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

November 14, 2014

EA-14-093

Mr. Timothy S. Rausch
Senior Vice President and Chief Nuclear Officer
PPL Susquehanna, LLC
769 Salem Boulevard, NUCSB3
Berwick, PA 18603

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION – NRC INTEGRATED INSPECTION REPORT 05000387/2014004 AND 05000388/2014004 AND EXERCISE OF ENFORCEMENT DISCRETION

Dear Mr. Rausch:

On September 30, 2014, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Susquehanna Steam Electric Station (SSES) Units 1 and 2. The enclosed integrated inspection report documents the inspection results, which were discussed on October 9, 2014, with Mr. Jeffrey Helsel and other members of your staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one self-revealing finding of very low safety significance (Green). If you contest the finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at SSES. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Senior Resident Inspector at SSES.

Additionally, the inspectors reviewed Unresolved Item 05000387/2012007-01, 05000388/2012007-01, which raised a concern as to whether PPL's method for testing the secondary containment boundary and the standby gas treatment system (SGTS) complied with the existing design and licensing bases. Following additional review of this concern, NRC staff concluded that this issue constituted a violation of NRC requirements, in that your implementation of the surveillance requirements of the plant technical specifications for Unit 1 and Unit 2 did not adequately demonstrate: (1) the quality of the secondary containment; and

(2) that the limiting conditions for operation were met as required by Title 10 of the *Code of Federal Regulations* (10 CFR) 50.36(c)(3). However, the NRC concluded that the cause of the issue of concern was not reasonably within PPL's ability to foresee and correct. Therefore, no performance deficiency associated with the violation was identified. The NRC performed a risk evaluation of the issue and determined it to be of very low safety significance (Green). Based on these facts, I have been authorized, after consultation with the Director, Office of Enforcement, and the Regional Administrator, to exercise enforcement discretion in accordance with Section 3.5 of the Enforcement Policy, and refrain from issuing enforcement for this violation.

In accordance with 10 CFR 2.390 of the NRCs "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 Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Ho K. Nieh
Division Director
Division of Reactor Projects

Docket Nos. 50-387; 50-388
License Nos. NPF-14, NPF-22

Enclosures: Inspection Report 05000387/2014004 and 05000388/2014004
w/Attachment: Supplemental Information

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(2) that the limiting conditions for operation were met as required by Title 10 of the *Code of Federal Regulations* (10 CFR) 50.36(c)(3). However, the NRC concluded that the cause of the issue of concern was not reasonably within PPL's ability to foresee and correct. Therefore, no performance deficiency associated with the violation was identified. The NRC performed a risk evaluation of the issue and determined it to be of very low safety significance (Green). Based on these facts, I have been authorized, after consultation with the Director, Office of Enforcement, and the Regional Administrator, to exercise enforcement discretion in accordance with Section 3.5 of the Enforcement Policy, and refrain from issuing enforcement for this violation.

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Enclosures: Inspection Report 05000387/2014004 and 05000388/2014004
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NAME	JGreives/SB for	SBarber/SB	FBower/FLB	ADimitriadis/JRB for	BBickett/BB	HNieh/HKN
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U.S NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos:	50-387, 50-388
License Nos:	NPF-14, NPF-22
Report Nos:	05000387/2014004 and 05000388/2014004
Licensee:	PPL Susquehanna, LLC (PPL)
Facility:	Susquehanna Steam Electric Station, Units 1 and 2
Location:	Berwick, Pennsylvania
Dates:	July 1, 2014 through September 30, 2014
Inspectors:	J. Greives, Senior Resident Inspector T. Daun, Resident Inspector E. Burket, Emergency Preparedness Inspector J. Cherubini, Senior Physical Security Inspector C. Graves, Health Physicist B. Lin, Project Engineer A. Turilin, Project Engineer
Approved By:	Fred L. Bower, III, Chief Reactor Projects Branch 4 Division of Reactor Projects

TABLE OF CONTENTS

SUMMARY 3

REPORT DETAILS 4

1. REACTOR SAFETY 4
   - 1R04 Equipment Alignment 4
   - 1R05 Fire Protection 5
   - 1R06 Flood Protection Measures 6
   - 1R07 Heat Sink Performance 7
   - 1R11 Licensed Operator Requalification Program 7
   - 1R12 Maintenance Effectiveness 8
   - 1R13 Maintenance Risk Assessments and Emergent Work Control 8
   - 1R15 Operability Determinations and Functionality Assessments 9
   - 1R18 Plant Modifications 10
   - 1R19 Post-Maintenance Testing 10
   - 1R20 Refueling and Other Outage Activities 11
   - 1R22 Surveillance Testing 11
   - 1EP4 Emergency Action Level and Emergency Plan Changes 12
   - 1EP6 Drill Evaluation 12

2. RADIATION SAFETY 14
   - 2RS5 Radiation Monitoring Instrumentation 14

4. OTHER ACTIVITIES 16
   - 4OA1 Performance Indicator Verification 16
   - 4OA2 Problem Identification and Resolution 17
   - 4OA3 Followup of Events and Notices of Enforcement Discretion 21
   - 4OA5 Other Activities 27
   - 4OA6 Meetings, Including Exit 30

ATTACHMENT: SUPPLEMENTAL INFORMATION 30

SUPPLEMENTAL INFORMATION A-1

KEY POINTS OF CONTACT A-1

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED A-1

LIST OF DOCUMENTS REVIEWED A-3

LIST OF ACRONYMS A-13

SUMMARY

IR 05000387/2014004, 05000388/2014004; 07/01/2014 – 09/30/2014; Susquehanna Steam Electric Station (SSES), Units 1 and 2; Followup of Events and Notices of Enforcement Discretion.

The report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. One self-revealing finding of very low safety significance (Green) was identified. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP), dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas," dated December 19, 2013. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Initiating Events

- Green. A finding of very low safety significance (Green) for inadequately implementing work instructions for the installation and calibration of the reactor recirculation pump (RRP) motor-generator (MG) set motor winding cooling air outlet temperature switch was self-revealed when the Unit 1 'B' RRP tripped on August 27, 2014, requiring a rapid unplanned downpower and transition to single loop operation. The cause of the RRP trip was a calibration error made on May 7, 2014, in which the alarm and trip setpoints were reversed such that the pump trip occurred at expected temperatures for the plant conditions. PPL's immediate corrective actions included entering the issue into their corrective action program (CAP) as CR-2014-27243 and correcting the calibration error.

  The inspectors determined that PPL's failure to implement a work order (WO) as written or make changes as required by station procedures was a performance deficiency (PD) that was within PPL's ability to foresee and correct and should have been prevented. The PD was more than minor because it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and affected its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, inadequate implementation of work instructions as directed resulted in the incorrect calibration of the 'B' RRP MG set high temperature trip setpoint so that it was reached during normal operations, resulted in a trip of the 'B' RRP, that required an unplanned rapid downpower to approximately 30 percent, and establishment of single loop operating conditions. The inspectors evaluated the finding in accordance with IMC 0609, Appendix A, "SDP for Findings At-Power," Exhibit 1 for the Initiating Events cornerstone. The inspectors determined the finding was of very low safety significance (Green) because it did not cause a reactor trip and the loss of mitigation equipment. This finding was determined to have a cross-cutting aspect in the area of Human Performance, Field Presence, because PPL did not ensure supervisory and management oversight of work activities, including contractors and supplemental personnel. Specifically, supervisory oversight of the calibration activity, including work package development, review of work performed and work package closeout, was insufficient to ensure that the changes made to the work package were processed in accordance with station procedures and did not result in a new deficiency being introduced [H.2]. (Section 4OA3)

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at or near 100 percent rated thermal power. On August 27, 2014, the 1 'B' RRP tripped unexpectedly, resulting in an unplanned power reduction to approximately 30 percent power. The pump was restarted on August 29, 2014, and power was returned to 100 percent on September 1, 2014. Unit 1 ended the inspection period at or near 100 percent power.

Unit 2 began the inspection period in Mode 4. Following the completion of the turbine outage maintenance activities, operators commenced a reactor startup on July 7, 2014. On July 24, 2014, operators lowered power on Unit 2 to 85 percent for planned condensate demineralizer maintenance. Power was returned to 100 percent on July 27, 2014. On August 8, 2014, operators lowered power on Unit 2 to 85 percent for a planned rod pattern adjustment and additional condensate demineralizer maintenance. Power was returned to 100 percent on August 11, 2014. On September 5, 2014, operators commenced a reactor shutdown on Unit 2 for a planned maintenance outage. Following the completion of the maintenance activities, operators commenced a reactor startup on September 13, 2014. Power was restored to 100 percent on September 20, 2014, and remained at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04Q – 3 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Unit 2, 'A' train residual heat removal (RHR) during 'B' train RHR system outage window on August 5, 2014
- Unit 1, high pressure coolant injection (HPCI) while reactor core isolation cooling (RCIC) inoperable on August 19, 2014
- Unit 2, control rod drive system during startup on September 17, 2014

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 (TSs), WOs, condition reports (CRs), 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 PPL staff had properly identified equipment issues and entered them into the CAP 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 August 15, 2014, the inspectors performed a complete system walkdown of accessible portions of the Unit 2 RCIC to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, surveillance tests, drawings, equipment line-up check-off lists, 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, hanger 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. Additionally, the inspectors reviewed a sample of related CRs and WOs to ensure PPL appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident 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 PPL 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 (OOS), degraded or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Unit 1, reactor building (RB) (Fire Zone 1-3B/N) on July 29, 2014
- Unit 2, upper relay room (Fire Zone 0-27A) on August 22, 2014
- Common, lower switchgear rooms (Fire Zone 0-29A/E) on August 26, 2014

- Common, control structure 806' (Fire Zone 0-30A) on September 15, 2014
- Common, 'C' diesel generator (DG) building (Fire Zone 0-41C) on September 30, 2014

b. Findings

No findings were identified.

.2 Fire Protection - Drill Observation (71111.05A – 1 sample)

a. Inspection Scope

The inspectors observed a fire brigade drill scenario conducted on August 11, 2014, that involved a lube oil fire at the 'A' reactor feed pump (RFP) turbine in the Unit 2 turbine building. The inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that PPL personnel identified deficiencies, openly discussed them in a self-critical manner at the debriefing, and took appropriate corrective actions as required. The inspectors evaluated specific attributes as follows:

- Proper wearing of turnout gear and self-contained breathing apparatus
- Proper use and layout of fire hoses
- Employment of appropriate fire-fighting techniques
- Sufficient fire-fighting equipment brought to the scene
- Effectiveness of command and control
- Search for victims and propagation of the fire into other plant areas
- Smoke removal operations
- Utilization of pre-planned strategies
- Adherence to the pre-planned drill scenario
- Drill objectives met

The inspectors also evaluated the fire brigade's actions to determine whether these actions were in accordance with PPL's fire-fighting strategies.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

.1 Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the UFSAR, the site flooding analysis, and plant procedures to assess susceptibilities involving internal flooding on Unit 1 RB, elevation 683' from September 23-24, 2014. The inspectors also reviewed the CAP to determine if PPL identified and corrected flooding problems and whether operator actions for coping with flooding were adequate. The inspectors also focused on the RHR equipment space to verify the adequacy of equipment seals located below the flood line, floor and water penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, control circuits, and temporary or removable flood barriers.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07A – 1 sample)

Heat Sink Annual Review

a. Inspection Scope

The inspectors reviewed the common 'A' DG jacket water cooler heat exchanger (HX) on July 30, 2014 to determine its readiness and availability to perform its safety functions. The inspectors reviewed the design basis for the component and verified PPL's commitments to NRC Generic Letter 89-13. The inspectors reviewed the results of previous inspections of the 'A' DG jacket water HX. The inspectors discussed the results of the most recent inspection with engineering staff and reviewed pictures of the as-found and as-left conditions. The inspectors verified that PPL initiated appropriate corrective actions for identified deficiencies. The inspectors also verified that the number of tubes plugged within the heat exchanger did not exceed the maximum amount allowed.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11Q – 2 samples)

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on September 17, 2014, which was administered to meet annual NRC licensed examination requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) 55.59. The inspectors evaluated operator performance during two scenarios, which included a loss of coolant accident and hydraulic anticipated transient without scram. The inspectors verified completion of 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 and the TS action statements entered by the unit supervisor. Additionally, the inspectors assessed the ability of the crew and 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 operator performance in the control room on July 8, 2014, which included rod pattern adjustment on Unit 2. The inspectors observed reactivity control briefings to verify that the briefings met the criteria specified in OP-AD-004, "Standards for Shift Operations," Revision 51, and OP-AD-338, "Reactivity Manipulations Standards and Communication Requirements," Revision 24. Additionally, the inspectors observed crew performance to verify that procedure use, crew communications, and coordination of activities between work groups met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12 – 2 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structures, systems, and components (SSC) performance and reliability. The inspectors reviewed system health reports, CAP documents, maintenance WOs, and Maintenance Rule (MR) basis documents to ensure that PPL was identifying and properly evaluating performance problems within the scope of the MR. For the first sample selected, the inspectors verified that the SSC was properly scoped into the MR in accordance with the 10 CFR 50.65 and verified that the (a)(2) performance criteria established by PPL staff was reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2). Additionally, the inspectors ensured that PPL staff was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries. For the second sample, inspectors reviewed PPL's assessment to ensure it met regulatory requirements.

- Unit 1, post-accident sample system
- Unit 1, impact of fan 2V414A failure on drywell ventilation system health

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 PPL 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 PPL personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. PPL performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- Unit 1, 'A' core spray (CS) inoperable for check valve inspections on July 31, 2014
- Unit 2, 'A' RFP turbine primary speed control demand failure on August 6, 2014
- Common, yellow risk during 'A' DG OOS for 5-year overhaul on August 20, 2014
- Common, yellow risk for 'A' emergency service water (ESW) OOS on August 25, 2014
- Common, yellow risk for 'A' residual heat removal service water (RHRSW) OOS on September 23, 2014

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 5 samples)

a. Inspection Scope

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

- Unit 2, RCIC high oil level on August 12, 2014
- Common, 1V222A failed to auto start in conjunction with a freon leak on the 'B' control structure chiller on July 10, 2014
- Common, 'B' DG standby lube oil pump failure on July 28, 2014
- Common, 'B' DG fuel oil transfer pump short cycling on August 25, 2014
- Common, reactor protection system electrical protection assembly breaker setpoint drift on September 12, 2014

The inspectors selected these issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the ODs to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to PPL'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 PPL. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

Temporary Modifications

a. Inspection Scope

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

- Common, Temporary Design Change 1831838, "Control Structure Chiller 0K112B Bearing High Temperature Trip Elimination"

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 7 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests (PMTs) 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.

- Unit 1, HV151F004C motor-operated valve (MOV) actuator overhaul on July 22, 2014
- Unit 1, 'A' and 'C' CS pump discharge check valve inspection and packing replacement on July 30, 2014
- Common, unaligned run of the 'A' DG and test of fuel oil booster pump on July 9, 2014
- Common, 'A' DG 5-year overhaul on August 19, 2014
- Common, motor driven fire pump maintenance on August 4, 2014
- Common, 101 railroad bay wall installation on August 6, 2014
- Common, 'A' ESW pump and motor replacement on August 29, 2014

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 2 samples)

Unit 2 Turbine Outages in July 2014 and September 2014

a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the Unit 2 forced turbine outages in July 2014 and September 2014. The inspectors reviewed PPL'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 cool down 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 TSs when taking equipment OOS
- 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
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and instrument error accounting
- Status and configuration of electrical systems and switchyard activities to ensure that TSs 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 TSs
- Fatigue management
- Identification and resolution of problems related to outage activities

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 4 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests (STs) and/or reviewed test data of selected risk-significant SSCs to assess whether test results TSs, the UFSAR, and PPL 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 STs:

- Unit 1, Division 1 CS quarterly flow verification on July 10, 2014
- Unit 1, RHRSW quarterly flow surveillance on September 25, 2014 (IST)
- Unit 2, primary coolant specific activity dose equivalent calculation on July 25, 2014 (RCS)
- Common, two-year secondary containment testing of zones I and III on September 9, 2014

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

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

a. Inspection Scope

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

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

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06 - 1 sample)

a. Inspection Scope

The inspectors evaluated the conduct of a routine PPL emergency drill on July 24, 2014, to identify weaknesses and deficiencies in the classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator to determine whether the event classifications,

notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the station drill critique to compare inspector observations with those identified by PPL staff in order to evaluate PPL's critique and to verify whether the PPL staff was properly identifying weaknesses and entering them into the CAP.

b. Findings

No findings were identified.

Introduction. An Unresolved Item (URI) was identified because additional information is needed to determine whether a performance deficiency exists and if a violation of 10 CFR 50.54(q)(2) occurred. The inspectors identified an issue of concern when multiple instances were noted during emergency plan (EP) drills and exercises where emergency response organization (ERO) members reached different conclusions about the status of a release when presented with the same set of plant conditions and indications.

Description. On July 24, 2014, inspectors observed a full-scale emergency preparedness (EP) drill at PPL's Susquehanna Steam Electric Station (SSES). During the drill, the inspectors observed that the staff in the Susquehanna control room (CR), the Technical Support Center (TSC), and the Emergency Operating Facility (EOF) utilized Attachment QQ of EP-PS-001, "Radiological Release in Progress Guidance," Revision 3 to determine whether or not a radioactive release was occurring due to the event. The inspectors identified that, when presented with the same set of plant conditions and indications, different emergency facilities made different notifications to the offsite response organization (ORO). Specifically, the notifications pertaining to the declaration of an Unusual Event by the CR, an Alert by the TSC, the CR and TSC Emergency Directors (EDs) communicated their determinations that there was no release in progress. Conversely, in a periodic update at the Alert level by the EOF staff, the EOF Recovery Manager (RM) communicated a determination that a release was occurring. The plant conditions for all three of these notifications involved a fuel failure with an unmonitored release path to the environment because the Turbine Building ventilation was inoperable due to a loss of offsite power. However, all main steam isolation valves (MSIVs) were closed in response to the event and the only unmonitored path for radioactive material was through MSIV seat leakage assumed in the design bases. As the drill progressed, plant conditions changed and a site area emergency (SAE) was declared due to a steam leak on the RCIC system in the reactor building. A fourth notification was made, by the EOF, and the RM again stated that there was a release in progress.

On July 25, 2014, the inspectors observed the post-drill critique, and noted that PPL determined that all four of these notifications were accurate thereby raising questions for the inspectors. Subsequently, in response to questions by the inspectors, PPL determined that there was initially no release in progress due to the event and that the EOF RM had communicated incorrect information during the periodic (third) update notification. The inspectors then questioned whether the subsequent (fourth) notification pertaining to the SAE was accurate. The inspectors also questioned PPL on the potential inconsistent outcomes that can arise from using the flowchart in Attachment QQ, "Radiological Release in Progress Guidance," Revision 3 of EP-PS-001). The inspectors also noted that, since 2005, two changes had been made to the release

progress flowchart. These two changes appeared to have the potential to change the outcome of the release in progress determinations.

While reviewing the inspectors concerns, PPL identified that, in recent licensed operator requalification training cycles, crews using the Attachment QQ flowchart had reached different conclusions on whether there was a release in progress for the same set of conditions and indications as provided for the SAE declaration in the July 24th full-scale drill. PPL found that, despite this disparity, the EP organization evaluated each opportunity as having appropriately assessed the status of the release, and reported them all as drill and exercise performance (DEP) performance indicator (PI) successes to the NRC. Inspectors noted that at the time of drill performance, the EP organization did not review and did not critique whether judgment was appropriately applied, nor did they retain sufficient documentation to allow inspectors to independently inspect and assess the outcome. Therefore, the inspectors determined that additional inspection and information regarding these questions are required.

The inspectors could not conclude whether each of the release determinations were accurate or whether the guidance provided to implement EPIP changes regarding release in progress determinations allowed PPL's ERO to come to disparate conclusions when presented with the same plant conditions and indications. Therefore, an Unresolved Item (URI) was identified because additional information is needed for the inspectors to determine whether a performance deficiency existed and if a violation of 10 CFR 50.54(q)(2) occurred when changes were implemented to the emergency plan implementing procedure (EPIP) for determining whether an event-based release is in progress. **(URI 05000387 & 388/2014004-01: Adequacy of Guidance for an Emergency Plan Procedure Change)**

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety

2RS5 Radiation Monitoring Instrumentation (71124.05 – 1 sample)

a. Inspection Scope

During September 22-26, 2014, the inspectors verified that the licensee is assuring the accuracy and operability of radiation monitoring instruments that are used to protect occupational workers and to protect the public from nuclear power plant operations. The inspectors used the requirements in 10 CFR Part 20; 10 CFR Part 50, Appendix I; TSs; offsite dose calculation manual (ODCM); applicable industry standards; and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors conducted an in-office review of: the UFSAR, TS requirements for post-accident monitoring instrumentation, ODCM, and audits and self-assessments pertaining to radiation monitoring instrumentation.

Walkdowns and Observations

The inspectors performed the following:

- Walkdowns of the effluent radiation monitoring systems (Unit 1 and Unit 2 RB vents and liquid discharge monitor) to assess configuration alignment
- Observed staff performance of source checks for portable survey instruments
- Walkdowns of various in plant monitor area radiation monitors and continuous air monitors and compared control room monitor response with actual monitor readouts
- Evaluated periodic source checks of personnel contamination monitors, portal monitors, and small area monitors.

Calibration and Testing Program

The inspectors performed the following:

- Evaluated channel calibration, functional tests, and alarm set-points of selected effluent monitoring instruments
- Assessed laboratory analytical instruments to evaluate performance checks, calibration data, frequency of testing, and corrective action maintenance of the equipment
- Reviewed calibration records and the methods used to perform functional tests for the whole body counter
- Reviewed the electronic and source calibration documentation for the containment high-range radiation monitor.
- Evaluated two effluent/process monitors used in emergency operating procedures for current calibration and availability of these instruments
- Evaluated the calibration documentation for selected portable survey instruments, area radiation monitors (ARM), air samplers, personnel contamination monitors, and small article monitors
- Reviewed the current calibration of the licensee's portable survey and ARM instrument calibrator unit
- Reviewed the licensee's waste stream characterization to assess whether calibration sources used were representative of radiation encountered in the plant.

Problem Identification and Resolution

The inspector evaluated whether problems associated with radiation monitoring instrumentation were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. The inspector assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve radiation monitoring instrumentation.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 - 8 samples)

.1 Safety System Functional Failures (2 samples)

a. Inspection Scope

The inspectors sampled PPL's submittals for the Safety System Functional Failures (SSFFs) PI for both Unit 1 and Unit 2 for the period of October 1, 2013 through June 30, 2014. To determine the accuracy of the PI data reported during those periods, inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment PI Guideline," Revision 7, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 10 CFR 50.73." The inspectors reviewed PPL's operator narrative logs, operability assessments, MR records, maintenance WOs, CRs, event reports and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index (MSPI) (6 samples)

a. Inspection Scope

The inspectors reviewed PPL's submittal of the MSPI for the following system for the period of October 2013 through June 2014:

- Units 1 and 2, emergency alternating current power system

Additionally, the inspectors reviewed PPL's submittal of the MSPI for the following systems for the period of April 2013 through June 2014:

- Units 1 and 2, high pressure injection system
- Units 1 and 2, heat removal system

To determine the accuracy of the PI data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment PI Guideline," Revision 7. The inspectors also reviewed PPL's operator narrative logs, CRs, MSPI derivation reports, 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 – 3 samples)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution (PI&R)," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that PPL 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 CR screening meetings.

b. Findings

No findings were identified.

.2 Annual Sample: Review of the Operator Workaround Program

a. Inspection Scope

The inspectors reviewed the cumulative effects of the existing operator workarounds (OWAs), operator burdens, existing operator aids and disabled alarms, and open main control room deficiencies to identify any effect on emergency operating procedure operator actions, and any impact on possible initiating events and mitigating systems. The inspectors evaluated whether station personnel had identified, assessed, and reviewed OWAs as specified in PPL's procedure OI-AD-096, "Operator Burdens," Revision 10.

The inspectors reviewed PPL's process to identify, prioritize and resolve main control room distractions to minimize operator burdens. The inspectors reviewed the system used to track these OWAs and recent PPL self-assessments of the program. The inspectors also toured the control room and discussed the current OWAs with the operators to ensure the items were being addressed on a schedule consistent with their relative safety significance.

b. Findings and Observations

No findings were identified.

The inspectors determined that the issues reviewed did not adversely affect the capability of the operators to implement abnormal or emergency operating procedures (EOPs). The inspectors also verified that PPL entered OWAs and burdens into the CAP at an appropriate threshold and planned or implemented corrective actions commensurate with their safety significance.

The inspectors noted that PPL's recovery plan, a plan to reduce operator burdens, has made improvements in the Operator Burden process within the past year. Specifically, in 2013 the inspectors observed that prior to the reactor scram on December 19, 2012,

PPL failed to identify all operator burdens. Those operator burdens that were identified did not specify compensatory measures to limit the burden to operations staff. Subsequent to the scram, PPL implemented corrective actions to address these programmatic weaknesses. Although still above the station goals, as defined in OI-AD-096, "Operator Burdens," Revision 12, the total number of operator burdens, documented in the August 2014 Operator Aggregate Index report, has been reduced to 33. This is an improvement with respect to the 98 operator burdens documented in the September 2013 Operator Aggregate Index.

.3 Annual Sample: Trend in TS Surveillance Procedure Inadequacies and Corrective Actions for NCV 05000387; 388/2012009-03

a. Inspection Scope

The inspectors performed an in-depth review of PPL's evaluation and corrective actions associated with the subject NCV. The NCV was documented because PPL did not perform an adequate extent of condition (EOC) review for a significant condition adverse to quality. Specifically, inspectors had determined that PPL's actions were inadequate to address the extent of TS surveillance procedure inadequacies. In review of the issue, inspectors identified another surveillance procedure which was within the scope of the extent of condition review that did not appropriately capture the TS surveillance requirement (SR). Therefore, the inspectors determined the PD was associated with a violation of 10 CFR 50 Appendix B, Criterion XVI, "Corrective Action." The subject NCV was entered into the CAP as CR-1641558. PPL performed an apparent cause evaluation (ACE) to identify the cause of the violation and identify corrective actions. The inspectors reviewed the ACE to determine if the corrective actions were reasonable. Additionally, inspectors performed a targeted sampling of other surveillance procedures for adequacy to independently assess PPL's actions.

b. Findings and Observations

No findings were identified.

Inspectors reviewed the ACE and determined that the evaluation did not identify corrective actions to address the PD identified in the NCV. Specifically, the ACE appropriately identified the apparent cause of the violation as the action generated to address the extent of condition was not SMARTER. The actions did not specify reviewing the procedure content/detail. Despite this, the ACE specified no corrective actions to address the apparent cause or for the inadequate extent of condition review identified in the NCV. Instead, the ACE stated that it is largely a latent organizational issue that has been and continues to be addressed in the 2013/2014 Plan for Excellence Focus Area # for CAP efficiency. Though this action was reasonable to limit the likelihood of future inadequate EOC reviews, the inspectors determined that the ACE did not correct the PD identified in the NCV.

As follow-up to the identified issue, inspectors reviewed a sampling of approximately ten surveillance procedures with unique or non-standard frequencies (e.g. on-demand, rotating test basis, etc.). Two deficiencies were noted:

- SE-024-100, “Unit 1 and Unit 2 Ten Year Simultaneous Start of Four DGs,” Revision 3, allows the surveillance to be performed with the ‘E’ DG substituted for one of the other DGs. The TS SR states that, “This SR does not have to be performed with DG ‘E’ substituted for any DG.” The TS bases continue that the ‘E’ DG’s independence is adequately verified by design and is not required to be tested. The inspectors determined that the procedure could allow for performance such that the TS SR could be missed. Review of previous performances of the surveillance identified that the test had not previously been performed with the ‘E’ DG substituted. PPL entered this issue into the CAP as CR-21371.

- SM-102-A04, “48 Month Channel A 1D610- 125 VDC Battery Discharge Modified Performance Test and Battery Charger Capability Test,” Revision 21, is scheduled at a 48 month interval. The implementing procedure states to take appropriate actions to shorten the test frequency if the battery has reached 85 percent expected service life (at the time of surveillance performance). The TS SR requires a capacity test every 12 or 24 months if the battery has reached 85 percent service life, depending on battery capacity. Inspectors determined that the implementing procedure, as written, could result in a missed surveillance if 85 percent service life were exceeded prior to the following 48 month capacity test. Inspectors reviewed battery performance for all the station’s safety-related batteries and verified that none currently met the condition. Additionally, inspectors noted that the battery replacement maintenance was scheduled at a frequency within 85 percent of the service life. PPL entered this issue into the CAP as CR-2014-21485.

Overall, the inspectors determined that PPL did not correct the PD identified in NCV. PPL entered the issue into the CAP as CR-2014-22735 and CR-2014-25374. Corrective actions specified under CR-2014-22735 included performing an in-depth cross-functional review of a 10 percent sampling of all surveillance implementing procedures, with follow-up action to expand the sampling population if additional inadequacies are identified. Inspectors determined that this corrective action, if implemented with rigor, was reasonable to evaluate the extent of inadequate surveillance implementing procedures. Inspectors assessed the failure to identify the two previously discussed deficient surveillance procedures, both of which were conditions adverse to quality, by specifying appropriate corrective actions to address a NCV as a PD. The inspectors evaluated the issue in accordance with the guidance in IMC 0612, Appendix B, “Issue Screening,” and Appendix E, “Examples of Minor Issues,” and determined the issues of concern were of minor significance because there was reasonable assurance that the tests would have been performed satisfactorily and no issues with past performance were identified. Consequently, the issues were not subject to enforcement action in accordance with the NRC’s Enforcement Policy.

.4 Annual Sample: Review of Secondary Containment Inoperabilities

a. Inspection Scope

A PI&R sample inspection was conducted during the period August 14 - September 20, 2014. The inspectors performed an in-depth review of PPL’s evaluation and corrective actions associated with Licensee Event Reports (LERs) submitted as the results of inoperabilities of secondary containment. The circumstances of each LER are documented in section 4OA3.2 of this report.

The inspectors assessed PPL's problem identification threshold, prioritization and timeliness of corrective actions to determine whether PPL was appropriately identifying, characterizing, and correcting problems associated with this issue and whether the planned or completed corrective actions were appropriate. The inspectors performed system walk-downs, documentation reviews and interviewed engineering and operations personnel to assess the effectiveness of any implemented corrective actions. The inspectors compared the actions taken to the requirements of PPL's CAP and 10 CFR Part 50, Appendix B.

b. Findings and Observations

No findings were identified.

In general, inspectors grouped the evaluations into two categories, those that were the result of TS ST failure and those that were the result of non-safety related ventilation system issues.

Inoperability resulting from Drawdown Testing Failures

NCV 05000387; 388/2013005-03: Missed TS Surveillance for Secondary Containment Drawdown Testing, found that prior to November 2013, PPL had not tested the secondary containment boundary configuration with the railroad bay open. Secondary containment drawdown and in-leakage testing was performed with the railroad bay aligned to zone III, masking any potential in-leakage through the secondary containment boundaries within the railroad bay such as removable walls and the 818 Railroad Bay Hatch Cover. After November 2013, PPL changed their drawdown and in-leakage testing strategy which resulted in three in-leakage testing failures.

An equipment apparent cause evaluation (EACE) and a Level 3 work group evaluation were completed under CR-2013-04462 and CR-2013-05775, respectively. Both evaluations identified the direct cause of the test failures were due to air in-leakage due to undetected seal degradation in the removable walls, 818 Railroad Bay Hatch Cover, and doors 102 and 113A. Corrective actions were implemented to repair leakage from the 818 hatch and removable walls. Temporary modifications were implemented to reduce leakage through both doors. These actions reduced the leakage so that secondary containment remained operable, though with reduced margin to the TS limit. The inspectors noted that permanent corrective actions associated with doors 102 and 113A are not currently scheduled. Additionally corrective actions to make repairs to door 101 seals and threshold, a secondary containment boundary while the 101 Bay is aligned to Zone I or Zone III, are also not scheduled. However, closure of the prompt operability determination (CR-2013-04462) which is maintaining secondary containment operable is not scheduled for completion until May 29, 2015. While all secondary containment operability testing has been completed, these three outstanding door repairs represent a significant reduction in the allowable in-leakage design margin.

The inspectors reviewed NCV 05000387;388/2013005-03 and determined that the undetected degradation of the secondary containment boundaries that caused the three failures was a direct result of failing to test the 101 Bay boundaries as described in the NCV. The inspectors did not identify any new findings.

Inoperability resulting from Non-safety Related Ventilation Failures

Challenges with non-safety related ventilation and its effect on secondary containment operability have been discussed during semi-annual trend reviews in NRC inspection reports 2012-03, 2013-05, and 2014-03. Subsequent to these reports, additional trips of non-safety related ventilation fans were caused by reactor protection system (RPS) electrical power transfers, improper damper response and operation, and solenoid valve failures. These trips and their associated inoperability of secondary containment were documented in LERs 05000387;388/2013-004, 05000387;388/2013-005, 05000387;388/2013-006, 05000387;388/2013-008, 05000387;388/2014-004, 05000387;388/2014-005, 05000387;388/2014-007. As discussed in section 4OA3 of this report, PPL has taken corrective actions to prevent recurrence of these failures, to include procedure changes to prevent an unexpected loss of secondary containment during RPS electrical power transfers and additional monitoring during operator rounds to ensure the ventilation system is functioning within operating limits. Inspectors determined that these corrective actions were reasonable and noted that since implementation, PPL has not experienced an unexpected loss of secondary containment for the same reasons documented in the above LERs.

Inspectors also reviewed PPL's reporting of the failures under NRC performance indicator MS05, SSFFs. The inspectors noted that PPL did not count the seven LERs associated with the inoperability of secondary containment due to differential pressure (DP) being less than the TS required value of 0.25 inches of vacuum water gauge (WG) as SSFFs. NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, states that events in which the licensee declared a system inoperable, but an engineering analysis later determined that the system was capable of performing its safety function are not counted. The inspectors questioned PPL's application of this statement since PPL's secondary containment drawdown analysis, EC-070-0526, assumes that secondary containment DP is initially at -0.25 inches of vacuum WG. In response to inspectors questions, PPL performed additional engineering analysis which concluded that secondary containment would continue to meet the TS surveillance limits with an initial secondary containment DP of 0.0 inches of vacuum WG (i.e. atmospheric conditions).

4OA3 Followup of Events and Notices of Enforcement Discretion (71153 – 12 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 IMC 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. As applicable, the inspectors verified that PPL made appropriate emergency classification assessments and properly reported the event in accordance with

10 CFR 50.72 and 50.73. The inspectors reviewed PPL's follow-up actions related to the events to assure that PPL implemented appropriate corrective actions commensurate with their safety significance.

- Unit 1, 'B' RRP trip on August 27, 2014

b. Findings

Introduction. A finding of very low safety significance (Green) for inadequately implementing work instructions for the installation and calibration of the RRP MG set motor winding cooling air outlet temperature switch as required by NDAP-QA-0502, "Work Order Process," was self-revealed when the Unit 1 'B' RRP tripped on August 27, 2014, and required a rapid unplanned downpower and transition to single loop operation. The cause of the RRP trip was a calibration error made on May 7, 2014, in which the alarm and trip setpoints were reversed such that the pump trip occurred at normal expected temperatures for the plant conditions.

Description. The RRP MG sets are protected, in part, by high temperature alarms and a MG-set drive motor trip on motor winding cooling air outlet high temperature. These functions are provided by a dual element high temperature bistable, TSH-14001B, which is configured to provide a control room alarm at 175 degrees Fahrenheit (°F) and a RRP MG set trip at 260 °F. This switch is non-safety-related because the protective functions are not credited in the accident analysis.

On August 27, 2014, the Unit 1 'B' RRP tripped unexpectedly, resulting in a rapid power reduction to approximately 68 percent power. Operators implemented several off-normal procedures and continued the unplanned power reduction to 30 percent power to maintain the plant within operating limits. Operators entered TS Limiting Conditions for Operation (LCO) 3.4.1, "Recirculation Loops Operating," that required implementation of reduced thermal limits and RPS trip setpoints that correspond to operation in single loop.

PPL's initial investigation into the trip identified that TSH-14001B was incorrectly calibrated on May 7, 2014, when the temperature switch was replaced and the alarm and trip setpoints were reversed. Additionally, the temperature bistable had drifted low by approximately 30°F, resulting in the MG set trip occurring within the normal range of motor winding cooling air temperatures with the motor generator fully loaded during summer months.

Setpoint	Expected Configuration	As-Left on May 7, 2014	As-Found on August 28, 2014
MG-set motor winding cooling air outlet temperature switch TSH-14001B- Trip (Contact #1)	260 °F	172 °F	143.8 °F
MG-set motor winding cooling air outlet temperature switch TSH-14001B- Alarm (Contact #2)	175 °F	260 °F	229.9 °F

PPL initiated a root cause evaluation (RCE) under CR-2014-27243. PPL reviewed WO 1764814 that was implemented on May 7, 2014, to install and calibrate a new temperature switch. PPL's review identified that numerous field changes were made to the work package. Specifically, twenty-seven field changes were made, including one to

change or request a plant drawing update to the motor trip contact to Contact 2 and the alarm contact to Contact 1. This change was made because the contract instrumentation and control (I&C) technicians performing the work believed they had identified that the wires associated with the two contacts were reversed in the field. No CR was written to document the reversal of the field wiring. In reality, the wiring and WO were correct. The field changes made by the technicians changed the plant configuration and reversed the alarm and trip functions. Plant drawings referenced in the WO identified that TSH-14001B Contact 1 provided the trip function and TSH-14001B Contact 2 provided the alarm function.

NDAP-QA-0502, "Work Order Process," Revision 38, step 6.9.5, states work shall be performed in accordance with the work package, all work instructions, and referenced procedures. Section 6.8 provides requirements for making changes to work packages. It states that field changes cannot result in a plant design or configuration change. Additionally, field changes require the person making the change and the approver to initial and date the change after verifying that the changes are technically correct and in accordance with plant procedures. PPL identified, for the field changes to the calibration sheets, no initials were provided indicating that the supervisor had approved the field change to reverse the contact numbers for the alarm and trip functions. Step 6.9.13 states that equipment shall be returned to the original design configuration following work completion unless a change mechanism has been issued. However, inspectors determined that there was no change mechanism initiated to update plant drawings or routine calibration procedures to reflect the as-left configuration. Section 6.10 of NDAP-QA-0502 provides instructions for post-work review and work package closeout. It requires that work group supervision review the work package for completeness, technical accuracy and ensuring the worker completed above discussed requirements. The inspectors concluded that work group supervision provided inadequate oversight of the work because none of the aforementioned deficiencies in work execution were identified.

The inspectors also reviewed the PMT performed for the work. The work instructions installed and calibrated the temperature switch with slide links opened so that the end device (i.e., control room annunciator and RRP MG-set drive motor breaker) was not tested or exercised. Specifically, when technicians calibrated and verified that the contact for the alarm changed state at the setpoint, no control room annunciator was received. Following closure of the slide links, no additional testing was performed to verify the functionality of the temperature switch. NDAP-QA-0482, "PMT," Revision 7, provides the requirements for identification of post-maintenance tests and states that the purpose is to ensure that the originally identified problems was corrected and no new deficiencies have been introduced. The inspectors determined that the method of performing the calibration was insufficient to ensure that the new deficiency was identified prior to restoring the system to service. Attachment E, "Bistable/Relay Component Testing," of PSP-29, "PMT Matrix," Revision 17, indicates that if the component is replaced or the setting is adjusted, then the maintenance functional tests, including verification that all indicating lights associated with the switch are operating acceptably, should be performed. The inspectors determined that the WO did not sufficiently direct appropriate testing to ensure the system was restored to an acceptable state; and, the supervisory review of the work planning process was insufficient to identify the deficiency.

PPL's immediate corrective actions included entering the issue into their CAP as CR-2014-27243, correcting the calibration error, starting the pump, and restoring normal two-loop flow to the reactor vessel.

Analysis. The inspectors determined that PPL's failure to implement a WO as written or make changes as required by station procedures was a PD that was within PPL's ability to foresee and correct, and should have been prevented. The PD was more than minor because it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and affected its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, inadequate implementation of work instructions resulted in the incorrect calibration of the 'B' RRP MG Set High Temperature Trip setpoint such that it was reached during normal operations, resulting in a trip of the 'B' RRP, an unplanned rapid downpower to approximately 30 percent and establishment of single loop operating conditions. The inspectors evaluated the finding in accordance with IMC 0609, Appendix A, "The SDP for Findings At-Power," Exhibit 1 for the Initiating Events cornerstone. The inspectors determined the finding was of very low safety significance (Green) because it did not cause a reactor trip or the loss of mitigation equipment.

This finding was determined to have a cross-cutting aspect in the area of Human Performance, Field Presence, because PPL did not ensure supervisory and management oversight of work activities, including contractors and supplemental personnel. Specifically, supervisory oversight of the calibration activity, including work package development, review of work performed and work package closeout were insufficient to ensure that the changes made to the work package were processed in accordance with station procedures and did not result in a new deficiency being introduced [H.2].

Enforcement. This finding does not any involve enforcement action since no regulatory requirement violation was identified. Specifically, since the ICS is non-safety related and not credited in any accident analysis, implementation of PPL's procedure, NDAP-QA-0502, "Work Order Process," is not required to be implemented as part of Susquehanna's 10 CFR 50, Appendix B, Quality Assurance Program. Because the finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as FIN, (**FIN 05000387/2014004-02, RRP Trip due to Incorrect Calibration of MG Set High Temperature Trip Setpoint**)

.2 LERs associated with Secondary Containment (10 samples)

The following LERs and associated evaluations were reviewed for accuracy, the appropriateness of corrective actions, the violations of requirements, and the generic issues. Any enforcement aspects of this issue are discussed in Section 4OA2.4. The inspectors did not identify any new issues during the review of the LERs. These LERs are closed.

(Closed) LER 05000387; 388/2013-007-00: Loss of Secondary Containment Due to Drawdown Test Failure

On November 20, 2013, Secondary Containment drawdown testing failed to meet the acceptance criteria of TS SR 3.6.4.1.5 due to in-leakage flow rate exceeding the allowable value. The ST was being conducted on a previously untested alignment of the

Unit 1 ventilation system. Prior to the test, LCO 3.6.4.1 was entered for both Unit 1 and Unit 2. Following the unsuccessful ST, Secondary Containment was realigned to an operable and tested configuration and LCO 3.6.4.1 was exited. This was documented in CR-2013-04462.

During retesting on December 7, 2013, Secondary Containment drawdown testing failed to meet the acceptance criteria of TS SR 3.6.4.1.5 due to in-leakage flow rate exceeding the allowable value. Following the unsuccessful ST, Secondary Containment was realigned to an operable and tested configuration and LCO 3.6.4.1 was exited. This was documented as CR-2013-05775.

(Closed) LER 05000387; 388/2014-003-00: Loss of Secondary Containment during TS SR 3.6.4.1.5 Drawdown Testing

On March 4, 2014, Secondary Containment drawdown testing again failed to meet the acceptance criteria of TS SR 3.6.4.1.5 due to in-leakage flow rate exceeding the allowable value. The ST was being conducted on a previously untested alignment of the Unit 2 ventilation system. This was documented in CR-2014-07035.

(Closed) LER 05000387; 388/2013-004-00: Loss of Secondary Containment Due to Differential Pressure Not Meeting TS 3.6.4.1

On October 13, 2013, control room operators received an alarm for High/Low RB DP. The Unit 2 Zone II Secondary Containment DP was at 0 inch of vacuum WG with the exhaust ventilation fans running. TS 3.6.4.1 requires a negative DP of at least 0.25 inch of vacuum WG. TS LCO 3.6.4.1 was entered for both Unit 1 and 2 due to low RB DP. The Zone I (Unit 1 RB) and the Unit 1 / 2 Zone III (Common Refuel Floor Area) ventilation remained in service and stable during the event. This was documented in CR-2013-00582.

(Closed) LER 05000387; 388/2013-005-00: Loss of Secondary Containment

On October 23, 2013, control room operators received an alarm for High/Low RB DP. The Unit 2 Zone II Secondary Containment DP was at 0.17 inch of vacuum WG. TS 3.6.4.1 requires a DP of at least 0.25 inch of vacuum WG. TS LCO 3.6.4.1 was subsequently entered for both Unit 1 and 2 due to low RB DP. The Zone II differential pressure was restored to within TS limits by adjusting the manual outside air supply damper in the closed direction. This was documented in CR-2013-01504.

(Closed) LER 05000387; 388/2013-006-00 and 05000387; 388/2013-006-01: Loss of Secondary Containment Due to DP Not Meeting TS 3.6.4.1

On October 31, 2013, operators performed a routine transfer of the Unit 1 Division I RPS power from its normal supply to its alternate supply in support of a maintenance activity. Upon resetting electrical relays affected by the power supply transfer, Secondary Containment Zone I DP was lost due to the trip of one of the Unit 1 RB exhaust fans. As a result, Zone I DP did not meet the criteria (vacuum > 0.25 inch of vacuum WG) of SR 3.6.4.1.1 and LCO 3.6.4.1 was entered for both Unit 1 and Unit 2. The Secondary Containment Zone II (Unit 2 RB) and the Zone III (Common Refuel Floor Area) ventilation remained in service and stable during the event. The tripped exhaust fan was subsequently started, Secondary Containment Zone I DP was restored, and LCO 3.6.4.1 was exited.

On November 1, 2013, operators performed a routine transfer of the Unit 1 Division I RPS power from its alternate supply to its normal supply in support of restoration from the maintenance activity. Upon resetting electrical relays affected by the power supply transfer, Secondary Containment Zone I DP was lost due to the trip of the Unit 1 RB exhaust fans. As a result, Zone I DP did not meet the criteria of SR 3.6.4.1.1 and LCO 3.6.4.1 was entered for both Unit 1 and Unit 2 at 0309 hours. The Secondary Containment Zone II and the Zone III ventilation remained in service and stable during the event. The tripped exhaust fans were subsequently started, Secondary Containment Zone I DP was restored, and LCO 3.6.4.1 was exited. These were documented in CR-2013-02233.

(Closed) LER 05000387; 388/2013-008-00: Loss of Secondary Containment Due to Failed Solenoid Valve in the RB Zone I Ventilation Exhaust System

On November 27, 2013, control room operators observed that the Zone I (Unit 1 RB) Secondary Containment DP was at 0.04 inch of vacuum WG. TS 3.6.4.1 requires a DP of at least 0.25 inch of vacuum WG. As a result, TS LCO 3.6.4.1 was entered for both Unit I and 2 due to low RB DP. The Zone ll (Unit 2 RB) and the Unit 1 / Unit 2 Zone III (Common Refuel Floor Area) ventilation remained in service and stable during the event. The Zone I DP was restored to within the required band by placing the standby train exhaust fan (which was out of service for maintenance) in operation and was verified to be stable. TS LCO 3.6.4.1 was subsequently exited. This was documented in CR-2013-05019.

(Closed) LER 05000387; 388/2014-004-00: Loss of Secondary Containment Pressure Due to Fan Trip

On March 8, 2014, the RPS power supply was transferred from Normal to Alternate and back to Normal in accordance with plant procedures to support testing of the Normal Electrical Protective Assembly (EPA) Breakers. The required Secondary Containment Zone II DP was lost during restoration of RB Zone II HVAC systems following the RPS power supply transfers. Instrument Air Valve 2252442 was determined to have not been fully closed and resulted in a RB Exhaust Fan trip on low flow. This was documented in CR-2014-07676.

(Closed) LER 05000387; 388/2014-005-00: Loss of Secondary Containment Due to DP Not Meeting TS 3.6.4.1

On April 17, 2014 at 0335, secondary containment Zone lll DP went to 0.15 inch of vacuum WG after the planned shutdown of the Unit 1 portion of Zone lll ventilation. As a result, Zone lll DP did not meet the criteria (0.25 inch of vacuum WG) of SR 3.6.4.1.1 and LCO 3.6.4.1 was entered for both Unit 1 and Unit 2. Zone II ventilation remained in service and stable during the events. Zone I ventilation remained isolated with secondary containment relaxed for a refueling outage on Unit 1. Unit 1 Zone lll ventilation was subsequently restored, Zone lll DP was restored, and LCO 3.6.4.1 was exited. This was documented in CR-2014-12316.

(Closed) LER 05000387; 388/2014-007-00: Loss of Secondary Containment Pressure during RPS Transfer

On April 24, 2014, secondary containment Zone III DP lowered to less than the required 0.25 inch of vacuum WG when restoring Unit 1 Zone III ventilation during a routine swap of RPS power supplies, due to a trip of the Unit 1 Zone III supply fan. Zone I ventilation was isolated with secondary containment relaxed for a refuel outage on Unit 1. Zone II ventilation remained in service and stable. Zone III DP recovered to SR 3.6.4.1.1 requirements of 0.25 inches WG and was verified to be stable. This was documented in CR-2014-13345.

.3 (Closed) LER 05000387/2013-003: Unauthorized Access Due to Not Completing Required Training (1 sample)

On August 6, 2013, PPL identified that approximately seven individuals accessed the facility without completing General Employee Training. PPL's investigation determined that the issue was programmatic in that the computer program that tracked completion of the courses allowed credit to be given without having completed all the requirements. This was documented in CR-1733104. The LER and associated evaluation was reviewed for accuracy, the appropriateness of corrective actions, violations of requirements, and generic issues. The inspectors did not identify any new issues during the review of the LER. This LER is closed.

4OA5 Other Activities

.1 (Closed) URI 05000387/2014002-01, Adequacy of Compensatory Measures to Restore TS Operability

Inspectors reviewed URI 05000387/2014002-01. This URI was initiated because additional NRC review and evaluation was required to determine whether implementation of a compensatory measure to restore TS operability required NRC approval prior to implementation and to subsequently determine whether a violation of 10 CFR 50.59, "Changes, Tests and Experiments" was more than minor. Specifically, to address a degraded condition, PPL implemented a compensatory measure of crediting plant equipment not previously credited in the UFSAR to restore and maintain operability in accordance with plant TSs without performing an evaluation of the change as required by 10 CFR 50.59(d)(1). To address the concerns, PPL entered the issue into the CAP as CR-2014-09397. PPL determined, in part, that the change did not result in a more than minimal increase in the likelihood of occurrence of a malfunction of a component important to safety previously evaluated in the UFSAR. The inspectors reviewed the evaluation and determined that it was reasonable. Consequently, inspectors determined that there was not a reasonable likelihood that the change would ever require NRC review and approval prior to implementation. Therefore, the inspectors concluded the violation of 10 CFR 50.59(d)(1) was minor. This URI is closed.

.2 (Closed) URI 05000387/2012007-01, 05000388/2012007-01, Adequacy of Secondary Containment and Standby Gas Treatment System Testing

a. Inspection Scope

An unresolved item (URI) was opened during an engineering team inspection in December 2012 because additional NRC review and evaluation was required to determine if PPL's method for testing the secondary containment boundary and the standby gas treatment system (SGTS) complied with the existing design and licensing bases.

During a review of a secondary containment boundary modification, the NRC inspection team identified a potential deficiency with PPL's operability testing of the secondary containment and SGTS per TS SR 3.6.4.1.4 and 3.6.4.1.5. The team questioned whether the configurations used for secondary containment during SGTS testing adequately tested secondary containment for all potential configurations (e.g., during refueling outages when one unit has relaxed/opened containment or when the non-safety related ventilation system is in operation) following a postulated design basis accident on each unit. Specifically, the team questioned whether the existing surveillance testing could mask potential leakage between the three secondary containment zones (i.e., shared internal boundaries), which could potentially render secondary containment inoperable.

In completing the NRC's review and evaluation of this item, NRC Region I requested technical assistance from the Office of Nuclear Reactor Regulation (NRR) via Task Interface Agreement (TIA) 2013-04 (ADAMS Accession No. ML14085A411). The focus of the TIA was on the adequacy of PPL's periodic operability testing and did not examine whether PPL had adequately performed post-maintenance or post-modification testing for work activities associated with modifying, changing, or adjusting any interior secondary containment boundaries. NRR staff used the Standard TSs for General Electric plants, NUREG-1433, the TS conversion documents for the SSES TS conversion, NRC IMC 0326, the content in SSES TS 3.6.4.1 and TS 3.6.4.1 Bases, and docketed correspondence.

Inspectors reviewed the TIA results to determine if a violation of regulatory requirements occurred as they relate to the scope of the TIA. Inspectors did not review LERs 05000387/2013-007 or 05000387/2014-003 during review of this TIA. However, these were reviewed and documented separately in Section 4OA3 of this report.

b. Findings

The NRC's review and evaluation identified an issue of concern. Specifically, the NRC concluded that PPL's implementation of the TS SRs 3.6.4.1.4 and 3.6.4.1.5 did not adequately demonstrate: 1) the quality of the secondary containment; and 2) that the LCO were met as required by 10 CFR 50.36(c)(3). The three zone secondary containment design led to multiple possible test configurations for the secondary containment; and testing in only selected configurations meant that some boundaries have not been tested. Data from TS SR 3.6.4.1.4 and 3.6.4.1.5 tests could not be used to eliminate the possibility of secondary containment bypass leakage through the untested boundaries. Although PPL had shown that they previously obtained a TS license amendment to change the required testing configurations, the history of when or

how the SR language was placed in the TS did not obviate the fact that the surveillance test was not sufficient to demonstrate the quality of the system as required by 10 CFR 50.36.

The NRC communicated the results of NRR's TIA on this subject by a memorandum dated May 6, 2014 (ADAMS ML14085A411). Subsequently, PPL initiated CR-1256036 to evaluate the need to change the affected TS SRs. In addition, PPL implemented the guidance provided in NRC Administrative Letter (AL) 98-10, "Dispositioning of Technical Specifications that are Insufficient to Assure Plant Safety," which includes taking actions (e.g., compensatory measures, appropriate SGTS testing) during the interim. As stated in NRC Inspection 05000387&388/2012007, PPL implemented several actions to provide reasonable assurance that the secondary containment and the SGTS were capable of performing their intended functions including a temporary system modification to align all three zones of ventilation to the SGTS if either unit received an accident signal. PPL's interim actions ensured that the safety function of secondary containment would be maintained.

The inspectors determined there was no performance deficiency because the issue of concern was not reasonably within PPL's ability to foresee and correct in that the NRC had explicitly approved the secondary containment testing methodology, which the station had been applying in compliance with TSs. Accordingly, NRC IMC 0612, Appendix B, "Issue Screening," directs disposition of this issue using traditional enforcement in accordance with the Enforcement Policy. The inspectors used Enforcement Policy, Section 6.1.d.1, "Reactor Operations," to evaluate the significance of this violation, and concluded that the violation was more than minor and best characterized as a Severity Level IV violation in that the issue was associated with allowances for surveillance requirements in Section 3.0 of TSs. In reaching this conclusion, the inspectors considered that the underlying technical finding would have been evaluated as having very low safety significance (i.e., Green) under the Reactor Oversight Process using NRC IMC 0609, Appendix A, Exhibit 3, "Barrier Integrity Screening Questions," dated June 19, 2012, since the issue was only associated with the radiological barrier function of the auxiliary building and SGTS.

10 CFR 50.36(c)(3), "Surveillance Requirements," requires, in part, that surveillance requirements related to testing assure that the necessary quality of systems and components are maintained and that the limiting conditions for operation will be met. Contrary to the above, from March 1984 to the present, the existing text for TS SRs 3.6.4.1.4 and 3.6.4.1.5 did not adequately demonstrate: (1) the quality of the secondary containment: and (2) that the LCOs were met.

The NRC has decided to exercise enforcement discretion in accordance with Section 3.5 of the NRC Enforcement Policy and refrain from issuing enforcement action for the violation of TS SRs 3.6.4.1.4 and 3.6.4.1.5 (EA-14-093). Further, because licensee actions did not contribute to this violation, it will not be considered in the assessment process or the NRC's Action Matrix.

Finally, the inspectors considered whether the TIA response from NRR represented a backfit in that the conclusion was different from the previously approved staff position that accepted the testing methodology of TS SR 3.6.4.1.4 and 3.6.4.1.5. It was concluded that the TIA response did represent a compliance backfit. However, upon agreement between the Office of Enforcement, Office of the General Counsel, Region I

and NRR, the backfit process was entered and subsequently exited based on the exercise of enforcement discretion discussed above. This URI is closed.

4OA6 Meetings, Including Exit

On October 29, 2014, the inspectors presented the inspection results to Mr. J. Helsel and other members of the PPL staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

S. Davis, Emergency Preparedness Manager
B. O' Rouke, Licensing Engineer
E. Ortuba, Dosimetry Supervisor
S. Peterkin, Radiation Protection Manager
P. Scanlan, Manager- Station Engineering
D. Deretz, Manager- Programs Engineering
J. Jennings, Supervisor Nuclear Regulatory Affairs
A. Griffith, Fix-It-Now Maintenance Manager
J. Laubach, Mechanical Maintenance Manager
M. Lewis, Senior Emergency Planning Coordinator
J. Grisewood, Corrective Actions and Assessment Manager
A. Jardine, Operations Manager
D. Marinos, Unit Supervisor
D. LaMarca, Shift Manager
C. Young, Unit Supervisor
A. Soden, Assistant Maintenance Manager
M. Murphy, Engineering Fix-It-Now Manager
J. Perry, Senior Engineer

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000387; 388/2014004-01	URI	Adequacy of Guidance to an Emergency Plan Procedure Change (1EP6)

Opened/Closed

05000387; 388/2014004-02	FIN	RRP Trip due to Incorrect Calibration of MG Set High Temperature Trip Setpoint (4OA3)

Closed

05000387; 388/2013-007-00	LER	Loss of Secondary Containment Due to Drawdown Test Failure (4OA3)
05000387; 388/2014-003-00	LER	Loss of Secondary Containment during TS SR 3.6.4.1.5 Drawdown Testing (4OA3)
05000387; 388/2013-004-00	LER	Loss of Secondary Containment Due to DP Not Meeting TS 3.6.4.1 (4OA3)
05000387; 388/2013-005-00	LER	Loss of Secondary Containment (4OA3)

05000387; 388/2013-006-00	LER	Loss of Secondary Containment Due to DP Not Meeting TS 3.6.4.1 (4OA3)
05000387; 388/2013-006-01	LER	Loss of Secondary Containment Due to DP Not Meeting TS 3.6.4.1 (4OA3)
05000387; 388/2013-008-00	LER	Loss of Secondary Containment Due to Failed Solenoid Valve in the RB Zone I Ventilation Exhaust System (4OA3)
05000387; 388/2014-004-00	LER	Loss of Secondary Containment Pressure Due to Fan Trip (4OA3)
05000387; 388/2014-005-00	LER	Loss of Secondary Containment Due to DP Not Meeting TS 3.6.4.1 (4OA3)
05000387; 388/2014-007-00:	LER	Loss of Secondary Containment Pressure during RPS Transfer (4OA3)
05000387; 388/2013-003-00	LER	Unauthorized Access Due to Not Completing Required Training (4OA3)
05000387/2014002-01	URI	Adequacy of Compensatory Measures to Restore TS Operability (4OA5)
05000387; 388/2012007-01	URI	Adequacy of Secondary Containment and SBGT System Testing (4OA5)

LIST OF DOCUMENTS REVIEWED
(Not Referenced in the Report)

Section 1R04: Equipment Alignment

Procedures:
OP-152-001, "HPCI System," Revision 56
OP-235-001, "Control Rod Drive Hydraulic System", Revision 61
OP-250-001, "RCIC System," Revision 42
SO-250-002, "Quarterly Flow Verification," performed on July 30, 2014; May 1, 2014; February 2, 2014
SO-250-004, "Quarterly RCIC Valve Exercising," performed on July 30, 2014; April 29, 2014; January 30, 2014
DBD041, "RCIC System," Revision 2

Condition Reports (*NRC identified):
CR-2014-25189, CR-2014-25181*, CR-2014-25186*, CR-2014-25714, CR-2014-25837, CR-2014-25839, CR-2014-25840, CR-1596680, CR-2014-25833*, CR-2014-26314*

Drawings:
E105946, "Unit 2 P&ID CRD Part A", Sheet 1, Revision 34
E105947, "Unit 2 P&ID CRD part B", Sheet 1, Revision 37
E105947, "Unit 2 P&ID CRD Part B", Sheet 4, Revision 13
E105949, "Unit 2 P&ID RCIC," Sheet 1, Revision 32
E105950, "Unit 2 P&ID RCIC Turbine Pump," Sheet 1, Revision 31
E105950, "Unit 2 P&ID RCIC Turbine Lube Oil," Sheet 2, Revision 2
E105951, "Unit 2 P&ID RHR," Sheet 1, Revision 59
E106260, "Unit 1 P&ID HPCI," Sheet 1, Revision 57
E106261, "Unit 1 P&ID HPCI Turbine Pump," Sheet 1, Revision 38
E106261, "Unit 1 P&ID HPCI Lubricating and Control Oil P&ID," Sheet 2, Revision 10

Miscellaneous
IOM 14, "RCIC Pump Drive /RCIC Turbine," Revision 21

Section 1R05: Fire Protection

Procedures:
NDAP-QA-0440, "Control of Transient Combustible Hazardous Materials," Revision 15
FP-013-161, "Unit 2 Upper Relay Room C-502, Fire Zone 0-27A, Elevation 754'," Revision 7
FP-013-146, "Unit 2 Lower Cable Spreading Room (C-300) Fire Zone 0-25A, Elevation 714'," Revision 5
FP-013-150, "Unit 1 Lower Cable Spreading Room (C-300) Fire Zone 0-25E, Elevation 714'," Revision 6
FP-013-195, "Diesel Generator Bay 'C' Fire Zone 0-41C, Elevations 677', 660', and 710'," Revision 5
FP-213-291, "Pre-fire Plan Condenser Gallery (II-113) Fire Zone 2-32D, Elevation 676'," Revision 0
TQ-171, "Susquehanna Fire Brigade Training Program," Revision 0

Condition Reports (*NRC identified):
CR-2014-23817, CR-2014-21255, CR-2014-26297, CR-2014-25739, CR-2014-25710

Drawings:
E205951, Sheet 1, "Unit 1 RB Fire Zone Plan Elevation 683'," Revision 13
E205992, Sheet 2, "Units 1 and 2 Control Structure Fire Doors and Fire Dampers, Elevation 754," Revision 6
E205992, Sheet 4, "Units 1 and 2 Control Structure Fire Detector Location Plan, Elevation 754' to 771'," Revision 6
E205992, Sheet 4A, "Units 1 and 2 Control Structure Heat and Ionization Detector, Upper Relay Room, Plan Elevation 754'," Revision 0
E206000, "Unit 1 and 2 DG Building Fire Detector Location Plan Elevation 660' to 677'," Revision 3
E206001, "Unit 1 and 2 DG Building Fire Detector Location Plan Elevation 677' to 710'," Revision 4

Miscellaneous:
Combustible WO 090-14

Section 1R06: Flood Protection Measures

Procedures
EC-FLOD-0001, "Internal Flooding Evaluations for Medium Energy Pipe Cracks and Sprinkler System Actuations," Revision 3
EC-FLOD-1001, "Evaluation of Response to INPO 1ER11-1, Recommendation 3 & 4 for Station Flooding," Revision 2
EC-FLOD-0500, "Evaluate Maximum Flood Depth in RB Piping/Penetration Room on Elevation 683', Revision 4
EC-RISK-0539, "Internal Flooding Analysis for PRA," Revision 2
D296450, "Unit 2 RB Station Flood Barrier Plan of 683' Elevation," Sheet 1, Revision 2
EC-PIPE-1032, "Moderate Energy Pipe Crack Evaluation," Revision 4

Condition Reports (*NRC Identified)
CR-2014-30108*

Section 1R07: Heat Sink Performance

Procedures:
MT-GM-025, "HX – Cleaning and Inspection," Revision 21

Engineering Work Requests:
1276004

Drawings:
E106216, "P&ID ESW System," Sheet 1, Revision 50

Work Orders
1754515, 1726162, 1639206, 1639197, 1188641

Section 1R11: Licensed Operator Requalification Program

Procedures:
NDAP-QA-0338, Reactivity Management and Control, Revision 32
NDAP-QA-0300, Conduct of Operation, Revision 35
OP-AD-338, Reactivity Manipulation Standards and Communication Requirements, Revision 24
OP-AD-338-1, Manipulation Request
OP-AD-338-2, CR Movement Sheets
OP-AD-338-3, Power Changes with Recirculation Flow

Section 1R12: Maintenance Effectiveness

Procedures:
NDAP-QA-0413, "Implementation of the MR," Revision 12
NSEP-AD-0413E, "Dispositioning Between (a)(1) and (a)(2)," Revision 0
NSEP-AD-0413D, "Performance Monitoring," Revision 2

Condition Reports (*NRC identified):
CR-2014-20010, CR-2014-11378, CR-2014-14615, CR-2014-14182

Drawings:
E106228, Sheet 1, "Unit 1 P&ID Process Sampling," Revision 16

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures:
OI-013-002, "Fire Risk Management," Revision 1
NDAP-QA-0340, "Protected Equipment Program," Revision 24
PSP-26, "Online and Shutdown Nuclear Risk Assessment Program," Revision 13
NDAP-QA-0443, "Firewatch Program," Revision 11
ON-231-003, "ICS Component Failures," Revision 9
NDAP-QA-0409, "Door, Floor Plug and Hatch Control," Revision 13
OP-024-001, "DGs," Revision 73

Condition Reports (*NRC identified):
CR-2014-25324, CR-2014-26977

Calculations:
EC-012-6068, "Tornado Missile Analysis of Vulnerabilities of Safety-Related Equipment in ESSW Pump House with Removed Roof Hatch," Revision 0
EC-054-0511, "Determine if Sufficient Cooling Can be Provided with One ESW Pump in Service," Revision 6

Work Orders:
1830559, "RMA for 01-013-002 CS Division II647018"

Drawings:
E205949, Sheet 1, "Unit 1 RB Fire Zone Plan Elevation 645'," Revision 7
E205959, Sheet 4, "Unit 1 RB Fire Detector Location Plan 645," Revision 5
FF62201, Sheet 194, 2 'A' RFP Turbine Speed Control," Revision 2
FF62201, Sheet 576, "RFP 2 'A' Control Interface," Revision 1

Miscellaneous:
Protected Equipment Clearance Order 51-001, "CS Division II Week of July 28, 2014
Risk Profiles for Units 1 and 2, week of August 18, 2014
Protected Equipment: 24-001-B Diesel Week of July 28, 2014,
24-001-C Diesel Week of July 28, 2014
24-001-D Diesel Week of July 28, 2014
24-001-E Diesel Week of July 28, 2014
34-002-U1 B RB Chiller Protected
50-001-RCIC Inoperable due to Instrument Failure
Daily Station Schedule dated August 20, 2014
Rule Profiles for Units 1 and 2, week of August 25, 2014
Protected Equipment 54-001-A ESW Replacement Week of August 25, 2014
Protected Equipment 16-001-Div 2 RHRSW on September 22, 2014
Risk Profiles for Units 1 and 2, week of September 22, 2014
Daily Station Schedule dated August 25, 2014
RIS-01-009, "Control of Hazard Barriers"

Section 1R15: Operability Evaluations

Procedures:
OP-024-001, "DGs," Revision 73
SM-258-003, "2-yr Cal-Normal RPS MG Set 'B', Revision 14
NDAP-QA-1221, "Managing Design and Operating Margin," Revision 2
DBD-021, "Design Basis Document for RPS," Revision 2

Condition Reports (*NRC identified):
CR-2014-02581*, CR-2014-28492*, CR-2014-17112*, CR-2014-23995,
CR-2014-23944, CR-2014-22330, CR-2014-22675, CR-2014-22537, CR-2013-02219

Action Requests:
AR-1139749

Drawings:
E-192, Sheet 45, "Unit 1 Schematic Diagram HVAC RB Vent System FSGR Unit Cooler 1V222A," Revision 7
V-176, Sheet 12, "Unit 1 Logic Diagram RB Zone I HVAC SWGR and LC Room Ceiling Fan 1V222A," Revision 1

Miscellaneous:
GE Design Specification 22A3056, Revision 4
NRC Regulatory Guide 1.105, "Instrument Setpoints," Revision 1
IEEE 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations"
GE Services Information Letter Number 606
Part 9900, Technical Guidance Section 3.0, Acceptable Measurement Tolerances for TS Limits
10M641, "Electrical Protection Assembly"
EC-SOPC-0501, "Relay Settings for EPAs 1Y2014, 1Y2013," Revision 2
ANSI/ISA-567.04, Part 1-1994, "Setpoints for Nuclear Safety-Related Instrumentation"

Section 1R18: Permanent Plant Modifications

Procedures:
TDC 1831838, "Control Structure Chiller OIC 112B Bearing Hi Temp Trip Elimination," Revision 0
JOM 168, "Control Structure Building Chillers," Revision 38
NDAP-QA-1220, "Engineering Change Process," Revision 9
NDAP-QA-1218, "Temporary Changes," Revision 14

Section 1R19: Post-Maintenance Testing

Procedures:
OP-024-001, (2.5 Manual Start of DG from Panel OC521A, 2.6 Shutdown, 2.25 DG Booster Pump Test, 2.23 DG Unloaded and Unaligned to 4kV Bus)
SO-149-A05, "Quarterly RHR Loop 'A' Valve Exercising," performed on July 22, 2014, Revision 14
SO-149-005, "RHR Two-year RPI Checks," performed on July 22, 2014, Revision 15
SO-013-001, "Monthly Diesel and Motor Driven Fire Pump Run," Revision 29
TP-013-035, "Annual Motor Driven Fire Pump OP 512 Performance Test," Revision 8
OP-134-002, "RB HVAC Zones 1 and 3," Revision 62
NDAP-00-0562, "Susquehanna Skill of the Craft Activities," Revision 6
NDAP-QA-0482, "PMT," Revision 7
SO-024-001A, "Monthly DG 'A' Operability Test," Revision 22
SO-054-A03, "92 Day ESW Flow Verification 'A' Loop," Revision 13
TP-024-145, "DG 'A' Restoration," Revision 5
TP-054-065, "Pump Curve for Division I ESW Pumps," Revision 14
TP-054-101, "Initial Start and Run-in of New or Repaired A' ESW Pump Motor," Revision 0

Condition Reports (*NRC identified):
CR-2014-21580, CR-2014-24945, CR-2014-26275*, CR-2014-26257, CR-2014-25694*, CR-2014-25262*, CR-2014-26465, CR-2014-26464, CR-2014-26568, CR-2014-26131, CR-2014-26235, CR-2014-26880, CR-2014-27096, CR-2014-27138, CR-2014-27813*

Action Requests:
AR-2014-27013

Work Orders:
1111765, 1224758, 1649378, 1753585, 1799806, 1826817, 1826819, 1826821, 1826823, 1828508, 1830205, 1822763,

Drawings:
E221031, "MOV Detail Drawing HV151 F004C," Revision 1
E106227, "P&ID Fire Protection, Fire Pump House, and North and South Gatehouse," Revision 52

Miscellaneous:
White Paper from SE with Chronology of Failure and Repairs
RTPM 1649378, RTPM 1753585

Section 1R20: Refueling and Other Outage Activities

Procedures:
GO-200-004, "Plant Shutdown to Minimum Power," Revision 72
GO-200-005, "Plant Shutdown to Hot/Cold Shutdown," Revision 61
GO-200-002, "Plant Startup, Heatup and Power Operation," Revision 94

Condition Reports (*NRC identified):
CR-2014-21809*, CR-2014-26589, CR-2014-02589, CR-2014-28085, CR-2014-28114, CR-2014-28117, CR-2014-28136, CR-2014-28905, CR-2014-28912

Section 1R22: Surveillance Testing

Procedures:
SC-276-102, Unit 2 Primary Coolant Specific Activity – Dose Equivalent I-131 Performed on July 25, 2014, Revision 14
CH-SY-013, Station Sample Collection, Revision 9, Revision 14
SO-151-A02, "Quarterly CS Flow Verification, Division I," Revision 22
SE-170-011, "24-month Secondary Containment Drawdown and In-Leakage ST Zones I and III," Revision 16
NDAP-QA-0722, "ST Program," Revision 25
M-175, "Unit 1 P&ID RB Air Flow Diagram Zone III," Sheet 2, Revision 33
M-175, "Unit 1 P&ID RB Air Flow Diagram Zone III," Sheet 1, Revision 8
M-176, "Unit 1 P&ID Air Flow Diagram Zone 1 Reactor Building," Revision 31
M-2175, "Unit 2 P&ID RB Air Flow Diagram Zone 3," Revision 20
M-2176, "Unit 2 P&ID RB Air Flow Diagram Zone 2," Revision 23
EC-070-0526, "SBGT System Drawdown Analysis," Revision 4
EC-070-0001, "Verification of SBGT System Fans Selection," Revision 1

Condition Reports (*NRC identified):
CR-2014-22681, CR-2014-22681, CR-2013-03891

Work Orders:
1802608

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Procedures:
EP-PS-101, TSC Emergency Director, Revision 30
EP-PS-106, OSC Health Physics Specialist, Revision 22

Section 1EP6: Drill Evaluation

Condition Reports:
CR-2014-24043, CR-2014-24063, CR-2014-24100, CR-2014-2401, CR-2014-29803*, CR-2014-26136*, CR-2014-24242, CR-2014-31520*, CR-2014-31515*, CR-2014-31506*, CR-2014-31738, CR-2014-31505, CR-2014-30748

Action Requests (*NRC identified):
AR-2014-24194*, AR-425226, AR-2014-24082, AR-2014-19772, AR-2014-19729, AR-2014-24455

Procedures:
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EP-PS-130, “HP II Dose Calculator,” Revision 26
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EP-PS-100-H, Tab H, “Determine if there is a radiological release in progress due to the event”, Revision 4
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EP-PS-001, Attachment AAA, “TSC Dose Assessment Flowchart”, Revision 3
EP-PS-001, Attachment S, “EOF Dose Assessment Flowchart”, Revision 3
EP-PS-245, “EOF Dose Assessment Supervisor,” Revision 15
EP-PS-001, Attachment X, “Field Team Monitoring Strategy Notes”, Revision 3
EP-PS-001, Attachment XX, “SSES Environmental Sampling Strategy”, Revision 3
EP-RM-004, Attachment F, “Fission Product Barrier Degradation”, Revision 2
EP-PS-325, EOF Systems Lead Engineer, Revision 12

Section 2RS5: Radiation Monitoring Instrumentation

Procedures:
CH-ON-001, SPING Alarm Response, Revision 18
CH-YS-014, SPING Data Collection and System Monitoring, Revision 15
CH-IC-011, Liquid Radwaste Discharge Monitor Radiological Calibration, Revision 16
CH-IC-016, Calibration of the Eberline SPING Monitors, Revision 28
ODCM-QA-003, Effluent Monitor Setpoints, Revision 7
HP-TP-047, HP Instrument Lab Work Activities, Revision 5
HP-TP-108, Calibration of the ASP-1/AC-3 (Alpha Meter), Revision 5
HP-TP-117, Calibration of the Eberline AMS-4, Revision 9
HP-TP-118, Use of the Eberline AMS-4, Revision 9
HP-TP-134, Calibration of the Fluke 451B, Revision 3
HP-TP-147, Calibration of the Canberra GEM5 Portal Monitor, Revision 6
HP-TP-208, Performance Verification and Calibration of the Whole Body Counting System, Revision 14
HP-TP-249, Calibration and Testing of Health Physics Counting Equipment, Revision 26
HP-TP-443, Use of Radiation Detection Equipment, Revision 35
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SH-179-003, 24 Month Radiation Source check of the Containment Monitoring System Channels 15720A and 15720B, Revision 15
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Whole Body Counter System Calibration Verification, May 10, 2014
Pole-0001 Telepole Calibration, February 25, 2014
Unit 1 24 Month Containment High Radiation Source Check, May 14, 2014
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SAM2-0005 Small Article Monitor Calibration, November 26, 2013
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1011-256 ARGOS Personnel Contamination Monitor Calibration, February 25, 2014
MRAS-0039 Air Sampler Calibration, April 9, 2014
Unit 1 RB Vent Accident Channel Calibration, July 26, 2013
Unit 1 RB Vent Low Range Noble Gas Calibration, July 26, 2013
FMFM-0060 Fluke 451B Calibration, September 22, 2014
24 Month SBGT Effluent and Sampler Flow Rate Monitor Calibration, June 6, 2011
24 Month SBGT Effluent and Sampler Flow Rate Monitor Calibration, June 19, 2013
24 Month SBGT Vent Low Range Noble Gas Calibration, July 11, 2013
Unit 2 RCIC Pump Room ARM Calibration, September 24, 2014
Unit 1 RB Vent Purge Noble Gas Monitor Calibration, October 4, 2012

Section 4OA1: Performance Indicator Verification

Procedures:
PL-NF-06-002, “SSES MSPI Basis Document,” Revision 7
PL-NF-06-002, “SSES MSPI Basis Document,” Revision 8
EC-070-0526, “SGTS Drawdown Analysis,” Revision 5

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NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7

Section 4OA2: Identification and Resolution of Problems

Procedures:
OI-AD-096, "Operator Burdens," Revision 12
OP-172-001, "SJAE and Off Gas System," Revision 64
SM-102-A04, "48 Month Channel 'A' 1D610-125 VDC Battery Discharge Modified Performance Test and Battery Charger Capability Test," Revision 20
SE-024-100, "Unit 1 and Unit 2 Ten-Year Simultaneous Start of Four DGs," Revision 2
SE-070-011, "2-Year Secondary Containment Zone I, II, III," performed on February 1, 2014
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Miscellaneous:
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Section 4OA3: Event Followup

Procedures:
GO-100-009, "Single Recirculation Loop Operation," Revision 21
OP-164-001, "Reactor Recirculation System," Revision 74

Action Reports:
AR-2014-27382

Condition Reports:
CR-1663755, CR-2014-02581, CR-2014-27243, CR-2014-27163, CR-2014-27244, CR-2014-07035, CR-2014-07676, CR-2014-12316, CR-2014-13345, CR-2013-00582, CR-2013-01504, CR-2013-02233, CR-2013-04462, CR-2013-05775, CR-2013-05019

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MI-B31-275, “Reactor Recirculation Pump >MG Set,” Revision 12, Sheet B
E-151, “Unit 1 Schematic Diagram Reactor Recirculation Pump Motor Generator Set 1B Drive Motor 1S134B,” Revision 15, Sheet 4

Miscellaneous:
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Section 4OA5: Other Activities

Procedures:
50.59 SE 00025, “Thermal Limits Assessment for CR 1724393,” Revision 0

Condition Reports (*NRC identified):
CR-2014-27163, CR-2014-0937*

Miscellaneous:
NEI-96-07, “Guidelines for 10 CFR 50.59 Implementation,” Revision 1
PPL 50.59, “Resource Manual,” Revision 6

LIST OF ACRONYMS

ACE	apparent cause evaluation
ADAMS	Agencywide Document and Access Management System
AL	Administrative Letter
ARM	area radiation monitor
CAP	corrective action program
CFR	Code of Federal Regulations
CR	condition report
CS	core spray
DEP	drill and exercise performance
DG	diesel generator
DP	differential pressure
EACE	equipment apparent cause evaluation
EAL	emergency action level
ED	emergency director
EOC	extent of condition
EOF	emergency operating facility
EOP	emergency operating procedure
EP	emergency preparedness
EPIP	emergency plan implementing procedures
ERO	emergency response organization
ESW	emergency service water
FIN	finding
HPCI	high pressure coolant injection
HX	heat exchange
I&C	instrumentation and control
IMC	inspection manual chapter
IST	inservice testing
LCO	limiting condition for operation
LER	licensee event report
MG	motor-generator
MR	Maintenance Rule
MSPI	mitigating systems performance index
NCV	non-cited violation
NDAP	Nuclear Department Administrative Procedure
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
ODCM	Offsite Dose Calculation Manual
OOS	out-of-service
ORO	offsite response organization
OWA	operator workaround
PD	performance deficiency
PI	[NRC] performance indicator
PI&R	problem identification and resolution
PMT	post-maintenance test
PPL	PPL Susquehanna, LLC
RB	reactor building
RCE	root cause evaluation
RCIC	reactor core isolation cooling

RCS	reactor coolant system
RFP	reactor feed pump
RHR	residual heat removal
RHRSW	residual heat removal service water
RM	recovery manager
RPS	reactor protection system
RRP	reactor recirculation pump
SAE	site area emergency
SDP	significance determination process
SGTS	stand-by gas treatment
SR	surveillance requirement
SSC	structures, systems and components
SSES	Susquehanna Steam Electric Station
SSFF	safety system functional failures
ST	surveillance test
TIA	Task Interface Agreement
TS	technical specifications
TSC	technical support center
UFSAR	updated final safety analysis report
URI	unresolved item
WG	water gauge
WO	work order