UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

May 14, 2013

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 05000387/2013002 AND 05000388/2013002

Dear Mr. Rausch:

On March 31, 2013, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Susquehanna Steam Electric Station (SSES) Units 1 and 2. The enclosed inspection report (IR) presents the inspection results, which were discussed on April 26, 2013, with Jon Franke, Site Vice President, 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 two self-revealing and two NRC-identified findings of very low safety significance (Green). Three of these findings were determined to involve violations of NRC requirements. Additionally, the NRC has determined that two traditional enforcement Severity Level IV violations occurred. One of these traditional enforcement violations was associated with one of the findings contained in this report. Further, one licensee-identified violation which was determined to be of very low safety significance and one licensee-identified violation which was determined to be Severity Level IV are listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program (CAP), the NRC is treating these findings as non-cited violations (NCVs) consistent with Section 2.3.2 of the NRC's Enforcement Policy. If you contest any NCV 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 the SSES. In addition, if you disagree with the cross-cutting aspect of 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 the SSES.

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

Mel Gray, Chief
Reactor Projects Branch 4
Division of Reactor Projects

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

Enclosures: Inspection Report 05000387/2013002 and 05000388/2013002
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

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REGION I

Docket No:	50-387, 50-388
License No:	NPF-14, NPF-22
Report No:	05000387/2013002 and 05000388/2013002
Licensee:	PPL Susquehanna, LLC (PPL)
Facility:	Susquehanna Steam Electric Station, Units 1 and 2
Location:	Berwick, Pennsylvania
Dates:	January 1, 2013 through March 31, 2013
Inspectors:	P. Finney, Senior Resident Inspector J. Greives, Resident Inspector F. Arner, Senior Reactor Inspector P. Kaufman, Senior Reactor Engineer C. Lally, Operations Engineer J. Ayala, Project Engineer
Approved By:	Mel Gray, Chief Reactor Projects Branch 4 Division of Reactor Projects

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SUMMARY OF FINDINGS

Inspection Report (IR) 05000387/2013002 05000388/2013002 01/01/2013 – 03/31/2013; Susquehanna Steam Electric Station (SSES), Units 1 and 2; Fire Protection, Maintenance Risk Assessments and Emergent Work Control, Plant Modifications, Performance Indicator (PI) Verification, Followup of Events and Notices of Enforcement Discretion

The report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Inspectors identified four findings of very low safety significance (Green), three of which were also NCVs, and two Severity Level IV non-cited violations (NCVs), one of which was associated with one of the findings. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). The cross-cutting aspects for the findings were determined using IMC 0310, "Components Within The Cross-Cutting Areas." Findings for which the SDP does not apply may be Green, or be assigned a severity level after Nuclear Regulatory Commission (NRC) management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process (ROP)," Revision 4.

Cornerstone: Initiating Events

- Green. A self-revealing NCV of very low safety significance (Green) was identified when PPL incorrectly implemented the clearance order process while returning the common offgas recombiner to service after maintenance. NDAP-QA-0322, "Energy Control Process," Revision 42, requires that "upon completion of the [clearance order] restoration plan, the system should be restored to the design operating condition (e.g. running, automatic standby, etc.)." Additionally, it requires the System Operating Representative (SOR) and Operations Supervision to "ensure restoration of the clearance order prevents introduction of system or plant transients." Contrary to these requirements, on December 12, 2012, when restoring from a clearance order, a manual isolation valve for the common recombiner was incorrectly left in the closed position. This resulted in a degradation of main condenser vacuum when the common recombiner was subsequently placed in service on February 5, 2013, requiring operator action to decrease reactor power to maintain main condenser vacuum within limits. PPL entered the issue into the CAP as CR 1668013.

  The performance deficiency is more than minor because it was associated with the Configuration Control attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, when PPL operators attempted to place the common recombiner in service on February 5, 2013, the closed manual isolation valve caused a loss of process flow to the recombiner and ultimately a degradation of main condenser vacuum. In responding to the reduction in vacuum, a recirculation pump runback was initiated and thermal power was rapidly reduced by approximately 32 percent. Additionally, the performance deficiency was similar to example 4.b in IMC 0612, Appendix E, "Examples of Minor Issues," which states that a procedural error is more than minor if it caused a reactor trip or other transient. The inspectors evaluated the finding using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," and determined the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip

to a stable shutdown condition. Consequently, the finding is of very low safety significance (Green). The finding is related to the cross-cutting area of Human Performance, Work Practices in that PPL did not communicate human error prevention techniques such as self and peer checking to ensure work activities are performed safely. Specifically, both the SOR and Operations Supervision reviews were insufficient to ensure the manual steam isolation valve for the common recombiner was restored to the correct position during clearance order removal. [H.4(a)] (1R13)

- Green. The inspectors identified a Green Finding related to implementation of NDAP-QA-0737, "Reactor Oversight Process (ROP) Performance Indicators," Revision 9, and associated severity level (SL) IV NCV of 10 CFR 50.9(a), "Completeness and Accuracy of Information" because PPL staff did not accurately report the Unplanned Scrams with Complications (USwC) performance indicator (PI) for the period of October 2012 through December 2012. Specifically, PPL did not report the Unit 2 reactor scram, which occurred on December 16, 2012, in this PI. PPL entered the issue in their CAP as CR 1688235 and corrected the data on March 20, 2013.This scram, when combined with a second complicated scram, which was accurately reported in the same quarter, caused the PI to cross the Green-White threshold. This was discussed in an NRC follow-up assessment letter dated April 1, 2013 (ML13092A011).

  The finding was evaluated in accordance with IMC 0612 Appendix B, "Issue Screening," which states, in part, that a performance deficiency is more than minor if it is related to a performance indicator and caused the performance indicator to exceed a threshold. In this case, when the December 16 scram was re-classified under the USwC PI, the performance indicator crossed the Green-White threshold. The inspectors evaluated the finding using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power" and determined the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. Consequently, the finding is of very low safety significance (Green). Additionally, the issue was evaluated in the traditional enforcement process because it had the potential to impact the NRC's ability to perform its regulatory function. The inspectors determined the finding was a Severity Level IV violation using the examples of the NRC Enforcement Policy. Specifically, example 6.9.d.11 states "a 10 CFR Part 50 licensee submits inaccurate or incomplete PI data to the NRC that would have caused a PI to change from green to white" is an example of a SL IV violation. This finding has a cross-cutting aspect in the area of Human Performance, Decision-Making because PPL personnel did not communicate decisions and the basis for decisions to personnel who have a need to know the information in order to perform work safely, in a timely manner. Specifically, PPL did not adequately document the basis for determining the scram, which occurred on December 16, 2012, should be classified under the USwC PI to enable reviewers to adequately challenge the decision to ensure the appropriate classification was made. [H.1.(c)] (4OA1)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green NCV of Unit 2 Operating License Condition 2.C.(3), regarding its fire protection program, when PPL stored transient combustibles in restricted areas without evaluations by the site fire protection group. PPL procedure NDAP-QA-0440, "Control of Transient Combustible/Hazardous Materials," Revision 10, section 6.2.4 states that, for restricted areas, "transient combustibles or hazardous materials shall not be stored in these areas without specific instructions to do so." It continues that "specific approvals for storage in Restricted Areas must be from the Site Fire Protection Group." PPL removed transient combustibles from the restricted areas, established hourly fire watches as

appropriate, revised procedures, conducted walkdowns for the extent of the condition, and entered the issues in their CAP.

The inspectors evaluated this finding using IMC 0612 Appendix B and determined it to be more than minor based on affecting the Protection against External Factors attribute of the Mitigating Systems cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events, in this case fire, to prevent undesirable consequences. Additionally, it was similar to IMC 0612 Appendix E example 4.k in that in all of the observations, transient combustibles were in a combustible free zone required for separation of independent trains and, in one case, the fire loading was not within fire hazard analysis limits. The finding was qualitatively screened in accordance with IMC 0609 Appendix F where the finding was categorized under Fire Prevention and Administrative Controls. The degradation was assigned a Low rating and screened to Green based on the Low degradation rating. The finding was determined to have a cross-cutting aspect in the area of Human Performance, Work Practices, for the need to ensure supervisory and management oversight of work activities such that nuclear safety is supported. Specifically, PPL supervisory and management oversight had not sufficiently coached and reinforced the knowledge of station and procedural standards regarding restricted area requirements. [H.4(c)] (1R05)

- SLIV. The inspectors identified a Severity Level IV (SL-IV) NCV of 10 CFR 50.59, "Changes, Tests, and Experiments," when PPL made changes that affected Unit 1 and Unit 2 TS 3.8.3 without obtaining a license amendment pursuant to 10 CFR 50.90. Specifically, PPL changed the TS 3.8.3 bases to support raising the American Petroleum Institute (API) gravity of acceptable diesel fuel oil by crediting the fuel oil day tank capacity to meet the onsite fuel requirements. This change altered the intent of TS 3.8.3. PPL entered this item in their CAP as CR 1678266, made urgent changes to surveillance procedures, evaluated the issue, and ultimately agreed with this conclusion.

  The inspectors determined that the failure to implement the requirements of 10 CFR 50.59 for changes to the TSBs was a performance deficiency within PPL's ability to foresee and correct. The inspectors evaluated the finding in accordance with IMC 0612 Appendix B. The inspectors determined that this issue impacted the regulatory function by failing to receive prior NRC approval for changes in licensed activities. Therefore, the violation was compared to examples in Enforcement Policy section 6. The violation was determined to be more than minor based on similarity to SLIV example 6.1.d.2, a 10 CFR 50.59 violation that resulted in conditions evaluated as having very low safety significance. The inspectors also evaluated the performance deficiency under the ROP and determined that the associated ROP finding was minor since PPL had not accepted fuel oil deliveries with a higher gravity. As such, no cross-cutting aspect was assigned to this finding. (1R18)

- Green. A self-revealing NCV of 10 CFR 50 Appendix B, Criteria V "Instructions, Procedures, and Drawings," was identified because PPL did not ensure alarm response procedures (ARPs) for control room cooling fan train failures were adequate, which resulted in the subsequent loss of both trains of cooling during clearance order (CO) application for fan repair work. Specifically, the ARP actions were deficient in allowing an abnormal system control switch configuration that led to the inadvertent shutdown of the in-service 'B' train fans during the application of the CO process to perform work on the failed 'A' control room cooling fan train. PPL entered the issue into their CAP to repair the failed damper and also evaluate the extent-of-condition to ensure the adequacy of other applicable ventilation procedures.

The inspectors determined the deficiency was more than minor because it was associated with the Procedure Quality attribute of the Mitigating System Cornerstone. The inadequate procedure resulted in the loss of control room cooling fans, which affects the objective to ensure the availability and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined through a review of IMC 0609 Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," that the finding was of very low safety significance (Green) because the finding was not related to a design or qualification deficiency, did not represent a loss of a credited mitigating system safety function because cooling was restored in a timely manner, and did not screen as potentially risk significant due to external initiating events. The control room operators immediately recognized the loss of cooling and took manual action to restart the 'B' cooling train within 15 minutes to ensure control room temperatures were not adversely affected. The finding did not have a cross-cutting aspect because the inadequate ARP was an historical issue not indicative of current performance. Specifically, the procedures had not been adequately identified and revised in 2003 and this occurred outside of the nominal three-year period for evaluating present performance as defined in IMC 0612, section 03.15. Additionally, PPL has instituted procedure and CAP improvements since that time which would have prevented the performance deficiency. (4OA3)

Other Findings

Violations of very low safety significance or Severity Level IV that were identified by PPL staff were reviewed by the inspectors. Corrective actions taken or planned by PPL staff have been entered into PPL's CAP. 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 power. On February 15, Unit 1 was reduced to approximately 68 percent over 13 hours for a control rod pattern adjustment. Unit 1 ended the inspection period at or near 100 percent power.

Unit 2 began the inspection period at 84 percent power with operators increasing reactor power from a reactor startup on December 26. Unit 2 reached full power later on January 1. Operators reduced Unit 2 power to 64 percent on February 5 due to a problem with an offgas recombiner that degraded main condenser vacuum. Operators returned Unit 2 to full power on February 6. On February 8, operators reduced Unit 2 power to 74 percent over 15 hours for a control rod sequence exchange. Operators similarly reduced Unit 2 power on February 16 to 89 percent over 8 hours for a control rod pattern adjustment. Finally, on March 2, operators decreased Unit 2 power to 77 percent over 15 hours for a control rod pattern adjustment and control rod scram testing. Unit 2 ended the inspection period at or near 100 percent power.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 sample)

Readiness for Imminent 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 (DGs), 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 Updated Final Safety Analysis Report (UFSAR), Technical Specifications (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. Documents reviewed for each section of this inspection report are listed in the Attachment.

- Common, cold weather alert for January 24, 2013

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04Q – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Unit 2, turbine building closed cooling water (TBCCW) on February 5, 2013
- Unit 2, RCIC during high pressure coolant injection (HPCI) unavailability, March 7, 2013
- Unit 2, HPCI during RCIC unavailability, March 14, 2013
- Common, 'B' emergency diesel generator (EDG) during 'A' EDG inoperability for a damper failure

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), condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether PPL staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident Inspector Quarterly Walkdowns (71111.05Q - 5 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that PPL controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in the area pre-fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out-of-service (OOS), degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Unit 1, RB 719' (Fire Zones 1-4A-N,-S,-W and 1-4C,-4D)

- Unit 1, RB 645' (Fire Zone 1-1D)
- Unit 2, RB 683' (Fire Zones 2-3B-N,-S,-W)
- Unit 2, RB 749' circulation space (Fire Zones 2-5A-N-S, -W, -H)
- Units 1 and 2, lower cable spreading rooms (Fire Zones 0-25E and 0-25A)

b. Findings

Introduction. The inspectors identified a Green NCV of Unit 2 Operating License Condition 2.C.(3) when PPL stored transient combustibles in restricted areas (red zone) without an evaluation by the site fire protection group. PPL removed transient combustibles from the restricted areas, established hourly fire watches and revised procedures as appropriate, conducted walkdowns for the extent of the condition, and entered the issues in their CAP.

Description. On January 4, 2013, the inspectors walked down Fire Zone 2-3B-W in the Unit 2 reactor building (RB) on the 683' elevation. During that walkdown, the inspectors observed that the overhead crane, 2H208B, and two trash cans were being stored in a restricted area (area labeled as a "restricted area" with floor markings in red). After the inspectors notified PPL staff, the crane and trash cans were relocated. On January 22, 2013, the inspectors walked down additional Unit 2 Fire Zones on the 683' and 719' elevations. The inspectors observed ladders, a plastic funnel and tygon tubing, and radiological nylon ropes in restricted areas. On March 14, inspectors identified multiple untagged items in the restricted area in front of the 2C004 and 2C005 instrument racks that included temporary drywell cooling hoses, chairs, and a mop. While PPL had established a WO for a 1-hour fire watch in this area, the WO had not been approved by the site fire protection group. PPL took corrective actions in response to these observations to include, as appropriate, removal of transient combustibles, establishing an hourly fire watch, procedure revisions, and conducting further walkdowns for the extent of the condition. The walkdowns resulted in identification of additional combustibles in restricted areas.

PPL procedure NDAP-QA-0440, "Control of Transient Combustible/Hazardous Materials," Revision 10, section 5.25, defines a restricted area as "an area within the plant… where additional restrictions on transient combustible or hazardous materials must be implemented to assure that engineering analyses are not invalidated. Attachment B to this procedure lists the restricted areas." Section 6.1.9 establishes maximum quantities of specific transient combustibles that may be allowed without a permit. It also restricts rubber and plastic hoses and non-PVC tygon tubing in restricted areas. Section 6.2.4 states that, for restricted areas, "transient combustibles or hazardous materials shall not be stored in these areas without specific instructions to do so." It continues that "specific approvals for storage in Restricted Areas must be from the Site Fire Protection Group."

As part of PPL's safe shutdown analysis, deviation requests for 10 CFR 50, Appendix R, Section III.G, were submitted that established wraparound zones and restricted areas. PPL calculation EC-013-1860, "Handling of Transient Combustibles in the Wraparound Zones and Restricted Areas," Revision 2, section 3.4, identifies that within a wraparound zone, both trains of safe shutdown equipment are protected. Section 3.5 defines a restricted area (Red Zone) as an area where additional restrictions on transient combustible or hazardous materials must be implemented to assure that engineering

analyses remain valid. Section 3.4 defines a transient combustible as any combustible material that is temporarily located and left unattended (stored), not installed, and not incorporated into the permanent fire loading for the applicable fire zone. Section 5 identifies that the storage of transient combustibles in Wraparound zones and restricted areas should be minimized and eliminated if possible. Section 5.2 of the calculation establishes that "transient combustibles, when installed in a red zone, shall be limited in quantity so that their combined effect is less than or equal to the effects of a trash can fire." It continues that "for those situations… where other types of transient material are to be installed in the Restricted Area (Red Zone), a one-hour roving fire watch shall be instituted for the period of time when the combustibles are in the Red Zone."

The inspectors concluded that the transient combustibles stored in restricted areas were not in accordance with PPL's fire protection program and that in one case, the loading exceeded that of one trash can. PPL personnel took action to remove the combustible materials, revise the hoist procedure, and entered the issues into their CAP as CR 1682515. During a subsequent evaluation investigation, PPL staff identified additional examples of non-compliance with transient combustibles in restricted areas. PPL staff completed an apparent cause evaluation that determined there was not awareness of fire protection requirements and locations of restricted areas and that those requirements were not adequately or repeatedly stressed to plant personnel. Based on this, inspectors determined that management and supervisory oversight was the most significant contributor to the performance issue.

Analysis. The inspectors concluded that storage of transient combustibles in restricted areas was a performance deficiency within PPL's ability to foresee and correct. The inspectors evaluated this finding using IMC 0612 Appendix B and determined it to be more than minor based on affecting the Protection against External Factors attribute of the Mitigating Systems cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events, in this case fire, to prevent undesirable consequences. Additionally, it was similar to IMC 0612 Appendix E example 4.k. Specifically, in all of the observations, transient combustibles were in an area marked as a combustible free zone that was required for separation of independent trains and, in one case, the fire loading was not within fire hazard analysis limits. The finding was qualitatively screened in accordance with IMC 0609 Appendix F where the finding was categorized under Fire Prevention and Administrative Controls. The degradation was assigned a Low rating based on the expectation that the fire protection systems and features in the area would display nearly the same level of effectiveness and reliability as it would had the degradation not been present. The finding screened to Green based on the Low degradation rating.

The finding was determined to have a cross-cutting aspect in the area of Human Performance, Work Practices, for the need to ensure supervisory and management oversight of work activities such that nuclear safety is supported. Specifically, PPL supervisory and management oversight had not sufficiently coached and reinforced the knowledge of station and procedural standards regarding restricted area requirements. (H.4(c)).

Enforcement. SSES Unit 2 Operating License Condition 2.C.(3) requires that PPL "shall implement and maintain in effect all provisions of the approved fire protection program as described in the Fire Protection Review Report (FPRR)." FPRR section 1.4 requires that plant procedures control the use and storage of transient combustible materials.

This control is implemented, in part, by Procedure NDAP-QA-0440, "Control of Transient Combustibles/Hazardous Materials," Revision 10. Regarding restricted areas, step 6.2.4.a states, in part, that "transient combustibles or hazardous materials shall not be stored in these areas without specific instruction to do so on the permit." NDAP-QA-0440 step 6.2.4.b states, in part, that "placing combustibles in the Restricted Areas requires Site Fire Protection approval PRIOR to placement." Contrary to this, PPL personnel stored transient combustibles in restricted areas without an evaluation by the site fire protection group. Because this violation was of very low safety significance (Green) and PPL staff entered this issue in their CAP in CR 1682515, this violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy. **(05000388;2013002-01, Combustible Storage in Restricted Areas Without Approval)**

1R06 Flood Protection Measures (71111.06 - 1 sample)

.1 Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the UFSAR, the site flooding analysis, and plant procedures to assess susceptibilities involving internal flooding in unit 1 and 2 railroad bays. The inspectors also reviewed the CAP to determine if PPL identified and corrected flooding problems and whether operator actions for coping with flooding were adequate. The inspectors also focused on adjacent rooms in the unit 1 and 2 reactor buildings to verify the adequacy of equipment seals located below the flood line, floor and water penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, control circuits, and temporary or removable flood barriers.

b. Findings

No findings were identified.

1R07 Heat Sink Performance

Heat Sink Annual Review (71111.07A – 1 sample)

a. Inspection Scope

The inspectors reviewed documents associated with maintenance for the Common, 'D' EDG lube oil cooler. This review was performed to ensure the performance capability for the EDG lube oil cooler was consistent with design assumptions. Additionally, the inspectors reviewed the WOs associated with the latest as-found maintenance inspection for the EDG lube oil cooler to evaluate whether maintenance procedures were adequate to ensure the minimum assumed design heat removal capability. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

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

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

The inspectors observed a licensed operator full scale drill on January 29, 2013, which included a loss of startup bus 20, loss of the '1D' engineering safeguard system (ESS) bus, and an auxiliary bus undervoltage load shed. 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 (EOPs). 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

a. Inspection Scope

The inspectors observed and reviewed scram time testing and control rod insert stall testing on Unit 2 on March 2, 2013. The inspectors observed infrequently performed test or evolution briefings, pre-shift briefings, and reactivity control briefings. Additionally, the inspectors observed test performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12 – 2 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structures, systems, and components (SSC) performance and reliability. The inspectors reviewed system health reports, CAP documents, maintenance WOs, and maintenance rule basis documents to ensure that PPL was identifying and properly evaluating performance problems within the scope of the maintenance rule. For each sample selected, the inspectors verified that the SSC was properly scoped into the maintenance rule in accordance with the Code of Federal Regulations (10 CFR) 50.65 and verified that the (a)(2) performance criteria established by PPL staff was reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2). Additionally, the inspectors ensured that PPL staff was identifying and addressing

common cause failures that occurred within and across maintenance rule system boundaries.

- Units 1 and 2, EDG room ventilation dampers
- Units 1 and 2, Instrument Air

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that PPL performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that PPL personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. PPL performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- Unit 1, Yellow Risk during Unit 1 standby gas treatment (SBGT) pressure switch calibration
- Unit 2, Unexpected de-energization of 2Y629 – 120V vital instrument alternating current (AC) bus
- Unit 2, Yellow Risk during Unit 2 residual heat removal (RHR) logic system functional test (LSFT)
- Unit 2, loss of Unit 2 offgas flow during recombiner swap in preparation for steam leak repair on Unit 2 recombiner
- Common, Yellow Risk during 'A' EDG maintenance on January 30, 2013

b. Findings

Introduction. A self-revealing NCV of very low safety significance (Green) was identified when PPL operators incorrectly implemented the clearance order process while returning the common offgas recombiner to service after maintenance. Specifically, on December 12, 2012, when restoring from a clearance order, operators incorrectly left a manual isolation valve in the closed position for the common recombiner. This resulted in a degradation of main condenser vacuum when the common recombiner was subsequently placed in service, requiring operator action to decrease reactor power to maintain main condenser vacuum within limits.

Description. The offgas recombiner system maintains a vacuum in the main condenser by removing non-condensable gasses via steam jet air ejectors (SJAEs). The offgas recombiner system includes three independent trains, one for each unit and a common train that can be aligned to either unit.

On February 4, 2013, SSES staff observed a steam leak on the Unit 2 offgas recombiner. Condition report 1667560 was generated and a work order was planned repair the leak. On February 5, 2013, PPL operators placed the common offgas recombiner in service so that the Unit 2 recombiner could be shut down to repair the steam leak. When operators aligned the common recombiner, to the Unit 2 main condenser, offgas flow decreased to zero and condenser vacuum began to degrade. Operators took action in accordance with procedures to initiate a limiter 2 reactor recirculation runback, which decreased reactor power to approximately 68%. Subsequently, operators placed the Unit 2 recombiner back in service and main condenser vacuum was restored.

An investigation into the cause of the degradation of vacuum revealed that manual steam isolation valve 269051 for the common recombiner was closed isolating flow from unit 2 SJAEs to the common offgas recombiner. The valve is required to be open as a prerequisite to placing the common offgas recombiner in service from a standby condition. Upon further review, PPL staff identified that valve 269051 was not in the expected position of open due to a previous error made in the restoration of a clearance order on December 12, 2012.

PPL staff entered the issue into the CAP as CR 1668013 and performed a human error assessment. The assessment determined the valve was left in the closed position during restoration of clearance order "27-002-Fall 2012 Forcd OTG-3027." Specifically, when identifying restoration positions, the System Operating Representative, a reactor operator, and a senior reactor operator allowed the valve to be restored to the computer system default position. The clearance order system automatically enters the system checklist position in the "restore position" on a clearance. The system checklist position is established with the system in a shutdown status, which for the manual steam isolation valve is closed. This allows the system to then be started up from a shutdown condition in accordance with the system operating procedures. However, in this case, the specific clearance that was being restored was atypical in that the common recombiner was not in a shutdown condition at the time of restoration. At the time of restoration, the common offgas recombiner was in a standby alignment to Unit 1. Therefore, the restoration position should have been in the open position such that the system alignment was consistent with the expected conditions for the operating procedure.

Susquehanna Procedure NDAP-QA-0322, "Energy Control Process", step 6.12 states that the "System Operating Representative (SOR) shall complete the restoration plan for components and switching moves on the clearance order." This is amplified by step 6.12.2.b and .d which state to "ensure restoration of the clearance order prevents introduction of system or plant transients" and "upon completion of the restoration plan, the system should be restored to the design operating condition (e.g. running, automatic standby, etc.)," respectively. Step 6.12.3 states that "Operations Supervision shall utilize Attachment D to review and approve the clearance order restoration plant." In addition to the same requirements of 6.12.2.b and .d, discussed above, Attachment D requires Operations Supervision to ensure "system and component restoration direction acceptable." At the time of restoration, the common recombiner was in a standby configuration that procedurally requires the manual steam isolation to be in the open position. Based on this, PPL's human error assessment determined that the valve was incorrectly restored to the closed position on December 12, 2012.

Analysis. The inspectors determined that incorrectly implementing the clearance order process when restoring from maintenance on the common offgas recombiner was a performance deficiency within PPL staff's ability to foresee and prevent. The inspectors screened the performance deficiency in accordance with IMC 0612, Appendix B, "Issue Screening." The performance deficiency is more than minor because it was associated with the Configuration Control attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, when PPL operators attempted to place the common recombiner in service on February 5, 2013, the closed manual isolation valve prevented flow to the recombiner and degraded main condenser vacuum. In responding to the reduction in vacuum, operators reduced reactor power via a recirculation pump runback to 68%. Additionally, the performance deficiency was similar to example 4.b in IMC 0612, Appendix E, "Examples of Minor Issues," which states that a procedural error is more than minor if it caused a reactor trip or other transient. The inspectors evaluated the finding using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," and determined the finding is of very low safety significance (Green) because it did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition.

The finding has a cross-cutting aspect in the area of Human Performance, Work Practices because PPL staff did not communicate human error prevention techniques such as self and peer checking to ensure work activities are performed safely. Specifically, the SOR and Operations Supervision reviews were not sufficient to ensure the manual steam isolation valve for the common recombiner was restored to the correct position during clearance order removal. (H.4(a))

Enforcement. Susquehanna Unit 2 TS 5.4.1, "Procedures," states, in part, that "written procedures shall be established, implemented and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978." Regulatory Guide 1.33, Appendix A, requires administrative procedures that include equipment control (e.g. locking and tagging). PPL Procedure NDAP-QA-0322, "Energy Control Process" which implements this requirement, states, in part, that "upon completion of the [clearance order] restoration plan, the system should be restored to the design operating condition (e.g. running, automatic standby, etc.)." Additionally, Procedure NDAP-QA-0322 requires the SOR and Operations Supervision to "ensure restoration of the clearance order prevents introduction of system or plant transients." Contrary to the above requirements, the clearance order restoration on December 12, 2012, did not restore a manual isolation valve for the common recombiner to the correct position for the operating condition of the system until identified on February 5, 2013. This degraded SSES Unit 2 main condenser vacuum when the common recombiner and resulted in a plant transient. PPL's immediate corrective actions included entering the issue into their CAP as condition report 1668013 and conducting a human error assessment. Because this violation was of very low safety significance (Green), and PPL entered this issue into their CAP (CR 1668013), this violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000388/2013002-02, Inadequate Restoration from Clearance Order Results in Degradation of Main Condenser Vacuum and Plant Downpower)**

1R15 Operability Determinations and Functionality Assessments (71111.15 – 6 samples)

a. Inspection Scope

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

- Unit 2, end of cycle recirculation pump trip response during scram on December 16, 2012
- Unit 2, loss of indication on HPCI exhaust line primary containment isolation valve (PCIV)
- Common, OP-023-001 affect on EDG operability
- Common, spray pond loop 'A' bypass valve dual indication
- Common, 'A' EDG jacket water leak
- Common, Inoperability of Backup diesel driven fire pump with motor driven fire pump out of service for maintenance

The inspectors selected these issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the operability determinations to assess whether technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and UFSAR to 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

.1 Permanent Modifications (71111.18 – 2 samples)

a. Inspection Scope

The inspectors evaluated the permanent plant modifications listed below to determine whether the changes adversely affected system or support system availability, or adversely affected a function important to plant safety. The inspectors reviewed the associated system design bases, including the Final Safety Analysis Report (FSAR), TSs, and assessed the adequacy of the safety determination screenings and evaluations. The inspectors also assessed configuration control of the changes by reviewing selected drawings and procedures to verify whether appropriate updates had been made. The inspectors compared the actual installations to the permanent modification documents to determine whether the implemented changes were consistent with the approved documents. The inspectors reviewed selected post-installation test

results to evaluate whether the actual impact of the changes had been adequately demonstrated by the test. Documents reviewed are listed in the Attachment.

- Unit 2, HPCI and RCIC exhaust valve modifications
- Common, ultra low sulfur diesel (USLD) fuel oil affect on fuel oil storage capacity requirements

b. Findings

Introduction. The inspectors identified a Severity Level IV (SL-IV) NCV of 10 CFR 50.59, "Changes, Tests, and Experiments," when PPL personnel made changes that affected Unit 1 and Unit 2 TS 3.8.3 without obtaining a license amendment pursuant to 10 CFR 50.90. Specifically, PPL staff changed the TS 3.8.3 bases to support raising the American Petroleum Institute (API) gravity of acceptable diesel fuel oil by crediting the fuel oil day tank capacity to meet the onsite fuel requirements. This change altered the intent of TS 3.8.3.

Description. SSES Units 1 and 2 each have two TSs that identify requirements for emergency diesel generators (DGs) A through D fuel oil. TS 3.8.1, "AC Sources - Operating," SR 3.8.1.4, requires that PPL staff periodically "verify each engine mounted day tank fuel oil level is >= 420 gallons. TS 3.8.3, "Diesel Fuel Oil, Lube Oil, and Starting Air," Action A requires action be taken when "one or more DGs with fuel oil level in associated storage tank < 47,570 gallons and > 41,018 gallons. SR 3.8.3.1 requires PPL to "verify each fuel oil storage tank contains >= 47,570 gallons. Similar TS requirements are identified for DG E.

On October 2, 2012, PPL's Plant Operations Review Committee approved a change to the TS 3.8.3 bases for Units 1 and 2 to support raising the acceptable API gravity of ULSD fuel oil deliveries to provide for acceptance of ultra low sulfur diesel fuel oil. The TSBs prior to the change stated, in part, that "each DG is provided with a storage tank having a fuel oil capacity sufficient to operate that DG for a period of 7 days… discussed in FSAR, section 9.5.4." The revised bases stated, in part, that "each DG is provided with a storage capacity sufficient to operate that DG for a period of 7 days… as discussed in FSAR, Section 9.5.4… This onsite fuel capacity, which, for the A-D DGs, includes the available volume in the diesel day tanks and storage tanks." PPL staff implemented this change with a supporting calculation, EC-023-1012, "Evaluate Impact on use of ULSD Fuel on the DG Fuel Oil Storage and Transfer System," Revision 1, and license document change notices (LDCNs) 4997 and 4998. In performing the applicability determination and 10 CFR 50.59 screening, PPL engineering staff concluded that this activity did not change the intent of the TSs.

EC-023-1012 provided a revised calculation for fuel oil consumption rate based on raising the maximum API gravity index from 38 to 40. The higher API gravity results in a lower volumetric heat content that consequently results in an increased fuel consumption rate to maintain DG operation. PPL Engineering calculated a revised fuel oil consumption rate of 275.45 gallons per hour and resulting 6 and 7-day supplies of 39,665 and 46,276 gallons respectively. Considering inaccessible tank volume and manufacturing tolerances, PPL staff calculated the required tank capacity for six days of fuel oil was 41,345 gallons and 47,956 gallons for seven days. These were increased from the values listed in TS 3.8.3 Condition A and SR 3.8.3.1. Consequently PPL's revised calculation credited 385 gallons of oil in each DG's day tank and thereby reduced the required capacity in the storage tank to less than the TS 3.8.3 values. This was reflected in the revised TS bases.

The inspectors determined the Susquehanna FSAR states in section 9.5.4.2, “One storage tank is provided for each DG. Each DG is provided with storage tank capacity sufficient for seven days full load continuous generator operation.” The inspectors also reviewed the Unit 1 and Unit 2 TS 3.8.1, TS 3.8.3, and associated TSBs. The inspectors noted limiting condition of operation (LCO) 3.8.3, TS 3.8.3 Condition A, and SR 3.8.3.1 describes "stored diesel fuel," "fuel oil level in associated storage tank," and "fuel oil storage tank" respectively and does not mention fuel oil day tanks for fuel oil storage.

The inspectors concluded this activity changed the intent of Units 1 and 2 TS 3.8.3 and that PPL staff should have determined this activity to be applicable to TSs, answered “Yes” to the screening question: "Does the proposed activity require a change to the TSs?," and requested a license amendment prior to implementing the activity. The inspectors affirmed this conclusion through discussions with staff from the NRC Office of Nuclear Regulatory Regulation (NRR) TS Branch. As a result of the inspector’s questions and observations, PPL staff entered this item in their CAP as CR 1678266, evaluated the issues and made changes to surveillance procedures to remove this change. The inspectors noted the change to accept ULSD with a higher specific gravity fuel oil had not yet been physically implemented because it had not been accepted for delivery prior to the inspector’s questions.

Analysis. The inspectors determined that the failure to implement the requirements of 10 CFR 50.59 for changes to the TSBs was a performance deficiency within PPL staff’s ability to foresee and correct. The inspectors evaluated the finding in accordance with IMC 0612 Appendix B. The inspectors determined that this issue impacted the regulatory function by because prior NRC approval was not received for changes that affected the TS. Therefore, the violation was compared to examples in Enforcement Policy section 6. The violation was determined to be more than minor based on similarity to SLIV example 6.1.d.2, a 10 CFR 50.59 violation that resulted in conditions evaluated as having very low safety significance. The inspectors also evaluated the performance deficiency under the ROP and determined that the associated ROP finding was minor because PPL had not accepted fuel oil deliveries with an API greater than 38. As such, no cross-cutting aspect was assigned to this finding.

Enforcement. 10 CFR 50.59, “Changes, Tests, and Experiments,” states, partially, in subsection (c)(1) that “A licensee may make changes in the facility as described in the FSAR (as updated), make changes in the procedures as described in the FSAR (as updated), and conduct tests or experiments not described in the FSAR (as updated) without obtaining a license amendment pursuant to Sec. 50.90 only if: (i) A change to the TSs incorporated in the license is not required.” Contrary to this, from October 2, 2012 through March 21, 2013, PPL changed the Unit 1 and Unit 2 TS 3.8.3 bases and ultimately made a change to the associated TS 3.8.3 without obtaining a license amendment pursuant to 10 CFR 50.90. In accordance with the NRC Enforcement Manual Section 7.3, “Enforcement of 10 CFR 50.59 and Related FSAR” and Section 6.1 of the Enforcement Policy, the violation was characterized as SLIV because the issue was evaluated to be of very low safety significance. However, because this failure to properly evaluate a change is of very low safety significance and has been entered into PPL’s CAP as 1678266, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000387;388/2013-003 Inadequate 10 CFR 50.59 Screening of TS Bases Change)**

1R19 Post-Maintenance Testing (71111.19 – 5 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests (PMTs) for the maintenance activities listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure was consistent with the information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data to verify that the test results adequately demonstrated restoration of the affected safety functions.

- Unit 2, 'C' RHR pump planned maintenance
- Common, 'D' EDG planned maintenance
- Common, 'A' EDG inlet damper failure
- Common, 'A' emergency service water (ESW) pump motor inspection and supply fan breaker replacement
- Common, 'E' EDG fuel oil storage tank cleaning and inspection

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 7 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 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 1, SO-150-002, RCIC quarterly flow surveillance Inservice Testing (IST)
- Unit 1, RHR suction and discharge functional test of reactor coolant system (RCS) leakage channels
- Unit 2, SO-249-B06, Division II RHR comprehensive flow surveillance (IST)
- Unit 2, performance of SO-200-006 during loss of 2Y629
- Unit 2, SE-252-002, HPCI LSFT
- Common, SO-1(2)93-001 with RPS test box
- Common, 'A' EDG Integrated Surveillance Test

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 - 1 sample)

a. Inspection Scope

The inspectors evaluated the conduct of a routine PPL emergency drill on January 29, 2013 to identify weaknesses and deficiencies in the classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator, and technical support center to determine whether the event classifications, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the station drill critique to compare inspector observations with those identified by PPL staff in order to evaluate PPL's critique and to verify whether the PPL staff was properly identifying weaknesses and entering them into the CAP.

- Common, Health Physics (HP) Biennial Exercise Practice Drill, January 29, 2013

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 - 6 samples)

.1 Initiating Events

a. Inspection Scope

The inspectors reviewed PPL's PI data for the period of January 2012 through December 2012 to determine whether the PI data was accurate and complete. The inspectors examined selected samples of PI data, PI data summary reports, and plant records. The inspectors compared the PI data against the guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment PI Guideline," Revision 6. The following PIs were included in this review:

- Units 1 and 2, Unplanned Scrams per 7000 Critical Hours, IE01
- Units 1 and 2, Unplanned Power Changes per 7000 Critical Hours, IE03
- Units 1 and 2, Unplanned Scrams with Complications, IE04

b. Findings

Introduction. The inspectors identified a Green Finding related to implementation of NDAP-QA-0737, "Reactor Oversight Process (ROP) Performance Indicators," Revision 9, and associated severity level (SL) IV NCV of 10 CFR 50.9(a), "Completeness and Accuracy of Information" because PPL staff did not accurately report the Unplanned Scrams with Complications (USwC) performance indicator (PI) for the period of

October 2012 through December 2012. Specifically, PPL did not report the Unit 2 reactor scram, which occurred on December 16, 2012, in this PI. PPL entered the issue in their CAP as CR 1688235 and corrected the data on March 20, 2013.

Description. On December 16, 2012, a reactor scram occurred during turbine control valve testing. Indicated reactor pressure vessel (RPV) water level initially dropped as expected due to shrink to approximately -47 inches on wide range level indication. The high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) pumps injected water to the reactor pressure vessel (RPV) per the plant design. Operators entered emergency operating procedure (EOP) EO-200-102, "RPV Control" because the entry conditions were met (<13 inch RPV level). Once operators verified adequate core cooling, HPCI and RCIC pumps were removed from operation and reactor level was restored automatically with the normal main feed water system. During this transition, by design the main feed water system master controller setpoint is setdown from the normal setpoint of +35 inches to +18 inches to prevent a high level feed condition. Operators reset the scram signal at 2:04 a.m.

At approximately 2:10 a.m., following the automatic transition of feed water to startup level control with the level controller set at +18 inches, RPV water level decreased which resulted in a second scram signal being received for RPV low level. Based on RPV water level traces, the lowest level recorded during this transition was approximately 12 inches on narrow range level indicators, meeting the criteria for re-entry into EOP EO-200-102. Operators took manual control of the feedwater system, raised the level control setpoint to the EOP prescribed band and reset the second reactor scram signal.

The inspectors reviewed PPL's reporting of the Unit 2 Unplanned Scrams with Complications Performance Indicator (USwC PI) for 2012, and determined that PPL staff did not report the scram on December 16, 2012 as "complicated" in accordance with NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. NRC Inspection Procedure (IP) 71151, "PI Verification," provides guidance to verify PI data submitted by licensees and refers inspectors to NEI 99-02 for more in-depth definitions and descriptions of PI inputs. NEI 99-02 section 2.1 states the USwC PI (IE04) "monitors that subset of unplanned automatic and manual scrams that require additional operator actions beyond that of the "normal scram." To determine if a scram meets these criteria, it provides a flowchart for boiling water reactors (BWRs) with six questions. Answering "Yes" to any one of the six questions requires the scram to be counted as an USwC.

The inspectors identified question #6 as pertinent to the Unit 2 scram on December 16, 2012. Question #6, states "Following initial transient, did stabilization of reactor pressure/level and drywell pressure meet the entry conditions for EOPs?" This is further amplified by "the requirement to remain in the EOPs because of reactor pressure/water level and drywell pressure following the initial transient indicates complications beyond the typical reactor scram. Additionally, repeated reactor water level scram signals during the initial transient indicate level could not be stabilized and required this question be answered "Yes"."

In response to the inspector's questions, PPL staff developed a "white paper" to document the basis for their conclusions for not reporting the scram on December 16, 2012 as complicated. Their conclusions involved consideration that the second scram signal on December 16 was not due to equipment problems and the plant transient

associated with the second scram signal was not significant in terms of risk or additional challenge to the plant operations staff. The inspectors concluded that while there were not equipment issues, NEI 99-02 guidance indicates the criteria in question #6 is to verify that there were no other conditions that developed during the stabilization of the plant in the scram response related to vessel parameters that required continued operation in the EOPs or re-entry into the EOPs. The conditions do not have to involve equipment problems. The inspectors confirmed PPL operators reentered an EOP on December 16, 2012, due to low RPV level and concluded question #6 should have been answered in the affirmative. Regarding safety significance, the inspectors identified frequently asked question (FAQ) 12-03, regarding the USwC PI was applicable. The NRC staff determined "the [NEI 99-02] guidance does not distinguish between levels of complication for the USwC; scrams involving minor and significant complications are treated equally under this PI."

Following discussions with inspectors, PPL staff revised the data to report the Unit 2 scram on December 16, 2013, under the USwC PI. This scram, when combined with a second complicated scram, which was accurately reported in the same quarter, caused the PI to cross the Green-White threshold. This was discussed in an NRC follow-up assessment letter dated April 1, 2013 (ML13092A011).

The inspectors reviewed PPL's implementing procedure for submittal of ROP PI data (NDAP-QA-0737). This procedure directs PPL staff to utilize the guidance in NEI 99-02 to report performance indicators. It also states that the staff "must be aware of applicable FAQs in order to apply the FAQs to SSES PI Data submittals, as appropriate." Additionally, this procedure requires retention and retrievability of the source documentation and analysis created to support the monthly data input. Finally, Step 7.1.3 of this procedure states "The PI source documentation needs to be of sufficient quality and reliability to use as the basis for future inspection of the data by NRC."

The inspectors reviewed the source documentation for the PI assigned to AR 1644047 and identified that, although data for the scram was retained (i.e. scram date and cause), it did not apply the NEI guidance. The basis for answering the NEI 99-02 questions related to the USwC PI was developed in a "white paper" for the inspectors to review in response to questions after the PI was submitted. Finally the inspectors identified that procedure PPL NDAP-QA-0737, Attachment F, "Clarifying notes and determination of Unplanned Scrams with Complications," was in error because it omitted the NEI 99-02 Question #6 for determining this PI. Based on these observations, the inspectors concluded PPL staff did not implement a reasonable, good faith effort (as described in NRC IP 71151) to apply the guidance of NEI 99-02.

Analysis. The inspectors determined that failure to submit complete and accurate PI data for Unplanned Scrams with Complications (IE04) from October 2012 through December 2012 was a performance deficiency that was reasonably within PPL's ability to foresee and correct. The finding is more than minor because it is related to a performance indicator and caused the performance indicator to exceed a threshold. In this case, when the December 16 scram was re-classified under the USwC PI, the performance indicator crossed the Green-White threshold. The inspectors evaluated the finding using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power" and determined the finding did not contribute to both the likelihood of

a reactor trip and the likelihood that mitigation equipment or functions would not be available. Consequently, the finding is of very low safety significance (Green).

The SDP, however, does not specifically consider the regulatory process impact. Thus, although related to a common regulatory concern, it is necessary to address the violation and finding using different processes to correctly reflect both the regulatory importance of the violation and the safety significance of the associated finding. Therefore, the issue was evaluated in the traditional enforcement process because it had the potential to impact the NRC's ability to perform its regulatory function. The inspectors determined the finding was a Severity Level IV violation using the examples of the NRC Enforcement Policy. Specifically, example 6.9.d.11 states "a 10 CFR Part 50 licensee submits inaccurate or incomplete PI data to the NRC that would have caused a PI to change from green to white" is an example of a SL IV violation.

This finding has a cross-cutting aspect in the area of Human Performance, Decision-Making because PPL personnel did not communicate decisions and the basis for decisions to personnel who have a need to know the information in order to perform work safely, in a timely manner. Specifically, PPL did not adequately document the basis for determining the scram, which occurred on December 16, 2012, should be classified under the USwC PI to enable reviewers to adequately challenge the decision to ensure the appropriate classification was made [H.1.(c)].

Enforcement. PPL Procedure NDAP-QA-0737, "Reactor Oversight Process (ROP) Performance Indicators" implements standards to assure "that PPL submits accurate and timely performance indicator data to the NRC." Since PI data reporting is voluntary for licensees, the finding associated with PPL not implementing their self-imposed standard, which was evaluated with the ROP, did not constitute a violation of regulatory requirements. However, 10 CFR 50.9(a), "Completeness and Accuracy of Information" requires, in part, that information provided to the NRC by a licensee be complete and accurate in all material respects. Contrary to this, PPL did not accurately report the USwC PI for the period of October 2012 through December 2012 when they did not report the Unit 2 reactor scram which occurred on December 16, 2012 under this PI. Therefore, this issue is being characterized as a Green FIN related to PPL's implementation of NDAP-QA-0737, "Reactor Oversight Process (ROP) Performance Indicators," with an associated SL IV NCV of 10 CFR 50.9(a), "Completeness and Accuracy of Information." Following identification, PPL revised the data on March 20, 2013, which resulted in Unit 2 crossing the Green-White threshold as discussed in a follow-up assessment letter dated April 1, 2013 (ML13092A011). Because this violation was of very low safety significance, was not repetitive or willful, and was entered into PPL's CAP as CR 1688235, this violation is being treated as an NCV, consistent with section 2.3.2.a of the NRC Enforcement Policy. **(NCV 05000388/2013002-04, Inaccurate USwC PI Data Submittal)**

4OA2 Problem Identification and Resolution (71152)

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

a. Inspection Scope

As required by IP 71152, "PI&R," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that PPL entered issues

into the CAP at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the CAP and periodically attended CR screening meetings.

b. Findings

No findings were identified.

.2 Annual Sample: Unit 2 Reactor Vessel Lower Heads Cooldown Rates

a. Inspection Scope

A PI&R sample inspection was conducted during the period January 14-16, 2013. The inspectors performed an in-depth review of PPL's evaluation and corrective actions associated with CRs 1649677 and 1650644, which were initiated to assess the reactor vessel lower head cooldown rate experienced during a Unit 2 reactor scram on November 9, 2012, that exceeded 100°F in an hour. In addition, the inspectors reviewed records and data associated with reactor vessel bottom head cooldown rates from two additional Unit 2 reactor scrams on December 16 and December 19, 2012. The inspectors performed this review to verify that the cooldown rates were appropriately identified, characterized, documented and entered into PPL's corrective action process and to ensure compliance with TS 3.4.10, RCS Pressure and Temperature (P/T) Limits.

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

b. Findings and Observations

No findings were identified.

The inspectors determined that the pressure/temperature curve basis analysis calculation was appropriately performed in accordance with 10 CFR 50, Appendix G, Fracture Toughness Requirements and American Society of Mechanical Engineers (ASME) Code, Appendix G requirements. This analysis showed that the reactor pressure vessel (RPV) cooldown rates experienced during the three Unit 2 reactor scrams reviewed were bounded by the Susquehanna reactor vessel design analysis. The non-beltline regions, including the bottom head region of the RPV are analyzed for thermal cooldown transients that are significantly more severe than the transients in the beltline region.

The need to monitor the temperature changes during heatups and cooldowns in non-beltline regions of the RPV was analyzed by the RPV designer for Susquehanna. The analysis concluded that the bounding thermal events for the non-beltline regions were

based on the worst transient, and an operator-controlled heatup or cooldown could not approach their severity. Therefore, the RPV designer concluded that there is no need to monitor heatup and cooldown rates in non-beltline regions of the RPV.

The inspectors noted that Susquehanna's TS 3.4.10 bases and calculation EC-062-0573 provided the technical basis for monitoring only the reactor vessel saturation temperature when above 212°F and recirculation loop temperature when below 212°F, to measure the temperature change for the beltline region of the RPV (RCS heatup and cooldown limit in TS 3.4.10). The NRC reviewed PP&L's technical basis for this change (letter from the NRC to PPL dated December 1991). The NRC also reviewed PPL's revised TSBs (letter from NRC to PPL dated July 19, 1994). The NRC's review of the change concluded that PPL had provided an adequate technical basis to support monitoring the cooldown rate in only the beltline region of the RPV.

The inspectors concluded PPL's response to this issue was appropriate.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153 – 7 samples)

.1 (Closed) Licensee Event Report (LER) 05000387/2012-004-00: Unit 1 Secondary Containment TS 3.6.4.2 Combined Limiting LCO Time Exceeded on Two Occasions when the Primary Containment N2 Spectacle Flange was Rotated in the Open Position

a. Inspection Scope

On April 27, 2012, it was determined that PPL did not enter a Unit 1 TS 3.6.4.2 LCO when the primary containment nitrogen makeup line spectacle flange was rotated in the open position in Mode 1, 2, and 3. A review of Unit 1 and Unit 2 control room logs for the past three years revealed that on two occasions in 2011, the Unit 1 spectacle flange was open for greater than the combined completion times for TS 3.6.4.2. As a result, these two events were reportable as a condition prohibited by TSs. PPL identified that the cause of the event was less than adequate guidance specified in Operations procedures and status control mechanisms for controlling Secondary Containment. The inspectors reviewed this LER, the root cause analysis (RCA) associated with this event, and corrective actions associated with this event. This LER is closed.

b. Findings

A licensee-identified Green NCV associated with this issue is documented in section 4OA7 of this report.

.2 (Closed) Licensee Event Report (LER) 05000387/2010-003-03: Unit 1 Manual Reactor Scram Due to Leakage from the Unit 1 Circulating Water (CW) System and Subsequent Flooding of the Unit 1 Condenser Bay

a. Inspection Scope

On July 16, 2010, PPL operators manually scrammed the Unit 1 reactor due to a large unisolable CW system leak in the main condenser area. All control rods fully inserted as designed. Reactor water level lowered to -28 inches causing Level 3 (+13 inches) isolations. The non-safety related Integrated Controls System (ICS) for feedwater control detected the scram condition and automatically entered the setpoint setdown

mode, which placed the non-lead reactor feed pumps (RFPs) in idle mode, and initiated transition to the startup level control mode. During this transition, ICS feedwater level control did not transfer to single element control due to a higher than expected steam flow signal, and concurrent feedwater flow oscillations resulted in an increase in reactor water level. Reactor water level reached Level 8 (+54 inches), which resulted in the trip of all three RFP turbines, the high pressure coolant injection (HPCI) system, and the RCIC system to shutdown. Reactor water level was subsequently restored by operators and maintained within normal operating range using the RCIC system. The CW system was shut down and the main steam isolation valves (MSIVs) were manually closed. Pressure control was initiated using the HPCI system in the pressure control mode. All safety systems operated as expected. No steam relief valves opened. PPL estimated that approximately one million gallons of non- contaminated CW leaked into the turbine building condenser bay area.

There are no new NRC violations identified associated with review of this LER. The NRC previously issued a White finding (FIN 05000387/2010004-01) regarding PPL's performance aspects associated with this event. Additionally, the NRC initially held open this White finding (IR 05000387/2012008) due to significant weaknesses identified during the 95002 supplemental inspection procedure regarding PPL's extent of condition review and corrective action implementation. This supplement was issued based on the NRC's identification of a discrepancy with supplement 2 of this LER during a supplemental inspection (IR 05000387/2012-008) and documented in CR 1528948. Specifically, supplement 2 discussed a corrective action that increased a manway hatch bolt torque value to 110 ft-lbs. Subsequently, PPL revised the torque value to 80 ft-lbs based on the potential for gasket damage during installation at the higher torque. This supplement revised the value previously reported. This LER is closed.

b. Findings

No findings were identified.

.3 (Closed) Licensee Event Report (LER) 05000387/2011-002-01: Unit 1 Manual Scram due to Unisolable Extraction Steam Leak

a. Inspection Scope

On January 25, 2011, the Unit 1 reactor was manually scrammed due to an unisolable extraction steam system leak in the 1C feedwater heater bay area. Operators reduced reactor power from 98.4 percent to 65 percent prior to the scram. Non-safety-related electrical equipment exposed to the steam leak began malfunctioning. Attempts to isolate the source of the leakage were unsuccessful. Based on continued indications of an unisolable steam leak, operators shut down Unit 1 by taking the mode switch to shutdown. All rods were inserted. Reactor water level lowered to -31 inches causing a Level 3 (+13 inches) isolation. The RCIC system automatically initiated on a -30 inch level signal and was manually secured after water level was restored. Reactor water level was subsequently maintained at the normal operating band using feedwater. No steam relief valves opened. All safety systems operated as expected. PPL's root cause evaluation determined that the direct cause of the unisolable steam leak was the loss of a bleeder trip valve (BTV) cover plug via steam-induced thread erosion. This was caused by insufficient work instructions and employee knowledge/experience to ensure there was adequate thread engagement and proper application of thread sealant.

Corrective actions were to replace and seal weld the cover plug on the affected valve and to seal weld the cover plugs on other valves of similar design. Other key corrective actions included planning procedure changes related to threaded pipe assemblies, evaluation and training of maintenance foremen, implementation of a more risk informed screening process, procedure changes and an enhanced coaching card on procedure use and adherence, and management observations using the revised coaching card. Inspectors previously identified a self-revealing Green finding for inadequate procedures to perform maintenance on a threaded connection of a BTV. This finding was documented in IR 05000387;388/2011002 (ML111330523).

PPL subsequently determined that the original investigation did not comprehensively address the organizational, programmatic, and safety culture contributors to the event and established a root cause investigation team to supplement the original root cause evaluation. The root causes identified by the supplemental root cause evaluation were: 1) less than adequate management oversight of the work activity and work planning process resulted in degraded standards being applied to preparation and performance of the repair; and 2) deficient work instruction and task assignment for the BTV repair task resulted in inadequate corrective maintenance. This root cause evaluation was reviewed as part of the IP 95002 supplemental inspection as documented in IR 05000387/2012008 (ML12125A374). Following completion of the final IP 95002 supplemental inspection, the inspectors reviewed this LER and did not identify any new violations or performance deficiencies. This LER is closed.

b. Findings

No findings were identified.

.4 (Discussed) Licensee Event Report (LER) 05000387/2012-003-00: Unit 1 Secondary Containment Bypass Leakage Exceeded

a. Inspection Scope

On April 6, 2012, during the Unit 1 refueling outage, PPL identified that the as-found minimum pathway secondary containment bypass leakage (SCBL) TS limit was exceeded during the regularly scheduled local leak rate testing (LLRT). At the time the limit was exceeded, an LLRT was being performed on the 'A' feedwater line penetration X-9A. The tested containment isolation valve 141818A was leaking 2,855 standard cubic centimeters per minute (sccm). When the 2,855 sccm leakage through the 141818A valve was added to the combined as-found minimum pathway SCBL calculation, the total equaled 7,185 sccm, which exceeded the TS limit of 7,079 sccm as specified in TS surveillance requirement 3.6.1.3.11. PPL notified the NRC on April 6, 2012 in accordance with 10 CFR 50.72(b)(3)(ii)(A) (EN 47812).

The apparent cause of the excessive leakage through the 141818A valve was due to a galled disc stud and minor seat wear. The valve's disc stud was repaired and the soft seat was replaced. Additional corrective actions included installation of a modification which modified one of the SCBL boundaries from the containment spray penetration isolation valves to smaller better performing isolation valves in interfacing systems. This modification reduced the SCBL total by approximately 50 percent. Inspectors reviewed the issue and associated apparent cause evaluations (ACEs) and determined the

evaluations were narrowly focused on valve 141818A and did not look holistically at all the SCBL boundaries. This was documented as a NRC-identified Green violation of 10 CFR 50 Appendix B Criterion XVI for failure to prevent recurrence of a significant condition adverse to quality in IR 05000387;388/2012003 (ML12223A154). Subsequently, PPL initiated root cause evaluation 1553582 and identified programmatic weaknesses and organizational contributors that led to the violation. Based on the results of the evaluation, PPL determined that a supplement to this LER would need to be submitted in accordance with NUREG-1022 and initiated CR action 1622420 to track the submittal.

b. Findings

No findings were identified.

.5 (Closed) Licensee Event Report (LER) 05000388/2012-001-00: Two Control Room Floor Cooling Systems Inoperable

a. Inspection Scope

On May 11, 2012 at 4:03 p.m., Unit 2 entered a TS shutdown action statement due to two control room floor cooling systems being inoperable. The 'A' train 0V117A control room floor cooling unit fan's discharge damper had failed earlier in the day, which resulted in the 0V117A fan being inoperable. In response to this, the 'B' train fans and associated control structure (CS) chiller automatically started as a result of the operating fan low-flow interlock. Operators entered their alarm response procedures which directed them to leave the control switch for the failed 'A' train logic in the 'start' position and the control switch for the 'B' train logic in 'auto.'

During application of a subsequent clearance order (CO) for safety and protection of employees performing work on the failed fan damper, the 'A' fan switch was placed in the 'STOP' position. In accordance with the design logic, this resulted in an automatic start of the 'A' CS chiller and all the associated 'A' fans except for the control room cooling fan. This also resulted in the shutdown of the 'B' train fans and chiller and was not an expected condition during the application of the CO. This condition caused the loss of both control room cooling fans and entry into TS LCO 3.7.3, "Control Room Emergency Outside Air Supply (CREOAS) System," Condition E; LCO 3.7.4 "Control Room Floor Cooling System," Condition D and LCO 3.0.3, a shutdown condition statement. The control room operators recognized the loss of cooling and took immediate actions to restart the 'B' train. This event was reportable as a loss of safety function under 10CFR50.73(a)(2)(v)(D). There were no actual adverse consequences as a result of this event. The inspectors reviewed this LER, including PPL's evaluations and associated corrective actions. This LER is closed.

b. Findings

Introduction. A self-revealing NCV of very low safety significance (Green) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified because PPL did not ensure ARPs for control room cooling fan system failures were adequate, which resulted in the subsequent loss of both trains of control room cooling during CO application for fan repair work.

Description. The control room floor cooling system is designed to remove sensible and latent heat loads from the control room to ensure equipment operability. The system is designed for 30-day continuous occupancy and the fans are used to maintain a positive pressure relative to the outside atmosphere to prevent air inleakage to the control room. On May 11, 2012, Unit 2 lost both control room floor cooling systems. During application of a CO to repair a failed damper on the 'A' CS fan, the control switch was placed in the 'STOP' position. This bypassed the low flow interlock signal for the 'A' CS heating, ventilation, and air-conditioning (HVAC) chiller with the result that the 'A' side chiller and associated fans started, and the in-service 'B' control room cooling system shutdown. This resulted in both trains being OOS until PPL operations personnel restored the 'B' train cooling within fifteen minutes.

The inspectors noted that there were two distinct control switches involved in this event, the control room cooling fan (0V117A) switch, and the chiller circulating pump control switch (HS08622A/B). HS08622A/B is a break-before-make style switch and because of this design, caution and warning statements were in the applicable ARPs to not attempt to transfer the control switch from the AUTO to START position because it may cause the chiller to trip. PPL's RCA of the event identified that the chiller circulating pump control switch requires the installation of an electrical jumper when changing positions for certain configurations because of the break-before-make design. When changing the position of the switch without the jumper applied, the circuit is momentarily interrupted, which can cause the system to trip.

PPL's RCA report identified that in 2003 the extent-of-condition evaluation of a radwaste chiller event had identified that the CS chiller was found to lack adequate direction for restoration following a chiller trip. The ARPs, off-normal and operating procedures were revised as part of the review to add guidance on changing the CS chiller circulating pump switch position. However, only the ARP sections applicable to chiller trip events were addressed (alarm windows A08 and C07) and other ARP actions for fan trip events were not adequately revised at the time. As a result, on May 11, 2012, when the 'A' control room cooling fan tripped, control room personnel referred to ON-030-001, "Loss of CS Chilled Water" and ARP AR-029-001, "CS, SGTS, DG and ESW PH Ventilation Division 1 0C681" for actions. The applicable section warned against taking action to place the 'B' chiller circulating pump control switch in the normally expected lead position 'START' for operating equipment. On May 11, the operators followed the procedure and left the tripped 'A' system in 'START' and the running 'B' system in 'AUTO.' PPL determined in the RCA that this lack of guidance to restore the switches in the appropriate lead and lag position allowed the system configuration to remain atypical, which lead to the subsequent simultaneous loss of both control room cooling systems.

The RCA also reviewed the CO application that ultimately led to the loss of both trains of cooling. The evaluation noted that the CO was prepared in accordance with NDAP-QA-0322, "Energy Control Process" and no procedural non-compliance issues were identified. However, procedural weaknesses were identified that led to the CO being less than adequate. Specifically, the CO had not received a technical evaluation, which prevented the impacts and effects of taking the failed control room fan handswitch to the 'STOP' position from being known. Additionally, the system logic diagrams were not reviewed as part of either the CO process or work control process to fully identify the effects of applying the CO. The inspectors independently reviewed the system logic diagrams and CO process and procedures. The inspectors concluded that while the process could have resulted in a technical evaluation being required, the control fan

logic was complex and it would not have been easily identifiable to the CO writer what the effects of taking the fan CS to 'STOP' would be. The inspectors determined that the ARP actions were deficient in allowing an abnormal system configuration that resulted in the subsequent loss of control room cooling. The inspectors reviewed PPL's actions after the event to modify and address the ARP for fan failures and found the procedural revisions to be adequate. Specifically, the ARPs were revised to ensure that if standby equipment automatically starts and is to remain in service, the respective control switch is taken to 'START' per the applicable operating procedures. This aligns the control logic for operating equipment so that repositioning switches on failed equipment in preparation for repair work will not affect it.

Analysis. The inspectors determined there was a performance deficiency because PPL had not provided adequate written instructions in response to a failure of a control room cooling fan damper. Specifically, adequate instruction did not exist to align equipment in response to a tripped fan train condition and this, subsequently, resulted in the unexpected loss of both control room cooling trains during the implementation of the CO process. The inspectors determined the deficiency was more than minor because it was associated with the Procedure Quality attribute of the Mitigating System cornerstone. The inadequate procedure resulted in the loss of control room cooling which affects the objective to ensure the availability and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined through a review of IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," that the finding was of very low safety significance (Green) because the finding was not related to a design or qualification deficiency, did not represent a loss of a mitigating system safety function because cooling was restored in a timely manner, and did not screen as potentially risk significant due to external initiating events. The control room operators immediately recognized the loss of cooling and took manual action to restart the 'B' cooling train within 15 minutes to ensure control room temperatures were not adversely affected. The finding did not have a cross-cutting aspect because the inadequate ARP was a historical issue not indicative of current performance. Specifically, the ARP deficiency had not been adequately identified and revised in 2003 and this occurred outside of the nominal three year period for evaluating present performance as defined in IMC 0612, section 03.15. Additionally, PPL has instituted procedure and CAP improvements since that time which would have prevented the performance deficiency.

Enforcement. 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires in part, that activities affecting quality shall be prescribed by documented instructions and procedures of a type appropriate to the circumstances. Contrary to the above, prior to May 11, 2012, it was identified that PPL had not incorporated adequate written guidance for AR-029-001, "CS, SGTS, DG and ESW PH Ventilation Division I 0C681" and AR-030-001, "CS, SGTS, DG and ESW PH Ventilation Division II 0C681," to realign the CS chiller circulating pump control switches in response to a failure of a control room cooling fan train. Because this violation was of very low safety significance, was not repetitive or willful, and was entered into PPL's CAP (CRs 1572658 and 1684872), this violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. (**NCV 05000388/2013002-01, Inadequate Procedure for Control Room Cooling Fan Train Failure**)

.6 (Closed) LER 05000387/2012-001-00: Both Trains of CS Chillers Inoperable

a. Inspection Scope

On February 22, 2012, PPL personnel identified that a linkage connector on the standby 'B' 0K112B CS chiller that connects the compressor guide vanes to the guide vane motor was broken. The guide vanes open and close to maintain the chilled water outlet temperature at the desired setpoint. With the guide vane linkage broken, the 'B' CS chiller would be unable to regulate itself to changing load conditions. Subsequently, on March 27, 2012, a CAP investigation into the failure determined that the chiller compressor guide vanes had failed on February 16, 2012, while the opposite train 'A' CS chiller was OOS for maintenance. PPL determined this by reviewing the compressor motor current traces of the 'B' CS chiller. As a result, PPL determined that both CS chillers had been inoperable simultaneously for a total of 49 hours. PPL also determined that this had resulted in a condition prohibited by TSs and in accordance with 10 CFR 50.73(a)(2)(i)(B) and 10 CFR50.73(a)(2)(v), represented a condition that could have prevented the fulfillment of a safety function.

The LER was reviewed for accuracy, the appropriateness of corrective actions, historical equipment operating experience (OE), violations of requirements, and generic issues. Corrective actions identified within the LER consisted of replacing the broken ball-joint connector on the 'B' CS chiller and reviewing the extent of condition need for replacement on other applicable chillers. The LER identified that replacement of the ball-joint connectors on the chiller guide vane linkage will be evaluated for addition into the preventive maintenance (PM) program for the chillers. The inspectors noted that vendor documentation had not specified the replacement of the connector and, therefore, it had not been previously included in the PM program. In addition, the inspectors noted that a review of historical operating performance had not shown the ball-joint connector to be a notable failure mode for the chillers. Based on this review, the inspectors did not identify a performance deficiency as there were no prior trends of failures of the ball joint connectors and no deficiencies related to maintenance practices were identified. Additionally, the inspectors determined that the failure of the chiller compressor guide vanes with the chiller in operation would not have been readily apparent due to minimal changes in chiller demand required at the time of the failure. This LER is closed.

b. Findings

A licensee-identified severity level SL IV NCV of TS 3.7.4 was identified and is documented in Section 4OA7 of this report.

.7 (Closed) Licensee Event Report (LER) 05000387/2012-002-00: 'B' CS Chiller Inoperable Concurrent with 'A' Emergency Diesel Generator Out of Service

a. Inspection Scope

On April 4, 2012 at 3:17 p.m., the 'A' EDG was declared inoperable for performance of a routine 24 month 4kV 'A' Bus UV relay calibration surveillance. At 7:35 p.m., on April 4, 2012, the 'B' CS chiller was declared inoperable due to an unrelated issue where degradation of chiller refrigerant piping at the connection of the evaporator had been identified. The LER associated with this event identified that with the 'B' CS chiller and

'A' EDG both considered inoperable, the 'A' CS chiller would not be available to perform its design function on a loss of offsite power. This was identified as a condition that at the time of discovery could have prevented fulfillment of a safety function and, therefore, it was reported in accordance with 10CFR 50.72(b)(3)(v) as an 8-hour notification. The event was also reportable as an LER in accordance with 10 CFR 50.73(a)(2)(v). Susquehanna TS 3.8.1.B.2 allows 4 hours to restore the inoperable EDG before the features ('A' CS chiller) supported by the EDG are required to be declared inoperable. The 'A' EDG was restored to operable status within those 4 hours on April 4, 2012 at 10:00 p.m., which restored the safety function capability for the 'A' CS chiller and the 'A' CS chiller was no longer required to be declared inoperable.

The LER was reviewed for accuracy, the appropriateness of corrective actions, violations of requirements, and generic issues. The inspectors noted that the degraded refrigerant piping for the 'B' CS chiller was licensee-identified as part of PPL's CAP and was discovered as part of actions which had been initiated to look for, identify, and address potential leakage issues with the CS chillers. In this case the 'B' CS chiller was declared inoperable due to an identified wall thickness issue with a Freon piping connection at the evaporator. No actual Freon leak was identified at the time of discovery of the wall thickness concerns. The inspectors noted that PPL promptly corrected the degraded piping and was in the process of developing and implementing a chiller project plan to address chiller equipment reliability issues. There were no performance deficiencies or violations identified during the review of this event. This LER is closed.

b. Findings

No findings were identified.

4OA5 Other Activities

.1 Review of INPO Accreditation Team Evaluation

a. Inspection Scope

The inspectors reviewed the final report for the INPO accreditation team evaluation of the maintenance, chemistry, and radiological protection. The inspectors reviewed this report to ensure that any issues identified were consistent with NRC perspectives of PPL performance and to determine if INPO identified any significant safety issues that required further NRC follow-up.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On April 26, 2013, the inspectors presented the inspection results to Mr. J. Franke, Site Vice President (SVP) and other members of the PPL staff. PPL acknowledged the findings. No proprietary information is contained in this report.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) or Severity Level IV 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.

- On April 27, 2012, PPL determined that its staff did not enter a Unit 1 TS 3.6.4.2 LCO when the primary containment nitrogen makeup line spectacle flange was rotated in the open position in Mode 1, 2, and 3. A review of Unit 1 and Unit 2 control room logs for the past three years revealed that on two occasions in 2011, the Unit 1 spectacle flange was open for greater than the combined completion times for TS 3.6.4.2. As a result, these two events were reportable as a condition prohibited by TSs. PPL identified that the cause of the event was less than adequate guidance specified in Operations procedures and status control mechanisms for controlling Secondary Containment.

  The issue was determined to be a violation of TS 5.4.1.a, "Procedures," which requires that written procedures be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A. Section 4 requires instructions for a list of BWR systems that includes, particularly, 4.j.(3) Inerting and deinerting of containment. Contrary to this, PPL procedure OP-173-001, Containment Atmosphere Control System, Revision 39, did not identify TS 3.6.4.2 as applicable and the TS was not entered when the nitrogen spectacle flange was rotated open. This also resulted in a violation of TS 3.6.4.2, "Secondary Containment Isolation Valves," when the spectacle flange was open longer than allowed. The issue was more than minor since it was similar to example 4.l of IMC 0612, Appendix E. It also was more than minor since it affected procedure quality attribute of the Barrier Integrity cornerstone and its objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The issue screened to Green using IMC 0609 Appendix B since the issue did not represent an actual open pathway in the physical integrity of the reactor containment or involve an actual reduction in reactor containment hydrogen igniter function. This issue was entered in PPL's CAP as CR 1548804.

- On March 27, 2012, PPL determined, during a CAP follow-up review into the failure of the 'B' CS chiller compressor guide vane linkage, that it had likely occurred on February 16, 2012, while the 'A' CS chiller was OOS for maintenance. The result was that both CS chillers had been inoperable simultaneously for a total of 49 hours. PPL determined that this had resulted in a condition prohibited by TS. Specifically, TS 3.7.4 action D.1 requires the immediate entry into LCO 3.0.3 during the time the two control room floor cooling subsystems were inoperable. Contrary to the above, PPL had not recognized the failure of the in-service 'B' chiller and, therefore, had not taken the appropriate 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 performance deficiency. A review of historical equipment performance had not shown the ball-joint connector to be a notable failure mode for the chillers and there were no prior trends of failures of the CS chiller compressor ball joint connectors. Additionally, the inspectors determined that the failure of the chiller compressor guide

vanes with the chiller in operation would not have been readily apparent due to minimal changes in chiller demand required at the time of the failure.

This issue was considered to be an SLIV violation of TS 3.7.4 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 SLIV licensee-identified NCV. There was no actual safety consequence as the 'B' CS chiller was able to support its cooling load to maintain the CS room temperatures within normal operating bands in the position where the vanes had failed. Additionally, although not considered operable for design conditions, the 'B' chiller was able to provide some minimal cooling to its respective loads during the limited exposure time where both trains were considered inoperable. This severity level IV licensee-identified NCV was entered into PPL's CAP as CR1548540.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
B. Bishop, GM Work Management
T. Case, Senior Engineer
D. Filchner, Licensing
B. Heacock, System Engineer
R. Hollands, System Engineer, Ventilation
J. Jennings, Supervisor Regulatory Affairs
M. Lingenfelter, Manager Station Engineering
E. Malia, Mechanic Leader
R. McCormick, Maintenance Production Foreman
D. McGarry, Manager, I&C Maintenance
S. Muntzenberger, Supervisor, Mechanical Engineering
B. O'Rourke, Licensing Engineer
J. Siroka, Senior Engineer
D. Sober, Maintenance Production Foreman
J. Titus, Maintenance Production Foreman
R. Thomann, Support Engineer
R. Vazquies, Principal Engineer
J. Weik, Engineering

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None.

Opened/Closed

05000388/2013002-01	NCV	Combustible Storage in Restricted Areas Without Approval (1R05)
05000388/2013002-02	NCV	Inadequate Restoration from Clearance Order Results in Degradation of Main Condenser Vacuum and Plant Downpower (1R13)
05000387;388/2013002-03	SLIV	Inadequate 10 CFR 50.59 Screening of TS Bases Change (1R18)
05000388/2013002-04	Green/SLIV	Inaccurate USwC PI Data Submittal (4OA1)
05000387;388/2013002-05	NCV	Inadequate Procedure for Control Room Cooling Fan Train Failure (Section 4OA3.5)

Closed

05000387/2012-004-00	LER	Unit 1 Secondary Containment TS 3.6.4.2 Combined LCO Time Exceeded on Two Occasions when the Primary Containment N2 Spectacle Flange was Rotated in the Open Position (4OA3.1)
05000387/2010-003-03	LER	Unit 1 Manual Reactor Scram Due to Leakage from the Unit 1 CW System and Subsequent Flooding of the Unit 1 Condenser Bay (4OA3.2)
05000387/2011-002-01	LER	Unit 1 Manual Scram due to Unisolable Extraction Steam Leak (4OA3.3)
05000388/2012-001-00	LER	Two Control Room Floor Cooling Systems Inoperable (Section 4OA3.5)
05000387/2012-001-00	LER	Both Trains of CS Chillers Inoperable (Section 4OA3.6)
05000387/2012-002-00	LER	'B' CS Chiller Inoperable Concurrent with 'A' EDG OOS (Section 4OA3.7)

Discussed

05000387/2012-003-00	LER	Unit 1 Secondary Containment Bypass Leakage Exceeded (4OA3.4)

LIST OF DOCUMENTS REVIEWED

(Not Referenced in the Report)

Section 1R01: Adverse Weather Protection

Procedures:
Nuclear Department Administrative Procedure (NDAP)-0O-0024, Winter Operation Preparations, Revision 18
NDAP-QA-1902, Integrated Risk Management, Revision 10
MT-085-001, Freeze Protection, Process heat Trace Testing and Maintenance, Revision 23
OI-AD-029, Emergency Load Control, Revision 15

Condition Reports:
1493695*, 1496219*, 1663877*, 1662649, 1662646, 1662648, 1557253, 1589198, 1662614, 1662619, 1664024*, 1667895*

Miscellaneous:
Units 1 and 2, Operations Logs January 23, 2013 – January 24, 2013
Station Priority Investigations/Focus for January 22, 2013
PJM M-13, Emergency Operations, Revision 51

Section 1R04: Equipment Alignment

Procedures:
TM-OP-015-ST, "Turbine Building Cloud Cooling Water," Revision 5
TM-OP-052-ST. HPCI system, Revision 2

Condition Reports (* NRC identified):
1668001*, 1663588, 1667071, 1677914*, 1677816*, 1677539*, 1253703, 1261816, 1649980, 1617099

Drawings:
E-162643, "Unit 2 P&ID Turbine Building Cloud Cooling Water," Revision 34
M-2150, Sheet 2, RCIC Turbine Lube Oil, Revision 2
M-2150, Sheet 1, RCIC Turbine Pump, Revision 28
E-11, Sheet 2, 125 and 250 VDC System, Revision 28
M-2155, Sheet 1, HPCI, Revision 43

Miscellaneous:
CL-202-0011, Unit 2 125 DC System, Revision 5
CL-250-0011, Unit 2 RCIC System, Revision 10
CL-250-0012, Unit 2 RCIC System, Revision 18
CL-250-0013, Unit 2 RCIC System, Revision 5

Section 1R05: Fire Protection

Procedures:
FP-213 – 246, Equipment Removal Area (11-200, 201) Fire Zones 2-3B-N, 2-3B-5, 2-3B-W, Elevation 683'-0", Revision 5
FP-113-113, Containment Access Area (I-401, I-404, I-405) Fire Zones 1-4A-N,S,W, Elevation 719'-0", Revision 6
NDAP-QA-0440, Control of Transient Combustibles/Hazardous Materials, Revision 10
FP-113-115, Switchgear Rooms ((-406, I-407) Fire Zones 1-4C, 1-4D, Elevation 719'-0", Revision 3
FP-213-054, Circulation Space (II-500), FP Heat Exchanger (HX) (II-514), Chiller Room (II-512), Standby Liquid Control System Area (II-513)
FP-013-150, Unit 1 Lower Cable Spreading Room (C-300), Fire Zone 0-25E, Elevation 714'-0", Revision 6
FP-013-146, Unit 2 Lower Cable Spreading Room (C-301) Fire Zone 0-25A, Elevation 714'-0", Revision 5
FP-113-104, RCIC Pump Room (I-12) Fire Zone 1-1D, Elevation 645'-0", Revision 5

Condition Reports (*NRC identified):
1663043*, 1663053*, 1663061*, 1663082, 1657687*, 1667975, 1676445*, 1681724*, 1682515*, 1682969*, 1685186*, 1685215*, 1685262*

Calculation:
EC-013-1860, Handling of Transient Combustibles in the Wraparound Zones and Restricted Areas Red Zones, Revision 2

Drawings:
C-1730, Sheet 1, Unit 2 RB Fire Zone Plan, Elevation 683'-0", Revision 16
C-1723, Sheet 1, RB Fire Zone Plan, Elevation 719'-1", Revision 12
C-1723, Sheet 2, RB Fire Doors and Fire Dampers, Elevation 719'-1", Revision 9
C-1723, Sheet 3, RB Fire Protection Plan, Elevation 719'-1", Revision 11
C-1723, Sheet 4, RB Fire Detector Location Plan, Elevation 719'-1", Revision 7

Section 1R06: Flood Protection Measures

Condition Reports (* NRC identified):
1673692*, 1673699*, 1671393, 1670164, 1674661*, 1674954*

Engineering Calculations:
EC-RISK-0539, Internal Flooding Analysis for PRA, Revision 2

Work Order:
1440874

Miscellaneous:
Unit 2 Operating Logs, February 12 – 13, 2013
FSAR 3.4, Revision 55

Section 1R07: Heat Sink Performance:

Procedure:
NDAP-QA-0504, HX Program, Revision 5

Condition Reports:
1044430, 1629144, 1313778, 1660403*

Work Orders:
1439359, 1453923, 1064513, 885110, 1170481, 1660403*

Drawings:
M-1557, HX Gasket Materials, Revision 1
FF-105801, Sheet 701, Revision 3
FF-105801, Sheet 801, Revision 1

Miscellaneous:
PSP-29, PMT Matrix, Revision 13
MT-GM-025, HX Cleaning and Inspection, Revision 20
H-1004, HX/Condenser Inspection and Condition Assessment, Revision 6

Section 1R11: Licensed Operator Requalification Program

Procedures:
TP-055-015, Insert Stall Testing, Revision 2
OP-AD-338, Reactivity Manipulations Standards and Communication Requirements, Revision 19
NDAP-QA-0300, Conduct of Operations, Revision 32
OP-AD-004, Operations Standards for Error and Event Prevention

NDAP-QA-0338, Reactivity Management and Controls Program, Revision 18
GO-200-012, Power Maneuvers, Revision 41
OP-AD-001, Operations Standards for System and Equipment Operation, Revision 49
OP-AD-002, Standards for Shift Operations, Revision 42

Condition Reports (* NRC identified):
1666289, 1666264, 1675957, 1675810

Miscellaneous:
2013 SSES Biennial Exercise Practice Scenario

Section 1R12: Maintenance Effectiveness

Procedures:
MT-GE-030, ITT Damper Hydramotor Model NH91/NH93 Overhaul, Revision 20
TP-118-018, "Test Loading Sequence of Lead and Log Instrument Air Compressors," Revision 0

Condition Reports:
1684082, 1665931, 1679013, 1666379, 1666397, 1665973, 1483180, 1482081, 1483039, 1483759, 1684041*, 1483759

Work Orders:
1150690, 1470229

Drawing:
V-482, Sheet 2, DG Building and Emergency Safeguards Service Water (ESSW) PH Heating and Ventilation

Miscellaneous:
System Health Reports, Systems 118/218

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures:
NDAP-QA-1902, Integrated Work Management, Revision 10
SE-249-008, 24 Month RHR LSFT Division II Online Partial, Revision 3
PSP-26, Online Shutdown Nuclear Risk Assessment Program, Revision 11
NDAP-QA-0340, Protected Equipment Program, Revision 20
NDAP-QA-1904, Shutdown Risk Management, Revision 1
ON-217-001, "Loss of Instrument Bus," Revision 27
OI-AD-006, "Station Electrical Breaker and Component Instruction," Revision 1
NDAP-QA-0029, "Procedure and Work Instruction Use and Adherence," Revision 20
OP-AD-055, "Operations Procedure Program," Revision 33
OP-257-001, "Computer and Vital UPS," Revision 16
NDAP-QA-0008, "Procedure Format and Content," Revision 14
OP-205-001, "480V AC System," Revision 25
NDAP-QA-0322, "ECP Administrative Guidelines," Revision 42
OP-272-001, "SJAE and Offgas System," Revision 57

Condition Reports:
1668353*1668544*, 1673677*, 1337052, 1661931, 1660714, 1660773, 1689358*, 1668013, 1668735, 1668090, 1668089, 1668220, 1552702, 1545616, 1668013

Work Orders:
1434073, 1150690, 1658693, 1149438, 1235160, 1494268

Drawings:
M-157, Sheet 1, Atmosphere Containment Control, Revision 50
M-2169, Sheet 1, "Unit 2, P&ID Offgas Recombiner System," Revision 32

Miscellaneous:
Unit 2 Operating Logs for February 5, 2013
Unit 2 Risk Profile for February 5, 2013
Hot Box 13-17
Risk Profile for Units 1 and 2 for February 5, 2013 and February 7, 2013
Unit 2 TS 3.5.1, 3.6.2.3, 3.6.2.4, 3.6.1.3
Operator Logs dated January 15, 2013
Operations Directive
Risk Profile for Week of January 28, 2013
Operator Logs dated February 6, 2013
CO 27-002-Fall 2012 Forced Outage - 3027

Section 1R15: Operability Evaluations

Procedures:
SO-016-002, "Quarterly Common Residual Heat Removal Service Water (RHRSW)/ESW Valve Exercising (ESW Spray Pond Valves)," Revision 18
TM-ST-013, "Fire Protection," Revision 12
OP-023-001, "Diesel Fuel Oil System," Revision 33
PSP-29, "Post-Maintenance Testing Matrix

Condition Reports (* NRC-identified):
1655470, 1660425, 1669563, 1669568, 1658990, 1654146, 1677470, 1678270, 1678267, 1678460, 1678382, 1678354, 1677371*, 1670519*, 1666164, 1475839, 1652386, 1666223, 1652315, 1675090, 1674096, 862230, 1436865

Miscellaneous:
Operator Logs dated March 7, 2013
EC-024-1028, "Evaluate Operability of DG 'E' with Jacket Water Leak Identified in AR 862230," Revision 0
EC-024-1033, "Establish a Maximum Allowable Jacket Water Leakage Rate for DGs A-D," Revision 0

Section 1R18: Permanent Plant Modifications

Procedures:
MFP-QA-1220,"Engineering Change Process handbook," Revision 16
SE-252-002, "HPCI 2 year LSFT," Revision 6

Condition Reports (* NRC identified):
1679246*, 1680291*, 1680289*, 1323000, 1680823*, 1680839*, 1680382*, 1680568*, 1680926, 1679802*, 1677470, 1471340, 1678266*, 821098, 98-2821, 1634476, 1628316, 1634471, 1626463, 1654149

Drawings:
E-154, Sheet 14, "Unit 1 Schematic Diagram RCIC Turbine Exhaust to Suppression Pool (SP) Valve HV-E51-1F059," Revision 19
E-154, Sheet 33, Unit 2, Schematic Diagram RCIC Turbine Exhaust to SF Valve HV-E51-2F059," Revision 16
E-152, Sheet 15, "Unit 1 Schematic Diagram HPCI Turbine Exhaust to SP Valve HV-E41-1F066, Revision 15
E-152, Sheet 33, "Unit 2 Schematic Diagram HPCI Turbine Exhaust to SP Valve HV-E41-2F066, Revision 13

Miscellaneous:
R.G. 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments"
DBD 003, "Primary Containment Isolation," Revision 2
NUREG-0800, Appendix 7.1-B, Guidance for Evaluation of Conformance to IEEE 279"
PPL 50.59 Resource Manual, Revision 6
Generic Letter (GL) 89-10
Operators Hot Box 13-15
TRAR 98-010
Federal Register May 1, 2000 (Volume 65, Number 84) (Page 25368 – 25395
PLA-4913
PLA-4488
PLA-4789
PLA-4887PLA-4856
NUREG-0776
RG 1.137, Fuel Oil Systems for Standby DGs, Revision 1
RG 1.59
FSAR 6, 9.5.3, 9.5.4, 15
PORC Meeting Minutes for October 2, 2012
EC-023-1012, Evaluate Impact on Use of ULSD Fuel on the DG Fuel Oil Storage and Transfer System, Revisions 0 and 1
ANSI-N195
DBD013, DGs and Auxiliaries, Revision 4

Section 1R19: Post-Maintenance Testing

Procedures:
MT-GE-030, ITT Damper Hydramotor Model NH91/NH93 Overhaul, Revisions 13 and 20
MT-GE-051, "Initial Inspection Testing and Installation of NLI 480 VAC MCC Cubicles," Revision 13
IC-DC-400, "Switch Bistable Calibration/Calibration Check Procedure," Revision 13
SO-024-001D, "Monthly DG 'D' Operability Test," Revision 12
SO-249-A06, "RHR Comprehensive Flow Verification Loop A," Revision 6
SE-259-400, "RHR/CS/HPCI/RCIC Component Post-Maintenance "Closed System" Testing," Revision 5
PSP-29, "Post-Maintenance Testing Matrix," Revision 13
SO-024-014, "Monthly DG 'E' Operability Test," Revision 34
SM-023-001, "10 Year Diesel Fuel Oil Storage Tank Cleaning Surveillance," Revision 7

Condition Reports (*NRC-identified):
1666865*, 1665931, 1665973, 1666397*, 1666379, 1468832, 1679327, 1623302

Calculations:
1666167, 1497268

Work Orders:
1150690, 1665932, 1665979, 1666113, 1307280, 1470229, 1296741, 1296751, 1324892, 1296744, 1654325, 1507537

Drawing:
E105951, Sheet 1, "Unit 2 P&ID RHR"

Miscellaneous:
IOM 671, Generic Nuclear Hydramotors Instruction Manual, Revision 5

Section 1R22: Surveillance Testing

Procedures:
SI-149-209, Quarterly Functional Test of RCS Leakage High Pressure Monitor, Revision 11
SI-149-210, Quarterly Functional Test of RCS Leakage High Pressure Monitor Channels (RHR Discharge Header High Pressure, Low Pressure Coolant Injection (LPCI), and Head Spray), Revision 13
NDAP-QA-0722, Surveillance Testing Program, Revision 20
SO-293-001, "Quarterly Turbine Valve Cycling, Revision 41
SO-150-002, "Quarterly RCIC Flow Verification," Revision 47
SO-250-006, "RCIC Comprehensive Flow Verification," Revision 8
SO-150-005, "RCIC Comprehensive Flow Verification," Revision 9
SO-249-B06, "RHR Comprehensive Flow Verification Loop B," Revision 9
SE-024-A01, "DG A Integrated Surveillance Test," Revision 5
SO-200-006, "Shiftly Surveillance Operating Log, Revision 63
SE-252-001, "Unit 2 HPCI Logic System Functional Test (Online)," Revision 6

Condition Reports (* NRC identified):
1653455, 1665968, 1665895, 1494267, 1569204, 1569013, 1668592, 1668593, 1669712*, 1674096, 1673623, 1668832, 1660829

Work Orders:
1641092, 1641088, 1608554, 1350099, 1668641

Drawings:
M-151, Sheet 1, RHR, Revision 68
FF-122610, Sheet 2206, "Reactor Protection System (RPS)," Revision 20
FF-122610, Sheet 2207, "RPS," Revision 22
FF-122610, Sheet 2208, "RPS," Revision 21
FF-122610, Sheet 2209, "RPS," Revision 20
FF-122610, Sheet 202, "Common Instrument Engineering Diagram RPS," Revision 12

Miscellaneous:
Unit 1 TRO 3.4.3
FSAR 5.2.5

C/D 49-001-1608554-0
Part 9900: Technical Guidance on Preconditioning
50.59 AD 01396
NL-01-017, SSES 50.59 SE, "Use of RPS Test Box for Trip Channel Functional Tests and Channel Calibration," Revision 2

Section 1EP6: Drill Evaluation

Condition Reports:
1665216, 1665462, 1665467, 1665469, 1665474, 1665476, 1665477, 1665480, 1665482, 1665483, 1665484, 1665485, 1665493, 1665494, 1666264, 1656792

Miscellaneous:
EP-PS-104, RP Coordinator, Revision 25
EP-PS-105, TSC Dose Calculator, Revision 19
EP-PS-130, HP II Dose Calculator, Revision 11
EP-PS-100, ED Control Room, Revision 27
EP-PS-126, Emergency Plan Communicator, Revision 28
10 CFR 50 APP. E, 10 CFR 50.47

Section 4OA1: Performance Indicator Verification

Procedures:
OP-AD-001, Operations Standards for System and Equipment Operation, Revision 49
NDAP-QA-7037, ROP PIs, Revision 9
OP-258-001, "RPS," Revision 39
ON-200-101, "Scram, Scram Imminent," Revision 24

Condition Reports (* NRC identified):
1673103*, 1586764, 1586835, 1673697, 1634039, 1652142, 1644047, 1549037, 390290, 1682230*1682239*, 1652338, 1688235, 1689470*

Miscellaneous:
NEI-99-02, Regulatory Assessment PI Guideline, Revision 6
Operator Logs, January 1, 2012 – December 31, 2012 for Units 1 and 2
FAQ 237, 231
Reactivity Manipulation Request 1C18, dated June 11, 2012
FAQ 481
FAQ 12-03, "St. Lucie Unplanned Scram w/Complications"
PPL Post-Event Review Report for Unit 2 Scram on December 16, 2012
EO-000-102, "RPV Control," Revision 11

Section 4OA2: Identification and Resolution of Problems

Procedures:
SO-200-011, Unit 2 Reactor Vessel Temperature and Pressure Recording, completed November11, 2012, Revision 18
ON-200101, Scram, Scram Imminent, Revision 24

Condition Reports (* NRC identified):
1651647, 1657682*, 1657685*, 1657687*, 1657647*, 1657686*, 1657691*, 1658661*, 1659054*, 1659155, 1659511*, 1660460*, 1663862*, 1663859*, 1664503*, 1664180*, 1664064*, 1664024*, 1664697*, 1664702*, 1664705*, 1664709*, 1664712*, 1664715*, 1664721*, 1666778*, 1667460*, 1667975*, 1669100*, 1670922*, 1649677, 1643156, 1650644, 1659449, 1659511, 1661128, 1660439, 1671975*, 1671961*, 1671980*, 1671982*, 1671968, 1673135*, 1673156*, 1676209*, 1676306*, 1681717*, 1683347*, 1684343*, 1684555*, 1684548*, 1684539*

Analysis/Calculations
SASR 89-40, Pressure-Temperature Curve Basis for SSES Units 1 and 2, June 1989
EC-062-0573, Study to Support the Bases Section of TS 3.4.10, June 14, 2002, Revision 1

Miscellaneous:
Unit 2 TS 3.4.10, RCS P/T Limits
Service Information Letter (SIL) 430, RPV Temperature Monitoring, September 27, 1985
SIL 251, Control of RPV Bottom Head Temperatures, October 31, 1977
Letter NRC to PPL in December 1991
Letter NRC to PPL dated July 19, 1994
ASME Boiler and Pressure Vessel Code, Section XI, Appendix G
10CFR50, Appendix G, Fracture Toughness Requirements
RG 1.99, Radiation Embrittlement of Reactor Vessel Materials, Revision 2
RPV Bottom Head Drain Line Temperature Data Recordings from Integrated Plant Computer System, November 9, 2012, December 16 and December 19, 2012
Nuclear Oversight Station Summary Report, September – December, 2012

Section 4OA3: Event Followup

Procedures:
AR-029-001, CS, SGTS, DG and ESW PH Ventilation Division I 0C681, Revision 26
AR-030-001, CS, SGTS, DG and ESW PH Ventilation Division II OC681 Revision 28
NDAP-QA-0322, Energy Control Process, Revision 42
ON-030-001, Loss of CS Chilled Water, Revision 12
OP-030-001, CS Chilled Water System, Revision 38
NDAP-QA-0702, “Action Request and CR Process,” Revision 38
NDAP-QA-0400, “Conduct of Station Engineering,” Revision 6

Condition Reports:
1548804, 1577981, 1560235, 1544033, 1507177, 1551380, 1676110*, 1534798, 1549431, 1572658, 1641025, 1643210, 1684820, 1604964, 1622395, 1622391, 1567000, 1554418, 1553582, 1590506, 1673095, 1346952

Work Orders:
528463, 1552538

Drawings:
M-157, Sheet 1, Containment Atmosphere Control
D107363, Common Schematic Diagram CS HVAC Chilled Water System, CIRC Pump 0P162B, Revision 7
D107378, Common Schematic Diagram Control RM Floor A/C Unit Fan, 0V117B, Revision 6

Miscellaneous:
Unit 1 TS 3.6.4.2, 3.6.1.3, and TSB
LDCN 4984
ACE for CR 1534798, Linkage Connector on CS Chiller 0K112B broker, Revision 0
CS Chiller (Control Room Floor Cooling) Inoperable Event, Root Cause Analysis Report, dated September 24, 2012, Revision 2
Maintenance Rule Basis Document System 30
TM-OP-030-ST, Systems Training, CS HVAC, Revision 6
'B' CS Chiller Motor Current Traces, dated February 12, 2012
PLA-6862
PLA-6804

LIST OF ACRONYMS

AC	Alternating Current
ACE	Apparent Cause Evaluation
ADAMS	Agencywide Document and Access Management System
ANS	Alert and Notification System
API	American Petroleum Institute
AR	Action Report
ARP	Alarm Response Procedure
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CNO	Chief Nuclear Officer
CO	Clearance Order
CR	Condition Report
CW	Circulating Water
DEP	Drill and Exercise Performance
DG	Diesel Generator
DRS	Division of Reactor Safety
EAL	Emergency Action Level
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedure
EP	Emergency Preparedness
EPIP	Emergency Plan Implementing Procedure
ESS	Engineering Safeguard System
ESSW	Emergency Safeguards Service Water
ESW	Emergency Service Water
FEMA	Federal Emergency Management Agency
FIN	Finding
FSAR	[SSES] Final Safety Analysis Report
GE	General Electric
GL	Generic Letter
HP	Health Physics
HPCI	High Pressure Coolant Injection
HRA	High Radiation Area
HX	Heat Exchanger
ICS	Integrated Controls System
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IP	Inspection Procedure
IR	NRC Inspection Report
IST	Inservice Testing
LCO	Limiting Condition for Operation
LDCN	Licensing Document Change Notice
LDE	Lens Dose Equivalent
LER	Licensee Event Report
LLRT	Local Leak Rate Test
LPCI	Low Pressure Coolant Injection
LSFT	Logic System Functional Test
MSO	Multiple Spurious Operations

MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NDAP	Nuclear Department Administrative Procedure
NEI	Nuclear Energy Institute
NERO	Nuclear Emergency Response Organization
NRC	Nuclear Regulatory Commission
OA	Other Activities
OE	Operating Experience
OOS	Out-of-Service
PARS	Publicly Available Records
PCIV	Primary Containment Isolation Valve
PI	[NRC] Performance Indicator
PI&R	Problem Identification and Resolution
PM	Preventive Maintenance
PMT	Post-Maintenance Test
PPL	PPL Susquehanna, LLC
PS	Planning Standard
P/T	Pressure/Temperature
QA	Quality Assurance
RB	Reactor Building
RCA	Root Cause Analysis
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
RFP	Reactor Feed Pump
RG	[NRC] Regulatory Guide
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
ROP	Reactor Oversight Process
RPS	Reactor Protection System
RPV	Reactor Pressure Vessel
SBGT	Standby Gas Treatment
SCBL	Secondary Containment Bypass Leakage
SCCM	Standard Cubic Centimeters per Minute
SDP	Significance Determination Process
SE	Safety Evaluation
SIL	Service Information Letter
SP	Suppression Pool
SRV	Safety Relief Valve
SSC	Structures, Systems and Components
SSES	Susquehanna Steam Electric Station
TBCCW	Turbine Building Closed Cooling Water
TS	Technical Specifications
TSB	Technical Specification Basis
UFSAR	Updated Final Safety Analysis Report
ULSD	Ultra Low Sulfur Diesel
WO	Work Order