PSEG Nuclear LLC
P.O. Box 236, Hancocks Bridge, NJ 08038-0236

PSEG
Nuclear LLC

DEC 22 2016

Order EA-13-109

LR-N16-0218

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Hope Creek Generating Station
Renewed Facility Operating License No. NPF-57
NRC Docket No. 50-354

Subject: Hope Creek Generating Station's Fifth Six-Month Status Report in Response to June 6, 2013 Commission Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA-13-109)

References:

1. NRC Order EA-13-109, "Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions," dated June 6, 2013

2. PSEG Letter LR-N14-0155, "PSEG Nuclear LLC's Phase 1 Overall Integrated Plan in Response to June 6, 2013, Commission Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA-13-109)," dated June 25, 2014

3. PSEG Letter LR-N14-0258, "Hope Creek Generating Station's First Six-Month Status Report in Response to June 6, 2013 Commission Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA-13-109)," dated December 19, 2014

4. PSEG Letter LR-N15-0129, "Hope Creek Generating Station's Second Six-Month Status Report in Response to June 6, 2013 Commission Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe

Accident Conditions (Order Number EA-13-109)," dated June 18, 2015

5. PSEG Letter LR-N15-0257, "Hope Creek Generating Station's Phase 1 and Phase 2 Overall Integrated Plan and Third Six-Month Status Report (Phase 1) in Response to June 6, 2013 Commission Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA-13-109)," dated December 28, 2015

6. PSEG Letter LR-N16-0118, "Hope Creek Generating Station's Fourth Six-Month Status Report in Response to June 6, 2013 Commission Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA-13-109)," dated June 29, 2016

7. NEI 13-02, "Industry Guidance for Compliance with Order EA-13-109," Revision 1, dated April 2015

8. NRC Interim Staff Guidance JLD-ISG-2013-02, "Compliance with Order EA-13-109, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions," dated November 14, 2013

9. NRC Interim Staff Guidance JLD-ISG-2015-01, "Compliance with Phase 2 of Order EA-13-109, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions," dated April 2015

10. NRC Letter to PSEG, "Hope Creek Generating Station – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Phase 1 of Order EA-13-109 (Severe Accident Capable Hardened Vents) (TAC NO. MF4458)," dated February 12, 2015

11. NRC Letter to PSEG, "Hope Creek Generating Station – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Phase 2 of Order EA-13-109 (Severe Accident Capable Hardened Vents) (CAC NO. MF4458)," dated August 2, 2016

On June 6, 2013, the Nuclear Regulatory Commission (NRC) issued Order EA-13-109 (Reference 1) to all licensees that operate boiling-water reactors (BWRs) with Mark I and Mark II containment designs. The Order was effective immediately and requires the Hope Creek Generating Station (HCGS) to install a reliable hardened venting capability for pre-core damage and severe accident conditions, including those involving a breach of the reactor vessel by molten core debris. Specific requirements are outlined in Attachment 2 of NRC Order EA-13-109.

Section IV of NRC Order EA-13-109 requires transmittal of an Overall Integrated Plan (OIP) for Phase 1 by June 30, 2014, status reports at six-month intervals thereafter, and an OIP for Phase 2 by December 31, 2015. PSEG submitted the Phase 1 OIP for HCGS via Reference 2. References 3 and 4, respectively, provided the first two six-month status reports for Phase 1 implementation. Via Reference 5, PSEG transmitted Revision 1 of the OIP, which addresses Phase 2 requirements and includes the third six-month status report. PSEG transmitted the fourth six-month status report via Reference 6. The purpose of this letter is to provide the fifth six-month status report pursuant to Condition IV.D.3 of NRC Order EA-13-109, which includes completion of Phase 1 in accordance with the schedule requirements of the Order.

Attachment 1 contains the fifth six-month status report for HCGS implementation of NRC Order EA-13-109, following the report content guidance of Nuclear Energy Institute (NEI) Report 13-02 (Reference 7) as endorsed by NRC Interim Staff Guidance documents JLD-ISG-2013-02 (Reference 8) and JLD-ISG-2015-01 (Reference 9). The attached report provides an update of the milestone accomplishments since the submittal of the previous six-month status report (Reference 6), including any changes to the compliance method, schedule, and the need and basis for relief or relaxation from specific requirements of NRC Order EA-13-109. The status of open items identified in the NRC's Interim Staff Evaluation (ISE) for Phase 1 (Reference 10) and the ISE for Phase 2 (Reference 11) is included in the attached update.

There are no regulatory commitments contained in this letter. If you have any questions or require additional information, please do not hesitate to contact Mr. Brian J. Thomas at 856-339-2022.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 12-22-2016
(Date)

Sincerely,

Eric Carr
Site Vice President
Hope Creek Generating Station

Attachment 1: HCGS Fifth Six-Month Status Report for Implementation of NRC Order EA-13-109, "Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions"

cc: Mr. Daniel Dorman, Administrator, Region I, NRC
Mr. Justin Hawkins, NRC Senior Resident Inspector, Hope Creek
Ms. Carleen J. Parker, Project Manager, NRC/NRR/DORL
Mr. John Boska, Senior Project Manager, NRC/NRR/JLD
Mr. Patrick Mulligan, Chief, NJBNE
Mr. Thomas MacEwen, Hope Creek Commitment Tracking Coordinator
Mr. Lee Marabella, PSEG Corporate Commitment Coordinator

LR-N16-0218

ATTACHMENT 1

HCGS Fifth Six-Month Status Report for Implementation of NRC Order EA-13-109, "Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions"

HCGS Fifth Six-Month Status Report for Implementation of NRC Order EA-13-109, "Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions"

References in this attachment are listed in Section 8.

1 Introduction

PSEG Nuclear LLC (PSEG) developed an Overall Integrated Plan (OIP) (Reference 1) for the Hope Creek Generating Station (HCGS), to address the installation of a Hardened Containment Vent System (HCVS), in response to NRC Order EA-13-109 (Reference 2).

PSEG developed an updated and combined Phase 1 and 2 OIP (Reference 5), to address:

1. The installation of a Hardened Containment Vent System (HCVS) that provides a reliable hardened venting capability for pre-core damage and severe accident conditions, including those involving a breach of the reactor vessel by molten core debris, in response to Phase 1 of NRC Order EA-13-109.

2. An alternative strategy that makes it unlikely that a drywell vent is needed to protect the containment from overpressure related failure under severe accident conditions, including those that involve a breach of the reactor vessel by molten core debris, in response to Phase 2 of NRC Order EA-13-109.

This report provides an update of milestone accomplishments since the previous six-month status report, including any changes to the compliance method, schedule, and the need and basis for relief or relaxation from specific requirements of NRC Order EA-13-109.

2 Milestone Accomplishments

The following milestones have been completed since the fourth six-month status report was transmitted to the NRC via Reference 6:

Implementation Outage – Phase 1: The Phase 1 implementation outage was the HCGS 20th refueling outage (H1R20) in fall 2016. On November 9, 2016, HCGS entered Operational Condition 2, Startup, as part of completion of H1R20.

Walk-Through Demonstration / Functional Test: Phase 1– Modification Acceptance Testing for Phase 1 design changes, and Verification and Validation of associated Emergency Operating Procedure changes were completed prior to startup during H1R20.

Operations Procedure Changes Developed – Phase 1: Operations procedure revisions were developed to support issuance prior to startup from H1R20.

Procedure Changes Active – Phase 1: Procedure changes to support Phase 1 implementation were issued prior to startup from H1R20.

Training Complete – Phase 1: PSEG used the site training process to identify training needs and completed just-in-time training for H1R20 changes to support Phase 1 implementation.

Submit Completion Report – Phase 1: Completed via this six-month status report.

3 Milestone Schedule Status

The following table provides an update to the OIP (Reference 5) milestones. The table provides the target completion date and activity status of each item. The dates are planning dates subject to change as design and implementation details are developed.

NRC Order EA-13-109 Milestones			
Milestone	**Target Completion Date**	**Activity Status**	**Comments (Includes Date Changes)**
Overall Integrated Plan and Six-Month Updates			
Submit OIP – Phase 1	Jun 2014	Complete	Reference 1
Update 1	Dec 2014	Complete	Reference 3
Update 2	Jun 2015	Complete	Reference 4
Update 3 and Phase 2 OIP	Dec 2015	Complete	Reference 5
Update 4	Jun 2016	Complete	Reference 6
Update 5	Dec 2016	Complete via this Report	Includes Phase 1 Completion
Update 6	Jun 2017	Not Started	
Update 7	Dec 2017	Not Started	
Phase 1 Implementation			
Hold preliminary/conceptual design meeting	Jun 2014	Complete	
Design Engineering On-site/Complete	Oct 2015	Complete	Completed to support Nov 2016 implementation
Implementation Outage	Oct 2016	Complete	Completed Nov 2016

NRC Order EA-13-109 Milestones			
Milestone	**Target Completion Date**	**Activity Status**	**Comments (Includes Date Changes)**
Phase 1 Implementation (continued)			
Walk-Through Demonstration / Functional Test	Nov 2016	Complete	
Operations Procedure Changes Developed	Jun 2016	Complete	Completed to support Nov 2016 implementation
Site-Specific Maintenance Procedures Developed	Apr 2018	Started	Periodic maintenance and testing is being addressed by the Preventive Maintenance process. The milestone date is changed to support maintenance and testing by the spring 2018 refueling outage.
Procedure Changes Active	Nov 2016	Complete	Procedure changes to support implementation were issued in Nov 2016
Training Complete	Jun 2016	Complete	Initial / Just-in-time training complete Nov 2016
Submit Completion Report – Phase 1	Dec 2016	Complete via this Report	

NRC Order EA-13-109 Milestones			
Milestone	**Target Completion Date**	**Activity Status**	**Comments (Includes Date Changes)**
Phase 2 Implementation			
Hold preliminary/conceptual design meeting	Dec 2015	Complete	
Submit Overall Integrated Implementation Plan	Dec 2015	Complete	
Design Engineering On-site/Complete	April 2017	Started	
Operations Procedure Changes Developed	Dec 2017	Not started	
Site-Specific Maintenance Procedures Developed	Dec 2017	Not started	
Training Complete	Feb 2018	Not started	
Implementation Outage	April 2018	Not started	
Procedure Changes Active	April 2018	Not started	
Walk Through Demonstration/Functional Test	April 2018	Not started	
Submit Completion Report	June 2018	Not started	

4 Changes to Compliance Method

PSEG identified planned alternatives to NEI 13-02 (Reference 7) and NRC Interim Staff Guidance documents JLD-ISG-2013-02 (Reference 8) and JLD-ISG-2015-01 (Reference 9) in Revision 1 to the OIP (Reference 5). These alternatives pertain to 1) monitoring the status of vent operation and 2) the height of the torus vent release point, and are associated with open items in the NRC Interim Staff Evaluation (ISE) (Reference 9) for compliance with Phase 1 of NRC Order EA-13-109. Sections 4.1 and 4.2 provide the current status of these items.

4.1 Monitoring the Status of Vent Operation

Hope Creek is taking an alternative approach to vent monitoring. JLD-ISG-2013-02 requires temperature and pressure monitoring of the vent piping as an indication of flow. Hope Creek currently has a dual-element flow monitor (high/low range) as part of the existing Hardened Torus Vent (HTV) radiation monitoring system. The vent flow signal is displayed at the Primary Operating Station (POS) in lieu of vent pipe temperature and pressure. The vent operation will be monitored by HCVS valve position, vent flow, and effluent radiation levels. Containment parameters of pressure, torus level and

temperature from the Main Control Room (MCR) instrumentation will be used to monitor effectiveness of the venting actions [ISE #6].

4.2 Vent Release Point Height

In References 12 and 13, PSEG requested relaxation from NRC Order EA-13-109 Attachment 2, Requirement 1.2.2, which states:

> "The HCVS shall discharge the effluent to a release point above main plant structures."

The NRC staff granted approval of the requested relaxation (Reference 14). Design Change Package (DCP) 80115583, "Hardened Containment Vent Modification," provided the final design of the HCVS release point consistent with the approved relaxation.

4.3 HCVS Battery Power

DCP 80113942, "Hardened Containment Vent Electrical," provides the HCVS battery power design. The final design reflects a change from the dedicated HCVS battery concept described in the OIP (Reference 5). The final design makes use of 120 VAC distribution panels 1BJ481 and 1DJ481 which are aligned during a Beyond Design Basis External Event (BDBEE) per the FLEX strategies, i.e., deep load shed procedure for the ELAP scenario using procedure HC.OP-AB.ZZ-0135, "Station Blackout / Loss of Offsite Power / Diesel Generator Malfunction."

The HCVS controls and instrumentation are powered via existing Class 1E station battery through inverter 1DD481 using the circuit feeding panel 10C399 for the first 24 hours of the event. After that time, power may be supplied by the FLEX diesel generator using connections installed in panel 10C399. The following calculations are affected by DCP 80113942 due to the addition of HCVS equipment loads and are available for audit:

- E-4.1(Q), HC Class 1E 125 VDC Station Battery & Charger

- E-4.6(Q), Hope Creek 125 VDC Beyond Design Base Event Battery Sizing Calculation

The FLEX DG sizing calculation, E-15.16, "Hope Creek FLEX Electrical System Loading Analysis" has been provided as part of the HCGS FLEX audit and is not affected by the design change to use existing station DC power that remains within its design margins.

5 Need for Relief/Relaxation and Basis for the Relief/Relaxation

The vent release point height relaxation described in Section 4.2 is an exception to NRC Order EA-13-109 Attachment 2, Requirement 1.2.2. The need and basis for the relaxation were addressed by PSEG's relaxation request submittals (References 12 and 13), and were approved by the NRC staff via Reference 14.

6 Open Items from Overall Integrated Plan and Draft Safety Evaluation

Phase 1 Open Items		
Item Ref.	**Action**	**Comment**
ISE #1 OIP #1	Finalize time constraints and their bases. Make available for NRC staff audit the finalized time constraints for remote manual operations and their bases.	Complete. Anticipatory venting time constraints are included in the FLEX strategy timeline which assumes torus venting is initiated approximately four hours following an Extended Loss of AC Power (ELAP) event, based on torus water temperature of 200 degrees F. MAAP analyses (HC-MISC-005) have been revised to reflect the modified vent design. NRC review of the OIP (Reference 5) timeline for HCVS is documented in Section 3.3.1 of the Phase 2 ISE (Reference 11).

Phase 1 Open Items		
Item Ref.	**Action**	**Comment**
ISE #2 OIP #2	Make available for NRC staff audit analyses demonstrating that HCVS has the capacity to vent the steam/energy equivalent of one percent of licensed/rated thermal power (unless a lower value is justified), and that the suppression pool and the HCVS together are able to absorb and reject decay heat, such that following a reactor shutdown from full power containment pressure is restored and then maintained below the primary containment design pressure and the primary containment pressure limit.	Complete. Calculation GS-0026, "Hardened Containment Vent Capacity," shows that the HCVS 12-inch vent can accommodate the required steam/energy equivalent of one percent of licensed/rated thermal power flow. Calculation GS-0027, "Disc Rupture Fluid Transient Analysis in Hardened Containment Vent Piping," shows that the piping can accommodate the fluid dynamics of the steam/energy equivalent of one percent of licensed/rated thermal power flow. Vendor Technical Document (VTD) 432633, "Suppression Pool Energy Capacity," shows that the suppression pool has sufficient capacity to absorb the energy released into the torus for the first three hours following an ELAP event, with approximately 60% margin. MAAP analyses (HC-MISC-005) support anticipatory venting at four hours based on torus water temperature of 200 degrees F and acceptable containment response thereafter.

Phase 1 Open Items		
Item Ref.	**Action**	**Comment**
ISE #3 OIP #6	Provide the seismic and tornado missile final design criteria for the HCVS stack.	Complete. Design Change Package (DCP) 80115583, "Hardened Containment Vent Modification," addresses the seismic design of the HCVS stack and includes a Technical Evaluation of tornado missile protection following NEI white paper HCVS-WP-04 as endorsed by NRC letter to NEI dated September 14, 2015 (ADAMS Accession No. ML15240A072).
ISE #4	Make available for NRC staff audit documentation that demonstrates adequate communication between the remote HCVS operation locations and HCVS decision makers during ELAP and severe accident conditions.	Complete as documented in the OIP (Reference 5).
ISE #5 OIP #4	Perform dose evaluation for venting actions (OIP #4). Make available for NRC staff audit an evaluation of temperature and radiological conditions to ensure that operating personnel can safely access and operate controls and support equipment.	Complete. The GOTHIC model Vendor Technical Documents (VTDs) 432340 (001) (Auxiliary Building GOTHIC model) and 432611 (001) (Room 5301 and TSC areas GOTHIC model) as well as HCVS Dose Evaluation VTD 432634 (001), show that the temperatures and radiation levels are acceptable for personnel ingress/egress.

Phase 1 Open Items		
Item Ref.	**Action**	**Comment**
ISE #6	Make available for NRC staff audit descriptions of all instrumentation and controls (existing and planned) necessary to implement this order including qualification methods.	Complete. Containment parameters of pressure, level, and temperature on MCR instrumentation allow monitoring effectiveness of torus venting actions. For these parameters, HCGS uses existing instrumentation and Main Control Room (MCR) displays qualified to Regulatory Guide 1.97 and provided with Class 1E electrical power (Updated Final Safety Analysis Report, Table 7.5-1). HCVS operation is monitored by vent valve position, vent flow, and effluent radiation levels. DCP 80113942, "Hardened Containment Vent Electrical," provided instrumentation and controls at the Primary Operating Station (POS) at the Remote Shutdown Panel in Room 3576 at elevation 137' in the Auxiliary Building, and at the Remote Operating Station (ROS) in the Electrical Chase Area (Room 5301) on EL 102'-0" of the Auxiliary Building. The HCVS instruments are qualified by using one or more of the three methods described in JLD-ISG-2013-02 (Reference 8).
ISE #7	Make available for NRC staff audit the final sizing evaluation for HCVS batteries/battery charger including incorporation into FLEX DG loading calculation.	Complete. Details are provided in Section 4.3.

Phase 1 Open Items		
Item Ref.	**Action**	**Comment**
ISE #8	Make available for NRC staff audit documentation of the HCVS nitrogen pneumatic system design including sizing and location.	Complete. DCP 80113941, "Hardened Containment Vent Mechanical," provided a permanently installed nitrogen supply at the ROS in the Electrical Chase Area (Room 5301) on elevation 102'-0" of the Auxiliary Building. The ROS is protected from all external hazards. VTD 432632, "Backup Nitrogen Supply for Hardened Vent," shows that the system possesses enough volume for 8 cycles of the HCVS valves. DCP 80113941 also installed the capability to manually breach the HCVS rupture disk from the ROS using a separate nitrogen source.
ISE #9	Make available for NRC staff audit the descriptions of local conditions (temperature, radiation, and humidity) anticipated during ELAP and severe accident for the components (valves, instrumentation, sensors, transmitters, indicators, electronics, control devices, etc.) required for HCVS venting including confirmation that the components are capable of performing their functions during ELAP and severe accident conditions.	Complete. Functionality of HCVS components during ELAP and severe accident conditions is supported by the documents referenced in response to ISE #5, combined with DCPs 80113941, 80113942 and 80115583.

Phase 1 Open Items		
Item Ref.	**Action**	**Comment**
ISE #10	Make available for NRC staff audit an evaluation verifying the existing containment isolation valves, relied upon for the HCVS, will open under the maximum expected differential pressure during BDBEE and severe accident wetwell venting.	Complete. The HCVS containment isolation valves (H1GS-HV-11541 and H1GS-HV-4964) are shown to have a disc design differential pressure of 65 psig per VTDs 315211 and 315212, respectively. The Primary Containment Pressure Limit is 65 psig.
ISE #11	Provide a description of the strategies for hydrogen control that minimizes the potential for hydrogen gas migration and ingress into the reactor building or other buildings.	Complete. The release point elevation and plume rise during venting (described in References 12 and 13) will minimize migration and ingress of hydrogen into buildings. Vendor Technical Document (VTD) 432628 Volume 2, "Hydrogen Leakage from the CIVs of HCVS into the Enclosed CPCS Duct Return Line," shows that the in-leakage of hydrogen into the vent is minimal in the time between venting operations. When the HCVS valves are closed, the vent piping will be purged with Argon gas.

Phase 1 Open Items		
Item Ref.	**Action**	**Comment**
ISE #12 OIP #5	Provide a description of the final design of the HCVS to address hydrogen detonation and deflagration.	Complete. Measures to prevent hydrogen deflagration/detonation have been established by Emergency Operating Procedure HC.OP-EO.ZZ-0318, "Containment Venting" (EOP-0318) and the argon purge system installed DCP via 80113941, “Hardened Containment Vent System Mechanical.” EOP-0318 has been revised in order to require an argon purge of the HCVS prior to opening the containment isolation valves in an accident scenario where hydrogen generation is expected, and to keep the HCV operating unless containment pressure approaches zero psig. Vendor Technical Document (VTD) 432631 demonstrates that the volume of argon gas used to purge the HCVS is sufficient in order to prevent hydrogen detonation/deflagration by completely filling the HCV downstream of HV-11541. The compressed gas purge system uses argon gas to fill the HCVS piping from valve HV-11541 (V-201) to the release point and prevent oxygen from entering the vent piping after a vent cycle.

Phase 1 Open Items		
Item Ref.	**Action**	**Comment**
ISE #13 OIP #3	Finalize χ/Q analysis (OIP #3). Submit a relaxation request as stated in the Order for the deviation from Order EA-13-109 provision 1.2.2, "The HCVS Section 3.2.2.3 shall discharge the effluent to a release point above the main plant structures," which includes a technical justification for the deviation.	Complete (References 12, 13, and 14).

Phase 2 Open Items		
Item Ref.	**Action**	**Comment**
ISE #1	Licensee shall provide the finalized design of HCVS discharge location.	Complete. DCP 80115583, "Hope Creek Hardened Torus Vent Modification," provides the final discharge location design consistent with relaxation of the release point height requirement (Reference 14).
ISE #2	Licensee shall provide the finalized design, which demonstrates the capability to inject the necessary Severe Accident Water Addition (SAWA) flow rate and the ability to control that flow under a flooded condition.	Started.
ISE #3	Licensee to confirm through analysis the temperature and radiological conditions to ensure that operating personnel can safely access and operate controls and support equipment.	Started.

Phase 2 Open Items		
Item Ref.	**Action**	**Comment**
ISE #4	Licensee to demonstrate how instrumentation and equipment being used for SAWA and supporting equipment is capable to perform for the sustained operating period under the expected temperature and radiological conditions.	Started.
ISE #5	Licensee to demonstrate that containment failure as a result of overpressure can be prevented without a drywell vent during severe accident conditions.	Started.
ISE #6	Licensee shall demonstrate how the plant is bounded by the reference plant analysis that shows the SAWM strategy is successful in making it unlikely that a drvwell vent is needed.	Started.
ISE #7	Licensee to demonstrate that there is adequate communication between the MCR and the operator at the FLEX manual valve during severe accident conditions.	Started.
OIP #7	Finalize design of SAWA flow control and indication for flooded condition.	Started.
OIP #8	Evaluate Control/Diesel Building temperature, humidity, and radiological conditions during a non-flooding event.	Started.
OIP #9	Evaluate Turbine and Auxiliary Building temperature, humidity, and radiological conditions during a flooding event.	Started.
OIP #10	Evaluate SAWA equipment and connections external to protected buildings.	Started.
OIP #11	Procedures for Phase 2 SAWA/SAWM.	Not Started.

7 Interim Staff Evaluation Impacts

Items identified in the Phase 1 ISE (Reference 10) and Phase 2 ISE (Reference 11) are addressed in Section 6, above. There are no other impacts to the ISE identified at this time.

8 References

1. PSEG letter LR-N14-0155, "PSEG Nuclear LLC's Phase 1 Overall Integrated Plan in Response to June 6, 2013, Commission Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA-13-109)," dated June 25, 2014
2. NRC Order EA-13-109, "Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Effective Immediately)," dated June 6, 2013
3. PSEG Letter LR-N14-0258, "Hope Creek Generating Station's First Six-Month Status Report in Response to June 6, 2013 Commission Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA-13-109)," dated December 19, 2014
4. PSEG Letter LR-N15-0129, "Hope Creek Generating Station's Second Six-Month Status Report in Response to June 6, 2013 Commission Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA-13-109)," dated June 18, 2015
5. PSEG Letter LR-N15-0257, "Hope Creek Generating Station's Phase 1 and Phase 2 Overall Integrated Plan and Third Six-Month Status Report (Phase 1) in Response to June 6, 2013 Commission Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA-13-109)," dated December 28, 2015
6. PSEG Letter LR-N16-0118, "Hope Creek Generating Station's Fourth Six-Month Status Report in Response to June 6, 2013 Commission Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA 13 109)," dated June 29, 2016
7. NEI 13-02, "Industry Guidance for Compliance with Order EA-13-109," Revision 1, dated April 2015
8. NRC Interim Staff Guidance JLD-ISG-2013-02, "Compliance with Order EA-13-109, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions," dated November 14, 2013

9. NRC Interim Staff Guidance JLD-ISG-2015-01, “Compliance with Phase 2 of Order EA-13-109, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions,” Revision 0, dated April 2015
10. NRC Letter to PSEG, “Hope Creek Generating Station – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Phase 1 of Order EA-13-109 (Severe Accident Capable Hardened Vents) (TAC NO. MF4458),” dated February 12, 2015
11. NRC Letter to PSEG, “Hope Creek Generating Station – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Phase 2 of Order EA-13-109 (Severe Accident Capable Hardened Vents) (CAC NO. MF4458),” dated August 2, 2016
12. PSEG Letter LR-N16-0041, "Hope Creek Generating Station’s Request for Relaxation from the Hardened Containment Vent Release Point Height Requirement of NRC Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA-13-109)," dated June 21, 2016
13. PSEG Letter LR-N16-0148, "Supplemental Information Regarding Hope Creek Generating Station’s Request for Relaxation from the Hardened Containment Vent Release Point Height Requirement of NRC Order EA-13-109," dated September 7, 2016
14. NRC Letter to PSEG, “Hope Creek Generating Station – Request for Relaxation of the Release Point Height Requirement of NRC Order EA-13-109, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions (CAC No. MF4458),” dated September 30, 2016