



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

October 30, 2014

Mr. Thomas P. Joyce
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 05000354/2014004

Dear Mr. Joyce:

On September 30, 2014, 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 October 9, 2014, with Mr. Paul 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.

No findings were identified during this inspection.

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 05000354/2014004
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. 05000354/2014004

Licensee: Public Service Enterprise Group (PSEG) Nuclear LLC

Facility: Hope Creek Generating Station (HCGS)

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

Dates: July 1, 2014, through September 30, 2014

Inspectors: J. Hawkins, Senior Resident Inspector
S. Ibarrola, Resident Inspector
P. Kaufman, Senior Reactor 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 05000354/2014004; 07/01/2014 – 9/30/2014; Hope Creek Generating Station; Routine Integrated Inspection Report.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

No findings were identified.

REPORT DETAILS

Summary of Plant Status

The Hope Creek Generating Station began the inspection period at full rated thermal power (RTP). On September 5, 2014, Hope Creek commenced a manual shutdown to conduct a planned maintenance outage (P141) to perform repairs on the 'H' safety relief valve (SRV) and turbine building circulating water (TBCW) system. Following corrective maintenance to replace the 'H' SRV and implement a design change to repair the TBCW system, Hope Creek commenced a reactor startup on September 9. On September 13, the unit was returned to full RTP. On September 27, Hope Creek performed a planned down power to 80 percent power to perform condenser water box leak investigation and repairs. The unit was returned to full RTP later the same day, and remained at or near full RTP for the duration of the inspection period except for brief periods to support planned testing and rod pattern adjustments.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 sample)

Summer Readiness of Offsite and Alternate Alternating Current (AC) Power Systems

a. Inspection Scope

The inspectors performed a review of plant features and procedures for the operation and continued availability of the offsite and alternate AC power system to evaluate readiness of the systems prior to seasonal high grid loading. The inspectors reviewed PSEG's procedures affecting these areas and the communications protocols between the transmission system operator and PSEG. This review focused on changes to the established program and material condition of offsite alternate AC power equipment. When required, the inspectors assessed whether PSEG established and implemented appropriate procedures and protocols to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system. The inspectors evaluated the material condition of the associated equipment by interviewing responsible PSEG personnel, reviewing the switchyard summer readiness letter, and walking down portions of the offsite and alternate AC power systems including the main transformers and the 500 kilovolt (kV) and 13.8 kV switchyards.

b. Findings

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04 – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- 'B' Standby Liquid Control (SLC) train during SLC injection line flushing and squib valve firing maintenance on SLC 'A' train on July 1

- Safety Relief Valve (SRV) acoustic monitoring and position indication system (notification (NOTF) 20658513) on August 7
- High Pressure Coolant Injection (HPCI) system on August 22
- 'A' Core Spray (CS) loop during 'B' CS loop planned maintenance on September 24

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, work orders, condition reports, 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 for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

.2 Full System Walkdown (71111.04S – 1 sample)

a. Inspection Scope

On July 18, the inspectors performed a complete system walkdown of accessible portions of the emergency diesel generators (EDG) to verify the equipment lineup was correct. The inspectors reviewed operating procedures, surveillance tests, drawings, equipment lineup procedures, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, component lubrication and equipment cooling, hangar and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and 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 for resolution with the appropriate significance characterization. Additionally, the inspectors reviewed a sample of related condition reports and work orders to ensure PSEG appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire ProtectionResident Inspector Quarterly Walkdowns (71111.05Q - 5 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, 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.

- HC.OP-FT.RG-0001, Guardhouse Standby Security Diesel Generator 00-R-503 Functional Test, Revision 3, on July 10
- FRH-II-713, Hope Creek Pre-Fire Plan Service Water Intake Structure, Revision 4, on July 25
- FRH-II-415, Hope Creek Pre-Fire Plan, Dry Well Pad Torus Area - Room 4102, Revision 4, on August 20
- FRH-III-111, Hope Creek Pre-Fire Plan, Turbine Building - Room 1101, Revision 4, on September 8
- FRH-II-436, Hope Creek Pre-Fire Plan Equipment Airlock - Room 4323, Revision 3, on September 9

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 3 samples).1 Internal Flooding Reviewa. 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 PSEG's response to water intrusion identified in the turbine building condenser bay 69 foot (ft.) elevation and on the reactor building floor drains located on the 54 ft. and 77 ft. elevations, to verify the adequacy of penetration seals located below the flood line, watertight door seals, common drain lines and sumps, and room level alarms in both areas.

b. Findings

No findings were identified.

.2 Flood Protection Measures

Annual Review of Cables Located in Underground Bunkers/Manholes

a. Inspection Scope

The inspectors conducted an inspection of underground bunkers/manholes subject to flooding that contain cables whose failure could affect risk-significant equipment. The inspectors evaluated the monitoring of water level in underground manholes containing safety-related cables. Specifically, the inspectors observed the station response to high water level in manhole vault MH105 that contains station service water system (SSWS) cables. The inspectors reviewed the maintenance to replace the dewatering pump and verified periodic level monitoring and performance of manual pump outs of the service water manholes as necessary to ensure that the cables would not be submerged while the dewatering pump was out of service.

b. Findings

No findings were identified.

1R07 Heat Sink Performance

Heat Sink Performance (Triennial) (IP 71111.07T - 3 samples)

a. Inspection Scope

Based on risk ranking of safety-related heat exchangers, a review of past heat sink inspections, recent operational experience, and resident inspector input, the inspectors selected the ultimate heat sink, which included SSWS piping integrity and SSWS intake structure functionality and operation. The inspectors also selected for review the inspection, cleaning, and performance testing of the SACS heat exchanger (H1EG-1A1E-201) and residual heat removal (RHR) heat exchanger (1A-E-205).

For the samples selected the inspectors reviewed program and system health reports, self-assessments, and the methods (inspection, cleaning, maintenance, and performance monitoring) used to ensure the heat removal capabilities for the heat exchangers and compared them to PSEG's Hope Creek commitments made in response to Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety-Related Equipment."

Station Service Water System (Ultimate Heat Sink)

The SSWS functions as the ultimate heat sink (UHS) to provide cooling water flow from the UHS, Delaware Bay, to the SACS heat exchangers during normal operation and loss of offsite power. The inspectors reviewed inspections and performance tests to verify that the systems components functioned as designed and in accordance with American Society of Mechanical Engineers (ASME) Code requirements.

To assess the structural integrity of the SSWS piping and ensure that any piping or intake structure degradation was appropriately identified and dispositioned the inspectors reviewed station procedures, non-destructive examination records, video

recordings, photographs, silt deposition inspection records, technical engineering evaluations, and interviewed engineering personnel. The inspectors reviewed SSWS performance testing, in-service testing results of the pumps, quarterly flow and pressure drop test results and flow calculations to verify that the minimum calculated flow rates were properly maintained to essential safety-related components and met the acceptance criteria in the Hope Creek UFSAR.

The inspectors performed walkdowns of accessible areas of the intake area (including SSWS pumps, strainers, traveling screens, and structural supports) to look for indications of piping leakage and/or material degradation. The inspectors verified that chlorination of the SSWS is controlled by procedures and in accordance with industry guidelines to maintain low biocide levels to eliminate system fouling. The inspectors reviewed silt deposition inspection records and reviewed several SSWS pump bay cleaning records from 2011-2013 to verify that silt accumulation is monitored and maintained at an acceptable level.

The inspectors verified that design drawings, calculations and procedures were maintained consistent with their design and licensing basis and that plant operators could reasonably implement the procedures. The inspectors performed walkdowns of the SSWS, control room panels, and intake structure to verify that the instrumentation that operators rely on for decision making was available and functional. The inspectors reviewed operation of the SSWS and ultimate heat sink, which encompassed procedures, intake structure operation, abnormal SSWS operations, loss of the SSWS/intake structure, adverse weather conditions, and SSWS leak isolation.

Heat Exchangers Cooled by Service Water or Closed Loop Cooling Water

The inspectors verified that the heat exchanger inspection, maintenance, cleaning, and performance monitoring was consistent with the Electric Power Research Institute (EPRI) NP-7552, "Heat Exchanger Performance Monitoring Guidelines" and accepted industry practices. The inspectors verified that the as-found and as-left condition of the heat exchangers were bounded by minimum calculated flow rates in the design basis analyses, in conjunction with the heat transfer capability, supported the minimum heat transfer rates during normal, accident, and transient conditions and that operation was consistent with applicable portions of the Hope Creek UFSAR and Technical Specifications.

The inspectors reviewed the procedures for maintaining the safety function of the SACS heat exchanger H1EG-1A1E-201, which is directly cooled by SSWS and RHR heat exchanger 1A-E-205 which is cooled by SACS, a closed cooling water system. The heat exchangers are monitored by means of inspection, cleaning, every other refueling outage and quarterly performance testing. The inspectors reviewed the tube plugging records, engineering calculations, completed heat exchanger cleaning, inspections, and performance testing results against the acceptance criteria to verify that the as-found and as-left condition was acceptable and operation was consistent with design and applicable engineering analyses. The inspectors concluded inspection and cleaning methods also addressed expected degradation trends, were consistent with industry standards, and provided reasonable assurance of continued operability.

The inspectors reviewed a sample of notifications and condition reports for the past three years related to these systems to ensure that PSEG appropriately identified,

characterized and corrected problems related to these structures, systems and components performance.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program and Licensed Operator Performance
(71111.11Q – 2 samples)

.1 Quarterly Review of Licensed Operator Regualification Testing and Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on August 19, that included a loss of the unit substation, a loss of the offsite power line and trip of two reactor feedwater pump turbines which resulted in a reactor scram and low reactor vessel level, followed by a loss of offsite power and stuck open safety relief valve. 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

a. Inspection Scope

The inspectors observed plant shutdown and restart activities for planned maintenance outage, P141, on September 5. The inspectors observed reactivity control briefings to verify that the briefings met the criteria specified in OP-AA-101-111-1004 "Operations Standards," Revision 5 and HU-AA-1211, "Pre-Job Briefings," Revision 11. Additionally, the inspectors observed licensed operator 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 – 1 sample)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, and component (SSC) performance and reliability. The inspectors reviewed corrective action program (CAP) documents (notifications), maintenance work orders (orders), 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.

- Potential repeat maintenance preventable functional failures of watertight door 3301A (NOTF 20655336) on July 7

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 technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- 'B' Reactor recirculation pump un-demanded speed change circuit card replacement on July 7
- 'A' Standby liquid control system injection line flush following inadvertent injection on July 30
- 'A' residual heat removal system and 'A' fuel pool cooling system planned maintenance on August 28
- 'B' residual heat removal (RHR) system and 'C' emergency diesel generator planned maintenance on September 6
- Planned 'B' RHR heat exchanger relief valve replacement on September 6

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 4 sample)a. Inspection Scope

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

- Inaccurate suppression pool downcomer heights on July 14 (NOTF 20656154)
- Operability determination for internal flooding in reactor core isolation cooling (RCIC) and HPCI on July 21 (NOTF 20653586)
- Safety relief valve acoustic monitor system on August 6 (NOTF 20658512)
- Evaluation of noise emanating from the torus on August 12 (NOTF 20658912)

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 technical specification 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 technical specifications 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

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)Permanent Modificationsa. Inspection Scope

The inspectors evaluated a modification to repair piping in the turbine building circulating water (TBCW) sump and dewatering system implemented by design change package (DCP) 80112615, "TBCW 10" (1-DA-038) Pipe Repair." The DCP replaced the piping to repair to prevent leakage of circulating water (CW) from the degraded pipe. The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems and structures were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the upgrade and design change.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 5 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.

- 'D' residual heat removal (RHR) discharge check valve inspection on July 23 (Order 30136475)
- 'A' standby liquid control (SLC) explosive valve replacement on July 31 (Order 60118461)
- Diesel driven fire pump speed switch replacement on August 27 (Order 60118830)
- 'A' residual heat removal (RHR) heat exchanger relief valve replacement on September 6 (Order 60115528)
- 'C' emergency diesel generator (EDG) lube oil keepwarm pump rebuild on September 9 (Order 30239872)

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 1 sample)

a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for a planned maintenance outage (P141) to replace the 'H' safety relief valve and make repairs to the CW system, which was conducted September 5 through September 11. The inspectors reviewed PSEG's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. During the outage, the inspectors observed portions of the shutdown and cooldown processes and monitored controls associated with the following outage activities:

- Configuration management, including maintenance of defense-in-depth, commensurate with the outage plan for the key safety functions and compliance with the applicable technical specifications when taking equipment out of service
- Implementation of clearance activities and confirmation that tags were properly hung and that equipment was appropriately configured to safely support the associated work or testing
- Status and configuration of electrical systems and switchyard activities to ensure that technical specifications were met
- Monitoring of decay heat removal operations

- Impact of outage work on the ability of the operators to operate the spent fuel pool cooling system
- Reactor water inventory controls, including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss
- Activities that could affect reactivity
- Maintenance of secondary containment as required by technical specifications
- Fatigue management
- Tracking of startup prerequisites and startup and ascension to full power operation
- Identification and resolution of problems related to outage activities

b. Findings

No findings were identified.

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 technical specifications, 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-IS.BJ-0001, HPCI Main and Booster Pump Set – 0P204 and 0P217 – In-Service Test on September 2 (in-service test)
- HC.OP-IS.BC-0002, CP202, 'C' Residual Heat Removal Pump In-Service Test on September 26 (in-service test)
- HC.OP-ST.AC-0002, Turbine Valve Testing on September 5
- HC.OP-ST.GK-0003, 'B' Control Room Emergency Filtration System Functional Test – Monthly on September 17
- HC.OP-ST.GS-0004, Suppression Chamber/Drywell Vacuum Breaker Operability Test – Monthly on September 7
- HC.IC-FT.SA-0002, Redundant Reactivity Control System DIV 2 CH A – Anticipated Transient Without Scram (ATWS) Recirculation Pump Trip on August 21

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06 – 1 sample)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine PSEG emergency drill on September 18 to identify any weaknesses and deficiencies in the classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator, technical support center, and emergency operations facility to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the drill critique to compare inspector observations with those identified by PSEG staff in order to evaluate PSEG's critique and to verify whether the PSEG staff was properly identifying weaknesses and entering them into the corrective action program.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 - 1 sample)

a. Inspection Scope

During the period July 21 to 24, and August 12 to 14, the inspectors reviewed PSEG's performance in assessing and controlling radiological hazards in the workplace. The inspectors used the requirements in 10 CFR Part 20, technical specifications, applicable Regulatory Guides, and PSEG procedures as criteria for determining compliance.

Inspection Planning

The inspectors conducted an in-office review of 2014 performance indicators for the occupational exposure cornerstone, radiation protection (RP) program audits, and reports of operational occurrences in occupational radiation safety since the last inspection.

Radiological Hazard Assessment

The inspectors reviewed the following:

- changes in radiological hazards for onsite workers or members of the public and potential impact of the changes;
- walk-downs and made independent radiation measurements and reviewed survey documentation to determine thoroughness and frequency of the surveys;
- risk-significant work activities (e.g., tank entries);
- radiological surveys performed used to identify and quantify the radiological hazard and to establish adequate protective measures;
- work in potential airborne radioactivity areas and evaluated whether the air samples were representative of the breathing air zone and properly evaluated including continuous air monitoring;
- the program for monitoring levels of loose surface contamination in areas of the plant.

Instructions to Workers

The inspectors reviewed the following:

- labeling of non-exempt radioactive material containers;
- radiation work permits (RWP) used to access high radiation areas (HRA) and evaluated if the specified work control instructions and control barriers were consistent with requirements (e.g., entry to tanks);
- use of stay times and permissible dose under RWPs including adequacy of associated electronic personal dosimeter (EPD) alarm set-points;
- occurrences where a worker's EPD malfunctioned or alarmed and workers response;
- means to inform workers of changes in radiological hazards.

Contamination and Radioactive Material Control

The inspectors reviewed the following:

- monitoring of contaminated material for release and methods for control, survey, and release;
- accounting of sealed sources from the inventory records and required testing for loose surface contamination;
- transactions involving nationally tracked sources including reporting.

Radiological Hazards Control and Work Coverage

The inspectors reviewed the following:

- adequacy of radiological controls, including: surveys, radiation protection job coverage, contamination controls, and use of EPDs in high noise areas;
- placement of dosimetry in the location of highest expected dose or use of NRC-approved method for effective dose including use in dose rate gradients;
- airborne radioactivity monitoring and controls;
- physical and programmatic controls for activated or contaminated materials stored within spent fuel and other storage pools;
- posting and physical controls for high radiation areas (HRAs), locked high radiation areas (LHRAs) and very high radiation areas (VHRAs).

Risk-Significant HRA and VHRA Controls

The inspectors reviewed the following:

- controls and procedures for HRAs and VHRAs including any changes to relevant procedures and areas with the potential to become a VHRA;
- controls in place for special areas that have the potential to become VHRAs during certain plant operations and communication to properly post, control, and monitor the radiation hazards including re-access authorization.

Radiation Worker Performance and RP Technician Proficiency

The inspectors reviewed the performance of radiation workers and RP technicians with respect to RP work requirements and procedures and awareness of radiological conditions.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with radiation monitoring and exposure control were being identified and addressed for resolution in the corrective action program.

b. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02)

a. Inspection Scope

During the period July 21 to 24, and August 12 to 14, 2014, the inspectors assessed performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR 20, applicable Regulatory Guides, technical specifications, and PSEG as criteria for determining compliance.

Inspection Planning

The inspectors conducted in-office review of the following:

- collective dose history, current exposure trends, ongoing and planned activities, and the plant's three year rolling average collective exposure;
- changes in the radioactive source term and procedures associated with maintaining occupational exposures ALARA.

Radiological Work Planning

The inspectors reviewed the following:

- various work activities (e.g., tank entry) and ALARA work activity evaluations, exposure estimates, and exposure reduction requirements;
- dose reduction techniques; alternate dose reduction features; and estimated dose goals;
- worker efficiency from use of respiratory protective devices and/or heat stress;
- integration of ALARA requirements into work procedure and RWP documents;
- results achieved for on-going and completed work with the intended dose.

Verification of Dose Estimates and Exposure Tracking Systems

The inspectors reviewed the following:

- annual collective dose estimate and applicable procedures;
- implementation of measures to track, trend, and reduce occupational doses for ongoing work activities.

Source Term Reduction and Control

The inspectors reviewed the following:

- source term reduction and records to determine the historical trends and current status of plant source term;
- 10 CFR 61 waste stream source term data.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with ALARA planning and controls were addressed for resolution in the corrective action program.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

a. Inspection Scope

During the periods July 21 to 24, and August 12 to 14, 2014, the inspectors reviewed controls for potential airborne radioactivity work and the use of respiratory protection devices. The inspectors used the requirements in 10 CFR Part 20, the guidance in applicable Regulatory Guides, technical specifications, and PSEG procedures as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the following:

- UFSAR to identify areas of the plant designated as potential airborne radiation areas;
- use of the respiratory protection program and devices used including location and quantity of respiratory protection devices stored for emergency use;
- procedures for maintenance, inspection, use of respiratory protection equipment including self-contained breathing apparatus (SCBA), and procedures for air quality maintenance;
- performance indicators to identify any related to unintended dose resulting from intakes of radioactive material.

Engineering Controls

The inspectors reviewed the following:

- use of ventilation systems for airborne radioactivity control;

- threshold criteria for evaluating levels of airborne beta-emitting and alpha-emitting radionuclides.

Use of Respiratory Protection Devices

The inspectors reviewed the following:

- selected work activities where respiratory protection devices were used to limit the intake of radioactive materials and means to determine the level of protection provided by the respiratory protection devices;
- use of certified respiratory protection devices (SCBAs, full-face);
- records of air testing for supplied-air devices and SCBA bottles;
- plant breathing air supply systems minimum pressure and airflow requirements for the devices in use;
- qualification of individuals qualified to use respiratory protection devices;
- program associated with donning, doffing, and functionally checking respiratory devices;
- chose various respiratory protection devices staged and ready for use in the plant and assessed the storage and physical condition of the device components and reviewed records of equipment inspection for each type of equipment;
- selected several of the devices and reviewed records of maintenance on the vital components.

SCBA for Emergency Use

The inspectors reviewed the following:

- status and surveillance records of three SCBAs staged in-plant for use and the capability for refilling and transporting SCBA air bottles;
- SCBA training and qualification records of individuals on different control room shift crews and from other departments who were designated as emergency responders;
- training and qualification of personnel assigned to refill bottles task;
- appropriate mask sizes and types were available for use;
- observed on-shift operators and radiation workers for facial hair that would interfere with the sealing of the mask to the face and whether vision correction mask inserts were available, as appropriate;
- past two years of maintenance records for three SCBA units and air cylinder hydrostatic testing

Problem Identification and Resolution

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were addressed for resolution in the corrective action program.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

a. Inspection Scope

During the periods July 21 to 24, and August 12 to 14, 2014, the inspectors reviewed the monitoring, assessment, and reporting of occupational dose. The inspectors used the criteria in 10 CFR 20, applicable Regulatory Guides, technical specifications, and PSEG procedures as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the following:

- radiation protection program audits;
- available dosimetry occurrence reports and corrective action program documents for adverse trends related to EPDs.

Routine Bioassay (In-Vivo)

The inspectors reviewed the following:

- procedures to assess dose from internally deposited radionuclides and the release of contaminated individuals;
- implementation of the whole body count (WBC) procedures and the use of portal radiation monitors as a passive monitoring system;
- worker whole body counts and the counting system sensitivity to measure the potential radionuclides of interest, used an appropriate radionuclide library, and provided for assessment of hard-to-detect radionuclides.

Special Bioassay (In-Vitro)

The inspectors conducted inspection and reviewed internal dosimetry procedures, available WBC count data, and the vendor laboratory quality assurance (QA) program.

Internal Dose Assessment – Airborne Monitoring

The inspectors reviewed the program for dose assessment based on airborne monitoring and calculations of internal dose and associated documentation.

Internal Dose Assessment – WBC Analyses

The inspectors reviewed dose assessments performed using the results of WBC analyses including use of properly calibrated equipment.

Declared Pregnant Workers

The inspectors reviewed training on the risks of radiation exposure, regulatory aspects of declaring a pregnancy, and the specific process to be used for voluntarily declaring a pregnancy.

Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures

The inspectors reviewed methodology for monitoring external dose in non-uniform radiation fields or where large dose gradients exist including use of multi-badging.

Shallow Dose Equivalent

The inspectors reviewed dose assessments for shallow dose equivalent.

Neutron Dose Assessment

The inspectors reviewed the neutron dosimetry program, including dosimeter types and/or radiation survey instrumentation.

Problem Identification and Resolution

The inspectors assessed whether problems associated with occupational dose assessment are being identified by PSEG at an appropriate threshold and were properly addressed for resolution in the licensee corrective action program.

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation (71124.05)

a. Inspection Scope

During the periods July 21 to 24, and August 12 to 14, 2014, the inspectors reviewed the accuracy and operability of radiation monitoring instruments that were used to protect occupational workers and members of the public. The inspectors used the requirements in 10 CFR Part 20, 10 CFR Part 50, 40 CFR 190, applicable Regulatory Guides and industry standards, technical specifications, Offsite Dose Calculation Manual (ODCM), and PSEG procedures as criteria for determining compliance.

Inspection Planning

The inspectors conducted in-office review of the following:

- UFSAR to identify radiation instruments associated with monitoring area radiation, airborne radioactivity, process streams, effluents, materials/articles, workers, and post-accident monitoring;
- records of in-service survey instrumentation including: air samplers, small article monitors (SAM), radiation monitoring instruments, personnel contamination monitors, portal monitors, and whole-body counters;
- number and type of instruments that were available to support operations;
- audits of the radiation monitoring program since the last inspection;
- procedures that govern instrument source checks and calibrations.

Walk-downs and Observations

The inspectors reviewed the following:

- walked down two gaseous effluent radiation monitoring systems and sampling point for gaseous effluent samples and assessed whether the effluent/process monitor configurations align with the UFSAR and ODCM;
- calibration, source checks, and operability of various portable survey instruments in use;
- performance of source checks for portable survey instruments;
- source checks of high-range instruments on all scales;
- walked down various area radiation monitors (ARMs) and continuous air monitors (CAMs);
- compared ARM and CAM remote control room indications with actual area radiological conditions for consistency;
- calibrations and source checks of various personnel contamination monitors, portal monitors, and SAMs.

Portal Monitors, Personnel Contamination Monitors, and SAMs

The inspectors reviewed the following:

- verified the alarm set-points of various instruments in use to ensure that licensed material is not released from the site;
- calibration methods and documentation for each instrument selected.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

a. Inspection Scope

During the period July 21 to 24 and August 12 to 14, 2014, the inspectors reviewed gaseous and liquid effluent processing and radiological discharges. The inspectors used the requirements in 10 CFR Part 20, 10 CFR Part 50, 40 CFR 190, applicable Regulatory Guides and industry standards, technical specifications, ODCM, and PSEG procedures as criteria for determining compliance.

Inspection Planning and Program Reviews

The inspectors conducted in-office review of the following:

- 2012 and 2013 Radioactive Effluent Release Report to determine anomalous results, unexpected trends, and abnormal releases that were identified;
- abnormal effluent result evaluations and their resolution in the corrective action program;
- UFSAR and ODCM descriptions of the radioactive effluent monitoring systems, treatment systems, and effluent flow paths;
- documentation of any non-radioactive systems that have become contaminated.

Groundwater Protection Initiative (GPI) Program

The inspectors reviewed groundwater monitoring results and changes to the GPI program for identifying and controlling contaminated spills/leaks to groundwater.

Procedures, Special Reports, and Other Documents

The inspectors reviewed Licensee Event Reports, event reports and/or special reports related to the effluent program issued since the previous inspection.

The inspectors reviewed calculations of gaseous and liquid dose projections and reviewed changes.

GPI Implementation

The inspectors reviewed monitoring results of the GPI and assessed whether PSEG has identified and addressed deficiencies through its corrective action program.

Problem Identification and Resolution

Inspectors assessed whether problems associated with the effluent monitoring and control program were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the corrective action program.

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (REMP) (71124.07 - 1 sample)

a. Inspection Scope

The REMP was inspected during the period August 27 and 28; September 15, and 30, 2014; to verify that the REMP adequately validated the effectiveness of the radioactive gaseous and liquid effluent release program. The inspectors used the requirements in 10 CFR Part 20; 40 CFR Part 190; 10 CFR 50 Appendix I; and the site's technical specifications, ODCM, and PSEG procedures as criteria for determining compliance.

Inspection Planning

The inspectors conducted in-office review of the following:

- 2012 and 2013 annual radiological environmental and effluent monitoring reports;
- results of PSEG assessments in this area since the last inspection;
- changes to the ODCM with respect to environmental monitoring, sampling locations, monitoring and measurement frequencies, Land Use Census, inter-laboratory comparison program, and analysis of data;
- the ODCM and associated maps to identify locations of environmental monitoring stations;
- the UFSAR for information regarding the environmental monitoring program and meteorological monitoring instrumentation;

- QA audit results to assist in selection of samples; and
- annual effluent release reports and 10 CFR Part 61 evaluations to identify the radionuclides likely to be released in effluents.

Onsite Inspection

The inspectors reviewed the following:

- walked down and observed sample collection, monitoring, dose measurement stations (e.g., Thermoluminescent Dosimeter, air monitoring, vegetation, milk);
- environmental sample gardens and placement;
- material conditions of environmental monitoring equipment;
- calibration and maintenance records/data to verify operability of environmental monitoring station components;
- criteria for sampling of other media upon loss of a required sampling station;
- environmental sampling of the effluent release pathways;
- walked down the meteorological tower and reviewed meteorological data readouts and potential foliage impact on tower instruments;
- verified that the meteorological instruments were operable, calibrated, and maintained;
- verified that missed and or anomalous environmental samples were identified, resolved, and reported in the annual radioactive environmental monitoring report;
- PSEG assessment of positive environmental samples;
- sampling and monitoring program for structures, systems, or components (SSCs) is sufficient to detect leakage;
- GPI Program Reports and Quarterly Groundwater Remedial Action Progress Reports;
- records for 10 CFR 50.75(g), leaks, spills, and remediation since the previous inspection;
- changes to the ODCM as the result of changes to the Land Use Census, long-term meteorological conditions, or modifications to the sampler stations;
- technical justifications for any changed sampling locations;
- appropriate detection sensitivities were used for counting samples; and
- results of the vendor's analysis laboratory quality control program, and the inter-and intra-laboratory comparison program results.

Identification and Resolution of Problems

The inspectors determined if problems associated with the REMP were being identified and placed in the corrective action program for resolution.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification (71151 – 5 samples)

Mitigating Systems Performance Index (MSPI)

a. Inspection Scope

The inspectors reviewed PSEG submittal of the Mitigating Systems Performance Index for the following systems for the period of July 1, 2013 through June 30, 2014:

- Emergency AC Power System (MS06)
- High Pressure Injection System (MS07)
- Heat Removal System (MS08)
- Residual Heat Removal System (MS09)
- Cooling Water Support System (MS10)

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 PSEG's operator narrative logs, CAP records, MSPI reports, key performance indicator summary records, operating data reports and the MSPI basis document, 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 – 1 sample)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that PSEG entered issues into the CAP 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 CAP and periodically attended notification screening meetings.

b. Findings

No findings were identified.

.2 Annual Sample: Ventilation System Dampers

a. Inspection Scope

The inspectors performed an in-depth review of PSEG's evaluations and corrective actions associated with Hope Creek ventilation damper failures for both safety and non-safety related systems. The inspection scope was focused on more risk significant ventilation systems including the reactor building Heating, Ventilation and Air Conditioning (HVAC), the Emergency Diesel Generator (EDG) auxiliary building HVAC, the turbine building HVAC and the Service Water Intake Structure (SWIS) HVAC. The scope also included other system dampers which are integrated into the ventilation

systems for fire protection and security functions. The inspectors reviewed multiple notifications, engineering evaluations, functional failure cause determination evaluations (FFCDEs), preventative maintenance plans and deferrals, and site procedures.

The inspectors assessed PSEG's problem identification threshold, problem analysis, extent of condition reviews, compensatory actions, and the prioritization and timeliness of PSEG's corrective actions to determine whether PSEG was appropriately identifying, characterizing, and correcting problems associated with this issue and whether the planned or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of PSEG's corrective action program and 10 CFR 50, Appendix B, Criterion XVI, Corrective Action.

b. Findings and Observations

No findings were identified.

During the fourth quarter of 2013 and the first quarter of 2014, the inspectors noted an adverse trend in the number of Hope Creek notifications generated regarding ventilation system deficiencies. Specifically, the inspectors reviewed over 20 notifications (NOTFs) concerning potential ventilation damper failures across multiple safety and non-safety related systems. On May 30, 2014, PSEG documented NOTF 20652670 for a seized CW fan damper, H1GF-1FCGFTD-9784A. At the weekly NRC resident PSEG management meeting on June 12, 2014, the inspectors questioned site management about the apparent ventilation damper adverse trend.

On June 16, 2014, PSEG documented NOTF 20653928 which identified an unusually high number of ventilation damper failures across multiple systems. This NOTF documented 26 NOTFs written against damper issues since January 2013, and recommended the performance of a common cause evaluation (CCE) to determine if there was a common failure mode or mechanism.

PSEG completed CCE 70167025 for the ventilation damper failures on August 4, 2014. The scope of the evaluation covered a period of time from January 24, 2013, through June 12, 2014, and excluded damper or actuator related failures due to failures of control system components, breakers, or other support components. 31 NOTFs were reviewed and PSEG determined that for the majority of the NOTFs (19), no causal factor could be identified because either no corrective maintenance had been done or no causal evaluation had been performed. For the remaining NOTFs (12), PSEG determined the prevalent causal factors to be a preventative maintenance scope/frequency deficiencies and component design application deficiencies. The CCE identified three areas requiring further evaluation:

1. CW pump room exhaust fan degraded/failed damper components (NOTF 20657453; evaluate preventive maintenance (PM) scope/frequency – in progress and scheduled for completion by October 10, 2014).

An evaluation is in progress to review the PM scope and frequency for CW pump exhaust fan dampers.

2. Reactor building ventilation system (RBVS) damper failures (NOTF 20657454; work group evaluation (WGE) – completed on September 5, 2014).

This WGE identified actuator PMs did not include replacing degraded actuators as specified in performance centered maintenance (PCM) template evaluation 70060871 and inadequate procedural guidance to identify degraded damper conditions. Corrective actions include revising multiple actuator PMs to include replacement of degraded damper actuators, and revising the work instructions and inspections procedures for dampers and actuators.

3. Hydramotor ventilation damper actuator failures utilized in multiple systems (NOTF 20657456 – WGE – completed on September 11, 2014).

This WGE identified that these failures were the result of equipment issues, inadequate corrective maintenance and a lack of system knowledge. The evaluation also highlights multiple inadequate PMs contributing to the equipment failures and the degrading quality of replacement parts used for corrective maintenance. Corrective actions include improving hydramotor ventilation damper actuator maintenance training, conducting a predefine change request (PCR) to review the lube PM scope/frequency, and review the failures to determine if an issue exists with quality and reliability of replacement parts.

The inspectors conducted an independent review of PSEG's CAP, engineering evaluations, ventilation system walk downs, site procedures and the completed CCE 70167025.

PSEG's Common Cause Evaluation Manual, LS-AA-125-1002, states that *"the primary objective of a common cause analysis is to identify and eliminate the most prevalent cause of a continuing problem. A secondary benefit is that lower level issues and causes are systematically organized for future analysis."* The inspectors determined that PSEG's CCE adequately scoped, framed and organized the issues and causes for further evaluations. The inspectors questioned how the results of these follow-up evaluations would be used to identify and eliminate the most prevalent causes of the adverse trend in ventilation damper and actuator failures, as stated in the CCE. The inspectors noted that PSEG's CCE did not identify a common cause, only prevalent causal factors for a minority portion of the NOTFs (12 of 31) reviewed, nor did it assign a follow-up action to perform an effectiveness review on the CCE and associated follow-up evaluations.

PSEG's CCE manual goes on to state that *"the overall [CCE] strategy is to continuously lower the number of occurrences through the implementation of focused corrective actions ... then critically evaluate them for effectiveness to ensure that issues triggered from the identified cause have decreased to an acceptable level."* PSEG's CCE manual also states *"if there was no common cause identified, then an effectiveness review is not required."*

After reviewing the CCE and the completed follow-up evaluations, the inspectors determined that a potential gap existed in PSEG's CAP procedures regarding the performance of an effectiveness review for corrective actions taken as a result of the CCE and assigned follow-up evaluations. Specifically, the CCE and completed WGEs determined there to be PM scoping and frequency deficiencies which include potential component design application deficiencies and the degrading quality of replacement parts used for corrective maintenance. The inspectors found that PSEG's evaluations

came to separate conclusions, all indicating PM scoping and frequency deficiencies. The inspectors also determined that no follow-up review of the multiple evaluations was assigned by either the CCE or follow-up WGE's to ensure a common cause did not go unidentified, uncorrected and un-evaluated by an effectiveness review. PSEG initiated NOTF 20665058 to add additional NOTFs concerning damper failures into the scope of the completed CCE and determine whether an effectiveness review for the multiple evaluations needs to be performed.

Although the inspectors found that a potential gap existed in the lack of performance of an effectiveness review for the completed CCE and WGE's, the inspectors determined that PSEG's individual corrective actions for the CCE and the WGE's were appropriate and the actions taken or planned were commensurate with the safety significance, and therefore no performance deficiency existed.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 5 samples)

.1 Plant Events

a. Inspection Scope

For the plant events listed below, the inspectors reviewed and/or observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant events to appropriate regional personnel, and compared the event details with criteria contained in Inspection Manual Chapter (IMC) 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. As applicable, the inspectors verified that PSEG made appropriate emergency classification assessments and properly reported the event in accordance with 10 CFR 50.72 and 50.73. The inspectors reviewed PSEG's follow-up actions related to the events to assure that PSEG implemented appropriate corrective actions commensurate with their safety significance.

- Loss of meteorological tower data on July 23 (EN 50302)
- Loss of meteorological tower data on July 28 (EN 50315)
- Circulating water dewatering line leak in the turbine building on July 29
- Inadvertent SLC injection on July 30
- Identification of an unidentified noise from the torus on August 12

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On October 9, 2014, 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
L. Clark, Instrument Supervisor
S. Connelly, System Engineer
B. Daly, Manager, Sustainability, Environmental Affairs
D. Durr, Residual Heat Removal System Engineer
S. English, Mechanical Maintenance Supervisor
D. Jackson, Chem Staff
K. Knaide, Director Hope Creek Engineering
R. Kocher, System Engineer
A. Kraus, Manager, Nuclear Environmental Affairs
I. Lake, Chem Staff
F. Leeser, Chemistry Manager
S. Maier, Fix It Now Team Senior Reactor Operator
T. Morin, Senior Regulatory Compliance Engineer
D. Nestle, Area Manager, Radiation Protection
J. Priest, Shift Operations Manager
M. Rooney, System Engineer
L. Sinclair, Emergency Preparedness Specialist
R. Smith, System Engineer
J. Southern, Meteorological Computer Engineer
K. Thompson, ALARA Engineer
H. Trimble, Radiation Protection Manger
D. Wahl, Chem Staff
C. Wend, Superintendent, Radiation Protection

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

None

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

HC.OP-AB.BOP-0004, Grid Disturbances, Revision 22
HC.OP-AB.ZZ -0135, Station Blackout/Loss of Offsite Power/Diesel Generator Malfunction,
Revision 39
OP-AA-102-101, Unit Load Changes, Revision 6
OP-AA-108-107-1001, Electric System Emergency Operations and Electric Systems Operator
Interface, Revision 3
WC-AA-107, Seasonal Readiness, Revision 13

Section 1R04: Equipment AlignmentProcedures

HC.IC-FT.AB-0033, Main Steam –Safety Relief Valve Position Indication (Acoustic Monitoring)
 System Non-Divisional Channel X-4508, Revision 24
 HC.OP-AB.CONT-0002, Primary Containment, Revision 13
 HC.OP-AB.RPV-0001, Reactor Power, Revision 13
 HC.OP-AB.RPV-0006, Safety/Relief Valve, Revision 3
 HC.OP-AR.ZZ-0008, Att. A3, ADS/Safety Relief Valve Not Closed, Revision 45
 HC.OP-SO.KJ-0001, Emergency Diesel Generators Operation, Revision 72
 HC.OP-ST.BE-0001, 'A' Core Spay Loop System Piping and Flow Path Verification – Monthly,
 Revision 13
 HC.OP-ST.BJ-0001, HPCI System Piping and Flow Path Verification – Monthly, Revision 18
 HU-AA-1212, Technical Task Risk/Rigor Assessment, Pre-Job Brief, Independent Third Party
 Review and Post-Job Brief, Revision 8
 MA-HC-716-004, Conduct of Troubleshooting (Hope Creek), Revision 0
 Revision 13

Notifications (*NRC-identified)

20558360	20615614	20651329
20568474	20615923	20652050
20568571	20616638	20653963
20568919	20623665	20653978
20569670	20626555	20655441
20571913	20626559	20655693
20572124	20626670	20656862
20572147	20626959	20656863
20572350	20627200	20656865
20573423	20627342	20657970
20574535	20627490	20658033
20580060	20628456	20658512
20581145	20628506	20658513
20581146	20628539	20660373
20583555	20630128	20662167
20583657	20631114	20656801*
20584127	20633576	20656810*
20587056	20633802	20656872*
20593405	20634131	20656873*
20593994	20635213	20656874*
20594493	20635403	20656875*
20597552	20639942	20656876*
20598342	20641830	20656926*
20611250	20645136	20656927*
20613232	20646597	20659901*
20613966	20648903	20659902*
20614116	20651267	20660070*

Maintenance Orders/Work Orders

60118460 70168161

Drawings

E-6067-0, Sht. 9, Solenoid Pilot Valves 'A' for SR Valves PSV-F013H, F and M, Revision 9
E-6603-0, Sht. 4, Remote Shutdown Panel (RSP)(10C399) Transfer Switch Power Dist.,
Revision 0
J-41-0, Sht. 16A, Logic Diagram Nuclear Boiler, Revision 0
M-30-1, Sheet 1, Diesel Engine Auxiliary Systems, Fuel Oil, Revision 26
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
M-52-1, Sheet 1, Core Spray, Revision 31
M-55-1, Sheet 1, High Pressure Coolant Injection, Revision 40
M-56-1, Sheet 1, HPCI Pump Turbine, Revision 32

Miscellaneous

80112383 (DEH 14-0134) Effects of Residual Sodium Pentaborate Solution in SLC Injection
Piping, 7/31/14
DCP 4-HC-0126
DCP 4-HC-0156
HC Standing Order 2014-35, Operator Actions Following SLC Injection, Effective 8/1/14
OTDM HC-14-011, Standby Liquid Control and DIV 1 Redundant Reactivity Control System,
Dated 7/30/14
M-48-1, Standby Liquid Control, Revision 16
HCGS Prompt Investigation for Open SRV Indication on 8/6/14 (20658512)
HCGS Operations Narrative Logs from 1/1/14 to 8/7/14 (Search: SRV)
Maintenance Strategy: H1BH-1BHXIS-AC652080807, Dated 9/15/14

Section 1R05: Fire Protection

Procedures

CC-AA-201, Plant Barrier Control Program, Revision 5
FP-AA-014, Fire Protection Training Program, Revision 1
FP-AA-015, Compensatory Measure Fire Watch Program, Revision 5
FP-AA-028-1001, PSEG Nuclear Fire Department Emergency Response Safety and Risk
Management Plan, Revision 1
FP-HC-004, Actions for Inoperable Fire Protection – Hope Creek Station, Revision 1
FRH-II-415, Hope Creek Pre-Fire Plan, Drywell Pad & Torus Area, Elevations 54' and 77',
Revision 4
FRH-II-436, Hope Creek Pre-Fire Plan Equipment Airlock Elevation: 102'-0", Revision 3
FRH-II-713, Hope Creek Pre-Fire Plan Service Water Intake Structure, Revision 4
FRH-III-111, Hope Creek Pre-Fire Plan: Turbine Building Elev. 54' & 69' (Rooms 1101-1106),
Revision 4
HC.MD-CM.GS-0002, Drywell to Torus to Reactor Building Vacuum Relief Valve Overhaul,
Revision 18
HC.OP-FT.RG-0001, Guardhouse Standby Security Diesel Generator 00-R-503 Functional
Test, Revision 3
SH.FP-EO.ZZ-0002, Fire Department Fire Response, Revision 3
WC-AA-101, On-line Work Management Process, Revision 22

Other Documents

80112513, Turbine Building Circulating Water Return Repair with AL6XN, Revision 0
 TCCP 4HT-14-026, Hope Creek Turbine Building Circulating Water Return Line Repair,
 Revision 0
 VTD F54260-0001 through -0026, Security Guardhouse Standby Diesel Generator

Notifications (*NRC-identified)

20107818	20194445	20315603	20341549	20555930	20618492
20629423	20636480	20642492	20647829	20655915	20656148
20658912	20659947	20659962	20659982	20660255	20662977
20663545	20636507*				

Maintenance/Work Orders

30226715	50082784	50082785
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Drawings

C-0399-0, Sht. 167, Equipment Foundation Details, Revision 3
 P-1702-1, Reactor Building Area 17 Plan Elevation 77', Revision 3
 P-1703-1, Reactor Building Area 17 Plan Elevation 100'-2, Revision 3
 P-1704-1, Reactor Building Area 17 Plan Elevation 112'-0, Revision 3
 P-1705-1, Reactor Building Area 17 Plan Elevation 77', Revision 3

Section 1R06: Flood Protection MeasuresProcedures

ER-AA-310, Implementation of the Maintenance Rule, Revision 12
 ER-HC-310-1009, Condition Monitoring of Structures, Revision 11
 HC.OP-EO.ZZ-0103/4, Reactor Building and Radioactive Release Control, Revision 9
 LS-AA-115-1004-F2, OPEX Response, Revision 1
 RP-AA-502, Catch Containment Program, Revision 2

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20263789	20449519	20503615	20654794	20658246
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1-P-DA-01, System Isometric/Turbine Building Condenser Water Box Drains, Revision 15
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 FSK-P-500, Sheet 2, Cable Vault Dewatering System Piping, Revision 0
 M-25-1, Plant Leak Detection, Revision 20
 M-33-0, Sheet 1, Low Volume and Oily Waste Water Treatment, Revision 20
 M-61-1, Liquid Radwaste Collection, Revision 21
 M-61-1, Liquid Radwaste Collection, Revision 26
 M-97-0, Sht. 2, Bldg. & Equip. Drains – Aux. Bldg. Control & Diesel Areas Oily, Normal &
 Chemical Waste Systems P&ID, Revision 16
 M-97-1, Sht. 1, P&ID Building & Equipment Drains Turbine Building Fl. Elevation 54 ft. to 102 ft.,
 Revision 17
 M-97-1, Sht. 2, Building & Equipment Drains Reactor Building, Revision 18

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 10855-P-S000-C, Revision 13
 Calculation 11-0028, Reactor Building Flood Calculations for Elev. 102' Unit 1, Revision 4
 Calculation 11-0032, Flooding for Elevation 132 ft. in Reactor Building – EPU, Revision 4
 Calculation 11-0068, Flooding for Elevation 145 ft. in Reactor Building – EPU, Revision 3
 Calculation 11-0092, Reactor Building Flooding – Elevation 54 ft. and 77 ft., Revision 5
 Calculation 19-0018, Max Flood Levels in Control/Diesel Generator Areas, Revision 7
 Maintenance Plans 198783 through 198788 for Reactor and Auxiliary Building Floor Drains

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ER-AA-1100, Att. 13, Program Basis, Hope Creek 89-13 Program, Revision 1
 ER-AA-340, GL 89-13 Program Implementing Procedure, Revision 6
 HC.CH-SA.ZZ.0014, Sampling Station Cooling Water Systems, Revision 7
 HC.MD-PM.EA-001, Service Water Strainer - Clean and Inspect, Revision 24
 HC.MD-PM.EA-002, Service Water Intake Bay Silt Survey and Sit Removal, Revision 24
 HC.OP-AB.COOL-0001, Station Service Water, Revision 18
 HC.OP-AB.COOL-0005, Total Loss of Station Service Water, Revision 5
 HC.OP-AR.ZZ-0001, Overhead Annunciator Window Box A1, Revision 22
 ER-AA-340-1002, Service Water Heat Exchanger and Component Inspection Guide, Revision 5

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20571583	20571603	20571604	20571605	20571606	20571607
20571608	20654927	20656609	20656748	20658252	

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30244203`	60118359	70111679	70145707	70150982
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 50165442, HC.OP-IS.BC-0101, RHR Subsystem 'A' Valves, completed May 25, 2014
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 HC.OP-ST.BC-0009, Residual Heat Removal System RHR Heat Exchanger Flow Measurement
 HC.OP-IS.BC-0001, AP202, A Residual Heat Removal Pump In-Service Test, Revision 48,
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NU-D-1022-11, SACS Heat Exchanger – Cross Section, Revision 0
 M-10-1, Service Water, Sh. 2, Revision 43
 M-11-1, Safety Auxiliaries Cooling Reactor Building, Revision 31

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EA-0033, Biofouling Monitoring and Trending Calculation, Revision 0
BC-0052, Plant Cooldown Using One RHR Heat Exchanger, Revision 3
BC-0056, RHR Hydraulic Analysis, Revision 5
EG-0020, STACS Required Flows and Heat Loads – EPU, Revision 10
EG-0043, STACS-PROTO-FLO Thermal Hydraulic Model, Revision 7
EG-0044, HCGS-STACS Proto Heat Exchanger Models, Revision 2
EG-0047, HCGS Ultimate Heat Sink Temperature Limits – EPU, Revision 5
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Report on Scanning of Joints – Underground Service Water Loop ‘A’, 2013 Service Water System Lesson Plan - NOHO4SERWATC-11
Updated Final Safety Analysis Report, Section 9.2.1
HX/Component Data Sheet, SACS-B1 (Bottom) HX, dated May 6, 2012 (Order 30214172; Records Management DEH120176)
HX/Component Data Sheet, SACS-B2 (Top) HX, dated May 6, 2012 (Order 30214171; Records Management DEH120176)
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Section 1R11: Licensed Operator Requalification Program and Licensed Operator Performance

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HC.OP-IO.ZZ-0004, Shutdown from Rated Power To Cold Shutdown, Revision 98
HC.OP-SO.BB-0002, Reactor Recirculation System Operation, Revision 100
HU-AA-1211, Pre-Job Briefings, Revision 11
OP-AA-101-111-1004, Operations Standards, Revision 5
OP-AA-300, Reactivity Management, Revision 6
OP-AB-300-1001, BWR Control Rod Movement Requirements, Revision 6
OP-AB-300-1003, BWR Reactivity Maneuver Guidance, Revision 11

Miscellaneous

REMA 2014-0060, September 2014 Shutdown REMA, Revision 0
Scenario Guide (SG)-721, Loss of 10B430/Scram w/ LVL 2/LOP w/ Stuck Open SRV dated July 30, 2014

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ER-AA-10, Equipment Reliability Process Description, Revision 1
 ER-AA-2012, Processing Plant Issues using LTA Manager, Revision 0
 ER-AA-310, Implementation of the Maintenance Rule, Revision 11
 ER-AA-310, Implementation of the Maintenance Rule, Revision 12
 ER-AA-310-1001, Maintenance Rule – Scoping, Revision 6
 ER-AA-310-1004, Maintenance Rule – Performance Monitoring, Revision 10
 ER-AA-310-1004, Maintenance Rule – Performance Monitoring, Revision 11
 ER-AA-310-1005, Maintenance Rule – Dispositioning Between (a)(1) and (a)(2), Revision 9
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 ER-HC-310-1009, Maintenance Rule System Function and Risk Significant Guide, Revision 10
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 HC.DE-PS.ZZ-0041, Hope Creek Station Blackout Program, Revision 3
 HC.MD-GP.ZZ-0037, Plant Bulkhead Doors Overhaul, Revision 5
 HC.MD-PM.ZZ-0007, Missile Resistant and Watertight Doors PM, Revision 9
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Notifications

20523281	20546153	20562816	20619702	20648216	20648434
20649147	20650908	20655336	20656045	20656508	

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HC.OP-AB.CONT-0002, Primary Containment, Revision 13
 HC.OP-AB.RPV-0001, Reactor Power, Revision 13
 HC.OP-IO.ZZ-0006, Power Changes During Operation, Revision 57
 HC.OP-ST.BC-0001, RHR System Piping & Flow Path Verification – Monthly, Revision 22
 HU-AA-1212, Technical Task Risk/Rigor Assessment, Pre-Job Brief, Independent Third Party
 Review and Post-Job Brief, Revision 8
 MA-AA-734-481, Use of Freeze Seals, Revision 1
 MA-HC-716-004, Conduct of Troubleshooting (Hope Creek), Revision 0
 OU-HC-105, Shutdown Safety Management Program – Hope Creek Annex, Revision 3
 SH.MD-SP.ZZ-0012, Use of Rigid Superfreeze SF-2500 Freeze Seal System, Revision 1
 WC-AA-101, On-Line Work Management Process, Revision 22
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 WC-AA-105, Work Activity Risk Management, Revision 2

Notifications (*NRC identified)

20662302*	20652621	20661429
20611250	20657970	20661459
20629240	20658033	20661547
20642492	20660399	20661748
20650904	20660404	20661748

Maintenance Orders/Work Orders

30211622	50165454	60118460
30211622	60115528	70161255
30216155	60116393	70166490
30216155	60116393	70168161
50045222	60117312	

Miscellaneous

Protected Equipment Log –'B' RHR in SDC and B CS Loop to Support DHR and Inventory Control, September 6, 2014

Shutdown Risk Assessment for Planned Outage 1401, dated September 2, 2014

Calculation BC-0033, Design Freeze: M51-RHR Overpressure Protection Report, Dated 12/14/81

80112383 (DEH 14-0134) Effects of Residual Sodium Pentaborate Solution in SLC Injection Piping, 7/31/14

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HC Standing Order 2014-35, Operator Actions Following SLC Injection, Effective 8/1/14

OTDM HC-14-011, Standby Liquid Control and DIV 1 Redundant Reactivity Control System, Dated 7/30/14

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HCGS System Vulnerability Review Report for Hope Creek Reactor Recirculation System, March/April 2011 (80104008)

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M-48-1, Standby Liquid Control, Revision 16

HCGS PRA Risk Evaluation Form for August 24, 2014, through August 30, 2014, Revision 0

Protected Equipment Log –'A' RHR, August 28, 2014

Maintenance Strategy: H1BH-1BHXIS-AC652080807, Dated 9/15/14

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ER-HC-321-1011, Testing of Hope Creek ASME Class 1,2,3 Safety/Relief Valves, Revision 2

FRH-II-415, Hope Creek Pre-Fire Plan, Drywell Pad & Torus Area, Elevations 54 ft. and 77 ft., Revision 4

HC.MD-CM.GS-0002, Drywell to Torus to Reactor Building Vacuum Relief Valve Overhaul, Revision 18

HC.MD-ST.AB-0003, Safety Relief Valve Discharge Piping Vacuum Breaker In-Place Test, Revision 2

HC.OP-AB.CONT-0006, Drywell Leakage, Revision 8

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HC.OP-AR.ZZ-0026, CRIDS Computer Points Book 7 D4600 thru D4799, Revision 6
 HC.OP-SO.BC-0001, Residual Heat Removal System Operation, Revision 53
 HC.OP-SO.BC-0001, Residual Heat Removal System Operation, Revision 53
 HC.OP-ST.GS-0004, Suppression Chamber/Drywell Vacuum Breaker Operability Test –
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 HC.OP-ST.ZZ-0006, Drywell to Suppression Chamber Leak Rate Test – 18 Months,
 Revision 17
 WC-AA-101, On-line Work Management Process, Revision 22

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 70157799 - DEH 14-0064, Determine the Adequacy of Current Method of Quantifying SRV Leak
 Rate, 4/22/14
 HCGS ACM #14-014, Torus Level and Temperature, Drywell Temperature, Pressure, and
 Unidentified Leakage, and Torus Area Noise, 8/15/14
 HCGS OTDM #13-003, 'R' SRV Tailpipe Temp. Trend and 'J' SRV Indication, Revision 4
 HCGS OTDM #14-013, Abnormal Torus Noise, Dated 8/25/14
 HCGS RF17 Vacuum Breaker As-Found Testing Results, Dated 4/30/12
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 Cycling, Dated 8/21/14
 HCGS Temporary Reading Sheet for 'H' SRV/Torus Noise as Heard in the 'A' & 'C' Core Spray
 Pump Rooms (2xShift), 8/25/14 – 9/4/14

Notifications

20259785	20647829	20658912
20341549	20653586	20658912
20555930	20655093	20659947
20604685	20655642	20659962
20618492	20655864	20659982
20629423	20656703	20660255
20629423	20657400	20662977
20642492	20657402	20663545
20643575	20657403	
20647829	20657404	

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30226715	50149086	70167582
50082784	60097071	70168360
50082785	60117621	70242930
50136602	70033415	
50136938	70167282	

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 10855-M141(Q) 15-9, DS-C-60901, Vacuum Relief Valve, Revision H
 C-0926-0, Sht. 1, Containment Vessel Requirements Plan Sections & Details, Revision 14
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M-57-1, Containment Atmosphere Control, Revision 43
 M-59-1, Primary Containment Instrument Gas, Revision 33
 P-1702-1, Reactor Building Area 17 Plan Elevation 77 ft., Revision 3
 P-1703-1, Reactor Building Area 17 Plan Elevation 100 ft., 2 in., Revision 3
 P-1704-1, Reactor Building Area 17 Plan Elevation 112 ft., Revision 3
 P-1705-1, Reactor Building Area 17 Plan Elevation 77 ft., Revision 3
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Calculation 12-0165, Suppression Pool to Drywell Vacuum Breaker Alternate Test Criteria, Revision 0
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 Calculation D-114, Dynamic Analysis for Design Evaluation of Main Steam Safety Relief Valve Discharge Piping Inside the Drywell Main Steam 'A' – Main Steam Line 'R', Revision 1
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 DCR 80109509
 DEH 14-0126 (70167153-0018), HPCI/RCIC Flood Evaluation
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 Hatch Unit 2 INPO OE #186312 from 5/10/00
 HC Torus Level Increase Input Troubleshooting from 7/10/14, 8/22/14 and 9/1/14
 HCGS Risk Assessment for Work Week #1434, Dated 8/17/14
 JAF-RPT-05-00115, PSA Evaluation of JAF Torus and Shutdown Cooling Line Cracks, Revision 1
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Procedures

CC-AA-112, Temporary Configuration Changes, Revision 13
 CC-AA-112-1001, Temporary Configuration Change Implementation T&RM, Revision 3

Notifications

20658210	20658747	20658747	20659406	20659406	20659420
20659420	20659546	20659546	20661607		

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80112403	60118784	60118871	80112615
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Drawings

M-09-1, Sheet 2, Circulating Water, Revision 27

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ER-AA-1001, Component Classification, Revision 2
 HC.MD-CM.KJ-0017, Diesel Generator Keepwarm Pump Maintenance and Repairs, Revision 1
 HC.OP-IS.BC-0004, DP202, D Residual Heat Removal Pump In-Service Test, Revision 41
 HC.OP-ST.BC-0001, RHR System Piping & Flow Path Verification – Monthly, Revision 22
 HC.OP-ST.BH-0001
 HC.OP-ST.BH-0002
 MA-AA-716-230-1002, Vibration Analysis/Acceptance Guideline, Revision 3
 MA-AA-734-458, Pressure Relief Device Removal and Installation, Revision 2
 MA-AA-734-481, Use of Freeze Seals, Revision 1
 MA-AA-734-481, Use of Freeze Seals, Revision 1
 SH.MD-SP.ZZ-0012, Use of Ridgid Superfreeze SF-2500 Freeze Seal System, Revision 1
 SH.MD-SP.ZZ-0012, Use of Rigid Superfreeze SF-2500 Freeze Seal System, Revision 1
 WC-AA-101, On-Line Work Management Process, Revision 22
 WC-AA-105, Work Activity Risk Management, Revision 2

Notifications (*NRC identified)

20662302*	20629240	20642492	20642492	20657641	20657644
20658042	20660127	20660312	20660314	20660315	20660469
20660927	20661149	20661409	20661432	20661459	20661547
20661748	20661748				

Maintenance orders/Work Orders

30136475	30239872	50045222	50165454	50166816	60115528
60115528	60118461	60118830			

Drawings

1-P-BC-242, Sheet 1, Small Piping/Rector Building Unit-1 Residual Heat Removal PSV-4431A
 from HX AE205 to BC-073, Revision 13
 M-51-1, Sheet 2, Residual Heat Removal, Revision 42

Miscellaneous

Calculation BC-0033, Design Freeze: M51-RHR Overpressure Protection Report, Dated
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ER-AA-2006, Lost Parts Evaluations, Revision 8
 ER-AB-331-1006, BWR Reactor Coolant System (RCS) Leakage Monitoring and Action Plan,
 Revision 0
 HC.IC-LC.AF-0007, Moisture Separator Drain Tank Level Tuning, Revision 2
 HC.OP-AB.RPV-0001, Reactor Power, Revision 14
 HC.OP-DL.ZZ-0026, Surveillance Log, Revision 141
 HC.OP-DL.ZZ-0026, Att. 3v-1, 'A' Recirc Loop Temperature – Calculated, Revision 141
 HC.OP-GP.ZZ-0002, Primary Containment Closeout, Revision 16

HC.OP-IO.ZZ-0003, Startup from Cold Shutdown To Rated Power, Revision 105
 HC.OP-IO.ZZ-0004, Shutdown from Rated Power To Cold Shutdown, Revision 98
 HC.OP-SO.BC-0003, RHR Alternate Cooling Modes, Revision 6
 LS-AA-106, Plant Operations Review Committee, Revision 5
 MA-AA-716-004, Conduct of Troubleshooting, Revision 12
 MA-AA-716-004, Conduct of Troubleshooting, Revision 12
 MA-AA-716-008, Foreign Material Exclusion Program, Revision 8
 MA-AA-734-458, Pressure Relief Device Removal and Installation, Revision 2
 OP-AA-108-108, Unit Restart Review, Revision 11
 OP-AA-108-108-1001, Drywell/Containment Closeout, Revision 3
 OP-HC-108-102, Management of Operations with the Potential to Drain the Reactor Vessel,
 Revision 2
 OU-AA-101-1006, Outage Management Risk and Impact Assessment, Revision 2
 OU-HC-105, Shutdown Safety Management Program – Hope Creek Annex, Revision 5
 REMA 2014-0058, September 2014 Startup through ~23% RTP, Revision 0
 REMA 2014-0059, September 2014 Startup 23% through Rated Power, Revision 0
 REMA 2014-0060, September 2014 Shutdown REMA, Revision 0
 Shutdown Risk Assessment for Planned Maintenance Outage P1-41, dated September 4, 2014

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M-49-1, P&ID Reactor Core Isolation Cooling, Revision 30
 M-51-1, Sht. 1 (2), Residual Heat Removal, Revision 45 (42)
 M-52-1, Core Spray, Revision 31
 M-53-1, Torus Water Cleanup, Revision 34
 M-55-1, High Pressure Coolant Injection, Revision 40

Notifications

20643133	20661319	20661552
20659420	20661351	20661612
20659955	20661351	20661658
20659955	20661387	20661658
20660290	20661387	20661739
20660634	20661439	20661739
20661017	20661517	20661852
20661319	20661552	

Maintenance Orders/Work Orders

30202008 60117621 70168678 80112592

Other Documents

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 HCGS P1-41 Planned Outage Scope, Dated 9/4/14
 ORAM-SENTINEL – AC-2: Electrical Power, All Other, dated February 3, 2012
 ORAM-SENTINEL – IC-1: Inventory Control, Gate In, dated February 3, 2012
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 REMA 2014-0058, September 2014 23% through Rated Power, Revision 0
 REMA 2014-0058, September 2014 Startup through ~23% RTP, Revision 0
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HC.IC-FT.SA-0002, RRCS DIV 2 CH A – ATWS Recirculation Pump Trip, Revision 11
 HC.IC-FT.SA-0003, RRCS DIV 1 CH B – ATWS Recirculation Pump Trip, Revision 14
 HC.IC-GP.SA-0003, General Work Process Troubleshooting of RRCS, Revision 0
 HC.OP-IS.BC-0002, CP202, C Residual Heat Removal Pump In-Service Test, Revision 43
 HC.OP-ST.AC-0002, Turbine Valve Testing – Quarterly, Revision 49
 HC.OP-ST.GS-0004, Suppression Chamber/Drywell Vacuum Breaker Operability Test –
 Monthly, Revision 13

Notifications (*NRC identified)

20660898*	20660902*	20304484	20605898	20621728	20645265
20660901					

Maintenance Orders/Work Orders

50162922	50165412	50167861	50168033	60116341	60116342
60116343	60116344	60118046	80112592		

Miscellaneous

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EP-AA-125-1002, NRC Drill and Exercise Performance (DEP) Indicator Guidance, Revision 3
 EP-AA-122-1001-F11, Drill & Exercise Comment & Feedback Form, Revision 0
 EP-HC-111-108, Section H -Hazards & Other Conditions Affecting Plant SafetyH2 – Fire or
 Explosion, Revision 0
 EP-HC-111-121, Fission Product Barrier Table, Revision 1
 EP-HC-111-130, Hope Creek Emergency Action Level Wall Chart – All Conditions, Revision
 EP-HC-111-131, Hope Creek Emergency Action Level Wall Chart – Hot Conditions
 (RCS>200°F, Revision
 EP-HC-111-230, Use of Fission Product Barrier Table, Revision 0
 EP-HC-111-F2, Declaration of Alert, Revision 1
 EP-HC-111-F3, Declaration of Site Area Emergency, Revision 2
 EP-HC-111-F4, Declaration of General Emergency, Revision 1
 EP-HC-111-F5, NRC Data Sheet and Completion Reference, Revision 0
 EP-HC-111-F6, Primary Communicator Log, Revision 10
 EP-HC-111-F8, Secondary Communicator Log, Revision 2
 NC.EP-EP.ZZ-0102, Emergency Coordinator Response, Revision 18
 NC.EP-EP.ZZ-0404, Protective Action Recommendations (PARS) Upgrades, Revision 4

Notifications

20662688	20662968	20663148	20663052	20663353
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Section 2RS1: Access Control to Radiologically Significant Areas

Procedures

RP-AA-460, Controls for High and Very High Radiation Areas, Revision 17
RP-AB-460, TIP Area Access Control, Revision 1
HC.RP-TI.XX-003(Q), Reactor Cavity, Fuel Pool, and Drywell Special Evolution, Revision 25
RP-AA-401-1001, Special Instructions for Highly Radioactive In-core Components, Revision 0
RP-AA-461, Radiological Control for Contaminated Water Diving, Revision 3
HC.RP-TI.ZZ-0105(Q), Radiation Protection Shift Duties and Responsibilities, Revision 22
HC.RP-TI.XX-0003(Q), Reactor Cavity, Fuel Pool, and Drywell Special Evolutions, Revision 25
IAW NF-AA-390, Spent Fuel Pool Material Control, Revision 5
RP-AA-503, Unconditional Release Survey Method, Revision 7
RP-AA-300-1002, Electron Capture Isotope Control, Revision 1
RP-AA-300, Radiological Survey Program, Revision 4
HC.CH-TI.ZZ-0021(Q), Gamma Spectroscopy Sample Preparation, Revision 8
RP-AA-800, Control, Inventory, and Leak Testing of Radioactive Sources, Revision 9

Other Documents

Source Inventory Control Documentation (2014)
Radiological Survey data (various)
Corrective Action Documents (various)
Dosimeter - NVLAP certification data
Contamination Control – Personnel Contamination Data and Dose Assessments
Whole Body Count Data
Technical Report No. 2000-01, Evaluation of Portal and Personnel Monitor Sensitivity to Internal Radiation Protection Plant Radionuclide Evaluation
Tritium Air sample results (various)

Section 2RS2: Occupational ALARA Planning and Controls

Procedures

RP-AA-400, ALARA program, Revision 6
RP-AA-401, Operational ALARA Planning and Control, Revision 12
RP-AA-403, Administration of the Radiation Work Permit Program, Revision 3

Other Documents

Hope Creek Five Year ALARA Plan
ALARA Plans (various); (e.g., tank entry, reactor water clean-up, water box)
Station ALARA Committee (SAC) Meeting Minutes

Section 2RS3: In-plant Airborne Radioactivity Control and Mitigation

RP-AA-13, Respiratory Protection Program Description, Revision 2
RP-AA-440, Respiratory Protection Program, Revision 10
RP-AA-441, Evaluation and Selection Process for Radiological Respirators, Revision 4
RP-AA-443, Quantitative Respirator Fit Testing, Revision 7
RP-AA-825, Maintenance, Care and Inspection of Respiratory Protection Equipment, Revision 5
NC.RP-TI.ZZ-0403 (Q), Operation of Breathing Air System, Revision 3
NC.RP-TI.ZZ.040 (Q), Testing and Evaluation of Compressed Breathing Air, Revision 1
HC.RP-EU-KG-004 (Q), Operation of Eagle Air Compressor, Revision 10
RP-AA-1013, Operation and Inspection of the 3M Air-mate Hood and PAPR Blower Unit, Revision 1

Other Documents

HRP-14-003, Requirement for Counting Air Sample Activity for Alpha Activity, August 11, 2014
Audit NOSA-HPC-13-08 (80110250), October 10, 2013
Respiratory Protection Lesson Plans
SCBA test records (HF 21, HF 5, HF 26)
Radiological Source Term Data – 10 CFR61 waste stream report
Airborne Radioactivity Intake Assessments and Sampling results
Corrective Action Documents (various)
Breathing air quality test data
Tritium Air sample results (various)

Section 2RS4: Occupational Dose Assessment

Procedures

RP-AA-301, Radiological Air Sampling Program, Revision 4
RP-AA-221, Whole Body Count (WBC) and WBC Data Review, Revision 4
RP-AA-222, Methods for Estimating Internal Exposure for In-Vivo and In-Vitro Bioassay Data, Revision 6
RP-AA-250, External Dose Assessment from Contamination, Revision 7
RP-AA-210, Dosimetry, Issuance, Usage, Control, Revision 12

Other Documents

Technical Bases Document 2012-01
HRP-14-0013, Requirement for Counting Air Samples for Alpha Activity
HRP-14-0014, Preliminary Review of Dose Risk Due to Long-Lived Alpha Activity
Annual Bioassay Program Review
Alpha Characterization Study (2010-2011)
Hope Creek Neutron Characterization Study, March 2014
Exposure Control and Dose Records (various)
Hope Creek General Source Term Data
Personnel Contamination Event Logs
Personnel Intake Investigations
Corrective Action Documents (various)

Section 2RS5: Radiation Monitoring Instrumentation

Procedures

NC.RS-TI.ZZ-0592 (Q), Radiation Protection Instrumentation Laboratory Calibration and Quality Control, Revision 1
RP-AA-605, 10 CFR 61, Program, Revision 1
RP-AA-605-1001, Evaluation of the 10 CFR 61 Sample Results

Other Documents

HRP-12-0006, Plant Nuclide Mix Evaluation, Revision 0
PIA -005, Hope Creek Failed Fuel, Revision 1
Evaluation of Portal Personnel Contamination Sensitivity, 2000-01
Corrective Action Documents (various)

Section 2RS6: Radioactive Gaseous and Liquid Effluent Treatment

Procedures

EN-AA-170-000, Radioactive Effluent and Environmental Monitoring Program, Revision 5

EN-AA-170-500, Meteorological Monitoring System Calibration and Maintenance, Revision 1
EN-AA-170-200, Radioactive Effluent Controls Program, Revision 0
EN-AA-170-400, Radiological Ground Water Protection Program, Revision 4

Other Documents

Ground water Monitoring Data
Hope Creek Offsite Dose Calculation Manual
10 CFR 50.59, Review Low Volume Oily Waste Sump
Tritium Recapture Study

Section 2RS7 Radiological Environmental Monitoring Program

Procedures

EN-AA-170-1000, Radiological and Environmental Monitoring Program (REMP) and
Metrological Program Implementation, Revision 1
EN-AA-170-000, Radioactive Effluent and Environmental Monitoring Program, Revision 5
EN-AA-170-100, Familiarization Guide for REMP and Radioactive Effluent Control Program,
Revision 1
EN-AA-170-1001, REMP Vendor Dosimetry and Laboratory QA Program, Revision 1
EN-AA-170-500, Meteorological Monitoring System Calibration and Maintenance, Revision 1
EN-AA-170-200, Radioactive Effluent Controls Program, Revision 0
EN-AA-170-2000, Annual Radioactive Effluent Release Report, Revision 0
EN-AA-170-3100, Offsite Dose Calculation Manual Revisions, Revision 0
EN-AA-170-400, Radiological Ground Water Protection Program, Revision 4
EN-AA-170-501, Metrological Monitoring Program Administration, Revision 0
HC.CH-TI.ZZ-0012(Q), Chemistry Sampling Frequencies and Surveillances CY-AB-120-300,
Revision 12, Spent Fuel Pool Chemistry, Revision 65
NASSV-1.2.2NS, Servicing of Low Volume Air Particulate Samplers, Revision 15
MLKSA-1.1.2, Collection of Raw Milk Samples, Revision 10
Work Instruction NASSV-1.2.2NS

Other Documents

2012, 2013 Annual Radioactive Effluent Release Reports
2012, 2013 Annual Radiological Environmental Operating Reports
Update of Annual Average Metrological Parameters at Salem and Hope Creek Station,
December 2011
Meteorological Instrument Test Data January 2013
Land Use Census
10 CFR 50.75(g) File
NEI-07-07, Structures Systems and Components Assessment (Salem and Hope Creek)
Quarterly Remedial Action Progress Reports- various
REMP/RETS Action Tracking Matrix
Recommendations for New REMP Sampling Locations, September 10, 2012
A Review of Gaseous Effluent Release Points and Dispersion Assumptions at the Salem
and Hope Creek Nuclear Generating Stations, September 7, 2012
MES PSEG-002, Rev. 0, Procedure to Conduct an Annual Assessment of Vegetation in
Area Surrounding the Salem/Hope Creek Metrological Tower
Paper- the Effect of Antenna cable and Structural Reinforcement on Data Collection at the
Salem and Hope Creek Meteorological Tower
MES Update of Annual Average X/Q and D/Q values at Salem and Hope Creek,
September 20, 2013

LS-AA-126-1001-F1, FASA NRC Inspection of REMP December 2013, Audit NOSA-SLM-14-04 (80111776)

Comparison of Wind Speed and Direction Data from the MET Tower 33'level and the Back-up Pole at the Salem/Hope Creek Meteorological Tower
Teledyne Brown Engineering Environmental Services Annual 2013 QA Report
Corrective Action Documents – various Notifications

Section 4OA1: Performance Indicator Verification

Procedures

ER-AA-2008, MSPI Failure Determination and Evaluation, Revision 0
HC-MSPI-001, Hope Creek Generating Station Nuclear Regulatory Commission Regulatory Oversight Process Mitigating System Performance Index Basis Document, Revision 7.
LS-AA-2200, Mitigating System Performance Index Data Acquisition & Reporting, Revision 4
OP-AA-101-112-1002, On-Line Risk Assessment, Revision 8

Notifications (*NRC identified)

20625727	20626889	20633458	20633644	20633708	20634061
20634488	20645348	20658568*	20660099*		

Maintenance Orders/Work Orders

70162113

Section 4OA2: Problem Identification and Resolution

Procedures

ER-AA-10, Equipment Reliability Process Description, Revision 1
HC.IC-GP.ZZ-0061, Ventilation System Flow Measurements, Revision 12
HC.OP-SO.GE-0001, Turbine Building Ventilation System, Revision 15
HU-AA-1212, Technical Task Risk/Rigor Assessment, Pre-Job Brief, Independent Third Party Review and Post-Job Brief, Revision 8
LS-AA-120, Issue Identification and Screening Process, Revision 13
LS-AA-125, Corrective Action Program (CAP) Procedure, Revision 18
LS-AA-125-1002, Common Cause Evaluation Manual, Revision 7
MA-AA-716-004, Conduct of Troubleshooting, Revision 12
MA-AA-716-210-1005, Predefine Change Processing, Revision 3
WC-AA-111, Predefine Process, Revision 8

Notifications (*NRC identified)

20529357	20612353	20652670	20656424
20554450	20613113	20653632	20656805
20562033	20633268	20653928	20657453
20564032	20634346	20653965	20657454
20564421	20639449	20654775	20657456
20571735	20639772	20654858	20657497
20586895	20641659	20654973	20657669
20589418	20641659	20654973	20658088
20593133	20641767	20654973	20661238
20595967	20647896	20655915	20662182
20599628	20650597	20655952	20663645
20608531	20650597	20655979	20665058
20608909	20651161	20656088*	

Maintenance Orders/Work Orders

30243142	60116765	60117683	60117986	60119003	70129996
70137311	70142156	70143022	70148590	70150802	70151767
70154456	70155811	70161505	70163645	70164253	70167025
80107924					

Section 40A3: Follow-Up of Events and Notices of Enforcement DiscretionProcedures

HC.OP-AB.RPV-0001, Reactor Power, Revision 13
 HC.OP-IO.ZZ-0006, Power Changes During Operation, Revision 57
 HC.OP-AB.CONT-0002, Primary Containment, Revision 13
 HU-AA-1212, Technical Task Risk/Rigor Assessment, Pre-Job Brief, Independent Third Party Review and Post-Job Brief, Revision 8
 MA-HC-716-004, Conduct of Troubleshooting (Hope Creek), Revision 0
 FRH-III-111, Hope Creek Pre-Fire Plan: Turbine Building Elev. 54' & 69' (Rooms 1101-1106), Revision 4
 MA-AA-716-016, Control of In-Plant Non-Safety Related Paintings/Coatings, Revision 3
 SH.MD-SP.ZZ-0010, General Application of Enecon Products, Revision 5
 ER-HC-1051, Leakage Reduction Program, Revision 2
 ER-HC-321-1011, Testing of Hope Creek ASME Class 1,2,3 Safety/Relief Valves, Revision 2
 FRH-II-415, Hope Creek Pre-Fire Plan, Drywell Pad & Torus Area, Elevations 54 ft. and 77 ft., Revision 4
 HC.MD-CM.GS-0002, Drywell to Torus to Reactor Building Vacuum Relief Valve Overhaul, Revision 18
 HC.MD-ST.AB-0003, Safety Relief Valve Discharge Piping Vacuum Breaker In-Place Test, Revision 2
 HC.OP-AB.CONT-0006, Drywell Leakage, Revision 8
 HC.OP-AB.RPV-0006, Safety/Relief Valve, Revision 3
 HC.OP-SO.BC-0001, Residual Heat Removal System Operation, Revision 53
 HC.OP-ST.ZZ-0006, Drywell to Suppression Chamber Leak Rate Test – 18 Months, Revision 17
 WC-AA-101, On-line Work Management Process, Revision 22

Other Documents

70121216 - Technical Evaluation 80103650, Main Steam SRV Tailpipe Temperature Monitoring Basis, Revision 0
 70157799 - DEH 14-0064, Determine the Adequacy of Current Method of Quantifying SRV Leak Rate, 4/22/14
 HCGS ACM #14-014, Torus Level and Temperature, Drywell Temperature, Pressure, and Unidentified Leakage, and Torus Area Noise, 8/15/14
 HCGS OTDM #13-003, 'R' SRV Tailpipe Temp. Trend and 'J' SRV Indication, Revision 4
 HCGS OTDM #14-013, Abnormal Torus Noise, Dated 8/25/14
 HCGS RF17 Vacuum Breaker As-Found Testing Results, Dated 4/30/12
 HCGS SER #13-003 SRV Tailpipe Temperatures and 'J' SRV Tailpipe Temperature Indication, Revision 4
 HCGS Standing Order #14-42, Operational Guidance for 'H' SRV Tailpipe Vacuum Breaker Cycling, Dated 8/21/14
 HCGS Temporary Reading Sheet for 'H' SRV/Torus Noise as Heard in the 'A' & 'C' Core Spray Pump Rooms (2xShift), 8/25/14 – 9/4/14

Notifications

20341549	20647829	20659947
20555930	20650904	20659962
20611250	20652621	20659982
20618492	20657970	20660255
20629423	20658033	20662977
20642492	20658912	20663545

Maintenance Orders/Work Orders

30226715	60097071	70161255
50082784	60117312	70166490
50082785	60117621	70168161
50136938	60118460	70168162
50149086	60118871	70168360

Drawings

10855-M141(Q) 15-9, DS-C-60901, Vacuum Relief Valve, Revision H
 10855-1-P-AB-11, MSRV Discharge Drum Line 'D', Revision 13
 VTD PM141Q-0113, Crosby Instruction Manual, Revision 14
 VTD PM141Q-0015, Quality System Manual Welding Control Section 9.0, Revision 1
 P-1702-1, Reactor Building Area 17 Plan Elevation 77 ft., Revision 3
 P-1703-1, Reactor Building Area 17 Plan Elevation 100 ft., 2 in., Revision 3
 P-1704-1, Reactor Building Area 17 Plan Elevation 112 ft., Revision 3
 P-1705-1, Reactor Building Area 17 Plan Elevation 77 ft., Revision 3

Miscellaneous

Calculation AB-0068, SRV Vacuum Breaker Test Acceptance Criterion, Revision 3
 Calculation AB-0076, Tailpipe Temperature vs. Leak Rate of PSV-F013H SRV (DCP 80106532), Revision 0, 5/21/12
 Calculation D-114, Dynamic Analysis for Design Evaluation of Main Steam Safety Relief Valve Discharge Piping Inside the Drywell Main Steam 'A' – Main Steam Line 'R', Revision 1
 CR-JAF-2005-02593, Root Cause Analysis Report – Torus Leak Discovered Near the Support between Bays 'A' and 'P', Revision 3
 GE Analysis, L-002766, GE NEDE and Continuous Operation of RHR in Suppression Pool Cooling Mode, Revision 0
 Hatch OE #197702
 Hatch Unit 2 INPO OE #186312 from 5/10/00
 HC Torus Level Increase Input Troubleshooting from 7/10/14, 8/22/14 and 9/1/14
 HCGS Risk Assessment for Work Week #1434, Dated 8/17/14
 JAF-RPT-05-00115, PSA Evaluation of JAF Torus and Shutdown Cooling Line Cracks, Revision 1
 Maintenance Strategy: H1AB-1ABPSV-F037H-B21, Dated 8/18/14
 Millstone LER 88-008-00 and 94-033-01
 NOH01MSTEAMC-07, Main Steam System Hope Creek Licensed/Non-licensed Operator Training, Dated 2/28/11
 NRC TIA 2001-14, Task Interface Agreement Evaluation of Lasalle Water Hammer Analysis, Revision 1
 80112513, Turbine Building Circulating Water Return Repair with AL6XN, Revision 0
 DCP 80112615
 M-09-1, Circulating Water, Revision 27
 TCCP 4HT-14-026, Hope Creek Turbine Building Circulating Water Return Line Repair, Revision 0

VTD 322086

80112383 (DEH 14-0134) Effects of Residual Sodium Pentaborate Solution in SLC Injection Piping, 7/31/14

DCP 4-HC-0126

DCP 4-HC-0156

HC Standing Order 2014-35, Operator Actions Following SLC Injection, Effective 8/1/14

M-48-1, Standby Liquid Control, Revision 16

Maintenance Strategy: H1BH-1BHXIS-AC652080807, Dated 9/15/14

OTDM HC-14-011, Standby Liquid Control and DIV 1 Redundant Reactivity Control System, Dated 7/30/14

DEH 14-107

HCGS System Vulnerability Review Report for Hope Creek Reactor Recirculation System, March/April 2011 (80104008)

OTDM HC-14-008, 'B' Reactor Recirculation MG Set Speed Control, Revision 1

PSE-22720, Failure Analysis of Various Bailey Control Boards, an RIS Isolator Module, and an NUS Control Module, 6/27/14

LIST OF ACRONYMS

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
AC	alternating current
ALARA	as low as is reasonably achievable
ARM	area radiation monitor
ATWS	anticipated transient without scram
CAM	continuous air monitor
CAP	corrective action program
CCE	common cause evaluation
CS	core spray
CW	circulating water
DCP	design change package
EDG	emergency diesel generator
EPD	electronic personal dosimeter
FFCDE	functional failure cause determination evaluation
EN	event notification
EPRI	Electric Power Research Institute
GL	Generic Letter
GPI	Groundwater Protection Initiative
HCGS	Hope Creek Generating Station
HPCI	high pressure coolant injection
HRA	high radiation area
HVAC	heating, ventilation, and air conditioning
HX	heat exchanger
IMC	Inspection Manual Chapter
kV	kilovolt
LER	licensee event report
LHRA	locked high radiation area
MSPI	mitigating system performance index
NEI	Nuclear Energy Institute
NOTF	notification
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
QA	Quality Assurance
PCM	performance centered maintenance
PCR	procedure change request
PM	preventive maintenance
PSEG	Public Service Enterprise Group Nuclear LLC
RBVS	reactor building ventilation system
RCIC	reactor core isolation cooling
RCS	reactor coolant system
REMP	Radiological Environmental Monitoring Program
RHR	residual heat removal
RP	radiation protection
RTP	rated thermal power
RWP	radiation work permit
SACS	safety auxiliaries cooling system
SAM	small article monitors
SCBA	self-contained breathing apparatus
SLC	standby liquid control

SRV	safety relief valve
SSC	structure, system, or component
SSWS	station service water system
TBCW	turbine building circulating water
TCCP	temporary configuration change package
UFSAR	Updated Final Safety Analysis Report
UHS	ultimate heat sink
VHRA	very high radiation area
VTD	vendor technical document
WBC	whole body count
WGE	work group evaluation