



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

April 3, 2017

Mr. Peter P. Sena, III
President and Chief Nuclear Officer
PSEG Nuclear LLC – N09
P.O. Box 236
Hancocks Bridge, NJ 08038

**SUBJECT: HOPE CREEK GENERATING STATION – NRC PROBLEM IDENTIFICATION
AND RESOLUTION INSPECTION REPORT 05000354/2017008**

Dear Mr. Sena:

On February 17, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution inspection at your Hope Creek Generating Station (HCGS), and the NRC inspection team discussed the results of this inspection with Mr. Eric Carr, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspection team reviewed the station's corrective action program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for corrective action programs. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety. The team documented one finding associated with prioritization and evaluation of issues. Specifically, the team documented a self-revealing finding, which included an observation by the team where PSEG did not prioritize and evaluate its extent of condition.

The team also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

Finally, the team reviewed the station's programs to establish and maintain a safety-conscious work environment, and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews, the team found no evidence of challenges to your organization's safety-conscious work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

NRC inspectors documented one finding of very low safety significance (Green) in this report. This finding involved a violation of NRC requirements. The NRC is treating this as a non-cited violation (NCV), consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest this NCV, you should provide a response within 30 days of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at HCGS.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Fred L. Bower, III, Chief
Reactor Projects Branch 3
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000354/2017008
w/ Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

SUBJECT: HOPE CREEK GENERATING STATION – NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000354/2017008 dated April 3, 2017

DISTRIBUTION w/enc!:

DDorman, RA	(R1ORAMail Res)
DLew, DRA	(R1ORAMail Res)
MScott, DRP	(R1DRPMail Res)
DPelton, DRP	(R1DRPMail Res)
RLorson, DRS	(R1DRSMail Res)
JYerokun, DRS	(R1DRSMail Res)
FBower, DRP	
RBarkley, DRP	
MDraxton, DRP	
SGhrayeb, DRP	
JHawkins, DRP, SRI	
SHaney, DRP, RI	
AZiedonis, DRP, RI	
ATurilin, DRP	
SAnderson, DRS	
COtt, DRP, AA	
JBowen, RI, OEDO	
RidsNrrPMHopeCreek Resource	
RidsNrrDorlLp1-2 Resource	
ROPReports Resource	

DOC NAME: G:\DRP\BRANCH3\Inspection Reports\Hope Creek\2017\PIR Team - 2017008\Report\Hope Creek 2017 PIR Report_FINAL.docx

ADAMS Accession No. ML17094A365

<input checked="" type="checkbox"/> SUNSI Review		<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive		<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available	
OFFICE	RI/DRP	RI/DRP	RI/DRP		
NAME	AZiedonis/RB	MFerdas	FBower		
DATE	3/31/2017	4/3/2017	4/3/2017		

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-354

License No.: NPF-57

Report No.: 05000354/2017008

Licensee: PSEG Nuclear LLC (PSEG)

Facility: Hope Creek Generating Station (HCGS)

Location: Hancocks Bridge, NJ

Dates: January 30 – February 17, 2017

Team Leader: Adam Ziedonis, Resident Inspector

Inspectors: Justin Hawkins, Senior Resident Inspector
Andrey Turilin, Project Engineer
Stephanie Anderson, Reactor Inspector

Approved by: Fred L. Bower, III, Chief
Reactor Projects Branch 3
Division of Reactor Projects

SUMMARY

IR 05000354/2017008; 01/30/2016 – 02/17/2016; Hope Creek Generating Station (HCGS); Biennial Baseline Inspection of Problem Identification and Resolution. The inspectors documented one finding associated with effectiveness of prioritization and evaluation of issues.

This NRC team inspection was performed by two regional inspectors and two resident inspectors. The inspectors documented one finding of very low safety significance (Green) during this inspection and classified this finding as a non-cited violation (NCV). The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated, April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Components Within Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with (IAW) the NRC's Enforcement Policy, dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

Problem Identification and Resolution

The inspectors concluded that PSEG was effective in identifying, evaluating, and resolving problems; exceptions noted included the NCV below and the observations listed in 4OA2.1.c. PSEG personnel identified problems, entered them into the corrective action program at a low threshold, and prioritized issues commensurate with their safety significance. PSEG appropriately screened issues for operability and reportability, and performed causal analyses that appropriately considered extent of condition, generic issues, and previous occurrences. The inspectors also determined that PSEG typically implemented corrective actions to address the problems identified in the corrective action program in a timely manner, except as noted in 4OA2.1.c(3). However, the inspectors documented one violation of NRC requirements that included an observation by the team in the area of effectiveness of prioritization and evaluation of issues where PSEG did not prioritize and evaluate the extent of condition of the performance deficiency.

The inspectors concluded that, PSEG adequately identified, reviewed, and applied relevant industry operating experience to HCGS operations. In addition, based on those items selected for review, the inspectors determined that PSEG's self-assessments and audits were thorough.

Based on interviews the inspectors conducted over the course of the inspection, observations of plant activities, and reviews of individual corrective action program and employee concerns program issues, the inspectors did not identify any indications that site personnel were unwilling to raise safety issues nor did they identify any conditions that could have had a negative impact on the site's safety conscious work environment.

Cornerstone: Barrier Integrity

- Green. A self-revealing Green non-cited violation (NCV) of Technical Specification (TS) 6.8.1, "Procedures and Programs," as described in Regulatory Guide (RG) 1.33, Revision 2, February 1978, was identified when PSEG did not maintain an appropriate preventive maintenance (PM) schedule for the 'A' control room heating, ventilation and air conditioning (HVAC) system. Specifically, PSEG inadvertently deactivated a PM activity to perform periodic cleaning of the 'A' control room return air fan (AVH-415) low flow switch pitot tubes that resulted in the 'A' train of the control room emergency filtration (CREF) to be

unavailable on November 23, 2016. PSEG performed corrective actions to clean the clogged pitot tubes associated with the AH-415 flow switch, re-activate the inadvertently deleted PM, and identify the extent of condition in other systems.

This issue was more than minor because it was associated with the structures, systems and components (SSC) and barrier performance attribute of the Barrier Integrity Cornerstone (under the “areas to measure” associated with the radiological barrier function of the control room); and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The inspectors determined that the finding was of very low safety significance (Green) in accordance with IMC 0609, Attachment 4 and Appendix A, Exhibit 3, because the finding only represented a degradation of the radiological barrier function for the control room. The inspectors determined that there was no cross-cutting aspect associated with this finding since it was not representative of current PSEG performance. Specifically, the causal factors associated with this finding occurred in 2010, which was outside the nominal three-year period of consideration and were not considered representative of present performance in accordance with IMC 0612. (Section 4OA2.1b)

REPORT DETAILS

4. OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution (71152B)

This inspection constitutes one biennial sample of problem identification and resolution as defined by Inspection Procedure 71152. All documents reviewed during this inspection are listed in the Attachment to this report.

.1 Assessment of Corrective Action Program Effectiveness

a. Inspection Scope

The inspectors reviewed the procedures that describe and implement PSEG's corrective action program at HCGS. To assess the effectiveness of the corrective action program, the inspectors reviewed performance in three primary areas: problem identification, prioritization and evaluation of issues, and corrective action implementation. The inspectors compared performance in these areas to the requirements and standards contained in Title 10 or the *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, Criterion XVI, "Corrective Action," and PSEG procedure LS-AA-125, "Corrective Action Program." For each of these areas, the inspectors considered risk insights from the station's risk analysis and reviewed notifications (NOTF) selected across the seven cornerstones of safety in the NRC's Reactor Oversight Process. Additionally, the inspectors attended multiple Station Ownership Committee (SOC) and Management Review Committee (MRC) meetings. The inspectors selected items from the following functional areas for review: engineering, operations, maintenance, physical security, emergency preparedness, radiation protection, chemistry, and oversight programs.

(1) Effectiveness of Problem Identification

In addition to the items described above, the inspectors reviewed system health reports, completed corrective and PM work orders, completed surveillance tests, and periodic trend reports. The inspectors completed field walkdowns of various systems on site, including the Emergency Diesel Generator (EDG), High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC). Additionally, the inspectors reviewed a sample of NOTFs written to document issues identified through internal self-assessments, audits, emergency preparedness drills, and the operating experience program. The inspectors completed this review to verify that PSEG entered conditions adverse to quality into their corrective action program as appropriate.

(2) Effectiveness of Prioritization and Evaluation of Issues

The inspectors reviewed the evaluation and prioritization of a sample of NOTFs, since the last NRC biennial Problem Identification and Resolution inspection completed in February 2015. The inspectors also reviewed NOTFs that were assigned lower levels of significance and did not include formal cause evaluations to ensure that they were properly classified. The inspectors' review included the appropriateness of the assigned significance, the scope and depth of the causal analysis, and the timeliness of resolution. The inspectors assessed whether the evaluations identified likely causes for the issues and developed appropriate corrective actions to address the identified

causes. Further, the inspectors reviewed equipment operability determinations, reportability assessments, maintenance rule functional failure determinations, and extent-of-condition reviews for selected problems to verify these processes adequately evaluated equipment operability, reporting of issues to the NRC, maintenance rule impacts, and the extent of the issues.

(3) Effectiveness of Corrective Actions

The inspectors reviewed PSEG's completed corrective actions through documentation review, interviews, and, in some cases, field walkdowns to determine whether the actions addressed the identified causes of the problems. The inspectors also reviewed NOTFs for adverse trends and repetitive problems to determine whether corrective actions were effective in addressing the broader issues. The inspectors reviewed PSEG's timeliness in implementing corrective actions and effectiveness in precluding recurrence for significant conditions adverse to quality. The inspectors also reviewed a sample of NOTFs associated with previous NCVs and findings to verify that PSEG personnel properly evaluated and resolved these issues. In addition, the inspectors expanded the review to five years to evaluate PSEG's actions related to the EDG and RCIC system issues.

b. Findings

Improper PM Deletion Results in the Inoperability of the 'A' Control Room HVAC System

Introduction. A self-revealing Green NCV of TS 6.8.1, "Procedures and Programs," as described in RG 1.33, Revision 2, February 1978, was identified when PSEG did not maintain an appropriate PM schedule for the 'A' control room HVAC system. Specifically, PSEG inadvertently deactivated a PM activity to perform periodic cleaning of the 'A' control room return air fan (AVH-415) low flow switch pitot tubes which resulted in the 'A' train of CREF to be unavailable on November 23, 2016.

Description. On November 23, 2016, the AVH-415 fan experienced an unplanned trip due actuation of the low flow switch. In response to the trip, PSEG entered two unplanned TS limiting conditions for operation (LCO) shutdown action statements: 3.7.2.1.a.1 for inoperability of the 'A' train of the CREF sub-system, which requires restoration within 7 days; and 3.7.2.2 for the 'A' train of the control room supply (CRS) sub-system, which requires restoration within 30 days. The CREF is a safety-related sub-system of the control room HVAC system, designed to maintain control room habitability by providing filtration of fresh air and recirculation air during accidents with high radiological conditions. The CRS is a safety-related sub-system of the control room HVAC system, designed to supply the main control room with the necessary heating, cooling, ventilation and environmental control, as well as provide a supporting function for the CREF system.

PSEG entered the AH-415 fan trip into the corrective action program under NOTF 20750230, cleaned the low flow switch pitot tube with pressurized air, and restored the AH-415 fan approximately 11 hours later on November 23. PSEG performed a maintenance rule functional failure causal evaluation (FFCDE) under order 70191008, and determined the cause of the fan trip was due to the buildup of debris in the pitot tube, which reduced air flow to the differential pressure switch, causing actuation of the switch and tripping of the fan. FFCDE 70191008 determined that the AVH-415 low flow

switch previously had its PM activity, to perform pitot tube cleaning with pressurized air, inadvertently deactivated in 2010 under order 70086220. PSEG further determined that the 2010 PM review activities had actually intended to change the AH-415 fan flow switch PM frequency from 24 to 36 months. As a result of FFCDE 70191008, PSEG created an action to reactivate the PM associated with the pitot tube cleaning.

PSEG performed an extent of condition review under FFCDE 70191008, and identified 101 other low flow switches used in ventilation systems that are within the scope of the maintenance rule and perform a high risk significance function. The inspectors identified that no specific action had been taken by PSEG to address the extent of condition. The inspectors determined that this was not a separate performance deficiency, because PSEG's procedures did not require any action to be taken after the extent of condition was identified. However, PSEG acknowledged the procedure gap, and generated NOTF 20755384 to capture the issue.

Analysis. Inadvertently deactivating a PM that was required for cleaning the 'A' AVH-415 low flow switch pitot tube was a performance deficiency. This issue was more than minor because it was associated with the SSC and barrier performance attribute of the Barrier Integrity Cornerstone (under the "areas to measure" associated with the radiological barrier function of the control room); and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the AVH-415 fan trip rendered the 'A' train of the CRS sub-system unavailable, and adversely affected the capability of the 'A' CREF sub-system to provide filtration of recirculation air and maintain control room habitability under certain accident scenarios involving radiological releases. The inspectors determined that because the 'A' CRS fan tripped, and the 'A' CREF train was subsequently rendered inoperable and unavailable, the radiological barrier function of the control room was adversely affected. The inspectors determined that the finding was of very low safety significance (Green) IAW IMC 0609, Attachment 4 and Appendix A, Exhibit 3, because the finding only represented a degradation of the radiological barrier function for the control room.

The inspectors determined that there was no cross-cutting aspect associated with this finding since it was not representative of current PSEG performance. Specifically, the causal factors associated with this finding occurred in 2010, which was outside the nominal three-year period of consideration and were not considered representative of present performance IAW IMC 0612.

Enforcement. TS 6.8.1, "Procedures and Programs," states, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix 'A' of RG 1.33, Revision 2, February 1978. RG 1.33, Revision 2, February 1978, Section 9, "Procedures for Performing Maintenance," states, in part, that PM schedules should be developed to specify inspections of equipment. WC-AA-111, "Predefine Process," Step 4.10, PM Change Request (PCR), established how to change equipment PM schedules. Contrary to the above, WC-AA-111, Step 4.10, was inadequately implemented in 2010 when a PM scheduled for the AVH-415 fan was inadvertently deactivated. This led to the AVH-415 fan tripping during the swapping of control room ventilation trains on November 23, 2016, due the low flow switch being found with a clogged pitot tube. PSEG entered this in their corrective action program under NOTF 20755384, and performed corrective

actions to clean the clogged pitot tubes associated with the AH-415 low flow switch, re-activate the inadvertently deleted PM, and identify the extent of condition in other systems. Because this finding was of very low safety significance (Green) and was entered into PSEG's corrective action program, this violation is being treated as an NCV consistent with Section 2.3.2.a of the NRC's Enforcement Policy.

(NCV 05000354/2017008-01, Improper Preventive Maintenance Deletion Results in the Inoperability of the 'A' Control Room HVAC System)

c. Assessment

(1) Effectiveness of Problem Identification

Based on the selected samples, plant walkdowns, and interviews of site personnel in multiple functional areas, the inspectors determined that PSEG identified problems and entered them into the corrective action program at a low threshold. PSEG staff at HCGS (and Common) initiated approximately 22,500 NOTFs from January 1, 2015, through December 31, 2016. The inspectors observed supervisors at SOC and MRC meetings appropriately questioning and challenging NOTFs to ensure clarification and proper classification of the issues. Based on the samples reviewed, the inspectors determined that PSEG appropriately identified problems in condition reports. The inspectors verified that conditions adverse to quality identified through this review were entered into the corrective action program as appropriate. The inspectors did not identify any issues or concerns that had not been appropriately entered into the corrective action program for evaluation and resolution. In response to the inspectors' observations minor issues during the course of the inspection, PSEG personnel promptly initiated condition reports and/or took immediate action to address the issues.

(2) Effectiveness of Prioritization and Evaluation of Issues

The inspectors determined that, in general, PSEG appropriately prioritized and evaluated issues commensurate with the safety significance of the identified problem. PSEG screened NOTFs for operability and reportability, categorized the NOTFs by significance, and assigned actions to the appropriate department for evaluation and resolution. The NOTF screening process considered human performance issues, radiological safety concerns, repetitiveness, adverse trends, and potential impact on the safety conscious work environment.

Based on the sample of NOTFs reviewed, the inspectors noted that the guidance provided by PSEG's corrective action program implementing procedures enabled consistency in the categorization of issues. Operability and reportability determinations were performed when conditions warranted, and in most cases, the evaluations supported the conclusion. In general, causal analyses appropriately considered the extent of condition or problem, generic issues, and previous occurrences of the issue, except as noted below.

Additionally, the inspectors identified the following minor observation regarding PSEG's prioritization and evaluation of other issues:

Unplanned PM Deactivation

The inspectors previously documented one self-revealing NCV in Section 4OA2.1.b, that included an associated observation by the team where PSEG did not prioritize and evaluate the extent of condition. As part of PSEG's evaluation of the 'A' CREF unplanned unavailability in November 2016, they performed an extent of condition review under FFCDE 709191008. PSEG identified 101 other low flow switches used in ventilation systems. The inspectors noted that PSEG did not take any specific action to ensure these switches had appropriate PMs established to clean the pitot tubes. PSEG's procedures do not require any action to be taken after extent of condition review is completed. PSEG acknowledged the inspectors' observation and generated NOTF 20755384 to evaluate if any procedure changes are needed. Additional details associated with the November 2016 event can be found Section 4OA2.1.b.

HPCI Overspeed Tappet Reset Spring

The inspectors reviewed work group evaluation (WGE) 70185851 that was performed in response to an inadvertent overspeed trip of HPCI during a post maintenance surveillance run on April 7, 2016, which PSEG subsequently reported in licensee event report (LER) 05000354/2016-001. PSEG procedure LS-AA-125, "Corrective Action Program," Revision 21, Step 2.27, defines a WGE as "an evaluation conducted to determine the problem that caused the condition." The inspectors observed that the WGE did not determine the problem that caused the condition, because the cause as stated in the WGE was not consistent with the supporting information provided in the body of the evaluation. The inspectors also questioned the appropriateness of PSEG's uncertainty ranking of low, documented in NOTF 20766089 for the April 7, 2016, overspeed trip that lead the station to perform a WGE in lieu of a higher level of corrective action program evaluation (e.g., an apparent cause evaluation [ACE]). LS-AA-120, "Issue Identification," Revision 14, Attachment 3, "Guidance for Determining Evaluation Type," describes that the level of causal evaluation is determined by ranking the level of risk and uncertainty associated with the issue. PSEG acknowledged the inspectors' observations and questions, generated NOTFs 20754829 and 20754829 in response, and determined that re-performing the evaluation using the ACE process was appropriate. The ACE product remained under development at the conclusion of this inspection. The inspectors determined the PD was minor IAW IMC 0612, Appendix B, "Issue Screening."

(3) Effectiveness of Corrective Actions

The inspectors concluded that corrective actions for identified deficiencies were generally timely and adequately implemented. For significant conditions adverse to quality, PSEG identified actions to prevent recurrence. The inspectors reviewed a selected sample of NRC NCVs and findings since the last problem identification and resolution inspection and concluded that PSEG's corrective actions were timely and effective. The inspectors did note the following observations associated with PSEG's resolution of degraded conditions that were determined to be minor IAW IMC 0612, Appendix B, "Issue Screening:"

- The actions to perform third party failure analysis associated with EDG speed switch failures in August 2015 (EQACE 70179133) and August 2016 (EQACE 70188603) were not tracked under a separate NOTF, as required by MA-AA-716-232-1004,

“Failure Analysis Tracking and Reporting,” Revision 2, Step 4.1.4. As a result of less than rigorous tracking, the inspectors determined that there were several periods of unnecessary delay during a 10 month period of failure analysis following the 2015 EQACE. However, the inspectors determined that the August 2016 failure would not have been reasonable to foresee and prevent, even if the August 2015 failure analysis was completed in a timely manner, based in part because the 2015 speed switch failure had a unique aspect (broken pin) that was not present in the 2016 failure. PSEG captured this observation under NOTF 20755419.

- The inspectors noted that during review of corrective action program evaluations that included third party equipment failure analysis, examples were identified where PSEG did not include actions to re-review the cause and corrective actions, once the results of the failure analysis were obtained. PSEG captured this observation in NOTF 20759367.
- The inspectors reviewed ACE 70176824, performed in response to the RCIC pump failing to rotate during low pressure testing at the end of the 2015 refueling outage. The inspectors noted that ACE Attachment 2, Step 2 that documented the PM review recommended oil sampling of the RCIC oil pump bearings on a 6 month frequency to align with PSEG’s recommended PM frequency. The inspectors determined that this action was not completed. Although this was a recommendation and not a procedure requirement, PSEG initiated NOTF 20759340 to capture this issue.

.2 Assessment of the Use of Operating Experience

a. Inspection Scope

The inspectors reviewed a sample of NOTFs associated with review of industry operating experience to determine whether PSEG appropriately evaluated the operating experience information for applicability to HCGS and had taken appropriate actions, when warranted. The inspectors also reviewed evaluations of operating experience documents associated with a sample of NRC generic communications to ensure that PSEG adequately considered the underlying problems associated with the issues for resolution via their corrective action program.

b. Findings

No findings were identified.

c. Assessment

The inspectors determined that PSEG appropriately considered industry operating experience information for applicability, and used the information to prevent, identify and correct similar issues when appropriate. The inspectors determined that operating experience was appropriately applied and lessons learned were communicated and incorporated into plant operations and procedures when applicable. The inspectors also noted that industry operating experience was routinely discussed and considered during the conduct of station meetings and pre-job briefs.

.3 Assessment of Self-Assessments and Audits

a. Inspection Scope

The inspectors reviewed a sample of audits, including the most recent audit of the corrective action program, departmental self-assessments, and assessments performed by independent organizations. Inspectors performed these reviews to determine if PSEG entered problems identified through these assessments into the corrective action program, when appropriate, and whether PSEG initiated corrective actions to address identified deficiencies. The inspectors evaluated the effectiveness of the audits and assessments by comparing audit and assessment results against self-revealing and NRC-identified observations made during the inspection.

b. Findings

No findings were identified.

c. Assessment

The inspectors concluded that self-assessments, audits, and other internal PSEG assessments were generally critical, thorough, and effective in identifying issues. The inspectors observed that PSEG personnel knowledgeable in the subject completed these audits and self-assessments in a methodical manner. PSEG completed these audits and self-assessments to a sufficient depth to identify issues which were then entered into the corrective action program for evaluation. In general, the station implemented corrective actions associated with the identified issues commensurate with their safety significance.

.4 Assessment of Safety Conscious Work Environment

a. Inspection Scope

During interviews with station personnel, the inspectors assessed the safety conscious work environment at HCGS. Specifically, the inspectors interviewed personnel to determine whether they were hesitant to raise safety concerns to their management and/or the NRC. The inspectors also interviewed the station Employee Concerns Program coordinator to determine what actions are implemented to ensure employees were aware of the program and its availability with regards to raising safety concerns. The inspectors reviewed the Employee Concerns Program files to ensure that PSEG entered issues into the corrective action program when appropriate.

b. Findings

No findings were identified.

c. Assessment

During interviews, PSEG staff expressed a willingness to use the corrective action program to identify plant issues and deficiencies and stated that they were willing to raise safety issues. The inspectors noted that no one interviewed stated that they personally experienced or were aware of a situation in which an individual had been

retaliated against for raising a safety issue. Interviews with PSEG staff demonstrated an adequate knowledge of the corrective action program and the Employee Concerns Program. Based on these limited interviews, the inspectors concluded that there was no evidence of an unacceptable safety conscious work environment and no significant challenges to the free flow of information.

4OA6 Meetings, Including Exit

On February 17, 2017, the inspectors presented the inspection results to Mr. Eric Carr, Site Vice President, and other members of the HCGS 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

E. Carr, Site Vice President
E. Casuli, Plant Manager
D. Mannai, Senior Director, Regulatory Operations
J. Mallon, Director, Site Regulatory Compliance
T. MacEwen, Compliance Engineer
A. Ochoa, Senior Engineer Nuclear
D. Shuman, Employee Concerns Program Manager
B. Mattingly, Manager of Organizational Effectiveness, Performance Improvement
K. Palmer, CAP Program Manager
C. Bersak, CAP Coordinator
M. Dior, Manager, Plant Engineering
K. Torres, Manager, Engineering Systems
A. Bauer, Staff Engineer Nuclear
D. Cendo, Lead Engineer Nuclear
M. Conroy, Principal Nuclear Engineer
Y. Khaled, Associate Engineer Nuclear
I. Kinnarney, Associate Engineer Nuclear
P. Koppel, Technical Specialist
T. Lighty, Senior Engineer Nuclear
C. Payne, Lead Engineer Nuclear
M. Peterson, Lead Engineer Nuclear
N. Rock, Associate Engineer Nuclear
M. Rooney, Nuclear Shift Supervisor
A. Simkins, System Engineer
D. Bedford, System Engineer

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened and Closed

05000354/2017008-01	NCV	Improper Preventive Maintenance Deletion Results in the Inoperability of the 'A' Control Room HVAC System
---------------------	-----	---

LIST OF DOCUMENTS REVIEWED

Section 40A2: Problem Identification and Resolution

Audits and Self-Assessments

- 80113373, Informal Benchmarking Report – Management of Augmented Quality Vendors, dated October 30, 2015
- 80115527, Informal Benchmarking Report – Evaluation of CMO and DevonWay Audit Software Suites, dated November 13, 2015
- 80114015, NOSA-HPC-15-04 – CAP Audit Report, dated April 29, 2015
- 80115689, Operations, Operations Training, and PORC Audit Report
- 80116308, Maintenance Audit Report, Audit NOSA-HPC-16-03, Hope Creek Generating Station February 8, 2016 to February 19, 2016
- 80117129, Training and Staffing Audit Report
- 80117891, Hope Creek PI&R Focused Area Self-Assessment (FASA), dated September 30, 2016

Cause Evaluations

- 70155514, RCE for “B” Circulating Water Pump Trip and Reactor Scram
- 70161698, RCE Reactor SCRAMs on ‘A’ Moisture Separator High Level
- 70166490, EQACE – ‘B’ Reactor Recirculation Pump Un-demanded Speed Increase, Revision 0
- 70171837, WGE for ‘A’ EDG Jacket Water Flange Leak during Surveillance
- 70171909, NRC Finding for Material Search Requirements
- 70172477, CCE NOS ID Adverse Trend Parts Issues
- 70174112, WGE for Diesel Generator Starting Compressor Air Dryer Power Switch
- 70174237, WGE Water in RCIC Oil
- 70175101, ‘A’ Core Spray Pump Failure to Start
- 70175408, RHR BC-HV-F024A Failed to Open
- 70175589, RCE Loss of SDC
- 70175866, WGE NSR O-Rings Procured for Safety-Related Applications
- 70175979, N1 Notifications Not Issued for PM CAT-type Instruments
- 70176519, CCE NOS: SACS/TACS Relief As-Found Trend
- 70176824, EQACE RCIC Pump / Turbine Did Not Turn
- 70176875, ‘A’ Recirculation Loop Discharge Valve Stroke to Mid Position
- 70177431, WGE ‘B’ SACS Pump Trip
- 70177915, CCE High Number of Critical Component Failures
- 70178604, WGE EDG SAC RV Leakage
- 70179133, ACE for ‘C’ EDG Speed Switch and Jacket Water Heater Failure
- 70179918, 1AFLT-1559C 5C Feedwater Heater Trip
- 70179919, 3C Feedwater Heater Dump Opened For 17 Minutes
- 70180096, ACE Locked High Radiation Area Controls Violation
- 70180697, ACE for Trip of the B Recirculation Pump
- 70183330, ACE for ‘C’ EDG Jacket Water Braided Hose Leak
- 70184094, WGE Calculating the Shelf Life of Relays
- 70185851, HPCI Trip on Start-up
- 70186738, WGE ‘A’ Control Area Ventilation Train Trip
- 70187591, WGE for B Control Room Ventilation Train Trip during Relay Replacement
- 70188713, WGE Non-Safety Related O-Rings in EQ Equipment
- 70188603, ACE for Repeat Failure of ‘C’ EDG Speed Switch

70190401, ERE for 'A' EDG Failed Large Load Reject
 70190511, 'A' SLC Operated with Less Than 5 inches in Test Tank

Drawings

7922-5, Diesel Area HVAC Control Panel, Sheet 1, Revision 10
 7922-5, Diesel Area HVAC Control Panel, Sheet 2, Revision 9
 7922-5, Diesel Area HVAC Control Panel, Sheet 3, Revision 5
 7922-5, Diesel Area HVAC Control Panel, Sheet 4, Revision 5
 7922-5, Diesel Area HVAC Control Panel, Sheet 5, Revision 5
 7922-5, Diesel Area HVAC Control Panel, Sheet 6, Revision 5
 7922-4, Diesel Area HVAC Control Panel, Sheet 1, Revision 9
 7922-4, Diesel Area HVAC Control Panel, Sheet 2, Revision 9
 7922-4, Diesel Area HVAC Control Panel, Sheet 3, Revision 5
 7922-4, Diesel Area HVAC Control Panel, Sheet 4, Revision 4
 7922-4, Diesel Area HVAC Control Panel, Sheet 5, Revision 5
 7922-4, Diesel Area HVAC Control Panel, Sheet 6, Revision 4
 M-10-1, Service Water P&ID, Sheet 1, Revision 56

Non-Cited Violations and Findings

05000354/2015-001-01, Failure to ID and Correct RCIC Insulation and Oil
 05000354/2015001-02, Failure to Take Timely Corrective Actions to Correct a Condition
 Adverse to Quality Related to a 480 VAC Masterpact Breaker Performer Plug
 05000354/2015-003-02, Unauthorized LHRA Entry
 05000354/2015007-01, LOOP/LOCA Testing Acceptance Criteria
 05000354/2015007-002, Inadequate Work Order Instructions and Drawings Resulting in
 Improper Installation of a Safety-Related SW Valve
 05000354/2015-008-01, Optical Isolator (in RHR System) Inadequate PM
 05000354/2015-008-03, RMCS (a)(1), 20678056
 05000354/2016001-01, Untimely CA to Address High Vibes on 'C' EDG Flexible JW Hose
 05000354/2016-002-01, Inadequate Maintenance Rule Monitoring of Multiple SSCs
 05000354/2016-002-02, FRVS Rad Monitor Inadequate Scoping, 20711929
 05000354/2016003-02, Untimely Submittal of an LER for a Condition that Could Have
 Prevented Fulfillment of a Safety Function
 05000354/2016-003-03, Loss of Shutdown Cooling
 05000354/2016007-01, EDG Transfer Switch
 05000354/2016-007-02, RCIC Remote S/D Panel Issue
 05000354/2016-404, Inadequate Assessment and Detection System Performance

Notifications (* indicates that notification was generated or updated as a result of this inspection)

20753422*	20755829*	20508557	20680046
20754662*	20755830*	20508558	20680046
20754762*	20755832*	20514408	20680046
20754829*	20755834*	20543194	20680097
20755344*	20755835*	20552353	20680312
20755384*	20755967*	20633364	20684861
20755401*	20756156*	20637873	20684861
20755433*	20759340*	20643694	20685474
20755419*	20759342*	20659701	20686500
20755507*	20759367*	20668072	20686533
20755626*	20457995	20679233	20686673

20686784	20724655	20693846	20746557
20687049	20724809	20689406	20699989
20688220	20728127	20698801	20730248
20689440	20731762	20754048	20732040
20695133	20733274	20748785	20752032
20695133	20738434	20726170	20751705
20696669	20744147	20673099	20748961
20701830	20748494	20673118	20750294
20702232	20750168	20735579	20745251
20702232	20749443	20753508	20701814
20702681	20720894	20753509	20735508
20714121	20700670	20698610	
20723341	20716721	20745485	
20723901	20725264	20713720	

NRC Generic Communications and Industry Operating Experience

20722482, Part 21 Weldstar Product Recall
 20746733, Part 21 Fairbanks Morse Cross-Drive Shaft
 20728828, Part 21 GE Microswitches
 70184543, NRC Information Notice 2016-01: Recent Issues Related to the Commercial Grade Dedication of Allen Bradley 700-RTC Time Delay Relays
 70189674, NRC Information Notice 2016-05: Operating Experience Regarding Complications from a Loss of Instrument Air
 70191174, PART 21 – (Potential) Design Basis Errors using FLO-2D Software
 70191410, PART 21 – Deviation on ATC OPRM Module Output Resolution
 IN 2015-12, Unaccounted for Error Terms Associated with the Irradiation Testing and Environmental Qualification of Important-to-Safety Components
 OE139944, Failure of RCIC Pump Turbine
 OE307259, Trip and Throttle Valve Closed with the Control Switch Positioned in the Open Position
 OE322376, Reactor Coolant Pressure Boundary Leakage from Residual Heat Removal Check Valve Equalizing Line
 OE323057, Diesel Generator Slow Start During Ten Year Simultaneous Start Test

Procedures

CC-AA-309-1012, 10 CFR Part 21 Technical Evaluations, Revision 5
 ER-AA-302-1007, MOV Limitorque Actuator Capability Determination Methodology, Revision 7
 ER-AA-310-1004, Maintenance Rule - Performance Monitoring, Revision 14
 ER-AA-310-1004-F1, Maintenance Rule Functional Failure Cause Determination Form (FFCDE), Revision 3
 ER-HC-310-1009, Hope Creek Generating Station – Maintenance Rule Scoping, Revision 12
 HC.IC-DC.ZZ-0057, Dwyer Differential Pressure Switch Series 1600, 1800 and 1900, Revision 10
 HC.IC-FT.BD-0005, RCIC – Division 2 Channel E51-N035A, E51- N035E Condensate Storage Tank Low Level, Revision 9
 HC.MD-PM.FC-0001, Reactor Core Isolation Cooling (RCIC) Steam Turbine Inspection and P.M., Revision 32
 HC.MD-PM.FD-0001, High Pressure Coolant Injection (HPCI) Steam Turbine Inspection and P.M., Revision 29
 HC.MD-PM.PH-0001(Q), 480 Volt MCC Starter Preventive Maintenance, Revision 28

HC.MD-PM.ZZ-0006(Q), General Preventive Maintenance for Distribution Panels, MCC's, Unit Substations, and Switchgear, Revision 21
 HC.MD-ST.KJ-0001(Q), Diesel Generator Technical Specification Surveillance and Preventive Maintenance, Revision 46
 HC.MD-ST.ZZ-0012, Masterpact Low Voltage Air Circuit Breaker Inspection and Preventive Maintenance, Revision 11
 HC.OP-IS.BJ-0001, HPCI Main and Booster Pump Set – OP204 and OP217 – In-service Test, Revision 65
 HC.OP-SO.BB-0002, Reactor Recirculation System Operation, Revision 103
 HC.OP-SO.PG-0001, 480V Electrical Distribution System, Revision 21
 HC.OP-ST.BH-0001, SLC Valve Operability Test – Monthly, Revision 8
 HC.OP-ST.BH-0002, SLC Flow Test – 18 Months, Revision 30
 HC.OP-ST.BJ-0002, HPCI System Functional Test (Low Pressure) – 18 Months and HPCI System Response Time Test - High Pressure, Revision 41
 HC.OP-ST.KJ-0003(Q), Emergency Diesel Generator 1CG400 Operability Test- Monthly, Revision 76
 HC.OP-ST.KJ-0005(Q), Integrated Emergency Diesel Generator 1AG400 Test- 18 Months, Revision 43
 HC.OP-ST.KJ-0007(Q), Integrated Emergency Diesel Generator 1CG400 Test- 18 Months, Revision 47
 LS-AA-120, Issue Identification and Screening Process, Revisions 13 and 14
 LS-AA-125, Corrective Action Program, Revisions 21 and 22
 LS-AA-125-F4, Work Group Evaluation Template, Revision 1
 LS-AA-125-1001, Cause Analysis, Revision 11
 LS-AA-125-1003, Apparent Cause Evaluation Manual, Revision 14
 LS-AA-126-1001, Self-Assessments, Revision 9
 LS-AA-1003, NRC Inspection Preparation and Response, Revision 13
 MA-AA-716-210-1005, Predefine Change Processing, Revision 7
 MA-AA-716-230-1001, Oil Analysis Interpretation Guideline, Revision 11
 MA-AA-716-232-1004, Failure Analysis Tracking and Reporting, Revision 2
 MA-AA-1006, Electronic Circuit Card Metallic Whisker Inspection Guide, Revision 1
 NO-AA-200-002-1001, NOS Audit Handbook, Revision 25
 OP-HC-101-112-1001, Operations Work Management Desk Guide, Revisions 13 and 14
 PIA-004, Work Group Evaluation, Revision 3
 WC-AA-106, Work Screening and Processing, Revision 19

Work Orders

30098827	60129682	70138581	70162823
30204912	70108785	70140460	70166490
30268577	70108785	70142159	70170768
30268577	70108785	70147741	70170768
50161244	70111934	70148538	70173642
60096728	70111934	70149539	70173642
60102083	70123806	70152218	70173986
60102406	70133304	70152219	70173994
60105483	70133304	70153078	70174237
60116149	70133437	70153718	70174237
60122766	70134059	70160516	70175001
60123025	70134244	70161255	70175589
60125553	70135167	70161427	70176260
60125553	70135193	70162284	70176260

70176519	70179186	70191664	30115197
70176519	70180697	80101359	70175935
70176519	70182043	80104008	60121032
70176639	70184543	80104685	70191085
70176824	70185164	80106935	70189179
70176824	70185512	80114015	60112463
70177099	70186738	80117891	70180794
70177413	70187722	70155514	70185840
70177413	70187722	80104008	70190875
70177431	70189377	70181315	30176319
70178071	70189674	70185535	70173642
70178071	70190004	80103518	80118713
70178604	70190374	70185287	
70178624	70191174	70182564	
70179009	70191410	70185270	

Miscellaneous

Calculation 1EA-HV-2198C, AC Motor Operated GL96-05 Butterfly Valve, Revision 8
 EPRI 2013 Technical Report, Terry Turbine Maintenance Guide, HPCI Application
 Licensee Event Report (LER) 2016-001-00, High Pressure Coolant Injection System Found to
 be Inoperable during Testing
 Licensee Event Report (LER) 2015-001-01, Conditions Prohibited by Technical Specifications
 due to Core Spray Inoperabilities
 Maintenance Rule Periodic (a)(3) Assessment for April 1, 2015 through October 14, 2016,
 performed under order 70190753
 NRC-2011-0237, Event Reporting Guidelines, ML12216A183
 Nuclear Safety Culture Assessment (USA) of Hope Creek, under order 70151525 (2013)
 Nuclear Safety Culture Assessment (USA) of Hope Creek, dated February 13, 2015
 Nuclear Safety Culture Monitoring Report, dated December 23, 2014
 Nuclear Safety Culture Monitoring Aggregate Performance Review, June 29 2016 to
 December 30, 2016
 PSE-25953, Failure Analysis of a Protective Relay/Fuses, dated 12/28/2015
 PSE-58463, Failure Analysis of Speed Switch Voltage Regulator Base, dated June 6, 2016
 PSE-79368, Failure Analysis of Dynalco, SST2400A-1 Speed Switch, dated
 September 15, 2016
 Speed Switch Failure Investigation, Barksdale Control Products, dated August 28, 2015
 Speed Switch Failure Investigation, Fairbanks Morse, dated January 8, 2016
 VTD PE118Q-0018, Cutler Hammer (Eaton) Unitrol Motor Control Centers, dated April 16, 1999
 VTD 323981, Instruction Manual for Butterfly Valve, 'C' SSW Discharge Valve 1EAHV-2198C,
 dated September 15, 1998

LIST OF ACRONYMS

ACE	Apparent Cause Evaluation
ADAMS	Agency-wide Documents Access and Management System
CCE	Common Cause Evaluation
CFR	Code of Federal Regulations
CREF	Control Room Emergency Filtration
CRS	Control Room Supply
EDG	Emergency Diesel Generator
FASA	Focused Area Self-Assessment
FFCDE	Functional Failure Cause Determination Evaluation
HCGS	Hope Creek Generating Station
HPCI	High Pressure Coolant Injection
HVAC	Heating, Ventilation and Air Conditioning
IAW	In Accordance With
IMC	Inspection Manual Chapter
IR	Inspection Report
LCO	Limiting Conditions for Operation
LER	Licensee Event Report
MPFF	Maintenance Preventable Functional Failure
MRC	Management Review Committee
NCV	Non-cited Violation
NOTF	Notification
NRC	Nuclear Regulatory Commission
PCR	PM Change Request
PD	Performance Deficiency
PI&R	Problem Identification and Resolution
PM	Preventive Maintenance
PSEG	PSEG Nuclear LLC
RCIC	Reactor Core Isolation Cooling
RG	Regulatory Guide
SOC	Station Ownership Committee
SSC	Structures, Systems and Components
TS	Technical Specifications
WGE	Work Group Evaluation