



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

August 14, 2013

EA-13-122

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 05000387/2013003 AND 05000388/2013003 AND
EXERCISE OF ENFORCEMENT DISCRETION**

Dear Mr. Rausch:

On June 30, 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 July 12, 2013, with you 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 three NRC-identified findings of very low safety significance (Green). All of these findings were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they are entered into your correction 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 Susquehanna Steam Electric Station. 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.

Separately, a violation involving a failure to set secondary containment during operations with the potential to drain the reactor vessel (OPDRVs) was identified during the Unit 2 refueling outage. Specifically, from April 17, 2013 to May 7, 2013 and May 10, 2013 to May 17, 2013, while all other Technical Specifications were met, PPL conducted several OPDRVs without establishing secondary containment operability, which is a violation of Technical Specification (TS) 3.6.4.1, "Secondary Containment." NRC issued EGM 11- 003, "Enforcement Guidance Memorandum

on Dispositioning Boiling Water Reactor (BWR) Licensee Noncompliance with TS Containment Requirements During Operations with a Potential for Draining the Reactor Vessel," on October 4, 2011, allowing for the exercise of enforcement discretion for such OPDRV-related TS violations, when certain criteria are met. The EGM, which was revised on December 20, 2012, also requires that, to be eligible for discretion, a licensee must submit a license amendment request (LAR) to accept the NRC's generic change to the Standard Technical Specifications (STS) that will allow a graded approach to OPDRV requirements. The LAR must be submitted within four months of NRC publication of the STS in the Federal Register.

The NRC concluded that, for the specified periods, PPL met the EGM criteria and has committed to submit the LAR, as required. Therefore, I have been authorized, after consultation with the Director, Office of Enforcement, and the Regional Administrator, to exercise enforcement discretion and refrain from issuing enforcement for the violation, subject to a timely LAR being submitted.

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/

Darrell J. Roberts, Director
Division of Reactor Projects

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

Enclosures: Inspection Report 05000387/2013003 and 05000388/2013003
w/Attachment: Supplemental Information

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Sincerely,
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Darrell J. Roberts, Director
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U.S NUCLEAR REGULATORY COMMISSION
REGION I

Docket No: 50-387, 50-388

License No: NPF-14, NPF-22

Report No: 05000387/2013003 and 05000388/2013003

Licensee: PPL Susquehanna, LLC (PPL)

Facility: Susquehanna Steam Electric Station, Units 1 and 2

Location: Berwick, Pennsylvania

Dates: April 1, 2013 through June 30, 2013

Inspectors: P. Finney, Senior Resident Inspector
J. Greives, Resident Inspector
F. Arner, Senior Reactor Inspector
S. Barber, Senior Project Engineer
R. Rolph, Health Physicist
D. Orr, Senior Reactor Engineer
D. Dodson, Resident Inspector
T. O'Hara, Reactor Inspector
A. Bolger, Reactor Engineer
J. Laughlin, Emergency Preparedness Specialist

Approved By: Mel Gray, Chief
Reactor Projects Branch 4
Division of Reactor Projects

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SUMMARY OF FINDINGS

Inspection Report (IR) 05000387/2013003 05000388/2013003, 04/01/2013 – 06/30/2013; Susquehanna Steam Electric Station, Units 1 and 2; Operability Determinations and Functionality Assessments, Surveillance Testing.

The report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Inspectors identified three NCVs of very low safety significance (Green). 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, dated December 2006.

Cornerstone: Mitigating Systems

- Green. Inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when PPL performed an inadequate operability determination for a synchroscope switch failure that rendered offsite power and the four emergency diesel generators (EDGs) inoperable. This resulted in PPL being in violation of Unit 1 TSs 3.8.1, 3.8.2, and 3.0.3, and Unit 2 TSs 3.6.4.1 and 3.8.2. PPL entered the issue in their CAP as CR 1703293, re-evaluated past operability and submitted a licensee event report (LER) for the associated condition prohibited by plant Technical Specifications (TS) on July 8, 2013 (ADAMS Accession No. ML13190A104).

The performance deficiency was determined to be more than minor since it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was evaluated using the SDP of IMC 0609.04. The finding was evaluated under both the Mitigating Systems Exhibit of IMC 0609 Appendix A when Unit 1 was at power and Appendix G for the times when one or both units were in a shutdown condition. Under IMC 0609, Appendix A, the finding screened to Green since it was not a design or qualification deficiency and was not a potential or actual loss of system or safety function. Under IMC 0609, Appendix G, Attachment 1, Checklists 5 through 7, the inspectors screened the issue to Green since it affected the requirement for operable DGs under TS 3.8.1 and TS 3.8.2. The inspectors determined that a Phase 2 analysis was not warranted since it did not match those criteria listed for further analysis in these checklists. Specifically, since all automatic transfer functions of off-site power and the EDGs remained functional, inspectors determined that none of the functions evaluated under the SDPs were affected. The finding had a cross-cutting aspect in Problem Identification and Resolution (PI&R), corrective action program (CAP), because PPL staff did not thoroughly evaluate problems such that the resolutions address the causes and extent of conditions, to include properly classifying, prioritizing and evaluating for operability. Specifically, PPL staff did not appropriately evaluate the effect that the synchroscope switch failure had on offsite power and emergency diesel generator operability. [P.1(c)] (1R15)

- Green. Inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XI, “Test Control,” because PPL staff performed unacceptable preconditioning by performing corrective maintenance prior to recording the as-found time response of the reactor protection system (RPS) and end-of-cycle recirculation pump trip (EOC-RPT) for the turbine control valve (TCV) fast closure function. Specifically, corrective maintenance was performed with the potential to improve the time response of the system without verifying that the as-found condition was within the acceptance criteria assumed in the accident analysis. PPL entered the issue into their CAP as CR 1712564 and verified as-left data was verified to be within acceptance criteria which provided reasonable assurance that the SSC would perform satisfactorily during the subsequent operational period.

Inspectors determined the performance deficiency is more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the failure to collect as-found data could result in the inability to verify the operability of structures, systems, and components (SSC). Additionally, in this case, the test had exhibited low margin and unreliable performance during its previous surveillance test. The inspectors determined, through a review of IMC 0609, Appendix A, Exhibit 2, that the finding was Green because the finding was not related to a design or qualification deficiency, did not represent a loss of a mitigating system safety function, and did not screen as potentially risk significant due to external initiating events. The finding is related to the cross-cutting area of PI&R, CAP, in that PPL did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, though degraded performance was identified during previous testing, PPL staff did not take timely and effective corrective actions to ensure the required maintenance did not unacceptably precondition the following 24-month surveillance test. [P.1(d)] (1R15)

Cornerstone: Barrier Integrity

- Green. Inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” because PPL did not adequately incorporate the acceptance criteria for heatup rate specified in the plant TSs, as amplified in its basis, into the surveillance test implementing procedure for monitoring adherence to pressure and temperature requirements during plant heatup and cooldown. Based on this procedure inadequacy, operators exceeded the TS limit during a plant startup on May 28, 2013. PPL entered the issue into their CAP as CR 1709058 and revised plant procedures to appropriately incorporate the acceptance criteria.

This performance deficiency is more than minor because it was associated with the human performance and procedure quality attribute of the Barrier Integrity cornerstone and affected the objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system (RCS), and containment) protect the public from radionuclide releases caused by accidents or events. Using IMC 0609, “Significance Determination Process,” Appendix A, Exhibit 3, “Barrier Integrity Screening Questions,” the inspectors determined that this issue required a detailed risk evaluation. In consultation with a Region I Senior Reactor Analyst, the inspectors completed a qualitative risk assessment and determined this issue is of very low safety significance (Green). Specifically, there was no impact on the integrity of the reactor vessel due to the short duration temperature gradient imposed by exceeding the TS heatup rate. Consistent with PPL’s evaluation, the observed

heatup rate minimally exceeded the specified limit during plant startup and remained within the acceptable bounds of the current plant pressure and temperature analysis. The finding is related to the cross-cutting area of PI&R, Corrective Actions, in that PPL did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, PPL did not take effective corrective actions to correct an inadequate procedure for monitoring adherence to pressure/temperature (P/T) limits after it was identified by inspectors.
[P.1(d)] (1R22)

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at or near 100 percent power. On May 9, Unit 1 was shutdown for a main turbine outage to inspect and replace turbine blades. Unit 1 commenced a reactor startup on June 1. Unit 1 was shutdown on June 4 from 15 percent power for main turbine balance adjustments. Unit 1 commenced a reactor startup on June 6. On June 7, operators manually scrammed Unit 1 due to a failure in the EHC system. Unit 1 commenced a reactor startup on June 8. Unit 1 was shutdown on June 10 from 16 percent power for main turbine balance adjustments. Unit 1 commenced a reactor startup on June 11 and reached 100 percent power on June 19. Unit 1 ended the inspection period at or near 100 percent power.

Unit 2 began the inspection period at or near 100 percent power. On April 13, Unit 2 was shutdown for a refueling outage. Unit 2 commenced a reactor startup on May 28 and reached 100 percent power on June 12. 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)

Summer Readiness of Offsite and Alternating Current (AC) Power Systems

a. Inspection Scope

The inspectors performed a review of plant features and procedures for the operation and continued availability of the offsite and alternate AC power system to evaluate readiness of the systems prior to seasonal high grid loading. The inspectors reviewed PPL's procedures affecting these areas and the communications protocols between the transmission system operator and PPL. This review focused on changes to the established program and material condition of the offsite and alternate AC power equipment. The inspectors assessed whether PPL established and implemented appropriate procedures and protocols to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system. The inspectors evaluated the material condition of the associated equipment by interviewing the responsible system manager, reviewing condition reports (CRs) and open work orders, and walking down portions of the onsite and offsite AC power systems including the diesel generators, transformers, and the 500 kilovolt (kV) and 230 kV switchyards.

b. Findings

No findings were identified.

1R04 Equipment Alignment

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

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Unit 1, 1A residual heat removal service water (RHRSW) during Division II RHRSW inoperability
- Unit 2, Division II, core spray (CS)
- Unit 2, Division II 'A' residual heat removal (RHR) following low pressure coolant injection (LPCI) alignment

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the Updated Final Safety Analysis Report (UFSAR), TSs, work orders (WOs), CRs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether PPL staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

.2 Full System Walkdown (71111.04S - 1 sample)

a. Inspection Scope

On April 24, 2013, the inspectors performed a complete system walkdown of accessible portions of the Unit 1 reactor core isolation cooling (RCIC) system to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, surveillance tests, drawings, equipment line-up check-off lists, and the UFSAR to verify the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, component lubrication, equipment cooling, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the system to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the RCIC components while in the standby condition to ensure no deficiencies existed. The inspectors also reviewed the latest surveillance test results to ensure operating parameters were in accordance with the design requirements of the system. Additionally, the inspectors reviewed a sample of related CRs and WOs to ensure PPL appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

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

a. Inspection Scope

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

- Unit 1, Division II RHR pump room, Fire Zone 1-1E
- Unit 1, high pressure coolant injection (HPCI) and RCIC pump rooms, Fire Zones 1-1C and 1-1D
- Unit 2, Division II, RHR/RHRWS pump room 'B', Fire Zone 2-1E
- Unit 2, upper and lower cable spreading rooms, Fire Zones 0-25A, 0-27C
- Common, equipment and battery rooms, Fire Zones 0-28A-I,G,E,C,D,F,T,II

b. Findings

No findings were identified.

1R08 Inservice Inspection (71111.08 - 1 sample)

a. Inspection Scope

A review of implementation of in-service inspection (ISI) program activities for monitoring degradation of the RCS boundary and risk significant piping system boundaries for the Susquehanna Unit 2 Generating Station was conducted from April 22 through 26, 2013 during refueling outage 16 (U2-16RIO). The sample selection was based on the inspection procedure objectives and risk priority of those components and systems where degradation would result in a significant increase in risk of core damage. The inspector reviewed documentation, observed in-process non-destructive examinations (NDE) and interviewed inspection personnel to verify that the activities were performed in accordance with the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 1998 Edition, 2000 Addenda.

Non-destructive Examination and Welding Activities (02.01)

The inspectors performed direct observations of NDE activities in process and reviewed records of nondestructive examinations listed below:

ASME Code Required Examinations

- The inspectors performed a field observation of the ultrasonic examination (UT) of weld GBB2041-1-B in the reactor heat removal piping. The inspectors observed the calibration of the testing equipment, reviewed the results of previous inspections of the weld and reviewed the testing procedure to be used. After observing the technicians performing the inspection and completing the data sheets, the inspectors reviewed the results of the inspection.
- The inspectors performed a field observation of the UT of nozzles N6B and N5B nozzle inner radius and nozzle to vessel welds on the reactor vessel head. The inspectors observed the calibration of the testing equipment, reviewed the results of previous inspection of the weld and reviewed the testing procedure to be used. After observing the technicians performing the inspection and completing the data sheets, the inspectors reviewed the results of the inspection.
- The inspectors conducted a remote visual observation of the UT of portions of the CS piping being done in place inside the reactor vessel. The inspectors discussed the equipment setup and calibration procedure with the technician, observed collection of data and reviewed the reported data after the examination. These examinations were part of the industry initiative In Vessel Visual Inspection (IVVI) scope.
- The inspectors observed the PPL Level III radiographic inspector completing the reading, interpretation and reporting of radiographic inspection of new decontamination connections being installed on the reactor recirculation system piping.
- The inspectors conducted a record review of a sample of eight IWE inspection data sheets from the present outage U2-16RIO.
- The inspectors also reviewed the completed data sheets of UT examinations conducted on two RPV bottom head meridional welds, and the UT examinations of reactor vessel nozzle N2D inner radius and nozzle to vessel welds.

The inspectors reviewed a sample of certifications for NDE technicians performing examinations and verified that the inspections were performed in accordance with approved procedures and that the results were reviewed and evaluated by certified Level III NDE personnel.

Other Augmented or Industry Initiative Examinations

The inspectors reviewed inspection records of visual inspections conducted on reactor vessel internals components. These inspections were carried out in accordance with the industry initiative under the Boiling Water Reactor Vessel and Internals Project (BWRVIP), IVVI Program. These inspections monitor and record the condition of the reactor vessel internal components. Specifically, the inspectors reviewed VT examination data records and reviewed the disposition of indications noted by the inspectors. The inspectors verified that the activities were performed in accordance with applicable examination procedures and industry guidance. All recorded indications were dispositioned by the NDE examiner and the licensee as acceptable for further service.

Review of Originally Rejectable Indications Accepted by Evaluation

There were no samples available for review during this inspection that involved examinations with recordable indications that had been accepted for continued service after evaluation or analysis from the present outage or the prior outage at Susquehanna Unit 2.

Repair/Replacement Activities Including Welding Activities

The inspectors reviewed the repair/replacement package for the modification of the 4 inch decontamination connections on the Unit 2, A and B recirculation loops (PCWO 1592811 during U2-16RIO). The inspector reviewed the work order instructions, the completed work order document, the specified material certifications and material list, and reviewed the post welding NDE tests. Additionally, the inspector reviewed the weld records used to control the welding process.

The inspector reviewed work orders (PCWO 737813 and 1255447) which applied a 2 X 1 weld overlay on several "A" and "B" recirculation loop small bore pipe welds during the previous U2 outage. The inspectors reviewed the work order instructions, the completed work order document, the specified material certifications and material list, and reviewed the post welding NDE tests. Additionally, the inspectors reviewed the weld records used to control the welding process.

Identification and Resolution of Problems (02.05)

The inspectors reviewed a sample of PPL corrective action reports, which identified NDE indications, deficiencies and other nonconforming conditions since the previous U2-15RIO outage and during the present, U2-16RIO outage. The inspectors verified that nonconforming conditions were generally properly identified, entered into the CAP, characterized, evaluated, corrective actions identified and dispositioned.

b. Findings

No findings were identified.

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

.1 Quarterly Review of Licensed Operator Regualification Testing and Training

a. Inspection Scope

The inspectors observed HIT and As-Left Regualification Training on April 4, 2013. 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 the reactor shutdown and cooldown for the 2R16 Unit 2 refuel outage on April 13. The inspectors observed infrequently performed test or evolution briefings, pre-shift briefings, and reactivity control briefings. Additionally, the inspectors observed 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 SSCs 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.

- Unit 2, DC Breaker Long Time delay trip device performance
- Unit 2, 2A residual heat removal service water (RHRSW) system failure on September 27, 2012

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 6 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that PPL performed the appropriate risk assessments prior to removing equipment for work. The inspectors

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

- Unit 2, 2A reactor recirculation pump motor replacement (heavy load lift)
- Common, Yellow Risk during B EDG planned maintenance on April 1
- Common, 'A' CS chiller trip on April 12
- Common, Blue Max radiator leak on April 17
- Common, Yellow Risk during OATS516 maintenance
- Common, Yellow Risk during recirculation plenum maintenance

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 7 samples)

a. Inspection Scope

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

- Unit 1, RHRSW penetration leakage and external corrosion
- Unit 2, PI-24202B, Division II, reactor pressure vessel (RPV) wide range pressure, reading high
- Unit 2, pitting and erosion identified during HPCI 10 year overhaul
- Unit 2, gel identified in RPS pressure switch
- Common, 'B' CS chiller circulating water pump trips
- Common, 'B' EDG synchroscope switch
- Common, pinhole leak on Division 1 emergency service water (ESW) supply to Unit 1 RB

The inspectors selected these issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the operability determinations to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to PPL's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by PPL. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

- .1 Introduction. Inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when PPL staff performed an inadequate operability determination for a synchroscope switch failure that rendered offsite power and all four EDGs inoperable. This resulted in PPL being in violation of Unit 1 TSs 3.8.1, 3.8.2, and 3.0.3, and Unit 2 TSs 3.6.4.1 and 3.8.2.

Description. On May 7, 2013, at 12:53 a.m., the synchroscope switch for the 'B' EDG to the 2B 4kV ESS bus failed in the closed position following its monthly surveillance. PPL entered the issue in their CAP as a Level 4 Correct, Condition Not Adverse to Quality (CR 1700407). Operability is evaluated using site procedure, Nuclear Department Administrative Procedure (NDAP)-QA-0703, "Operability Assessments and Requests for Enforcement Discretion," Revision 22, which states, in part, that an initial operability screening shall be documented such that it "provide[s] a basis for operability." PPL operators evaluated the operability as "N/A, no safety function." Operators documented that "a review of TS 3.8.1 and 3.8.7 revealed no safety function; however, with this switch failed in the 'synch' position it prevents all manual synch/parallel operations on all 13.8kV and 4.16kV busses." PPL staff determined that the use of any other synchroscope switch would result in a blown fuse and failure to synchronize the desired electrical source and bus. At the time of the switch failure, Unit 1 was in Mode 1 and Unit 2 was in Mode 5. PPL shut down Unit 1 on May 9 for a main turbine maintenance outage, reaching Mode 3 at 6:47 a.m. and Mode 4 at 12:56 p.m. that same day. PPL repaired the switch on May 10 at 3:32 a.m.

The inspectors subsequently questioned PPL staff as to how the condition affected the ability to successfully pass SR 3.8.1.16, "AC Sources – Operating," applicable in Modes 1, 2, and 3, which verifies that "each DG: (a) synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; (b) transfers loads to offsite power source; and (c) returns to a ready-to-load operation." The inspectors also noted that SR 3.8.2.1, "AC Sources - Shutdown," applicable in Modes 4 and 5, requires that certain SRs from TS 3.8.1 including SR 3.8.1.16 must be met. Per SR 3.0.1, failure to meet a SR is failure to meet an LCO.

Based on the inspectors questions, operators declared all four EDGs were inoperable during the time of the failure. A potential consequence of this condition was that offsite power could not have been restored to safety-related busses following a loss of offsite power (LOOP). Subsequently, inspectors questioned PPL as to how the condition also affected Unit 1 SR 3.8.1.8, which verifies "automatic and manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit." The inspectors concluded that offsite power had also been inoperable. Since PPL did not recognize the inoperability prior to performing repair activities, operators did not take the required actions specified in TSs. This resulted in Unit 1 operating in a condition prohibited by TSs 3.8.1, 3.8.2 and 3.0.3 and Unit 2 operating in a condition prohibited by TS 3.8.2. As a result, the EDGs remained capable of performing their safety function to start and provide power to their safety related loads during postulated accident conditions. All automatic transfer functions for off-site power and the EDGs remained functional.

The NRC issued Enforcement Guidance Memorandum (EGM) 11-003, Revision 1, "Dispositioning BWR Licensee Noncompliance with TS Containment Requirements during Operations with a Potential for Draining the Reactor Vessel (OPDRVs)," to

exercise enforcement discretion and not cite licensees for TS violations related to conduct of OPDRVs with secondary containment inoperable provided that certain criteria were met. One of those criteria was that the licensee must follow all other TS applicability and action requirements for Mode 5. Since Unit 2 was conducting OPDRVs during the time of the inoperability, PPL did not meet the criteria in EGM 11-003 for the staff to consider exercising discretion at Unit 2 from May 7 to May 10, 2013. For the inoperability, TS 3.8.2 required initiation of action to suspend OPDRVs immediately as did TS 3.6.4.1, Secondary Containment, for inoperable secondary containment. Therefore, Unit 2 was in a condition prohibited by TS 3.6.4.1.

In addition to repairing the synchroscope switch, PPL entered this issue in their CAP as CR 1703293, re-evaluated past operability, and affirmed the TS for SSES Unit 1 and Unit 2 were not complied with while the synchroscope switch was inoperable. PPL staff also submitted LER for the associated condition prohibited by plant TSs on July 8, 2013 (ADAMS Accession No. ML13190A104).

Analysis. The inspectors concluded PPL operators failure to adequately assess operability was a performance deficiency within PPL's ability to foresee and correct. The finding was evaluated using IMC 0612 Appendix B and determined to be more than minor since it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was evaluated using the SDP of IMC 0609.04. The finding was evaluated under both the Mitigating System Exhibit of IMC 0609 Appendix A when Unit 1 was at power and Appendix G for the times when one or both units were in a shutdown condition. Under IMC 0609, Appendix A, the finding screened to Green since it was not a design or qualification deficiency and was not a potential or actual loss of system or safety function. Under IMC 0609, Appendix G, Attachment 1, Checklists 5 through 7, the inspectors screened the issue to Green since it affected the requirement for operable DGs under TS 3.8.1 and TS 3.8.2. The inspectors determined that a Phase 2 analysis was not warranted since it did not match those criteria listed for further analysis in these checklists. Specifically, since all automatic transfer functions of off-site power and the EDGs remained functional and capable of powering, inspectors determined that none of the functions evaluated under the SDPs were affected.

The finding had a cross-cutting aspect in PI&R, CAP, because PPL did not thoroughly evaluate problems such that the resolutions address the causes and extent of conditions, to include properly classifying, prioritizing and evaluating for operability. Specifically, PPL did not appropriately evaluate the effect that the synchroscope switch failure had on offsite power and EDG operability. (P.1(c))

Enforcement. 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, in part, that "activities affecting quality shall be prescribed by documented instructions, procedures, or drawings... and shall be accomplished in accordance with these instructions, procedures, or drawings." NDAP-QA-0703, "Operability Assessments and Requests for Enforcement Discretion," Revision 22, states, in part, that an initial operability screening shall be documented such that it "provide[s] a basis for operability." Contrary to this, on May 7, 2013, PPL performed an initial operability screening for the synchroscope switch failure that did not provide an adequate basis for operability, in that, PPL did not identify that the failure rendered offsite power and the EDGs inoperable. Consequently, all four EDGs and offsite power

remained inoperable from May 7 through May 10, 2013, causing PPL to also be in violation of Unit 1 TSs 3.8.1, 3.8.2, and 3.0.3, and Unit 2 TSs 3.8.2 and 3.6.4.1. PPL entered this issue in their CAP as CR 1703293, re-evaluated past operability, and submitted a licensee event report (LER) for the associated condition prohibited by plant TSs. Because this finding is of very low safety significance and has been entered into PPL's CAP, this violation is being treated as an NCV consistent with the NRC Enforcement Policy. **(NCV 05000387;388/2013003-01, Inadequate Operability Assessment of Synchroscope Switch)**

- .2 Introduction. Inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," because PPL performed unacceptable preconditioning by performing corrective maintenance prior to recording the as-found time response of RPS and EOC-RPT for the Unit 2 TCV fast closure function.

Description. TS surveillance testing is performed to verify that operability and performance characteristics of SSCs have not degraded below specific acceptance criteria during a specified period. To validate that the SSC would have performed as designed, testing is performed in an "as-found" condition. TS 3.3.1.1, "RPS Instrumentation," and TS 3.3.4.1, "EOC-RPT Instrumentation," require performance of time response testing every 24 months. Procedure SI-283-433, "24-Month Time Response Test of RPS and EOC-RPT Turbine Stop Valve (TSV)-Closure and TCV-Closure Functions," implements these requirements for both the TSV and TCV closure functions. These tests ensure that an anticipatory reactor scram and recirculation pump trip will occur on a main turbine trip within the time requirements assumed in the accident analysis.

During review of performance history associated with pressure switch, PSL-C72-2N005C, inspectors identified that unacceptable preconditioning occurred that masked the as-found condition of the SSC. This pressure switch is one of four that provide an RPS scram signal and EOC-RPT based on TCV fast closure. If a TCV fast closure occurs, the FAS valve dumps emergency trip system fluid. The pressure switch senses the rapid drop in pressure and sends a signal to the K8 relay, generating an RPS scram and the EOC-RPT. TS SRs 3.3.1.1.17 and 3.3.4.1.5 require verifying response time of RPS and EOC-RPT are within the acceptance criteria of 50 ms and 175 ms, respectively. Documented performance was as follows:

2011

- | | |
|--------|---|
| June 3 | EOC-RPT time response exceeded acceptance criteria at 189.48 ms. |
| June 8 | Retest #1: Technicians burnished contacts for K8 relay and re-performed applicable section of test. Test results are satisfactory at 136.98 ms, but technicians noted bounce in the contacts indicating it may not be fully picking up. |
| June 8 | Retest #2: Test re-performed and results are unsatisfactory at 65 ms for RPS and 202.48 ms for the EOC-RPT response times. |
| June 8 | Retest #3: Results were 147.48 ms for EOC-RPT. Notes from the work order state "it appears test 2 failed based on sluggish SV20150C [the FAS] and/or PSL-C72-2N005C. During test 3 no failures observed." |
| June 8 | Engineering Work Request (EWR) 1420212 written to document the plan. The EWR stated that "the slow response could have been caused by a slow response of the fast acting solenoid or the pressure switch. It also could |

have been a sticky K8C relay. No way of knowing for sure.” The recommendation of the EWR was to replace the K8 relay and re-test.

June 11 K8C replaced and re-test performed. Results were satisfactory at 43 ms and 170.48 ms for RPS and EOC-RPT, respectively. CR 1421489 was written which states that “times are approaching acceptance criteria of 50 ms (act 43 ms) and 175 ms (act 170.48 ms), respectively. It appears SV20150C and/or PSLC722N005C are contributing to the increased time.”

2013

April 25 PSL-C72-2N005C is replaced and jelly-like substance identified in pressure line. This maintenance was performed prior to collecting as-found data for the 24-month SR.

May 27 2-year TRT performed. Results indicated improved performance at 26 ms for the K8C relay and 146.48 ms for the EOC-RPT function.

Inspectors questioned whether unacceptable preconditioning occurred on April 25, 2013, when the pressure switch was replaced to improve the system’s time response prior to performing TS required time response testing. NDAP-QA-0722 is the station procedure for surveillance testing and defines preconditioning as “the alteration, variation, manipulation, or adjustment of the physical condition of a SSC before TS/TR surveillance or ASME Code testing. Any activity that could affect the outcome of the test.” Section 6.2 provides the following additional information:

- 6.2.4.e(5): “Maintenance work may occasionally occur prior to a regularly scheduled surveillance. However, maintenance activities cannot be performed prior to the scheduled surveillance which would affect the test/surveillance results.”
- 6.2.5.c: “The performance of maintenance activities prior to a surveillance test with the intent of ensuring favorable test results is unacceptable preconditioning.”
- 6.2.6: “The following questions should be considered when evaluating the acceptability of preconditioning:
 - Does the activity ensure that the SSC will meet the surveillance acceptance criteria?
 - Would the SSC have failed the surveillance if the activity was not performed?
 - Does the activity bypass or mask the as-found condition?
 - Is the preventative maintenance activity routinely performed just before the surveillance test?
 - Is the preventative maintenance activity performed prior to the routine surveillance only for scheduling convenience?

If a question is answered “Yes” and the activity meets the guidelines of Section 6.2.5, then the preconditioning is unacceptable.”

Based on the above information, inspectors determined that unacceptable preconditioning occurred.

Analysis. The inspectors determined there was a performance deficiency because PPL performed unacceptable preconditioning prior to recording the as-found time response of RPS and EOC-RPT for the TCV fast closure function. The performance deficiency is more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the objective to ensure the availability,

reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the failure to collect as-found data could result in the inability to verify the operability of an SSC. Additionally, in this case, the test of the subject pressure switch had exhibited decreasing margin and inconsistent performance during its previous surveillance test. 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, and did not screen as potentially risk significant due to external initiating events.

The finding is related to the cross-cutting area of PI&R, Corrective Actions in that PPL did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, although degraded performance was identified, PPL did not take timely and effective corrective actions to ensure the required maintenance did not unacceptably precondition the 24-month surveillance test. (P.1.d)

Enforcement. 10 CFR 50, Appendix B, Criterion XI, requires, in part, that "a test program shall be established to assure that all testing required to demonstrate that SSCs will perform satisfactorily in service is identified and performed in accordance with written test procedures." Procedure NDAP-QA-0722, "Surveillance Testing," defines preconditioning as "the alteration, variation, manipulation, or adjustment of the physical condition of a SSC before TS/TR surveillance or ASME Code testing." As an example of unacceptable preconditioning, it states that "the performance of maintenance activities prior to a surveillance test with the intent of ensuring favorable test results is unacceptable preconditioning." Contrary to the above, on April 25, 2013, PPL staff unacceptably preconditioned a surveillance test required by plant TSs by performing corrective maintenance prior to collecting as-found data. As-left data was verified to be within acceptance criteria which provided reasonable assurance that the SSC would perform satisfactorily during the subsequent operational period. Because this violation was of very low safety significance, was not repetitive or willful, and was entered into PPL's CAP (CR 1712564), this violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. (**NCV 05000388/2013003-02, Unacceptable Preconditioning of RPS and EOC-RPT Time Response Test**)

1R18 Plant Modifications

.1 Temporary Modifications (71111.18 – 2 samples)

a. Inspection Scope

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

- Units 1 and 2, supplemental decay heat removal (SDHR)
- Units 1 and 2, change in turbine bypass valve sequence

b. Findings

No findings were identified.

.2 Permanent Modifications (71111.18 – 1 sample)

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 1, changes to ON-100-101, “Scram, Scram Imminent,” and modifications to the setpoint setdown function in response to recent reactor scrams

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 9 samples)

a. Inspection Scope

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

- Unit 1, emergency switchgear fan, 1V222A, following bearing failure
- Unit 2, RPV leak test following reassembly
- Unit 2, surveillance tests following HPCI 10-year overhaul
- Unit 2, ‘A’ RHR motor replacement
- Unit 2, safety relief valve (SRV) stroking following replacement
- Unit 2, drywell personnel hatch following removal
- Common, B EDG following voltage regulator relay replacement

- Common, B CS chiller circulation water pump motor breaker following setpoint increase
- Common, OATS516 maintenance

b. Findings

No findings were identified.

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

.1 Unit 2 Refuel Outage (RFO)

a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the Unit 2 refueling outage (2R16), which was conducted April 13 through June 5, 2013. The inspectors reviewed PPL's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. During the outage, the inspectors monitored controls associated with the following outage activities:

- Configuration management, including maintenance of defense-in-depth, commensurate with the outage plan for the key safety functions and compliance with the applicable TSs when taking equipment OOS
- Implementation of clearance activities and confirmation that tags were properly hung and that equipment was appropriately configured to safely support the associated work or testing
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and instrument error accounting
- Status and configuration of electrical systems and switchyard activities to ensure that TSs were met
- Monitoring of decay heat removal (DHR) operations
- Impact of outage work on the ability of the operators to operate the spent fuel pool cooling (SFPC) system
- Reactor water inventory controls, including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss
- Activities that could affect reactivity
- Maintenance of secondary containment as required by TSs
- Refueling activities, including fuel handling and fuel receipt inspections
- Fatigue management
- Identification and resolution of problems related to refueling outage activities

b. Findings

No findings were identified.

.2 Unit 1 Maintenance Outage

a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the Unit 1 maintenance outage, which was conducted May 9 through June 14, 2013. The inspectors reviewed PPL's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. During the outage, the inspectors observed portions of the shutdown and cooldown processes and monitored controls associated with the following outage activities:

- Configuration management, including maintenance of defense-in-depth, commensurate with the outage plan for the key safety functions and compliance with the applicable TSs when taking equipment OOS
- Implementation of clearance activities and confirmation that tags were properly hung and that equipment was appropriately configured to safely support the associated work or testing
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and instrument error accounting
- Status and configuration of electrical systems and switchyard activities to ensure that TSs were met
- Monitoring of DHR operations
- Reactor water inventory controls, including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss
- Activities that could affect reactivity
- Maintenance of secondary containment as required by TSs
- Fatigue management
- Identification and resolution of problems related to outage activities

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 8 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, CS valve exercising loop 'B', and pump flow verification Division II (Inservice Testing (IST))
- Unit 2, quarterly calibration of drywell pressure switches

- Unit 2, elevated unidentified leakage (RCS)
- Unit 2, reactor vessel temperature and pressure recording
- Unit 2, 'C' and 'D' main steam isolation valve (MSIV) local leak rate test (LLRT) (PCIV)
- Unit 2, RCIC steam supply LLRT (PCIV)
- Unit 2, Division II loss of coolant accident/loss of offsite power (LOCA/LOOP) testing
- Common, offsite power during 'B' and 'E' EDG swaps

b. Findings

Introduction. Inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Procedures," because PPL's surveillance implementing procedure for monitoring adherence to pressure and temperature requirements during plant heatup and cooldown did not adequately incorporate the acceptance criteria for heatup rate specified in the plant TSs and TS basis. Based on this procedure inadequacy, operators did not take timely and appropriate action with regard to controlling heatup rate during a plant startup on May 28, 2013.

Description. During a reactor startup on May 28, 2013, operators exceeded the TS 3.4.10 limit for reactor vessel heatup rate. Specifically, heatup rate was assessed as high as 105°F for two different periods during the plant startup. Operators recognized that heatup of recirculation loop suction temperatures exceeded the 100°F in one hour limit, but did not enter the TS action statement because steam dome temperature heatup was recorded at 97°F in the same hour. Operators determined no action was required because procedure SO-200-011, "Reactor Vessel Temperature and Pressure Recording," which stated "TS Required Actions should only be entered if Reactor Steam Dome Temperature ΔT 's are > 100°F in any one hour." Operators continued with plant heatup and generated CR 1709058 to document the approach to the limit. Approximately 15 hours later, following review of the data and TS basis, PPL engineering concluded that the TS limit was exceeded. PPL entered the TS action statement and performed an in-depth evaluation of acceptability of the RCS for continued operation by determining that the actual heatup observed during plant startup was within the bounds of the current plant P/T analysis.

The inspectors followed up with plant staff to understand the issues and further reviewed associated documentation. The inspection noted TS 3.4.10, "RCS Pressure and Temperature (P/T) Limits," provides limits for reactor coolant system (RCS), heatup and cooldown rates to ensure stresses remain within the analyses of record. The inspectors reviewed PPL procedure SO-200-011, "Reactor Vessel Temperature and Pressure Recording," which implements these requirements.

The inspectors noted that during a previous plant startup in June 2012, inspectors questioned whether procedure SO-200-011 adequately incorporated the heatup rate limits prescribed by TS 3.4.10. Specifically, at the time the procedure stated that "TS Required Actions should only be entered if Reactor Steam Dome Temperature ΔT 's are >100°F in any one hour."

Inspectors determined this statement was inconsistent with the TS SR 3.4.10.1 which states to verify "RCS heatup and cooldown rates are \leq 100°F in any one hour period." This is amplified in the TS basis which states:

“The 100°F limit in a one-hour period applies to the coolant in the beltline region, and takes into account the thermal inertia of the vessel wall. Steam Dome saturation temperature (T_{SAT}) as derived from steam dome pressure, should be monitored to determine the beltline temperature change rate at temperatures above 212°F. At temperatures below 212°F, the recirculation loop suction temperatures should be monitored.”

CR 1584097 was generated to address the inspector’s concerns and actions were taken in September 2012 to clarify the procedure. Inspectors determined that the actions taken in 2012 were inadequate to correct the deficient procedure. Specifically, though some clarifications were made in the body of the procedure, the note in Attachment D, which is referenced continuously by operators during plant heatup still stated that TS actions were only required if Reactor Steam Dome Temperature ΔT ’s are > 100°F in any one hour.

Analysis. Inspectors determined that PPL’s failure to adequately include acceptance criteria as specified in TSs into plant procedures was a performance deficiency. This performance deficiency is more than minor because it was associated with the human performance and procedure quality attribute of the Barrier Integrity Cornerstone and affected the objective to provide reasonable assurance that physical design barriers (fuel cladding, RCS, and containment) protect the public from radionuclide releases caused by accidents or events.

Using IMC 0609, “Significance Determination Process,” Appendix A, Exhibit 3, “Barrier Integrity Screening Questions,” the inspectors determined that this issue required a detailed risk evaluation. In consultation with a Region I Senior Reactor Analyst, the inspectors completed a qualitative risk assessment and determined this issue is of very low safety significance (Green). Specifically, there was no impact on the integrity of the reactor vessel due to the short duration temperature gradient imposed by exceeding the TS heatup rate. Consistent with the licensee’s evaluation, the observed heatup rate minimally exceeded the specified limit during plant startup and remained within the acceptable bounds of the current plant pressure and temperature analysis.

The finding is related to the cross-cutting area of PI&R, Corrective Actions, in that PPL did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, PPL did not take effective corrective actions to correct an inadequate procedure for monitoring adherence to P/T limits after it was identified by inspectors. (P.1.d)

Enforcement. 10 CFR 50, Appendix B, Criterion V, requires, in part, that “activities affecting quality shall be prescribed by documented... procedures.” Additionally, it requires that procedures “include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.” Contrary to the above, on May 28, 2013, it was identified that SO-200-011, “Reactor Vessel Temperature and Pressure Recording,” did not adequately translate the acceptance criteria described in the plant TSs, as amplified by its basis, into the procedure. This resulted in operators exceeding the TS limit for heatup rate during a startup on May 28, 2013. After identification, PPL revised the procedure and entered the issue into the station’s CAP as CR 1709058. Because this violation was of very low safety significance, was not repetitive or willful, and was entered into PPL’s CAP, this

violation is being treated as an NCV consistent with Section 2.3.2 of the Enforcement Policy. (**NCV 05000388/2013003-03, Inadequate Procedure to Control and Monitor Reactor Coolant System Heatup Rate**)

Cornerstone: Emergency Preparedness

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

a. Inspection Scope

The Nuclear Security and Incident Response (NSIR) headquarters staff performed an in-office review of the latest revisions of various Emergency Plan Implementing Procedures (EPIPs) and the EP located under ADAMS accession numbers ML13114A202 and ML13003A135 as listed in the Attachment.

PPL determined that in accordance with 10 CFR 50.54(q), the changes made in the revisions resulted in no reduction in the effectiveness of the Plan, and that the revised Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The NRC review was not documented in a safety evaluation (SE) report and did not constitute approval of PPL-generated changes; therefore, this revision is subject to future inspection. The specific documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06 - 1 sample)

a. Inspection Scope

The inspectors evaluated the conduct of a routine PPL emergency drill on June 25 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, white team HP drill on June 25

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational/Public Radiation Safety (PS)

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

During April 22 - 26, 2013, the inspectors reviewed and assessed PPL's performance in assessing the radiological hazards and exposure control in the workplace. The inspectors used the requirements in 10 CFR Part 20 and guidance in Regulatory Guide (RG) 8.38 Control of Access to High and Very High Radiation Areas (VHRA) for Nuclear Plants, TSs, and the Susquehanna procedures required by TSs as criteria for determining compliance.

a. Inspection Scope

Inspection Planning

The inspectors reviewed 2012 PPL performance indicators (PIs) for the Occupational Exposure cornerstone for Susquehanna. The inspectors reviewed the results of radiation protection (RP) program audits. The inspectors reviewed any reports of operational occurrences related to occupational radiation safety since the last inspection.

Radiological Hazard Assessment

The inspectors determined if there have been changes to plant operations since the last inspection that may result in a significant new radiological hazard for onsite workers or members of the public and any hazards have been adequately evaluated by PPL. The inspectors reviewed the last two radiological surveys from Unit 2 drywell shutdown surveys, RB 719', 749/762', HPCI, and RCIC. The inspectors evaluated whether the thoroughness and frequency of the surveys were appropriate with respect to the radiological hazard.

The inspectors conducted walkdowns in the facility, including radioactive waste processing, storage, and handling areas to evaluate material and radiological conditions.

The inspectors selected the following radiological risk-significant work activities.

- Scaffold building in the Unit 2 drywell
- Unit 2 'A' recirculation pump
- Unit 2 drywell ISI

For these work activities, the inspectors assessed whether the pre-work surveys performed were appropriate to identify and quantify the radiological hazard and to establish adequate protective measures.

The inspectors observed work in potential airborne radioactivity areas and evaluated whether the air samples from the Unit 2 control rod drive (CRD) rebuild room and the under vessel area work locations were representative of the breathing air zone and were properly evaluated. The inspectors evaluated whether continuous air monitors were located in areas that were representative of actual work areas and provided adequate alarm setpoints. The inspectors evaluated PPL's program for monitoring levels of loose

surface contamination in areas of the plant with the potential for the contamination to become airborne.

Instructions to Workers

The inspectors selected three containers of non-exempt licensed radioactive material. The inspectors assessed whether the containers were adequately labeled and controlled.

The inspectors reviewed the following radiation work permits (RWPs) used to access high radiation areas (HRA) and evaluated if the specified work control instructions and control barriers were consistent with requirements.

- 2013-2324 – 2 A recirculation pump and motor replacement including small bore piping modifications and support
- 2013-2320 – scaffolding work in the drywell
- 2013-2370 – Nozzle and Vessel ISI and associated support

For these RWPs, the inspectors assessed whether the permissible dose for each RWP was clearly identified and whether electronic personal dosimeter (EPD) alarm set-points were in conformance with survey indications and procedure requirements.

The inspectors reviewed two occurrences where a worker's EPD noticeably malfunctioned or alarmed. The inspectors assessed whether the issue was included in the CAP and whether compensatory dose evaluations were conducted as appropriate. For work activities that could cause a transient increase in radiological conditions, the inspectors assessed PPL's means to inform workers of these changing conditions.

Contamination and Radioactive Material Control

The inspectors observed the Unit 2 radiological controlled area (RCA) where PPL monitors potentially contaminated material leaving the RCA and inspected the methods used for control, survey, and release material from this area. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use and evaluated whether the work was performed in accordance with procedures. The inspectors assessed whether the radiation monitoring instrumentation used for equipment release and personnel contamination surveys had appropriate sensitivity for the types of radiation present.

The inspectors reviewed PPL's procedures and records for the survey and release of potentially contaminated material to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters. The inspectors selected two sealed sources from PPL's inventory records and assessed whether the sources were accounted for and were tested for loose surface contamination. The inspectors evaluated whether any recent transactions involving nationally tracked sources were reported in accordance with regulatory requirements.

Radiological Hazards Control and Work Coverage

The inspectors evaluated radiological conditions during walkdowns of the facility. The inspectors assessed whether the conditions were consistent with applicable posted surveys, RWPs, and associated worker briefings.

The inspectors evaluated the adequacy of radiological controls, such as required surveys, RP job coverage, and contamination controls. The inspectors evaluated PPL's use of EPDs in high noise areas that were also HRAs or locked high radiation areas (LHRA).

The inspectors assessed whether radiation monitoring devices in high radiation work areas with significant dose rate gradients, were placed on the individual's body in the location of highest expected dose to monitor exposure to personnel or that PPL properly implemented an NRC-approved method of determining effective dose equivalent.

The inspectors did not review RWPs for work within airborne radioactivity areas as none were available during the inspection period.

The inspectors assessed applicable containment barrier integrity and the operation of temporary high-efficiency particulate air ventilation systems.

The inspectors examined the posting and physical controls for selected HRAs, LHRAs and VHRA to verify conformance with the occupational PI.

Radiation Worker Performance

The inspectors observed the performance of radiation workers with respect to RP work requirements. The inspectors assessed whether workers were aware of the radiological conditions in their workplace and the RWP controls/limits in place, and whether their behavior reflected the level of radiological hazards present.

RP Technician Proficiency

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

The inspectors reviewed five radiological problem reports since the last inspection that attributed the cause of the event to RP technician error. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by PPL to resolve the reported problems.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with radiation monitoring and exposure control were being identified by PPL at an appropriate threshold and were properly addressed for resolution in PPL's CAP. The inspectors assessed the

appropriateness of the corrective actions for a selected sample of problems documented by PPL that involve radiation monitoring and exposure controls. The inspectors assessed PPL's process for applying operating experience (OE) to their plant.

b. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02)

During April 22 through 26, 2013, the inspectors assessed performance with respect to maintaining occupational individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspectors used the requirements in 10 CFR 20, RG 8.8 - Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Plants will be ALARA, RG 8.10 - Operating Philosophy for Maintaining Occupational Radiation Exposure ALARA, TSs, and PPL procedures required by TSs as criteria for determining compliance.

a. Inspection Scope

Inspection Planning

The inspectors reviewed pertinent information regarding Susquehanna's collective dose history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors reviewed the plant's three year rolling average collective exposure. The inspectors compared the site-specific trends in collective exposures against the industry average values and those values from similar vintage reactors. The inspectors reviewed site-specific procedures associated with maintaining occupational exposures ALARA, which included a review of processes used to estimate and track exposures from specific work activities.

Radiological Work Planning

The inspectors selected the following work activities that had the highest exposure significance.

- 2013-2324 - 2A recirculation pump and motor replacement including small bore piping modifications and support
- 2013-2320 – Scaffolding work in the drywell
- 2013-2370 – Nozzle and Vessel ISI and associated support

The inspectors reviewed the ALARA work activity evaluations, exposure estimates, and exposure reduction requirements. The inspectors determined whether PPL reasonably grouped the radiological work into work activities, based on historical precedence and industry standards.

The inspectors assessed whether PPL's planning identified appropriate dose reduction techniques, considered alternate dose reduction features, and estimated reasonable dose goals. The inspectors evaluated whether PPL's ALARA assessment had taken into account decreased worker efficiency from use of respiratory protective devices and/or heat stress mitigation equipment. The inspectors determined whether PPL's work

planning considered the use of remote technologies as a means to reduce dose and the use of dose reduction insights from industry OE and plant-specific lessons learned. The inspectors assessed the integration of ALARA requirements into work procedure and RWP documents.

Verification of Dose Estimates and Exposure Tracking Systems

The inspectors reviewed the assumptions and basis for the current annual collective dose estimate for accuracy. The inspectors reviewed applicable procedures to determine the methodology for estimating exposures from specific work activities and for department and station collective dose goals.

The inspectors evaluated whether PPL had established measures to track, trend, and reduce occupational doses for ongoing work activities. The inspectors assessed whether dose threshold criteria was established to prompt additional reviews and/or additional ALARA planning and controls.

The inspectors evaluated PPL's method of adjusting exposure estimates, or re-planning work for emergent work. The inspectors assessed whether adjustments to exposure estimates were based on sound RP and ALARA principles or if they were adjusted to account for failures to plan/control the work.

Source Term Reduction and Control

The inspectors used PPL's records to determine the historical trends and current status of plant source term known to contribute to elevated facility collective dose. The inspectors assessed whether PPL had made allowances or developed contingency plans for expected changes in the source term as the result of changes in plant fuel performance issues or changes in plant primary chemistry.

Radiation Worker Performance

The inspectors observed radiation worker and RP technician performance during work activities being performed in radiation areas and HRAs. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice and whether there were any procedure or RWP compliance issues.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with ALARA planning and controls are being identified by PPL at an appropriate threshold and were properly addressed for resolution in PPL's CAP. The inspectors assessed PPL's process for applying OE to their plant.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

During April 22 - 26, 2013, the inspectors verified in-plant airborne concentrations were being controlled consistent with ALARA principles. The inspectors used the requirements in 10 CFR Part 20, the guidance in RG 8.15 Acceptable Programs for Respiratory Protection, RG 8.25 Air Sampling in the Workplace, NUREG-0041 Manual of Respiratory Protection Against Airborne Radioactive Material, TSs, and PPL's procedures required by TSs as criteria for determining compliance.

a. Inspection Scope

Inspection Planning

The inspectors reviewed Susquehanna's UFSAR to identify areas of the plant designed as potential airborne radiation areas and any associated ventilation systems or airborne monitoring instrumentation. This review included instruments used to identify changing airborne radiological conditions.

Engineering Controls

The inspectors reviewed PPL's use of permanent and temporary ventilation to determine whether PPL uses ventilation systems as part of its engineering controls to control airborne radioactivity. The inspectors reviewed procedural guidance for use of installed plant systems to reduce dose and assessed whether the systems are used during high-risk activities

The inspectors selected one installed ventilation system used to mitigate the potential for airborne radioactivity. The inspectors evaluated whether the ventilation system operating parameters were consistent with maintaining concentrations of airborne radioactivity in work areas below the concentrations of an airborne radioactivity area. The inspectors selected one temporary ventilation system setup used to support work in a contaminated area. The inspectors assessed whether the use of this system was consistent with PPL's procedural guidance and the principles of ALARA.

The inspectors reviewed airborne monitoring protocols by selecting one installed system used to monitor and warn of changing airborne concentrations in the plant. The inspectors evaluated whether the alarms and set-points are sufficient to prompt licensee/worker action to ensure that doses are maintained ALARA.

Use of Respiratory Protection Devices

The inspectors selected one work activity where respiratory protection devices were used to limit the intake of radioactive materials, and assessed whether PPL performed an evaluation concluding that further engineering controls were not practical and that the use of respirators is ALARA. The inspectors also evaluated whether PPL had established means to determine if the level of protection was at least as good as that assumed in PPL's work controls and dose assessment.

The inspectors assessed whether respiratory protection devices used to limit the intake of radioactive materials were certified by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration (NIOSH/MSHA). The inspectors

evaluated whether the devices were used consistent with their NIOSH/MSHA certification.

b. Findings

No findings were identified.

2RS7 Radiological Environment Monitoring Program (71124.07 – 1 sample)

During June 17- 21, 2013, the inspectors verified that the radiological environmental monitoring program (REMP) quantifies the impact of radioactive effluent releases to the environment.

The inspectors used the requirements in 10 CFR Part 20; 10 CFR Part 50 Appendix A Criterion 60 - Control of Release of Radioactivity to the Environment; 10 CFR 50 Appendix I Numerical Guides for Design Objectives and LCO to Meet the Criterion "ALARA" for Radioactive Material in Light-Water - Cooled Nuclear Power Reactor Effluents; 40 CFR Part 190 Environmental Radiation Protection Standards for Nuclear Power Operations; 40 CFR Part 141 Maximum Contaminant Levels for Radionuclides; the guidance in RGs 1.23 Meteorological Measurements Program for Nuclear Power Plants, RG 4.1 Radiological Environmental Monitoring Programs for Nuclear Power Plants; RG 4.15 Quality Assurance (QA) for Radiological Monitoring Programs; NUREG 1302 Offsite Dose Calculation Manual (ODCM) Guidance: Standard Radiological Effluent Controls; applicable industry standards; and licensee procedures as criteria for determining compliance.

a. Inspection Scope

Inspection Planning

The inspectors reviewed the Susquehanna Annual Radiological Environmental Operating Reports for 2011 and 2012, and the results of PPL's assessments since the last inspection to verify that the REMP was implemented and reported in accordance with requirements. This review included changes to the ODCM with respect to environmental monitoring, sampling locations, monitoring and measurement frequencies, land use census, inter-laboratory comparison program, and analysis of data.

The inspectors reviewed the Susquehanna ODCM to identify locations of environmental monitoring stations.

The inspectors reviewed the FSAR for information regarding the environmental monitoring program and meteorological monitoring instrumentation.

The inspectors reviewed quality assurance audits and technical evaluations performed on the vendor analytical laboratory program.

The inspectors reviewed the Susquehanna Annual Radioactive Effluent Release Reports and the most recent results from waste stream analysis, to determine if PPL is sampling and analyzing for the predominant radionuclides likely to be released in effluents.

Site/Environmental Inspection

The inspectors walked down five air sampling stations and five thermoluminescent dosimeter (TLD) monitoring stations.

For the air samplers and TLD stations selected, the inspectors reviewed the calibration and maintenance records. Additionally, the review included the calibration and maintenance records of two composite water samplers.

The inspectors verified the performance of compensatory sampling upon loss of a required sampling station.

The inspectors observed the collection and preparation of one environmental sample from surface water and the simulated collection and preparation of a soil sample, to verify that environmental sampling is representative of the release pathways as specified in the ODCM and that sampling techniques are in accordance with procedures.

Based on direct observation and review of records, the inspectors assessed whether the meteorological instruments were operable, calibrated, and maintained in accordance with procedures and that readout values were commensurate with the control room.

The inspectors evaluated whether missed and/or anomalous environmental samples were identified and reported in the Annual Radiological Environmental Operating Reports. The inspectors selected three events that involved a missed sample, inoperable sampler, lost TLD, or anomalous measurement to verify that PPL has identified the cause and has implemented corrective actions. The inspectors reviewed the assessment of any sample results detected above the lower limits of detection and reviewed PPL's evaluation of associated radioactive effluent release data.

The inspectors selected three SSCs where there is a credible mechanism for radioactive material to reach ground water. The inspectors assessed whether PPL has implemented a sampling and monitoring program sufficient to provide early detection of leakage from these SSCs.

The inspectors evaluated whether decommissioning records of leaks, spills, and environmental remediation are retained in the 10 CFR 50.75(g) decommissioning file.

The inspectors reviewed any significant changes made to the ODCM as the result of changes to the land census, long-term meteorological conditions (three year average), or modifications to the sampler stations since the last inspection. The inspectors reviewed technical justifications for any changed sampling locations to verify that the changes did not affect the ability to monitor the impacts of radioactive effluent releases on the environment.

The inspectors assessed whether the detection sensitivities for environmental samples were below the lower limits of detection specified in the ODCM. The inspectors reviewed the results of the vendor's quality control program, including the inter-laboratory comparison, to assess the adequacy of the vendor's program.

The inspectors reviewed the results of inter-laboratory and intra-laboratory comparison program to verify the quality of environmental sample analyses performed by PPL.

Identification and Resolution of Problems

The inspectors assessed whether problems associated with the REMP are being identified by PPL at an appropriate threshold and appropriate corrective actions are assigned for resolution in PPL's corrective action program.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 - 6 samples)

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

a. Inspection Scope

The inspectors reviewed PPL's submittal of the Mitigating Systems Performance Index for the following systems for the period of April 2012 through March 2013:

- Units 1 and 2, High Pressure Injection Systems, MS07

To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors also reviewed PPL's operator narrative logs, condition reports, mitigating systems performance index derivation reports, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.2 Reactor Coolant System (RCS) Specific Activity (2 samples)

a. Inspection Scope

The inspectors reviewed PPL's submittal for the RCS specific activity performance indicator for both Unit 1 and Unit 2 for the period of April 2012 through March 2013. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6.

b. Findings

No findings were identified.

.3 RCS Leak Rate (2 samples)

a. Inspection Scope

The inspectors reviewed PPL's submittal for the RCS leak rate performance indicator for both Unit 1 and Unit 2 for the period of April 2012 through March 2013. To determine the accuracy of the performance indicator data reported during those periods, the

inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors also reviewed control room logs of daily measurements for RCS leakage, and compared that information to the data reported by the performance indicator. Additionally, the inspectors observed surveillance activities that determined the RCS identified leakage rate.

b. Inspection Findings

No findings were identified.

.4 RETS/ODCM Radiological Effluent Occurrences

a. Inspection Scope

The inspectors reviewed relevant effluent release reports for the period January 1 through December 31, 2012, for issues related to the public radiation safety performance indicator.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

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

a. Inspection Scope

As required by Inspection Procedure (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 followup, the inspectors performed a daily screening of items entered into the CAP and periodically attended periodically attended condition report screening meetings.

b. Findings

No findings were identified.

.2 Annual Sample: Loss of One of Two Offsite Power Sources

a. Inspection Scope

The inspectors performed an in-depth review of PPL's RCA and corrective actions associated with CR 1592976. CR 1592976 documented a June 28, 2012 lockout condition that occurred on startup transformer T-20 while measuring phase currents with an installed local ammeter and phase selector switch at an associated 13.8kV buss. During normal electric plant lineups, T-20 supplies an offsite power line to each SSES

unit. As a result of the lockout condition, Unit 1, which was operating in cold shutdown, temporarily lost shutdown cooling for 32 minutes. Unit 2 remained at full power. Both Units 1 and 2 were at increased risk to a loss of offsite power initiating event. PPL completed its RCA report for the loss of T-20 startup transformer on September 4, 2012.

The inspectors assessed PPL's problem identification threshold, causal analyses, technical analyses, extent of condition reviews, compensatory actions, and the prioritization and timeliness of corrective actions to determine whether PPL was appropriately identifying, characterizing, and correcting problems associated with this issue. The inspectors focused on technical and equipment issues. Onsite resident inspectors previously reviewed PPL staff response and evaluation of the event during and promptly after the event and documented these inspection activities in NRC Integrated Inspection Report 05000387; 388/2012003 (ADAMS ML122223A) Section 4OA3.1. The inspectors compared the actions taken to the requirements of PPL's CAP and 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." In addition, the inspectors reviewed documentation associated with this issue, including condition and failure analysis reports, and interviewed engineering personnel to assess the effectiveness of the implemented corrective actions and the actions planned to complete full resolution of the issue.

b. Findings and Observations

No findings were identified.

The T-20 lockout was directly attributed to an anomaly with the operation of ammeter phase selector switch AS-0A10401. Operators had recently begun taking individual phase current readings of each startup transformer, T-10 and T-20, as a compensatory measure in response to OE and an industry event at the Byron Nuclear Station. The Byron event occurred on January 30, 2012, and was described in NRC Information Notice 2012-03, Design Vulnerability in Electric Power System (ADAMS Accession Number ML120480170). The cause of the Byron Unit 2 full power trip and event was determined to be an unbalanced condition on station busses that occurred when a phase to both unit auxiliary transformers was lost due to an insulator failure in the 345kV switchyard. The phase imbalance went undetected by the existing bus undervoltage protective relaying scheme. PPL reviewed the OE and its applicability to SSES Units 1 and 2, and determined SSES was similarly vulnerable to an undetected single-phase open circuit condition. SSES entered this OE issue into the CAP as AR 1528510 and completed an operational decision making (ODM) plan (1578080) that included compensatory measures that required shiftly readings of the T-10 and T-20 individual phase currents at associated 13.8kV busses. On June 24, 2012, plant operators began implementing the compensatory measure and recording T-10 and T-20 individual phase currents. On June 28, 2012, a lockout of T-20 occurred when the AS-0A10401 switch was operated and ground differential relay 87A1N0A10401 and primary lockout relay 86A10A10401A actuated.

PPL promptly investigated the cause of the protective relay actuation for the T-20 transformer and determined that the 'A' phase contact of the Westinghouse W2 AS-0A10401 switch failed to close. PPL reviewed circuit diagrams and determined that the switch was not only a part of a metering circuit but also an integral part of a protective relaying scheme and the high resistance or open contact caused the protective action or lockout condition to occur. PPL promptly suspended the ODM

compensatory measures to read individual phase currents and established administrative measures to prevent operation of similar switches in other switchgear applications until the issues and potential vulnerabilities were more fully investigated. Additionally, PPL chartered a root cause team and sent the suspect switch to an independent laboratory for failure analysis. The laboratory observed the same contact open/high resistance condition. The laboratory determined the most likely explanation was that a small piece of insulating material became stuck to one of the contacts at the point where the two portions meet.

PPL established several corrective actions from its RCA to ensure Westinghouse W2 metering switches installed in similar circuits were reviewed for potential vulnerabilities, administrative controls established to prevent their operation, and modifications developed and implemented for long-term resolution. PPL also reviewed its configuration management program to ensure future design changes would not integrate metering circuits with protective relaying circuits.

The inspectors determined that PPL's overall response to the issue was commensurate with the safety significance, was timely, and the actions taken and planned were reasonable to resolve the metering switch issues. The inspectors determined that the switch malfunction and its impact on the protective relaying circuit was not a foreseeable condition. PPL acted in good faith response to OE and established compensatory measures to identify potential power imbalances. A legacy design, metering circuits combined with protective relaying circuits, in addition to a switch malfunction, were a root cause and direct cause of the event respectively. The root cause team and the inspectors did not identify an industry standard that required metering circuits isolated from protective relay circuits. The inspectors also determined that PPL remained committed to resolving its design vulnerability in promptly detecting unbalanced phase conditions on SSES's offsite power system, and is represented in the industry working groups on this issue. Finally, the inspectors verified PPL continued to implement other compensatory measures within ODM 1578080 to detect unbalanced phase conditions on SSES's offsite power system.

.3 Review of Substantive Cross Cutting Issue for Problem Evaluation (P.1.(c))

a. Inspection Scope

The inspectors performed an annual sample review, as required by IP 71152, "Problem Identification and Resolution," to verify that PPL had taken corrective actions commensurate with the significance of this issue. This included an in-depth review of PPL's root cause analysis and corrective actions associated with a substantive cross cutting issue (SCCI) for problem evaluation cross cutting aspect (P.1.(c)).

The inspectors also interviewed selected PPL staff to assess their understanding of the causal analyses, technical analyses, and other evaluation techniques that were described in NDAP-00-0752, Cause Analysis. During this review, the inspectors specifically reviewed ongoing evaluations for a number of open condition reports in various stages of review.

The results of a 2013 nuclear safety culture assessment were reviewed to assess perceptions of PPL staff on the effectiveness of CAP.

b. Findings and Observations

No findings were identified.

The NRC originally identified this SCCI in the 2011 Mid-Cycle assessment letter. In the Annual Assessment letter dated March 1, 2012, the NRC sustained this SCCI because of six previous findings with a cross cutting aspect of P.1(c). PPL developed improvement plans to address this issue and documented them in an April 16, 2013 letter to the NRC. These plans describe their actions taken to date and additional actions planned to improve their evaluation of problems. A major facet of this effort was the implementation of a comprehensive set of station and department CAP performance indicators (PIs). The inspectors reviewed these PIs from June 2012 until May 2013 and noted general improvements in the health of the CAP. Specifically, the timeliness and backlog of CRs improved, and the total number of CRs ready to be closed that were older than 30 days was also reduced significantly. The inspectors also noted that the Utilities Service Alliance (USA) key performance indicator, which compares eight non-fleet nuclear sites, showed consistent improvement over the last few months.

In NRC Inspection Report 05000387;388/2012005, the inspectors questioned the quality of Corrective Action Review Board (CARB) reviewed CR evaluations because PPL asserted that the trend in October and December 2012 was slowly and consistently improving. At that time, the inspectors determined that this was an erroneous characterization of the trend because evaluation rejection rate had increased from 12.5 percent in both July and August, to 25 percent in September, to 50 percent for October and November, without a corresponding decline in overall metric performance. PPL examined the input data to the PI and determined that the metric was incorrect. During the current inspection, the inspectors examined this PI and noted a general reduction in the evaluation rejection rate since December 2012, as well as a slight increase in the CAP system health scores. There was a slight increase in the May 2013 rejection rate which was attributable to a small sample size (one in five rejected due scheduling issues). The Department CARB scores remained above 90 percent for this entire period. The inspectors did not identify problems with PI calculations or internal reporting.

During interviews, the inspectors questioned plant staff on their use of the various evaluation techniques described in NDAP-00-0752, Cause Analysis, and noted a general understanding of the analysis techniques. The inspectors also verified that they had specific training on the performance of root and apparent cause evaluations and that this training was completed, as required. Most of the evaluators knew that each apparent cause evaluation had to implement at least one root cause technique to ensure a thorough review. These techniques included, for example, events and causal factors charting, cause and effect (why) chart, and equipment apparent cause analysis. They were able to describe, in detail, how they used these techniques for Level 2 CRs. The inspectors also noted that these evaluators were also able to adequately describe the steps they use to evaluate direct causes per NDAP-00-0752.

The inspectors also reviewed the Nuclear Safety Culture Assessment (NSCA) Executive Summary Report to assess plant management and staff perceptions regarding the effectiveness of the CAP. The inspectors noted a general decline in a number of areas that were reflective of CAP performance. Six of the twelve questions in this area were rated as Areas for Improvement and five of the remaining questions indicated a decline

from the previous survey. This was indicative of PPL staff's perceptions on the health of the CAP. While the decline was widespread and did represent a significant change since the last NSCA in 2011, one indicator did show a modest improvement in the attitudes towards CAP over the last year. PPL staff did not identify changes to their plans as a result of these perceptions.

.4 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a semi-annual review of site issues, as required by IP 71152, "PI&R," to identify trends that might indicate the existence of more significant safety issues. In this review, the inspectors included repetitive or closely-related issues that may have been documented by PPL outside of the CAP, such as trend reports, performance indicators, major equipment problem lists, system health reports, maintenance rule assessments, and maintenance or corrective action program backlogs. The inspectors also reviewed PPL's CAP database for the first and second quarters of 2013 to assess CRs written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRC's daily CR review (Section 4OA2.1). The inspectors reviewed PPL quarterly trend reports for the third quarter of 2012 through first quarter of 2013, conducted under NDAP-QA-0710, "Station Trending Program," Revision 6, to verify that PPL personnel were appropriately evaluating and trending adverse conditions in accordance with applicable procedures.

b. Findings and Observations

No findings were identified.

Operability Determinations. During the inspection period, the inspectors identified a trend in operability evaluations. During daily CAP review, the inspectors made observations on several CRs that generally fell within three themes: 1) operability was not assessed for the installed condition when degradation was identified during testing after removal from service, 2) operability of degraded equipment was assessed based on the as-left condition instead of the as-found condition, or 3) CRs were awaiting immediate operability determinations for extended periods of time. With the exception of CR 1703293, discussed in section 1R15 of this report, inspector observations did not question operability; rather PPL's following of the operability determination process. PPL entered this item in their CAP as CR 1704034, issued Hot Box 13-24 to notify the Operations department of the observations and requirements, and implemented interim weekly reviews of operability determinations.

Traditional Enforcement. During the fourth quarter 2011 trend review, the inspectors identified a trend in Traditional Enforcement (TE) violations (IR 05000387;388/2012005). Following this report, the NRC identified three SLIV NCVs in 2012 and an additional three TE violations during the first half of 2013. Additionally, the inspectors observed that PPL continues to have challenges in reporting NRC performance indicators. Specific examples included omission of an hour of EDG unavailability, not reporting a December 2012 scram as complicated, and seven out of twenty-four RCS leakage data points being reported incorrect.

Mispositioning Events. The inspectors identified a potential trend in mispositioning events during the first half of 2013. Specifically, a comparison of the six month period from June to November 2012 to December 2012 to May 2013, reveals that the average number of status control events rose 50 percent. Additionally, the average risk category of those events rose from a Level 3 to a Level 2 over the same time periods.

Handswitches. The inspectors identified a potential trend in handswitch performance. Over the first half of 2013, there have been at least nine examples of handswitches with degraded conditions. While there have been a comparable number in the previous six month period, 73 percent have occurred in the latter two-thirds of the overall timeframe and all of the control room handswitch issues occurred during that subset period. Though none of these handswitch equipment problems resulted in more than minor performance deficiencies, the inspectors concluded they collectively represent a potential challenge to operations personnel. PPL staff placed this issue in their corrective action program.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153 – 3 samples)

.1 Plant Events

a. Inspection Scope

For the plant events listed below, the inspectors reviewed and/or observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant events to appropriate regional personnel, and compared the event details with criteria contained in IMC 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. As applicable, the inspectors verified that PPL made appropriate emergency classification assessments and properly reported the event in accordance with 10 CFR 50.72. The inspectors reviewed PPL's follow-up actions related to the events to assure that PPL implemented appropriate corrective actions commensurate with their safety significance.

- Unit 1, manual reactor scram on June 7, 2013 due to unexpected opening of turbine bypass valves

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000387/2012-008: Loss of One of Two Offsite Power Sources

a. Inspection Scope

On June 28, 2012, at 1:53 p.m., SSES experienced a loss of power from one of two offsite power sources when startup transformer T-20 automatically locked out. The direct cause of the event was an open ammeter phase selector switch contact causing a phase imbalance that was detected by the protective relaying and initiated a transformer lockout. Details of the ammeter phase selector switch operation and its malfunction are described in Section 4OA2.1 of this report. The LER and associated RCA were reviewed for accuracy, the appropriateness of corrective actions, violations of requirements, and generic issues. This LER is closed.

b. Findings

No findings were identified.

.3 (Closed) LER 05000388/2013-001-00: Implementation of Enforcement Guidance Memorandum (EGM) 11-003, Revision 1

a. Inspection Scope

From April 17 through May 17, PPL performed OPDRVs without establishing secondary containment integrity. An OPDRV is an activity that could result in the draining or siphoning of the RPV water level below the top of fuel, without crediting the use of mitigating measures to terminate the uncovering of fuel. TS 3.6.4.1, "Secondary Containment" requires that secondary containment be operable and is applicable during OPDRVs. The required action for this specification if secondary containment is inoperable in this condition of applicability is to initiate actions to suspend OPDRVs immediately. Therefore, failing to maintain secondary containment operability during OPDRVs without initiating actions to suspend the operation was considered a condition prohibited by TSs as defined by 10 CFR 50.73(a)(2)(i)(B).

As reported in LER 05000388/2013-001, PPL conducted the following OPDRVs during the period of secondary containment inoperability:

- Recirculation system drain and maintenance;
- RWCU system removal from service, maintenance, testing and restoration;
- RHR system LLRT, drain, maintenance and testing;
- Hydraulic Control Unit (HCU) replacement;
- Local Power Range Monitor (LPRM) replacement;
- Scram Discharge Volume (SDV) maintenance and testing;
- CRD mechanism replacements;
- Scram Pilot Solenoid Valve testing;
- Reset of Reactor Scram; and
- Dynamic vent of CRD headers.

NRC EGM 11-03, "Enforcement Guidance Memorandum On Dispositioning BWR Licensee Noncompliance With TS Containment Requirements During Operations With A Potential For Draining The Reactor Vessel," provides, in part, for the exercise of enforcement discretion only if the licensee demonstrates that it has met four specific criteria during an OPDRV activity. The inspectors' assessments of PPL's implementation of these four criteria during the LPRM replacement activity are described below:

- 1) The inspectors observed that, as required by the EGM, the OPDRV activities were logged in the control room narrative logs and that the log entries appropriately documented actions being taken to ensure water inventory was maintained and defense-in-depth criteria were in place.
- 2) The inspectors noted that the reactor vessel water level was maintained above the RHR high water level setpoint of 22 feet. The inspectors also noted that at least one safety-related pump was the standby source of makeup designated in the control

room narrative logs for the evolutions. PPL logged that the worst case estimated time to drain the reactor cavity to the RPV flange was greater than the EGM criteria of 24 hours.

- 3) The inspectors verified that the OPDRVs were not conducted in Mode 4 and that PPL maintained secondary containment operability for the refueling floor while moving irradiated fuel during OPDRVs. The inspectors noted that PPL had contingency plans in place for isolating the potential leakage paths, should difficulty arise during the LPRM replacement activities. Additionally, the inspectors verified that two independent means of measuring RPV water level (one alarming) were available for identifying the onset of loss of inventory events.
- 4) Inspectors verified that, for the periods of April 17 through May 7 and May 10 through May 17, all other TSs were met during OPDRVs with secondary containment inoperable. For the period of May 7 through May 10, inspectors identified that the requirements of TS 3.8.2, "AC Sources- Shutdown" was not met when operators failed to adequately assess the operability of the EDGs and offsite power. Enforcement associated with performance deficiency is discussed in Section 1R15 of this report.

TS 3.6.4.1 is applicable during OPDRVs and requires that secondary containment be operable. TS 3.6.4.1, action C.3, requires operators to initiate actions to suspend OPDRVs immediately upon discovery that secondary containment is inoperable. Contrary to the above, between 12:02 a.m. on April 17, 2013, and 12:53 a.m. on May 7, 2013, and between 3:32 a.m. on May 10, 2013, and 10:00 p.m. on May 17, 2013, PPL did not maintain secondary containment operable while performing OPDRVs. Because the violation was identified during the discretion period described in EGM 11-003, the NRC is exercising enforcement discretion in accordance with Section 3.5, "Violations Involving Special Circumstances," of the NRC Enforcement Policy and, therefore, will not issue enforcement action for this violation. In accordance with EGM 11-003, each licensee that receives discretion must submit a license amendment request within 4 months of the NRC staff's publication in the Federal Register of the notice of availability for a generic change to the Standard TSs to provide more clarity to the term OPDRV. The inspectors observed that PPL is tracking the need to submit a license amendment request in its CAP as CR 1707662. This LER is closed.

b. Findings

A violation associated with the period between 12:53 a.m. on May 7, 2013 and 03:32 a.m. on May 10, 2013 was identified and is documented in section 1R15 of this report.

4OA6 Meetings, Including Exit

On July 12, 2013, the inspectors presented the inspection results to Mr. T. Rausch, CNO and other members of the PPL staff. PPL acknowledged the findings. No proprietary information is contained in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

K. Anderson, PPL Engineering
M. Baldwin, Principal Engineer
D. Brophy, Senior Emergency Planning Coordinator
M. Broski, PPL Welding Engineer
T. Case, PPL Licensing
L. Crawford, Assistant Operations Manager
N. D'Angelo, Chemistry Manager
N. Davis, Supervisor, Corrective Action
R. Day, PPL ISI Program Manager
A. Durzynski, Environmental Scientist
M. Dziedzic, PPL NDE Level III
J. Frank, Site Vice President
E. Gerlach, PPL ISI Engineer
J. Grisewood, Manager, Performance Indicators
J. Griswald, Radiation Operations Supervisor
J. Hartzell, Supervisor Plant Analysis
B. Heacock, Senior Engineer
J. Hesel, Plant General Manager and Acting Site Vice-President
F. Hickey, Chemistry Support
M. Hiday, Ecology III, Supervisor
J. Knorr, Maintenance Production Foreman
T. Jacobsen, Ecology III, Project Director
W. Laubach, Environmental Scientist
R. Linden, PPL NDE Level III
D. Lock, Manager Nuclear Maintenance
G. Merenich, RP Instrument Foreman
P. Merrell, Contractor
S. Muntzenberger, Engineering Supervisor
B. O'Rourke, Licensing Engineer
E. Ortuba, Health Physicist
O. Ortwine, Maintenance Production Supervisor
J. Oswald, Electrical Design Engineer
S. Peterkin, RP Manager
T. Reichart, Maintenance Production Foreman
S. Renner, Predictive Specialist
R. Rodriguez-Gillroy, Radiation Operations Supervisor
B. Satteson, Predictive Specialist
C. Saxton, Senior Environmental Scientist
R. Senick, Instrument and Control Technician
S. Sienkiewicz, Supervisor Programs and Testing
R. Vasquez, PPL Corporate Engineering
T. Walters, Senior Engineer
J. Weik, PPL Engineering
C. Young, ANII

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSEDOpened

None.

Opened/Closed

05000388/2013003-01	NCV	Inadequate Operability Assessment of Synchroscope Switch (1R15)
05000388/2013003-02	NCV	Unacceptable Preconditioning of RPS and EOC-RPT Time Response Test (1R15)
05000388/2013003-03	NCV	Inadequate Procedure to Control and Monitor RCS Heatup Rate (1R22)

Closed

05000387/2012-008-00	LER	Loss of One of Two Offsite Power Sources (Section 4OA3.1)
05000388/2013-001-00	LER	Implementation of Enforcement Guidance Memorandum (EGM) 11-003, Revision 1

LIST OF DOCUMENTS REVIEWED

(Not Referenced in the Report)

Section 1R01: Adverse Weather ProtectionProcedures:

NDAP-00-1913, Seasonal Readiness, Revision 0
 NDAP-00-0334, Summer Operation Preparations, Revision 5
 GO-1(2)00-0014, Unit 1(2) Hot Weather Operation, Revision 6(4)
 OI-AD-029, Emergency Load Control, Revision 15
 OI-AD-032, Station Operation Reporting, Revision 14
 CL-149-0012, Unit 1 RHRSW System Division I Mechanical, Revision 22
 CL-149-0015, Unit 1 RHRSW System Division II Mechanical, Revision 17
 CL-149-0014, Unit 1 RHRSW System Division II Electrical, Revision 13
 OP-149-001, "RHR System," revision 42
 OP-149-002, "RHR Shutdown Cooling," Revision 52

Condition Reports:

1579977, 1585274, 1598613, 1661149, 1666906, 1705261, 1714338, 1640160, 1490631,
 1717203, 1717219, 1625663, 1162673, 1247022, 1333186, 1484320, 1546173

Work Orders:

1717322, 1692079, 1626253, 1632912, 1703689, 1688423

Drawing:

M-80-2, Emergency Safeguards Service Water (ESSW) Spray Pond Network A1 and B1 Plan,
Revision 2

Miscellaneous:

Generic Letter 2006-02
PJM Manuals 03, 13, and 39

Section 1R04: Equipment Alignment

Procedures:

OP-150-001, Unit 1 RCIC System, Revision 38
SE-150-002, Unit 1 RCIC Logic System Functional Test (LSFT) (On-Line Version), Revision 2
SO-150-002, Unit 1 Quarterly RCIC Flow Verification, Revision 47
OP-249-001, "RHR System," Revision 41

Condition Reports (* NRC identified):

1549568, 1575676, 1549568, 1453148, 1444679, 1491628, 1566734

Drawings:

E-154, Sheet 2, Schematic Diagram RCIC Injection Shutoff Valve, Unit 1, Revision 20
M-149, Sheet 1, Unit 1 P&ID Reactor Core Isolation Cooling, Revision 47
M-2151, Sheet 1, "Unit 2 P&ID RHR," Revision 57
M-152, Sheet 1, "Unit 1 P*ID CS," Revision 39

Miscellaneous:

TM-OP-051-ST, "Core Spray System," Revision 4

Section 1R05: Fire Protection

Procedures:

FP-113-103, HPCI Pump Room (I-II), Fire Zone 1-1C, Elevation 645'0", Revision 5
FP-113-104, RCIC Pump Room (I-12), Fire Zone 1-10, Elevation 645'0", Revision 4
FP-113-105, RHR Pump Room 'B', Fire Zone 1-1E, Elevation 645'-0", Revision 3
FP-213-240, RHR Pump Room 'B' (II-13) Fire Zone 2-1E, Elevation 645'-0", Revision 5
NDAP-QA-0440, Control of Transient Combustible/Hazardous Material, Revision 11
NDAP-QA-0442, Control of Ignition Sources: Cutting, Welding, and Hot Work Permits,
Revision 6
NDAP-QA-0443, Firewatch Procedures, Revision 21
FP-013-171, Equipment and Battery Rooms Unit 2 East Side (C-613, 609, 614, 615) Fire Zones
0-28A-1, 0-28G, 0-28E, 0-28C, Elevation 771'
FP-013-170, Equipment and Battery Rooms Unit 2 West Side (C-611, 612, 610, 616, 617) Fire
Zones 0-28-11, 0-28F, 0-28D, 0-28T, Elevation 771'
FP-013-162, Unit 2 Upper Cable Spreading Room (C-507) Fire Zone 0-27B, Elevation 754',
Revision 6
FP-013-146, Unit 2 Lower Cable Spreading Room (C-301), Fire Zone 0-25A, Elevation 714',
Revision 15

Condition Reports (*NRC identified):

1685262*, 1685467*, 1685471*, 1690257*, 1700320,

Work Order:

1393412

Drawings:

C-1754, Sheet 1, Control Structure Fire Zone Plan, Elevation 771', Revision 11
C-1753, Sheet 1, Control Structure Fire Zone Plan, Elevation 754', Revision 10
C-1750, Sheet 1, Control Structure Fire Zone Plan, Elevation 714', Revision 6

Miscellaneous:

Unit 1, Pump Room 'B', Fire Zone 1-1E
Unit 1, HPCI and RCIC HPCI Pump Room (I-II), Fire Zone 1-1C
RCIC Pump Room (I-II), Fire Zone 1-D, Elevation 645'-0"
EC-013-1860, Handling of Transient Combustibles in the Wraparound Zones and Restricted Areas (Red Zone), Revision 2
PLA-4983
EC-013-1846, FHA to Support the Fire Barrier Upgrades on 771', Revision 0

Section 1R08: Inservice Inspection Activities

Procedures:

NDAP-QA-1208, Control of Welding, 8/10/2010, Revision 10
NDAP-QA-0702,; ACTION REQUEST, and CR Process, Revision 40
NDE-VT-003, 10/25/12, Visual Examination (VT)-3, Revision 10
NDE-UT-001, Manual Ultrasonic, Examination of Austenitic Pipe Welds for IGSCC, 4/3/12, Revision 10
NDE-UT-002, Manual Ultrasonic Examination of Ferritic Welds for IGSCC, 9/8/11, Revision 6
NDE-UT-027, Vendor Originated Procedure For Manual Ultrasonic of Nozzle Inner Radius, Bore And Selected Nozzle to Vessel Regions (General Electric (GE) ID #GEH-UT-311, Version 18), 4/15/13, Revision 7
NDE-UT-028, Vendor Originated Procedure For Manual Planar Flaw Sizing of Nozzle Inner Radius and Bore Regions (GE ID # GEH-UT-039, Version 12), 4/16/13, Revision 6
NDE-UT-042, Vendor Originated Procedure GE: Procedure For Manual Examination of Reactor Vessel Assembly Welds In Accordance With Performance Demonstration Initiative (PDI) (GE ID # GEH-UT-300, Version 11), 4/15/13, Revision 4
NDE-UT-043, Vendor Originated Procedure GE: Procedure For Manual Ultrasonic Flaw Sizing In Vessel Materials. (GE ID # GEH-UT-304, Version 10), 4/15/13, Revision 4
NDE-UT-049, Vendor Originated Procedure GE: Procedure For Automated Examination of CS Welds Contained Within the RPV. (GE ID # GEH-UT-511, Version 16, DDR #09-12), 4/15/13, Revision 4
NDE-UT-055, Vendor Originated Procedure GE: Procedure For The Examination of RPV Welds From the Outside Surface With Microtomo In Accordance with Appendix VIII (GEH-UT-716, Version 3), 4/16/13, Revision 1
NDE-UT-056, Vendor Originated Procedure GE: Procedure For The Examination of RPV Nozzles Inside Radius Sections From the Outside Surface With Microtomo In Accordance with Appendix VIII (GEH-UT-718, Version 3), 4/15/13, Revision 1
NDE-UT-073, Vendor Originated Procedure GE: Procedure For The Automated Ultrasonic Examination of Jet Pump Assembly Welds (GEH-UT-543, Version 4, DDR No.11-12 Revision 1), 4/16/13, Revision 0

NDE-UT-074, Vendor Originated Procedure For The Examination of Core Support Welds From Outside The Reactor Pressure Vessel Outside Surface With the SP-2000 (GE ID GEH-UT-720, Version 1, DDR No.11-18), 4/16/13, Revision 0

Action Requests (* NRC-identified):

1691224, 1437546, 1437549, 1439642, 1442394, 1444172, 1446464, 1481010, 1475299, 1465169, 1465162, 1459112, 1453648, 1448122, 1446979, 1692572, 1692769, 1691778, 1691336, 1693841, 1415100, 1446979, 1448122, 1453648, 1459112, 1465162, 1465169, 1475299, 1481010, 1703108*

Work Order:

935595

Drawings and Sketches:

Chicago Bridge and Iron Company, drawing 73-5519-30, Revision 5; Suppression Chamber Stretchout 0 degrees to 180 degrees (FF101504, Sheet 3302 Revision 6)
Chicago Bridge and Iron Company, drawing 73-5519-31, Revision 2; Suppression Chamber Stretchout 180 degrees to 0 degrees (FF101504, Sheet 3301 Revision 7)
Chicago Bridge and Iron Company, drawing 73-5519-16, Revision 3; Plan of Suppression Chamber ¾ inch Thick Bottom Plates (FF101504, Sheet 3401 Revision 4)
Chicago Bridge and Iron Company, drawing 73-5519-14, Revision 1; Plan of Suppression Chamber ¼ inch Thick Bottom Plates (FF101503, Sheet 8901 Revision 5)
Chicago Bridge and Iron Company, drawing 73-5519-03, Revision 4; Shell Stretchout 0 degrees to 90 degrees (FF101508, Sheet 0801 Revision 6)
Chicago Bridge and Iron Company, drawing 73-5519-04, Revision 3; Shell Stretchout 90 degrees to 180 degrees (FF101508, Sheet 0901 Revision 5)
Chicago Bridge and Iron Company, drawing 73-5519-05, Revision 5; Shell Stretchout 180 degrees to 270 degrees (FF101508, Sheet 1001 Revision 7)
Chicago Bridge and Iron Company, drawing 73-5519-06, Revision 5; Shell Stretchout 270 degrees to 360 degrees (FF101508, Sheet 1101 Revision 7)
Bechtel drawing C-277, E-105290, PPL, RB UNIT 1 & 2, Liner Plate Developed Elevation

Engineering Calculations & Evaluations:

Engineering Change Document 935595, Jet Pump Repairs During 16th Refueling Inspection Outage – (1) Install Slip Joint Clamps on all Jet Pumps, (2) Install Anti-vibration System on 2JP11 and 2JP12, and (3) Install Auxiliary Spring Wedges, as Needed, November 30, 2012
RCA for CR1589390, Revision 1; Fatigue Cracking of U1 Recirculation Loop Decontamination Connections

GE Hitachi Nuclear Energy, Susquehanna Unit 1 & 2, Jet Pump Antivibration Soutlion Hardware Stress Analysis Report, 0000-0155-0720, Revision 1, Class III DRF0000-0153-2858-RO, April 2013

NDE Inspection Reports & Data Sheets:

Report VT-13-022, Procedure NDE-VT-003/IWE, Drywell Head Flange and Manhole Hatch (X-4), April 18, 2013

Report VT-12-010, Procedure NDE-VT-003/IWE, Containment Penetrations, April 20, 2013

Report VT-12-031, Procedure NDE-VT-003/IWE, Containment Liner and Penetrations, April 13, 2012

Report VT-12-027, Procedure NDE-VT-003/IWE, Containment Liner and Penetrations, April 13, 2012

Report VT-12-028, Procedure NDE-VT-003/IWE, Containment Liner and Penetrations, April 13, 2012

Report VT-12-088, Procedure NDT-VT-003/ IWE, Containment Area Zone 42

Report VT-12-005, Procedure NDE-VT-003/IWL, Drywell Exterior Concrete Surfaced, 4/16/12

Report VT-12-099, Procedure NDE-VT-003/IWE, Containment Penetrations, 4/22/12

Report VT-13-038, Procedure NDE-UT-002, Component GBB2041-1-B, RHR, 4/24/13

GE-Hitachi, Customer Notification Form, CS Piping UT

Report Penetrant Test (PT)-13-003, Procedure NDE-PT-001, Component VRRB313-14-G, 4/25/13 (6 pages)

Report PT-13-002, Procedure NDE-PT-001, Component VRRB313-14-F, 4/25/13 (6 pages)

Report PT-13-005, Procedure NDE-PT-001, Component VRRB313-14-G, 4/25/13 (6 pages)

Report PT-13-004, Procedure NDE-PT-001, Component VRRB313-14-F, 4/25/13 (6 pages)

Report BOP-RT-13-007, VRRB-31-3, 0-3; 4/8/13, PCWO1592799

Report BOP-RT-13-007, VRRB-31-3, 3-6; 4/8/13, PCWO1592799

Report BOP-RT-13-007, VRRB-31-3, 6-9; 4/8/13, PCWO1592799

Report BOP-RT-13-007, VRRB-31-3, 9-12; 4/8/13, PCWO1592799

Report BOP-RT-13-007, VRRB-31-3, 12-0; 4/8/13, PCWO1592799

Report BOP-RT-13-008, VRRB-31-4, 0-3; 4/8/13, PCWO1592799

Report BOP-RT-13-008, VRRB-31-4, 3-6; 4/8/13, PCWO1592799

Report BOP-RT-13-008, VRRB-31-4, 6-9; 4/8/13, PCWO1592799

Report BOP-RT-13-008, VRRB-31-4, 9-12; 4/8/13, PCWO1592799

Report BOP-RT-13-008, VRRB-31-4, 12-0; 4/8/13, PCWO1592799

Report BOP-PT-13-188, Procedure NDE-PT-001, Component VRR-B31-3 FW-35A FINAL, 5/8/13, (1page)

Report BOP-PT-13-189, Procedure NDE-PT-001, Component VRR-B31-3 FW-35A Final Weld Inspection, 5/8/13, (1page)

Report BOP-PT-13-184, Procedure NDE-PT-001, Component VRR-B31-3 FW-35A Weld Preparation, 6/7/13, (1page)

Report BOP-RT-13-022, PCWO 1592799, Weld DOC 130025, VRR-B31-3, FW-35A; 0-3, 3-6, 6-9, 9-12, 12-0; 5/9/13, (1 page), (5, RT films)

Report UT-13-083, Procedure NDE-UT-001, Component VRR-B31-3-FW-35A, 5/9/13, (6 pages)

Report UT-13-056, Procedure NDE-UT-042, RPV-DG, CRD Penetrations Obstructing Weld, RPV BHEAD Meridinal Weld, 5/3/13 (6 pages)

Report UT-13-057, Procedure NDE-UT-042, RPV-DH, RPV BHEAD Meridinal Weld, CRD Penetrations obstructing Weld, 5/3/13 (6 pages)

GE-Hitachi UT Examination Summary Sheet, 621023, Susquehanna U2, RPV N2D-IR, 5/2/13 (5 pages)

GE-Hitachi UT Examination Summary Sheet, 621023, Susquehanna U2, RPV N2D Nozzle to Shell Weld, 5/3/13 (10 pages)

GE-Hitachi UT Examination Summary Sheet, Report No. 627072, Susquehanna U2, RPV N5B-IR, 5/2/13 (5 pages)

GE-Hitachi UT Examination Summary Sheet, Report No. 627057, Susquehanna U2, RPV N5B Nozzle to Shell Weld, 5/2/13 (10 pages)

Report UT-13-053, Procedure NDE-UT-027, RPV-E, N6A-IR, 5/3/13 (13 pages)

Report UT-13-054, Procedure NDE-UT-042, RPV-E, N6A, 4/29/13 (5 pages)

Report UT-13-056, Procedure NDE-UT-027, RPV-E, N6B-IR, 5/3/13 (13 pages)

Report UT-13-055, Procedure NDE-UT-042, RPV-E, N6B, 4/29/13 (4 pages)

Report BOP-PT-13-145, Procedure NDE-PT-001, U2-16RIO; Weld Prep on Existing Decon Connection Piping; Component ID: VRR-B31-4FW-47A WELD PREP, 5/4/13 (4 pages)

Mistras Radiographic Inspection Report BOP-RT-13-019; VRRB31-4, FW-47-A; 0-3, 3-6, 6-9, 9-12, 12-0; 5/3/13 (1 page) B Loop Decon Flange

Report UT-13-078, Procedure NDE-UT-001, PSI on VRRB314-FW-B-47-A, 5/4/13 (8 pages)
GE Hitachi Customer Notification Form CNF-CSI-002 RO, 4/22/12; Core Spray Weld N5B P5
Report BOP-VT-13-193, Procedure NDE-VT-002/Leakage, Component IDs: VRR-B31-3
FW-35A and VRR-B31-4 FW 47A

Program Health Reports:

PRRR-ASME Repair and Replacement Program, 1/29/13
WELD-Welding Program, 1/17/13
ENGINEERING, Trimester Health Scorecard, 3012-3

Self Assessment – Benchmarking Reports:

PPL ISI ASME Section XI Program, AR # 1341774, 11/30/12
Nuclear Welding Program, AR# 876878, 6/27/08
ASME Repair and Replacement Program, 11/27/09

NDE Inspector Certifications:

1218	0801
1081	0714
1287	19988
0072	0638

Welder Certifications:

589, 592, 586, 188, 511

ASME Repair-Replacement Plans/Work Orders:

PCWO1592811 Modify 4" Decontamination connection VRRB31-4 PER EC/BTT 1592792
PCWO737813 Apply A 2X1 Weld Overlay on the Following "A" LOOP recirculation Small Bore
Pipe Welds: SPDCA218-3-FW-1, "A" LOOP RXR Instrument Line, SPDCA219-4-FW-1;
"A" LOOP RXR Instrument Line
PCWO1255447 APPLY A 2X1 Weld Overlay on the Following "A" LOOP Recirculation Small
Bore Pipe Welds: SPDCA217-2-FW-10, "B" LOOP RXR Instrument Line SPDCA220-3-
FW-13, "B" LOOP RXR Instrument Line SPDCA221-5-FW-1, "B" LOOP RXR Instrument
Line

Section 1R11: Licensed Operator Qualification Program

Procedures:

OP-249-002, RHR Shutdown Cooling, Revision 52
GO-200-005, Plant Shutdown to Hot/Cold Shutdown, Revision 54
GO-200-010, Emergency Core Cooling System (ECCS)/Decay/Heat Removal in Mode 4, 5, or
Defueled, Revision 22
GO-200-006, Cold Shutdown, Defueled and Refueling, Revision 49

Section 1R12: Maintenance Effectiveness

Procedures:

NDAP-QA-0702, AR and CR Report Process, Revision 39
NDAP-QA-0702, AR and CR Report Process, Revision 40
NDAP-QA-0703, Operability Assessments and Requests for Enforcement Discretion,
Revision 22
MT-GE-014, GE DC Switchgear Inspection and Breaker Maintenance, Revisions 13 and 23

Condition Reports:

1246136, 1247022, 1625663, 1642438, 1643706, 1692776, 1692797, 1694337, 1696287,
1696688, 1696896, 1699836, 1700474, 1700883, 1714714*, 1719066*, 1625071,
1553755, 1553958, 1554975, 1554977, 1562001, 1562375, 1562604, 1563499,
1563500, 1668210, 1670135, 1693159, 1692451, 1691909

Drawings:

M-2151, Sheet 3, "P&ID RHR," Revision 24
E-11, Sheet 2, Single Line Meter and Relay Diagram 125 and 250 VDC System Station Health
Report May 1, 2013 through August 31, 2012, Revision 28

Miscellaneous:

IST Pumps and Valves, Journal Report 267, June 15, 2011
IST Pumps and Valves, Journal Report 269, July 6, 2011
IST Pumps and Valves, Journal Report 272, July 8, 2011
IST Pumps and Valves, Journal Report 278, October 10, 2011
IST Pumps and Valves, Journal Report 279, October 11, 2011
IST Pumps and Valves, Journal Report 282, March 31, 2012
IST Pumps and Valves, Journal Report 283, April 23, 2012
IST Pumps and Valves, Journal Report 287, May 2, 2012
IST Pumps and Valves, Journal Report 291, October 1, 2012
IST Pumps and Valves, Journal Report 292, October 2, 2012
IST Pumps and Valves, Journal Report 293, October 2, 2012
IST Pumps and Valves, Journal Report 296, October 31, 2012
IST Pumps and Valves, Journal Report 299, November 27, 2012
IST Pumps and Valves, Journal Report 300, November 28, 2012
IST Pumps and Valves, Journal Report 308, April 12, 2013
IST Pumps and Valves, Journal Report 309, April 24, 2013
Maintenance Rule Basis Document, System 16, RHRSW
Maintenance Rule Basis Document, System 49, RHR
Station Health Report, Unit 2, 116-RHRSW
IOM-262, 125 VDC and 250 VDC Load Centers, Revision 13

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures:

NDAP-QA-1902, Integrated Risk Management, Revision 10
PSP 26, Online and Shutdown Nuclear Risk Assessment, Revision 12
NDAP-QA-1902, Integrated Risk Management, Revision 10
NDAP-QA-0505, Crane, Hoist, and Rigging Program, Revision 20
NDAP-QA-1904, Shutdown Risk Management, Revisions 1 and 2
OP-102-002, Operation of 125 VDC Common Load Manual Transfer Switches, Revision 15

Condition Reports:

723370, 878992, 1687775, 1694912, 1693831, 1693582, 1689391, 1691902, 1692144,
1554320, 1694288*

Action Requests:

1690550, 1690394

Work Orders:

1508860, 1522285, 1233999, 1520376, 1664006, 1664025, 1520377, 1692162, 1121868,
1585441, 1585432, 1585442, 1585435

Drawing:

MT-GM-014, Rigging and Lifting Inspection

Miscellaneous:

Units 1 and 2, RISK Profiles for April 1, 2013
Protected Equipment Tracking Form, April 1, 2013
EGM 11-003
FSAR 9.1.4.3.5, 9.1.6
NUREG 0612, Control of Heavy Loads at Nuclear Power Plants
NEI 08-05
NUREG 0776, Supplement 6
TRO 3.1.2.2
FSAR 15.9
Risk Evaluation for WO 1121868
Units 1 and 2 Risk Summary for Week of May 13

Section 1R15: Operability Evaluations

Procedures:

OP-205-001, 480V AC System, Revision 25
NDAP-QA-0703, Operability Assessments and Requests for Enforcement Discretion,
Revision 21
NDAP-QA-0703, "Operability Assessments and Requests for Enforcement Discretion,"
Revision 22
NDAP-QA-0722, "Surveillance Testing," Revision 22

Condition Reports (* NRC-identified):

1652099, 1494830, 1689739, 1652235, 1603055*, 1693055, 1704034*, 1503268, 1524265,
1698343, 1696516, 1696626, 1699601*, 1699325*, 1696189, 1695346, 1567198,
1709434, 1420212, 1420123, 1418356

Work Orders:

1652124, 1670717, 1682851, 1674520, 1504708, 1266402, 1701551, 1421489, 1148045,
1653185, 888261

Work Request:

1652235

Drawings:

M-2142, "Unit 2 P&ID Nuclear Boiler Vessel Instrumentation," Revision 48
M-2155, "Unit 2 P&ID HPCI," Revision 43
M-2156, Unit 2 P&ID HPCI Turbine/Pump," Revision 29
M1-C72-S, "RPS," Sheet 6, Revision 21
M1-C72-S, "RPS," Sheet 1, Revision 25
M1-C72-S, "RPS," Sheet 10, Revision 10
M1-C72-S, "RPS," Sheet 8, Revision 25
M1-C72-S, "RPS," Sheet 11, Revision 16

Miscellaneous:

Operability Followup Request (OFR) 1693661, Revision 0
PLA-2222, "SSES Conformance to RG 1.97, Revision 2, dated May 31, 1984
Part 9900: Technical Guidance "Maintenance – Preconditioning of SSCs Before Determining Operability"

Section 1R18: Permanent Plant Modifications

Procedures:

MFP-QA-1220, Engineering Change Process Handbook, Revision 16
NDAP-QA-0702, Action Request and CR Process, Revision 28 and 29
TP-235-011, Refuel Outage Decay Heat Removal and Tie-In of the SDHR Temporary Cooling Equipment
OP-011-001, SDHR, Revision 37

Condition Reports (* NRC identified):

1714813, 1715128, 1714713, 1715177, 1695993, 1700997*, 1683433, 1316754, 1350738,
1594941, 1644838, 1655727, 1374006, 1695987, 1682928, 1678162, 1322472,
1695138, 1695167, 1666888, 1288609, 1594453, 1568017, 1693458, 1696142,
1694792

Drawing:

M2A-2, Sheet 1, "Outline Turbine Bypass Valves for Steam Turbine," Revision 8

Miscellaneous:

PPL 50.59 Resource Manual, Revision 6
FSAR Chapter 15
TEC 1715021, "Provide Setpoint Changes for Unit 1 Bypass Valves"

Section 1R19: Post-Maintenance Testing

Procedures:

SO-024-001B, Monthly DG 'B' Operability Test, Revision 13
MT-GE-048, Cutlerhammer Type Circuit Breaker and Switchgear Inspection and Maintenance, Revision 13
TP-024-146, DG B Restoration, Revision 6
PSP-29, PMT Matrix, Revision 14
MT-GE-050, 480 VAC MCC NLI Cubicle Inspection, Testing, and Maintenance, Revision 11
TP-249-073, Initial Start and Run-In of New or Repaired RHR Pump Motor, Revision 3
DP-249-008, Unit 2 RHR Division II Drain Procedure While Unit Shutdown (Operational Mode 4 or 5), Revision 2
OP-105-001, 480 VAC System, Revision 38
NDAP-QA-0702, Action Request and CR Process
NDAP-QA-0752, Cause Analysis, Revision 20
TP-252-006, "HPCI Uncoupled Run Overspeed Test," Revision 18
SO-252-005, "2 Year HPCI Flow Verification," Revision 21
SO-252-006, "HPCI Comprehensive Flow Surveillance," Revision 13
SE-249-002, "LLRT of Personnel Airlock Equipment Hatch," Revision 15
SO-249-A02, "Quarterly RHR Flow Verification A loop"

Condition Reports (*NRC-identified):

1686446, 1594527, 1697097, 879631, 1244620, 1563578, 1704797*, 1705537, 1700680,
1699393, 1698488, 1655671, 1696810, 1658735, 1658711, 1659927, 1660761,
1434095, 1560378, 1476368, 1671065, 1273485, 1291668, 1273502, 1273489,
1447169

Work Orders:

1676426, 1647492, 1676879, 1233999, 1689886, 1689887, 1690037, 1121868, 1585435,
1585441, 1585442, 1585432, 1540504

Drawing:

FF 105802, Sheet 402A, Control Schematic Static Excitation Voltage Regulator, Revision 5

Miscellaneous:

B Chiller Circulation Pump Breaker Reset
FSAR Tables 3.10C-15, 3.10C-17
IOM 354, 480 VAC 400A Automatic Transfer Switches, Revision 4
DBD 013, DGs and Auxiliaries, Revision 4

Section 1R20: Refueling and Other Outage Activities

Procedures:

IC-280-005, Installation and Removal of Temporary Unit 2 RPV Shutdown Level Transmitter,
Revision 5
GO-100-005, Plant Shutdown to Hot Cold Shutdown, Revision 58
GO-100-004, ECCS Decay Heat Removal in Mode 4, 5, or Defueled, Revision 23
GO-200-004, Plant Shutdown to Minimum Power, Revision 62
GO-200-005, Plant Shutdown to Hot/Cold Shutdown, Revision 54
GO-200-010, ECCS/DHR in Mode 4, 5, or Defueled
GO-200-011, Plant Cooldown Following a Scram, Revision 3
GO-100-011, Plant Cooldown Following a Scram, Revision 3
GO-200-006, Cold Shutdown Defueled, and Refueling, Revision 49
OP-249-002, RHR Shutdown Cooling, Revision 52

Condition Reports (*NRC identified):

1690672, 1691392, 1691393, 1691778, 1694189*, 1690852, 1693210*, 1700320, 1704770,
1707895*, 1707738*, 1707918*, 1708308, 1709547, 1713921, 1684756, 1634169,
1683148, 1681460, 1681036, 1671846, 1641203, 1665711, 1643987, 1650260,
1619864, 1619866, 1628959, 1606676, 1605207, 1603505, 1601545, 1446367,
1423515

Miscellaneous:

935595, Unit 2 Jet Pump Repairs, Revision 0
Unit 2 Sequence A2

Section 1R22: Surveillance Testing

Procedures:

SO-024-013, Offsite Power Source and Onsite Class 1E Operability Test, Revisions 17 and 18
SO-000-005, Weekly Electrical Distribution Verification, Revision 4
NDAP-QA-0423, Station Pump and Valve Testing Program

OP-151-001, CS System, Revision 35
SO-151-B02, Quarterly CS Flow Verification Division II
SO-151-B04, CS Valve Exercising Division II
SE-259-028, LLRT of RCIC Penetration Number X-10, Revision 17
MI-VL-009, Operation of Leak Rate Monitors, Revision 6
SE-224-207, Unit 2 Division II, DG LOCA/LOOP Test, Revision 17
SO-200-006, Shiftly Surveillance Operating Log, Revision 63
SI-269-202, Monthly Functional Test of Drywell Floor Drains, Revision 20
ON-200-005, Excess Drywell Leakage Identification, Revision 16

Condition Reports (* NRC identified):

1687591, 1697099, 1698020, 1697258, 1698141, 1702718, 1702898, 1703403, 1712530,
1714946*

Work Order:

1452033

Miscellaneous:

Operator Logs for Units 1 and 2, April 1 – April 13, 2013
TS 3.8.1 for Units 1 and 2
Technical Specification Basis (TSB) 3.8.1 for Units 1 and 2
TS 3.6.1.3
FSAR Table 6.2-12
ANSI 56.8, Containment System Leakage Testing Requirements, 1994
PLA-6809
PLA-6825
Operator Logs Unit 2, June 12, 2013

Section 1EP4: Emergency Action Level and EP Changes

Miscellaneous:

Emergency Plan, Revision 54
Evacuation Time Estimate Study Update

Section 1EP6: Drill Evaluation

Procedures:

EP-TP-001, Emergency Action Level Classification Levels, Revision 6
ON-155-001, Control Rod Problems, Revision 37
ON-100-101, Scram, Scram Imminent, Revision 30
EO-000-113, Level Power Control, Revision 10
EO-000-102, RPV Control, Revision 11
AR-104-001, RPS Division II 1C651, Revision 35

Condition Reports:

1720002, 1720007, 1719438, 719603*, 1718061, 1756795, 1718061, 1719220, 1719239,
1719230, 1719229, 1719444, 1719452, 1719458

Miscellaneous:

NUREG 0654

Section 2RS1: Radiological Hazard Assessment and Exposure ControlsProcedures:

HP-TP-310, Barricading, Posting, and Labeling, Revision 40
 HP-TP-311, Locking and Key Control, Revision 33
 HP-TP-320, Radiation Work Permits, Revision 24
 NDAP-QA-0620, Conduct of Health Physics, Revision 10
 NDAP-QA-0626, Radiologically Controlled Area Access and RWP System, Revision 29
 NDAP-QA-0627, Radioactive Contamination Control, Revision 33

Audits, Self-Assessments, and Surveillances:

AR-1669634 - Formal Bench Mark – PSEG Nuclear and RP Department procedures – March 22, 2013
 AR-1677323 – Informal Benchmark JAF for HP – March 7, 2013

Condition Reports:

1583002, 1590419, 1597849, 1612884, 1635047, 1638377, 1642063, 1683077, 1684087

Surveys:

Map Location	Date	Time
749/762	March 5, 2013	1835
749/762	March 12, 2013	1230
645 HPCI	March 5, 2013	0155
645 HPCI	March 11, 2013	2100
645 RCIC	March 5, 2013	0140
645 RCIC	February 13, 2013	1610

Drywell Shut Down Surveys:

Title	Date	Time
704' Under Vessel	April 15, 2013	0900
704' General Area	April 13, 2013	1200
704' General Area	April 15, /2013	1230
719' General Area	April 14, 2013	0100
738' General Area	April 13, 2013	1715
767' General Area	April 13, 2013	1615
779' General Area	4April 13, 2013	1630

RWPs/ALARA Reviews:

20132324, 20132320, 20132370, 20132001, 20132002, 20132003, 20132009, 20132017

Section 2RS2: ALARA Planning and ControlsProcedures:

HP-AL-400, RWP ALARA Reviews, Revision 17
 NDAP-QA-1191, ALARA Program and Policy, Revision 18

Condition Reports:

1592779, 1613247, 1633654, 1634007

Station ALARA Committee (SAC) Meeting Minutes:

October 8, 2012
October 26, 2012
January 14, 2013
February 6, 2013
February 11, 2013
March 11, 2013
March 18, 2013
April 4, 2013
April 8, 2013

Section 2RS3: Radiological Environmental Monitoring Program (REMP) and Radioactive Material Control Program

Procedure:

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

Condition Report:

1588306

Air Samples:

RWP 20132339 Drywell 738'
General Area April 20, 2013 at 1530
Breach 'M' MSR/V April 22, 2013 at 0955
Breach 'A' MSR/V April 22, 2013 at 1340
Decon MSR/V April 22, 2013 at 1457
Decon MSR/V April 23, 2013 at 0410

Section 4OA1: Performance Indicator Verification

Procedure:

DP-152-005, Unit 1 HPCI Drain Procedure, Revision 6

Condition Reports (* NRC identified):

1693120*, 1714681*, 1715154*, 1560195, 1514808, 1359800, 1518018, 1636407, 1634039,
1463504*, 1463475*, 1448124*, 1457945*

Miscellaneous:

Operator Logs for Units 1 and 2
MSPI Derivation Reports for Units 1 and 2 HPCI UAI and URI for April 2012 through
March 2013

Section 4OA2: Identification and Resolution of Problems

Procedures:

AR-015-001, 13.8kV Switchgear Distribution and Diesel Generators A, B, & C 0C653,
Revision 38
ON-003-001, Loss of Startup Bus 10, Revision 25
ON-003-002, Loss of Startup Bus 20, Revision 28
ON-204-201, Loss of 4kV ESS Bus 2A (2A201), Revision 13
ON-204-201, Loss of 4kV ESS Bus 2B (2A202), Revision 13

OP-003-001, 13.8kV Common Electrical Equipment, Revision 11
OP-104-001, 4kV Electrical System, Revision 11
OP-204-001, 4kV Electrical System, Revision 11
TI-CH-106, Preparation of Monthly NRC PI RCS Specific Activity, Revision 6
SC-1(2)76-102, Unit 1(2) Primary Coolant Activity Dose-Equivalent I-131, Revision 15(14)
NDAP-QA-0737, ROP Performance Indicators, Revision 9
NDAP-QA-0702, Action Request and Condition Report Process, Revision 40
NDAP-00-0752, Cause Analysis, Revision 20

Condition Reports (* NRC identified):

1684872*, 1684874*, 1685186*, 1685215*, 1685453*, 1687686, 1688351*, 1689035*,
1689809*, 1689829*, 1696097*, 1697193*, 1700170*, 1700997*, 1704034*, 1704455,
1707568*, 1707571*, 1707578*, 1707583*, 1707587*, 1707594*, 1707596*, 1528510, 1534133,
1534810, 1578080, 1592976, 1593349, 1594174, 1595769, 1598955, 1609455, 1618189,
1619271, 1622077, 1624024, 1626160, 1627322, 1651787, 1717603*, 1717194*, 1719608*,
1719606*, 1719837, 1707471, 1700254, 1704034, 1718790, 1718796, 1665479, 1666245,
1585845, 1625705, 1628336, 1634551, 1639162, 1653022, 1655010, 1674211, 1677335,
1677326, 1677340, 1677348, 1720308, 1720278, 1715053, 1697062, 1700474, 1718790,
1718796, 1705903, 1707471, 1700254, 1704034, 1665479, 1666245, 1585845, 1625705,
1628336, 1634551, 1639162, 1653022, 1655010, 1674211, 1677335, 1677326, 1677340,
1677348, 1720308, 1720278, 1680121, 1655010, 1702895, 1705537, 1706053, 1710293,
1712564

Completed Tests/Surveillances:

SO-013-017, Three Year Startup Transformer T20 (0X104) Deluge System DS-015 Full Flow
Test, performed October 2, 2012

Drawing:

E107171, Sht. 3, Schematic Meter & Relay Diagram 13.8kV Startup Bus 0A104, Revision 30

Miscellaneous:

The Susquehanna Focus, p. 3, dated September 26, 2012
1578080, Offsite Power Source Single Phase Open Circuit Event ODM, dated May 24, 2012
and revised June 28, 2012
PPL-13200, Failure Analysis of an Ammeter Switch, Manufacturer: Westinghouse, Type: W2,
Model: 3669A05G01, Purchase Order: 556164-C-0, dated August 23, 2012
TS 3.4.7, 3.4.4
NEI-99-02, Revision 6
OI-AD-094, NRC PI Update RCSL, Revision 1
Station Trending Report 1Q13 (1680121)
Operations Intervention Plan (CR 1665479)
Susquehanna Steam Electric Station Response to NRC Annual Assessment Letter, dated
April 3, 2013
Nuclear Safety Culture Assessment Executive Summary Report, June 7, 2013

LIST OF ACRONYMS

AC	Alternating Current
ADAMS	Agencywide Document and Access Management System
ALARA	As Low As Is Reasonably Achievable
ASME	American Society of Mechanical Engineers
BWR	Boiling Water Reactor
BWRVIP	Boiling Water Reactor Vessel and Internals Project
CAP	Corrective Action Program
CFR	Code of Federal Regulations
EGM	Enforcement Guidance Memorandum
CARB	Corrective Action Review Board
CR	Condition Report
EDG	Emergency Diesel Generator
EPD	Electronic Personal Dosimeter
ESSW	Emergency Safeguards Service Water
ESW	Emergency Service Water
EWR	Engineering Work Permit
FAS	Fast Acting Solenoid
FIN	Finding
FSAR	[SSES] Final Safety Analysis Report
GE	General Electric
HCU	Hydraulic Control Unit
HP	Health Physics
HPCI	High Pressure Coolant Injection
HRA	High Radiation Area
HX	Heat Exchanger
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	NRC Inspection Report
ISI	Inservice Inspection
IST	Inservice Testing
IVVI	In Vessel Visual Inspection
kV	Kilovolts
LCO	Limiting Condition for Operation
LDE	Lens Dose Equivalent
LER	Licensee Event Report
LHRA	Locked High Radiation Areas
LLRT	Local leak Rate Test
LOCA/LOOP	Loss of Coolant Accident/Loss of Offsite Power
LOOP	Loss of Offsite Power
LP	Liquid Penetrant
LPCI	Low Pressure Coolant Injection
LPRM	Local Power Range Monitor
LSFT	Logic System Functional Test
LT	Liquid Penetrant Testing
MT	Magnetic Particle Testing
MSIV	Main Steam Isolation Valve
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation

NDAP	Nuclear Department Administrative Procedure
NDE	Non-Destructive Examinations
NEI	Nuclear Energy Institute
NIOSH/MSHA	National Institute for Occupational Safety and Health/Mine Safety and Health Administration
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
NSCA	Nuclear Safety Culture Assessment
NSIR	Nuclear Security and Incident Response
OA	Other Activities
ODCM	Offsite Dose Calculation Manual
ODM	Operational Decision Making
OE	Operating Experience
OFR	Operability Followup Request
OOS	Out-of-Service
OPDRV	Operations with a Potential for Draining the Reactor Vessel
PARS	Publicly Available Records
PDI	Performance Demonstration Initiative
PI	[NRC] Performance Indicator
PI&R	Problem Identification and Resolution
PIM	Plant Issues Matrix
PMT	Post-Maintenance Test
PPL	PPL Susquehanna, LLC
PS	Planning Standard
PT	Penetrant Test
P/T	Pressure and Temperature
QA	Quality Assurance
RB	Reactor Building
RCA	Radiologically Controlled Area
RCA	Root Cause Analysis
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
REMP	Radiological Environmental Monitoring Program
RETS	Radiological Effluents Technical Specifications
RFO	Refuel Outage
RG	[NRC] Regulatory Guide
RHR	Residual Heat Removal
RHRSW	Residual heat Removal Service Water
ROP	Reactor Oversight Process
RP	Radiation Protection
RPS	Reactor Protection System
RPV	Reactor Pressure Vessel
RR	Reactor Recirculation
RT	Radiographic Testing
RWCU	Reactor Water Clean Up
RWP	Radiation Work Permit
SCCI	Substantive Cross Cutting Issue
SDE	Skin Dose Equivalent
SDHR	Supplemental Decay Heat Removal
SDP	Significance Determination Process
SDV	Scram Discharge Volume

SE	Safety Evaluation
SFP	Spent Fuel Pool
SFPC	Spent Fuel Pool Cooling
SP	Suppression Pool
SRV	Safety Relief Valve
SSC	Structures, Systems and Components
SSES	Susquehanna Steam Electric Station
TCV	Turbine Control Valve
TE	Traditional Enforcement
TEDE	Total Effective Dose Equivalent
TI	Temporary Instruction
TLD	Thermoluminescence Dosimeter
TRT	Time Response Test
TS	Technical Specifications
TSB	Technical Specification Basis
TSV	Turbine Stop Valve
T20	T20 Startup Transformer
UFSAR	Updated Final Safety Analysis Report
USA	Utilities Service Alliance
UT	Ultrasonic Test
VHRA	Very High Radiation Areas
VT	Visual Examination
WO	Work Order