

# Susquehanna 1

## 4Q/2006 Plant Inspection Findings

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### Initiating Events

**Significance:**  Jun 30, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Inadequate Design Review of PRNMS Modification Resulted in a Reactor Scram**

A self-revealing non-cited violation was identified for failure to comply with 10 CFR 50 Appendix B, Criterion III, Design Control. PPL did not correctly verify that the Power Range Neutron Monitoring System (PRNMS) modification would not adversely affect the design bases of the reactor protection system. This resulted in a Unit 1 reactor automatic shutdown (scram) on June 15, 2006, when the division II reactor protection system power supply was transferred to the alternate supply. PPL entered the issue into the corrective action program and installed a modification to prevent recurrence.

The finding was more than minor because the condition affected the Design Control attribute of the Initiating Events Cornerstone and affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during power operations. The finding is of very low safety significance because all mitigating systems were available and responded appropriately to the reactor scram. This finding is also related to the human performance cross-cutting area because PPL did not ensure supervisory and management oversight of work activities, including contractors such that there would be no adverse system interface issues in the PRNMS design which supports nuclear safety.

Inspection Report# : [2006003](#) (*pdf*)

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### Mitigating Systems

**Significance:**  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate work instructions for the disassembly and inspection of IST check valves**

The inspectors identified a non-cited violation (NCV) of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because PPL did not provide adequate work instructions for the disassembly and inspection activities, required by Technical Specification 5.5.6, Inservice Testing (IST), for emergency service water (ESW) check valve 011514. Consequently, undetected degradation of the valve internals, led to the valve's failure in the full open position and the diversion of approximately 1000 gallons per minute of ESW system flow from the operating loop into the idle ESW Loop. PPL has entered the finding into the corrective action program (CR 824522) and plans to revise its maintenance instructions.

The finding is more than minor because it is associated with the Procedure Quality attribute of the Mitigating System Cornerstone and it adversely affected the cornerstone's objective to ensure the availability, reliability, and capability of systems (e.g. ESW) that respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance in the Phase 1 screening conducted per Appendix A of the SDP. This finding has a cross-cutting aspect in the area of human performance because the work package was not sufficiently complete to define and implement the required disassembly and inspection of check valves (1R12).

Inspection Report# : [2006005](#) (*pdf*)

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**Significance:**  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Corrective Actions for EPA Breaker Failures**

Inspectors identified a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because PPL failed to correct a long standing condition adverse to quality with regard to RPSP EPA circuit breaker problems. The failures were attributed, in part, to PPL's inadequate prior evaluations with respect to not following recommended preventive maintenance replacement activities. PPL entered the finding into its corrective program (CR 710737) and plans to modify its preventive maintenance practices for the EPA breakers and to continue to work with the vendor to establish a permanent resolution.

The finding is more than minor because it is associated with the equipment performance attribute and affected the objective of the Mitigating Systems Cornerstone to ensure the availability, reliability and capability of equipment (e.g. the reactor protection system) that respond to initiating events to prevent undesirable consequences. The finding was determined to have very low safety significance (Green) in Phase 1 of Appendix A to the SDP because it was not a design or qualification deficiency, did not result in the loss of system safety function, did not represent the actual loss of safety function of a single train of equipment for greater than its technical specification allowed outage time, did not result in the loss of safety function of a train of risk significant non-technical specification equipment for greater than 24 hours, nor is it potentially risk significant due to seismic, flood, or severe weather initiating events. This finding has a cross-cutting aspect in the area of problem identification and resolution because PPL did not thoroughly evaluate similar breaker failures and take into account vendor information such that the extent of condition was considered and the problem resolved (4OA2).

Inspection Report# : [2006005](#) (*pdf*)

**Significance:**  Jun 30, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Inadequate Procedures Resulted in Motor Operated Valve Failures**

A self-revealing non-cited violation was identified for failure to have adequate work instructions in accordance with 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings." This resulted in not identifying stem nut degradation prior to the failure of two Unit 1 residual heat removal (RHR) valves. PPL entered the issue into the corrective action program and has replaced the stem nuts on the two failed RHR valves, as well as other valves, that had degraded stem nuts.

The finding was more than minor because the condition affected the Procedure Quality attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The valves failed to stroke during the Spring 2006 refueling outage. The finding is of very low safety significance because the finding was determined to not require a quantitative assessment using Manual Chapter 0609, Appendix G, "Shutdown Operations Significant Determination Process."

Inspection Report# : [2006003](#) (*pdf*)

**Significance:**  Jun 30, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Identify Material Degradation Which Resulted in a Failure of the "C" ESW Pump Breaker**

A self-revealing non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, Corrective Action was identified because PPL failed to adequately evaluate and correct degraded material in the "C" Emergency Service Water (ESW) pump breaker that caused a failure on April 5, 2006. PPL's corrective action for this failure included replacing the breaker with a new style breaker.

The finding was more than minor because the condition affected the Equipment Performance attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. This finding is of very low safety significance because the finding was not a design or qualification deficiency, did not represent a loss of system safety function, did not represent an actual loss of safety function of a single train for greater than its Technical Specification Allowed Outage Time, did not represent an actual loss of safety function of one or more non-Technical Specification trains of equipment designated as risk significant per 10 CFR 50.65, for greater than 24 hours, and did not screen as potentially risk significant due to external events. This finding has a PI&R (evaluation) cross-cutting aspect because PPL did not perform a thorough evaluation of the problem so that the resolution addressed causes and extent of condition as necessary to prevent the subsequent failure of the 4Kv breaker due to material degradation.

Inspection Report# : [2006003](#) (*pdf*)

**G****Significance:** Jun 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

**Ineffective Corrective Actions to Assure Training and Qualification of Workers as Required by 10 CFR 50****Appendix B, Criterion XVI**

The inspectors identified a non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, "Corrective Action" because PPL did not correct long standing issues related to worker qualifications. This resulted in unqualified workers performing tasks important to safety as described by the Quality Assurance (QA) program. Inspectors observed that over a four year period, PPL took action to reconcile the qualification of the individuals involved in each event. PPL has developed a plan to address this issue and an effectiveness review of the implemented actions is scheduled for November 2006.

This finding is more than minor because if left uncorrected, the tasks being performed by unqualified workers will become a more significant safety concern. An unqualified worker calibrating safety-related equipment affected the Equipment Performance attribute of the mitigating systems cornerstone and unqualified fire brigade members affect the Protection Against External Factors attribute of the same cornerstone. The finding affects the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events. This finding is of very low safety significance because the work performed by the unqualified individual performing the recirculation flow calibration did not result in a loss of system safety function, and did not represent an actual loss of safety function of any single train of equipment. The Significance Determination Process (SDP), Appendix F, does not specifically address fire brigade issues and allows for management discretion to determine issue significance. This performance issue was reviewed by NRC management and is determined to be a finding of very low safety significance.

Inspection Report# : [2006003](#) (*pdf*)**G****Significance:** Mar 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Equipment Hatch Plugs are not Watertight as Indicated in the FSAR**

A self-revealing non-cited violation was identified for not complying with 10 CFR 50, Appendix B, Criterion III, "Design Control." PPL did not assure that the emergency core cooling system (ECCS) compartments were water tight as described in the Final Safety Analysis Report (FSAR). This resulted in water intrusion into two ECCS compartments simultaneously during an unexpected overflow of the reactor water cleanup backwash receiving tank on August 18, 2004. PPL entered this issue into the corrective action program, re-performed numerous internal flood analysis and concluded that the hatch plugs do not have to be leak tight. In addition, PPL sealed the gaps around the equipment hatch plugs.

This finding is greater than minor because it is associated with the Mitigating Systems Cornerstone of design control and affects the cornerstone's objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). The water intrusion reduced the capability of the division II core spray system because the system auto start feature was manually disabled for approximately two hours. The inspectors performed a Phase 1 screening using IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." The finding was determined to be of very low safety significance (Green) because this design deficiency did not result in a loss of function in accordance with Generic Letter 91-18.

Inspection Report# : [2006002](#) (*pdf*)

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## Barrier Integrity

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## Emergency Preparedness

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## Occupational Radiation Safety

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## Public Radiation Safety

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## Physical Protection

[Physical Protection](#) information not publicly available.

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## Miscellaneous

**Significance:** N/A Feb 10, 2006

Identified By: NRC

Item Type: FIN Finding

### PI&R Inspection Summary

The team concluded that the implementation of the corrective action program (CAP) at Susquehanna was generally good. The team determined that Susquehanna was effective at identifying problems and entering them in the CAP. However, while the identification of equipment deficiencies was acceptable, the team identified one finding and several minor issues where there appeared to be an attitude of acceptance of deficiencies and abnormal conditions. Once entered into the system, the items were screened and prioritized in a timely manner using established criteria. Items entered into the CAP were properly evaluated commensurate with their safety significance. The causal evaluations reasonably identified the causes of the problems and developed appropriate corrective actions. The team noted a trend over the last two years of a lack of rigor with regard to operability evaluations. Corrective actions were typically implemented in a timely manner and appropriately addressed the root causes. However, the team identified one example where the corrective actions to prevent repetition for a NRC identified NCV were implemented in an ineffective manner constituting a minor violation. Licensee audits and self-assessments were generally adequate. The team also noted that the licensee's efforts to reduce human performance error rates were continuing. On the basis of interviews conducted during the inspection, the team concluded that workers at the site felt free to input safety concerns into the CAP.

Inspection Report# : [2006006](#) (*pdf*)

Last modified : March 01, 2007