



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

February 12, 2015

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 05000387/2014005 AND 05000388/2014005**

Dear Mr. Rausch:

On December 31, 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 January 23, 2014, with Mr. Franke 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 four violations of NRC requirements, all of which were of very low safety significance (Green or Severity Level IV). Additionally, two licensee-identified violations, which were determined to be of very low safety significance, are listed in this report. However, because of the very low safety significance, and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs), consistent with Section 2.3.2.a of the NRC Enforcement Policy. If you contest any NCVs in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Senior 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.

In accordance with Title 10 *Code of Federal Regulations* (CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access 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/***

Fred L. Bower, III, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

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

Enclosures: Inspection Report 05000387/2014005 and 05000388/2014005  
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

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U.S NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-387, 50-388

License No: NPF-14, NPF-22

Report No: 05000387/2014005 and 05000388/2014005

Licensee: PPL Susquehanna, LLC (PPL)

Facility: Susquehanna Steam Electric Station, Units 1 and 2

Location: Berwick, Pennsylvania

Dates: October 1, 2014 through December 31, 2014

Inspectors: J. Greives, Senior Resident Inspector  
J. Heinely, (Acting) Senior Resident Inspector  
T. Daun, Resident Inspector  
F. Arner, Senior Reactor Inspector  
J. Brand, Reactor Inspector  
J. Furia, Senior Health Physicist  
C. Graves, Health Physicist  
H. Gray, Senior Reactor Inspector  
D. Lawyer, Health Physicist  
O. Masnyk Bailey, Health Physicist  
J. Nicholson, Health Physicist  
M. Patel, Operations Engineer  
S. Pindale, Senior Reactor Inspector

Approved By: Fred L. Bower, III, Chief  
Reactor Projects Branch 4  
Division of Reactor Projects

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## SUMMARY

IR 05000387/2014005, 05000388/2014005; 10/01/2014 – 12/31/2014; Susquehanna Steam Electric Station, Units 1 and 2; Maintenance Risk Assessment and Emergent Work Control, Drill Evaluation, and Follow-up of Events and Enforcement Discretion.

The report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Inspectors identified one Severity Level IV non-cited violations (NCV), three findings of very low safety significance (Green), which were NCVs. 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 The Cross-Cutting Areas," dated December 19, 2013. All violations of Nuclear Regulatory Commission (NRC) requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated January 28, 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: Mitigating Systems

Green. The inspectors identified a Green NCV of Title 10 *Code of Federal Regulations* (CFR) 50.65(a)(4) due to multiple examples of not assessing and managing the increase in risk from online maintenance activities. Specifically, on November 12, 2014, a risk assessment did not identify a Yellow online risk condition during a residual heat removal system (RHR) outage. Additionally, the inspectors identified multiple examples where PPL did not implement the procedural requirements of OI-013-002, "Fire Risk Management," NDAP-QA-1902, "Integrated Risk Management," and NDAP-QA-0340, "Protected Equipment Program" such that adequate risk mitigation actions were performed. Immediate corrective actions were taken and PPL documented the issues in condition report (CR) 2014-35235 and 2014-35270.

The inspectors determined the performance deficiency (PD) was more than minor because it adversely impacted the protection against external factors attribute of the Mitigating Systems cornerstone objective to ensure the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors evaluated the finding using IMC 0612 Appendix K, "Maintenance Risk Assessment and Risk Management SDP." The inspectors and the Region I Senior Risk Analyst (SRA) used Appendix K, Flowchart 2, "Assessment of Risk Management Actions (RMAs)," and determined that not implementing the appropriate RMAs was of very low safety significance (Green). The basis for this determination was that the short duration of the actual planned maintenance activities (62 hours and 40.5 hours) associated with the RHR Train 'B' unavailability results in a mid E-9 calculated incremental core damage probability (ICDP), using the Susquehanna Unit 2 standardized plant analysis risk (SPAR) Model, Revision 8.21, and Systems Analysis Programs for Hands-on Integrated Reliability Evaluations (SAPHIRE) 8. In accordance with Appendix K guidance, doubling the estimated ICDP value to reflect not implementing RMAs is a reasonable approximation of the increased risk. The resultant low E-8 ICDP deficit remains below the ICDP E-6 deficit Green-White threshold and screens this PD to Green.

The finding was determined to have a cross-cutting aspect in the area of Human Performance, Work Management, in that, PPL did not control and execute activities, consistent with nuclear safety, by managing risk commensurate to the work and the need for coordination with different

groups or job activities. Specifically, PPL did not recognize an elevated risk category and incorporate all RMAs into its work activities [H.5]. (Section 1R13)

Green. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," for PPL not establishing design control measures that provide for verifying or checking the adequacy of design and translating the design basis requirements into allowable values and trip set points. Specifically, PPL did not establish measures to assure the under frequency trip set point on the electrical protection assemblies (EPA) for the reactor protection system (RPS) were correctly translated into design specifications. PPL took immediate corrective actions to perform calibration of all EPA under frequency setpoints and document the condition under CR 2014-28492 and 2014-37665.

The PD was determined to be greater than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the capability of the system that respond to initiating events to prevent undesirable consequences (i.e., core damage). The item is similar to example 3.j in NRC IMC 0612, Appendix E, "Examples of Minor Issues." This example states, in part, that it is not minor if the engineering calculation error results in a condition where there is now reasonable doubt on the operability of a system or component. The inspectors evaluated the finding in accordance with NRC IMC 0609, Attachment 4, "Initial Characterization of Findings," Table 2, "Cornerstones Affected by Degraded Condition or Programmatic Weakness," and determined it affected the Reactivity Control Systems Degraded subsection of the Mitigating Systems cornerstone. Per IMC 0609, Appendix A, "SDP for Findings at Power," Exhibit 2, "Mitigating Systems Screening Questions," sub-paragraph C, the inspectors and a Region 1 SRA determined that a detailed risk evaluation was needed to assess the safety significance of this finding. Based upon the detailed risk evaluation, this finding was determined to be Green.

The finding was determined to have a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, in that PPL did not thoroughly evaluate issues to ensure resolutions address causes commensurate with their safety significance. Specifically, PPL did not thoroughly investigate and evaluate the causes of EPA under frequency set point drift outside the technical specification (TS) allowable values after three EPAs under frequency trip set points drifted below the TS allowable value in 2013 [P.2]. (Section 40A3)

Severity Level IV. Inspectors identified a Severity Level IV NCV of 10 CFR 50.73 (a)(2)(v) for PPL staff not submitting an Licensee Event Report (LER) within 60 days of discovery of a condition that could have prevented the fulfillment of the safety function of the RPS Electrical Power Monitoring System. PPL submitted an LER for the subject condition and entered the issue into their CAP under CR-2014-17112.

The finding was evaluated using the traditional enforcement process because not accurately reporting events has the potential to impact or impede the regulatory process. The finding was determined to be a Severity Level IV violation of 10 CFR 50.73 (a)(2)(v) based on example 6.9.d.9 of the NRC Enforcement Policy. This example states that a licensee failing to make a report required by 10 CFR 50.73 is an example of a Severity Level IV violation.

Because this violation involves the traditional enforcement process and does not have an underlying technical violation that would be considered more-than-minor, inspectors did not assign a cross-cutting aspect to this violation in accordance with IMC 0612, Appendix B. (Section 40A3.3)

### **Cornerstone: Emergency Preparedness (EP)**

Green. The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50.54(q)(2) for failing to follow and maintain an emergency plan that meets the requirements of appendix E and the planning standards of 10 CFR 50.47(b). Specifically, PPL did not identify and critique a weakness related to a risk significant planning standard during their critique following the July 24, 2014, emergency preparedness drill, as required by 10 CFR 50.47(b)(14) and Appendix E, Section IV(F)(2)(g).

The inspectors determined that PPL did not identify and critique an emergency preparedness drill performance weakness in the formal critique was a performance deficiency that was within PPL's ability to foresee and correct and should have been prevented. Specifically, PPL did not identify that a periodic update notification provided to the offsite response organizations (OROs) was inaccurate in that it stated an airborne radiological release was in progress when one was not occurring. The inspectors determined the performance deficiency was more than minor because it was associated with the emergency response organization performance attribute of the Emergency Preparedness cornerstone and affected the cornerstone objective (Training, Drills, Exercises) to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, PPL's did not effectively identify and critique an emergency preparedness drill performance weakness caused a missed opportunity to identify and correct a drill-related performance deficiency. The inspectors evaluated the finding using IMC 0609, Attachment 4, "Initial Characterization of Findings," issued June 19, 2012. The attachment instructs the inspectors to utilize IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," issued September 26, 2014, when the finding is in the licensee's Emergency Preparedness cornerstone. The inspectors determined this finding was a critique finding, the drill scope was full scale, the planning standard was a risk-significant planning standard, and the performance indicator opportunity was a success because periodic update notifications to the OROs are not credited as performance indicator (PI) opportunities using the guidance provided in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. Therefore, using Figure 5.14-1, "Significance Determination for Critique Findings," the inspectors determined the finding was of very low safety significance (Green).

The cause of the finding has a cross-cutting aspect in the area of Human Performance, Consistent Process, because PPL did not use a consistent, systematic approach when making decisions. Specifically, PPL personnel did not use a consistent approach when evaluating and critiquing the accuracy of all notifications provided to the OROs [H.13]. (Section 1EP6)

### **Other Findings**

Two violations of very low safety significance that were identified by PPL were reviewed by the inspectors. Corrective actions taken or planned by PPL have been entered into PPL's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.



## REPORT DETAILS

### Summary of Plant Status

Unit 1 began the inspection period at or near 100 percent rated thermal power. On October 27, operators reduced power to 80 percent to support a planned condenser tube leak repair and control rod scram time testing. The unit was returned to full power on October 28. The unit was downpowered to 68 percent for a planned rod sequence exchange on November 7 and subsequently returned to full power on November 8. On December 12, operators performed a planned shutdown to investigate a leak in the primary containment. The source of the leak was identified, repaired and the unit was returned to full power on December 21. Unit 1 remained at or near full power for the remainder of the quarter.

Unit 2 began the inspection period at or near 100 percent rated thermal power. On December 6, operators reduced power to 66 percent for a planned rod sequence exchange and condenser tube leak repairs. The unit was returned to full power on December 8 and remained at or near full power for the remainder of the quarter.

### 1. REACTOR SAFETY

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

1R01 Adverse Weather Protection (71111.01 – 3 samples)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of PPL's readiness for the onset of seasonal extreme low temperatures on October 31 - November 14, 2014. The review focused on the engineered safeguards service water pump house, exposed portions of the condensate and refueling water storage system, and the circulating water pump house. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), TS, control room logs, and the CAP to determine what temperatures or other seasonal weather could challenge these systems, and to ensure PPL personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including PPL's seasonal weather preparation procedure and applicable operating procedures. The inspectors performed walkdowns of the selected systems to ensure station personnel identified issues that could challenge the operability of the systems during cold weather conditions. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

## .2 Readiness for Impending Adverse Weather Conditions

### a. Inspection Scope

The inspectors reviewed PPL's preparations in advance of and during warnings and advisories issued by the National Weather Service. The inspectors performed walkdowns of areas that could be potentially impacted by the weather conditions, such as the emergency and station black out diesel generators, station transformers, and switchyards, and verified that station personnel secured loose materials staged for outside work prior to the forecasted weather. The inspectors verified that PPL monitored the approach of adverse weather according to applicable procedures and took appropriate actions, as required. The inspectors reviewed the UFSAR, TSs, control room logs, and the CAP to determine what temperatures or other seasonal weather could challenge these systems and to ensure PPL personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including PPL's seasonal weather preparation procedure and applicable operating procedures.

- Initial deep freeze and extreme cold on November 20, 2014
- Winter Storm CATO on November 26, 2014

### b. Findings

No findings were identified.

## 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' RHR Loop during a 'B' Loop Outage on November 4, 2014
- 'A' emergency service water (ESW) loop with 'B' ESW Loop Outage on November 18, 2014
- Unit 2 reactor core isolation cooling (RCIC) during a high pressure coolant injection (HPCI) System Outage Window (SOW) on December 2, 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 UFSAR, TSs, work orders (WOs), 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.

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, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Common, Control Structure 698 Fire Area 0-24 during CO<sub>2</sub> Outage on October 30, 2014
- Common, Control Structure 714 Fire Area 0-25 during CO<sub>2</sub> Outage on October 30, 2014
- Unit 2, Reactor Building (RB) Fire Area 2 -1G during RHR SOW on November 4, 2014
- Unit 2, RB Fire Area 2-3C-S during RHR SOW on November 4, 2014
- Unit 2, RB Fire Area 2-5A-N during RHR SOW on November 12, 2014

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

.1 Annual Review of Cables Located in Underground Bunkers/Manholes

a. Inspection Scope

The inspectors conducted an inspection of underground bunkers/manholes subject to flooding that contain cables whose failure could disable risk-significant equipment. On October 7, 2014, the inspectors performed walkdowns of risk-significant areas, including electrical manholes 1 and 9 containing electrical equipment associated with the Unit 1 and Unit 2 off-site power transformers, to verify that the cables were not submerged in water, that cables appeared intact, and to observe the condition of cable support structures. When applicable, the inspectors verified proper sump pump operation and verified level alarm circuits were set in accordance with station procedures and calculations to ensure that the cables will not be submerged. The inspectors also ensured that drainage was provided and functioning properly in areas where dewatering devices were not installed.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program

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

a. Inspection Scope

The inspectors observed licensed operator regualification training on December 8 and 11, 2014. The inspectors evaluated operator performance during the simulated event and 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 shift technical advisor. 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 (71111.11Q – 1 sample)

a. Inspection Scope

The inspectors observed reactor shutdown for Unit 1 maintenance outage on December 12, 2014. The inspectors observed pre-shift briefings and reactivity control briefings to verify that the briefings met the criteria specified in OP-AD-002, "Standards for Shift Operations," Revision 45, OP-AD-004, "Operations Standards for Error and Event Preparation," Revision 37 and OP-AD-338, "Reactivity Manipulations Standards and Communication Requirements," Revision 26. 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.

.3 Licensed Operator Regualification Program (71111.11A – 1 sample)

a. Inspection Scope

On November 26, 2014, region-based inspectors conducted an in-office review of results of licensee-administered annual operating tests and comprehensive written

examinations for 2014. The inspection assessed whether pass rates were consistent with the guidance of NRC IMC 0609, Appendix I, and “Operator Requalification Human Performance SDP.” The inspectors verified that:

- Crew pass rates were greater than 80 percent. (Pass rate was 92 percent)
- Individual pass rates on the written examinations were greater than 80 percent. (Pass rate was 93.3 percent)
- Individual pass rates on the job performance measures of the operating examinations were greater than 80 percent. (Pass rate was 98.3 percent)
- Individual pass rates on the dynamic simulator test were greater than 80 percent. (Pass rate was 98.3 percent)
- Overall pass rate among individuals for all portions of the examinations was greater than or equal to 80 percent. (Overall pass rate was 91.7 percent)

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12 – 3 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on 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 MR system boundaries. For the second sample, inspectors reviewed PPLs assessment to ensure it met regulatory requirements.

- Common, routine maintenance effectiveness for 250V DC on November 11, 2014
- Common, routine maintenance effectiveness for H<sub>2</sub>/O<sub>2</sub> analyzers on December 2, 2014
- Common, condensate water transfer level indication a(1) plan for repetitive freeze failures from 2013 and 2014

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 2, Division II RHR SOW Yellow Risk and Fire RMAs on November 5, 2014
- Unit 2, Division I RHR SOW on November 12, 2014
- Unit 2, HPCI SOW on December 2, 2014
- Unit 1, Shutdown Risk on December 15, 2014
- Unit 1, Operation with potential to drain the reactor vessel for reactor head vent line PMT on December 16, 2014

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50.65(a)(4) due to PPL not assessing and managing the increase in risk from online maintenance activities. Specifically, on November 12, 2014, a risk assessment did not identify a Yellow online risk condition during a RHR outage. Additionally, the inspectors identified multiple examples where PPL did not implement the procedural requirements of OI-013-002, "Fire Risk Management," Revision 2; NDAP-QA-1902, "Integrated Risk Management," Revision 16; and NDAP-QA-0340, "Protected Equipment Program," such that adequate RMAs were performed.

Description: On November 3, 2014, PPL implemented RMAs in accordance with OI-013-002 for a Unit 2, Division 2, RHR SOW scheduled for 62 hours. OI-013-002 requires RMAs to be implemented for the opposite (unaffected) division safe shutdown path if an in-scope primary system is scheduled to be out of service (OOS) for greater than 36 hours. Specifically, OI-013-002 directs the removal of all transient combustibles from the fire zones identified in Attachment D, Fire Zones Requiring RMAs (Division 1 Equipment Areas), or institute an hourly fire watch for any zone with transient combustibles stored.

On November 5, 2014, the inspectors assessed the implementation of the RMAs associated with the RHR SOW. The inspectors identified multiple deficiencies in the implementation of the RMAs including, not performing a required RMA brief and control of combustible materials in risk significant fire zones. Specifically the field unit supervisor did not review the affected fire risk management zones or the known status

of affected fire risk management zones as required with the operating crew (CR-2014-34344). Inspectors toured the transient combustible free areas identified in Attachment D of OI-013-002 and identified combustible materials in six fire zones in the Unit 2 RB. While reviewing the fire watch assignments for the RHR SOW, the inspectors determined that no fire watches had been established for the six previously identified fire zones. PPL confirmed the combustible material (CR-2014-34374) and implemented hourly fire watches on Fire Zones 2-1F, 2-1G, 2-3C-S, 2-3C-W, 2-4A-S, 2-5A-S under ZWO 1855055.

On November 12, 2014, PPL commenced a Unit 2, Division 1, RHR SOW scheduled for 40.5 hours. The station integrated risk, as required by NDAP-QA-1902, "Integrated Risk Management," Revision 16, was communicated to the station as Green during this outage window. On November 13, 2014, the inspectors reviewed the equipment out of service (EOOS) configuration risk associated with this outage window. The inspectors independently reviewed the plant risk using the EOOS software tool and determined that the current risk condition was actually Yellow. The inspectors provided their assessment to PPL and they promptly confirmed that the station risk was Yellow and immediately communicated the change in risk condition to the station (CR-2014-35235).

The inspectors also questioned the RMAs associated with this SOW since the Unit 2 Division II RHR suppression pool spray and cooling isolation valves (F024B/F027B/F028B) were not protected. NDAP-QA-0340 directs the protection of redundant equipment when a loss of the redundant system would result in a loss of safety function. Specifically, with Division I RHR OOS, inadvertent closure of F024B or F028B would result in a loss of safety function for both suppression pool cooling and suppression pool spray systems. PPL took immediate corrective actions and entered the issue into the CAP as CR-2014-35270.

Additionally, inspectors toured the transient combustible free areas identified in Attachment C of OI-013-002 and identified combustible materials in five fire zones of the Unit 2 RB for the opposite (unaffected) division safe shutdown path. Inspectors discussed their observations with the fire protection engineer and upon review of the fire watch assignments, PPL determined that no fire watches were assigned to four of the five zones identified in the Unit 2 RB. PPL confirmed the combustible material (CR-2014-35160) and subsequently implemented hourly fire watches on Fire Zones 2-1D, 2-3C-N, 2-4A-N, 2-4A-W, and 2-3C-W under ZWO 1851393.

Finally, during the tour on November 12, 2014, inspectors identified hot work being performed in Fire Zone 2-5A-N contrary to OI-013-002, Attachment A, which requires that hot work be eliminated from the zones identified in Attachment C or if essential work is required, to elevate the hot work permit level of approval. Upon review of the hot work permit required by NDAP-QA-0442, "Control of Ignition Sources, Cutting, Welding, and Hot Work Permits," inspectors noted that the permit had not acknowledged that RMAs were in effect. The inspectors communicated the issue to PPL and the hot work was immediately secured until after the completion of the Unit 2, Division 1, RHR SOW (CR-2014-35154).

Analysis: Not ensuring plant maintenance activities were properly assessed for online plant risk and implementing adequate RMAs is a PD, which was reasonably within PPL's ability to foresee and correct, and was a violation of 10 CFR 50.65 (a)(4). Specifically, multiple examples of inadequate implementation of RMAs during maintenance on

systems which are credited for safe shutdown were identified: PPL did not remove all combustible materials from required fire areas without implementing appropriate fire watches, hot work was allowed to continue in a fire area without proper evaluation, required equipment was not protected, and station integrated risk was not appropriately classified. The inspectors determined that this PD was more than minor because it adversely impacted the protection against external factors attribute of the Mitigating Systems cornerstone objective to ensure the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).

The inspectors evaluated the finding using IMC 0612 Appendix K, "Maintenance Risk Assessment and Risk Management SDP." The inspectors and the Region I SRA used Appendix K, Flowchart 2, "Assessment of RMAs," and determined that not implementing the appropriate RMAs was of very low safety significance (Green). The basis for this determination was that the short duration of the actual planned maintenance activities (62 hours and 40.5 hours) associated with the RHR Train 'B' unavailability results in a mid E-9 calculated ICDP, using the Susquehanna Unit 2 SPAR Model, Revision 8.21, and SAPHIRE 8. In accordance with Appendix K guidance, doubling the estimated ICDP value to reflect not implementing RMAs is a reasonable approximation of the increased risk. The resultant low E-8 ICDP deficit remains below the ICDP E-6 deficit Green-White threshold and screens this PD to Green.

The finding was determined to have a cross-cutting aspect in the area of Human Performance, Work Management, in that, PPL did not control and execute activities, consistent with nuclear safety, by managing risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, PPL did not recognize an elevated risk category and incorporate all RMAs into its work activities. [H.5]

Enforcement. 10 CFR 50.65(a)(4) states, in part, that "before performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities." PPL procedures NDAP-QA-1902, "MR Risk Assessment and Management Program," Revision 16; NDAP-QA-0340, "Protected Equipment Program," Revision 25; and OI-013-002, "Fire Risk Management," Revision 2, implement the requirements of 10 CFR 50.65(a)(4) at the station. Contrary to the above, from November 12 to 13, 2014, the station improperly classified risk as Green vice Yellow and between November 3 and 12, 2014, there were multiple instances of inadequate implementation of RMAs while maintenance was conducted. Because of the very low safety significance of this finding and because the finding was entered into PPL's CAP as CRs 2014-35235 and 2014-35270, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000387; 388/2014005-01, Risk Management Actions Not Implemented)**

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

a. Inspection Scope

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

- Unit 2, standby liquid control continuity meter on October 7, 2014



- Unit 2, suppression pool water temperature instrument (TI-25752) on November 3, 2014
- 'E' emergency diesel generator (EDG) start time degradation on November 7, 2014
- Unit 1, low pressure injection valve seat leakage during startup on December 17, 2014
- Unit 1 and Unit 2 RPS EPA Under Frequency Trip Setpoints on December 8, 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 operability determinations to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to 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)

.1 Permanent Modifications

a. Inspection Scope

The inspectors examined a modification involving a new piping connection installation into RHR service water (RHRSW), associated with PPL's modifications in response to Japan Lessons Learned Order. The inspection did not address whether the modification satisfactorily addressed the objectives of Order EA-12-049. The inspection scope for the modification was focused on the elements and objectives of IP 71111.18, specifically:

- To verify that modifications have not affected the safety functions of important safety systems
- To verify that the design bases, licensing bases, and performance capability of risk significant SSCs have not been degraded through modifications
- Verify that modifications performed during increased risk-significant configurations did not place the plant in an unsafe condition.

On December 11, 2014, the inspectors evaluated the permanent plant modification to the RHRSW system implemented by engineering change 1687569, "U2 RHRSW FLEX Distribution Manifolds." The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the upgrade and design change.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 7 samples)a. Inspection Scope

The inspectors reviewed the post-maintenance testing 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 2, Division I core spray following SOW on October 8, 2014
- Unit 2, RCIC following SOW on October 30, 2014
- Unit 2, HPCI following SOW on December 4, 2014
- Unit 1, recirculation pump weld repair pressure test on December 16, 2014
- Unit 1, RCIC steam admission valve following stem and packing replacement on December 17, 2014
- Unit 1, reactor head vent to 'A' main steam line (HV141F005) following valve packing replacement on December 18, 2014
- 'E' EDG following replacement of mechanical governor on December 19, 2014

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 1 sample)a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the Unit 1 planned maintenance outage, which was conducted December 12 through 19, 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 cooldown evolution 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
- 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
- Restart readiness activities
- Reactor and plant startup
- 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 and/or reviewed test data of selected risk-significant SSCs to assess whether test results satisfied the 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 surveillance tests:

- Unit 2 Average Power Range Monitor 21 Functional Test on November 3, 2014
- Unit 1 Unidentified Leak Rate Surveillance on November 4, 2014
- Unit 2 Halon Suppression System Test on November 20, 2014
- Unit Common, 'A' Control Room Emergency Outside Air Supply Following System Flow Calibration on December 27, 2014

b. Findings

No findings were identified.

## Cornerstone: Emergency Preparedness (EP)

### 1EP6 Drill Evaluation (71114.06 - 1 sample)

#### .1 Drill Evaluation

##### a. Inspection Scope

The inspectors evaluated the conduct of a routine PPL emergency drill on December 9, 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 inspectors' 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.

### .2 (Closed) Unresolved Item (URI) 05000387; 388/2014004-01: Adequacy of Guidance for an Emergency Plan Procedure Change.

##### a. Inspection Scope

The inspectors reviewed this URI that had been initiated to determine whether PPL had provided adequate guidance to the emergency response organization when implementing procedure changes regarding the release in progress determination. During a full-scale drill on July 24, 2014, the inspectors observed PPL's emergency response organization (ERO) reach disparate conclusions when presented with the same plant conditions and indications. The inspectors reviewed PPL's evaluation of the issue and consulted with the Office of Nuclear Security and Incident Response (NSIR). Additionally, the inspectors reviewed drill reports and evaluated the adequacy of the critique process following the full-scale drill on July 24, 2014. This URI is closed based upon the issuance of the following Green NCV. The basis for URI closure is also described in this NCV.

##### b. Findings

Introduction. The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50.54(q)(2) for failing to follow and maintain an emergency plan that meets the requirements of 10 CFR 50 Appendix E and the planning standards of 10 CFR 50.47(b). Specifically, PPL did not identify and critique a weakness related to a risk significant planning standard during their critique following the July 24, 2014, emergency preparedness drill, as required by 10 CFR 50.47(b)(14) and 10 CFR 50 Appendix E, Section IV(F)(2)(g).

Description. On July 24, 2014, inspectors observed a full-scale EP drill. During the drill, the inspectors observed that the staff in the Susquehanna control room (CR), the Technical Support Center (TSC), and the Emergency Operations 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 organizations (OROs). 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 notification at the Alert level by the EOF staff, the EOF Recovery Manager (RM) communicated a determination that a release was occurring. The simulated 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 normal MSIV seat leakage assumed in the design bases. Nominally, this type of release is not considered an unmonitored release. 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. The EOF made the notification to the OROs for the SAE, 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. PPL initiated a condition report (CR) to address the inspectors concerns (CR-2014-26136). 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 a periodic update notification. PPL ultimately determined the UE, Alert, and SAE declarations to be successful PI opportunities. Periodic update notifications to the OROs are not credited as PI opportunities using the guidance provided in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7.

While reviewing the inspectors' concerns, PPL identified that, in recent licensed operator requalification (LOR) 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 24 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. PPL performed a root cause analysis (CR-2014-29803) and determined that inadequate procedural guidance for critiquing drill performance was the root cause of the incorrect reporting of PI data to the NRC.

The inspectors performed an independent review of a sample of drill reports and notification forms from licensed operator requalification training cycles from the past three years and identified two additional instances in June 2011 and November 2012, when periodic update notifications to the OROs were incorrect with regards to the release in progress status, however, the ERO performance weakness was not properly critiqued. The inspectors considered this further verification of the existence of this PD.

Analysis. The inspectors determined that because PPL did not identify and critique an emergency preparedness drill performance weakness in the formal critique this was a performance deficiency that was within PPL's ability to foresee and correct and should have been prevented. Specifically, PPL did not identify that a periodic update notification provided to the offsite response organizations by the EOF was inaccurate in that it stated an airborne radiological release was in progress when one was not occurring. The inspectors determined the performance deficiency was more than minor because it was associated with the ERO performance attribute (Training, Drills, Exercises) of the Emergency Preparedness cornerstone and affected the cornerstone objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, because PPL did not effectively identify and critique an emergency preparedness drill performance weakness this caused a missed opportunity to identify and correct a drill-related performance deficiency.

The inspectors evaluated the finding using IMC 0609, Attachment 4, "Initial Characterization of Findings," issued June 19, 2012. The attachment instructs the inspectors to utilize IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," issued September 26, 2014, when the finding is in the licensee's Emergency Preparedness cornerstone. The inspectors determined this finding was a critique finding, the drill scope was full scale, the planning standard was a risk-significant planning standard, and the performance indicator opportunity was a success because periodic update notifications to the OROs are not credited as PI opportunities using the guidance provided in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. Therefore, using Figure 5.14-1, "Significance Determination for Critique Findings," the inspectors determined the finding was of very low safety significance (Green).

The cause of the finding has a cross-cutting aspect in the area of Human Performance, Consistent Process, because PPL did not use a consistent, systematic approach when making decisions. Specifically, PPL personnel did not use a consistent approach when evaluating and critiquing the accuracy of all notifications provided to the OROs [H.13].

Enforcement. 10 CFR 50.54(q)(2) requires, in part, that the licensee shall follow and maintain the effectiveness of an emergency plan that meets the requirements in Appendix E to this part and the planning standards of 10 CFR 50.47(b). 10 CFR 50.47(b)(14) requires, in part, that periodic drills are conducted to develop and maintain key skills, and that deficiencies identified as a result of exercises are corrected. Section IV.F.2.g of Appendix E to 10 CFR 50 requires that all exercises, drills, and training that provide performance opportunities must provide for formal critiques in order to identify weak or deficient areas that need correction. Any weaknesses or deficiencies that are identified in a critique must be corrected. Contrary to the above, PPL failed to identify and correct a performance weakness during the July 25, 2014, critique of the July 24, 2014, Susquehanna emergency preparedness drill. Specifically, PPL did not identify during its formal critique a weakness associated with the accuracy of a periodic update notification to the offsite response organizations made by the EOF emergency response organization. Because this violation was of very low safety significance and was entered into PPL's CAP as CR-2014-26136, this finding is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000387 & 388/2014005-02, EP Drill Critique Did Not Identify a Risk-Significant Planning Standard Weakness)**

## 2. RADIATION SAFETY

### Cornerstone: Occupational Radiation Safety

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

##### a. Inspection Scope

During November 3 - 6, 2014, the inspectors reviewed PPL's performance in assessing the radiological hazards and exposure control in the workplace. The inspectors used the requirements in 10 CFR Part 20, TSs, and procedures required by TSs as criteria for determining compliance.

##### Inspection Planning

The inspectors conducted in-office review of the PIs for the Occupational Exposure cornerstone, radiation protection (RP) program audits, and any reports of operational occurrences related to occupational radiation safety since the last inspection.

##### Radiological Hazard Assessment

The inspectors reviewed the following:

- Conducted facility walk-downs of radiological postings and radiological controls and performed independent radiation measurements during plant tours
- Changes to plant operations involving new radiological hazards
- In-plant radiological surveys

##### Contamination and Radioactive Material Control

The inspectors reviewed the following:

- Monitoring of material leaving the radiological control area
- Methods to control, survey, and release materials
- Radiation monitoring instrumentation operability and use

##### Radiological Hazards Control and Work Coverage

The inspectors reviewed the following:

- Personal radiation monitoring device operability and use
- Posting and physical controls for high radiation areas, and locked high radiation areas
- Control of radioactive materials stored in pools

##### Radiation Worker Performance

The inspectors observed the performance of radiation workers with respect to radiation protection requirements and assessed whether workers were aware of the radiological

conditions in their workplace and the radiation work permit (RWP) controls/limits in place.

#### RP Technician Proficiency

The inspectors observed the performance of RP technicians with respect to controlling radiation work. The inspectors evaluated whether technicians were aware of the radiological conditions in their workplace and the RWP controls/limits, and whether their performance was consistent with their training and qualifications.

#### Problem Identification and Resolution

The inspectors evaluated whether problems associated with radiation monitoring and exposure control were being identified at an appropriate threshold and properly addressed. The inspectors assessed the process for applying operating experience to the radiation protection program.

#### b. Findings

No findings were identified.

### 2RS2 Occupational ALARA Planning and Controls (71124.02 – 1 sample)

#### a. Inspection Scope

During November 3 - 6, 2014, the inspectors assessed performance with respect to maintaining occupational individual and collective radiation exposures As Low As is Reasonably Achievable (ALARA). The inspectors used the requirements in 10 CFR Part 20, TSs, and PPL's procedures required by TSs as criteria for determining compliance.

#### Inspection Planning

The inspectors reviewed the following:

- Site-specific trends in collective exposures
- Changes in the radioactive source term
- ALARA procedures

#### Radiological Work Planning

The inspectors reviewed the following:

- High exposure work planning activities
- ALARA work activity evaluations
- Exposure estimates, and exposure reduction requirements
- Results achieved (dose rate reductions, actual dose)



### Radiation Worker Performance

The inspectors observed radiation worker and RP technician performance during work activities being performed in radiation areas, airborne radioactivity areas, and high radiation areas and evaluated whether workers demonstrated the ALARA philosophy in practice and whether there were any procedural compliance issues.

### Problem Identification and Resolution

The inspectors evaluated whether problems associated with ALARA planning and controls are being identified by PPL at an appropriate threshold and were properly addressed. The inspectors assessed PPL's process for applying operating experience.

#### b. Findings

No findings were identified.

### 2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03 – 1 sample)

#### a. Inspection Scope

During November 3 - 6, 2014, the inspectors reviewed in-plant airborne radioactivity controls consistent with ALARA principles and the use of respiratory protection. The inspectors used the requirements in 10 CFR Part 20, TSs, and procedures required by TSs as criteria for determining compliance.

#### Inspection Planning

The inspectors reviewed the UFSAR to identify areas of the plant designed as potential airborne radiation areas and any associated ventilation systems or airborne monitoring instrumentation.

The inspectors reviewed the following:

- Use of ventilation
- Criteria for evaluating levels of airborne for beta-emitting, alpha-emitting, and other hard-to-detect radionuclides

#### Use of Respiratory Protection Devices

The inspectors reviewed the following:

- Respiratory equipment storage
- Use of respiratory protection factors
- Use of certified respiratory protection devices
- Qualifications of individuals assigned to use respiratory protection devices

### Self-Contained Breathing Apparatus (SCBA) for Emergency Use

The inspectors reviewed the following:

- Status and surveillance records of three SCBAs staged in-plant for use during emergencies
- SCBA procedures
- SCBA maintenance and test records
- Capability for refilling and transporting SCBA air bottles
- Availability of providing different mask sizes
- Qualifications of personnel performing service and repair

### Problem Identification and Resolution

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were being identified by PPL and placed in the CAP with appropriate corrective actions planned or implemented.

#### b. Findings

No findings were identified.

### 2RS4 Occupational Dose Assessment (71124.04 – 1 sample)

#### a. Inspection Scope

During November 3 - 6, 2014, the inspectors verified that occupational dose is appropriately monitored, assessed and reported by PPL. The inspectors used the requirements in 10 CFR Part 20, TSs, and PPL's procedures required by TSs as criteria for determining compliance.

#### Inspection Planning

The inspectors conducted an in office review of:

- Results of RP program audits related to internal and external dosimetry
- Procedures associated with dosimetry operations, including issuance/use of external dosimetry and assessments of external and internal dose for radiological incidents

#### Internal Dosimetry Routine Bioassay (In Vivo)

There were no internal dose assessments obtained using In Vivo results for the inspectors to review since the last inspection.

#### Special Bioassay (In Vitro)

There were no internal dose assessments obtained using In Vitro results for the inspectors to review since the last inspection.

### Internal Dose Assessment – Airborne Monitoring

There were no internal dose assessments using airborne/derived air concentration monitoring to review since the last inspection.

### Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures

The inspectors reviewed the methodology for monitoring external dose where large dose gradients exist and evaluated the criteria for determining when the use of multi-badging is implemented.

### Problem Identification and Resolution

The inspectors assessed whether problems associated with occupational dose evaluations were identified at an appropriate threshold, were placed in the corrective action program, and were adequately resolved.

#### b. Findings

No findings were identified.

### 2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08 – 1 sample)

#### a. Inspection Scope

During October 6 - 10, 2014, the inspectors verified the effectiveness of PPL's programs for processing, handling, storage, and transportation of radioactive material. The inspectors used the requirements of 49 CFR Parts 170-177; 10 CFR Parts 20, 61, and 71; and procedures required by TSs as criteria for determining compliance.

#### Inspection Planning

The inspectors conducted an in-office review of the solid radioactive waste system description in the UFSAR, the Process Control Program, and the recent radiological effluent release report for information on the types, amounts, and processing of radioactive waste disposed. The inspectors reviewed the scope of quality assurance (QA) audits performed for this area since the last inspection.

#### Radioactive Material Storage

The inspectors inspected areas where containers of radioactive waste were stored. The inspectors verified that PPL had established a process for monitoring the impact of long-term storage.

### Radioactive Waste System Walkdown

The inspectors walked down the following areas of the plant:

- Accessible portions of liquid and solid radioactive waste processing systems to verify current system alignment and material condition
- Identified radioactive waste processing equipment that was abandoned in place, to verify the controls in place to ensure protection of personnel
- Changes made to the radioactive waste processing systems since the last inspection
- Processes for transferring radioactive waste resin and/or sludge discharges into shipping/disposal containers
- Current methods and procedures for dewatering waste

### Waste Characterization and Classification

The inspectors identified radioactive waste streams and reviewed radiochemical sample analysis results to support radioactive waste characterization. The inspectors reviewed the use of scaling factors and calculations account for difficult-to-measure radionuclides.

### Shipment Preparation

The inspectors reviewed the records of shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and PPL's verification of shipment readiness. The inspectors observed various activities associated with radioactive material shipment number 2014-088 on October 9, 2014.

### Shipping Records

The inspectors reviewed non-excepted package shipment records in accordance with 49 CFR Parts 100-177.

### Identification and Resolution of Problems

The inspectors verified that problems associated with radioactive waste processing, handling, storage, and transportation, were being identified by PPL at an appropriate threshold, were properly characterized, and were properly addressed for resolution in PPL's CAP.

#### b. Findings and Observations

No findings were identified.

#### 4. OTHER ACTIVITIES

##### 4OA1 Performance Indicator Verification (71151 - 4 samples)

##### .1 Mitigating Systems Performance Index (MSPI)

##### a. Inspection Scope

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

- Units 1 and 2, RHR systems on November 25, 2014
- Units 1 and 2, cooling water systems on November 25, 2014

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 – 4 samples)

##### .1 Routine Review of Problem Identification and Resolution (PI&R) Activities

##### a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that 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 Semi-Annual Trend Review

##### a. Inspection Scope

The inspectors performed a semi-annual review of site issues, as required by Inspection Procedure 71152, "PI&R," to identify trends that might indicate the existence of more significant safety issues. In this review, the inspectors included repetitive or closely-

related issues that may have been documented by PPL outside of the CAP, such as trend reports, PIs, major equipment problem lists, system health reports, MR assessments, and maintenance or CAP backlogs. The inspectors also reviewed PPL's CAP database for the third and fourth quarters of 2014 to assess CRs written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRCs daily CR review (Section 40A2.1). The inspectors reviewed the PPL quarterly trend report, conducted under LS-125-1009, "Station Trending Manual," Revision 0, to verify that PPL personnel were appropriately evaluating and trending adverse conditions in accordance with applicable procedures.

b. Findings and Observations

Procedure Use and Adherence. The inspectors identified a trend in PPLs' adherence to procedurally required steps. A review of daily plant status and routine plant activities had identified numerous instances where station personnel had not performed actions in accordance with procedural requirements. Specifically the inspectors identified:

- Plant equipment important to safety was not protected in accordance with NDAP-QA-0340 to mitigate risk during elevated risk conditions. (CR-2014-38680, 34374, 35235); (05000387/388-2014005-01, see Section 1R13)
- Off-Normal procedure ON-000-002, "Severe Weather," was not entered, as required, after the national weather service issued a severe winter storm warning. (CR-2014-36451)
- RCIC surveillance steps were performed out of sequence contrary to 'continuous use' requirements. (CR-2014-38533)
- Hot work permits were extended beyond 24 hours contrary to OI-013-002. (CR-2014-35160)

In general, the applicable procedures for the above issues were maintained with adequate detail to ensure timely and accurate execution of the steps. As such, PPL recognized the deficient procedure use and adherence trend and entered it into their CAP under CR-2014-38533. The inspectors reviewed the associated performance deficiencies and identified one more than minor finding (see section 1R13).

Energy Control Process (ECP) Events. The inspectors identified a continuing trend in ECP related events for the period of July 2014 through December 2014. This trend was previously identified and documented in NRC Inspection Report 05000387, 05000388/2014003 (ML14225A018). Specifically, inspectors identified that:

- Two additional level one ECP events, indicating that there were no remaining barriers for worker or equipment protection
- One additional level two ECP event, indicating the only remaining barrier was the willingness of the holder to sign on to the clearance

PPL also identified this continuing adverse trend and entered it into their CAP under CR-2014-38324 to conduct a common cause analysis of the 2014 ECP events and past efforts taken to improve and sustain performance. The inspectors reviewed the associated performance deficiencies and identified no more than minor findings.

### .3 Annual Sample: Motor-Operated Valve (MOV) Grease and Torque Switch Issues

#### a. Inspection Scope

The inspectors performed an in-depth review of PPL's evaluations and corrective actions associated with several CRs related to motor-operator valve (MOV) issues. Specifically, the inspectors reviewed PPL's responses associated with previously identified MOV stem lubrication and grease sampling deficiencies. The inspectors also reviewed PPL's responses to several instances where MOVs did not satisfactorily stroke due to problems related to torque switches.

The inspectors assessed PPL's problem identification threshold, problem analysis, extent-of-condition (EOC) reviews, compensatory actions, and the prioritization and timeliness of their corrective actions to evaluate whether PPL was appropriately identifying, characterizing, and correcting problems associated with these issues and whether the planned or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of PPL's CAP and 10 CFR 50, Appendix B. The inspectors also interviewed engineering personnel to assess the reasonableness of the planned and completed corrective actions. Finally, the inspectors reviewed completed maintenance activities and station procedures to evaluate the effectiveness of PPL's actions.

#### b. Findings and Observations

No findings were identified.

PPL developed a formal gearbox lubrication evaluation table that listed specific acceptance criteria to classify and evaluate the condition (i.e., color, consistency) of the grease sampled from MOV gearboxes. There were five "grades" according to the grease condition, with corresponding required actions. In addition, PPL developed a formal task qualification for the individual(s) performing the grease sample evaluation. The MOV engineer was qualified in accordance with the task qualification and performed the grease evaluations reviewed by the inspectors. The inspectors reviewed the completed WO associated with the grease sample evaluations from the recent (spring 2014) Unit 1 refueling outage MOV maintenance activities; and concluded that the grease sample evaluations and associated actions were consistent with the formal evaluation process. The inspectors concluded that the evaluation table contained clear acceptance criteria and corresponding required actions, and noted that the worst condition (Grade 5) was characterized by dry and lumpy grease with virtually no oil remaining. For a Grade 5 evaluation result, the required action was to evaluate the scheduling of an immediate MOV actuator overhaul and to generate a CR to document the grease condition. The inspectors did not identify any issues of concern related to grease evaluations.

PPL had also identified weaknesses related to the adequacy and effectiveness of MOV stem lubrication in that some portions of the valve stem could not be lubricated due to interferences or valve position; and this information was not previously captured or corrected. As a result, changes were implemented to the associated work instructions, and expectations were reinforced to maintenance workers. Specifically,

in the event that portions of the stem could not be lubricated during the preventive maintenance activity, technicians are required (by the work instructions) to generate an action request (AR) and notify the MOV Engineer.

Relative to torque switch issues, PPL initiated CR-1625705 in September 2012 to identify a trend whereby four MOVs did not close due to apparent torque switch problems. The specific torque switches had been identified as a longstanding plant equipment issue and the associated action remains to replace existing SMB-000 torque switches with a vendor-redesigned and more robust torque switch. Although that design change has not yet been completed, PPL pursued other specific corrective actions for additional problems associated with some of the failures. Specifically, some of the failures were determined to be due to a high resistance on the torque switch contacts. In response, PPL revised preventive maintenance work instructions to require periodic torque switch contact resistance measurements and contact cleaning. The inspectors reviewed the torque switch corrective actions and found them to be appropriate.

.4 Annual Sample: ESW System, Leakage Issues and Mitigation

a. Inspection Scope

The inspectors performed an in-depth review of PPL staff's identification, evaluation and corrective actions related to leakage from the ESW system. The inspectors assessed the problem identification threshold, cause analyses, EOC reviews, compensatory actions, and the prioritization and timeliness of PPL's corrective actions to determine whether PPL staff was appropriately identifying, characterizing, and correcting problems associated with ESW system leaks and whether the planned or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of PPL's CAP and 10 CFR 50, Appendix B.

The inspectors reviewed documentation of the types and locations of leakage identified in Units 1 and 2 ESW systems during the past three years, performed a walk-down of portions of the ESW system, and observed the plant conditions of each ESW leak location. One leak, referenced in CR-2014-30991, was the only ESW pressure boundary with a local patch in place until a permanent repair can be made prior to the end of the next refuel outage as described in the American Society of Mechanical Engineers (ASME) Code Case N-513-3. The inspectors compared the attributes of ASME Code Case N-513 to the actions taken by PPL staff in characterizing the leak area, evaluating the pipe structural integrity, scheduling daily visual observations and monthly ultrasonic examinations of the leak area, and providing for a leak control patch.

The inspection scope included a review of the plant drawings of the ESW system, the pressure boundary leak characterization process, the operational and risk significance, and the process controls on mitigation and repair of identified leaks.

b. Findings and Observations

No findings were identified.

The inspectors determined PPL staff identified instances of ESW system leakage at an appropriate threshold, entered the issues into the plant CAP, and implemented corrective actions. The inspectors further noted PPL staff initiated a plan to perform



an overall review of leaks in the ESW system and other raw water systems to identify possible preventive actions.

.5 Annual Sample: RHR Pump Suction Relief Valve Lift

a. Inspection Scope

The inspectors performed an in-depth review of PPL's evaluations and corrective actions associated with the root cause and CR related to a 2 'B' RHR pump suction relief valve lift, which resulted in water release into the Unit 2 'B' RHR pump room. On September 15, 2013, during alignment from the 2 'B' RHR shutdown cooling mode to the standby low pressure coolant injection (LPCI) lineup, a pressure transient (water hammer) event occurred. This transient resulted in the RHR 'B' loop pump room flooded alarm annunciating in the Unit 2 control room. The direct cause of the flooding event was attributed to the lifting and sticking open of the RHR suction relief valve due to a steam voiding water hammer during the re-alignment of the isolated high temperature pressurized portion of the suction piping to the suppression pool. PPL performed a root cause analysis of the event to identify direct and contributing causes for the water hammer. Several of the key corrective actions included revision to the operating experience review and evaluation guide, performing an extent-of-condition review with respect to relief valve operating margins for other safety systems, and developing a new operating strategy for realignment of the RHR system under hot shutdown conditions.

The inspectors assessed PPL's problem identification threshold, problem analysis, EOC reviews, compensatory actions, and the prioritization and timeliness of their corrective actions to evaluate whether PPL was appropriately identifying, characterizing, and correcting the concerns associated with this event. This review included an evaluation of whether the planned and completed corrective actions were appropriate. While there were numerous corrective action assignments originating from the root cause evaluation, the inspectors focused on the technical review of the thermal hydraulic study performed for these conditions and the adequacy of the procedures in place to prevent additional pressure transients. The inspectors also independently sampled PPL's review and response to various NRC Information Notices to evaluate the adequacy of PPL's responses to the technical issues. This was performed because a cause of this event had been less than adequate analysis applied to the review of industry and internal operating experience (OE) for similar RHR pressure spike events, including the failure to recognize the need to address/revise the RHR system operating procedures at Susquehanna. The inspectors compared the actions taken to the requirements of PPL's CAP and 10 CFR Part 50, Appendix B. The inspectors also interviewed engineering personnel to assess the reasonableness of the planned and completed corrective actions. Finally, the inspectors reviewed station procedure revisions and performed a system walkdown to further evaluate the effectiveness of PPL's actions.

b. Findings and Observations

No findings were identified.

PPL's root cause evaluation was performed and documented within the actions taken to address CR-1746612. The inspectors reviewed procedure changes to LS-115-1004, "Manual for Processing Non-IER OE Documents," Revision 1, which were performed to enhance the guidance and expectations for operating experience issue reviews

performed by PPL. The inspectors noted that PPL performed screenings of past OE information reviews to identify if any significant vulnerabilities had been missed by the prior reviews. The inspectors also independently sampled PPL's screening of several NRC Information Notices from the 2012-2013 timeframe. This was performed to determine if the screenings were adequate with respect to applicability and to evaluate the effectiveness and thoroughness of identified corrective actions. The inspectors found that PPL had provided reasonable technical evaluations of the OE sampled.

PPL had a vendor analysis performed to evaluate the transition from the shutdown cooling (SDC) system alignment to the LPCI valve alignment. The analysis was performed in support of PPL's root cause evaluation, and to develop and implement a strategy to transition from SDC to LPCI while in a Mode 3 (hot shutdown) condition. The analysis recommended a modification to allow the RHR pump suction valves (F004) to be throttled open to a minimal position to allow for slower depressurization and cooldown of the suction line to minimize pressure transients. PPL's analysis concluded that the existing method of depressurizing the line through the minimum flow line may not be sufficient in preventing a pressure spike which could challenge the RHR suction relief valves. The inspectors noted the review used conservative inputs and determined the conclusions of the vendor report were reasonable. In addition, the inspectors noted that PPL had initiated an action to track a longer term resolution to the issue under modification proposal, EPMC 2014-10634, with respect to a design change to the suction valves to prevent the pressure transients during the alignment shift under hot conditions.

The inspectors also reviewed the SDC procedure, OP-149-002, "RHR Shutdown Cooling," Revision 65, to determine the adequacy of existing procedural direction to prevent the potential for water hammer issues. The methodology was similar for both units. The inspectors observed that the existing procedure section for transferring from the SDC mode to LPCI operation (concurrent with a loss-of-coolant accident (LOCA) did not allow the manual swapping of the RHR suction to the suppression pool without guidance from station engineering on how to cool the loop. Additionally, the inspectors determined that while in the SDC alignment in Mode 3 (hot shutdown); the RHR system is procedurally considered inoperable for the containment cooling and LPCI modes of operation. The inspectors also noted that the core spray system remained available, as well as the other loop of LPCI in response to a postulated accident. Thus, the inspectors determined that this interim procedure direction (i.e., if a LOCA occurred in Mode 3, seek engineering guidance on RHR loop restoration) was adequate and would not result in the re-alignment of the system and potential to challenge the RHR suction relief valves due to pressure surges.

Notwithstanding, the inspectors did identify an observation with PPL's review of the issue. Specifically, the inspectors identified a weakness with the existing SDC procedure for swapping between RHR loops in Mode 3. OP-1(2)49-002, did not provide appropriate criteria and had not been evaluated for system loop cooldown requirements prior to the potential for system re-alignment, (opening suppression pool suction valves) to support the LPCI mode. For example, if the RHR SDC system would be required to be secured for any reason while in a hot or pressurized condition (Mode 3) and the opposite RHR loop was placed in SDC, adequate criteria did not exist within the procedure to ensure a system pressure transient within the original RHR system would be minimized if realigned to the suppression pool at a later time. Specifically, the inspectors were concerned that the isolated RHR piping which had seen hot conditions,

(i.e., greater than 212 degrees), could remain at temperatures which could result in a pressure transient even after the unit would be brought to a cold shutdown condition by the other operating loop of RHR. This was considered to be of minor safety significance because PPL had taken actions to minimize the need to swap RHR SDC loops. Specifically, PPL increased the margin to the discharge relief valve setpoint by lowering the required reactor vessel pressure before initiating shutdown cooling operations. This limited discharge pressure spikes to prevent failing the discharge relief valves on pump starts with the subsequent need to swap loops, while in hot shutdown conditions.

As a result of the inspector's observation, PPL initiated CR-2014-37515 to ensure that loop temperature is the parameter of concern with respect to when a loop could be re-aligned for the LPCI mode. This addressed the issue that the secured and isolated loop could remain in a hot, pressurized condition even after reactor cold shutdown conditions may be reached through operation of the other RHR loop. The inspectors discussed the issue with engineering staff and licensing personnel. In accordance with IMC 0612, "Power Reactor Inspection Reports," the above issue constituted a violation of minor significance which is not subject to enforcement action in accordance with NRC's Enforcement Policy.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153 – 4 samples)

.1 (Closed) LER 05000388/2013-002: Valve Internal Misalignment Resulting in Multiple Inoperable Main Steam Safety Relief Valves (SRV)

a. Inspection Scope

During the spring 2013 Susquehanna Unit 2 16th refueling and inspection outage, three (3) main steam SRVs did not meet the setpoint criteria of +3/-5% set forth in TS 3.4.3. The three SRVs actuated at a setpoint less than the -5% criteria during off-site testing. The cause of the lower setpoint actuation is attributed to possible misalignment of the valve internals due to post-installation valve cycling using the actuator assembly. The LER was submitted in accordance with 10 CFR 50.73(a)(2)(vii) for a common-cause inoperability of independent trains or channels due to having more than one failure caused by misalignment of the valve internals. In addition, this event was also determined to be an operation or condition prohibited by TSs and reportable under 10 CFR 50.73(a)(2)(i)(B).

The LER was reviewed for accuracy, the appropriateness of corrective actions, historical equipment OE, violations of requirements, and generic issues. Corrective actions identified within the LER consisted of replacement of the SRVs with SRVs having a setpoint tolerance of +/- 1% of nameplate setpoint pressure.

Based on this review, the inspectors did not identify a performance deficiency. In NRC Integrated Inspection Report 05000387/2012005 and 05000388/2012005 (ML13044A599), inspectors performed an in-depth review of PPL's evaluations and corrective actions associated with CR 1587108, for similar main steam SRV test failures during the 2012 Unit 1 refueling outage. The inspectors determined PPL staff's overall response to the issue was commensurate with the safety significance and included

conservative decision-making and appropriate engineering analysis. The inspectors determined that the actions taken or planned were reasonable to resolve the identified SRV issues. This LER is closed.

b. Findings

A licensee-identified severity level (SL) IV NCV of TS 3.4.3 was identified and is documented in Section 4OA7 of this report.

.2 (Closed) LER 05000388/2013-004-00: Unit 2 RHR Pump Room Flooding

a. Inspection Scope

On September 15, 2013, during alignment from 2 'B' RHR system SDC to standby LPCI, a pressure transient (water hammer) event occurred. The RHR loop 'B' room flooded alarm annunciated in the Unit 2 control room. Operations entered the emergency operating procedure for secondary containment control and the off-normal procedure for flooding in the RB. PPL identified that the Unit 2 RHR pump 'B' suction relief valve was leaking and water was entering the pump room. PPL engineering determined that leakage from the 2 'B' RHR pump suction relief valve caused the engineered safety feature leakage to exceed the 2.5 gpm limit which was provided to the NRC during the implementation of the alternate source term submittal. The LER was submitted in accordance with 10 CFR 50.73(a)(2)(ii)(A) for an event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded. A cause of the event was the failure to recognize the need to revise the RHR operating procedure based on operating experience review. This was documented as a self-revealing Green violation of 10 CFR Part 50, Appendix B, Criterion V, for the failure of PPL's RHR SDC procedures to include appropriate criteria to preclude steam voiding in the RHR suction piping prior to realigning from SDC to LPCI standby in IR 05000387;388/2013004 (ML13318A960).

Subsequently, PPL initiated root cause evaluation CR-1746612 and identified additional weaknesses related to the event. The inspectors reviewed the LER, root cause evaluation, and associated corrective actions as documented in detail within Section 4OA2.5 of this report. No additional findings or violations of NRC requirements were identified during this review. This LER is closed.

b. Findings

No findings were identified.

.3 (Closed) LER 05000387/2013-009: RPS Electrical Protection Assembly (EPA) Logic Card Under Frequency Trip Setpoints Out of Calibration

a. Inspection Scope

During routine surveillance testing on October 30, 2013, the two RPS EPAs in the 'A' train alternate RPS power supply were found to have underfrequency trip set points outside of the TS allowable value, thus not meeting TS surveillance requirement 3.3.8.2.2. The affected EPAs were not in service during the testing, and are only required to be operable when the associated alternate RPS power supply is in service. The LER was submitted in accordance with 10 CFR 50.73(a)(2)(v) as a condition that

could have prevented the fulfillment of the safety function of the RPS electric power monitoring system because the failures involved the redundant, series connected EPAs in an RPS power supply. In addition, this event was also determined to be a common cause inoperability of independent channels in a single system reportable under 10 CFR 50.73(a)(2)(vii), and a condition prohibited by TSs reportable under 10 CFR 50.73(a)(2)(i)(B).

The LER was reviewed for accuracy, the appropriateness of corrective actions, historical equipment OE, violations of requirements, and generic issues. This LER is closed based upon the issuance of the following Green NCV. The basis for LER closure is also described in this NCV.

b. Findings

- .1 Introduction. Inspectors identified a Severity Level IV NCV of 10 CFR 50.73 (a)(2)(v) for PPL staff not submitting an LER within 60 days of discovery of a condition that could have prevented the fulfillment of the safety function of the RPS Electrical Power Monitoring System.

Description. 10 CFR 50.73 (a)(2)(v) requires, in part, that licensees submit an LER for any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to shut down the reactor and maintain it in a safe shutdown condition within 60 days of discovering the event.

On October 30, 2013, two RPS EPAs in the Unit 1 'A' train alternate RPS power supply were found to have under-frequency trip set points outside of the TS Allowable Value of 57 Hz. The function of the breakers is to open on under-frequency conditions to prevent failures in the RPS from their non-safety related power supplies.

Inspectors reviewed PPL's CAP and identified that CR- 2013-02219, which dispositioned their reportability determination, was closed on November 27, 2013. PPL determined that the event was not reportable because there was only a 0.01 Hz and 0.06 Hz delta from the TS required value. In essence, these values are equal to 57 Hz when rounded to the significant digits of the TS required value or in consideration of reasonable instrument accuracy. PPL determined the EPA breaker trip under frequency inputs were considered to have met the TS requirement and were not reportable.

Inspectors questioned PPL's use of rounding to meet the TS required value of 57 Hz. On June 20, 2014, PPL initiated CR-2014-17112 and determined that the event was reportable under 50.73 (a)(2)(v) as a condition that could have prevented the fulfillment of the safety function, 50.73(a)(2)(vii) as a common cause inoperability of independent channels, and 50.73(a)(2)(i)(B) as a condition prohibited by technical specifications. On July 18, 2014, PPL submitted LER 2013-009.

Analysis. The inspectors determined that PPL did not report a condition that could have prevented the fulfillment of the safety function was a performance deficiency which impacted the NRC's ability to perform its regulatory function. Specifically, not reporting the issue would have impacted timely NRC review of the issue and the subsequent identification of an associated performance deficiency (2014005-04) in this report. The finding was evaluated using the traditional enforcement process because not accurately

reporting events has the potential to impact or impede the regulatory process. The finding was determined to be a Severity Level IV violation of 10 CFR 50.73 (a)(2)(v) based on example 6.9.d.9 of the NRC Enforcement Policy. This example states that a licensee failing to make a report required by 10 CFR 50.72 or 10 CFR 50.73 is an example of a Severity Level IV violation.

Because this violation involves the traditional enforcement process and does not have an underlying technical violation that would be considered more-than-minor, inspectors did not assign a cross-cutting aspect to this violation in accordance with IMC 0612, Appendix B.

Enforcement. 10 CFR 50.73 (a)(2)(v) requires, in part, that licensees shall report any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to shut down the reactor and maintain it in a safe shutdown condition within 60 days of discovering the event. Contrary to the above, PPL staff did not submit a report within 60 days of October 30, 2013, after a condition that could have prevented the fulfillment of the safety function of the RPS Electrical Power Monitoring System was discovered. Specifically, this condition was not reported until July 18, 2014. This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy because it was a Severity Level IV and was entered into PPL's CAP under CR-2014-17112. **(SL IV 05000387/2014005-03, Failure to Submit an LER)**

- .2 Introduction: The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," for not establishing design control measures that provide for verifying or checking the adequacy of design and translating the design basis requirements into allowable values and trip set points. Specifically, PPL did not establish measures to assure the under frequency trip set point on the EPAs for the RPS were correctly translated into design specifications.

Description: On July 18, 2014, PPL submitted LER 2013-009 detailing two Unit 1 'A' train alternate RPS EPAs which were found on October 30, 2013, to have under frequency trip set points outside the TS allowable value. PPL reported this event as a condition that could have prevented the fulfillment of the safety function of the RPS electrical power monitoring system, a common cause inoperability of independent channels in a single system and a condition prohibited by TS. Specifically, between September 21, 2011 and October 30, 2013, the 'A' train alternate RPS EPAs were in service and required to be operable for approximately 33 days.

Each RPS trip system is protected by EPAs, placed in series on each motor-generator setoutput and on each alternate power source, for a total of eight EPAs per unit. An EPA consists of trip components which disconnect circuitry from input power whenever voltage or frequency exceeds their normal tolerance. The EPA consists of a circuit breaker with undervoltage release and a printed circuit card. The EPAs are the Class 1E interface between the non-safety related RPS power supplies and the safety-related RPS loads designed to prevent the reactor from operating under unsafe or potentially unsafe conditions.

Inspectors reviewed the calibration history of the sixteen (eight per unit) RPS EPAs and identified four times since 2002 that a single EPA drifted to less than the TS required trip frequency. Inspectors reviewed the vendor design specification, Spec-22A3056 – "Reactor Protection System," and noted it stated, in part, "The protective devices shall

be set to trip, accounting for not only instrument drift and inaccuracies ... whenever the frequency is outside the range of -5 percent of 60 Hz.” Inspectors also reviewed the vendor Operation and Maintenance Instructions for the EPA (IOM641) which specified an expected drift range of + or – 0.2 Hz. Contrary to the IOM, PPL’s design calculation, EC-SOPC-0501 – Relay Settings for EPAs, allowed an as-left calibration range of 0.05 Hz above the set point and would allow the under frequency trip set point to drift below the minimum TS allowable setpoint of 57 Hz. Inspectors questioned the discrepancy and PPL initiated CR-2014-28492. A prompt operability determination (POD) was performed by PPL for all EPAs based on their last as-left under frequency set points and concluded that reasonable assurance of operability was maintained based on a drift of greater than 0.1 Hz is not typical. The POD directed a design review of allowed as-left calibration bands.

On December 5, 2014, PPL completed their design review and concluded based on historical operating data from 2003 to 2014 that the vendor designed drift value of the under frequency set point of + or – 0.2 Hz was valid. PPL updated EC-SOPC-0501 to require the as-left under frequency set point to be 57.20 – 57.25.

On December 8, 2014, inspectors questioned the existing POD given that the new design calculation did not support the statements in the POD. PPL maintained that the reasoning in their POD remained valid and scheduled under frequency trip calibrations on all EPAs that had as-left set point values less than 57.2 Hz to align with the new design calculation. On December 11, 2014, PPL conducted under frequency calibrations on the Unit 1 EPAs and identified drift values outside the POD expected 0.1 Hz. PPL declared the inservice power supplies with EPAs that had under frequency as-left set points less than 57.2 Hz inoperable. Subsequently, PPL completed all calibrations to the new band of 57.2 – 57.25Hz and declared the applicable power supplies operable. Of the fourteen calibrations performed, 6 had drifted outside the 0.1 Hz band discussed in the POD but none had drifted below the TS allowable value of 57 Hz.

Analysis: Not establishing measures to assure the under frequency trip set point on the RPS EPAs were correctly translated into design specifications, as revealed by under frequency set point drifts outside of TS allowable value, was a PD which was reasonably within PPL’s ability to foresee and correct, and was a violation of 10 CFR 50, Appendix B, Criterion III, “Design Control.” The PD was determined to be more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the capability of the system that responds to initiating events to prevent undesirable consequences (i.e., core damage). The item is similar to example 3.j in NRC IMC 0612, Appendix E, “Examples of Minor Issues.” This example states, in part, that it is not minor if the engineering calculation error results in a condition where there is now reasonable doubt on the operability of a system or component. The design calculation of record allowed a drift band of 0.05 Hz which was insufficient to prevent instrument drift outside the TS acceptance value. Engineering performed a POD which accepted 0.1 Hz drift as acceptable based on historical data. Once a design review was performed, it was determined that the vendor specified drift value of 0.2 Hz was verified as accurate based upon historical data thus, a reasonable doubt of operability existed.

In accordance with NRC IMC 0609, Attachment 4, "Initial Characterization of Findings," Table 2, "Cornerstones Affected by Degraded Condition or Programmatic Weakness," the issue was determined to affect the Reactivity Control Systems Degraded subsection of the Mitigating Systems cornerstone. Per IMC 0609, Appendix A, "The SDP for Findings at Power," Exhibit 2, "Mitigating Systems Screening Questions," subparagraph C, the inspectors and a Region I senior reactor analyst (SRA) determined that a detailed risk evaluation was needed to assess the safety significance of this finding. The SRA used SAPHIRE Revision 8.1.0 and the SPAR Model for Susquehanna Unit 1, Version 8.23, to conduct an evaluation of the safety significance of this finding. The SRA determined that the RPS EPAs are not modeled in SPAR. Accordingly, the SRA conducted a bounding analysis using conservative assumptions and modeling changes to approximate the worst case increased risk associated with the degraded condition of the 'A' train of RPS. The SRA made the following assumptions to estimate a conservative upper bound to the risk consequence of the EPA relay setpoint drift:

- Basis event RPS-SYS-ELECT, "RPS Trip System Electrical Failures," was set to 1.0 or failed
- The exposure time was capped at six days based upon the longest period of time the alternate EPA breakers were known to be in service in the latter half of the calibration cycle (two years). 2014 calibration checks identified that all relays remained in calibration when in service for one year.

Based upon the above assumptions, the calculated delta core damage frequency (CDF) for this condition was high E-7. The SRA also performed a sensitivity assessment to determine the importance of lesser changes in RPS electrical system reliability (failure probabilities less than total system failure or 1.0. By increasing the nominal RPS-SYS-ELECT failure probability (3.8E-6) by factors between 100 to 10,000 times higher, the delta CDF ranged between 3E-10 to 3E-8; still well below the Green-White threshold. Because the internal events bounding analysis was overly conservative, the SRA determined that it was not appropriate to consider external events contributions or large early release factor. This finding was determined to be Green.

The finding was determined to have a cross-cutting aspect in the area of Problem Identification and Resolution, Evaluation, in that, PPL did not thoroughly evaluate issues to ensure resolutions addresses causes commensurate with their safety significance. Specifically, PPL did not thoroughly investigate and evaluate the causes of EPA under frequency set point drift outside the TS allowable values after three EPAs under frequency trip set points drifted below the TS allowable value in 2013. [P.2]

Enforcement. Title 10 CFR 50, Appendix B, Criterion III, "Design Control," the design basis for structures, systems, and components will be translated into specifications, drawings, procedures, and instructions and design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of simplified methods, or by performance of a suitable testing program.

Contrary to the above, prior to December 2014, PPL did not adequately translate design basis information into specifications, drawings, procedures, and instructions, and verify the adequacy of the design by the performance of design reviews. Specifically, PPL did not establish an appropriate as-left calibration value for the RPS EPA under frequency trip point that ensured the protection of the components connected downstream of the



RPS bus during an under frequency condition below their design qualification. This resulted in a violation of TS 3.3.8.2 because both 'A' train alternate power supplies and EPAs were inoperable three times between March 2012 and October 2013 for longer than the TS limiting condition for operation (LCO) and the required actions were not taken.

Because of the very low safety significance of this finding and because the finding was entered into PPL's CAP as 2014-28492 and CR-2014-37665, this violation was treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000387; 388/2014005-04, EPA Breaker Under Frequency Setpoint Drift)**

.4 (Closed) LER 05000387/2014-002: Secondary Containment Door Found Ajar

a. Inspection Scope

On February 12, 2014, PPL identified a secondary containment boundary door sign wedged between the door and its frame thereby not allowing the door to fully close. The subject door was required to be closed in order to maintain secondary containment integrity in accordance with TS 3.6.4.1, Secondary Containment. This condition was identified shortly after the secondary containment configuration was realigned. PPL immediately closed the door and restored secondary containment and documented the issue into their CAP under CR-2014-04709. The LER was submitted in accordance with 10 CFR 50.73(a)(2)(v)(C) as an event or condition that could have prevented the fulfillment of the safety function of secondary containment.

The LER was reviewed for accuracy, the appropriateness of corrective actions, historical equipment OE, violations of requirements, and generic issues. This LER is closed.

b. Findings

A licensee-identified NCV of TS 5.4.1a was identified and is documented in Section 4OA7 of this report.

4OA5 Other Activities

.1 Operation of an Independent Spent Fuel Storage Installation (ISFSI) at Operating Plants (60855 and 60855.1)

a. Inspection Scope

The inspectors observed and evaluated PPL's loading of the second (October 13 – 17, 2014) and fourth (November 3 – 6, 2014) canisters associated with PPL's current ISFSI dry cask campaign. The inspectors verified compliance with the Certificate of Compliance (CoC), TS, regulations, and PPL procedures. The inspectors also reviewed PPL's activities related to long-term operation and monitoring of the ISFSI.

The inspectors observed and evaluated PPL's cask processing operations including: loading of fuel into the dry shielded canister (DSC), heavy load movement of the transfer cask and loaded DSC from the spent fuel pool to the refuel floor equipment pit area, decontamination and surveying, blowdown, vacuum drying, helium backfilling, welding

operations, non-destructive examinations (dye penetrant tests), and movement of the loaded transfer vehicle to the ISFSI pad. During performance of these activities, the inspectors evaluated PPL's adherence to site procedures, supervisory oversight, and communication and coordination between the personnel involved.

The inspectors reviewed RP procedures and RWPs associated with the ISFSI loading campaign. The inspectors also reviewed the ALARA goal for the cask loading to assess the adequacy of PPL's radiological controls and to ensure that radiation worker doses were ALARA, and that project dose goals could be achieved. The inspectors reviewed radiological survey records from the current and previous loading campaigns to confirm that dose rate levels measured on the cask were consistent with values specified in the TS.

The inspectors reviewed PPL's program associated with fuel characterization and selection for storage. The inspectors reviewed cask fuel selection packages to verify that PPL was loading fuel in accordance with the CoC, TS and site procedures. In addition, the inspectors independently verified the cask loading of selected fuel bundles via review of the digital recordings.

The inspectors reviewed PPL's 10 CFR 72.48 screenings to verify that PPL had appropriately considered the conditions under which they may make changes without prior NRC approval. The inspectors reviewed revisions to the 10 CFR 72.212 report. The inspectors also reviewed corrective action reports, audit reports, and self-assessments that were generated since PPL's last loading campaign to ensure that issues were being properly identified, prioritized, and evaluated commensurate with their safety significance.

The inspectors performed a walk-down of the heavy haul path and toured the ISFSI pad to assess the material condition of the pad and the loaded horizontal storage modules, and verified that PPL appropriately performed surveillances in accordance with TS requirements. The inspectors verified that transient combustibles were not being stored on the ISFSI pad or in the vicinity of the loaded casks. Environmental reports were reviewed to verify that areas around the ISFSI site boundary were within the limits specified in 10 CFR Part 20 and 10 CFR 72.104. The inspectors confirmed that vehicle entry onto the ISFSI pad was controlled in accordance with PPL's procedures.

b. Findings

No findings were identified.

.2 Follow-Up Inspection On Corrective Actions For Three Severity Level IV Traditional Enforcement Violations in Radiation Protection Procedures in a 12-Month Period (92723 - 1 sample)

a. Inspection Scope

Between January 1 to December 31, 2013, the NRC issued PPL three SL IV traditional enforcement violations associated with wrongdoing. The violations included one Notice of Violation (NOV) (05000387; 388/2013-03) and two NCVs (05000387; 388/2013-01 and 02) associated with radiation protection procedure adherence. The NRC informed PPL of the intent to conduct this inspection via an Annual Assessment letter dated

March 4, 2014 (ML 14058A340) and conducted the inspection to review the corrective actions for these violations.

The inspectors reviewed the associated Common Cause Analysis Report for the three willful violations of radiation protection procedures documented in CR-2014-26335, and Root Cause Evaluation for CR 1392500, "Radiologically Controlled Area (RCA) Egress," to ensure that: the causes of the multiple SL IV traditional enforcement violations were understood by PPL; the EOC and extent of cause were identified; and to ensure that PPL's corrective actions were sufficient to address the underlying causes.

The inspectors also reviewed a list of radiation protection related CRs for corrective actions and reportability, and to evaluate whether the issues were reported at the appropriate threshold. The inspectors also reviewed selected procedures and interviewed station personnel from radiation protection, field services, facilities, operations, engineering, and licensing to assess the effectiveness of implemented corrective actions. In addition, the inspectors performed a walkdown of the Units 1 and 2 radiologically controlled areas and plant exit monitors to verify implementation of applicable corrective actions.

b. Findings and Observations

No findings were identified.

The PPL analysis identified the following four common causes:

- Less than adequate understanding of radiation safety and standards;
- Perceived, self-imposed time pressure;
- All of the willful violations involved contract workers; and
- Less than adequate procedure use and adherence of information use procedures.

The inspectors verified that PPL has implemented numerous corrective actions including:

- Procedures revisions, and revision of plant specific site access training (GET01); increased emphasis on procedure use and adherence and personnel awareness of radiation protection procedures and requirements; training to include discussion of associated consequences for the individual and the station associated with willful misconduct and record falsification; and implementation of related periodic refresher training
- Added requirements to close RCA egress points when not staffed
- Installed positive barriers (swing-arms) on the site exit radiation/portal monitors to prevent workers from leaving the site when the radiation/portal monitor alarms
- Installed a telephone on the site exit area and a sign to indicate that HP is to be called in the event of a second portal monitor alarm

The inspectors determined that PPL evaluated each issue appropriately, developed appropriate corrective actions, and implemented those actions in a timely manner. Notwithstanding, the inspectors noted that three other events (CR-1734447, CR-2014-35871, and CR-2014-13031) involving workers not following radiation protection procedures and /or requirements that had occurred since September 25, 2013 when the

NRC issued the three SL IV willful violations. The inspectors observed that these issues had not been included in the PPL common cause analysis report documented in CR 2014-26335, however, the issues were assessed as not being sufficiently similar to those evaluated in the common cause. Therefore, the inspectors did not identify any issues of concern with the scope of issues evaluated under CR 2014-26335.

The inspectors evaluated CR-1734447, CR-2014-35871, and CR-2014-13031 for significance in accordance with the guidance in IMC 0612, Appendix B, "Issue Screening," and Appendix E, "Examples of Minor Issues." The inspectors determined these issues were deficiencies of minor significance since there were no overexposures or spread of contamination outside of the RCA boundary. Therefore, these deficiencies were not subject to enforcement action in accordance with the NRC's Enforcement Policy.

Finally, during review of CR-2014-13031, the inspectors observed that the CR had not been properly revised to include updated information identified by PPL during their investigation of the issue. PPL entered the inspector's observations into the CAP as CR-2014-35871.

.3 (Updated) NOV 05000387; 388/2014009-04, Failure to Take Action to Restore Degraded Emergency Action Level Scheme (92702)

The NRC documented NCV 05000387; 388/2013005-04, Inadequate Instrumentation to Implement EALs for Fission Product Barrier Degradation, in February 2014, when we determined that the lack of installed temperature indication in nine out of 21 specified areas in the Susquehanna EALs had the potential to impact the declaration of emergency classifications. In a follow-up inspection, the NRC documented NOV 05000387; 388/2014009-04, in August 2014, because PPL had failed to restore compliance or demonstrate objective evidence of plans to restore compliance in a reasonable period of time. In order to restore compliance, PPL developed plans to implement NEI 99-01, Revision 6, EAL scheme, which removes the requirement for temperature indication in all of the specified 21 areas. Because the NEI 99-01, Revision 6, EALs will not be implemented at Susquehanna until sometime in mid-2016, PPL developed compensatory actions to maintain the adequacy of the current EAL scheme.

During this inspection period, the inspectors reviewed these compensatory actions to assure their adequacy. The compensatory actions included increased monitoring of the nine areas lacking instrumentation by equipment operators conducting their tours of the reactor building, and the provision of portable temperature monitors in cabinets proximate to those nine areas. The inspector reviewed Hot Box 14-37, which notified equipment operators of the location of the portable temperature monitors and the process for determining any elevated temperatures, and Equipment Operator Tour 34 instructions, which directed specific direction to assess elevated temperature in any of the nine un-monitored areas. The inspector further interviewed members of the Operations staff to assure their familiarity with and knowledge of the Hot Box and Tour 34 expectations. The inspectors concluded that the implemented compensatory actions were adequate to provide for the timely implementation of the current Susquehanna EAL scheme. The permanent corrective actions will be assessed during an upcoming NRC inspection.

#### 4OA6 Meetings, Including Exit

On January 23, 2014, the inspectors presented the inspection results to J. Frank, SVP, and other members of the PPL staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

#### 4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by PPL and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

##### .1 Multiple Inoperable Main Steam Safety Relief Valves

On May 6, 2013, PPL determined that three main steam SRVs did not meet the setpoint criteria of +3%/-5% set forth in TS 3.4.3. PPL reported this condition under LER 05000388/2013-002. PPL determined that this had resulted in a condition prohibited by TS. Specifically, the LCO 3.4.3 states the safety function of 14 SRVs shall be operable while in Mode 1, 2, and 3. If LCO 3.4.3 is not met, action A.1 requires the reactor to be placed in mode 3 within 12 hours and mode 4 in 36 hours. With three of the sixteen main steam SRVs inoperable due to setpoints less than the -5% criteria, LCO 3.4.3 was not met. Contrary to the above, PPL had not recognized the failure of the main steam SRV setpoint criteria until removed and tested during the Unit 2 Refueling and Inspection Outage in May 2013 and, therefore had not taken the required action.

Traditional enforcement applies in accordance with IMC 0612, sections 0612-09 and 0612-13 and Enforcement Policy section 2.2.4.d, because the inspectors did not identify an associated PD. Specifically, the inspectors determined that the failure of main steam SRV setpoint criteria would not have been readily apparent.

This issue was considered to be an SL IV violation of TS 3.4.3 in accordance with Enforcement Policy section 6.1.d. In addition, IMC 0612, Appendix B, Figures 1 and 2, "Issue Screening," were referenced in documenting this SL IV licensee-identified NCV. There was no actual safety consequence and although not considered operable for design conditions the three SRVs would have relieved pressure before exceeding +3 percent. The SRV safety function, described in UFSAR 5.2.2.1.1, to prevent over-pressurization of the reactor coolant pressure boundary, was not adversely impacted. This Severity Level IV licensee-identified NCV was entered into PPL's CAP as CR-1700379.

.2 Secondary Containment Door Found Ajar

On February 12, 2014, PPL identified a secondary containment door (Door 612) between the HVAC room and central railroad bay wedged open by a door sign. In order for secondary containment to be operable in the as-found mode of operation, Door 612 had to be secured. PPL immediately secured the door, entered the condition into their CAP (2014-04709), and reported the condition under LER 50-387; 388/2014-002. Contrary to TS 5.4.1a, PPL did not secure the secondary containment door and maintain system operability in accordance with OP-134-002, RB HVAC Zones 1 and 3 after realignment of the secondary containment. The finding was more than minor because it adversely impacted the barrier performance attribute of barrier integrity and was determined to be of very low safety significance (Green) in accordance with IMC 0609, Appendix A, since the finding only represented a degradation of the radiological barrier function provided by standby gas treatment system.

**ATTACHMENT: SUPPLEMENTAL INFORMATION**

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee Personnel

B. Bishop, General Manger - Maintenance  
J. Borman, Plant Security Manager  
B. Bridge, Effluents Manager  
M. Broski, R/R Program Owner  
E. Camacho, IVVI Program Owner  
T. Case, Senior Engineer  
K. Cimorelli, General Manager - Operations  
S. Davis, Manager, Susquehanna Emergency Preparedness  
R. Day, ISI Program Owner  
J. Diehl, Health Physics Technical Specialist  
G. Durange, Radiation Protection Senior Technician  
M. Dziedzic, Site Level III and IWE/IWL Program Owner  
D. Filchner, Supervisor NRA  
J. Franke, Vice President  
B. Franssen, General Manager Operations  
M. Fuehrer, Refuel Floor Shift Manager  
J. Griswold, Reactor Oversight  
J. Grisewood, Nuclear Regulatory Affairs Manager  
J. Helsel, Plant Manager  
F. Hickey, Health Physicist  
B. Houseknecht, Radiation Protection Foreman  
B. Hyduk, Design Engineer  
T. Jardine, Operations Manager  
S. Jurek, Nuclear Regulatory Affairs  
J. Kanute, Snubber Program Owner  
D. Karchner, Refuel Floor Manager  
J. Lindsley, Radiation Protection Training Coordinator  
D. Lock, Operation Manager  
C. Minor, GE Level III  
J. Mirilovich, Refuel Floor Shift Manager  
K. Murchison, Radwaste Shipper  
A. Nestico, Refuel Floor Shift Manager  
B. O' Rourke, Licensing Engineer  
E. Ortuba, Dosimetry Supervisor  
L. Owen, Radiation Protection Foreman  
S. Peterkin, Radiation Protection Manager  
B. Reppa, General Manager Engineering  
R. Rodriguez, Radiation Protection  
P. Scanlan, Manager Station Engineering  
S. Sienkiewicz, Supervisor Programs and Testing  
A. Soden, Assistant Manager Maintenance  
R. Sopko, Radiation Protection Senior Technician  
R. Steigers, Radwaste Specialist  
C. Torres, Radiation Engineer  
D. Waller, Radiation Operations Supervisor

L. West, Manager Performance Improvement  
 R. Whiteknight, FAC Program Owner  
 L. Winker, Nuclear Safety Specialist  
 M. Yackoski, Supervising Engineer

### LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened/Closed

05000387; 388/2014005-01	NCV	Risk Management Actions Not Implemented (Section 1R13)
05000387; 388/2014005-02	NCV	Emergency Preparedness Drill Critique Did Not Identify a Risk-Significant Planning Standard Weakness (Section 1EP6.2)
05000387/2014005-03	NCV	Failure to Submit an LER (Section 40A3.3)
05000387; 388/2014005-04	NCV	EPA Breaker Under Frequency Setpoint Drift (Section 40A3.3)

#### Closed

05000388/2013-002-00	LER	Inoperable SRVs (Section 40A3.1)
05000388/2013-004-00	LER	Unit 2 RHR Pump Room Flooding (Section 40A3.2)
05000387; 388/2013-009-00	LER	RPS EPA Logic Card Failures (Section 40A3.3)
05000387; 388/2014-002-00	LER	Secondary Containment Door Ajar (Section 40A3.4)
05000387; 388/2014-004-01	URI	Adequacy of Guidance to an Emergency Plan Procedure Change (Section IEP6.2)

#### Discussed

05000387; 388/2014009-04	NOV	Failure to Take Action to Restore Degraded Emergency Action Level Scheme (Section 40A5.3)
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**LIST OF DOCUMENTS REVIEWED**  
(Not Referenced in the Report)

**Section IR01: Adverse Weather Protection**

Procedures:

NDAP-00-1913, "Seasonal/Readiness," Revision 2  
NDAP-00-0030, "Severe Weather Natural Disaster Preparation," Revision 7  
ON-000-002, "Severe Weather/Natural Phenomena," Revision 34  
OP-128/228-005, "Circulating Water Pumphouse Fire Pump Rooms and Water Treatment Acid Storage Room HVAC," Revision 13  
OP-054-001, ESW System, Revision 38  
C1-054-0014, Unit 1 ESW System, Revision 17  
C1-054-0016, Unit 2 ESW System, Revision 25

Condition Reports:

2013-02738, 2014-34229, 2014-34624, 2014-33693, 2014-33666, 2014-33665, 2014-35717, 2014-36451,

Action Requests:

2014-35022, 2014-35789, 2014-35648, 2014-32554

Drawings:

E106216, ESW System, Sheet 1, 2, 4, Revision 50

Miscellaneous:

PCWO 1788112, 1788114, 1679520, 1765789, 1764129, 1762906, 1777404

**Section 1R04: Equipment Alignment**

Procedures:

OP-249-001, RHR System, Revision 43

Drawings:

E105951, Unit 2 RHR Sheet 1 Revision 59  
E105951, Unit 2 RHR, Sheet 2 Revision 45  
E105950, Unit 2 RCIC Turbine Pump, Sheet 1, Revision 31  
E105949, Unit 2 RCIC, Sheet 1, Revision 32

**Section 1R05: Fire Protection**

Condition Reports (\*NRC identified):

2014-35168\*, 2014-35154

Procedure:

01-013-001, "Fire Protection Component Technical Data," Revision 23  
NDAP-QA-0449, "Fire Protection Program," Revision 11  
NDAP-QA-0443, "Fire Watch Procedure," Revision 11  
FP-013-138, "Unit 1 UPS Panel Room C-208, Fire Zone 0-24C," Revision 6  
FP-013-142, "Unit 2 Lower Relay Room C-201 Fire Zone 0-24G," Revision 7  
FP-013-148, "North and Center Cable Chase Fire Zone 0-25D, 025C Elevation 714'," Revision 4

FP-013-150, "Unit 1 Lower Cable Spreading Room C-300 Fire Zone 0-25E Elevation 714',"  
Revision 6  
FP-213-242, "Sump Pump Room 2-15 Fire Zone 2-1G Elevation 645"  
FP-213-241, "RHR Pump Room 'A' 2-14 Fire Zone 2-1F Elevation 645"  
FP-213-247, "Equipment Access Area (2-202, 204, 205) Fire Zones 2-3C-N, 2-3C-W, 2-3C-S  
Elevation 683"  
NDAP-QA-0442, "Control of Ignition Sources, Cutting, Welding, and Hot Work Permits,"  
Revision 8  
NDAP-QA-0440, "Control of Transient Combustible/Hazardous Materials," Revision 17  
FP-213-254, "Fire Zones 2-5A-N, 2-5A-S, 2-5A-W, 2-5H Elevation 749," Revision 8

Drawings:

E205988, Sheet 3, "Units 1 and 2 Control Structure Fire Protection Plan Elevation 698'-0","  
Revision 6  
E205988, Sheet 4B, "Units 1 and 2 Control Structure Heat and Ionization Detector Lower Relay  
Rooms, Plan at Elevation 697'-0"," Revision 0  
E205989, Sheet 3, "Units 1 and 2 Control Structure Fire Protection Plan, Elevation 714'-0","  
Revision 4  
E205989, Sheet 4, "Unit 1 and 2 Control Structure Fire Detector Location Plan Elevation 714'-0"  
to 729'-0," Revision 4  
EC-013-1860, "Handling of Transient Combustibles in the Wrap around Zones and Restricted  
Areas (Red Zones)," Revision 4  
E205961, Sheet 1, "Unit 2 RB Fire Zone Plan Elevation 749-1," Revision 15  
E205961, Sheet 3, "RB Fire Protection Plan," Revision 9

Miscellaneous:

Fire Protection Review Report Volume I, Units 1 and 2

**Section 1R06: Flood Protection Measures**

Condition Reports:

AR-1398404, AR-1398163

Procedures:

NDAP-QA-1163, "Structured Monitoring Program," Revision 3

Drawings:

E107562, "Susquehanna Units 1 and 2 Manholes and Duct Banks," Sheet 1, Revision 36

**Section 1R11: Licensed Operator Requalification Program**

Procedures:

2015-01-SA2, "EOP102 with a RFPT bearing high temp," Revision 0  
JIT-OP-1418, "U1 November Drywell Leak Outage SD JITT," Revision 1  
GO-100-005, "Plant Shutdown to Hot Cold Shutdown," Revision 61

**Section 1R12: Maintenance Effectiveness**

Procedures:

NDAP-QA-0702, "Action Request and Condition Reports Process," Revision 32  
NSEP-AD-0413A, "MR Scoping," Revision 0;  
NSEP-AD-0413B, "MR Safety Significance Classification," Revision 0;  
NSEP-AD-0413C, "MR Performance Criteria Selection", Revision 0;  
NSEP-AD-0413A, "MR Performance Monitoring," Revision 1

NSEP-AD-0413E, "MR Dispositioning Between A1 and A2," Revision 0;  
NSEP-AD-0413H, "MR Performance Indicators," Revision 1

Condition Reports:

2014-09025\*, 2014-28299, 2014-28171, 2014-28299, 2014-28134, AR-2013-04899,  
2014-28135, 2014-24217, 2014-29602, 2014-39063, 2014-39063, 2014-35717,  
2014-35918, 2014-36103, 1667552 1680817, 2013-3591,

Drawings:

E106213, "Condensate & Refueling Water Storage," Revision 58  
FF170018, "Nelex Heater Installation Panels 0CB517, 0CB518 & 0CB590," Revision 4

Work Orders: 1695103, 1812245, 1844916, 1662901, 1662649, 1822987, 1812086

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

Condition Reports (\*NRC identified):

2014-34344\*, 2014-34374\*, 2014-35235\*, 2014-35270\*, 2014-35168\*, 2014-35160\*,  
2014-35154\*

Procedures:

01-013-002, "Fire Risk Management," Revision 2  
NDAP-QA-0326, "Operations with Potential for Draining Reactor Vessel," Revision 18  
NDAP-QA-1902, "Integrated Risk Management," Revision 16, 17  
NDAP-QA-1904, "Low Power and Shutdown Risk Management Program," Revision 4  
NDAP-QA-0442, "Control of Ignition Sources, Cutting, Welding, and Hot Work," Revision 8  
NDAP-QA-0340, "Protected Equipment Program," Revision 25  
PSP-26, "On-line and Shutdown Nuclear Risk Assessment Program," Revision 13

Work Orders:

2WO 1850629, "01-013-002 High Risk Fire Impairment RMA's For '2B' RHR 005 For  
Maintaining SOW (HV 251F047B) HX Inlet 005 For 62 Hours"  
2WO 1855055, "Additional Fire Risk Compensatory Actions Required Due to Combustible  
Material Identified During Unit 2 Division 2 RHR SOW"

Work Orders:

1811085

Miscellaneous:

PPL EOOS Risk Screening Unit 1, December 12, 2014

**Section 1R15: Operability Evaluations**

Procedures:

10m 716, "Stand-by Liquid Control System Explosive Valve," Revision 3  
S0-200-001, "Monthly Remote Shutdown Panel Instrumentation Channel Checks," Revision 21  
performed on October 7, 2014  
SE-159-031, LLRT of RHR Shutdown Return Penetration Number X-13A, Revision 13  
OP-149-002, RHR Shutdown Cooling, Revision 65  
SM-158-003  
SM-158-002  
SM-258-003  
SM-258-002

Condition Reports (\*NRC identified):

2014-31046, 2014-31046, 2014-32327, 2014-33783\*, 2014-33847\*, 2014-38211, 1253296, 2014-28492\*, 2014-37665, 2014-26131

Action Requests:

2014-38309

Work Orders:

635987            1281815            1570808            836142

Drawings:

FF121010, Sheet 3603 "Stand-by Liquid Control," Revision 16  
93-13738, Weld Ends Pressure Seal Flex Wedge Stainless Steel Gate Valve, Revision D  
E106256, Unit 1 RHR, Sheet 1, Rev. 69

Miscellaneous:

EC-VALV-0569, Design Basis Development for Priority 1 MOVs, Revision 22

**Section 1R18: Permanent Plant Modifications**

Action Requests:

AR-2013-06465

Miscellaneous:

EC-1687569, "U2 RHRSW FLEX Distribution Manifolds," Revision 1  
EC-PIPE-16365, "Addition of RHRSW FLEX Distribution Manifolds in Unit 2, Fukushima Mitigating Strategies," Revision 1

**Section 1R19: Post-Maintenance Testing**

Condition Reports (\*NRC identified):

2014-33537, 2014-36964, 2014-36453, 2014-36858, 2014-36832, 2014-36787, 2014-36865, 2014-36984, 2014-37067, 2014-37100, 2014-37118, 2014-38163, 2014-37848, 2014-38205, 2014-37846, 2014-38057, 2014-38576, 2014-38153, 2014-38351, 2014-38581, 2014-38584, 2014-38583

Procedure:

IC-024-003E, "Engine Control Parameter Checks/Monitoring And 2301A Electronic Tune-ip  
OP-252-001, "HPCI System," Revision 55  
Procedure for Diesel Generator Governor E," Revision 2  
SO-150-005, "24 Month RCIC Flow Verification," Revision 1  
SO-251-A02, "Quarterly Core Spray Flow Verification, Division I," Revision 23 (performed on 10/8/14)  
SO-250-002, "Quarterly RCIC Flow Verification," Revision 46  
SO-252-002, "Quarterly HPCI Flow Verification," Revision 59  
TP-024-149, "Diesel Generator "E" Restoration," Revision 8  
TP-164-045, "Local System Leakage Test of Reactor Recirc Loops A & B," Revision 5  
TP-252-006, "HPCI Overspeed Trip Testing Using Auxiliary Steam," Revision 19  
PSP-29, "Post-Maintenance Testing Matrix," Revision 19  
MT-AD-522, "Repair Alteration and Replacement of ASME Code Components," Revision 12  
NDAP-QA-0480, "ASME Section XI System and Component Pressure Testing," Revision 9

TP-024-149, "Diesel Generator "E" Restoration," Revision 8  
IC-024-003E, "Engine Control Parameter Checks Monitoring and 2301A Electronic Tune-up  
Procedure for Diesel Generator Governor E," Revision 2

Drawings:

E105952, Sheet 1, "P&ID Core Spray," Revision 27  
E105955, "Unit 2 HPCI," Revision 45  
E105950, "Unit 2 RCIC Turbine Pump," Revision 31  
E105949, "Unit 2 RCIC," Revision 32  
E106248, "Unit 1 Reactor Recirculation," Revision 1  
FF62000, "2 inch – 1500 lb Y-Globe Valve Socket Ends, Carbon Steel, Threaded Backseat for  
SMB-000-5 Limitorque Actuator," Sheet 151, Revision 2

Work Orders:

1832275, 1855080, 1724914, 1864235, 1863357, 1854572, 1864102, 1866202, 1855080

Miscellaneous:

EC-037-1006, "Determination of Minimum Pressure Required to assure ECCS and RCIC pump  
discharge lines are filled with water," Revision 2  
IOM179, "5500 Series Motorized Valves," Revision 1

**Section 1R20: Refueling and Other Outage Activities**

Condition Reports (\*NRC identified):

2014-37833, 2014-37840, 2014-37842, 2014-37846, 2014-37848, 2014-37849, 2014-37852,  
2014-37861, 2014-38157, 2014-38168, 2014-38205, 2014-38207

**Section 1R22: Surveillance Testing**

Procedures:

SI-278-241, "Functional Test of Average Power Range Monitor 21 (Mode 1)," Revision 5,  
performed on November 3, 2014  
SM-213-015, "3 year inspection, level/weight measurement, and pressure/flow verification  
of halon cylinders," Revision 5  
SO-100-006, Shiftly Surveillance Operation Log, Revision 94  
SO-030-A01, "Monthly Control Room Emergency Outside Air Supply System A Operability  
Test," Revision 2

Condition Reports (\*NRC identified):

2014-34411\*, 2014-30563, 2014-38769, 2014-34700, 2014-35258, 2014-35428

Action Requests:

Work Orders:

1806676, 1806677, 1860378, 1857270, 1854814, 1088922

Miscellaneous:

GEK – 83263A  
EC-013-1913, "PGCC Halon Systems for the Unit 1 & 2 Upper and Lower Relay Rooms,"  
Revision 0

## **Section 1EP6: Drill Evaluation**

### Drill Reports

2014 Biennial Exercise Report, performed 10/21/2014

2014 Blue Team HP Drill, performed 7/24/2014

2013 White Team Drill Report, performed 6/25/2013

2013 Biennial Exercise Report, performed 2/26/2013

### Miscellaneous

Emergency Notification Report Forms for EP Drills and Exercises, dated 7/24/14, 11/13/14, 6/28/11, 6/30/14, 3/06/14, 2/24/14, 4/09/13, 11/13/12, 2/26/13, 6/25/13 2/7/12, 6/17/14, and 9/13/11

Root Cause Analysis Report, Incorrect Reporting of Performance Indicator Opportunities, dated November 11, 2014

### Action Requests

1430293      1641911      1464865

### Procedures

EP-PS-001, Attachment QQ, "Radiological Release in Progress Guidance," Revision 4

EP-PS-001, Attachment SS, "Radiological Release in Progress Guidance," Revision 1

EP-AD-000-511, Tab 19, "Radiological Release in Progress Guidance," Revisions 2, 3, and 4

EP-RM-004, EAL Classification Bases, Revision 2

### Condition Reports:

2014-37383, 2014-37491, 2014-37501, 2014-37475, 2014-37432, 2014-37577, 2014-37587, 2014-37481, 2014-24242, 2014-26136

## **Section 2RS1: Radiological Hazard Assessment and Exposure Controls**

### Procedures

HP-TP-310, Barricading, Posting, and Labeling, Revision 41

HP-TP-500, Health Physics Radiological Survey Program, Revision 47

HP-TP-602, Free Release Surveys, Revision 30

HP-TP-720, Airborne Concentration Sampling and Evaluation, Revision 38

NDAP-QA-0626, Radiologically Controlled Area Access and RWP System, Revision 33

### Condition Reports

2014-33010; 2014-33483

## **Section 2RS2: ALARA Planning and Controls**

### Procedure

NDAP-QA-1191, ALARA Program and Policy, Revision 20

HP-AL-400, RWP ALARA Reviews and Evaluations, Revision 17

### RWPs/ALARA Reviews

Dry Fuel Storage ALARA Plan, 10/25/2014

2014-0053 Clean and Inspect Unit 1 & Unit 2 FPC Heat Exchangers

2014-0058 Spent Resin Tank OT324 Work

2014-0087 Unit 2 Condensate Filtration Filter Changeout and Support to Include Turbine And Radwaste Buildings

Condition Reports

2014-04616

**Section 2RS3: In-Plant Airborne Radioactivity Control and Mitigation**

Procedures

HP-TP-118, Use of the Eberline AMS-4, Revision 9

HP-TP-240, Use and Operation of Portable Ventilation Units, Revision 19

HP-TP-720, Airborne Concentration Sampling and Evaluation, Revision 38

**Section 2RS4: Occupational Dose Assessment**

Procedures

HP-TP-223, Internal Dose Investigations and Evaluations, Revision 13

NDAP-QA-0625, Personnel Radiation Exposure Monitoring Program, Revision 13

**Section 2RS8: Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation**

Procedures:

NDAP-QA-0646, Solid Radioactive Waste Process Control Program, Revision 13

WM-PS-150, 10 CFR 61 Non-Process Waste Stream Sampling, Revision 2

WM-PS-155, 10 CFR 61 Sample Shipping and Correlation Factor Determination, Revision 5

WM-PS-160, Rad Waste Curia Calculations, Revision 5

Training Materials:

HP230, HAZMAT Training for Health Physics Technicians, Revision 2

HS053, HAZMAT Training for Material Handlers, Revision 2

EF009, Load Securement Training, Revision 3

Condition Reports:

1667946, 2014-02959, 2014-01216, 2014-02948, 2014-27642, 1651101, 1652754, 1672456, 1688323, 1667890, 1743024, 1741335, 2014-31847, 2014-31848, 2014-31849, 2014-31850, 2014-31852, 2014-31853

Teledyne Brown Engineering Report of Analysis for: Dry Active Waste; Bead Resin; Reactor Water Clean-Up; Liquid Radwaste Filter Media; Control Rod Drive; Condensate Filter System Backwash Filter Media; U-2 Spent Fuel Pool Smears; "B" Reactor Water Clean-Up Phase Separator; U-1 Spent Fuel Pool Smears; Chem Waste Bead Resin

Shipments: 2014-013; 2014-023; 2014-029; 2014-030; 2014-040

NUPIC Audit No. 23201, Energy Solutions, November 2012

Nuclear Oversight Audit No. 1519828, "Radiation Protection & Solid Radwaste," February 2013

**Section 40A1: Performance Indicator Verification**

Procedures:

NDAP-QA-0737, "ROP Performance Indicators," Revision 14  
NSEI-AD-403, "Preparation and submittal of monthly operating report and NRC PI data,"  
Revision 5

Condition Reports (\*NRC identified):

2013-03391, 2014-06256, 2013-03219, 2014-07916

Miscellaneous:

PL-NF-06-002, "SSES Mitigating System Performance Index Basis Document," Revision 8  
ESW MSPI Job Aid, Revision 4

**Section 40A2: Identification and Resolution of Problems**

Procedures:

MT-GM-050, Limatorque Type SMB 000-4 and Type SMB-3 Operator Maintenance, Revision 24  
NDAP-QA-0017, MOV Program, Revision 13  
NEIM-00-1185, Pipe Corrosion Program Implementation, Revision 1  
NEPM-QA-1170, Through Wall Leakage in Class 3 Raw Water Systems, Revision 3  
Specification H019, The Inspection Program for Pipe Corrosion and Degradation, Revision 3  
NDAP-QA-1218, Temporary Changes, Revision 14

Condition Reports (\*NRC identified):

2014-13303; 2014-13302; 2014-13295; 1641555; 1625705; 1567824; 1562326; 1544737;  
1372081; 1646629; 1710287; 1710961; 1710964; 1710966; 1710291; 1719731; 1731864;  
2014-11597; 2014-30991; 2014-34152; 2014-31449

Work Orders:

1742074      1652794

Drawings:

E106215, Sheet 1, Revision 43, E162639, Sheet 1, Revision 44, E106258, Sheet 1, Revision 42  
E106291, Sheet 1, Revision 42, E106216, Sheet 2, Revision 53, E106216, Sheet 3,  
Revision 24,  
E106216, Sheet 4, Revision 4, E162640, Sheet 1, Revision 45, E162640, Sheet 2, Revision 7,  
E106291, Sheet 1, Revision 42, E106291, Sheet 2, Revision 14, E106291, Sheet 3, Revision 9,  
E106291, Sheet 4, Revision 8, E106214, Sheet 2, Revision 16, E162638, Sheet 2,  
Revision 13,  
E105953, Sheet 1, Revision 32

Technical Reports:

Health Scorecard Report 2014-Q2 for the Pipe Corrosion Program  
Health Scorecard Report 2014-Q2 for the Emergency Service Water System  
Engineering disposition AR-2014-31039, Evaluate UT Data  
NDE RPT #: BOP-UT-14-118 for HRC106-1 leak, dated 10/04/2014



Miscellaneous:

Limiterorque Technical Update 14-01, SMB-000 'C Style' Torque Switch Product Release, dated 8/25/14

ASME Section XI, Code Case N-513-3, "Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping, Section XI, Division 1"

**Section 4OA3: Event Followup**

Procedures:

NDAP-QA-1221, "Managing Design and Operating Margins", Revision 3

CC-13, "Margin Management Program Description", Revision 0

Condition Reports:

1700379, 2013-02219, 2014-02581\*, 2014-28492\*, 2014-37665, 2014-17112\*,

Miscellaneous:

IOM641, "EPA Breakers for Reactor Protection System," Revision 6

DBD021, "Design Basis Document for Reactor Protection System," Revision 3

SPEC-22A3056, "Reactor Protection System," Revision 4

EC-SOPC-0501, "Relay Settings for EPAs," Revision 2

EC-SOPC-0501, "Relay Settings for EPAs," Revision 3

**Section 4OA5: Other Activities**

Action Request Reports:

2014-25693, 31240, 31337, 32423, 32458, 33613, 33649, 33706, 33713, 33717

Audits, Self-Assessments, and Surveillances

Root Cause Analysis for CR1392500, Radiologically Controlled Area (RCA) Egress, Revision 4

Common Cause Analysis Report CR-2014-26335, Willful Violations of Radiation Protection Procedures, Revision 0

Final and Second Interim Effectiveness Review of CR 1392500 (CRA 1440661)

Susquehanna Error Prevention Team Assessment Report CR-2014-07656

Condition Reports:

1540514, 1655897, 1660503, 1685793, 2013-01925, 07786, 32062, 32062, 32065, 32067, 32205, 32469, 32479, 32705, 1392500, 1402683, 1411389, 1450581, 1468939, 1481967, 1487595, 1522187, 1550619, 1655241, 1667689, 1734447, 2013-02104, 2014-07656, 2014-11805, 2014-13031, 2014-24738, 2014-26335, 2014-33937, 2014-35871, 1727229, 2014-05421

Design and Licensing Basis Documents

72.48 Screen, 2003-1893

10 CFR 72.12 Evaluation, Revision 5

CoC 72-1004, Certificate No. 1004, Revision 10

Updated Final Safety Analysis Report (UFSAR) for the Standardized NUHOMS Horizontal Modular Storage System for Irradiated Nuclear Fuel

Completed Surveillance and Functional Testing

1H213, Inspect 1H213 Crane for Proper Operation, completed August 15, 2014  
M8672-01 0S292 – PM Dry Fuel Storage Transfer Cask Lifting Yoke (DFS), completed July 30, 2014  
M1040-01, Perform Inspection RB Crane 1H213, completed 8/15/2014  
NDE-PT-001, Report No. BOP-PT-14-295, Root Pass Weld for Inner Top Cover Plate, 10/14/2014  
NDAP-QA-0507, Conduct of Refuel Floor, Revision 26  
NDAP-QA-1902, Risk Management Actions Planning Sheet, completed 10/08/2014  
NDAP-QA-0322-14, Completed Attachments, G-7/02/14, H-8/12/14, J-7/07/14, and M-7/01/14  
Completed Clearance Manipulation, 2014-0882 (7/21/14), 2014-0887 (7/23/14), and 2014-0923 (8/08/14)  
Receipt Inspection Report, RIR No. 21796, 2/06/2014  
SM-199-003, RB Crane 1H213 Travel Restriction Check completed 10/13/14

Miscellaneous

AREVA letter dated October 20, 2014, “Technical Specification 1.2.12 Maximum DSC Removable Surface Contamination”  
2013 Dry Fuel Storage Project, Completion Review Self-Assessment  
2014 Dry Fuel Storage (DFS) Campaign, Preparation, Support and Commitment to a successful DFS Campaign  
2014 Dry Fuel Storage Foreign Material Exclusion Plan  
Various completed Form 314s, Area Survey Map  
Various Gamma Spectrum Analysis reports for DPS Annulus water  
NRC Inspection Report 05000387; 388/2013013; and Notice of Violation dated 9/25/13  
ML 14058A340, NRC Annual Assessment Letter for Susquehanna Steam Electric Station Units 1 and 2 report 05000387/2013001 and 05000388/2013001, dated 3/04/14  
Hot Box 14-37  
Equipment Operator Logs, Tour 34

Procedures

HP-TP-320, Radioactive Work Permits, Revision 26  
HP-TP-443, Use of Radiation Detection Equipment, Revision 35  
HP-TP-500, Health Physics Radiological Survey Program, Revision 47  
HP-TP-511, Hot Particle Controls, Revision 24  
ME-ORF-023, Dry Fuel Storage – 61BT(H) Dry Shielded Canister, Revision 28  
ME-ORF-152, Dry Fuel Storage Response to Crane/Rigging Transfer Equipment Malfunction and Certificate of Compliance Technical Specification Requirements, Revision 3  
ME-ORF-179, Dry Fuel Storage Equipment List and Reference Information, Revision 13  
NDAP-QA-0620, Conduct of Health Physics, Revision 14  
NDAP-QA-0658, Dry Fuel Storage Program, Revision 10  
NDAP-QA-0442, Hot Work Permit, Revision 8  
NDE-LT-001, Vendor Originated Procedure: Helium mass Spectrometer Leak Test Procedure for Dry Fuel Storage Casks, Revision 2  
NDE-PT-001, Color Contrast Liquid Penetrant Examination, Revision 04  
NEPM-QA-1154, Procedure for the Nuclear Department NDE Training, Qualification and Certification Program, Revision 9  
PTIP, NUHOMS 61BT(H) Type 1 DSC Closure Procedure, Revision 0  
RE-081-043, Selection and Monitoring of Fuel for Dry Storage, Revision 8  
Transnuclear Services Program Manual SPM-9.1, General Welding Procedure, Revision 3

SPM 9.1a, Welding Procedure Specification and Qualification, Revision 2  
SPM 9.1.c, Filler Metal Control, Revision 2  
NDAP-QA-0620, Conduct of Health Physics, Revision 8  
NDAP-QA-0627, Radioactive Contamination Control, Revision 32  
NDAP-QA-0702, Action Request and Condition Report Process, Revision 42  
LS-120, Issue Identification and Screening Process, Revision 1  
LS-125, CAP, Revision 2  
HP-TP-033, Conduct And Operation of Health Physics Control Points, Revision 8

## LIST OF ACRONYMS

ALARA	As Low As Is Reasonably Achievable
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CDF	Core damage Frequency
CFR	<i>Code of Federal Regulations</i>
CoC	Certificate of Compliance
CR	Condition Report
CR	Control Room
DSC	Dry Shielded Canister
ECP	Energy Control Process
EDG	Emergency Diesel Generator
EOC	Extent-of-Condition
EOF	Emergency Operations Facility
EOOS	Equipment Out of Service
EP	Emergency Preparedness
EPA	Electrical Protection Assembly
ERO	Emergency Response Organization
ESW	Emergency Service Water
HPCI	High-Pressure Coolant Injection
ICDP	Incremental Core Damage Probability
IMC	Inspection Manual Chapter
ISFSI	Independent Spent Fuel Storage Installation
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LOCA	Loss-of-Coolant Accident
LPCI	Low Pressure Core Injection
MOV	Motor-Operated Valve
MR	Maintenance Rule
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OE	Operating Experience
OOS	Out-of-Service
ORO	Off-site Response Organization
PD	performance Deficiency
PI	Performance Indicator
PI&R	Problem Identification and Resolution
POD	Prompt Operability Determination
QA	Quality Assurance

RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
RM	Recovery Manager
RMA	Risk Management Action
RP	Radiation Protection
RPS	Reactor Protection System
RWP	Radiation Work Permit
SAE	Site Area Emergency
SAPHIRE	Systems Analysis Programs for Hands-on Integrated Reliability Evaluations
SCBA	Self-Contained Breathing Apparatus
SDC	Shutdown Cooling
SDP	Significance Determination Process
SOW	System Outage Window
SPAR	Standardized Plant Analysis Risk
SRA	Senior Risk Analyst
SRV	Safety Relief Valve
SSES	Susquehanna Steam Electric Station
SSC	Structures, Systems, and Components
TS	Technical Specifications
TSC	Technical Support Center
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order