway leak repair. Following the repair, operators returned the unit to 100 percent the same day. On February 14, 2015, operators reduced power to 80 percent to perform a control rod pattern adjustment and control rod friction testing. Operators returned the unit to 100 percent the same day. On March 1, 2015, operators reduced power to 84 percent to perform a control rod pattern adjustment. Operators returned the unit to 100 percent the same day. On March 15, 2015, operators reduced power to 83 percent power to perform a control rod pattern adjustment. Operators returned the unit to 100 percent the same day. On March 22, 2015, operators reduced power to 83 percent power to perform a control rod pattern adjustment. Operators returned the unit to 100 percent the same day. The unit remained at or near full RTP for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 2 samples)

Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

The inspectors reviewed PSEG's preparations for the onset of extremely low outside temperatures experienced the week of January 5, 2015. The inspectors also reviewed PSEG's preparations for the onset of impending adverse weather conditions, including heavy snow and high winds and a winter storm warning for Salem County, New Jersey on January 26, 2015. The inspectors reviewed the abnormal operating procedure, HC.OP-AB.MISC-0001, "Acts of Nature," for responding to adverse weather conditions. The inspectors walked down the emergency diesel generators (EDGs) and the switchyard to ensure compliance with PSEG's cold weather procedures. The inspectors also verified that operator actions defined in PSEG's adverse weather procedure maintained the readiness of essential systems. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial System Walkdowns (71111.04 – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- 'A' condenser waterbox leak during the week of January 5, 2015
- Seismic monitoring system during the week of January 12, 2015
- 'B' EDG during 'A' EDG planned maintenance on January 29, 2015
- 'A' safety auxiliaries cooling system (SACS) loop with the 'B' SACS pump out of service for planned maintenance on March 10, 2015

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the Updated Final Safety Analysis Report (UFSAR), technical specifications (TS), WOs, notifications, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether PSEG staff had properly identified equipment issues and entered them into the corrective action program (CAP) for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

1R05 Fire Protection

Resident Inspector Quarterly Walkdowns (71111.05Q - 6 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that PSEG controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in the area pre-fire plan (PFP), and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- FRH-III-134, condenser bay rooms during the week of January 5, 2015
- FRH-II-412, RCIC pump and turbine room during the week of February 9, 2015
- Review of compensatory measure firewatch for service water intake structure incipient fire detection system failure on February 12, 2015
- FRH-II-552, rod block monitor equipment room the during the week of March 9, 2015
- FRH-II-471, refueling floor during the week of March 16, 2015
- FRH-II-563, control area heating, ventilation, and air conditioning (HVAC) equipment rooms during the week of March 23, 2015

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the UFSAR, the site flooding analysis, and plant procedures to assess susceptibilities involving internal flooding. The inspectors also reviewed the corrective action program to determine if PSEG identified and corrected flooding problems and whether operator actions for coping with flooding were adequate. The inspectors also focused on the torus room (4102) to verify the adequacy of penetration seals located below the flood line, watertight door seals, common drain lines and sumps, and room level alarms.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

.1 Quarterly Review of Licensed Operator Requalification Testing and Training (71111.11Q – 1 sample)

a. Inspection Scope

The inspectors observed licensed operator simulator training on March 3, 2015, that included an 'A' reactor recirculation pump (RRP) seal failure, power oscillations, loss of coolant accident (LOCA), and downcomer failure. The inspectors evaluated operator performance during the simulated event and verified completion of critical tasks, risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager. Additionally, the inspectors assessed the ability of the training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room (71111.11Q – 1 sample)

a. Inspection Scope

The inspectors observed performance of the 'D' residual heat removal (RHR) pump in-service test and time response surveillance test on March 19, 2015. The inspectors observed the pre-job briefing to verify that the briefing met the criteria specified in HU-AA-1211, "Pre-Job Briefings," Revision 12. Additionally, the inspectors observed test performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12 – 3 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on SSC performance and reliability. The inspectors reviewed CAP documents (notifications), maintenance WOs, and maintenance rule basis documents to ensure that PSEG was identifying and properly evaluating performance problems within the scope of the maintenance rule. As applicable, the inspectors verified that the SSC was properly scoped into the maintenance rule in accordance with 10 CFR 50.65 and verified that the (a)(2) performance criteria established by PSEG staff was reasonable; for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2); and, the inspectors independently verified that appropriate work practices were followed for the SSCs reviewed. Additionally, the inspectors ensured that PSEG staff was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

- 'A' standby liquid control system and redundant reactivity control system excessive alternating current (AC) load driver noise troubleshooting on March 16, 2015
- Potter Brumfield relay replacement on March 23, 2015
- Reactor manual control system transformer failure functional failure reviews on March 29, 2015

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that PSEG performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that PSEG personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the

assessments were accurate and complete. When PSEG performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- 'A' core spray loop, 00K107 service air compressor and 'C' SACS pump planned maintenance on January 6, 2015
- Unplanned high risk 'D' channel analog logic cabinet +24V power supply replacement on January 23, 2015
- Troubleshooting of main steam tunnel elevated room temperatures on March 18, 2015
- Planned redundant reactivity control system surveillance testing and reactor water cleanup isolator card replacement on March 19, 2015
- Planned new fuel receipt and movement on March 20, 2015

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 6 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions:

- Control rod 26-15 elevated friction levels identified during performance of channel distortion testing on September 9, 2014 (Order 70172377)
- H1BC -1BCPSV-4431A Failed As-found Leak Test & Lift Setpoint not established during P141HC Online Testing on September 9, 2014 (Order 70169180)
- Increasing drywell floor drain leakage (Unidentified) on December 17, 2014
- Water intrusion into RCIC Bearing Housing and Lubrication System on February 14, 2015 (Order 70173676)
- 'C' EDG slow start during its maintenance run on March 4, 2015 (Order 80113940)
- Station service water valve failure to stroke fully closed on March 10, 2015 (Order 70165163)

The inspectors selected these issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the operability determinations to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to PSEG's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by PSEG. The inspectors determined, where appropriate, compliance with assumptions in the evaluations.

b. Findings

Introduction. A self-revealing Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified because PSEG did not promptly identify and correct a CAQ. Specifically, PSEG 1) failed to identify a deficiency with the RCIC turbine thermal insulation on July 28, August 19, and November 18, 2014; and, 2) failed to initiate a NOTF identifying an adverse trend in RCIC oil moisture content and level on November 18, 2014, and in January 2015. The failure to identify and correct a CAQ resulted in high moisture content in the RCIC oil and a reasonable doubt of RCIC system operability on February 14, 2015.

Description. RCIC is a safety-related system consisting of a steam turbine (a GS-2 frame style Terry Turbine) driven-pump designed to ensure sufficient reactor water inventory is maintained in the reactor vessel to allow for adequate core cooling when the vessel is isolated and/or after a loss of feed water, prior to reactor depressurization. The operability of the system is confirmed through a quarterly IST that monitors system flow and pressure requirements. As part of the quarterly IST, an oil sample is taken after each run while the system is warm and adequately mixed. The RCIC turbine shaft is supported by two sleeve bearings and a double ball thrust bearing, which along with the turbine governor, are all lubricated by Mobil DTE 732 oil. The bearings are located in two separate oil reservoirs which are connected by a piping system that includes a cooler, a filter, an attached turbine shaft driven oil pump, and a branch line that feeds oil to the governor and remote servo.

On July 28, 2014, NOTF 20657925 documented an active steam leak past the steam supply admission valve (F045) during a system walk down. The steam was identified to be coming out of the RCIC pump-side turbine gland seal casing and a small steam plume (4") coming out of the insulation opening. This NOTF discussed the potential impact of steam leakage past the F045 condensing in the turbine's insulation blanket and then migrating past the gland seal casing rings, through the gland case and into the turbine bearing housing accumulating water into the oil system. The NOTF also stated that "excessive thermal insulation in this area [around the gland seal] can compound the problem [water accumulation in the oil system]," and recommended trending the water content in the oil sampling to ensure potential moisture intrusion did not lead to binding of the governor.

PSEG oil quality guidelines for the RCIC oil samples are provided in MA-AA-716-230-1001, Oil Analysis Interpretation Guideline. Specifically for moisture content in the oil, the guideline specifies an alert limit of 1000 parts per million (PPM) and a fault limit of 2000 PPM, with instructions to inspect and flush the governor if moisture content exceeds the fault limit.

On August 19, 2014, the post RCIC IST oil sample revealed 226 PPM, approximately 3 times the normal amount of 81 PPM, but below the alert and fault levels in PSEG's oil quality guideline and the reliability limit of 5000 PPM prescribed in the Electric Power Research Institute (EPRI) Terry Turbine Maintenance Guide for RCIC Application (The generic levels for water in oil are 200-1000 PPM for alert, and greater than 1000 PPM for fault). The EPRI reliability limit of less than 5000 PPM water ensures that the residual water in the governor does not corrode the internal components. The vendor used by PSEG to analyze the oil samples rated this oil sample as 'marginal.' Another NOTF

(20659703) was written documenting the steam leak from the governor side turbine gland seal casing, recommended the replacement of the gland seal casing rings, and discussed the potential for water to enter the RCIC oil system. PSEG screened this NOTF to be worked in the next refueling outage.

On November 18, 2014, the post RCIC IST oil sample revealed another increase in the RCIC oil moisture content. Since the August oil sample, the moisture content again tripled, rising from 226 PPM to 821 PPM. The vendor rated this oil sample as 'critical – attention required.' No NOTF was written by PSEG to document the increasing trend in moisture content contained in the RCIC oil samples.

On February 14, 2015, an equipment operator (EO) identified during normal reactor building logs that the RCIC turbine oil reservoir level was elevated to the maximum limit in the sight-glass. The EO took action to drain approximately 100 ml of oil from the system to restore oil reservoir level and noted a visible layer of water in the removed oil. NOTF 20678608 was written documenting the high oil level condition and the visible water in the drained oil. The operability screening used the potential available margin to the 5000 PPM limit to determine the operable but degraded status of the RCIC system. It also stated that the Shift Manager noted evidence of moisture, water droplets, rust stains, and crusting in and around the turbine gland seal and bearing housing. A system walk down performed by PSEG found that the insulation on the turbine was not properly secured around the gland seal casings such that steam leakage was condensing in the turbine's insulation blanket and eventually accumulating water in the oil system (NOTF 20679097). Subsequent interviews by PSEG and the inspectors confirmed that an EO had previously drained approximately 100 ml of oil from the RCIC turbine reservoir to maintain level in the sight-glass without documenting the adverse condition and the corrective action in a NOTF in January 2015.

PSEG's oil sample results between February 14, and February 19, indicated that the RCIC oil moisture content reached approximately 18,632 PPM or 1.8 percent water. PSEG's immediate corrective actions included replacing the RCIC system oil on February 19, and repairing the non-conforming turbine insulation on February 25. PSEG's TE 70173676 was completed on March 13, 2015, which determined that the RCIC system was operable and able to perform its designed functions even with the elevated moisture content in the turbine oil. PSEG based RCIC operability on the fact that oil viscosity remained unchanged with 1.8 percent water and a completed RCIC IST on February 20, 2015, which validated the operation of the RCIC electronic governor-remote (EG-R), controller output and turbine speed response. PSEG also compared these results to the February 2014, RCIC IST results and found no discernable differences in the EG-R, controller output and turbine speed response.

The inspectors noted that the F045 valve had been previously scoped into the refueling outage (April 2015) by PSEG, but no inspection or replacement of the thermal insulation had ever been performed or documented in the corrective action program, between July 2014 and February 14, 2015, even though PSEG's NOTFs clearly identified the EPRI guidance concerns with deficiencies in the thermal insulation and steam leakage past the F045 valve resulting in oil moisture intrusion. This represented multiple missed opportunities to identify and correct a CAQ associated with the RCIC system insulation and oil, and a performance deficiency.

Analysis. The inspectors determined that PSEG failed to identify a deficiency with the RCIC turbine thermal insulation on multiple occasions and initiate a NOTF identifying an adverse trend in RCIC oil moisture content and level. This represented a PD that was within PSEG's ability to foresee and correct. The PD was determined to be more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). This PD was also similar to examples 3.j and 3.k of NRC IMC 0612, Appendix E, in that the increased moisture content in the RCIC oil created a reasonable doubt of operability of the RCIC system. The inspectors determined the finding to be of very low safety significance (Green) in accordance with Exhibit 2 of IMC 0609, Appendix A, The Significance Determination Process for Findings At-Power, dated June 19, 2012, because: it was not a deficiency affecting the design or qualification of the mitigating system; it did not represent a loss of system function; it did not represent the loss of function for any TS system, train, or component beyond the allowed TS outage time; and it did not represent an actual loss of function of any non TS trains of equipment designated as high safety significance in accordance with PSEG's maintenance rule program.

The finding has a cross-cutting aspect in the area of PI&R, Trending, because PSEG did not periodically analyze information from the corrective action program and other assessments in the aggregate to identify programmatic and other common cause issues. Specifically, PSEG did not analyze multiple RCIC system oil sample results or RCIC system NOTFs in the aggregate to identify a CAQ. (P.4)

Enforcement. 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, PSEG did not promptly identify and correct a CAQ. Specifically, PSEG failed to identify a deficiency with the RCIC turbine thermal insulation on July 28, August 19, and November 18, 2014; and failed to initiate a NOTF identifying an adverse trend in RCIC oil moisture content on November 18, 2014 and in January 2015. These failures led to a reasonable doubt of RCIC system operability due to high moisture content in the oil on February 14, 2015.

PSEG's immediate corrective actions included replacing the RCIC system oil on February 19, and repairing the deficiency with the turbine insulation on February 25. PSEG also completed the RCIC IST satisfactorily on February 20, 2015, validating operation of the governor, controller output and turbine speed response. PSEG also compared these results to the February 2014, RCIC IST results and found no discernable differences in the governor, controller output and turbine speed response. PSEG performed an extensive TE and an extent of condition review on the high pressure coolant injection system. Because this finding was of very low safety significance and because it was entered into PSEG's CAP as NOTF 20680046, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000354/2015001-01, Failure to Identify and Correct a Condition Adverse to Quality Associated with the Reactor Core Isolation Cooling System Insulation and Oil)**

1R18 Plant Modifications (71111.18 – 2 samples)

.1 Temporary Modifications

a. Inspection Scope

The inspectors reviewed the temporary modifications listed below to determine whether the modifications affected the safety functions of systems that are important to safety. The inspectors reviewed 10 CFR 50.59 documentation and post-modification testing results, and conducted field walkdowns of the modifications to verify that the temporary modifications did not degrade the design bases, licensing bases, and performance capability of the affected systems.

- Temporary Configuration Change Package Number 4HT-15-002, Revision 0 – Jumper B EDG Jacket Water Keepwarm Heater H1KJ-1B-E-407

b. Findings

No findings were identified.

.2 Permanent Modifications

a. Inspection Scope

The inspectors evaluated a modification to the safety relief valve (SRV) system implemented by design change package (DCP) 80107006, “Replacement of the Main Steam Line safety relief valves (SRVs).” The inspectors also reviewed operational and technical decision making (OTDM) document H15-003, Install 1 Target Rock 3-Stage Valve in Refueling Outage (RF19), dated March 16, 2015. The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the upgrade and design change. On March 30, 2015, PSEG decided to not start implementation of this permanent DCP in the refueling outage (April 2015) due to a preliminary Part 21 issued by the SRV vendor (NOTF 20682164).

- Permanent Design Change Package (80107006) and OTDM H15-003, Install 1 Target Rock 3-Stage Valve in Refueling Outage (RF19)

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 6 samples)

a. Inspection Scope

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 the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the

maintenance activity, that the acceptance criteria in the procedure was consistent with the information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data to verify that the test results adequately demonstrated restoration of the affected safety functions.

- 'C' FRVS recirculation fan breaker trip on December 17, 2014 (Order 60121032)
- RCIC pump and turbine lubricating oil replacement on February 19, 2015 (Order 60120557)
- Turbine auxiliaries cooling loop isolation valve failure to stroke open on February 26, 2015 (Order 60122161)
- 'C' EDG planned relay replacement on March 6, 2015 (Orders 60120792 and 60120883)
- 'A' control room ventilation train trip on March 10, 2015 (Order 60122293)
- Periodic cycling of manual 'D' RHR suction valve from the 'B' reactor recirculation loop and 'D' to 'B' RHR cross-tie isolation valves on March 17, 2015 (Order 30262329)

b. Findings

Introduction. A self-revealing Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified for PSEG's failure to take timely corrective action to correct a CAQ. Specifically, PSEG failed to take timely corrective actions to replace a performer plug installed in the 'C' FRVS recirculation fan motor breaker that was known to potentially cause inadvertent advanced protection breaker trips when closing motor starter breakers.

Description. The FRVS recirculation system is an engineered safeguard ventilation system located inside the reactor building. FRVS is designed to provide a barrier against the release of radioactive materials to the environment during accident conditions. The FRVS maintains a slight vacuum in the reactor building while circulating and cleaning-up the atmosphere within the building during abnormal (accident) conditions. This system consists of two full-capacity centrifugal vent fans and six 25 percent capacity recirculation fan and filter trains. The vent unit takes suction from the FRVS recirculation system discharge duct and discharges the air through charcoal and high-efficiency particulate air filters to the atmosphere through a vent at the top of the reactor building.

The Masterpact micrologic trip units provide digital breaker protective trip functions for long time, short time, instantaneous, ground fault overcurrent, and advanced protection. In 2008, the vendor issued Technical Bulletin TB-08-005 due to inadvertent advanced protection breaker trips of Masterpact breakers. The vendor identified that in isolated instances, the Masterpact breakers would experience inadvertent advanced protection breaker trips when being used to start a motor. The cause was determined to be an intermittent electrical connection in the performer plug. The performer plug defines the fault protection for maximum instantaneous fault level and maximum close into fault level. The manufacturing tolerance of the female pin connector on the performer plug causes the problem. The design of the performer plug was modified to eliminate this issue. PSEG performed a technical evaluation to evaluate the issue and decided to

replace the performer plugs on all Masterpact breakers to ensure there were no susceptible breakers installed at Hope Creek. The 'C' FRVS recirculation fan motor breaker performer plug was replaced in October 2009.

On June 27, 2013, the 'C' FRVS recirculation fan failed to start due to binding within the breaker's operating linkage. The breaker was replaced (WO 60111712) with a Masterpact breaker that had a performer plug installed that was known to potentially cause inadvertent advanced protection breaker trips when closing motor starter breakers. Notification 20613693 was written to replace the plugs during the next available maintenance activity. The corrective maintenance for this condition was allocated to the next scheduled breaker PM (WO 30194055). The 'C' FRVS recirculation fan motor breaker replacement on June 27 fulfilled the intent of the scheduled PM, but the WO wasn't closed or rescheduled to be implemented from the work completion date.

The PM remained scheduled for the next 'C' FRVS recirculation fan work window in April 2014. The WO was not planned in time, and the PM WO that included the corrective maintenance to replace the performer and sensor plugs was deferred until October 2015.

The 'C' FRVS recirculation fan motor breaker subsequently failed to close on December 17, 2014, during normally scheduled testing due to an inadvertent advanced protection breaker trip and the fan was declared inoperable (NOTF 20673099). The performer and sensor plugs and micrologic trip unit were replaced, and the fan was retested successfully. PSEG determined that based on available information, the most probable cause of the advanced protection breaker trip was the fact that the breaker contained the incorrect performer and sensor plugs. NOTF 20673118 was written to have the procedure to install the Masterpact breakers changed to prevent the installation of breakers with the old performer plugs. The breaker's inadvertent advanced protection trip on December 17, 2014, could have been prevented had the corrective maintenance to replace the performer and sensor plugs been performed in the April 2014 work window or prior to the replacement breaker's installation in June 2013.

Analysis. The inspectors determined that PSEG's failure to take timely corrective action to correct a condition adverse to quality is a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the SSC and Barrier Performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to replace the 'C' FRVS recirculation fan motor breaker performer plug resulted in an inadvertent advanced protection breaker trip and emergent inoperability of the 'C' FRVS recirculation fan. The finding is of very low safety significance (Green) per IMC 0609, Appendix A, "Exhibit 3 – Barrier Integrity Screening Questions," dated June 19, 2012, because the finding only represented a degradation of the radiological barrier function provided for the reactor building by the FRVS system.

The inspectors determined the finding had a cross-cutting aspect in the area of Human Performance, Resources, because PSEG did not ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety. Specifically, because of the deferral of the PM WO with a corrective maintenance assignment, PSEG did not to replace the 'C' FRVS recirculation fan breaker performer

and sensor plugs during a 'C' FRVS work window in April 2014. PSEG did not adequately consider the potential impact of the deferred maintenance. The breaker subsequently failed due to an inadvertent advanced protection breaker trip and the fan was declared inoperable on December 17, 2014. [H.1].

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as defective material are promptly identified and corrected. Contrary to the above, between June 27, 2013 and December 17, 2014, PSEG failed to take timely corrective actions to correct a CAQ associated with the 'C' FRVS recirculation fan motor breaker performer plug. PSEG's corrective actions included replacing the performer and sensor plugs and micrologic trip unit, and changing the Masterpact breaker maintenance procedure to prevent the installation of breakers with the old performer plugs. Because this finding is of very low safety significance (Green) and has been entered into the CAP as notification 20673099, this violation is being treated as a NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000354/2015001-02, Failure to Take Timely Corrective Actions to Correct a Condition Adverse to Quality Related to a 480 VAC Masterpact Breaker Performer Plug)**

1R22 Surveillance Testing (71111.22 – 6 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs to assess whether test results satisfied (TS), the UFSAR, and PSEG procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

- HC.OP-LR.GS-0201, Containment Isolation Valve (CIV) Type C Leak Rate Test, CIV 1GSHV-4959B (1GSV-040), Penetration J210: 'B' H2/O2 Analyzer Torus Sample on January 13, 2015 (containment isolation valve)
- HC.OP-IS.BC-0003, BP202, 'B RHR Pump In-Service Test on January 15, 2015 (in-service test)
- HC.OP-IS.BD-0001, RCIC Pump – 0P203 – Inservice Test on February 20, 2015 (in-service test)
- HC.OP-ST.KJ-0014, Emergency Diesel Generator 1AG400 – 24 Hour Operability Run and Hot Restart Test on February 23, 2015
- HC.OP-IS.BJ-0001, High Pressure Coolant Injection Pump – Inservice Test on March 6, 2015 (in-service test)
- Increasing reactor coolant system unidentified leakage on March 29, 2015 (reactor coolant system leakage)

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (IP 71114.04 – 1 Sample)

a. Inspection Scope

PSEG implemented various changes to the Hope Creek Emergency Action Levels (EALs), Emergency Plan, and Implementing Procedures. PSEG had determined that, in accordance with 10 CFR 50.54(q)(3), any change made to the EALs, Emergency Plan, and its lower-tier implementing procedures, had not resulted in any reduction in effectiveness of the Plan, and that the revised Plan continued to meet the standards in 50.47(b) and the requirements of 10 CFR 50 Appendix E.

The inspectors performed an in-office review of all EAL and Emergency Plan changes submitted by PSEG as required by 10 CFR 50.54(q)(5), including the changes to lower-tier emergency plan implementing procedures, to evaluate for any potential reductions in effectiveness of the Emergency Plan. This review by the inspectors was not documented in an NRC Safety Evaluation Report and does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety. The requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06 – 1 sample)

Training Observations

Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on March 9, 2015, which required emergency plan implementation by an operations crew. PSEG planned for this evolution to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that PSEG evaluators noted the same issues and entered them into the CAP.

Findings

No findings were identified

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 3 samples)

Unplanned Scrams, Unplanned Power Changes, and Unplanned Scrams with Complications

a. Inspection Scope

The inspectors reviewed PSEG's submittal of the following Hope Creek Initiating Events Cornerstone performance indicators for the period of January 1, 2014 through December 31, 2014:

- Unplanned (automatic and manual) Scrams per 7,000 critical hours
- Unplanned Power Changes per 7,000 critical hours
- Unplanned Scrams with Complications

To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspectors also reviewed Hope Creek's operator narrative logs, notifications, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that PSEG entered issues into the corrective action program at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the corrective action program and periodically attended condition report screening meetings.

b. Findings

No findings were identified.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 1 sample)

Event Follow-Up (EN 50864)

a. Inspection Scope

On March 10 and 30-31, 2015, the inspectors conducted an onsite review of the circumstances and on-going PSEG investigations associated with the March 3, 2015, identification and subsequent reporting of tritium in samples of snow and melted ice near the exterior wall of the northeast corner of the Hope Creek Administration Building. PSEG identified the tritium as a result of a previous on-going investigation into detection of tritium in a shallow onsite ground water well (BY) located at the northeast corner of the Hope Creek Administration Building. The inspectors reviewed this matter with respect to implementation and adequacy of occupational and public radiological controls. Specifically, the review was conducted with respect to: applicable PSEG procedures; site TSs; 10 CFR 20; 10 CFR 50, Appendix I; Hope Creek Offsite Dose Calculation Manual (ODCM); NEI-07-07, "Industry Ground Water Protection Initiative;" NRC Inspection Procedure 71124.06, "Radioactive Gaseous and Liquid Effluent Treatment," and NRC Regulatory Issue Summary (RIS) 2008-003, "Return/Re-use of Previously Discharged Radioactive Effluents." The inspectors reviewed: bounding occupational and public radiation dose assessments associated with the identified tritium; PSEG's on-going evaluation results; and reporting of the issue.

b. Findings and Observations

No findings were identified.

In late 2013, PSEG's groundwater monitoring program identified detectable tritium in a shallow onsite well (BY) near the corner of the Hope Creek Administration Building. The building is within the site restricted area and is not accessible to members of the public. PSEG's evaluation, at that time, concluded that the detectable activity was associated with precipitation recapture of gaseous radioactive effluent releases since: 1) there were no sources of tritium near the area (e.g., pipes, tanks etc.); 2) there was no evidence of any leak or spill; and, 3) the concentrations of well sample results correlated well with gaseous radioactive effluent releases over the same time period. PSEG's reviews did not identify any significant public or occupational doses associated with the issue at that time. PSEG had been evaluating and routinely reporting its gaseous radioactive effluent releases in accordance with the ODCM and determined the dose projections were within the radioactive effluent release limits.

On February 18, 2015, PSEG identified some dripping from an icicle near the north end of the Hope Creek Turbine Building and collected a sample on February 19, 2015, of the dripping water as part of its on-going evaluation to identify the cause of the indication of tritium in ground water monitoring well BY. PSEG analyzed the sample and confirmed on March 3, 2015, that the dripping from the ice exhibited a tritium concentration of about 0.01 uCi/ml. On March 4, 2015, PSEG informed the New Jersey Department of Environmental Protection, Bureau of Nuclear Engineering, in accordance with NEI 07-07, "Industry Ground Water Protection Initiative." As a result of this notification

to another government agency, PSEG subsequently issued Event Report No. 50864 to the NRC in accordance with 10 CFR 50.72. This notification indicated the cause of the tritium was under further evaluation.

PSEG installed catch containments in the affected area to collect residual dripping water and also collected and drummed residual snow and ice. PSEG initiated an investigation to ensure a comprehensive review of this issue. PSEG developed a sampling plan, that supplemented its ongoing sampling of storm drains and outfalls, to characterize the magnitude and extent of the condition. PSEG also controlled personnel access to the areas exhibiting elevated tritium. Samples taken in down gradient onsite ground water monitoring wells (e.g., BM) did not identify any indication of migration of tritium in ground water. PSEG's evaluations of this new information, including bounding dose assessments, did not identify any significant dose impact to onsite employees, members of the public, or visitors to the site.

At the conclusion of this inspection period, PSEG was continuing with its investigation to determine the cause of the elevated activity within the snow and ice samples, and was also conducting additional reviews of any potential impacts of this ice and snow, as well as potential additional pathways to ground water.

4OA5 Other Activities

Institute of Nuclear Power Operations (INPO) Report Review

a. Inspection Scope

The inspectors reviewed the final report for the INPO plant assessment of Hope Creek conducted in May 2014. The inspectors evaluated this report to ensure that NRC perspectives of PSEG performance were consistent with any issues identified during the assessment. The inspectors also reviewed this report to determine whether INPO identified any significant safety issues that required further NRC follow-up.

b. Findings

No findings were identified.

4OA6 Meetings, including Exit

On April 7, 2015, the inspectors presented the inspection results to Mr. P. Davison, Site Vice President of Hope Creek, and other members of the Hope Creek staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

P. Davison, Site Vice President
E. Carr, Plant Manager
C. Banner, Emergency Preparedness Manager
A. Bauer, Staff Engineer Nuclear
C. Buckley, Technical Specialist
R. Cary, Environmental Coordinator
R. Chan, Nuclear Oversight Manager
K. Coslett, Nuclear Maintenance Supervisor
B. Daly, Manager, Sustainability, Environmental Affairs
P. Duca, Senior Compliance Engineer
T. Gingerich, System Engineer
R. Heathwaite, Chemistry Supervisor
W. Hicks, Reactor Operator
J. Hinkle, Cycle Manager
S. Kopsick, Senior Reactor Operator
A. Kraus, Manager, Nuclear Environmental Affairs
S. Kugler, Chemistry Manager
G. Lichty, Technical Specialist
T. MacEwen, Compliance Engineer
T. Morin, Senior Regulatory Assurance Engineer
J. Nere, Reactor Operator
M. Ouellette, Reactor Operator
B. Padworny, Senior Reactor Operator
C. Payne, System Engineer
S. Rawlins, Equipment Operator
S. Simpson, Regulatory Assurance Manager
J. Southerton, Shift Manager
H. Trimble, Radiation Protection Manger
C. Wend, Superintendent, Radiation Protection
J. Witinski, Operations Shift Supervisor

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000354/2015001-01	NCV	Failure to Identify and Correct a Condition Adverse to Quality Associated with the Reactor Core Isolation Cooling System Insulation and Oil (Section 1R15)
05000354/2015001-02	NCV	Failure to Take Timely Corrective Actions to Correct a Condition Adverse to Quality Related to a 480 VAC Masterpact Breaker Performer Plug (Section 1R19)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
ER-AA-1001, Component Classification, Revision 2
HC.OP-AB.MISC-0001, Acts of Nature, Revision 24
HC.OP-FT.RG-0001, Guardhouse Standby Security Diesel Generator 00-G-503 Functional Test, Revision 3
HC.OP-GP.ZZ-0003, Station Preparations for Winter Conditions, Revision 29
OP-AA-108-111-1001, Severe Weather and Natural Disaster Guidelines, Revision 11
SY-AA-101-109-1003, Security During Hazardous Exterior Conditions, Revision 7

Notifications

20655915	20675170	20675170	20675389
20676766	20676779	20676950	

Section 1R04: Equipment Alignment

Procedures
HC.IC-CC.SG-0003, Seismic Instrumentation – VAH-7874 Triaxial Response-Spectrum Recorder System, Revision 14
HC.IC-FT.SG-0003, Functional Test Seismic Instrument – VAH-7874 Triaxial Response-Spectrum Recorder, Revision 5
HC.OP-FT.SG-0001, Seismic Instrument Channel Check – Monthly, Revision 2
HC.OP-SO.KJ-0001, Emergency Diesel Generators Operation, Revision 72
HC.OP-ST.EG-0001, SACS Flow Path Verification - Monthly, Revision 9

Notifications

20529200	20604244	20635972	20644409
20674227	20674227	20675220	20675220
20681053	20681249	20681254	

Orders

30253062	60121167	60121627	70112011

Drawings
M-11-1, Sheet 1, Safety Auxiliaries Cooling Reactor Building, Revision 31
M-11-1, Sheet 2, Safety Auxiliaries Cooling Reactor Building, Revision 42
M-11-1, Sheet 3, Safety Auxiliaries Cooling Reactor Building, Revision 31
M-12-1, Sheet 1, Safety Auxiliaries Cooling Auxiliary Building, Revision 31
M-30-1, Sheet 1, Diesel Engine Auxiliary Systems Fuel Oil, Revision 27
M-30-1, Sheet 2, Diesel Engine Auxiliary Systems Intercooler and Injector Cooling, Jacket Water, Crankcase Vacuum Air Intake, Exhaust, and Vibration Monitoring Systems, Revision 23
M-30-1, Sheet 3, Diesel Engine Auxiliary Systems Starting Air & Lube Oil, Revision 23

Miscellaneous
Adverse Condition Monitoring Plan, HC 14-016, Circ Water Leakage from ‘A’ North Waterbox Manway in Condenser Bay, Revision 2

HC Standing Order, 2015-03, 'A' North Waterbox Leakage Operational Guidance Revised for Increased Leakage
Maintenance Plan HC460216
Maintenance Plan HC460218

Section 1R05: Fire Protection

Procedures
FP-AA-015, Compensatory Measure Firewatch Program, Revision 5
FP-HC-004, Actions for Inoperable Fire Protection – Hope Creek Station, Revision 2
FRH-II-412, Hope Creek Pre-fire Plan – RCIC Pump & Turbine Room, RHR Pump Room, RHR Heat Exchanger Room & Electrical Equipment Room (Rooms 4107-4110), Revision 3
FRH-II-471, Hope Creek Pre-fire Plan – Refuel Floor, Revision 3
FRH-II-552, Hope Creek Pre-fire Plan – Control Room & Electrical Access Area (Rooms 5501-5590), Revision 7
FRH-II-563, Hope Creek Pre-fire Plan – Control Area HVAC Equipment Rooms, Revision 6
FRH-II-713, Hope Creek Pre-Fire Plan, Service Water Intake Structure, Revision 4
FRH-III-134, Hope Creek Pre-fire Plan – Turbine Building (Rooms 1310-1313, 1318, 1319 & 1324), Revision 3
HC.FP-ST.QK-0090, Service Water Intake Structure Incipient Fire Detector System Functional Test, Revision 7
HC.IC-CC.SE-0019, Nuclear Instrumentation System – Non-divisional Channel A Rod Block Monitor, Revision 32
HC.OP-AR.ZZ-0013, Overhead Annunciator Window Box D1, Revision 26
HC.OP-AR.ZZ-0021, CRIDS Computer Points Book 2, D2271 through D2879, Revision 12
HC.OP-GP.ZZ-0011, Placing Selected Instruments in the Tripped Condition, Revision 3
HC.OP-SO.PN-0001, 120 VAC Electrical Distribution, Revision 24

Notifications

20252825	20267648	20639079	20658862	
20673611	20674227	20675108	20675480	
20676586	20676624	20677482	20677553	
20677999	20678049	20678695		

Orders

60118740	60121167	60121893	70096250	70172676

Miscellaneous
Adverse Condition Monitoring Plan, HC 14-016, Circ Water Leakage from 'A' North Waterbox Manway in Condenser Bay, Revision 2
HC Preventative Maintenance Plan, PM030364
HC Standing Order, 2015-03, 'A' North Waterbox Leakage Operational Guidance Revised for Increased Leakage

Section 1R06: Flood Protection Measures

Notifications
20531884

Drawings
A-4641-1, Reactor Building Unit 1 Floor Plan at El. 54'-0", Revision 6
A-4642-1, Reactor Building Unit 1 Floor Plan at El. 77'-0", Revision 5
M-51-1, Sheet 2, Residual Heat Removal, Revision 42

Other Documents
Calculation Number 11-0028, Reactor Building Flood Calculations for Elevation 102', Revision 4
Calculation Number 11-0088, Torus Area Flooding Height, Revision 0
Calculation Number 11-0092, Reactor Building Flooding – Elevation 54' and 77', Revision 5
HC-PRA-012, Internal Flood Evaluation Summary and Notebook, Revision 2
HC-PRA-017, Internal Flood Walkdown Notebook, Revision 0

Section 1R11: Licensed Operator Requalification Program

Procedures
HC.OP-IS.BC-0004, DP202, D Residual Heat Removal Pump In-Service Test, Revision 41
HC.OP-ST.BC-0007, LPCI Subsystem D ECCS Time Response Functional Test – 18 Months, Revision 12
HU-AA-101, Human Performance Tools and Verification Practices, Revision 10
HU-AA-1211, Pre-Job Briefings, Revision 12
OP-AA-101-111-1003, Use of Procedures, Revision 5
OP-AA-103-102, Watchstanding Practices, Revision 11

Notifications (*NRC-identified)
20682011*

Miscellaneous
Scenario Guide (SG)-734, Recirc Pump Seal Failure/Power Oscillations/LOCA/Downcomer Failure, dated March 2, 2015

Section 1R12: Maintenance Effectiveness

Procedures
HC.IC-CC.SB-0007, RPS – Division 3 Channel C71-N005C Turbine Control Valve Fast Closure, Revision 12
HC.IC-FT.BF-0014, CRD Hydraulic – Division 3 Channel C11-N013C Scram Discharge Volume Water Level, Revision 4

Notifications (*NRC-identified)

20682773*	20681679*	20632754	20658033
20658033	20661359	20661530	20673657
20674064	20674064		

Orders

30250327	70172477	80113523

Drawings
PN1-0083, Purchased Part Auxiliary Relay, Revision 1
PN1-C71-1020-0006, Elem. Diagram Reactor Protection System, Revision 19

Miscellaneous
Complex Troubleshooting Support and Refute Matrix for 20658033

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

ER-AA-380, Primary Containment Leakage Testing Program, Revision 9
HC.IC-FT.SK-0005, RWCU – Division 1, NSSSS – Division 1 Steam Leak Detection Temperature Monitor H1SK-1SKXR-11497, Revision 12
HC.IC-FT.SK-0009, Excess Flow Check Valves CH E21-N656 Core Spray Line Break, Revision 3
HC.IC-GP.RL-0006, De-Energizing Bailey Panel Series 655/Bailey Cabinet Power Restoration/Recovery, Revision 3
HC.IC-GP.ZZ-0133, Power Supply Voltage Check, Revision 12
HC.MD-FR.KE-0039, New Channeled Fuel Inspection and Storage, Revision 8
HC.OP-AB.BOP-0005, Main Steam Tunnel Temperature, Revision 1
HC.OP-AB.BOP-0005, Main Steam Tunnel Temperature, Revision 1
HC.OP-AR.ZZ-0013, Overhead Annunciator Window Box D1, Revision 26
HC.OP-AR.ZZ-0021, CRIDS Computer Points Book 2 D2271 Thru D2879, Revision 12
HC.OP-DL.ZZ-0027, Temporary Reading Log, Revision 5
HC.OP-ST.BE-0004, B Core Spray Loop System Piping and Path Verification – Monthly, Revision 4
HC.OP-ST.EG-0001, SACS Flow Path Verification – Monthly, Revision 9
HC.RE-FR.ZZ-0001, Hope Creek Special Nuclear Material and Core Component Movement, Revision 44
MA-AA-716-012, Post Maintenance Testing, Revision 20
OP-AA-101-112-1002, On-Line Risk Assessment, Revision 8
WC-AA-105, Work Activity Risk Management, Revision 2

Notifications

20567779	20629913	20661351	20675345
20676624	20676993	20679628	20681239
20681458	20681458	20681984	20681984
20682135			

Drawings

E-0012-1, Sheet 4, Single Line Meter & Relay Diagrams – 120V AC Instrumentation & Miscellaneous Systems, Revision 8
E-6050-0, Elec. Schematic Dia. SLC Injection Pumps, Revision 6
E-6768-0 sht. 2, MCR Annunciators SLC System, Revision 3
J-108-0, Sheet 9, Logic Diagram, Miscellaneous Alarm Systems, Revision 1
J-48-0 sht. 1, 2, 5, SLC, Revision 13
M-48-1, P&ID SLC, Revision 16
M-52-1, Core Spray, Revision 1
PJ200-1451, Sheet 1, 7000 Power Distribution System D
PJ200Q-0413, SLC Injection, Revision 15
PJ200Q-3051, 862 System SLC Injection Pump, Revision 8
PN1-C41-1040-0041 sht. 1-3, Elem. Dia. SLC System, Revision 21
PP302Q-0335, 3-900 Weld Ends Carbon Steel Flex Wedge Gate Valve, Revision 6

Orders

30072723	30095633	30229077	50159415
50170856	50189822	60113388	60114123
60118785	60120676	60121512	70169082
80077508	80112383		

Miscellaneous
SC-SK-0055, Calculation for Steam Tunnel Area 4316 Ambient Temperature, Revision 5
SC-SK-0071, Set Point Calculation – Steam Tunnel Area 4316 Ambient Temperature, Revision 3
Protected Equipment Log – 'A' Core Spray Loop, dated January 5, 2015
HCGS PRA Risk Evaluation Form for January 4, 2015, through January 10, 2015, Revision 0
Protected Equipment Log – 'C' SACS Pump, dated January 5, 2015
HCGS PRA Risk Evaluation Form for January 25, 2015, through January 31, 2015, Revision 0

Section 1R15: Operability Determinations and Functionality Assessments

Procedures
CC-HC-211-1002, Machinery Inspection Program, Revision 8
ER-HC-1051, Leakage Reduction Program, Revision 2
HC.IC-FT.BC-0009, RHR – Division 1 Channel E11-N653A Pump Discharge Pressure Alarm, Revision 6
HC.OP-AB.CONT-0006, Drywell Leakage, Revision 8
HC.OP-AR.KJ-0005, Att. 12, Lube Oil Keep Warm Temp Low, Revision 22
HC.OP-AR.ZZ-0004, Overhead Annunciator Window Box A6, Revision 18
HC.OP-AR.ZZ-0011, Overhead Annunciator Window Box C6, Revision 60
HC.OP-FT.BC-0001, C ECCS Jockey Pump –CP228- Functional Test, Revision 12
HC.OP-GP.ZZ-0004, Reactor Coolant System Pressure Isolation Valve Leakage Determination, Revision 7
HC.OP-GP.ZZ-0005, Drywell Leakage Source Determination, Revision 9
HC.OP-SO.KJ-0001, Emergency Diesel Generators Operation, Revision 72
HC.OP-ST.BF-0002, Control Rod Drive Accumulator Operability Check – Weekly, Revision 9
HC.OP-ST.KJ-0003, Emergency Diesel Generator 1CG400 Operability Test – Monthly, Revision 76
HC.OP-ST.KJ-0016, EDG 1CG400 – 24 Hour Operability Run and Hot Restart Test, Revision 10
HC.RE-RA.BF-0002, Channel Distortion Testing, Revision 14
HC.RE-RA.BF-0002, Channel Distortion Testing, Revision 14
HC.RE-ST.BF-0001, Control Rod Scram Time Surveillance, Revision 34
HC.RE-ST.BF-0001, Control Rod Scram Time Surveillance, Revision 34
MA-AA-716-230-1001, Oil Analysis Interpretation Guideline, Revision 11
MA-AA-716-230-1004, Lubricant Sampling Guideline, Revision 3
OP-AA-101-111, Roles and Responsibilities of On-shift Personnel, Revision 5
OP-AA-108-115, Operability Determinations & Functionality Assessments, Revision 4
OP-AA-108-115, Operability Determinations & Functionality Assessments, Revision 4
OP-HC-108-115-1001, LCO Entry/Exit & Operability Determination SAP Guidance, Revision 3
OP-HC-108-115-1001, Operability Assessment and Equipment Control Program, Revision 28

Notifications (*NRC-identified)

20682779*	20495191	20537974	20573137
20629240	20641748	20642492	20644501
20657925	20659703	20661350	20661658
20661658	20661700	20673114	20673114
20674118	20675546	20677676	20677792
20678260	20678608	20678608	20678611
20678715	20678792	20679097	20679200

20679385	20680046	20680341	20680378
20680441	20680522	20680743	20680870
20682011	20682270	20684118	

Orders

30250326	30274989	50045222	60115528
60117560	60118264	60120792	60120883
60121931	70120299	70127666	70135925
70163260	70164862	70165163	70169180
70169453	70172377	70172377	70173676
80090905	80105459	80113934	80113940

Drawings

M-51-1, Residual Heat Removal P&ID, Revision 42
PM018Q-0056, Lube Oil System, Revision 25
RHR and Core Spray as Extended Containment Boundary, UFSAR Fig. 6.2, Revision 47

Miscellaneous

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ASTM D445, Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)
ASTM D6304, Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration
Hope Creek Calculation SC-BC-0033, DES Freeze MSI RHR Overpressure Protection Report, Revision 1
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Hope Creek Long Term Trends – 2015 dated 3/31/15
Hope Creek Maintenance Strategy: H1FC-1FCV-021, RCIC Steam Supply Isolation Valve dated 2/27/15
Hope Creek Narrative Logs, 11/5/13-11/10/13
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Hope Creek OPEVAL 14-006, H1BF-10-S-2132615, Revision 0
SC 11-05, GE Safety Communication: Failure to Include Seismic Input in Channel-Control Blade Interference Customer Guidance, Revision 2
SH-PBD-AMP-XI.M39, Lubricating Oil Analysis – Program Basis Document, Revision 3
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Section 1R18: Plant Modifications

Procedures

CC-AA-112, Temporary Configuration Changes, Revision 14
CC-AA-112-1001, Temporary Configuration Change Implementation T&RM, Revision 4
HC.OP-AR.KJ-0003, Diesel Generator Remote Engine Control Panel 1BC423, Revision 24
LS-AA-104, 50.59 Review Process, Revision 6
LS-AA-104-1000, 50.59 Resource Manual, Revision 8
LS-AA-104-1002, 50.59 Applicability Review Form, Revision 3

Notifications
20675952

Orders
30244827 60121413 80104607 80107006 80113622

Miscellaneous
OTDM H15-003, Install 1 Target Rock 3-Stage Valve in RF19, Dated 3/16/15

Section 1R19: Post-Maintenance Testing

Procedures
HC.MD-CM.ZZ-0012, Masterpact Low Voltage Air Circuit Breaker Corrective Maintenance, Revision 1
HC.OP-AB.HVAC-0001, HVAC, Revision 9
HC.OP-AR.ZZ-0019, Overhead Annunciator Window Box E6, Revision 20
HC.OP-IS.EG-0004, D SACS Pump –DP210- Inservice test, Revision 44
HC.OP-PM.BC-0001, Cycling RHR Pumps C and D Suction From Recirc Loop B Manual Isolation Valves and RHR Pumps C to A and D to B Cross-Tie Isolation Valves, Revision 1
HC.OP-SO.EG-0001, Safety and Turbine Auxiliaries Cooling Water System Operation, Revision 54
HC.OP-SO.PG-0001, 480V Electrical Distribution System, Revision 21
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LS-AA-125, Corrective Action Program, Revision 18
MA-AA-716-010-1000, Maintenance Planning, Revision 6
MA-AA-716-012, Post Maintenance Testing, Revision 20
MA-AA-716-210-1005, Predefine Change Processing, Revision 4
MA-AA-716-230-1001, Oil Analysis Interpretation Guideline, Revision 11
PP-AA-3001, Position Paper on Preconditioning, Revision 0
WC-AA-101-1005, On-Line Scheduler Guide, Revision 3
WC-AA-106, Work Screening and Processing, Revision 15
WC-AA-111, Predefine Process, Revision 8

Notifications

20397009	20519328	20613483	20613693
20614115	20651498	20651500	20658336
20666930	20673099	20673118	20674205
20675542	20677546	20679214	20679274
20679275	20679810	20680078	20680441
20680522	20680743	20681109	20681218

Orders

30164749	30194055	30211730	30211982
30221560	30262329	40025904	40025905
40025906	40036701	40036702	40036703
50173895	60059226	60081517	60111712
60119930	60120792	60120883	60121032
60121931	60122161	60122161	60122293
70083956	70093256	70155511	70155746
70163260	70168223	70173003	

Drawings
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Miscellaneous
HCGS PRA Risk Evaluation Form for February 15, 2015, through February 21, 2015, Revision 1
HCGS PRA Risk Evaluation Form for March 8, 2015, through March 14, 2015, Revision 1
OP-HC-108-115-1001, Form 1, Technical Specification Action Statement Log, 14-099, C FRVS Recirc Fan, dated, April 9, 2014
OP-HC-108-115-1001, Form 1, Technical Specification Action Statement Log, 14-330, C FRVS Recirc Fan, dated, December 17, 2014
Technical Bulletin TB-08-005, Micrologic Trip Unit Ap Trip, August 2008

Section 1R22: Surveillance Testing

Procedures
HC.OP-AB.CONT-0006, Drywell Leakage, Revision 8
HC.OP-GP.ZZ-0005, Drywell Leakage Source Detection, Revision 9
HC.OP-GP.ZZ-0005, Drywell Leakage Source Determination, Revision 9
HC.OP-IS.BC-0003, BP202, 'B' RHR Pump In-Service Test, Revision 47
HC.OP-IS.BD-0001, RCIC Pump – 0P203 – Inservice Test, Revision 59
HC.OP-IS.BJ-0001, HPCI Main and Booster Pump Set – 0P204 and 0P217 – In-service Test, Revision 63
HC.OP-LR.GS-0201, Containment Isolation Valve Type C Leak Rate Test, CIVS 1GSHV-4959B (1GSV-040) and 1GSHV-4965B (1GSV-041), Penetration J210: 'B' H2/O2 Analyzer Torus Sample, Revision 0
HC.OP-ST.KJ-0014, EDG 1AG400 – 24 Hour Operability Run and Hot Restart Test,
IST-HC-I3-PROG-VLV TBL, Hope Creek Third Interval Inservice Testing Plan Table 3 – Valve Test Table, Revision 5
LRT-VOL2-ATT.2, Summarized Listing of Administrative and IST Limits, Revision 8
OP-GC-108-110-1001, Leak Rate Testing General Guidance, Troubleshooting, and Special Testing, Revision 7
Revision 34

Notifications

20536358	20537974	20623502	20626373
20633470	20657925	20659703	20660443
20673114	20673181	20679097	20679200
20679737	20680341	20680877	20680878
20678608	20678715		

Orders

30121418	30250326	30260772	30262061
30262208	50149976	50160334	50170055
50170158	50171054	50172355	50172516
60113375	60114868	60116089	70141323
80105459			

Miscellaneous
ACM HC 14-017, Increasing Drywell Floor Drain (DWFD) Leakage (Unidentified), dated December 29, 2014
ACM HC 14-017, Increasing Drywell Floor Drain (DWFD) Leakage (Unidentified), dated January 13, 2015
ACM HC 14-017, Increasing Drywell Floor Drain (DWFD) Leakage (Unidentified), dated March 10, 2015
Adverse Condition Monitoring Plan, ACM HC 14-017, Increasing Drywell Floor Drain (DWFD) Leakage (Unidentified)
OTDM HC 15-001, Increasing Drywell Floor Drain (DWFD) Leakage (Unidentified), Revision 2

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Procedures
EP-HC-111-F4, Attachment 4, General Emergency, Revision 2

Section 1EP6: Drill Evaluation

Miscellaneous
Hope Creek Simulator Scenario Guide, Recirc Pump Seal Failure/Power Oscillations/LOCA/Downcomer Failure, SG-734, dated April 5, 2015

Section 4OA1: Performance Indicator Verification

Procedures
LS-AA-2001, Collecting and Reporting of NRC Performance Indicator Data, Revision 11
LS-AA-2003, Use of the INPO Consolidated Data Entry Database for NRC and WANO Data Entry, Revision 6
LS-AA-2010, Monthly Data Elements for NRC/WANO Unit/Reactor Shutdown Occurrences, Revision 6
LS-AA-2030, Monthly Data Elements for NRC Unplanned Power Changes per 7000 Critical Hours, Revision 6

Notifications (*NRC-identified)
20681700*

Miscellaneous
LS-AA-2010, Attachment 1, Monthly Data Elements for NRC/WANO Unit/Reactor Shutdown Occurrences, for January 2014 – December 2014
LS-AA-2030, Attachment 1, Monthly Data Elements for NRC Unplanned Power Changes per 7000 Critical Hours, for January 2014 – December 2014

Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion

Procedures
EN-AA-170-4000, Rev. 0, Radiological Groundwater Protection Program Implementation
Hope Creek Offsite Dose Calculation Manual

Miscellaneous
NEI-07-07, Industry Ground Water Protection Initiative
Apparent Cause Evaluation Charter (CR20680496)
Public, Occupational, and Visitor Dose Projections
Various Sampling Results
Review of Gaseous Effluent Points and Dispersion Modeling Assumptions at the Salem and Hope Creek Nuclear station, September 7, 2012

LIST OF ACRONYMS

10 CFR	Title 10 of the *Code of Federal Regulations*
AC	alternating current
ADAMS	Agencywide Documents Access and Management System
CAP	corrective action program
CAQ	condition adverse to quality
CFR	*The Code of Federal Regulations*
CIV	containment isolation valve
DCP	design change package
EAL	Emergency Action Level
ECCS	emergency core cooling system
EDG	emergency diesel generator
EG-R	electronic governor-remote
EO	equipment operator
EPRI	Electric Power Research Institute
FRVS	filtration recirculation and ventilation system
HCGS	Hope Creek Generating Station
HEPA	high efficiency particulate air
HVAC	heating, ventilation, and air conditioning
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IST	in-service testing
LOCA	loss of coolant accident
NCV	non-cited violation
NEI	Nuclear Energy Institute
NOTF	notification
NRC	Nuclear Regulatory Commission
ODCM	offsite dose calculation manual
OTDM	operational and technical decision making
PD	performance deficiency
PFP	pre-fire plan
PI&R	problem identification and resolution
PM	preventive maintenance
PPM	parts per million
PSEG	Public Service Enterprise Group Nuclear LLC
RCIC	reactor core isolation cooling
RHR	residual heat removal
RRP	reactor recirculation pump
RTP	rated thermal power
SACS	safety auxiliaries cooling system
SDP	Significance Determination Process
SRV	safety relief valve
SSC	structure, system, or component
TE	technical evaluation
TS	technical specifications
UFSAR	Updated Final Safety Analysis Report
WO	work order