



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
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February 3, 2010

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 05000387/2009005 AND 05000388/2009005

Dear Mr. Rausch:

On December 31, 2009, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Susquehanna Steam Electric Station Units 1 and 2. The enclosed integrated inspection report presents the inspection results, which were discussed on January 29, 2010, with you and other members of your staff.

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

This report documents two NRC-identified findings of very low safety significance (Green). One finding was determined to involve a violation of NRC requirements. Additionally, one licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. However, because of the very low safety significance and because they are entered into your correction action program (CAP), the NRC is treating these findings as non-cited violations (NCVs), consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Susquehanna Steam Electric Station. In addition, if you disagree with the characterization of the cross-cutting aspect of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at Susquehanna Steam Electric Station. The information you provide will be considered in accordance with Inspection Manual Chapter (IMC) 0305.

In accordance with 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 document 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,



Paul G. Krohn, Chief
Projects Branch 4
Division of Reactor Projects

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

Enclosures: Inspection Report 05000387/2009005 and 05000388/2009005
Attachment: Supplemental Information

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Sincerely,
/RA/
 Paul G. Krohn, Chief
 Projects Branch 4
 Division of Reactor Projects

Docket Nos. 50-387; 50-388
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U.S NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-387, 50-388

License No: NPF-14, NPF-22

Report No: 05000387/2009005 and 05000388/2009005

Licensee: PPL Susquehanna, LLC

Facility: Susquehanna Steam Electric Station, Units 1 and 2

Location: Berwick, Pennsylvania

Dates: October 1, 2009 through December 31, 2009

Inspectors: F. Jaxheimer, Senior Resident Inspector
P. Finney, Resident Inspector
A. Rosebrook, Senior Project Engineer
E. Torres, Project Engineer
J. Caruso, Senior Operations Engineer
J. Furia, Senior Health Physicist
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Approved By: Paul G. Krohn, Chief
Projects Branch 4
Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000387/2009005, 05000388/2009005, 10/01/2009 – 12/31/2009; Susquehanna Steam Electric Station, Units 1 and 2; Fire Protection, Licensed Operator Requalification Program.

The report covered a 3-month period of inspection by resident inspectors and announced inspections by regional reactor inspectors. One Green non-cited violation (NCV) and one Green finding (FIN) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Cross-cutting aspects associated with findings are determined using IMC 0305, "Operating Reactor Assessment Program," dated August 2009. Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green: The inspectors identified a Green NCV of the Susquehanna Operating License Conditions 2.C.(6) and 2.C.(3), Fire Protection, for Units 1 and 2 respectively, for inadequate assessment of fire brigade response times during an unannounced drill. PPL is required to implement and maintain in effect all provisions of the approved fire protection program as described in its Fire Protection Review Report (FPRR). That report states that fire brigade drills, at a minimum, shall assess response time among other aspects. Contrary to this, the fire brigade response time was not adequately assessed during an unannounced drill on November 16, 2009. This issue was entered into PPL's CAP as CR 1226464 and future drills were to have response time requirements.

This finding is more than minor since unaddressed fire brigade deficiencies have the potential to result in a more significant safety concern. In addition, this finding is associated with the protection against external events (fire) attribute of the Mitigating Systems cornerstone and impacts its objective of ensuring the availability, reliability and capability of systems, such as the fire brigade, that respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance (Green) in accordance with NRC IMC 0609, Appendix M, because the other elements of the defense in depth concept for fire events remained effective, area combustible loading limits were not exceeded, installed fire detection systems were functional, and alternate means of safe shutdown were not impacted. This finding was determined to have a cross-cutting aspect in the area of Problem Identification and Resolution, Self and Independent Assessment, because PPL did not conduct self-assessments that were of sufficient depth, appropriately objective, and self critical [P.3(a)]. Specifically, the PPL self-evaluation of fire brigade performance identified timeliness issues but was not of sufficient depth or appropriately self-critical to address the significance of brigade response time. (Section 1R05)

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- Green: The inspectors identified a Green finding in that greater than 20 percent of the NRC annual operating examination simulator scenarios reviewed did not meet the quantitative standard for total malfunctions, 4 to 8 for a single scenario, and 10 to 14 for a scenario set established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Form ES-604-1, "Simulator Scenario Review Checklist." In addition, PPL's procedures NTP-QA-31.11, "Operator Requalification Examination Preparation and Implementation" and NTP-QA-31.7, "Simulator Scenario Writers Guides," recommend these same quantitative standards. The quantitative guidelines for malfunctions are an important metric because it establishes an objective standard used throughout the nuclear industry to ensure that the simulator portion of the NRC-required annual operating exams are written at an appropriate level of difficulty. As an immediate corrective action, PPL entered this finding into their CAP (CR 1187760).

This finding is more than minor because it is associated with the Human Performance attribute of the Mitigating Systems cornerstone and affected the objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, the finding affected the level of difficulty of simulator operating examinations which potentially impacted PPL's ability to appropriately evaluate licensed operators. A review of the possible cross-cutting aspects was performed and no cross-cutting aspect was identified that would be considered a contributor to the cause of the finding. (Section 1R11)

B. Licensee Identified Violations

A violation of very low safety significance, identified by PPL, was reviewed by the inspectors. Corrective actions taken or planned by PPL have been entered into PPL's CAP. This violation and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Susquehanna Steam Electric Station (SSES) Unit 1 began the inspection at the authorized licensed power level of 94.4 percent rated thermal power (RTP). On November 7, power was reduced to 70 percent over 11 hours for a control rod pattern adjustment. On December 3, power was reduced to 70 percent over 33 hours in support of river water makeup (RWMU) pipe repairs on Unit 2. On December 23, power was reduced to 70 percent over 33 hours to support a control rod pattern adjustment. Unit 1 returned to 94.4 percent RTP for the remainder of the inspection period.

Unit 2 began the inspection period at the authorized licensed power level of 94.4 percent RTP. On November 20, power was reduced to 73 percent over 22 hours for a control rod sequence exchange. On December 1, Unit 2 was reduced to 80 percent power over 42 hours in response to a rupture of the RWMU line to the Unit 2 natural draft cooling tower basin. Power was then further reduced, on December 3, to 50 percent over 25 hours to support RWMU line repairs and modifications. Unit 2 returned to 94.4 percent RTP for the remainder of the inspection period.

Note: The licensed RTP for both units is 3952 megawatts thermal. The Extended Power Uprate (EPU) License Amendment for SSES was approved in January 30, 2008, and was implemented for both units in accordance with the issued license conditions. For the current operating cycle, the authorized power level for both units is 94.4 percent of the EPU licensed power limit.

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

a. Inspection Scope

During the week of November 2, 2009, the inspectors reviewed system operations and preparations for extreme cold weather conditions. Plant walkdowns for selected structures, systems, and components (SSCs) were performed to determine susceptibility and the adequacy of PPL's operating procedures. Inspectors reviewed operator actions to address failures of equipment due to freezing and compensatory actions during the adverse, cold weather conditions. Inspectors included a specific review of the reactor building (RB) chilled water and ventilation and heat tracing of onsite water sources and instrumentation lines. The inspectors also reviewed and evaluated considerations in PPL's Maintenance Rule station risk assessment. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Readiness For Impending Adverse Weather

During the week of November 2, 2009, the inspectors evaluated implementation of adverse weather preparation to include procedures and compensatory measures as they relate to high winds. The inspectors toured susceptible plant areas and reviewed associated issues in the CAP for appropriate evaluation and resolution.

- High winds on November 5th and 6th and supplemental decay heat removal (SDHR) components within the high winds evaluation (missile analysis)

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial Walkdown (71111.04Q – 3 Samples)

a. Inspection Scope

The inspectors performed partial walkdowns to verify system and component alignment and to identify any discrepancies that would impact system operability. The inspectors verified that selected portions of redundant or backup systems or trains were available while certain system components were out-of-service (OOS). The inspectors reviewed selected valve positions, electrical power availability, and the general condition of major system components. Documents reviewed are listed in the Attachment. The walkdowns included the following systems:

- Station portable diesel generator and met tower during recovery of onsite 12KV;
- 818' hatch alignment to support dry storage cask (DSC) movement; and
- "B" and "D" emergency diesel generator (EDG) air start systems during air accumulator safety relief valve (SRV) testing.

b. Findings

No findings of significance were identified.

.2 Complete Walkdown (71111.04S – 1 Sample)

a. Inspection Scope

The inspectors performed a detailed review of the alignment and condition of the Ultimate Heat Sink (UHS). The inspectors reviewed operating procedures, checkoff lists, and system piping and instrumentation drawings. Walkdowns of accessible portions of the systems were performed to verify components were in their correct positions and to assess the material condition of systems and components. The inspectors evaluated ongoing maintenance and outstanding CRs associated with the UHS to determine the effect on system health and reliability. The inspectors verified proper system alignment and reviewed system operating parameters. Documents reviewed are listed in the Attachment. The walkdown included the following system:

- ESW and residual heat removal service water (RHRSW) valves that are part of UHS.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Protection – Tours (71111.05Q – 5 Samples)

a. Inspection Scope

The inspectors reviewed PPL's fire protection program to evaluate the specified fire protection design features, fire area boundaries, and combustible loading requirements for selected areas. The inspectors walked down these areas to assess PPL's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. Documents reviewed are listed in the Attachment. The inspected areas included:

- Unit 1, HPCI and reactor core isolation cooling (RCIC) pump rooms, fire area R-1B, Zones 1-1C and 1-1D;
- Unit 1, main steam pipeway, exhaust fan room, Fire Zone 1-4G;
- Unit 2 Division II lower relay room, Division II lower cable spreading room and Division II upper relay room;
- Unit 2, RB 749' and 762' Fire Zones 2-5A-N, -S, -W, 2-5-H; and
- Turbine building heating and ventilation equipment room, Zone 2-36A.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

On November 16, 2009, the inspectors observed an unannounced fire drill conducted in and around the Unit 2 remote shutdown (RSD) panel to evaluate fire brigade performance. The inspectors evaluated whether fire brigade members responded in the appropriate number, correctly donned the proper gear, carried and applied the proper fire protection equipment, and arrived at the scene in a timely manner. Further, the inspectors evaluated the fire brigade leader's command and control as well as communications throughout the fire response organization. Finally, the inspectors observed the drill evaluators' conduct and control during the drill to include the post-drill critique and evaluation against established acceptance criteria. Documents reviewed are listed in the Attachment.

- Unannounced, Operations shift 'A', class "A" fire in the RSD panel room.

b. Findings

Introduction: The inspectors identified a Green NCV for the inadequate assessment of fire brigade response time during an unannounced fire drill, as required by the fire protection program.

Description: On November 16, 2009, the inspectors observed an unannounced fire brigade drill involving a simulated class "A" fire in the Unit 2 Remote Shutdown Panel room in the Reactor Building. The inspectors observed the drill in and around the fire area and noted that eighteen minutes transpired from the time that the fire was announced over the public address system to the time the brigade arrived at the on-scene command post. Further, thirty minutes had transpired from the time of the announcement to the time the brigade entered the fire area. The inspectors observed the post-drill critique and then reviewed the completed drill evaluation forms where inspectors noted that the brigade was passed on the drill despite PPL evaluators noting that certain aspects of the drill were "way too slow."

Section 1.4.3.3.3(f) of the SSES Fire Protection Review Report (FPRR), Revision 18, discusses fire brigade drills and states that "at a minimum, the critique shall assess: (1) fire alarm effectiveness, response time, selection, placement and use of equipment, and (2) the leader's direction of the effort and each member's response." PPL procedure NTP-QA-53.1, Susquehanna Fire Brigade Training Program, Revision 16, step 6.4.10 adds communications and the fire brigade leader's effectiveness to that list as requiring assessment. The same procedure also states that an unannounced fire drill is an evaluation of brigade performance against a prepared scenario and, unlike an announced drill, is not a training exercise.

The drill critique forms, from NTP-QA-53.1, describe that a fire drill will be failed based on either "omission or improper completion of a critical step" or "omission or improper completion of three or more steps under one heading." A comparison of the areas required to be assessed from the FPRR to the critique forms showed that alarm effectiveness, selection, placement and use of equipment, member response, and communications had associated critical steps. However, the inspectors noted that the steps for brigade dress-out times and initial fire attack time did not have established time requirements nor did they have a "yes/no" acceptance criterion as did all other steps. Therefore, response time did not contribute to overall consideration of brigade performance. The inspectors determined that the lack of time requirements or an acceptance criterion was inconsistent with the committed requirements of the FPRR and fire protection program procedures.

An announced fire drill was subsequently conducted on November 18, 2009, in which the fire brigade failed the drill. The inspectors requested and reviewed the drill critique forms for that drill and noted that while the fire brigade satisfied all steps, both critical and non-critical, they still failed the drill. PPL's evaluators determined that the fire brigade had failed due to "excessive time to full dress out." The inspectors determined that this drill failure confirmed that the overall response time is a critical step, warranting failure for improper completion.

Analysis: The inspectors determined that the inadequate assessment of fire response time on November 16, 2009, was a performance deficiency that was more than minor since unaddressed fire brigade deficiencies have the potential to result in a more significant safety concern. Specifically, degraded brigade performance during a real fire

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event may enable a normally extinguished fire to propagate and further challenge the plant's defenses. Additionally, the deficiency was associated with the protection against external events (fire) attribute of the Mitigating Systems cornerstone and impacts its objective of ensuring the availability, reliability, and capability of systems, such as the fire brigade, that respond to initiating events to prevent undesirable consequences. Traditional enforcement does not apply because the issue did not have any actual safety consequence or potential for affecting the NRC's regulatory function and was not the result of any willful violation of NRC requirements or licensee procedures.

The finding was determined to be of very low safety significance (Green) in accordance with NRC IMC 0609 Appendix M, "Significance Determination Process Using Qualitative Criteria," because the other elements of the defense in depth concept for fire events remained effective. More specifically, area combustible loading limits were not exceeded, installed fire detection systems were functional, and alternate means of safe shutdown were not impacted.

This finding was determined to have a cross-cutting aspect in the area of Problem Identification and Resolution, Self and Independent Assessment, because PPL did not conduct self-assessments that were of sufficient depth, appropriately objective, and self-critical [P.3(a)]. Specifically, the PPL self-evaluation of fire brigade performance identified timeliness issues but was not of sufficient depth, or appropriately self-critical to address the significance of brigade response time.

Enforcement: The Susquehanna Operating License Conditions 2.C.(6) and 2.C.(3), Units 1 and 2 respectively, require that PPL implement and maintain all provisions of the fire protection program as described in the FRR for the facility. Section 1.4.3.3.3(f) states that "at a minimum, the critique shall assess: (1) fire alarm effectiveness, response time, selection, placement and use of equipment."

Contrary to the above, during the unannounced fire drill on November 16, 2009, the fire brigade's response time was not adequately assessed and consequently not corrected. Specifically, thirty minutes transpired from the time of the announcement to the time the brigade entered the area yet the brigade was passed for the drill. Because the finding was of very low safety significance and because it was entered into PPL's CAP (1226464), this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy. **(NCV 05000387; 388/2009005-01, Inadequate Assessment of Fire Brigade Response Time to an Unannounced Drill)**

1R06 Flood Protection Measures (71111.06 – 2 Samples)

Internal Flooding

a. Inspection Scope

The inspectors reviewed documents, interviewed plant personnel, and walked down SSCs to evaluate the adequacy of PPL's internal flood protection measures. The inspection focused on verifying that PPL's flooding mitigation plans and equipment were consistent with the design requirements and risk analysis assumptions. The material condition of credited components such as watertight plugs, floor drains, flood detection equipment and alarms were also assessed to determine whether the components were capable of performing their intended function. The inspectors also verified that adequate

procedures were in place to identify and respond to floods. Documents reviewed are listed in the Attachment. The following risk significant areas were reviewed:

- Unit 1, Division II RHR room and Units 1 and 2 turbine building 656'; and
- "A" through "E" EDG rooms and the engineered safeguard service water (ESSW) pump house.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed PPL's program for the as-found and as-left conditions of the heat exchanger. Specifically, the review included a visual inspection of the tubesheet and endplate before and after cleaning as well as a review of eddy current test data. Finally, the inspectors visually inspected and reviewed tube plugging and repairs to flow and mating surfaces associated with the heat exchanger. Documents reviewed are listed in the Attachment. The annual heat sink performance sample included:

- Common, "A" EDG Lube Oil Heat Exchanger 0E506A.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

.1 Biennial Requalification Program Review (71111.11B – 1 Sample)

a. Inspection Scope

The following inspection activities were performed using NUREG-1021, Revision 9, Supplement 1, "Operator Licensing Examination Standards for Power Reactors," Inspection Procedure (IP) Attachment 71111.11, "Licensed Operator Requalification Program," NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance SDP," and 10 CFR 55.46, "Simulator Rule" as acceptance criteria.

A review was conducted of recent operating history documentation found in inspection reports, licensee event reports, the licensee's corrective action program, and the most recent NRC plant issues matrix (PIM). The inspectors also reviewed specific events from PPL's CAP which indicated possible training deficiencies, to verify that they had been addressed appropriately. 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. The documents reviewed are listed in the Attachment.

The inspectors reviewed two 2008 comprehensive biennial written exams, and three sets of simulator scenarios and job performance measures (JPMs) administered during

this current exam cycle (i.e., weeks 3, 4, and 5) to ensure the quality of these exams met the criteria established in the Examination Standards and 10 CFR 55.59.

The week of the inspection, the inspectors observed the administration of operating examinations to one operating crew. The operating examinations consisted of two simulator scenarios and one set of five JPMs administered to each individual.

Conformance with operator license conditions was verified by reviewing the following records:

- Ten licensed operator medical records to confirm all records were complete, that restrictions noted by the doctor were reflected on the individual's license, and that the physical exams were given within 24 months;
- Proficiency watch-standing and reactivation records were complete. A sample of one licensed operator reactivation record and a sample of one quarter of licensed personnel watch-standing documentation were reviewed to ensure time on shift was current and conformed with the requirements of 10 CFR 55; and
- Remediation training records were complete. A sample of one 2008 annual operating crew failure, and two Senior Reactor Operator (SRO) emergency action level (EAL) classification failures (i.e., one for 2008 and one for the current 2009 annual operating exam) were reviewed to ensure that following a licensed operator exam failure the remediation training and retesting was conducted prior to returning the licensed operator to watch standing duties.

Licensee's Feedback System

The inspectors interviewed instructors, training and operations management personnel, and reviewed licensed operator feedback records to ensure the requalification program was meeting the needs of the operators and responsive to their noted deficiencies and recommended changes.

Conformance with Simulator Requirements Specified in 10 CFR 55.46

For the site specific simulator, the inspectors observed simulator performance during the conduct of the examinations, and reviewed discrepancy reports to verify compliance with the requirements of 10 CFR 55.46. The following areas were reviewed:

The inspectors reviewed a sample of simulator tests including transients, steady state operations, core performance tests, and malfunction tests. The inspectors verified that a sample of completed computer simulator problem reports (CSPRs) and action requests (ARs) from the past two-year period effectively addressed each issue. For a listing of the specific simulator tests reviewed see the attachment for a list of documents.

Review of Pass/Fail Rates for Written and Operating Current Exam Cycle for SDP Input

On October 23, 2009, the inspectors conducted an in-office review of PPL requalification examination results. These results included the annual operating tests and the comprehensive written examinations administered this year. The inspection assessed whether pass rates were consistent with the guidance of NRC Manual Chapter 0609,

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Appendix I, "Operator Requalification Human Performance SDP." The inspectors verified that:

- Crew failure rate on the dynamic simulator was less than 20 percent; (failure rate was 0.0 percent);
- Individual failure rate on the dynamic simulator test was less than or equal to 20 percent; (failure rate was 0.0 percent);
- Individual failure rate on the walkthrough test (JPMs) was less than or equal to 20 percent; (failure rate was 1.3 percent);
- Individual failure rate on the comprehensive biennial written examination was less than or equal to 20 percent. (N/A – written examinations were not administered this year); and
- More than 75 percent of the individuals passed all portions of the examinations (98.7 percent of the individuals passed all portions of the examination).

b. Findings

Introduction: A finding of very low safety significance (Green) was identified based on greater than 20 percent of the NRC annual operating examination simulator scenarios reviewed did not meet the quantitative standard for total malfunctions.

Description: As part of the biannual licensed operator requalification training (LORT) program inspection, the inspectors evaluated six of the simulator scenarios that PPL developed to examine licensed operators on the NRC-required annual operating examination. The six scenarios were used, or planned to be used, in weeks 3, 4, and 5 of the examination cycle. Two scenarios administered in a week constitute a set of scenarios. The scenarios reviewed did not meet the quantitative attributes for total malfunctions, 4 to 8 for a single scenario, and 10 to 14 for a scenario set established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Form ES-604-1, "Simulator Scenario Review Checklist." In addition, PPL's procedures NTP-QA-31.11, "Operator Requalification Exam Preparation and Implementation", Revision 3, and NTP-QA-31.7, "Simulator Scenario Writers Guide," Revision 2, recommend these same quantitative standards. The NRC inspectors concluded that week 3 had 8 total malfunctions for the set, week 4 had a total of 7 malfunctions for the set and week 5 had a total of 8 malfunctions for the simulator scenario set. The quantitative guidelines for malfunctions is an important metric because it establishes an objective standard used throughout the nuclear industry for ensuring that the simulator portion of the NRC-required annual operating examinations are written at an appropriate level of difficulty.

All of the scenarios reviewed contained one or more malfunctions that did not require operator actions to correct and, therefore, should not have been counted towards the required number of malfunctions. NUREG-1021, Appendix D. C. 2. b., states to count as a separate malfunction, "they must involve a significant system response and require operator action to correct." NUREG 1021, further states that component or instrument failures that require no operator actions or response to correct the condition do not count toward the recommended total number of malfunctions. Appendix D.C.2, "Quantitative Attributes," states that while ranges are not absolute limitations, a scenario that does not fit into these ranges should be evaluated to ensure the scenario is of an appropriate level of difficulty. PPL's procedure NTP-QA-31.11 contains similar guidance.

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After the NRC inspectors informed PPL management of this issue, week 6 examinations were revised to add additional malfunctions prior to administration. PPL documented this issue in CR 1187760 and initiated corrective actions to revise the simulator scenario writer's guide to add a job aid that will list the malfunctions, so reviewers can ensure that the scenario sets meet the expected number of malfunctions.

Analysis: A performance deficiency was identified in that PPL did not ensure that the simulator scenario sets met the minimum number of malfunctions. Traditional enforcement does not apply because the issue did not have any actual safety consequence or potential for affecting the NRC's regulatory function and was not the result of any willful violation of NRC requirements or licensee procedures. This finding was more than minor because it was associated with the Human Performance attribute of the Mitigating Systems cornerstone and affected the objective of ensuring the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, the finding affected the level of difficulty of simulator operating examinations which potentially impacted PPL's ability to appropriately evaluate licensed operators. The NRC-required annual operating exams are designed to ensure that licensed operators maintain safe standards of knowledge and ability in order to take appropriate safety-related actions in response to actual abnormal or emergency conditions.

Since this is a requalification training issue, the risk importance was evaluated using Appendix I, "Licensed Operator Requalification SDP." Appendix I was entered using the number of scenarios that did not meet the quantitative standard for total malfunctions. Since 100 percent of the scenario sets reviewed did not meet the guidance, Block 25 of Appendix I applies, "Were more than 20 percent of the scenarios in the sample reviewed by the inspector unacceptable based on the criteria of NUREG-1021, Form ES-604-1, Simulator Scenario Review Checklist, and Appendix D, Simulator Testing Guidelines?" Based on this screening criteria, the finding was characterized by the SDP as having very low safety significance (greater than 20 percent unacceptable) or Green.

A review of the possible cross-cutting aspects was performed and no cross-cutting aspect was identified that would be considered a contributor to the cause of the finding.

Enforcement: NRC regulations require that licensed operators pass an annual operating test; the regulations do not specify the quality of examination material. Therefore, no violation of regulatory requirements occurred. Enforcement action does not apply because the performance deficiency did not involve a violation of a regulatory requirement. This issue has been entered into PPL's CAP as CR 1187760. Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as a FIN. (**FIN 05000387; 05000388/2009005-02, Scenarios for NRC Annual Operating Examinations Did Not Meet Quantitative Standard for Total Malfunctions**)

.2 Resident Inspector Quarterly Review (71111.11Q – 1 Sample)

a. Inspection Scope

On October 7, 2009, the inspectors observed licensed operator simulator requalification examinations. The inspectors compared their observations to Technical Specifications (TSs), emergency plan implementation, and the use of system operating procedures. Inspectors reviewed startup data specific to the configuration for the current reactor

cycle. The inspectors also evaluated PPL's critique of the operators' performance to identify discrepancies and deficiencies in operator training. Documents reviewed are listed in the Attachment. The following training was observed:

- Operations crew "E," OP002-305 and -405, simulator activities.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12 – 1 Sample)

a. Inspection Scope

The inspectors evaluated PPL's work practices and followup corrective actions for selected SSC issues to assess the effectiveness of PPL's maintenance activities. The inspectors reviewed the performance history of those SSCs and assessed PPL's extent of condition determinations for these issues with potential common cause or generic implications to evaluate the adequacy of PPL's corrective actions. The inspectors reviewed PPL's problem identification and resolution actions for these issues to evaluate whether PPL had appropriately monitored, evaluated, and dispositioned the issues in accordance with PPL procedures and the requirements of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance." In addition, the inspectors reviewed selected SSC classification, performance criteria and goals, and PPL's corrective actions that were taken or planned, to verify whether the actions were reasonable and appropriate. Documents reviewed are listed in the Attachment. The following system was reviewed:

- Unit 2 containment area radiation monitoring system and the reactor coolant system (RCS) leakage detection instrumentation following questions regarding NRC IN 2005-24, "Non-conservatism in Leakage Detection Sensitivity."

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed the assessment and management of selected maintenance activities to evaluate the effectiveness of PPL's risk management for planned and emergent work. The inspectors compared the risk assessments and risk management actions to the requirements of 10 CFR Part 50.65(a)(4) and the recommendations of NUMARC 93-01, Section 11, "Assessment of Risk Resulting from Performance of Maintenance Activities." The inspectors evaluated the selected activities to determine whether risk assessments were performed when specified and appropriate risk management actions were identified.

The inspectors reviewed scheduled and emergent work activities with licensed operators and work-coordination personnel to evaluate whether risk management action threshold levels were correctly identified. In addition, the inspectors compared the assessed risk

configuration to the actual plant conditions and any in-progress evolutions or external events to evaluate whether the assessment was accurate, complete, and appropriate for the emergent work activities. The inspectors performed control room and field walkdowns to evaluate whether the compensatory measures identified by the risk assessments were appropriately performed. Documents reviewed are listed in the Attachment. The selected maintenance activities included:

- Unit 2, RWMU to Natural Draft Cooling Tower basin pipe rupture.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 – 5 Samples)

a. Inspection Scope

The inspectors reviewed operability determinations that were selected based on risk insights, to assess the adequacy of the evaluations, the use and control of compensatory measures, and compliance with TSs. In addition, the inspectors reviewed the selected operability determinations to evaluate whether the determinations were performed in accordance with NDAP-QA-0703, "Operability Assessments." The inspectors used the TSs, Technical Requirements Manual, Final Safety Analysis Report (FSAR), and associated Design Basis Documents as references during these reviews. The issues reviewed included:

- Unit 1, operability followup and risk evaluation for missed SRV surveillances;
- Units 1 and 2, Main Steam Line flow instruments fail to move with flow changes;
- Seismic monitoring instrumentation inoperability;
- "B" EDG normal voltage regulator failure; and
- Inadvertent start of 2A RHRSW pump from the RSD panel.

b. Findings

No findings of significance were identified

1R18 Plant Modifications (71111.18 – 3 Samples)

Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed temporary plant modifications to determine whether the changes adversely affected system or support system availability, or adversely affected a function important to plant safety. The inspectors reviewed the associated system design bases, including the FSAR, TSs, and assessed the adequacy of the safety determination screening and evaluation. The inspectors also assessed configuration control of the changes by reviewing selected drawings and procedures to verify whether appropriate updates had been made. The inspectors compared the actual installation to the modification documents to determine whether the implemented change was consistent with the approved documents. The inspectors reviewed selected

post-installation or removal test results as appropriate to evaluate whether the actual impact of the change or removal had been adequately demonstrated by the test. Documents reviewed are listed in the Attachment. The following modifications and documents were included in the review:

- Unit 1, equipment drain tank inboard isolation open indication, TEC 1183777;
- Removal of TDM-08206B4/D4 damper gags in ESSW "A" bay; and
- EC 1165801, bypass "E" diesel generator turbocharger overspeed trip.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 – 6 Samples)

a. Inspection Scope

The inspectors observed portions of post-maintenance test (PMT) activities in the field to determine whether the tests were performed in accordance with the approved procedures. The inspectors assessed the test adequacy by comparing the test methodology to the scope of maintenance work performed. In addition, the inspectors evaluated acceptance criteria to determine whether the test demonstrated that components satisfied the applicable design and licensing bases and TS requirements. The inspectors reviewed the recorded test data to determine whether the acceptance criteria were satisfied. Documents reviewed are listed in the Attachment. The PMT activities reviewed included:

- Unit 1, drywell temperature transient during 1B RB chiller PMT;
- Unit 1, RHR loss of offsite power (LOOP) B suppression pool cooling valve yoke-to-actuator stud replacement;
- Unit 1, HPCI system outage window for suction from suppression pool valve;
- Unit 1, "A" drywell sump level indication repairs;
- Unit 2, HPCI equipment room high delta temperature/isolation switch replacement;
- HV-01222A, spray pond bypass valve timing relay replacement.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 – 6 Samples)

a. Inspection Scope

The inspectors observed portions of selected surveillance test activities in the control room and in the field and reviewed test data results. The inspectors compared the test results to the established acceptance criteria and the applicable TS or Technical Requirements Manual operability and surveillance requirements to evaluate whether the systems were capable of performing their intended safety functions. Documents reviewed are listed in the Attachment. The observed or reviewed surveillance tests included:

- Unit 1, RCIC quarterly flow verification and PMT;
- Unit 1, 1B RHRSW direct current control automatic transfer logic test;
- Unit 1, control rod mechanism quarterly functional surveillance;
- Unit 2, functional test of drywell floor drain sump level channels;
- Common, "B" ESW pump logic functional test, SE-054-001B; and
- Common, control room emergency outside air supply (CREOAS) testing in accordance with TP-030-002 (Division I).

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety (OS)

2OS1 Access Control to Radiologically Significant Areas (71121.01 – 7 Samples)

a. Inspection Scope

The inspector reviewed PPL's performance indicators (PIs) for the occupational exposure cornerstone for follow-up.

The inspector reviewed PPL's self-assessments, audits, Licensee Event Reports, and Special Reports related to the access control program since the last inspection. The inspector determined that identified problems were entered into the corrective action program for resolution.

The inspector reviewed corrective ARs related to access controls. The inspector interviewed staff and reviewed documents to determine if the follow-up activities are being conducted in an effective and timely manner commensurate with their importance to safety and risk:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of non-cited violations tracked in the corrective action system; and
- Implementation/consideration of risk significant operational experience feedback.

For repetitive deficiencies or significant individual deficiencies in problem identification and resolution identified above, the inspector determined that the licensee's self-assessment activities were also identifying and addressing these deficiencies.

The inspector reviewed PPL documentation packages for all PI events occurring since the last inspection. The inspector determined if any of these PI events involved dose rates >25 R/hr at 30 centimeters or >500 R/hr at 1 meter. If so, the inspector determined what barriers had failed and if there were any barriers left to prevent personnel access. For unintended exposures >100 mrem total effective dose equivalent (or >5 rem skin

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dose equivalent or >1.5 rem lens dose equivalent), the inspector determined if there were any overexposures or substantial potential for overexposure. No issues of this type were identified during the inspection period.

The inspector reviewed radiological problem reports since the last inspection which found that the cause of the event was due to radiation worker errors. The inspector determined that there was no observable pattern traceable to a similar cause. The inspector determined that this perspective matched the corrective action approach taken by PPL to resolve the reported problems. The inspector discussed with the radiation protection manager (RPM) any problems with the correction actions planned or taken.

The inspector reviewed radiological problem reports since the last inspection that found the cause of the event was radiation protection technician error. The inspector determined that there was no observable pattern traceable to a similar cause. The inspector determined that this perspective matched the corrective action approach taken by PPL to resolve the reported problems.

The inspector evaluated licensee performance against the requirements contained in 10 CFR 20 and Plant Technical Specification 5.7.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02 – 2 Samples)

a. Inspection Scope

The inspector reviewed PPL's self-assessments, audits, and Special Reports related to the as low as is reasonably achievable (ALARA) program since the last inspection. The inspector determined that PPL's overall audit program's scope and frequency (for all applicable areas under the Occupational Cornerstone) met the requirements of 10 CFR 20.1101(c).

For repetitive deficiencies or significant individual deficiencies in problem identification and resolution identified above, the inspector determined that PPL's self-assessment activities were also identifying and addressing these deficiencies.

The inspector evaluated PPL performance against the requirements contained in 10 CFR 20.1101.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation (71121.03 – 4 Samples)

The inspector reviewed corrective action program reports related to exposure and significant radiological incidents that involved radiation monitoring instrument deficiencies since the last inspection in this area. The inspector interviewed staff and reviewed documents to determine if the following activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of corrective actions which will achieve lasting results;
- Resolution of non-cited violations (NCVs) tracked in corrective action system(s); and
- Implementation/consideration of risk significant operational experience feedback.

For repetitive deficiencies or significant individual deficiencies in problem identification and resolution identified above, the inspector determined that PPL's self-assessment activities are also identifying and addressing these deficiencies.

Based on FSAR, Technical Specifications and Emergency Operating Procedures (EOP) requirements, the inspector reviewed the status and surveillance records of self-contained breathing apparatus (SCBA) staged and ready for use in the plant. The inspector reviewed PPL's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center during emergency conditions. The inspector determined that control room operators and other emergency response and radiation protection personnel were trained and qualified in the use of SCBA (including personal bottle change-out). The inspector determined that personnel assigned to refill bottles were trained and qualified for that task.

The inspector reviewed the qualification documentation for onsite personnel designated to perform maintenance on the vendor-designated vital components, and the vital component maintenance records for three SCBA units currently designated as "ready for service." For the same three units, the inspector ensured that the required periodic air cylinder hydrostatic testing was documented and up to date and the DOT required retest air cylinder markings were in place. The inspector reviewed the onsite maintenance procedures governing vital component work and identified any inconsistencies between PPL's procedures and the SCBA manufacturer's recommended practices.

The inspector evaluated licensee performance against the requirements contained in 10 CFR 20.1501, 10 CFR 20.1703, and 10 CFR 20.1704.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 – 14 Samples)

.1 Mitigating Systems (12 Samples)

a. Inspection Scope

The inspectors reviewed PPL's performance indicator (PI) data for the period of September 2008 through September 2009 to determine whether the PI data was

accurate and complete. The inspectors examined selected samples of PI data, PI data summary reports, and plant records. The inspectors compared the PI data against the guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline" and PL-NF-06-002, "SSES Mitigating System Performance Index Basis Document," Revision 4. Documents reviewed are listed in the Attachment. The following PIs were included in this review:

- Units 1 and 2, Safety System Functional Failures, MS05;
- Units 1 and 2, Emergency Alternating Current (AC) Power Systems, MS06;
- Units 1 and 2, High Pressure Injection Systems, MS07;
- Units 1 and 2, Heat Removal Systems, MS08;
- Units 1 and 2, Residual Heat Removal (RHR) Systems, MS09; and
- Units 1 and 2, Cooling Water Systems, MS10.

b. Findings

No findings of significance were identified.

.2 Occupational Radiation Safety (1 Sample)

a. Inspection Scope

The inspector reviewed all PPL PIs for the Occupational Exposure Cornerstone for follow-up. The inspector reviewed a listing of PPL ARs for the period January 1, 2009 through November 30, 2009 for issues related to the occupational radiation safety PI, which measures non-conformances with high radiation areas greater than 1R/hr and unplanned personnel exposures greater than 100 mrem total effective dose equivalent (TEDE), 5 rem skin dose equivalent (SDE), 1.5 rem lens dose equivalent (LDE), or 100 mrem to the unborn child. The inspector determined that no PI events had occurred during the assessment period. Documents reviewed are listed in the Attachment. The following PI was included in this review:

- Occupational Exposure Control Effectiveness, OR01.

b. Findings

No findings of significance were identified.

.3 Public Radiation Safety (1 Sample)

a. Inspection Scope

The inspector reviewed a listing of PPL ARs for the period January 1, 2009 through November 30, 2009 for issues related to the public radiation safety PI, which measures radiological effluent release occurrences per site that exceed 1.5 mrem/qtr whole body or 5 mrem/qtr organ dose for liquid effluents; or 5 mrad/qtr gamma air dose, 10 mrad/qtr beta air dose; or 7.5 mrems/qtr organ doses from I-131, I-133, H-3 and particulates for gaseous effluents. Documents reviewed are listed in the Attachment. The following PI was included in this review:

- RETS/ODCM Radiological Effluent Occurrence, PR01.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152 – 3 Samples)

.1 Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As specified by IP 71152, "Identification and Resolution of Problems" (PI&R), and in order to help identify risk significant, repetitive, long-term or latent equipment failures, cross-cutting components or adverse performance trends for follow-up, the inspectors performed screening of all items entered into PPL's CAP. This was accomplished by reviewing the description of each new CR, attending management committee meetings, and viewing computerized CAP entries.

b. Findings

No findings of significance were identified.

.2 Annual Operator Work Around Review

a. Inspection Scope

The inspectors reviewed station documents, interviewed plant operators, and conducted in-plant tours for operator work arounds, challenges, and burdens previously identified by PPL and to look for those not yet identified. This inspection focused on identifying potentially adverse impacts on the operating crew's ability to execute critical tasks required in off-normal or EOPs. The inspectors reviewed actions taken to verify that PPL had adequately identified these workaround problems at an appropriate threshold, entered them in the CAP and had proposed or implemented appropriate corrective actions to include evaluation of the cumulative effects of existing workarounds.

b. Findings and Observations

No findings of significance were identified.

The inspectors observed that the seismic monitor did not appear as an operator work around or challenge. The seismic monitor became inoperable on October 29, 2009, and compensatory actions were taken to accommodate for the ability to directly quantify seismic activity. This data is considered in the declaration of EALs under the Emergency Preparedness (EP) plan. Subsequent to inspector questions, the seismic monitor was characterized as an operator work around.

The inspectors also observed that the refuel floor radiation monitor recorder in the control room was OOS and was classified as an operator challenge. Despite the fact that the trip functions remained operable, the inspectors questioned the component not being an operator work around due to the inoperable high radiation alarm that comes from the recorder. Subsequently, the recorder was re-characterized as an operator work around.

Neither of these observations were considered to be a more-than-minor violation since there was no actual safety consequence and the monitors had not been relied upon to mitigate the consequences of an actual event.

3. Semi-Annual Review to Identify Trends

a. Inspection Scope

As required by IP 71152, "Identification and Resolution of Problems," the inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment and corrective maintenance issues but also considered the results of daily inspector CAP item screening discussed in Section 40A2.1. The review also included issues documented outside the normal CAP in corrective maintenance work orders (WOs), component status reports, site monthly meeting reports and maintenance rule assessments. The inspectors' review concentrated on the six month period of July through December 2009, although some examples expanded beyond those dates when the scope of the trend warranted. Corrective actions associated with a sample of the issues identified in the licensee's trend reports were reviewed for adequacy.

As part of this sample and in support of the potential Chilling Effect Letter (CEL) issued to PPL in January 2009, the inspectors examined issues related to the general work environment (GWE) at Susquehanna. Specific documents reviewed are listed in the attachment

b. Findings

No findings of significance were identified.

Assessment and Observations

Energy Control Process

The trend identified in the two previous semi-annual trend reviews (IR 05000387; 388/2009-003 and 2008-005) continued. CRs that were coded with an energy control aspect increased by 50 percent and three Level 1 events occurred. In July, a worker encountered live cables when drilling into an energized 480V cabinet (CR 1166206). In response, departmental safety standdowns were conducted. In October, a supplemental employee observed electrical sparks while cutting a conduit that was supposed to be empty (CR 1189566). In November, a WO was not placed in "foreign potential" status during double testing on pump equipment (CR 1194463). In response to the October event and cumulative energy control issues, PPL conducted another site-wide standdown, sponsored a root cause analysis (RCA), and established a primary clearance holder program limiting the number of personnel that could hold clearances. The results of the RCA were being presented to CARB at the time of this inspection.

Problem Evaluation, Resolution and Trending

The inspectors noted a declining trend in the evaluation and resolution aspects of the site's CAP. PPL's non-NRC PIs SL50 CR Timeliness and SL55 OE Backlog went Red in the fourth quarter of 2009. Additionally, the inspectors had voiced concerns over timeliness of corrective actions in periodic meetings with functional managers. Elements of this decline include ineffective, incomplete, or cancelled corrective actions and the timeliness of corrective actions. In response to trends cited both internally and by external organizations, PPL established RCA teams for both the Corrective Action Program and Performance Improvement (1194033 and 1194026). The RCAs for CAP and Performance Improvement were being conducted at the time of this inspection.

In addition, the inspectors noted insufficient use of Susquehanna Error Prevention Team Assessments (SEPTA). On November 17, 2009, during a 2 year surveillance at the Unit 2 remote shutdown panel, there was an inadvertent start of the 2A RHRSW pump. While PPL entered the issue into their CAP, the investigation into how this issue occurred was conducted almost a month later. No personal statements were taken and the SEPTA process was not entered.

The inspectors reviewed NDAP-00-0032, "Human Performance (HuP) – Standards for Error and Event Prevention," Revision 5, and noted that a SEPTA's primary objective is to conduct a timely thorough, systemic investigation of a significant event, to determine the root causes and prevent recurrence. When questioned by inspectors, PPL's response was that there was no clear evidence that the pump start was caused by a human performance error. Troubleshooting late in mid-December 2009 resulted in the elimination of hardware as a contributing cause leaving human errors or a spurious actuation as the remaining potential contributors. During further review of this issue, the inspectors noted that QA had performed a focused self-assessment of the new SEPTA process on December 3, 2009, and reached a similar conclusion that it is "not routinely conducted for events that meet the established criteria." The inspectors concur with this assessment.

SR 3.0.3. Entries

While there was no violation, inspectors reviewed entries into surveillance requirement (SR) 3.0.3. during 2009. The TS Bases for SR 3.0.3. states, "failure to comply with specified frequencies for SRs is expected to be an infrequent occurrence." The inspectors noted that, despite this, SR 3.0.3. was entered four times for missed surveillances. These events were a 2-year Remote Shutdown panel suppression pool water level calibration on March 9, a 2-year Remote Shutdown panel RCIC pump flow calibration on September 1, a 6-year SRV lift setpoint test on November 18, and 12-hour reactor coolant system (RCS) leakage determination on December 29. In the case of the last two events, the inspectors determined that PPL's applications of SR 3.0.3. contained errors. The time of discovery for a group of Unit 1 SRVs landed between the first and second SRV's periodicity. Despite this, PPL incorrectly applied SR 3.0.3. on the second SRV despite the fact that its surveillance frequency plus grace period had not yet expired. Similarly, PPL incorrectly applied SR 3.0.3. after work to resolve procedural and technical issues on a RCS leakage surveillance resulted in its surveillance frequency plus grace period time elapsing. Both latter events were incorrect applications of SR 3.0.3. and were captured in PPL's CAP (1220036, 1197496). There was also one technical requirement surveillance (TRS) 3.0.3. entry during 2009 and its bases on infrequent entry is the same as that for SR 3.0.3.

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The inspectors also reviewed entries into technical requirement (TRO) 3.0.3. and noted that its bases states that, "TRO 3.0.3. entries are undesirable and should be avoided whenever possible." Despite this, there were four TRO 3.0.3. entries in 2009. Those events were a missed fire watch at the ESSW pump house on August 3, an entry due to conflict between Unit 1 and Unit 2 TROs on ESW piping on September 19, Unit 2 TB Post Accident Ventilation Stack Sampling System (PAVSSS) inoperable greater than 30 days on October 28, and seismic monitoring instrumentation inoperable greater than 30 days on November 28.

The increased frequency of entering these conditions that are expected to be infrequent or undesirable suggests inadequate oversight of surveillances associated with the licensing basis and a potentially elevated level of challenges to plant equipment.

Work Environment

The inspectors reviewed the usage of available programs for raising concerns over the last six months. Since the last semi-annual trend review, PPL has established a permanent onsite ECP representative and the inspectors noted that this action was well received by plant personnel. Inspection of the employee concerns program (ECP) revealed that there has been consistent use of the program between the first and second halves of the year. There were 46 ECP entries in the first half of 2009 to include eight anonymous issues while the latter part of 2009 had 39 ECP entries with only one anonymous issue. Of those issues, there appeared to be a balance in use between both bargaining unit and management personnel. The inspectors concluded that use of the ECP is showing some improvement, particularly in the willingness of employees to use the program in a non-anonymous form. There was a steady increase in the number of monthly, anonymous ARs generated in the third quarter coincident with implementation of the internet version on June 22, 2009. The inspectors determined that PPL is still reaching what will be considered a "normal" or steady state number of anonymous CRs. Of particular note, PPL adjusted its anonymous AR/CR process so that these issues go through a pre-screening process via an ECP representative for supervisory review and then continue through the normal screening process. Anonymous phone hotline use has been comparatively low against the anonymous AR/CR process.

Overall, the available programs implemented by PPL have proven effective through their use and PPL has exhibited flexibility and adaptability in their GWE improvement plan to date. However, the site appears to be struggling with the balance between personnel accountability, its associated, potential impact on the work environment, and the communications with site personnel on related, management decisions. A recent event of employee accountability disrupted the general site paradigm on accountability expectations. The site-wide communications published on the issue were deemed reasonable by senior management but became inadequate in the eyes of many employees. While senior management responded with further communications that elaborated and provided details on the underlying process and detailed their conclusion, this event displayed that the work environment at Susquehanna continues to improve but that progress remains fragile.

- .4 Annual Sample: Review of PPL's Independent Safety Culture Evaluation Survey, Report, and Write-in Comments
 - a. Background: On January 28, 2009, the NRC issued a potential CEL letter advising PPL of concerns related to the safety conscious work environment (SCWE) at Susquehanna

and requested PPL provide: (1) a description of PPL's current action plans to address existing SCWE concerns to preclude a chilled work environment at Susquehanna; (2) PPL plans for further evaluating the health of the SCWE at Susquehanna; and (3) the metrics PPL intended to monitor to determine the effectiveness of their actions and ensure a SCWE at the Susquehanna site (ML090280115). Also, on January 28, 2009, the NRC issued Susquehanna Steam Electric Station – NRC Integrated Inspection Report 05000387/2008005 and 05000388/2008005 (ML090230434) which described the SCWE concerns at PPL and provided additional background. PPL completed their formal root cause analysis (RCA) of the work environment issues in May 2009. The NRC has reviewed the RCA, documented in NRC Integrated Inspection Report 05000387/2009003 and 05000388/2009003 (ML092230158), and conducted a review of PPL's progress in implementing corrective actions in the 3rd quarter 2009, documented in NRC Integrated Inspection Report 05000387/2009004 and 05000388/2009004 (ML093170275).

Inspection Scope: The inspectors performed a detailed review of PPL's 2009 Independent Safety Culture Survey and Report conducted by an independent third party vendor. The survey was administered in September 2009 and the final report was received by PPL on December 15, 2009. The inspectors reviewed the survey questions and methodology and PPL's analysis of the survey data. The inspectors compared the results to the November 2008 SCWE Trending Survey and the 2006 Nuclear Safety Culture Survey at Susquehanna. The inspectors reviewed all 1160 write in comments for the 2009 Survey. The inspectors also reviewed CRs, interviewed several personnel, and attended a site meeting of all supervisors on December 17, to discuss an Energy Control Program event which had the potential to impact the GWE on site. The inspectors also reviewed site communications related to GWE issues.

b. Findings and Observations

No findings of significance were identified.

Survey Results:

Based upon the 2009 survey results and comparing these results with the full 2006 nuclear safety culture survey and the 2008 SCWE surveys (also administer by the same vendor), it appears that the actions taken to date to address the SCWE have had a positive impact. SCWE and GWE dropped significantly from 2006 to 2008 (-4.9 percent for SCWE); however these same indicators showed significant improvement from 2008 to 2009 (+4.2 percent for SCWE). Of the 64 common questions asked in the 2008 and 2009 surveys, 99 percent of the responses showed improvement and ~60 percent have statistically significant levels of improvement (>5 percent).

Significant improvement was noted in several work groups including instrumentation and control (I&C) maintenance, mechanical maintenance, fuels, and electrical maintenance. However, significant declines were noted in the health physics department, the Fix-It-Now team, the quality assurance (QA) organization, the permanent modifications group, and nuclear procurement. The QA organization was noted as having particularly low scores in the SCWE area and a 10 percent negative response rate.

The plant remains in the 4th quartile of plants surveyed by the vendor in the SCWE and GWE areas; however both areas are notably improved from the low point in 2008.

Write-In comments:

The inspectors' review of the write-in comments identified a significant increase in the number of positive comments compared to 2008 (~10 percent in 2008 compared to ~36 percent in 2009), and a large number of responses where individuals felt the plant was on the right track, but they need more time to evaluate the outcome. Major themes raised in the write-in comments related to staffing, knowledge management concerns, first line supervisor challenges and compensation, performance evaluation and recognition programs, and accountability. A relatively large number of issues were raised about the nuclear procurement group structure and managers, and the administrative support group's structure and management.

Other Site Issues:

The inspectors noted that a current issue related to disciplinary action taken against a plant worker following an energy control process (tagout) event in November had the potential to impact the SCWE and GWE. The site has 13 level 1 or 2 energy control process events in the last 12 months and the NRC, and other outside organizations have identified weaknesses in the energy control process. There have been 2 site-wide safety stand downs on this issue in September and October and when the latest event occurred in November, PPL management entered the disciplinary process. However, since the individual who made the error self-reported the issue, some Susquehanna personnel took issue with the disciplinary action. PPL issued a site wide communication on this issue and on December 17 the CNO lead an All Supervisors meeting to discuss the issue and encourage management to communicate what was discussed with their groups. The CNO also stated he was working with the Union leadership to communicate the message, to all site personnel. The inspectors felt the communications were appropriate; however, these communications could have been more effective if the station had communicated earlier.

The NRC will continue to monitor the SCWE at Susquehanna via focus group and individual interviews during the biennial PI&R team inspection in January 2010.

Conclusion:

Overall, there is evidence that the actions taken thus far have had a positive effect on the SCWE at Susquehanna, but the PPL staff reaction to the energy control process event demonstrates how fragile the work environment remains and the importance of effective and timely communications to the workforce.

4OA3 Event Followup (71153 – 3 Samples).1 Susquehanna Unit 2 River Water Makeupa. Inspection Scope

On December 1, 2009, Susquehanna Unit 2 was operating at 94.4 percent power when the RWMU bypass line to the Unit 2 cooling tower basin ruptured. The 16-inch fiberglass piping circumferentially sheared, flooded the valve pit at the base of the cooling tower basin, and overflowed to surrounding runoff drains. The resident inspectors responded promptly to both the control room and the valve pit to observe operators taking mitigating actions. Plant operators subsequently reduced Unit 2 to 80 percent

power and adjusted blowdown flow from both cooling tower basins restoring the plant to a steady state condition. During the initial response, the NRC Region I office staffed its Incident Response Center. PPL reduced power on both units on December 3, 2009, in order to support a modification to the 30-inch main RWMU line and a subsequent operational swap to that line. The inspectors reviewed several aspects of this event, including power maneuvers, emergent work planning and control, and PPL's evaluation of the event response in the CAP (1199435).

b. Findings

No findings of significance were identified.

.2 (Closed) License Event Report (LER) 05000387/2009-001-00, High Pressure Coolant Injection (HPCI) System Inoperable due to Turbine Stop Valve Failure

On August 18, 2009, the Unit 1 HPCI turbine stop valve did not fully close during the performance of a routine preventive maintenance activity. In-field observations revealed that the valve did not operate smoothly and it was subsequently declared inoperable.

The HPCI turbine ramp generator will not reset without full stop valve closure. Without a functioning ramp generator, the HPCI system would likely experience several overspeed trips before the governor would successfully control turbine speed. This failure was reported as a condition that could have prevented the fulfillment of a safety function required to mitigate the consequences of an accident. During the repair effort, the cause of the HPCI stop valve failure was determined to be increased friction between the actuator shaft and the rod bushing as a result of general corrosion. Inspectors determined this component failure was a repeat of a failure in 2006 and an NCV regarding corrective action was issued and documented in section 1R12 of NRC inspection report 05000387; 388/2009004.

Inspectors reviewed this LER, and the PPL CR 1172997 including all associated corrective actions. No additional findings of significance were identified. Inspectors found that the corrective actions address all the causal factors and contributors to this loss of safety function. However, inspectors did notice that several corrective actions associated with extent of condition on Unit 2 have not yet been performed. This LER is closed.

.3 (Closed) LER 05000388/2009-002-00, Emergency Service Water (SW) Cooling Valves Found Closed Resulting in the Unit 2 "C" RHR Pump being Inoperable for Approximately 4 Months

On August 25, 2009, while performing pre-start checks to place a Unit 2 RHR loop in suppression pool cooling, a field operator identified the ESW cooling water valves 211193 and 211194 to be unlocked and closed. These valves are required to be locked open to assure adequate cooling supply to a Unit 2 RHR room cooler and 2C RHR pump motor oil cooler. PPL determined that the status control of these valves was most likely lost during the post-modification testing performed in late April 2009. Upon discovery, the valves were promptly aligned to provide cooling flow and the performance issue was captured in PPL's CAP (1174837). Inspectors determined this issue was a licensee-identified violation and was documented in Section 4OA7 of NRC inspection report 05000387; 05000388/2009004.

Enclosure

Inspectors reviewed this LER, the update to this LER, and CR 1174837 including PPL's follow-up actions. No additional findings of significance were identified. Inspectors found that the corrective actions addressed all the causal factors and contributors to this loss of safety function. This LER is closed.

40A5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors performed observations of security force personnel and activities to ensure that the activities were consistent with site security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours. These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

.2 Temporary Instruction (TI) 2515/180 – Inspection of Procedures and Processes for Managing Fatigue

a. Inspection Scope

The objective of this TI was to determine if PPL's implementation procedures and processes required by 10 CFR 26, Subpart I, "Managing Fatigue" are in place to reasonably ensure that the requirements specified in Subpart I are being addressed. This TI applies to all operating nuclear power reactor licensees, but is intended to be performed for one site per utility. On December 3, 2009, the inspector interfaced with the appropriate station staff to obtain and review station policies, procedures, and processes necessary to complete all portions of this TI.

b. Findings and Observations

No findings of significance were identified.

The inspectors confirmed that, in general, Susquehanna procedures NDAP-QA-0025, "Working Hour Limits for Station Staff," Revision 7, and NDAP-00-2002, "Fitness-for-Duty/Behavior Observation Program," Revision 8, contained all the necessary processes to ensure compliance with requirements in 10 CFR 26, Subpart I, "Managing Fatigue." However, the inspectors did note one observation regarding work hour waiver documentation in the annual Fitness-for-Duty program performance report.

10 CFR 26.203(e) requires that licensees include a summary of all work hour waivers in the annual Fitness-for-Duty program performance report. The inspectors noted that neither NDAP-QA-0025 nor NDAP-00-2002 contained provisions for including a summary of instances where work hour controls were waived in this annual report. Not including this information in the program implementation procedures could result in

omitting the waiver summary from future Fitness-for-Duty program performance reports. The inspectors did not consider this observation to be a violation because the regulation does not specifically require this information to be included in the implementation procedures. Additionally, PPL has not been required to submit an annual Fitness-for-Duty program performance report since implementation of Subpart I and has not performed any work hour control waivers to date. PPL has entered this issue into their CAP as AR 1218394.

40A6 Meetings, Including Exit

An inspector presented inspection results to members of PPL's management at the conclusion of the on-site inspection on October 2, 2009. In addition, on November 23, 2009, a final summary exit with PPL was conducted via a telephone conference.

On December 4, 2009, an inspector presented inspection results to Mr. T. Rausch and other members of his staff, who acknowledged the findings. The inspectors confirmed no proprietary information was provided or examined during the inspection.

On January 29, 2010, the resident inspectors presented their findings to Mr. J. Hesel, and other members of his staff, who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

40A7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by PPL and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV:

- SSES Unit 1 Technical Specification 5.7.2.a requires, in part, that each entryway to an area shall be conspicuously posted as a high radiation area and shall be provided with a locked door or gate that prevents unauthorized entry. Contrary to the above, on November 13, 2009, a survey near a scaffold erected by the north hydraulic control units at the Unit 1 RB, 719' elevation, identified area dose rates of 170 mR/hr at 30 centimeters without being posted and barricaded as required. This issue was documented in PPL's CAP as CR 1195463. The violation was determined to be of very low safety significance (Green) because workers immediately left the area when their dosimeters alarmed (set at a dose rate less than 100 mR/hr), no unintended dose to the workers resulted from this event, and no other workers entered the area between April 2009 and the event date as the area was rendered inaccessible.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION**KEY POINTS OF CONTACT**Licensee Personnel

N. Coddington, Senior Engineer, Regulatory Affairs
 C. Dodge, Simulator Engineering
 A. Fitch, Training Director
 R. Fry, Operations Training Manager
 C. Hess, Simulator Supervisor
 M. Jacopetti, Licensed Operations Requalification Program Lead
 R. Kessler, Health Physicist - ALARA
 S. Lines, Manager Nuclear Support
 P. Moran, Examination Contact
 R. Pudish, Examination Contact
 M. Rochester, Special Projects Coordinator, Nuclear Regulatory Affairs
 V. Schuman, Radiation Protection Manager
 R. Smith, General manager, Site Preparedness and Services

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSEDOpened

None.

Opened/Close

05000387; 388/200900501	NCV	Inadequate Assessment of Fire Brigade Response Time to an Unannounced Drill (1R05.2)
05000387; 388/200900502	FIN	Scenarios for NRC Annual Operating Examinations Did Not Meet Quantitative Standard for Total Malfunctions (1R11)

Closed

05000387/200900100	LER	High Pressure Coolant Injection (HPCI) System Inoperable due to Turbine Stop Valve Failure (40A3.2)
05000388/200900200	LER	Emergency Service Water (SW) Cooling Valves Found Closed Resulting in the Unit 2 "C" RHR Pump being inoperable for approximately 4 months (40A3.3)

TI 2515/180

TI

Inspection of Procedures and Processes for
Managing Fatigue (40A5.2)

BASELINE INSPECTION PROCEDURE PERFORMED

LIST OF DOCUMENTS REVIEWED
(Not Referenced in the Report)

Section 1R01: Adverse Weather Protection

Condition Report:

1184726, 1190871, 1185041, 1177529, 1177491, 1192894, 1198388, 1151980, 1153860,
161606

Procedure:

MT-134-001, Winterization Preventive Maintenance for Unit 1 RB Ventilation Zone 1 Supply
Cooling Coils 1E215A through 1E215D, Revision 11
OP-134-001, RB Chilled Water, Revision 36
MT-134-002, Winterization Preventive Maintenance for Unit 1 RB Ventilation Zone III Supply
Cooling Coils 1E216A through 1E216D, Revision 9
FSAR Sections 9.2.7 and 9.2.10
OP-116-001, RHR SW, Revision 28
OP-054-001, Emergency SW Systems, Revision 28
NDAP-00-0024, Winter Operation Preparations, Revision 14
FSAR Sections 9.2.7, 9.2.10

Work Order:

1093915 and 1154315

Other:

Unit 1 Operator Logs for October 19, 2009

Section 1R04: Equipment Alignment

Condition Reports:

1185529

Procedures:

SI-079-333, 24 Month Calibration of railroad Access Shaft Exhaust Duct High Radiation Monitor
Channel R-012-1K616A, January 24, 2008, Revision 12
OP-134-002, RB Heating, Ventilation and Air-Conditioning (HVAC) Zones I and III, Revision 43
ME-ORF-126, Refueling Floor railroad Bay hatch Cover Removal and Installation, Revision 3
FSAR 6.5.1.1 and 7.3.1.1b.4

OP-002-001, Station Portable Diesel Generator, Revision 15

Drawings:

FCIE-133, Sheet 1, 230/12.5 kV 12 kV Power Distribution, Revision 14

FCIE-134, Sheet 1, 480/277V Substations 10, 2D and 3D Temporary Power Distribution,
Revision 17

Section 1R05: Fire Protection

Condition Reports:

1189884, 1086805, 1086808, 822972, 1195590, 1196070, 1196071, 1197087, 1197088,
1197274, 1197427, 1196998, 1197090, 1198261, 1217692, 1160107, 1187627, 1158193,
1177256, 1221819, 1221823

Procedures:

FP-013-161, Unit 2 Upper Relay Room, Revision 6

FP-013-142, Unit 2 Lower Relay Room, Revision 6

FP-013-146, Unit 2 Lower Cable Spreading Room, Revision 5

FP-113-103, HPCI Pump Room (I-II) Fire Zone 1-1CC Elevation 645'-0", Revision 5

FP-113-104, RCIC Pump Room (I-12) Fire Zone 1-1D Elevation 645'-0", Revision 5

FP-113-118, Main Steam Pipeway (I-411) Exhaust Fan Room (1-709) Fire Zone 1-4G Elevation
719'-0" through 816'-1", Revision 5

SI-113-236, Annual Functional Test of Photoelectric Detectors for Fire Zones 1-46, 1-5B, and
1-5A-N, Revision 2

FP-213-290, Turbine Building H & V Equipment Rooms (11-531, 532) Fire Zone 2-36A
Elevation 762'-0", Revision 7

Drawings:

C-1723, Sheet 4, Fire Detection Location Plan Elevation 719'-1" to 749'-11", Revision 4

C-1723, Sheet 2, Fire Doors and Fire Dampers Elevation 719'-1", Revision 8

ZE-410A, Sheet 1, Riser Diagram Fire Detection and Alarm System, Revision 12

C-1724, Sheet 4, Fire Detection Location Plan Elevation 749'-1" to 779'-1", Revision 7

Other:

Fire Watch Logs on November 4, 2009

Fire Protection Review Report (FPPR) Deviation Request Number 3, Revision 10

Section 1R06: Flood Protection Measures

Condition Reports:

1159654, 1191940, 1190410, 1187408, 1187579, 8457113, 1036205

Procedures:

E0-100-114, Secondary Containment Control, Revision 8

NDAP-QA-0409, Door Floor Plug and Hatch Control, Revision 06

FSAR Section 3.4

Work Order:

1038123, 1036205

Drawing:

E-106265, Sheet 2, Revision19

Other:

EC-076-1001, Safety Class & Seismic Qualification Basis for Mercoid Type 280E Flood Detectors, Revision 01
IEEE-344-1975, Recommended Practices for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations
Calculation EC-RISK-0539, Internal Flooding Analysis for PRA, Revision 1
Calculation EC-034-0004, Pump Room Flooding for EOPs, Revision 1

Section 1R07: Heat Sink Performance

Condition Reports:

1162322

Work Orders:

1111425, 1067871

Section 1R11: Operator Re-qualification Program

Condition Reports:

1185374 and 1187760

Action Requests:

1143139, 1038986, and 1023806

Procedures:

EC-RISK-1128, "PSA-006, Human Reliability Notebook, Revision 3
NTP-QA-31.10, Simulator Performance Evaluation, Revision 2
NTP-QA-31.2, Licensed Operator Requalification Program Implementation, Revision 12
OP-AD-010, Control of Licensed Operator License status, Restrictions, and Requirements, Revision 3
NTP-QA-31.12, , Preparation and submission of NRC Form 396, Revision 3

JPMs:

45.OP.004.151, 57.OP.011.001, 53.OP.002.151, 34.EO.003.151, 58.EO.003.101, 88.OP.002.101, 03.ON.005.001, 45.OP.013.151, 03.OP.003.101, 16.OP.002.101, 00.SO.003.051, 24.AD.002.051, 45.ON.001.151, 00.EO.017.101, 52.OP.011.101,

57.OP.011.001, 00.EO.017.101, 00.AD.063.101, 55.ON.007.152, 56.OP.006.101, 50.OP.010.151, 24.OP.002.001, 57.OP.001.102, and 84.OP.001.151.

Scenarios:

301, 407, 306, 610, 304, 601

Biennial Written Examinations:

08-07-S2 and 08-07-S4

Simulator Documents:

2009 Annual Simulator Certification Testing
2008 Annual Simulator Certification Testing
Unit 1 Cycle 16 EOC Core Testing
CSPR 976511, Modify the Simulator Models to Agree to the Engineering Work Request (EWR)
976477 DBA Loss of Coolant Accident (LOCA) Response
CSPR 1137298, Simulator Response to Loss of 1A203 Engineering Safeguard System (ESS)
Bus

Section 1R12: Maintenance Effectiveness

Condition Report:

698860

Procedures:

SC-173-102, "Monthly Functional Test of the Unit 1A Containment Radiation System,"
Revision 17
CH-IC-034, "Radiological Calibration of the Containment Radiation Detection System,
Revision 3
SC-173-107, "Calibration of the Unit 1A Containment Radiation Detection System Noble Gas
Channel," Revision 12

Work Orders:

1194156, 1194486

Other:

US NRC Regulatory Guide 1.45, "Guidance on monitoring and Responding to Reactor Coolant
System Leakage," Revision 1
US NRC Information Notice 2005-24, "Nonconservatism in Leakage Detection Sensitivity."
Callaway Plant-NRC Integrated Inspection Report 05000483/2003004
McGuire Nuclear Station-NRC Integrated Inspection Report 05000369/2005002 and
05000370/2005002.
Catawba Nuclear Station- NRC Integrated Inspection Report 05000413/2005002 and
05000414/2005002
Susquehanna FSAR Section 5.2.5.1.2.3.1, "Sensitivity and Response Time," Revision 64
Susquehanna TS and TS Basis

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Condition Report:

1194403, 1199435

Work Order:

1194407

Section 1R15: Operability Evaluations

Condition Reports:

1185971, 1186008, 1186025, 1188356, 1197631, 1197885, 1197666, 1190959, 1198659, 1198243, 1198523, 1196415, 1196389, 1196407, 1201217

Procedures:

FSAR 7.3.1.1 and .2.4.1.4
OP-099-002, Seismic Monitoring System, Revision 14
EP-TP-001, EAL Classification Levels, Revision 2
EP-TP-007, Equipment Important for Emergency Plan Implementation, Revision 1
SE-200-007, ESW/RHRSW Functional Test at 2C201B, Revision 7

Drawings:

M-2141, Sheet 1, P&ID Nuclear Boiler, Revision 46
E-23, sheet 6C, 4.16KV diesel generator B

Work Order:

1191104

Other:

Calculation EC-083-0639, "Main Steamline High Flow Interlock Setpoint/FIS-B21-1(2) N009A/B/C/D", Revision 3
10M 222, Standby Diesel Generator Control and High Voltage (HV) Cubicle, Revision 17
Regulatory Guide 1.166, Pre-earthquake Planning and Immediate Nuclear Power Plant Operator Post-earthquake Actions, March 4, 1997
J. Felock e-mail dated December 7, 2009 at 1:33 p.m., "CR 11186028 Questions"

Section 1R18: Permanent Plant Modifications

Condition Reports:

1181218, 1183777, 1187061, 1183794

Procedures:

OP-128-001, ESSW Pump House HVAC, Revision 10

AR-030-001, Control Structure SGTS DG and ESW PH Ventilation Division II)C681,
Revision 26

Drawings:

FF61604, Sheet 40, DG/E Control Schematic Shutdown & Alarm System, Revision 6
M-161, Sheet 1, P&ID Liquid Radwaste Collection, Revision 45
E-159, Sheet 8, "Liquid Radwaste Collection Drywell Equipment Drain Tank Isolation Valves
Unit 1, Revision 21

Work Order:

1183796, 899758, 899751, 1184325, 1184318

Other:

CARB Meeting Minutes 10/6/09 for CR 1165553
50.59 SD 00770, Revision 0
Calculation EC-SQRT-1433, "Dynamic Qualification of Indicator Light in Panel 1C601",
Revision 0
TEC - 1183777
TEC - 899048, Provide Supplemental Heating and Ventilation Flow Path for ESW Pump House,
Revision 0

Section 1R19: Post-Maintenance Testing

Condition Reports:

1188103, 1187670, 1187488, 1186030, 868074, 863450, 881973, 1196417, 1198484, 1199632,
1220250, 1219719, 1222679, 1222679

Procedures:

SO-149-B05, Quarterly RHR LOOP B Valve Exercising, Revision 12
SO-152-004, Quarterly HPCI Valve Exercising, Revision 28
SO-116-002, Quarterly Common RHR/SW/ESW Valve Exercising (ESW Spray Pond Valves),
Revision 15

Drawing

M-187, Sheet 5, RB Chilled Water Chiller 1K206B, Revision 2
GBB109-M33, Pipe Support RB RHR, Revision 5
GBB209-H58, Pipe Support RB RHR, Revision 2
FF-104-051, Sheet 7103, BOP ESS Relay Panel 1C221, Revision 18
E-150, Sheet 31, Spray Pond Valves Auxiliary Control Common, Revision 14

Work Orders:

1187628, 1186165, 865511, 863594, 1196455, 855072, 1219739

Other:

Vendor Manual, IOM 168 Centrifugal Refrigeration Machines or Water Chillers for Reactor and Turbine and Control Structure Building Chillers, Revision 33
Operator Logs, Unit 1, October 16, 2009

Section 1R22: Surveillance Testing

Condition Reports:

1188634, 1188255, 1188468, 1188596, 1185604, 1200420, 69860,

Action Request:

1200627

Procedures:

SI-269-202, Monthly Functional Test of Drywell Floor Drain Sump Level Channels LIT-26102 A&B, October 2, 2009, Revision 16
SO-150-002, Quarterly RCIC Flow Verification, October 22, 2009, Revision 40
TP-030-002, Minimum Air Flow Required for Control Structure Pressurization, Revision 11
SE-116-313, IP506B DC Control Automatic Transfer Logic Test, Revision 6

Work Orders:

1130776

Drawing:

M-2161, Sheet 1, P&ID Liquid Radwaste Collection, Revision 28
J-2461, Sheet 2, LOOP Diagram Liquid Radwaste Collection, Revision 15
E-150, Sheet 2, Schematic Diagram RHR SW Pump 1P506B, Revision 28

Other:

Regulatory Guide 1.45, Guidance on Monitoring and Responding to Reactor Coolant System Leakage, Revision 1
DCP 93-3003P, Unit 1 Channel D 4.16kV Load Shed, Revision 0
IN 2005-24, Nonconservatism in Leakage Detection Sensitivity
RTSV 1194156, 1194486

Section 2OS1: Access Control to Radiologically Significant Areas

Condition Reports:

1195463, 1188807, 1187186, 1185509, 1183549, 1183547, 1183455, and 1171857

Other:

QA Audit Report No. 1093653

QA Assessment Reports: 864510; 1112308
QA Station Summary Report January 2009 – May 2009

Section 2OS2: ALARA Planning and Controls

Condition Reports:

1193193 and 1173304

Section 2OS3: Radiation Monitoring Instrumentation

Condition Report:

1189508

Section 4OA1: Performance Indicator Verification

Procedures:

NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 5
PL-NF-06-002, Mitigating System Performance Index Basis Document, Revision 4

Section 4OA2: Identification and Resolution of Problems

Action Requests:

1220084

Condition Reports:

1188897, 1196342, 1218276, 1218189, 1218152, 1217377, 1218581, 1217492, 1027040,
1044490, 1073866, 1114121, 1128499, 1147908, 1148761, 1148762, 1148765, 1148790,
1148824, 1148828, 1148834, 1148851, 1148852, 1148853, 1148854, 1148859, 1148862,
1148879, 1148884, 1148887, 1148891, 1148895, 1148900, 1159485, 1157872, 1158039,
1162998, 1173604, 1173611, 1173614, 1173619, 1173697, 1181243

NRC-PPL Correspondence:

NRC Letter-EA-09-003, "Work Environment Issues at Susquehanna Steam Electric
Station-Potential Chilling Effect," dated January 28, 2009
PPL Letter PLA-6486 "Susquehanna Steam Electric Station NRC Request to Address Work
Environment Issues at Susquehanna Steam Electric Station," dated February 27, 2009
PPL Letter PLA-6489 "Susquehanna Steam Electric Station NRC Request to Address Work
Environment Issues at Susquehanna Steam Electric Station," dated March 13, 2009
PPL Letter PLA-6528 "Susquehanna Steam Electric Station PPL Susquehanna LLC Work
Environment Improvement Plan," dated June 23, 2009

Other:

Susquehanna Concerns Hotline Flyer
GWE-PCE Power Point Presentation, dated June 15, 2009

Communication Plan for Work Environment Root Cause Analysis report, dated June 3, 2009
USNRC Allegation Website allegation data from January 2005 - November 2009
Susquehanna Organizational Effectiveness Oversight Panel "Employee Focus Group Meeting
May 5-7, 2009" summary report.
Susquehanna Focus (Internal Communications newsletter) dated July 16, 2009; July 21, 2009;
July 29, 2009; July 31, 2009; August 7, 2009 (2); August 14, 2009, August 17, 2009,
August 20, 2009, August 24, 2009, August 26, 2009, August 31, 2009; September 1,
2009, September 4, 2009; September 11, 2009; September 14, 2009 (2); September 15,
2009; September 22, 2009; September 23, 2009, and December 2, 2009.
Susquehanna Grapevine dated August 28, 2009; September 2, 2009; September 8, 2009, and
December 9, 2009.
Susquehanna Work Environment Pls for July 2009, August 2009, and October 2009.
Memorandum of Agreement between PPL and IBEW Local 1600 dated May 9, 2002.
Station Health Report, June 1, 2009 – August 31, 2009

Section 40A3: Event Follow Up

Condition Reports:

1174837, 1181825, 1186298

Other:

CARB Meeting Minutes 10/12/09 Rev. 0 for ACE CR 1174837
Licensee Event Report (LER) 50-388/2009-002-00, Emergency SW Cooling Valves Found
Closed Resulting in the Unit 2 "C" RHR Pump Being Inoperable for Approximately 4
Months
Susquehanna PORC meeting minutes No.09-10-23.

Section 40A5: Other Activities

Condition Reports:

1070603, 1079737, 1083716, 1083918, 1085643, 1086853, 1188897, 1196342, 1172997,
1146040, 1194370, 1200067, 1200099, 1200049, 1218125, 1200317, 1199959, 1199746,
1199435, 1200050, 1010954, 1056037, 1161087, 1185619, 1186890, 1188278, 1188574,
1188728, 1193592, 1193597, 1194548, 1198387, 1198394, 1199343, 1218387, 1218389,
1218390, 1218392, 1218394, 1218398, 1218401

Procedures:

NDAP-QA-0737, Reactor Oversight Process (ROP) Pls, Revision 5
TP-054-099, Directing ESW Flow Through CCW Heat Exchangers, Revision 3
NDAP-00-2002, Fitness-for-Duty/Behavior Observation Program, Revision 8
NDAP-QA-0025, Working Hour Limits for Station Staff, Revision 7
NDAP-QA-0413, Maintenance Rule Program, Revision 8

Work Order:

1173007

Other:

Review of any Susquehanna LERs from July 1, 2008 through September 30, 2009
Review of Action Requests/Condition Reports with MRFF from July 1, 2008 through
September 30, 2009
ENS Notification 45073
MSPI Deprivation Reports for Units 1 and 2 UAI and URI ending September, 2009
MSPI Deprivation Reports for Units 1 and 2 UAI and URI ending September, 2009
NEI 99-02, Regulatory Assessment Indicator Guideline, Revision 5
Unit 1 Operator Logs for August 18, 2009 to August 23, 2009
ENS Notification 45073
Clearance 52-001-1173192-0
PL-NF-06-002, Mitigating System Performance Index Basis Document, Revision 4
Security Incident Report September 12, 2008

Section 40A7: Licensee-Identified Violations:

Condition Report:

1172997 and 1146040

Work Order:

1173007

Other:

MSPI Deprivation Reports for Unit 1 and Unit 2 UAI and URI ending September, 2009
NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 5
Unit 1 Operator Logs for August 18, 2009 to August 23, 2009
ENS Notification 45073
Clearance 52-001-1173192-0
PL-NF-06-002, Mitigating System Performance Index Basis Document, Revision 4
MSPI Deviation Reports for Unit 1 and Unit 2 UAI, URI end September, 2009, Emergency AC
Power System

LIST OF ACRONYMS

AC	Alternating Current
ADAMS	Agencywide Document and Access Management System
ALARA	As Low As Is Reasonably Achievable
AR	Action Report
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CEL	Chilling Effect Letter
CFR	Code of Federal Regulations
CR	Condition Report
CREOAS	Control Room Emergency Outside Air Supply
EAL	Emergency Action Level
ECP	Employee Concerns Program
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedure
EP	Emergency Preparedness
EPU	Extended Power Uprate
ER	Engineering Request
ESS	Engineering Safeguard System
ESSW	Engineered Safeguard Service Water
EWR	Engineering Work Request
FIN	Finding
FSAR	[SSES] Final Safety Analysis Report
GE	General Electric
GWE	General Work Environment
HPCI	High Pressure Coolant Injection
HV	High Voltage
IAW	In Accordance With
HVAC	Heating, Ventilation and Air-Conditioning
I&C	Instrumentation and Controls
IEEE	Institute of Electrical and Electronics Engineers
IN	Information Notice
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	NRC Inspection Report
kV	Kilovolts
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
LOOP	Loss of Offsite Power
NCV	Non-Cited Violation
NDAP	Nuclear Department Administrative Procedure
NEI	Nuclear Energy Institute
NRA	Nuclear Regulatory Affairs
NRC	Nuclear Regulatory Commission
OA	Other Activities
ODCM	Offsite Dose Calculation Manual
OE	Operating Experience
OOS	Out-of-Service
PARS	Publicly Available Records
PCE	Potential Chilling Effect

PI	[NRC] Performance Indicator
PI&R	Problem Identification and Resolution
PIM	Plant Issues Matrix
PMT	Post-Maintenance Test
PPL	PPL Susquehanna, LLC
QA	Quality Assurance
RB	Reactor Building
RCA	Radiologically Controlled Area
RCA	Root Cause Analysis
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
RG	[NRC] Regulatory Guide
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
ROP	Reactor Oversight Process
RPM	Radiation Protection Manager
RTP	Rated Thermal Power
RWMU	River Water Make-Up
SCBA	Self-Contained Breathing Apparatus
SCWE	Safety Conscious Work Environment
SDHR	Supplemental Decay Heat Removal
SDP	Significance Determination Process
SRV	Safety Relief Valve
SSC	Structures, Systems and Components
SSES	Susquehanna Steam Electric Station
SW	Service Water
TS	Technical Specifications
WO	Work Order