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

February 14, 2014

EA-13-187

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 05000387/2013005 AND 05000388/2013005, AND INDEPENDENT SPENT FUEL STORAGE INSTALLATION REPORT NO. 07200028/2013001

Dear Mr. Rausch:

On December 31, 2013 the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Susquehanna Steam Electric Station (SSES) Units 1 and 2. The enclosed integrated inspection report documents the inspection results, which were discussed on January 24, 2014, with Jeff Helsel, Plant Manager, 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). These findings were determined to involve violations of NRC requirements. Additionally, a licensee-identified violation, which was determined to be of very low safety significance, is listed in the report. However, because of the very low safety significance, and because they are entered into your corrective action program (CAP), the NRC is treating these findings as non-cited violations (NCVs), consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any NCVs in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Senior Resident Inspector at SSES. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Senior Resident Inspector at SSES.

As a result of the Safety Culture Common Language Initiative, the terminology and coding of cross-cutting aspects were revised beginning in calendar year (CY) 2014. New cross-cutting aspects identified in CY 2014 will be coded under the latest revision to IMC 0310. Cross-cutting

aspects identified in the last six months of 2013 using the previous terminology will be converted to the latest revision in accordance with the cross-reference in IMC 0310. The revised cross-cutting aspects will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the CY 2014 mid-cycle assessment review.

In accordance with Title 10 of 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/

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

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

Enclosures: Inspection Report 05000387/2013005, 05000388/2013005 and 07200028/2013001 w/Attachment: Supplemental Information

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U.S NUCLEAR REGULATORY COMMISSION

REGION I

Docket No:	50-387, 50-388, 72-28
License No:	NPF-14, NPF-22
Report No:	05000387/2013005, 05000388/2013005 and 07200028/2013001
Licensee:	PPL Susquehanna, LLC (PPL)
Facility:	Susquehanna Steam Electric Station, Units 1 and 2
Location:	Berwick, Pennsylvania
Dates:	October 1, 2013 through December 31, 2013
Inspectors:	J. Greives, Senior Resident Inspector T. Daun, Resident Inspector A. Turilin, Acting Resident Inspector S. Barr, Senior Emergency Preparedness Inspector R. Rolph, Health Physicist D. Kern, Senior Reactor Inspector J. Nicholson, Health Physicist J. D'Antonio, Senior Operations Engineer T. Hedigan, Operations Engineer
Approved By:	Fred L. Bower, III, Chief Reactor Projects Branch 4 Division of Reactor Projects

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SUMMARY

IR 05000387/2013005, 05000388/2013005, 07200028/2013001, 10/01/2013 – 12/31/2013; Susquehanna Steam Electric Station, Units 1 and 2; Flood Protection Measures, Surveillance Testing, and Drill Evaluation.

The report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Inspectors identified three findings of very low safety significance (Green), which were NCVs. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP), dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within The Cross-Cutting Areas," dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated January 28, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4.

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green NCV of Technical Specifications (TS) 5.4.1, "Procedures," because PPL's procedures EO-000-104, "Secondary Containment Control" and ON-169-002, "Flooding in the Reactor Building" were inadequate in that actions directed in the procedures could complicate an internal flooding event and may adversely affect aspects of PPL's flood design. Specifically, the procedures directed operators to enter a flooded room to assess the extent and source of the flooding; an action which could render multiple trains of emergency core cooling system (ECCS) inoperable due to communicating two watertight rooms. In addition to entering the issue into the CAP as Condition Reports (CRs)-2013-02099 and 2013-06417, PPL issued Operations Directive 13-07 which provided guidance to ensure that operators sent to investigate a room flooded alarm will do so in a manner that will not affect redundant trains.

  The performance deficiency is more than minor because it was associated with the procedure quality attribute of the Mitigating Systems cornerstone and affected the objective to ensure the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the procedure to respond to a room flooded alarm was insufficient to ensure operator response would not potentially render multiple trains of ECCS inoperable. The finding was evaluated in accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibits 2 and 4 of IMC 0609, Appendix A, "The SDP for Findings At-Power." Since opening the watertight door with excessive flooding could bypass the flood protection feature and potentially degrade two or more trains of a multi-train system or function, a detailed risk assessment was performed. The condition was modeled using the Susquehanna standardized plant analysis risk (SPAR) model version 8.19 along with SAPHIRE version 8.09. As a bounding analysis, the condition was assumed to exist for greater than one year and the flooding was assumed to require a reactor shutdown which results in a plant transient with failure of high pressure coolant injection (HPCI) and core spray (CS) due to flood impacts. The flooding initiating event frequency was estimated to be about 1 in 10,000 years. The resulting change in core damage frequency was substantially less than 1E-7. The dominant sequences included a transient with a loss of all direct current (DC) power and a transient with failures to depressurize and

reactor core isolation cooling (RCIC) failures. Since the change in core damage frequency was sufficiently low no further evaluation for large early release was required. The finding is related to the cross-cutting area of PI&R, Self and Independent Assessments, in that PPL did not conduct assessments to identify areas for improvement. In particular, the self-assessments were not of sufficient depth, comprehensive, appropriately objective, or self-critical. Specifically, despite PPL's process requiring periodic verification that event driven procedures are technically and functionally correct, the periodic review completed in April 2013 failed to identify that actions specified in the procedure could invalidate the flood design. [P.3(a)]. (Section 1R06)

Cornerstone: Barrier Integrity

Green. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," because PPL did not ensure all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service was identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. Specifically, PPL's procedure used to implement the requirements of TS Surveillance Requirements (SR) 3.6.4.1.4 and 3.6.4.1.5 did not ensure that secondary containment integrity was tested in all required configurations. PPL's immediate corrective actions included entering the issue into their CAP as CR-2013-03891 and applied a status control tag to the railroad access bay door-101 as an administrative control until corrective actions can be completed and the configuration tested satisfactorily.

The finding is more than minor because it is associated with the procedure quality attribute of the Barrier Integrity cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the inadequate surveillance procedure resulted in missed surveillances for SRs 3.6.4.1.4 and 3.6.4.1.5. Additionally, it was similar to example 3.d in IMC 0612 Appendix E, "Examples of Minor Issues," in that the failure to implement the TS SR as required is not minor if the surveillance had not been conducted. In this case, the surveillance requirement had not been completed for all configurations of secondary containment. In accordance with IMC 0609.04, "Initial Characterization of Findings," and IMC 0609, Appendix A, "The SDP for Findings At-Power," the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency only represented a degradation of the radiological barrier function provided for the Standby Gas Treatment system. This finding was determined to have a cross-cutting aspect in the area of Human Performance Resources area because the licensee failed to ensure that personnel, equipment, procedures, and other resources are available and adequate to assure nuclear safety. Specifically, those necessary for: complete, accurate and up-to-date design documentation, procedures, and work packages, and correct labeling of components [H.2(c)]. (Section 1R22)

Cornerstone: Emergency Preparedness

- Green. The inspectors identified a Green NCV of 10 CFR 50.54, "Conditions of Licenses," paragraph (q), because PPL did not maintain the Emergency Plan to adequately meet the standards of 50.47(b). Specifically, PPL did not have temperature indication installed in some areas of the reactor building that are required to support assessment and determination of entry conditions into the fission product barrier emergency action levels (EALs). PPL entered this issue into their CAP as CR 1727229.

The inspectors determined that the failure to have temperature indication installed in certain areas of the reactor building was a performance deficiency that was within PPL's ability to foresee and correct. The performance deficiency is more than minor because it is associated with the Facilities and Equipment attribute of the Emergency Preparedness cornerstone, and adversely affected the cornerstone objective of ensuring that a licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the lack of installed temperature instrumentation and the reliance on local temperature indications were insufficient to ensure a timely and accurate EAL classification could be made. Using IMC 0609, Appendix B, section 5.4, the finding is of very low safety significance (Green) because the finding was determined to be an example of an ineffective EAL initiating condition, such that a Site Area Emergency would be declared in a degraded manner. The cause of this finding has a cross-cutting aspect in the area of Human Performance Resources because PPL did not ensure that facilities and equipment were adequate and available, including emergency facilities and equipment. Specifically, PPL did not provide temperature instrumentation to operators to ensure a timely and accurate declaration of an emergency for an un-isolable reactor coolant leak in the reactor building. [H.2.d]. (Section 1EP6)

Other Findings

One Severity Level IV violation that was identified by PPL was reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's CAP. This violation and corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at or near 100 percent rated thermal power (RTP). On November 1, 2013, operators lowered power on Unit 1 to 64 percent for a planned rod sequence exchange. Power was returned to 100 percent on November 3, 2013. On November 10, 2013, Unit 1 performed an unplanned power reduction to 57 percent due to a trip of the running turbine building chiller. Power was restored to 98 percent on November 12, 2013. On November 29, 2013, Unit 1 power was reduced to 90 percent to perform unplanned emergent cleaning of the cooling tower screens. Power was restored to 100 percent the same day and Unit 1 ended the inspection period at or near 100 percent power.

Unit 2 began the inspection period at or near 100 percent RTP. On October 24, 2013, power was reduced to 60 percent on Unit 2 for grid-related maintenance. Power was restored to 100 percent on October 25, 2013. On November 22, 2013, power was reduced on Unit 2 to 67 percent for a planned rod sequence exchange. Unit 2 was restored to 100 percent on November 23, 2013. On November 29, 2013, Unit 2 power was reduced to 90 percent to perform unplanned emergent cleaning of the cooling tower screens. Power was restored to 100 percent the same day and 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 – 2 samples)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of PPL's readiness for the onset of seasonal extreme low temperatures on October 31 - November 22, 2013. The review focused on the engineered safeguards service water (ESSW) pump house, exposed portions of the condensate and refueling water storage system and the circulating water pump house. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), technical specifications, control room logs, and the CAP to determine what temperatures or other seasonal weather could challenge these systems, and to ensure PPL personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including PPL's seasonal weather preparation procedure and applicable operating procedures. The inspectors performed walkdowns of the selected systems to ensure station personnel identified issues that could challenge the operability of the systems during cold weather conditions. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

The inspectors reviewed PPL's preparations in advance of and during warnings and advisories issued by the National Weather Service for a tornado watch and high winds on October 7, 2013. The inspectors performed walkdowns of areas that could be potentially impacted by the weather conditions, such as station blackout and emergency diesel generators (EDGs), station transformers, switchyards, and verified that station personnel secured loose materials staged for outside work prior to the forecasted weather. The inspectors verified that PPL staff monitored the approach of adverse weather according to applicable procedures and took appropriate actions as required. The inspectors reviewed the UFSAR, Technical Specifications (TSs), control room logs, and the CAP to determine what temperatures or other seasonal weather could challenge these systems, and to ensure PPL personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including PPL's seasonal weather preparation procedure and applicable operating procedures.

b. Findings

No findings were identified.

1R04 Equipment Alignment

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

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Unit 1, Division I residual heat removal (RHR) during Division II RHR work window on November 6, 2013
- Unit 1, RCIC during HPCI work window on December 2, 2013
- Unit 2, Division II 125V DC distribution, December 30, 2013
- Common, 'D' EDG during T-10 unavailability on October 21, 2013

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

b. Findings

No findings were identified.

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

a. Inspection Scope

From October 18 - 23, 2013, the inspectors performed a complete system walkdown of accessible portions of the Unit 2 HPCI 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 HPCI system 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, standby liquid control (SBLC) area, Zone 1-5A-S on October 28, 2013
- Unit 1, containment area access, Zone 1-4A-N on October 28, 2013
- Unit 2, SBLC area, Zone 2-5A-N on October 29, 2013
- Unit 2, equipment and battery rooms, Zone 0-28A-II, December 20, 2013
- Common, fan room and associated heating, ventilation, and air conditioning equipment, Zone 0-29B on November 1, 2013

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors observed a fire brigade drill scenario conducted on December 19, 2013, that involved a fire at the independent spent fuel installation and included offsite fire company response. The inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that PPL personnel identified deficiencies, openly discussed them in a self-critical manner at the debrief, and took appropriate corrective actions as required. The inspectors evaluated specific attributes as follows:

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

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

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

.1 Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the UFSAR, the site flooding analysis, and plant procedures to assess susceptibilities involving internal flooding on Unit 1 reactor building elevation 645' on October 29, 2013. The inspectors also reviewed the CAP to determine if PPL identified and corrected flooding problems and whether operator actions for coping with flooding were adequate. The inspectors also focused on ECCS and RCIC rooms to verify the adequacy of equipment seals located below the flood line, floor and water penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, control circuits, and temporary or removable flood barriers.

b. Findings

Introduction. The inspectors identified a Green NCV of Technical Specifications (TS) 5.4.1, "Procedures," because PPL's procedures EO-000-104, "Secondary Containment Control" and ON-169-002, "Flooding in the Reactor Building," were inadequate in that actions directed in the procedures could complicate an internal flooding event and may adversely affect aspects of PPL's flood design. Specifically, the procedures directed operators to enter a potentially flooded room to assess the extent and source of the flooding; an action which could render multiple trains of ECCS inoperable due to communicating two watertight rooms.

Description. During a routine review of flood protection measures for basement elevation of Unit 1 Reactor Building, inspectors questioned whether execution of flooding procedures could impact the assumption of the flood analysis, which assumes that each of the six ECCS and RCIC rooms are water tight. Specifically, inspectors determined that the procedures directed operators to enter the rooms to investigate and assess the extent of flooding, an action which could allow communication of water between two watertight rooms.

PPL's UFSAR section 3.5, "Water Level (Flood) Design, Revision 66 states, in part, that "the worst case scenario for postulated pipe cracks occurring inside the ECCS/RCIC rooms is that only the equipment inside the affected room would become inoperable due to flooding. Consequently, for the worst case flood scenario inside an ECCS/RCIC room, adequate core cooling systems will remain available to safely shutdown and maintain safe shutdown of the plant."

Inspectors reviewed procedural actions that would be taken in response to a room flooded alarm for the 'A' CS room, Room I-17. EO-000-104, "Secondary Containment Control," provides as an entry condition any reactor building area water level above the high level alarm. If this is met, the procedure directs operators to operate all available sump pumps and, if room water level cannot be restored and maintained below the alarm setpoint, isolate all systems discharging into the room. The sump pumps are manually operated from inside the same flood area as the 'A' CS room. The bases to EO-000-104 states, in part that "area water levels 3"-4" on an ECCS room floor corresponds to the high (room flooded) alarm setpoint. Actual water levels may be determined locally by visual observation.

ON-169-002, "Flooding in the Reactor Building," directs control room personnel to "dispatch [an] operator to assess extent and source of flooding" and "ensure all eight water tight doors on elevation 645' closed." Additionally, it states that "if the reactor building sump hi-hi level annunciated, then ensure the sump pumps are running." This step is preceded by a caution which states that if the 'A' CS room flooded alarm was received, "sump pump box 1CB238 may only be accessible by wading through water. Electrical and/or radiological safety measures should be implemented."

Since both procedures direct operators to assess the extent and source of the flooding and acknowledge that the rooms may be flooded, inspectors assessed the ability of operators to enter the room without affecting equipment in an adjacent room. Each of the ECCS/RCIC rooms are separated by large watertight doors with no portholes to monitor conditions on the other side of the door without opening the door. For a flood in the 'A' CS Room, since both doors to the room open into the other room (i.e., water

pressure would aid in opening the door), once the door was unlatched the water would force the door open and flood the adjacent room. Therefore, when executing the procedure to respond to flooding in the reactor building, operators could potentially render multiple trains of ECCS inoperable.

Inspectors identified that PPL completed the most recent biennial periodic review of ON-169-002 in April 2013. Based on program requirements for performing periodic reviews, Inspectors determined that it was reasonable for the periodic review to have identified that performance of the procedure was inconsistent with the flooding design to maintain watertight integrity of ECCS rooms. Inspectors determined that the actions directed by EO-000-104 and ON-169-002 would complicate a flooding scenario and invalidate assumptions in PPL's flooding analysis. Specifically, actions taken by operators could render multiple trains of ECCS inoperable due to communicating two watertight rooms during certain flooding scenarios.

PPL entered the issue into the CAP as CR-2013-02099 and CR-2013-06417. PPL also issued Operations Directive 13-07 which states that operators sent to investigate a room flooded alarm shall only access the room using a watertight door that opens away from them and clarifies that the HPCI and RCIC rooms can be assessed by looking from an unaffected elevation. Inspectors determined that this interim corrective action was reasonable since if water level were at a sufficient level that it would impact multiple trains, water pressure would prevent opening the door if it opened into the flooded room.

Analysis. The inspectors determined that PPL's failure to provide adequate procedural guidance to respond to an ECCS/RCIC room flooded alarm was a performance deficiency that was within PPL's ability to foresee and correct, and should have been prevented. The performance deficiency is more than minor because it was associated with the procedure quality attribute of the Mitigating Systems cornerstone and affected the objective to ensure the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the procedure to respond to a room flooded alarm was insufficient to ensure operator response would not potentially render multiple trains of ECCS inoperable. The finding was evaluated in accordance with IMC 0609.04, "Initial Characterization of Findings," dated June 19, 2012, and Exhibits 2 and 4 of IMC 0609, Appendix A, "The SDP for Findings At-Power," dated June 19, 2012. Since opening the watertight door with excessive flooding could bypass the flood protection feature and potentially degrade two or more trains of a multi-train system or function, a detailed risk assessment was performed.

The condition was modeled using the Susquehanna SPAR model version 8.19 along with SAPHIRE version 8.09. As a bounding analysis, the condition was assumed to exist for greater than one year and the flooding was assumed to require a reactor shutdown which results in a plant transient with failure of HPCI and CS due to flood impacts. The flooding initiating event frequency was estimated to be about 1 in 10,000 years. The resulting change in core damage frequency was substantially less than 1E-7. The dominant sequences included a transient with a loss of all DC power and transient with failures to depressurize and RCIC failures. Since the change in core damage frequency was sufficiently low no further evaluation for large early release was required.

The finding is related to the cross-cutting area of PI&R, Self and Independent Assessments, in that PPL did not conduct assessments to identify areas for improvement. In particular, the self-assessments were not of sufficient depth,

comprehensive, appropriately objective, or self-critical [P.3(a)]. Specifically, despite PPL's process requiring periodic verification that event driven procedures are technically and functionally correct, the periodic review completed in April 2013 failed to identify that actions specified in the procedure could invalidate the flood design.

Enforcement. TS 5.4.1.a, "Procedures," requires in part, that written procedures shall be established covering the applicable procedures recommended in RG 1.33. RG 1.33, Appendix A, requires procedures for combating emergencies and other significant events. Contrary to the above, before November 25, 2013, PPL's procedures EO-000-104, "Secondary Containment Control," Revision 10, and ON-169-002, "Flooding in the Reactor Building," Revision 8, were inadequately established in that actions directed in the procedures would complicate an internal flooding event and potentially adversely affect assumptions in PPL's flood design. Specifically, the procedures directed operators to enter the flooded room to assess the extent and source of the flooding; an action which could render multiple trains of ECCS inoperable due to communicating two watertight rooms. In addition to entering the issue into the CAP as CR-2013-02099 and CR-2013-06417, PPL issued Operations Directive 13-07 which provided guidance to ensure that operators sent to investigate a room flooded alarm will do so in a manner that will not affect the redundant train. Because this violation was of very low safety significance (Green), and PPL entered this issue into their CAP, this violation is being treated as a non-cited violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000387/2013005-01, Inadequate Procedural Guidance for Responding to an Internal Flooding Event in ECCS Rooms)**

1R07 Heat Sink Performance

Heat Sink Annual Review (71111.07A – 1 sample)

a. Inspection Scope

The inspectors reviewed the reactor building closes cooling water (RBCCW) exchanger to determine its readiness and availability to perform its functions. The inspectors reviewed the design basis for the component. The inspectors reviewed the results of previous inspections of the RBCCW and similar heat exchangers. The inspectors discussed the results of the most recent inspection with engineering staff. The inspectors verified that PPL initiated appropriate corrective actions for identified deficiencies.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

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

a. Inspection Scope

The inspectors observed licensed operator requalification re-examinations on November 1, 2013. The inspectors evaluated operator performance during the

simulated event and verified completion of risk significant operator actions, including the use of abnormal and 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 licensed operators. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room (71111.11Q – 1 sample)

a. Inspection Scope

The inspectors observed an emergent downpower to 90 percent RTP due to cooling tower screen clogging on November 29, 2013 The inspectors observed pre-shift briefings and reactivity control briefings to verify that the briefings met the criteria specified in OP-AD-002, “Standards for Shift Operations,” Revision 47, and OP-AD-338, “Reactivity Manipulations Standards and Communications Requirements,” Revision 21. Additionally, the inspectors observed crew performance to verify that procedure use, crew communications, and coordination of activities between work groups met established expectations and standards.

b. Findings

No findings were identified.

.3 Licensed Operator Requalification (71111.11B – 1 sample)

a. Inspection Scope

The following inspection activities were performed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, Inspection Procedure 71111, Attachment 71111.11B, “Licensed Operator Requalification Program,” Appendix A “Checklist for Evaluating Facility Testing Material,” and Appendix B “Suggested Interview Topics.”

A review was conducted of recent operating history documentation found in inspection reports, licensee event reports, the licensee’s CAP, and the most recent NRC plant issues matrix. The inspectors also reviewed specific events from the licensee’s CAP which indicated possible training deficiencies, to verify that they had been appropriately addressed. The senior resident inspector was also consulted for insights regarding licensed operators’ performance. These reviews did not detect any operational events that were indicative of possible training deficiencies.

Examination Results

The operating tests for the week of the inspection were reviewed for quality and performance.

On December 1, 2013, the results of the annual operating tests for year 2013 were reviewed to determine if pass/fail rates were consistent with the guidance of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1, and NRC Manual Chapter 0609, Appendix I, “Operator Requalification Human Performance Significance Determination Process (SDP).” The review verified the following:

- Crew pass rates were greater than 80 percent. (Pass rate was 90.9 percent)
- Individual pass rates on the job performance measures of the operating exam were greater than 80 percent. (Pass rate was 100 percent)
- More than 80 percent of the individuals passed all portions of the exam. (86.4 percent of the individuals passed all portions of the examination)
- Individual pass rates on the dynamic simulator test were greater than 80 percent. (Pass rate was 86.4 percent)

Observations were made of the dynamic simulator exams and job performance measures (JPM) administered during the week of October 28, 2013. These observations included facility evaluations of crew and individual performance during the dynamic simulator exams and individual performance of five JPMs.

Remedial Training and Re-Examinations

The remediation plans for one crew failure during this inspection, four individual failures in 2012, and one written failure in 2012 were reviewed to assess the effectiveness of the remedial training.

Simulator Performance

Simulator performance and fidelity were reviewed for conformance to the reference plant control room.

License Conditions

A sample of records for requalification training attendance, program feedback, reporting, and medical examinations were reviewed for compliance with license conditions, including NRC regulations.

b. Findings

One licensee-identified violation was evaluated as described in Section of 4OA7 of this report.

1R12 Maintenance Effectiveness (71111.12 – 2 samples)

a. Inspection Scope

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

- Unit 1, electro-hydraulic control (EHC) valve failures from November 30 through December 21, 2013
- Common, maintenance and testing of secondary containment boundary integrity from November 21 through December 13, 2013

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 3 sample)

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.

- Common, Planned work on a single off-site power source, transformer T-10 on October 22, 2013
- Common, Emergent Repairs to the standby gas treatment (SBGT) system on December 12, 2013

- Common, Risk Assessment for a missed TS SR in accordance with SR 3.0.3 on December 31, 2013

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 2 samples)

a. Inspection Scope

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

- Unit 1, failure of HV-151-F024B to stroke on November 8, 2013
- Common, degraded emergency service water (ESW) header penetration support on October 2, 2013

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

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

.1 Permanent Modifications

a. Inspection Scope

The inspectors evaluated the permanent plant modifications listed below to determine whether the modifications adversely affected the safety-related structures at Susquehanna Steam Electric Station; these are the reactor buildings, diesel generator buildings, the control structure, and the ESSW pumphouse, that could result in a loss of the capability to function in a manner necessary to meet 10CFR100 requirements. The inspectors verified that the design bases, licensing bases, and performance capability of the affected components or safety-related structures were not degraded by these modifications.

The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), the vendors turbine missile probability analysis, the safety evaluation of the turbine missile

probability analysis report, the vendors exhaust hood replacement design analysis, the licensee's engineering change packages, the design specification for the replacement of the main turbine with a more efficient design, and the WOs for the installation of the new turbine exhaust hoods. Additionally, the inspectors discussed the turbine stop, control, and intermediate valve quarterly surveillance testing and the frequency of the turbine blade disk and blade root inspections.

- Units 1 and 2, turbine exhaust hood replacements

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 6 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, Division II RHR flow verification following work window on November 8, 2013
- Unit 1, HV-151-F024B anti-rotation device repair on November 9, 2013
- Unit 1, HPCI flow verification following work window on December 11, 2013
- Common, 'B' control structure chiller post maintenance test following overhaul on October 1, 2013
- Common, secondary containment drawdown testing following repairs to various secondary containment boundaries on December 7, 2013
- Common, failure of 'A' SBGT flow controller on December 10, 2013

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 5 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs to assess whether test results satisfied 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, quarterly CS flow verification on October 17, 2013 (IST)
- Common, 'A' EDG monthly surveillance testing on October 28, 2013
- Common, ESW flow balance from October 3 through October 11, 2013
- Common, secondary containment drawdown testing on November 13, 2013
- Common, EDG frequency and voltage monitoring on November 14, 2013

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR 50, Appendix B Criterion XI, "Test Control," when PPL failed to ensure all testing required to demonstrate that SSCs will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. Specifically, PPL's procedure used to implement the requirements of TS SR 3.6.4.1.4 and 3.6.4.1.5 did not ensure that secondary containment integrity was tested in all required configurations.

Description. On November 13, 2013, while reviewing SE-070-011, Revision 13, "Secondary Containment Drawdown and Inleakage Test Zones I, II and III," inspectors identified that prerequisite 5.16 required operators to "confirm Zone III ventilation is established to the Railroad Access Shaft." Further review determined that this configuration is established for all secondary containment in-leakage tests. The UFSAR states "the railroad access shaft is accessible to Zones I and III through access hatches that are normally kept closed and will not be opened without proper controls to maintain secondary containment integrity during normal plant operation". Additionally, UFSAR Figure 6.2-25, Note 1 states "the normal ventilation alignment for the railroad access shaft is a no-zone." Inspectors questioned how the implementing procedures and testing methodology tested the shared boundary between the railroad access shaft and the three zones of the secondary containment. Specifically, with the railroad access shaft aligned to Zone III ventilation, there would be no differential pressure between the railroad access shaft and the secondary containment boundary because its respective isolation dampers are in the open position. To move material and equipment in and out of the reactor building, the railroad access shaft is isolated from secondary containment and the outside door is opened while secondary containment is maintained as operable because the station credits the leak tightness of the railroad access shaft, including its isolation dampers without having performed any successful confirmatory testing.

Based on this, inspectors questioned whether the entire secondary containment boundary was being tested and whether TS SRs 3.6.4.1.4 and 3.6.4.1.5 were being met. Both SRs require verifying the ability of each SBGT subsystem to drawdown secondary containment every 24 months on a staggered test basis such that each configuration is tested every 60 months. In review of the inspector's questions, PPL determined that the testing was not being performed in all configurations as required by TS SRs since current drawdown testing is performed only with the Unit 1 railroad access shaft aligned to Zone III. In response to the inspector's questions, PPL determined the untested configuration was with the Unit 1 railroad access shaft aligned as a no-zone, which closes the railroad access shaft Supply from Zone III damper (XD-17513) and railroad

access shaft Exhaust to Zone III damper (XD17514), so that the railroad access Door-101 can be opened without entering the Secondary Containment LCO.

Step 6.3.3 of NDAP-QA-0722, "Surveillance Testing Program," Revision 24, requires surveillance procedures to be written such that all required functions are tested. Additionally, one of the review criteria of the Surveillance Procedure Review Checklist (Attachment C to NDAP-QA-0722) states "does the procedure (including but not limited to all procedure changes) in conjunction with other procedures completely meet the testing requirements of TS/TR". This checklist was most recently completed on November 7, 2013 and the criterion was marked "Yes."

On November 21, 2013, SE-070-011 was performed with the railroad access bay aligned to no-zone with the railroad bay Door-101 open and the test did not meet the acceptance criteria for in-leakage. The railroad access bay was realigned to Zone III, a known tested and operable configuration, and the licensee entered the condition into the CAP as CR 2013-04464.

The licensee applied a status control tag to the railroad access bay Door-101 as an administrative control until corrective actions can be completed and the configuration tested satisfactorily.

Analysis. The inspectors determined the failure to ensure that secondary containment integrity was tested in all required configurations to be a performance deficiency that was within PPL's ability to foresee and correct and should have been prevented. The finding is more than minor because it is associated with the procedure quality attribute of the Barrier Integrity cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the inadequate surveillance procedure resulted in missed surveillances for SRs 3.6.4.1.4 and 3.6.4.1.5. Additionally, it was similar to example 3.d in IMC 0612 Appendix E, "Examples of Minor Issues," in that the failure to implement the TS SR as required is not minor if the surveillance had not been conducted. In this case, the TS SR had not been completed for all configurations of secondary containment.

The inspectors utilized IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012, and determined that this issue affected the Barrier Integrity cornerstone. IMC 0609, Appendix A "The SDP for Findings At-Power," Exhibit 3, "Barrier Integrity Screening Questions," dated June 19, 2012, was utilized and question C.1 was answered "yes" since the finding only represented a degradation of the radiological barrier function provided for the standby gas treatment system. The resulting significance of this issue was of very low safety significance (Green).

The inspectors determined that this issue was cross-cutting in the Human Performance, Resources area because the licensee failed to ensure that personnel, equipment, procedures, and other resources are available and adequate to assure nuclear safety. Specifically, those necessary for: complete, accurate and up-to-date design documentation, procedures, and work packages, and correct labeling of components [H.2(c)]. Despite PPL's NDAP-QA-0722 process for ensuring procedures completely meet the testing requirements of the TSs, the surveillance procedure did not incorporate testing of the complete boundary of secondary containment as described in the UFSAR.

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," requires, in part, a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. Contrary to the above, prior November 22, 2013, the licensee's test program had not tested their secondary containment in-leakage with the railroad access bay aligned in a no-zone configuration. Additionally, when tested in this configuration, secondary containment in-leakage exceeded the technical specification acceptance limits. Corrective actions for this issue included revising the surveillance procedure to require testing with the railroad access bay aligned to a no-zone configuration, applying status control tags to the untested secondary containment boundaries and maintaining the secondary containment in a tested configuration until surveillance testing is completed on the previously untested configuration. It is not clear whether or not secondary containment was inoperable for greater than the allowed outage time. Because this violation was of very low safety significance and it was entered into PPL's CAP as CR-2013-03891, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000387; 388/2013005-03: Missed Technical Specification Surveillance for Secondary Containment Drawdown Testing)**.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Evaluation (71114.03 – 1 sample)

a. Inspection Scope

An onsite review was conducted to assess the maintenance and testing of the alert and notification system (ANS). During this inspection, the inspectors conducted a review of the ANS testing and maintenance programs. The inspectors reviewed the associated ANS procedures and the Federal Emergency Management Agency (FEMA) approved ANS Design Report to ensure compliance with design report commitments for system maintenance and testing. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 2. 10 CFR 50.47(b)(5) and the related requirements of 10 CFR Part 50, Appendix E, were used as reference criteria.

b. Findings

No findings were identified.

1EP3 Emergency response Organization Staffing and Augmentation System (71114.03 – 1 sample)

The inspectors conducted a review of the SSES Emergency Response Organization (ERO) augmentation staffing requirements and the process for notifying and augmenting the ERO. The review was performed to verify the readiness of key PPL staff to respond to an emergency event and to verify PPL's ability to activate their emergency response facilities (ERF) in a timely manner. The inspectors reviewed the SSES Emergency Plan for ERF activation and ERO staffing requirements, the ERO duty roster, applicable station procedures, augmentation test reports, the most recent drive-in drill reports, and corrective action reports related to this inspection area. The inspectors also reviewed a

sample of ERO responder training records to verify training and qualifications were up-to-date. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 3. Title 10 CFR 50.47(b)(2) and related requirements of 10 CFR Part 50, Appendix E, were used as reference criteria.

b. Findings

No findings were identified

1EP5 Maintaining Emergency Preparedness (71114.05 - 1 sample)

a. Inspection Scope (71114.05 - 1 sample)

The inspectors reviewed a number of activities to evaluate the efficacy of PPL's efforts to maintain the SSES emergency preparedness program. The inspectors reviewed: letters of agreement with offsite agencies; the 10 CFR 50.54(q) Emergency Plan change process and practice; PPL's maintenance of equipment important to EP; records of evacuation time estimate population evaluation; and provisions for, and implementation of, primary, backup, and alternate ERF maintenance. The inspectors also verified PPL's compliance at Susquehanna with new NRC EP regulations regarding: emergency action levels (EALs) for hostile action events; protective actions for on-site personnel during events; emergency declaration timeliness; ERO augmentation and alternate facility capability; evacuation time estimate updates; on-shift ERO staffing analysis; and, ANS back-up means.

The inspectors further evaluated PPL's ability to maintain their EP program through their identification and correction of EP weaknesses, by reviewing a sample of drill reports, actual event reports, self-assessments, 10 CFR 50.54(t) reviews, and EP-related CRs. The inspectors reviewed a sample of EP-related CRs initiated at SSES from January 2012 through November 2013. The inspection was conducted in accordance with NRC Inspection Procedure 71114.05. Title 10 CFR 50.47(b) and the related requirements of 10 CFR Part 50, Appendix E, were used as reference criteria.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06 - 1 sample)

a. Inspection Scope

(Closed) Unresolved Item (URI) 05000387;388/2012002-03: Installed Instrumentation Necessary for EAL Declaration.

The inspectors reviewed this URI that had been initiated to determine whether PPL had adequate instrumentation to support entry into the EP under the fission product barrier EAL. The fission product barrier EAL, as presented in EP-TP-001, "Emergency Classification Levels Manual," Revision 5, includes the use of room temperatures for identification of a "Potential Loss of RCS Barrier" and "Loss of Primary Containment Barrier." Both criteria reference tables of applicable areas with the corresponding "Max Normal RB Temperature" and "Max Safe RB Temperature" limits. Exceeding the "Max

Normal RB Temperature" limit indicates a potential loss of the RCS barrier and exceeding the "Max Safe RB Temperature" limit indicates a loss of the primary containment barrier. In PPL's case, 9 of the 21 areas listed do not have installed temperature indication. The inspectors reviewed PPL's evaluation of the issue and consulted with the Office of Nuclear Security and Incident Response (NSIR). Additionally, the NRC evaluated the circumstances surrounding the adequacy of the Susquehanna EAL scheme submittal to the NRC in October 2003. This URI is closed.

b. Findings

Introduction. The NRC identified a Green NCV associated with emergency preparedness planning standard 10 CFR 50.47(b)(14) and the requirements of Section IV.F.2.g of 10 CFR 50 Appendix E. Specifically, PPL staff did not identify a performance weakness related to a risk significant planning standard (RSPS) during their critique following the full-scale EP drill.

Description. The EALs associated with fission product barrier degradation (FG1, FS1, FA1, and FU1) are based on a loss or potential loss of each of the three fission product barriers: fuel cladding, RCS, and primary containment. Depending on which barriers are affected or potentially affected, an emergency declaration would be made at any of the four emergency classification levels: Notice of Unusual Event, Alert, Site Area Emergency, and General Emergency.

The fission product barrier EALs, as presented in EP-TP-001, "Emergency Classification Levels Manual," Revision 6, include the use of room temperatures for identification of a "Potential Loss of RCS Barrier" and "Loss of Primary Containment Barrier." Both reference tables of applicable areas with the corresponding "Max Normal Reactor Building Temperature" and "Max Safe Reactor Building Temperature" limits. Exceeding the "Max Normal Reactor Building Temperature" limit indicates a potential loss of the RCS barrier and exceeding the "Max Safe Reactor Building Temperature" limit indicates a loss of the primary containment barrier. During the course of questioning, it was determined that nine of the 21 areas listed do not have installed temperature indication. Therefore, there would be no installed instrumentation to declare the appropriate EAL for a break that was not isolated in those rooms. This condition has the potential to impact declaration of all four classifications, however; due to the redundancy within the fission product barrier matrix, it is reasonable that a General Emergency would be declared in a timely manner. However, inspectors determined that the lack of installed instrumentation could result in an untimely declaration of a Site Area Emergency, Alert, or Unusual Event. This would result in these classifications being declared in a degraded manner.

This issue was initially identified by PPL in CR 1541912. PPL's evaluation determined that the condition was consistent with industry practice and with assumptions made during transition to the Nuclear Energy Institute (NEI) 99-01 EAL scheme. Specifically, the table was taken directly from EOPs, and it was recognized that not all EOP criteria have installed instrumentation. For the areas that do not have installed temperature indication, reliance would be on local temperatures taken manually by operators. However, through discussions with the EP staff in NSIR, it was determined that the use of a local thermometer would not be an acceptable method to meet the intent of the EAL as it would not allow for a timely assessment.

Analysis. PPL's failure to have adequate instrumentation to support timely and accurate declaration of an emergency in accordance with the EAL classification process constituted a performance deficiency, which was reasonably within PPL's ability to foresee and correct. The performance deficiency is more than minor because it is associated with the Facilities and Equipment attribute of the EP cornerstone, and adversely affected the cornerstone objective of ensuring that a licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the lack of installed temperature instrumentation and the reliance on personnel dispatched to take temperature readings were insufficient to ensure a timely and accurate EAL classification could be made. Using IMC 0609, Appendix B, section 5.4, dated February 24, 2012, the finding is of very low safety significance (Green) because the finding was determined to be an example of an ineffective EAL initiating condition, such that a Site Area Emergency would be declared in a degraded manner.

The cause of the finding has a cross-cutting aspect in the area of Human Performance, Resources, because PPL did not ensure that facilities and equipment were adequate and available, including emergency facilities and equipment [H.2.d]. Specifically, PPL did not provide installed remote area temperature instrumentation to operators to ensure a timely and accurate declaration of an emergency for an unisolable reactor coolant leak in the reactor building.

Enforcement. 10 CFR 50.54(q) requires that the facility licensee follow and maintain the effectiveness of an EP program that meets the planning standards in 10 CFR 50.47(b). 10 CFR 50.47(b)(4) requires, in part, that emergency response plans include a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters. Contrary to the above, since adopting the NEI 99-01 EAL scheme in October 2003, nine out of 21 areas, where reactor building temperature needs to be considered for the fission product barrier degradation EALs, did not have installed temperature instrumentation and resulted in an EAL classification process that would declare a Site Area Emergency FS1 in a degraded manner. Because this violation is of very low safety significance (Green) and PPL entered this into their CAP as CR 1727229, this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000387; 388/2013005-04, Inadequate Instrumentation to Implement EALs for Fission Product Barrier Degradation)**

2. RADIATION SAFETY

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

During November 18 - 22, 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 for Nuclear Plants, TSs, and the Susquehanna procedures required by TSs as criteria for determining compliance.

a. Inspection Scope

Radiological Hazards Control and Work Coverage

The inspectors evaluated ambient radiological conditions and performed independent radiation measurements during walk-downs of the facility.

The inspectors examined PPL's physical and programmatic controls for highly activated or contaminated materials stored within spent fuel and other storage pools. The inspectors assessed whether appropriate controls were in place to preclude inadvertent removal of these materials from the pool.

Risk-Significant High Radiation Area and Very High Radiation Area (VHRA) Controls

The inspectors discussed with the radiation protection manager the controls and procedures for HRAs and VHRAs. The inspectors discussed with first-line health physics supervisors the controls in place for special areas that have the potential to become VHRAs during certain plant operations. The inspectors evaluated PPL controls for VHRAs and areas with the potential to become a VHRA to ensure that an individual was not able to gain unauthorized access to these VHRAs

Radiation Worker Performance

The inspectors reviewed five radiological CRs since the last inspection that attributed the cause of the event to human performance errors. 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.

b. Findings

No findings were identified.

2RS2 Occupational ALARA Planning and Controls (71124.02)

During November 18 - 22, 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 Part 20, RG 8.8 - Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Plants will 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

Radiological Work Planning

The inspectors compared the results achieved (dose rate reductions, actual dose) with the intended dose established in PPL ALARA planning for various work activities. The inspectors compared the person-hour estimates provided by maintenance planning and other groups to the Radiation Protection (RP) group actual person-hours for each work

activity, and evaluated the accuracy of these time estimates. The inspectors assessed the reasons for any inconsistencies between intended and actual work activity doses.

The inspectors determined whether post-job reviews were conducted to identify lessons learned. If problems were identified, verified that worker suggestions for improving dose and contamination reduction techniques were entered into PPL's CAP.

b. Findings

No findings were identified.

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

During November 18 - 22, 2013, the inspector verified in-plant airborne concentrations are being controlled consistent with ALARA principles and the use of respiratory protection devices on-site does not pose an undue risk to the wearer. The inspector 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 the respiratory protection program and a description of the types of devices used. The inspectors reviewed the UFSAR, TSs, and emergency planning documents to identify the location and quantity of respiratory protection devices stored for emergency use.

Engineering Controls

The inspectors assessed whether PPL had established threshold criteria for evaluating levels of airborne beta-emitting and alpha-emitting radionuclides.

Use of Respiratory Protection Devices

The inspectors reviewed records of air testing for supplied-air devices and self-contained breathing apparatus (SCBA) bottles to assess whether the air used in these devices meets or exceeds Grade D quality. The inspectors reviewed plant breathing air supply systems to determine whether they meet the minimum pressure and airflow requirements for the devices in use.

The inspectors selected three individuals qualified to use respiratory protection devices and assessed whether they were deemed qualified to use the devices by successfully passing an annual medical examination, respirator fit-test, and relevant respiratory protection training.

The inspectors selected three individuals assigned to wear a respiratory protection device and observed them donning, doffing, and functionally checking the device as appropriate. Through interviews with these individuals, the inspectors evaluated

whether they knew how to safely use the device and how to properly respond to any device malfunction or unusual occurrence (loss of power, loss of air, etc.).

The inspectors chose five respiratory protection devices staged and ready for use in the plant. The inspector assessed the physical condition of the device components and reviewed records of equipment inspection for each type of equipment. The inspectors selected several of the devices and reviewed records of maintenance on the vital components. The inspectors verified that onsite personnel assigned to repair respiratory protection equipment have received vendor-provided training.

SCBA for Emergency Use

The inspectors reviewed the status and surveillance records of selected SCBAs staged in-plant for use during emergencies. The inspectors reviewed PPL's capability for refilling and transporting SCBA air bottles to and from the control room and the operations support center during emergency conditions.

The inspectors selected three individuals on control room shift crews and from designated departments currently assigned emergency duties to assess whether control room operators and other emergency response and RP personnel were trained and qualified in the use of SCBA. The inspectors evaluated whether personnel assigned to refill bottles were trained and qualified for that task.

The inspectors determined whether appropriate mask sizes and types are available for use. The inspectors determined whether (on-shift operators and/or radiation workers) had no facial hair that would interfere with the sealing of the mask to the face and whether vision correction mask inserts were available, as appropriate.

The inspectors reviewed the past two years of maintenance records for three SCBA units to assess whether any maintenance and repairs on any SCBA units were performed by an individual, or individuals, certified by the manufacturer of the device to perform the work. For those SCBAs that were ready for use, the inspectors verified that the required periodic air cylinder hydrostatic testing was documented and up to date.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were being identified by PPL at an appropriate threshold and were properly addressed for resolution in PPL's CAP. The inspectors assessed whether the corrective actions were appropriate for a selected sample of problems involving airborne radioactivity and were appropriately documented by PPL.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04 – 1 sample)

During November 18 - 22, 2013, the inspectors verified that occupational dose is appropriately monitored, assessed, and reported by PPL. The inspectors used the requirements in 10 CFR Part 20, the guidance in RG 8.13 - Instructions Concerning

Prenatal Radiation Exposures, RG 8.36 - Radiation Dose to Embryo Fetus, RG 8.40 - Methods for Measuring Effective Dose Equivalent from External Exposure, TSs, and the licensee's procedures required by TSs as criteria for determining compliance.

a. Inspection Scope

Inspection Planning

The inspectors reviewed the results of PPL's RP program audits related to internal and external dosimetry. The inspectors reviewed the most recent National Voluntary Laboratory Accreditation Program report on the principal dosimetry used to establish dose of legal record. The inspectors conducted a review of PPL procedures associated with dosimetry operations, including issuance/use of external dosimetry, and assessments of external and internal dose for radiological incidents. The inspectors evaluated whether PPL had established procedural requirements for determining when external dosimetry and internal dose assessments are required.

External Dosimetry

The inspectors evaluated whether the PPL dosimetry vendor is NVLAP accredited and if the approved irradiation test categories for each type of personnel dosimeter used are consistent with the types and energies of the radiation present and the way the dosimeter is being used. The inspectors evaluated the onsite storage of dosimeters before issuance, during use, and before processing/reading. The inspectors also reviewed the guidance provided to radiation workers with respect to care and storage of dosimeters.

The inspectors assessed the use of electronic personal dosimeters (EPDs) to determine if PPL uses a "correction factor" to address the response of the EPD as compared to the dosimeter of legal record for situations when the EPD is used to assign dose and whether the correction factor is based on sound RP principles. The inspectors reviewed three dosimetry occurrence reports or CAP documents for adverse trends related to EPDs. The inspectors assessed whether PPL had identified any adverse trends and implemented appropriate corrective actions.

Internal Dosimetry Routine Bioassay (In Vivo)

The inspectors reviewed procedures used to assess the dose from internally deposited radionuclides using whole body count (WBC) equipment. The inspectors evaluated whether the procedures addressed methods for differentiating between internal and external contamination, the release of contaminated individuals, determining the route of intake and the assignment of dose. The inspectors reviewed the WBC process to determine if the frequency of measurements was consistent with the biological half-life of the radionuclides available for intake. The inspectors reviewed PPL's evaluation for use of its portal radiation monitors as a passive monitoring system. The inspectors assessed if instrument minimum detectable activities were adequate to determine the potential for internally deposited radionuclides sufficient to prompt an investigation.

The inspectors selected three WBCs and evaluated whether the counting system used had sufficient counting time/low background to ensure appropriate sensitivity for the potential radionuclides of interest. The inspectors reviewed the radionuclide library used

for the count system to determine if it included the gamma-emitting radionuclides that exist at the site. The inspectors evaluated how PPL accounts for hard-to-detect radionuclides in their internal dose assessments, if applicable.

Special Bioassay (In Vitro)

The inspectors selected one internal dose assessments obtained using WBCs. The inspectors reviewed and assessed the adequacy of PPL's program for urinalysis and fecal analysis of radionuclides including collection and storage of samples. The inspectors reviewed the vendor laboratory quality assurance program and assessed whether the laboratory participated in an industry recognized cross-check program including whether out-of-tolerance results were reviewed, evaluated and resolved appropriately.

Internal Dose Assessment – Airborne Monitoring

PPL had not performed any internal dose assessments using airborne/derived air concentration monitoring during the period reviewed.

Internal Dose Assessment – WBC Analyses

The inspectors reviewed several dose assessments performed by PPL using the results of WBC analyses. The inspectors determined whether affected personnel were properly monitored with calibrated equipment and that internal exposures were assessed consistent with PPL's procedures.

Special Dosimetric Situations Declared Pregnant Workers

The inspectors assessed whether PPL informs workers, as appropriate, of the risks of radiation exposure to the embryo/fetus, the regulatory aspects of declaring a pregnancy, and the specific process to be used for (voluntarily) declaring a pregnancy. The inspectors reviewed the records for one individual who had declared pregnancy during the current assessment period and evaluated whether the PPL's radiological monitoring program (internal and external) for declared pregnant workers is technically adequate to assess the dose to the embryo/fetus. The inspectors reviewed exposure results and monitoring controls that were implemented.

Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures

The inspectors reviewed PPL's methodology for monitoring external dose in non-uniform radiation fields or where large dose gradients exist. The inspectors evaluated PPL's criteria for determining when alternate monitoring, such as use of multi-badging, is to be implemented. The inspectors reviewed selected dose assessments performed using multi-badging to evaluate whether the assessment was performed consistent with procedures and dosimetric standards.

Shallow Dose Equivalent

The inspectors reviewed two dose assessments for shallow dose equivalent for adequacy. The inspectors evaluated PPL's method (e.g., VARSKIN or similar code) for

calculating shallow dose equivalent from distributed skin contamination or discrete radioactive particles.

Neutron Dose Assessment

The inspectors evaluated PPL's neutron dosimetry program, including dosimeter types and/or radiation survey instrumentation. The inspectors reviewed one neutron exposure occurrence and assessed whether (a) dosimetry and/or instrumentation was appropriate for the expected neutron spectra, (b) there was sufficient sensitivity for low dose and/or dose rate measurement, and (c) neutron dosimetry and/or neutron detection instruments were properly calibrated. The inspectors also assessed whether interference by gamma radiation had been accounted for in the calibration and whether time and motion evaluations were representative of actual neutron exposure events, as applicable.

Assigning Dose of Record

For the special dosimetric situations reviewed in this section, the inspectors assessed how PPL assigns dose of record for total effective dose equivalent, shallow dose equivalent, and lens dose equivalent. This included an assessment of external and internal monitoring results, supplementary information on individual exposures, and radiation surveys when dose assignment was based on these techniques.

Problem Identification and Resolution

The inspectors assessed whether problems associated with occupational dose assessment are being identified by PPL at an appropriate threshold and are 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 involving occupational dose assessment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 - 14 samples)

.1 Safety System Functional Failures (2 samples)

a. Inspection Scope

The inspectors sampled PPL's submittals for the Safety System Functional Failures performance indicator for both Unit 1 and Unit 2 for the period of July 1, 2012, through September 30, 2013. To determine the accuracy of the performance indicator data reported during those periods, inspectors used definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 10 CFR 50.73." The inspectors reviewed PPL's operator narrative logs, operability assessments, event reports and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index (8 samples)

a. Inspection Scope

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

- Units 1 and 2, Heat Removal Systems

Additionally, the inspectors reviewed PPL's submittal of the Mitigating Systems Performance Index for the following systems for the period of October 2012 through September 2013:

- Units 1 and 2, Emergency Alternating Current (AC) Power Systems
- Units 1 and 2, RHR Systems
- Units 1 and 2, Cooling Water Systems

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 7. The inspectors also reviewed PPL's operator narrative logs, CRs, 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.

.3 Emergency Preparedness (3 samples)

a. Inspection Scope

The inspectors reviewed data for the following three EP Performance Indicators (PI): (1) drill and exercise performance; (2) ERO drill participation; and, (3) ANS reliability. The last NRC EP inspection at Susquehanna was conducted in the fourth calendar quarter of 2012. Therefore, the inspectors reviewed supporting documentation from EP drills and equipment tests from the fourth calendar quarter of 2012 through the third calendar quarter of 2013 to verify the accuracy of the reported PI data. The review of the PIs was conducted in accordance with NRC Inspection Procedure 71151. The acceptance criteria documented in NEI 99-02, "Regulatory Assessment Performance Indicator Guidelines," Revision 7, was used as reference criteria.

b. Findings

No findings were identified.

4. Occupational Exposure Control Effectiveness (1 sample)

a. Inspection Scope

During November 18 - 22, 2013, the inspectors sampled PPL's submittals for the occupational exposure control effectiveness PI for the period from the first quarter 2012 through fourth quarter 2012. The inspectors used PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the PI data reported.

To assess the adequacy of the PPL's PI data collection and analyses, the inspectors discussed with radiation protection staff, the scope and breadth of its data review and the results of those reviews. The inspectors independently reviewed electronic personal dosimetry accumulated dose alarms, dose reports, and dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized PI occurrences. The inspectors also conducted walkdowns of numerous locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 3 sample)

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

a. Inspection Scope

As required by Inspection Procedure 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 CR screening meetings.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a semi-annual review of site issues, as required by Inspection Procedure 71152, "Problem Identification and Resolution," 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 CAP backlogs. The inspectors also reviewed PPL's CAP database for the third and fourth 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 NRCs daily condition report review (Section 4OA2.1). The inspectors reviewed PPL's quarterly trend report for the second and third quarters of 2013, conducted under NDAP-QA-0710, "Station Trending Program," Revision 9, 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.

Human Performance Related Events. During the inspection period, the inspectors identified a trend in human performance related events. During daily CAP review, the inspectors identified that there were fifteen prompt human performance investigations completed in the fourth quarter in accordance with NDAP-00-0032, "Human Performance (HuP) Standards for Error and Event Prevention," Revision 15. Inspectors recognized that this represented more than double the highest value of any of the last eight quarters. PPL had generated CR-2013-04796 due to an adverse trend in status control events. Specific inspection of each HuP event was completed in accordance with focused inspection samples as appropriate, however, inspectors acknowledged this as a potential adverse trend that may warrant additional evaluation since many of these HuP events were not related to status control.

Secondary Containment Operability. The inspectors noted that there has been an increase in emergency notification system (ENS) reports, and corresponding licensee event reports (LERs), associated with loss of safety function. Specifically, since October 2013, PPL has made seven reports for loss of safety function associated with secondary containment. PPL attributes this trend to changes associated with Revision 3 to NUREG-1022, "Event Report Guidelines 10 CFR 50.72 and 50.73" which more clearly defined the loss of safety function as being associated with operability by plant technical specifications. Revision 3 to NUREG-1022 was issued in January 2013, but was not effective until July 1, 2013. Inspectors identified that in the 4 quarters prior to implementation of NUREG 1022, Revision 3, PPL experienced 15 unplanned entries into TS 3.6.4.1, "Secondary Containment." Additionally, during the second quarter 2012 trend review, the inspectors identified a trend in secondary containment challenges (IR 05000387;388/2012003).

.3 Annual Sample: NCV 05000387/2012003-01, Failure to Prevent Recurrence of Secondary Containment Bypass Leakage (SCBL) Significant Condition Adverse to Quality (SCAQ) and NCV 05000387/2012003-02, Failure to Correct Main Steam Isolation Valve (MSIV) Seat Leakage

a. Inspection Scope

During the week of October 28, 2013, the inspectors performed an in-depth review of PPL's root cause analysis and corrective actions associated with the subject NCVs and reviewed selected aspects of the containment isolation valve local leak rate test (LLRT) program. The NCVs addressed PPL's failure to adequately monitor, evaluate, and repair safety-related valves to provide reasonable assurance that the valves would remain

capable of performing their isolation function. Specifically, the decision not to rework Unit 1 valve HV151F016B and not to repair Unit 1 valve 141818A prior to starting up from the 2010 refueling outage were considered non-conservative. The decision to accept the as-left leakage values for these valves for the next operating cycle, directly contributed to SCBL exceeding the TS allowed value in 2012 for a second consecutive test. Additionally, in April 2012 the Unit 1 'D' outboard MSIV (HV141F028D) failed to meet TS LLRT requirements for the second consecutive test. Evaluation of PMT results following MSIV repair were inadequate to assess effectiveness of the repair. Corrective actions for the two issues included revision of LLRT procedures to establish more restrictive as-found and post-repair as-left leakage criteria, issuing a new procedure to provide guidance for monitoring and trending components and system performance, revising work instructions for valve repairs, establishing a schedule to perform self-assessments of 22 engineering programs (including the LLRT program), and reviewing collective LLRT data for the past 10 years to identify additional valves of concern. PPL entered the issues into the CAP under CRs 1582747, 1590506, and 1609375.

The inspectors independently reviewed the CRs listed above, selected industry operating experience documents, procedures for valve LLRT performance, selected WOs for valve leakage repair, selected SCBL and containment isolation valve LLRT results, training documents, valve maintenance and testing records, and additional CRs associated with safety-related valve leakage or test issues during the last 5 years. Additionally the inspectors interviewed station personnel to assess current practices and programs to ensure safety-related SCBL and primary containment integrity. The inspectors assessed PPL's problem identification threshold, documentation of the issues, causal analyses, extent-of-condition reviews, compensatory actions, and the prioritization and timeliness of corrective actions to evaluate whether PPL was appropriately identifying, characterizing, and correcting problems associated with this issue. The inspectors also assessed whether PPL had identified associated lessons learned and communicated the results to appropriate staff. The inspectors compared the actions taken to the requirements of PPL's CAP and 10 CFR Part 50, Appendix B.

b. Findings and Observations

No findings were identified.

PPL determined the primary causes of the repetitive valve failures were: 1) a lack of technical management oversight over the SCBL and 10 CFR 50, Appendix 'J' primary containment leakage test programs; 2) deficient valve repair maintenance WO instructions; and 3) NDAP-QA-0412, "Leakage Rate Test Program," Revision 15, did not require trending and establishing maintenance limits for LLRT acceptance. The inspectors determined that PPL adequately evaluated the valve leakage issues, identified reasonable primary and contributing causes, established and implemented adequate corrective actions, and effectively communicated the results to plant staff. Actions to improve valve repair work instructions were implemented. Extent-of-condition reviews identified additional improvements associated with snubber performance tests (CR 1598142), 10-year LLRT trend reviews (CR 1613224), and use of trending data when performing operability assessments (CR 1616004). Most programmatic corrective actions (e.g., component/system monitoring and trending) had not been implemented for a sufficient duration for the inspectors to assess their effectiveness at the time of this inspection.

Notwithstanding overall improvements to the valve maintenance and leakage testing programs, the inspectors identified several observations. For example:

- CR 1609377, “Inadequate LLRT Repair PMT,” written to the address the NCV associated with repetitive ‘D’ MSIV leakage, was prematurely closed. PPL closed CR 1609377 to actions taken under CR 1590506, “Root Cause Evaluation for Repetitive MSIV LLRT and SCBL Test Failures.” However, CR 1590506 did not evaluate the underlying cause of CR 1609337. Specifically, the PMT test method described in CR 1590506 tested a group of valves collectively, but did not verify maintenance effectiveness on the individual valve. Reviews by engineering management and the Corrective Action Review Board (CARB) did not identify the lack of a maintenance effectiveness review for the individual valve. PPL’s CR 1590506 root cause effectiveness review found several actions that were not completed by the assigned due dates. Additionally, the proposed resolution to address the corrective action to improve equipment/system performance trending was to credit existing processes. Both the inspectors and the root cause assessment leader determined the proposed resolution was inadequate because existing processes provided only general instructions and were not consistently implemented by the station. These issues were properly documented in CR 1673095.

- Corrective actions to address two of the three CR 1590506 root causes were not correctly implemented. NDAP-QA-0412, Attachment ‘A,’ “LLRT Administrative Limits,” did not properly implement CRA 1622385, established to address CR 1590506 root causes 1 and 2. This corrective action specified that “as-found” and “as-left” administrative limits be incorporated into the procedure. These limits were to be established to identify an administrative limit which would require valve repair and an associated as-left LLRT administrative limit which would support high confidence of continued valve operability for the upcoming operating cycle. Specifically, Attachment ‘A’ Notes (5) for MSIV administrative limits and Notes (6), (7), and (10) which identify administrative limits for SCBL valve repair were not correctly translated into the Attachment ‘A’ listing. The listing still contained the higher regulatory limit (TS or Appendix ‘J’ values). This provided no margin to operability and affected 22 valves.

The inspectors discussed these issues with engineering staff and management personnel. These issues were determined to be minor because no equipment operability was affected and the SCBL and primary containment valves remained capable of fulfilling the intended safety function. In accordance with IMC 0612, "Power Reactor Inspection Reports," the above issues constituted violations of minor significance that are not subject to enforcement action in accordance with the NRC’s Enforcement Policy. PPL entered the inspectors’ observations into their CAP (CRs 2013-02365, 2013-02517, 2013-02532).

.4 Annual Sample: Operability Determination Process and Corrective Actions for NCV 05000387;388/2013003-01, Inadequate Operability Assessment of Synchroscope Switch

a. Inspection Scope

The inspectors performed an in-depth review of PPL's evaluation and corrective actions associated with the subject NCV and reviewed selected aspects of the operability assessment process. The NCV addressed PPL's inadequate operability determination for a synchronizing selector switch failure that rendered offsite power and all four EDGs inoperable. PPL entered the issue into the CAP under CR 1703293 and evaluated the failure of the operability process. PPL also reviewed this issue under CR 1736823. Additionally, PPL submitted LER 05000387/2013-001 to report the condition prohibited by plant TSs. The inspectors independently reviewed the CRs listed above, procedures for operability assessment, and operator training for operability assessments to assess the adequacy of corrective actions. Finally, inspectors reviewed a sampling of CRs and evaluated the operability assessment performed by PPL for each.

b. Findings and Observations

No Findings were identified.

As documented in LER 05000387/2013-01, PPL's evaluation concluded that the cause of the inadequate operability assessment was that the surveillance procedure did not provide guidance that the synchronizing selector switch was required to meet TS SR 3.8.1.8 and SR 3.8.1.16. In reviewing the LER and corrective actions, the inspectors determined the corrective actions to revise the affected surveillance procedure and sample other surveillance that would lead to a similar short-duration LCO were pertinent to the operability assessment process.

Inspectors determined these corrective actions were less than adequate to address the cause that was identified by PPL. Specifically, the first corrective action only added a note to the monthly EDG test procedure which cautions operators that failure of the switch would affect SR 3.8.1.16, which is a SR that tests the operability of the EDGs. However, it did not specify that SR 3.8.1.8 was also affected, which is required to be met for offsite power to be operable. The second action, which PPL executed by reviewing surveillance procedures that required entry into a 2 hour or less LCO and verifying that the correct LCO was described in the procedure, was inadequate because it would not have identified a similar condition as the one reported. Inspectors determined that PPL's planned corrective actions were not reasonable because PPL could not anticipate and proceduralize all potential component failures that could occur during each surveillance test and ensure appropriate contingency actions were clearly specified in procedures. Inspectors determined that this was the purpose and intent of the operability determination process, which is completed by a licensed senior reactor operator (SRO) in accordance with NDAP-QA-0703, "Operability Assessments and Requests for Enforcement Discretion," Revision 24.

The inspectors considered whether this constituted a failure to correct the condition adverse to quality described in the NCV, but determined that other actions specified by the evaluation would reasonably correct the performance issue. Specifically, PPL recently implemented in-depth operability determination training supplied by an industry

expert on the topic. A corrective action described in the LER was to review this operability determination training for effectiveness. Action 1723537 concluded that the training was not fully effective and specified a corrective action to provide additional training to SROs. In the interim, PPL specified that the operability determination review meeting discussed in section 8 of NDAP-QA-0703 would be conducted weekly to identify any additional weaknesses in the operability determination process so that feedback could be provided to all SROs. Inspectors determined that these two planned corrective actions, if implemented with quality, would reasonably correct the performance issue identified in the NCV.

The inspectors' review of CR 1736823 revealed a gap between the NCV and CR 1703293 because the evaluation failed to identify all the surveillance requirements that were impacted as a result of the failed component. Specifically, the comparison identified that the original evaluation did not identify that offsite power was also affected and inoperable because of the failure. Despite this, no corrective actions to close this gap were specified. Inspectors determined that this was a reasonable opportunity for PPL to have self-identified the observations discussed above. PPL documented this observation under CR-2013-07307.

Inspectors reviewed the results of several weekly operability determination review meetings and sampled several operability determinations completed on degraded or non-conforming conditions. Inspectors concluded that the operability determination review meetings were effective at evaluating the operability assessments and a reasonable method of collecting data on performance and correcting deficiencies at a lower level. However, inspectors identified that the majority of CRs evaluated by the team were not of degraded or non-conforming conditions and therefore limited the ability to trend SRO performance in performing operability determinations. PPL documented this issue under CR-2013-07306.

The inspectors independently evaluated, for significance in accordance with the guidance in IMC 0612, Appendix B, "Issue Screening," and Appendix E, "Examples of Minor Issues," the inspector identified issues in: CR-2013-07307 related to less than adequate corrective actions; and, CR-2013-07306 related to less than adequate sample selection for periodic operability determination review meetings. As described above, the inspectors determined the issues of concern were performance deficiencies of minor significance and, therefore, were not subject to enforcement action in accordance with the NRC's Enforcement Policy.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153 – 10 samples)

.1 (Closed) Licensee Event Report (LER) 05000387/2012-003-00 and 05000387/2012-003-01: Unit 1 Secondary Containment Bypass Leakage Exceeded

On April 6, 2012, during the Unit 1 refueling outage, PPL identified that the as-found minimum pathway SCBL TS limit was exceeded during the regularly scheduled LLRT. At the time the limit was exceeded, an LLRT was being performed on the 'A' feedwater line penetration X-9A. The tested containment isolation valve 141818A was leaking 2,855 standard cubic centimeters per minute (sccm). When the 2,855 sccm leakage through the 141818A valve was added to the combined as-found minimum pathway SCBL calculation, the total equaled 7,185 sccm, which exceeded the TS limit of 7,079

sccm as specified in TS surveillance requirement 3.6.1.3.11. PPL notified the NRC on April 6, 2012 in accordance with 10 CFR 50.72(b)(3)(ii)(A) (EN 47812).

The apparent cause of the excessive leakage through the 141818A valve was due to a galled disc stud and minor seat wear. The valve's disc stud was repaired and the soft seat was replaced. Additional corrective actions included installation of a modification which modified one of the SCBL boundaries from the containment spray penetration isolation valves to smaller better performing isolation valves in interfacing systems. This modification reduced the SCBL total by approximately 50 percent. Inspectors reviewed the issue and associated apparent cause evaluations and determined the evaluations were narrowly focused on valve 141818A and did not look holistically at all the SCBL boundaries. This was documented as a NRC-identified Green violation of 10 CFR 50

Appendix B Criterion XVI for failure to prevent recurrence of a significant condition adverse to quality in inspection report (IR) 05000387;388/2012003 (ML12223A154). Subsequently, PPL initiated root cause evaluation 1553582 and identified programmatic weaknesses and organizational contributors that led to the violation. Inspectors reviewed the root cause evaluation and associated corrective actions. No findings or violations of NRC requirements were identified during this review. This LER is closed.

.2 (Closed) LER 05000387/2012-001-01: Two Control Room Floor Cooling Systems Inoperable

On May 11, 2012, Unit 2 entered LCO 3.0.3 due to two control room floor cooling systems being inoperable. The event occurred when clearance order application with the system controls in an abnormal alignment resulted in a loss of both subsystems. Control room operators immediately recognized the loss and took manual action to restore cooling. This event is reportable as a loss of entire safety function under 10CFR50.73 (a)(2)(v)(D).

Inspectors reviewed Revision 0 to the LER in IR 05000387;388/2013002 (ML1313A117) and documented a self-revealing NCV of very low safety significance (Green). Following this review, PPL updated the LER because the final causal analysis of the event was not complete at the time of the review. The inspectors reviewed this revision to the LER, including PPL's evaluations and associated corrective actions. No additional findings or violations of NRC requirements were identified. This LER is closed.

.3 (Closed) LERs 05000387/2012-006-00 and 05000387/2012-006-01: Unit 1 ‘D’ Outboard Main Steam Isolation Valve Leakage – 2012 and LER 05000387/2010-004-00: Unit 1 ‘D’ Outboard Main Steam Isolation Valve Leakage – 2010

On April 9, 2012, during LLRT of the ‘D’ main steam line isolation valve (MSIV) penetration, the ‘D’ main steam line boundary would not pressurize due to excessive leakage. As a result of the testing and subsequent troubleshooting, PPL discovered that the leak rate for the Unit 1 ‘D’ outboard MSIV exceeded 150 standard liters per minute. This condition was a failure to meet TS 3.6.1.3.

Inspectors determined this failure was reportable as a condition prohibited by plant TSs because there was firm evidence to indicate that seat leakage from the MSIV had been in excess of the limit during the previous two operating cycles. Accordingly,

a Severity Level IV NCV of 10 CFR 50.73(a)(2)(i)(B) was documented in IR 05000387;388/2012003 (ML12223A154) for failure to report this condition prohibited by TSs. As a corrective action for this violation, PPL reported these failures in the referenced LERs. Additionally, inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI for failure to correct excessive seat leakage associated with the Unit 1 'D' outboard MSIV during the previous maintenance periods.

The LERs and associated evaluations were reviewed for accuracy, the appropriateness of corrective actions, violations of requirements, and generic issues. No additional findings or violations of NRC requirements were identified during this review. These LERs are closed.

.4 (Closed) LER 05000388/2012-002-01: Unit 2 Manual Scram due to Loss of the Integrated Control System

On November 9, 2012, operators manually scrammed Unit 2 and tripped all reactor feed pumps due to a loss of the Integrated Control System (ICS). All systems responded appropriately and there were no actual adverse safety consequences as a result of this event. Following the manual scram due to the ICS failure, a second scram signal was received due to low water level during recovery from the initial scram. These events were also reportable as a LER in accordance with 10 CFR 50.73(a)(2)(iv)(A).

Inspectors reviewed Revision 0 to the LER in IR 05000387;388/2013011 (ML13322B321) and documented a self-revealing finding of very low safety significance (Green). PPL supplemented the LER because the final causal analysis of the event was not complete at the time of the original LER submittal. The inspectors reviewed this revision to the LER and no additional findings or violations of NRC requirements were identified. This LER is closed.

.5 (Closed) LER 05000387/2013-002: Unit 1 Manual Scram Due to Failure of the EHC 'B' Pressure Setpoint Potentiometer

On June 7, 2013, Unit 1 was manually scrammed during reactor startup. The pressure setpoint was being adjusted to the normal operating setpoint when all turbine bypass valves unexpectedly opened. Reactor feed pumps tripped and main turbine HPCI and RCIC received trip signals on the high level setpoint due to the resultant reactor level swell. A manual reactor scram was initiated and all control rods inserted. Reactor water level lowered to approximately -10 inches causing Level 3 (+13 inches) isolations. All safety systems operated as expected.

The scram and associated actuations were reported in accordance with 10 CFR 50.72 (b)(2)(iv)(B) and 10 CFR 50.72 (b)(3)(iv)(A) in EN 49099. These events were also reportable as an LER in accordance with 10 CFR 50.73 (a)(2)(iv)(A).

The LER and associated evaluation were reviewed for accuracy, the appropriateness of corrective actions, violations of requirements, and generic issues. No findings or violations of NRC requirements were identified during this review. This LER is closed.

.6 (Closed) LER 05000387/2013-001-00 and 05000387/2013-001-01: DG 'B' to Bus '2B' Synchronizing Selector Switch Failure

On May 7, 2013, at 12:53 a.m., the synchronizing selector switch for the 'B' EDG to the 2B 4kV bus failed in the closed position following its monthly surveillance. Due to the design of the synchronizing selector switch circuitry, with the switch failed in the closed position, all other synchronizing selector switches were rendered non-functional. PPL's operability determination for the failed synchronizing selector switch failed to identify that the failed switch caused SRs 3.8.1.8 and 3.8.1.16 associated with Unit 1 LCO 3.8.1 and Unit 2 LCO 3.8.2 to not be met and therefore resulted in all four EDGs and both offsite AC sources to be inoperable. Accordingly, an NRC-identified Green NCV of 10 CFR 50, Appendix B, Criterion V was documented in IR 05000387;388/2013003 (ML13226A023) for failure adequately assess the condition for operability. Consequently, PPL determined the condition prohibited by TSs was reportable under 10 CFR 50.73(a)(2)(i)(B).

The LER and associated evaluation were reviewed for accuracy, the appropriateness of corrective actions, violations of requirements, and generic issues. No additional findings or violations of NRC requirements were identified during this review. This LER is closed.

4OA5 Other Activities

.1 Independent Spent Fuel Storage Installation Cask Loading Issue (60855 – 1 sample, 60855.1 - 1 sample)

a. Inspection Scope

During processing of dry shielded canister (DSC) #72 on August 9, 2013, SSES personnel observed elevated neutron dose rates around the transfer cask (TC) during the drain down of the DSC (CRs: 1735024, 1734921, and 1734956). SSES personnel subsequently discovered that the transfer cask neutron shield tank (NST) was not completely filled with water as required to provide complete neutron radiation shielding. SSES performed an apparent cause evaluation of this event and determined that the existing method described in Procedure ME-ORF-023, "Dry Fuel Storage - 61BT DSC," for confirming the NST was full of water was subject to false indications due to air binding. At the time of the event, SSES personnel were utilizing a method that was being used by users of Transnuclear (TN) casks. SSES worked with TN to communicate with the industry on a revised method to verify that the transfer cask neutron shield is filled with water and to determine that the NST was not subject to air binding prior to use.

The inspectors interviewed SSES personnel and reviewed CRs, WOs, and procedures. The inspectors reviewed the Certificate of Compliance, TSs, and the FSAR for the TN cask model TN DSC 61B to verify SSES compliance with the conditions of their general license. The inspectors also reviewed SSES's evaluations and immediate followup actions to verify that SSES implemented appropriate compensatory and corrective actions prior to resuming independent spent fuel storage loading and processing operations.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On January 24, 2014, the inspectors presented the inspection results to Mr. J. Helsel, Plant Manager, and other members of the PPL staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

4OA7 Licensee-Identified Violations

The following Severity Level IV violation was identified by PPL and is a violation of NRC requirements which meets the criteria of Section 2.3.2 of the NRC Enforcement Policy for being dispositioned as an NCV.

10 CFR 55.53(e) requires, in part, that to maintain active status, a licensee shall actively perform the functions of an operator or senior operator on a minimum of seven 8-hour shifts or five 12-hour shifts per calendar quarter and that if a licensee has not been actively performing the functions of an operator or senior operator, the licensee may not resume activities authorized by a license issued except as permitted by 10 CFR 55.53(f). 10 CFR 55.53(f) requires, in part, that before resumption of licensed functions, an authorized representative of the facility licensee shall certify that: 1) the licensee's qualification and status of the licensee are current and valid; and 2) that the licensee has completed a minimum of 40 hours of shift functions under the direction of an operator or senior operator as appropriate and in the position to which the individual will be assigned. Contrary to the above, between April 1, 2010, and December 31, 2012, prior to allowing 8 licensed SRO and 2 licensed Reactor Operators (RO) to conduct licensed activities, SSES did not properly ensure that the qualifications and status of the SRO or RO licenses were current and valid, regarding each individual meeting the minimum of seven 8-hour or five 12-hour shifts per calendar quarter. Specifically, the operators stood watch as members of a reactivity management team, which is not a credited shift crew position. These watches were incorrectly credited towards meeting their minimum required quarterly proficiency requirements. The facility has properly reactivated those individuals who still have licenses as required by 10 CFR 55.53 (f). This issue was entered in the facility CAP as CR 1658590. Additionally, SSES promptly removed the licensed operators from shift duties and entered the issue into its Corrective Action Program (CR 1658590). To prevent reoccurrence, SSES revised its procedure to identify the shift positions that are creditable for proficiency. The Operators were re-certified to stand shift in accordance with 10 CFR 55.53(f). SSES also communicated lessons learned from this issue to the SSES operations department staff.

This issue was subject to traditional enforcement because it involves operator license conditions and impacts the regulatory process of operator licensing. This issue matches a severity level III example in the NRC enforcement policy. However, after review of the responsibilities of the reactivity management team positions and that none of the operators were responsible for operational errors as a result of not standing the required

number of proficiency watches and there were no other factors impacting their ability to hold a shift position, NRC management has determined this issue to be more appropriately evaluated as a severity level IV.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

S. Davis, Emergency Preparedness Manager
B. Fransen, GM Operations
C. Goff, Training Manager
J. Helsel, Plant General Manager
J. Jennings, Regulatory Affairs Supervisor
D. Karchner, Refuel Floor Manager
J. Mertz, Mechanical Engineering Supervisor
T. McAndrew, Dry Cask Foreman
F. Mercer, Radiation Protection Technician
I. Missien, Senior Emergency Preparedness Coordinator
G. Merenich, Radiation Protection Instrument Foreman
S. Muntzenberger, NSSS Engineering Supervisor
M. Murphy, EFIN Supervisor
B. O'Rourke, Licensing Engineer
E. Ortuba, Health Physicist
S. Peterkin, Radiation Protection Manager
T. Rausch, Senior Vice President and CNO
R. Rodriguez-Gillroy, Radiation Operations Supervisor
J. Scranton, LLRT Program Engineer
R. Shopko, RP Lead Technician
S. Sienkiewicz, Program/Components Engineering Supervisor
J. Tripoli, Manager - NRA
G. Walker, RP Lead Technician

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened
None

Opened/Closed

05000387/2013005-01	NCV	Inadequate Procedural Guidance for Responding to an Internal Flooding Event in ECCS Rooms (1R06)
05000387/2013005-03	NCV	Missed Technical Specification Surveillance for Secondary Containment Drawdown Testing (1R22)
05000387;388/2013005-04	NCV	Inadequate Instrumentation to Implement EALs for Fission Product Barrier Degradation (1EP6)

Closed		
05000387;388/2012002-03	URI	Installed Instrumentation Necessary for EAL Declaration (1EP6)
05000387/2012-003-00	LER	Unit 1 Secondary Containment Bypass Leakage Exceeded (4OA3)
05000387/2012-003-01	LER	Unit 1 Secondary Containment Bypass Leakage Exceeded (4OA3)
05000387/2012-001-01	LER	Two Control Room Floor Cooling Systems Inoperable (4OA3)
05000387/2012-006-00	LER	Unit 1 'D' Outboard Main Steam Isolation Valve Leakage – 2012 (4OA3)
05000387/2012-006-01	LER	Unit 1 'D' Outboard Main Steam Isolation Valve Leakage – 2012 (4OA3)
05000387/2010-004-00	LER	Unit 1 'D' Outboard Main Steam Isolation Valve Leakage – 2010 (4OA3)
05000388/2012-002-01	LER	Unit 2 Manual Scram due to Loss of the Integrated Control System (4OA3)
05000387/2013-002-00	LER	Unit 1 Manual Scram Due to Failure of the EHC 'B' Pressure Setpoint Potentiometer (4OA3)
05000387/2013-001-00	LER	DG 'B' to Bus '2B' Synchronizing Selector Switch Failure (4OA3)
05000387/2013-001-01	LER	DG 'B' to Bus '2B' Synchronizing Selector Switch Failure (4OA3)

LIST OF DOCUMENTS REVIEWED

(Not Referenced in the Report)

Section IR01: Adverse Weather Protection

Procedures:
ON-000-002, "Severe Weather/Natural Phenomena," Revision 32
NDAP-00-0030, "Severe Weather/Natural Disaster Preparation," Revision 5
NDAP-00-0024, "Winter Operations Preparations," Revision 20
NDAP-00-0024, "Winter Operation Preparations," Revision 20
OP-185-001, "Freeze Protection System," Revision 14
OP-285-001, "Freeze Protection System," Revision 13

Condition Reports:
1628452, 1575207, 1653772, 1575209, 2013-02738, 2013-02345, 2013-04197, 2013-04070, 2013-04734, 2013-04152, 2013-03462, 2013-01492, 2013-04152, 2013-02738, 2013-02345, 2013-04197, 2013-04070, 2013-04734, 2013-06450

Action Requests:
2013-03462, 2013-01492

Section 1R04: Equipment Alignment

Procedures:
OP-152-001, HPCI System, Revision 51
DBD004, "Design Basis Document for HPCI System, Revision 5
OP-024-001, "DGs," Revision 69
CL-024-0017, "DG 'D' Electrical," Revision 12
CL-024-0018, "DG 'D' Mechanical," Revision 9
OP-150-001, "RCIC System," Revision 39
SO-150-001, "Monthly RCIC Alignment Check," Revision 16
OP-102-001, "125V DC System," Revision 24

Condition Reports (*NRC identified):
2013-03015*, 2013-03011*, 2013-03020*, 2013-03009*, 2013-03018*, 2013-06439

Drawings:
M-2155, Sheet 1, "Unit 2 P&ID HPCI," Revision 43
M-2156, Sheet 1, "Unit 2 P&ID HPCI Turbine – Pump," Revision 30
M-108, Sheet 2, "Condensate and Refueling water Storage," Revision 55
M-151, Sheet 1, "Unit 1 P&ID RHR," Revision 68
M-151, Sheet 2, "Unit 1 P&ID RHR," Revision 53
M-150, "Unit 1 P&ID RCIC Turbine-Pump," Revision 33
M-149, "Unit 1 P&ID Reactor Core Isolation Cooling," Revision 50
E-420, "Units 1 and 2 General Arrangement Battery Room," Revision 11
C-804, "Project Civil Standards Typical Details Embedment Details," Revision 26

Section 1R05: Fire Protection

Procedures:
NDAP-QA-0445, "Fire Brigade," Revision 11
FP-213-277, Pre-Fire Plan, EHC Pump Room," Revision 5
FP-013-170, Pre-Fire Plan, Equipment and Battery Rooms, Unit 2 West Side," Revision 3
SI-013-200, "Annual Functional Test, Fire Zones 0-21A, 0-25A, 0-27A, 0-28A-II, 0-29A, 0-30A," Revision 3

Condition Reports (*NRC identified):
2013-00447, 2013-00455

Drawings:
E-205961, Sheet 1, "Unit 2 RB Fire Zone Plan, Elevation 749'-1"," Revision 15
E-205961, Sheet 2, "Unit 2 RB Fire Doors and Fire Dampers, Elevation 749'-1"," Revision 10
E-205961, Sheet 3, "Unit 2 RB Fire Protection Plan, Elevation 749'-1"," Revision 9

E-205961, Sheet 4, “Unit 2 RB Fire Detector Location Plan, Elevation 749’-1” to 779’-1”,” Revision 8
E-205961, Sheet 1A, “Unit 2 Fire Zone Partial Plan, Elevation 749’-1”, Revision 0
E-205952, Sheet 1, “Unit 1 RB Fire Zone Plan, Elevation 719’-1”,” Revision 12
E-205952, Sheet 2, “Unit 1 RB Fire Doors and Fire Dampers, Elevation 719’-1”,” Revision 9
E-205952, Sheet 3, “Unit 1 RB Fire Doors and Fire Protection Plan, Elevation 719’-1”,” Revision 11
E-205952, Sheet 4, “Unit 1 RB Fire Doors and Fire Detector Location Plan, Elevation 719’-1”,” Revision 7
E-205953, Sheet 1, “Unit 1 RB Fire Zone Plan, Elevation 749’-1”,” Revision 11
E-205953, Sheet 2, “Unit 1 RB Fire Zone Plan, Elevation 749’-1”,” Revision 9
E-205953, Sheet 3, “Unit 1 RB Fire Zone Plan, Elevation 749’-1”,” Revision 9
E-205953, Sheet 4, “Unit 1 RB Fire Zone Plan, Elevation 749’-1”,” Revision 7
E-205993, Sheet 1, “Units 1 and 2 Control Structure Fire Zone Plan, Elevation 771’-0”, Revision 11
E-205993, Sheet 2, “Units 1 and 2 Control Structure Fire Doors and Fire Dampers, Elevation 771’-0”, Revision 12
E-205993, Sheet 3, “Units 1 and 2 Control Structure Fire Protection Plan,” Elevation 771’-0”, Revision 5
E-205993, Sheet 4, “Units 1 and 2 Control Structure Fire Detector Location Plan,” Elevation 771’-0”, Revision 5

Miscellaneous:
SSES Fire Protection Review Report, Units 1 and 2, Revision 10
EC-013-1823, “Evaluation of the Acceptability of Protection Safe Shutdown Required Raceway E2KU99 in Fire Zone 2-5A-N With a 1-Hour in Lieu of a 3-Hour Fire Rated Barrier

Section 1R06: Flood Protection Measures

Procedures:
ON-169-002, “Flooding in the Reactor Building,” Revision 7
EO-000-104, “Secondary Containment Control,” Revision 10
OP-AD-001, “Standards for Shift Operations,” Revision 54

Condition Reports (*NRC identified):
2013-06417*, 2013-02099*, 2013-01091*

Drawings:
C-2725, “Unit 1 Reactor Building Station Flood Barrier Plan,” Elevation 645’-0”, Revision 3

Miscellaneous:
EC-FLOD-1001, “Evaluation of Response 6 INPO ER 1H, Recommendation 314 For Station Flooding,” Revision 2
EC-076-1001, “Seismic Qualification Bases for Type 280E Flood Detectors,” Revision 3
EC-RISK-0539, “Internal Flooding Analysis,” Revision 2
EC-FLOD-0500, “Evaluate Maximum Flood Depth in Reactor Building Piping/Penetration Room on Elevation 683’,” Revision 4

Section 1R7: Heat Sink Performance

Procedure:
NDAP-QA-0504, "Heat Exchange Program," Revision 5

Miscellaneous:
Specification M-1453, "Heat Exchanger Tube Plugging," Revision 8

Section 1R11: Licensed Operator Requalification Program

Procedures:
OP-242-001, "Circulating Water System and Cooling Tower Operation," Revision 63
ON-142-003, "Cooling Tower Screen Plugging," Revision 4
ON-155-004, "RPIS Failure," Revision 22
NDAP-QA-0300, "Conduct of Operations," Revision 34
NDAP-QA-0723 PPL Susquehanna NRC Operator License and Medical Notification Process Revision 3, September 25, 2013
NTP-QA-31.2 Licensed Operator Requalification Program Implementation Revision 16, August 31, 2012
NTP-QA-31.10 Simulator Performance Evaluation Revision 5, November 11, 2012
NTP-QA-31.1 Operator Requalification Examination Preparation and Implementation Revision 9, September30, 2013
OI-AD-044 Return to Shift Duty / Job Promotion (Operator Qualification) Revision 33, August 12, 2013
NTP-QA-71.2 Scenario Based Testing Revision 1, November 26, 2012

Condition Reports:
2013-05082, 2013-05083

Miscellaneous:
Self-Assessment / Benchmarking Repot Pre NRC 71111.11 Inspection
Remediation Documentation 2012 Biennial Written Failure
Remediation Documentation 2012 Annual Examination Failures
SSES-5501 Simulator To Reference Plant Comparison at Intermediate Power August 3, 2013
SSES-5310 Simultaneous Closure of MSIVs with Stuck Open Safety July 30, 2013
SSES-5308 Maximum Size RCS Rupture with LOOP July 30, 2013
SSES-5302 Simultaneous Trip of All Feedwater Pumps July 28, 2013
SSES-5305 Single Recirculation Pump Trip August 4, 2013
PTR060908 Plant Event Review – Trip of 1B Reactor Recirculation Pump August 6, 2013
Scenario Based Test # 308, October 19, 2013
Scenario Based Test # 514, August 23, 2013
Scenario Based Test # 608, August 23, 2013

Section 1R12: Maintenance Effectiveness

Procedures:
SE-070-011, "24 Month Secondary Containment Drawdown and Leakage Surveillance Test Zones I, II, and III," Revision 13 – Revision 15
SE-034-0015, "Recirculation System and SGTS Flow rates After Reactor Building Zone(s) Isolation," Revision 2
NDAP-QA-0321, "Secondary Containment Integrity Control," Revision 13

NDAP-QA-0752, "Cause Analysis," Revision 17
TP-070-013, "Secondary Containment Drawdown Test Zones 1, 2, and 3 – Railroad Bay Door Open," Revision 1
NDAP-QA-0722, "Surveillance Testing Program," Revision 24

Condition Reports (*NRC identified):
2013-02363, 2013-02233, 2013-01504, 2013-03891*, 1644307, 1713177, 1643675, 1727394, 1733588, 1738970, 1724394, 2013-05915*, -2013-06412*, 2013-03891*, 2013-02233, 1460362, 2013-04462, 2013-02363, 2013-01504, 2013-05965, 2013-05967, 2013-05970, 2013-05979, 2013-05981, 2013-05982, 2013-05984, 2013-05985, 2013-05987, 2013-05771, 2013-05772, CR-013-05773, 2013-05673, 2013-04715, 2013-06385, 2013-06245

Action Requests:
2013-02275, 2013-02565, 2013-03895, 2013-00694, 2013-00696, 2013-02553, 2013-02275, 2013-02565, 2013-02895, 2013-05550, 2013-05901, 2013-06311

Calculations:
EC-070-0526, "SGTS Drawdown Analysis," Revision 2

Miscellaneous:
Maintenance Rule Basis Documents, System 82, "Bypass System," Revision 1
Maintenance Rule Basis Documents, System 93, "Main Turbine," Revision 3
Maintenance Rule Basis Documents, System 93L, "EHC," Revision 0
Trimester System Health Scorecard, Systems 193 and 182, 193L, 293 and 282, and 293L, Revision 2 dated April 29, 2013
LDCN-5102, "Railroad Bay Alignment Testing Requirement for TS Bases 3.6.4.1

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures:
NDAP-QA-1902, "Integrated Risk Management," Revision 13
SO-024-013, "Offsite Power Source and Onsite Class 1E Operability Test," Revision 20

Condition Reports (*NRC identified):
2013-05775, 2013-006304*

Action Requests (*NRC identified):
2013-04020*

Miscellaneous:
Protected Equipment Clearance Order 03-002, "T-10 Outage Week of October 21, 2013"

Section 1R15: Operability Evaluations

Procedures:
SO-149-015, "RHR Two Year RPI Checks," Revision 15
SO-149, B05, "Quarterly RHR Loop B Valve Exercising," Revision 17
SO-149-B02, Quarterly RHR Loop B Flow Verification," Revision 23

Condition Reports (*NRC identified):
1753597, 1753503, 1753092, 1753286, 1724393, 1727308*, 1724618, 1724394, 2013-03351, 2013-03352, 2013-03330, 2013-03219, 2013-03317, 2013-03219,

Action Requests:
1753462, 1724528, 1726346, 1724819, 1724820, 1724821, 1724822, 1724831, 1724832, 1753586, 594677

Drawings:
M-2111ABD, "Unit 2 Analysis Boundary Diagram ESW System," Revision 5
M-2111, "Unit 2 P&ID ES System 'A' Loop," Revision 45
HRC-202-1, "Unit 2 Isometric – Reactor Building ESW," Revision 4

Miscellaneous:
50.59 SD 01408, "Thermal Limits Assessment for CR-1724393," Revision 0
PPL 50.59 Resource Manual, Revision 6

Section 1R18: Permanent Plant Modifications

Condition Reports (*NRC identified):

Action Requests:
1642789, 1642807

Miscellaneous:
Final Safety Analysis Report (FSAR) Section 3.5.1.3, Turbine Missiles
CT-27332, Siemens Safety Evaluation, Revision 2
CT-27495, Siemens Turbine Missile Probability Report for Susquehanna Unit 1, dated March 30, 2004
DPECR-6000069000, Siemens Exhaust Hood Replacement Design Analysis, Revision C
Engineering Change Packages, EC-093-1064,EC-093-1036, EC-093-1023, EC-093-1016
Specification M-1549, The Replacement of the Main Turbine with a More Efficient Design, Revision 4

Section 1R19: Post-Maintenance Testing

Procedures:
SO-149-B05, "Quarterly RHR Loop B Valve Exercising," Revision 19
SO-149-B02, "Quarterly RHR System Flow Verification Division II," Revision 23
SO-030-B03, "Quarterly Control Structure Chilled Water Flow Verification Loop B," Revision 22
SO-149-015, "RHR Two Year RPI Checks," Revision 15
SO-149-B05, "Quarterly RHR Loop B Valve Exercising," Revision 17
SO-149-B02, Quarterly RHR Loop B Flow Verification," Revision 23
SO-152-002, "92-Day Flow Verification – HPCI," Revision 55
SE-070-011, "24 Month Secondary Containment Drawdown and Inleakage Surveillance Test Zones I, II, and III," Revision 15

Condition Reports (*NRC identified):
1753299, 1752642, 1752275, 1746070, 1749742, 750043, 2013-06005

Action Requests:
1753586, 1762689, 1762688, 1753586, 1434612, S84730

Miscellaneous:
PSP-29, "Post-Maintenance Testing Matrix," Revision 16

Section 1R22: Surveillance Testing

Procedures:
SO-151-B02, "Quarterly Core Spray Flow Verification Division II", Revision 20
SO-024-001A, "Monthly DG 'A' Operability Test," Revision 20
TP-054-076, "ESW Flow Balance," Revision 10

Condition Reports (*NRC identified):
2013-00958, 1727803, 1760138, 05775, 2013-06141

Action Request:
AR-1697321

Section 1EP2: Alert and Notification System Testing

Procedures:
EP-AD-007, Alert Notification System Annual Test – American Signal Corporation Sirens, Revision 6
EP-AD-011, Alert Notification System – American Signal Corporation Sirens, Revision 8
EP-AD-018, ANS Problem Solving - American Signal Corporation Sirens, Revision 5

Miscellaneous:
Susquehanna Steam Electric Station Emergency Plan, Revision 55
Susquehanna Nuclear Power Station, Siren Alert Notification System Design Evaluation, Final Report, dated September 2008
Letter from FEMA Region III to Pennsylvania Emergency Management Agency, Regarding Backup ANS for Susquehanna Steam Electric Station Emergency Planning Zone, dated November 28, 2012
ANS Maintenance Records, January 2012 – November 2013
ANS Testing Records, January 2012 – November 2013

Section 1EP3: Emergency Preparedness Organization Staffing and Augmentation System

Procedures:
EP-AD-005, SSES Drill and Exercise Program, Revision 17
EP-AD-025, Pager Test Analysis, Revision 0
EP-AD-028, Training of Emergency Planning Personnel, Revision 3
EP-AD-031, NERO Succession Planning, Revision 2

Miscellaneous:
Susquehanna Steam Electric Station Emergency Plan, Revision 55
Susquehanna Steam Electric Station On-Shift Staffing Analysis Report, Revision 0
Nuclear Department NERO Personnel On-Call/Call-Out List, dated October 11, 2013

Monthly NERO Call-In Drill Reports January – November 2013
2012 Unannounced EP Drill Report, August 9, 2012

Section 1EP5: Maintenance of Emergency Preparedness

Procedures:
EP-AD-019, Nuclear Emergency Planning Offsite Program, Revision 9
EP-00-006, Inventory Inspection and Operational Testing of Emergency Equipment and Supplies, Revision 0
EP-TP-005, Coordinated Offsite Organization Response to Plant Events, Revision 2
EP-TP-007, Equipment Important For Emergency Plan Implementation, Revision 6

Condition Report:
1746612

Action Requests:
1339438, 1666262, 1666262, 1704822, 1541932, 1555280, 1668524, 1669664, 1739135, and 1748254

Miscellaneous:
Susquehanna Steam Electric Station Emergency Plan, Revision 55
Nuclear Oversight Independent Assessment Basis Document, Emergency Preparedness, dated January 17, 2013
Quality Assurance Internal Audi Report, Emergency Preparedness Audit 1344052

Section 1EP6: Drill Evaluation

Procedures:
EP-TP-001, EAL Classification Levels, Revisions 5, 6, and 7
EP-RM-004, EAL Classification Bases, Revision 0

Condition Reports:
CR 678779, CR 1541912, CR 1727229

Miscellaneous:
Susquehanna Steam Electric Station Emergency Plan, Revision 55
BWR Owners' Group Emergency Procedure and Severe Accident Guidelines, Revision 0
PPL Submittal to NRC, PLA-5632, Susquehanna Steam Electric Station Revision to EALs, dated October 27, 2003
NRC Response to PPL, Safety Evaluation Report, Susquehanna Steam Electric Station, Units 1 and 2 – Proposed Revision to EALs, dated July 21, 2004

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures:
HP-TP-073, Notification of Plant Evolutions and Expected HP Actions, Revision 21
HP-TP-310, Barricading, Posting, and Labeling, Revision 40
HP-TP-311, Locking and Key Control, Revision 34
HP-TP-602, Free Release Surveys, Revision 30
HP-TP-720, Airborne Concentration Sampling and Evaluation, Revision 38
NDAP-QA-0627, Radioactive Contamination Control, Revision 34

Audits, Self-Assessments, and Surveillances:
AR-1673113 – MSIV Work, Continental Field Services – January 24, 2013
AR-1705918 – Health Physics CAP – 8/2/2013
AR-1712271 – Free Release Procedure – 6/30/2013

Condition Reports:
1548465, 1597849, 1734958

RWPs/ALARA Reviews:
20132324, 20132320, 20132370, 20132001, 20132002, 20132003, 20132009, 20132017

Section 2RS2: ALARA Planning and Controls

Procedures:
NDAP-QA-1191, ALARA Program and Policy, Revision 20
HP-AL-400, RWP ALARA Reviews and Evaluations, Revision 17

RWPs/ALARA Reviews:
20132009, 20132122, 20132324, 20132370, 20132372

Condition Reports:
1552949, 1692696, 1718021, 2013-07306*, 2013-07307, 2013-03323*, 2013-02230, 2013-05789, 2013-05090, 2013-06608*, 2013-06996*, 2013-05753*, 1720033, 1719731, 2013-02736, 2013-05620

Action Requests:
1725030, 1722713,

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

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

Condition Reports:
1535382, 1535384

Section 4OA1: Performance Indicator Verification

Procedures:
PL-NF-06-002, “SSES Mitigating System Performance Index Basis Document,” Revision 7
NDAP-QA-0737, “Reactor Oversight Process (ROP) Performance Indicators,” Revision 12
TP-054-106, “ESW Pump B Test of EC 1305801, 4 kV Breaker Modification,” Revision 1
TP-054-108, “ESW Pump D Test of EC 130580, 4 kV Breaker Modification, Revision 2
SE-124-207, “Unit 1 Division II Diesel Generator LOCA Loop Test,” Revision 22
EP-AD-022, Nuclear Emergency Planning Performance Indicators, Revision 3

Condition Reports (*NRC identified):
1527190, 1636408, 1658925, 1636409

Action Requests:
1519893, 1636410, 1517330, 1679364, 1517815, 1568925, 1551282

Miscellaneous:
DEP PI data, October 2012 – September 2013
ERO Drill Participation PI data, October 2012 – September 2013
ANS Reliability PI data, October 2012 – September 2013

Section 4OA2: Identification and Resolution of Problems

Procedures:
NDAP-QA-0405, "Station Health Committee," Revision 1
NFPM-QA-1170, "Through-Wall Leakage in Class 3 Rain Water Systems," Revision 2
NDAP-QA-0400, Conduct of Station Engineering, Revision 6
NDAP-QA-0412, Leakage Rate Test Program, Revision 16
NDAP-QA-0415, Susquehanna Preventive Maintenance (PM) Program, Revision 1
NSE-DTG-003, Station Engineering Desktop Guide #3, Component/System Monitoring and Trending, Revision 0
NSEP-AD-0001, Station Engineering Business Conduct, Revision 17
SE-159-024, LLRT of Main Steam Line Isolation Valves Penetration Number X-7D, Revision 15
SE-159-024, LLRT of Main Steam Line Isolation Valves Penetration Number X-7D, Revision 16

Condition Reports (*NRC identified):
1753603, 2013-00168*, 736823, 1722260, 2013-03333, 2013-00286, 2013-02113, 2013-01843, 013-01700, 2013-07307*, 2013-07306*, 2013-05751, 2013-01959, 2013-03009, 2013-08983, 2013-02499, 2013-07294*, 013-05474, 1704034, 2013-00241, 2013-05731, 2013-05112*, 1389530, 1496608, 1496616, 1497012, 1517515, 1517545, 1549115, 1554813, 1582747, 1595502, 1595514, 1595521, 1595522, 1595757, 1598142, 1609375, 1609387, 1613224, 1616004, 1622373, 1622391, 1622397, 1622402, 1622404, 1622411, 1622417, 1673095, 2013-02365*, 2013-02517*, 2013-02532*

Action Requests:
2013-03148, 1723534, 1723534, 1720011, 2013-05618, 1731875, 1711367, 1733488, 1713030, 1711367, 1528174, 1464275

Work Orders:
RTSV 1448481
RTSV 1448704
RTSV 1448706
RTSV 1448707

Calculations:
EC-PIP-16229, "HRC 106-1 Pipe Leak Minimum Wall Thickness Evaluation," Revision 0
EC-059-1020, Administrative Limits for 10 CFR 50, Appendix J Option B, Revision 0

Drawing:
FF62069, 26" Atwood & Morrill Main Steam Isolation Valve, Revision 2

Miscellaneous:
Station Health Committee Meeting Agenda for Meeting 2013-1219
Susquehanna Station Quarterly Trend Report for Quarter 3Q13, 2Q13, and 1Q13
Susquehanna Performance Metrics dated October, 2013
Operational Excellence Management Review Meeting Agenda for December 13, 2013

SSES Nuclear Oversight Station Summary Report – May through August, 2013, PLI 95440
OpESS 2012-02, "TS Interpretation and Operability Determination," Revision 1
Hot Box 13-30, "Review Surveillance Requirements as Part of the Operability Determination Process"
SSES Updated FSAR, Revision 64.
SSES Unit 1 and Unit 2 MSIV LLRT Trend data dated March 2001 to March 2012
Training Lesson Plan AD281, Justification of Interim Operation – Operability and Functionality Processes dated July 23, 2012
SSES Units 1 and 2 SCBL Leak Rate Test Data from March 2001 to March 2013
SSES Unit 1 Refueling Outage 17, 10 CFR 50, Appendix J Leakage Test Results

Section 4OA3: Event Followup

Condition Reports:
1609375, 1707587, 1684872, 1572658, 1590506, 1609387, 1672421, 1609377, 1591827, 1640540, 1703293, 1736823, 1723537, 1735790, 1704034, 1717587

Action Request:
1613224

Section 4OA5: Other Activities

Procedure:
ME-ORF-179, Dry Fuel Storage Equipment List and Reference Information, Revision 11

Condition Reports:
1734921, 1734956, 1734958, 1735024, 2013-01883, 2013-01925, 2013-02030, 2013-02031

Work Orders:
1231879, 1473020, 1473025

Evaluations:
DFS Cask #72 Neutron Shield Apparent Cause Evaluation Report (CR 1734956), Revision 3
DFS Cask #72 Neutron Shield Susquehanna Error Prevention Team Assessment Report (CR 1734956 Maintenance SEPTA), Revision 0
DFS Cask #72 Neutron Shield Susquehanna Error Prevention Team Assessment Report (CR 1735024 RP SEPTA), Revision 0 and Revision 1
Formal Stop Work Human Performance Event Evaluation (CR 1735024), Revision 0

Miscellaneous:
ME-ORF-023, Dry Fuel Storage - 61BT DSC, performed August 17, 2013
ME-ORF-179 Attachment E, Transfer Cask Neutron Shield Filling, performed August 10, 2013
NDAP-00-0752-8, Operating Experience Review, dated August 12, 2013
PCWO 1231879, 2013 Dry Fuel Storage Project: Load Canister #72, performed August 20, 2013
RWP 2013-0200, Dry Fuel Storage Activities on the Refuel Floor, Revision 1
Susquehanna SES – Area Survey Map (U1 Equipment Pit), dated August 9, 2013 and August 10, 2013
Transnuclear Technical Bulletin ID 2013-428, dated August 26, 2013

LIST OF ACRONYMS

AC	Alternating Current
ADAMS	Agencywide Document and Access Management System
ALARA	As Low As Is Reasonably Achievable
ANS	Alert Notification System
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
CS	Core Spray
CV	Control Valve
DC	Direct Current
DSC	Dry Shielded Canister
EAL	Emergency Action Level
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EHC	Electrohydraulic Control
ENS	Emergency Notification System
EPD	Electronic Personal Dosimeter
EOP	Emergency Operating Procedure
ERF	Emergency Response Facility
ERO	Emergency Response Organization
ESW	Emergency Service Water
ESSW	Engineered Safeguards Service Water
FEMA	Federal Emergency Management Agency
HPCI	High Pressure Coolant Injection
HuP	Human Performance
ICS	Integrated Control System
IR	NRC Inspection Report
JPM	Job Performance Measures
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LHGR	Linear Heat Generation Rate
LLRT	Local Leak Rate Test
MCPR	Minimum Critical Power Ratio
MSIV	Main Steam Isolation Valve
NCV	Non-Cited Violation
NDE	Non-destructive Evaluation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
NSIR	Nuclear Security and Incident Response
NST	Neutron Shield Tank
PI&R	Problem Identification and Resolution
PMT	Post-Maintenance Test
PPL	PPL Susquehanna, LLC
RBCCW	Reactor Building Closed Cooling Water
RCIC	Reactor Core Isolation Cooling
RFCF	Recirculation Flow Controller Failure

RG	[NRC] Regulatory Guide
RHR	Residual Heat Removal
RTP	Rated Thermal Power
SBGT	Standby Gas Treatment
SBLC	Standby Liquid Control
SCBA	Self-Contained Breathing Apparatus
SCBL	Secondary Containment Bypass Leakage
SDP	Significance Determination Process
SPAR	Standardized Plant Analysis Risk
SRO	Senior Reactor Operator
SSC	Structures, Systems and Components
SSES	Susquehanna Steam Electric Station
TN	Transnuclear
TRM	Technical Requirements Manual
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VHRA	Very High Radiation Areas
WBC	Whole Body Count
WO	Work Order