

Susquehanna 2

1Q/2006 Plant Inspection Findings

Initiating Events

G**Significance:** Jun 30, 2005

Identified By: NRC

Item Type: FIN Finding

Inadequate Corrective Actions to Address Loss of Main Transformer Cooling and Potential for Reactor Scram

The loss of all cooling to the "B" main transformer and the resulting manual reactor scram on April 28, 2005 uncovered a self-revealing finding of failure to follow the corrective action program procedure. Following transformer replacement modifications, and a review of industry operating experience in 2002, PPL identified that the automatic transfer scheme of the power supplies to the Unit 2 main transformer cooling system contained single-point failure vulnerabilities. A previous loss of all cooling to the Unit 2 "A" main transformer occurred on March 27, 2003 and identified that total loss of transformer cooling could result in a reactor scram. The PPL Corrective Action procedure NDAP-QA-702, requires the implementation of interim corrective actions to prevent recurrence, minimize the problem or mitigate its effects. Contrary to this procedure, PPL initiated no actions to prevent recurrence or mitigate its effects until the identified design vulnerability caused another loss of main transformer cooling which resulted in a reactor scram on April 28, 2005. After the April 28th scram, PPL revised procedures to improve operator response to a total loss of transformer cooling and initiated a high priority modification to remove the design vulnerability.

This finding is greater than minor because it is associated with the design control and procedure adequacy performance attributes of the Initiating Events cornerstone and the finding negatively affected the cornerstone objective to limit the likelihood of those events that upset plant stability. An SDP Phase 1 risk assessment determined the finding was determined to be of very low significance (Green) since as a transient initiator it did not contribute to the likelihood of mitigation equipment or functions not being available.

This finding is related to the corrective action category of the Problem Identification and Resolution cross-cutting area because PPL did not take action on identified problems in accordance with corrective action and work process procedures to implement actions that could prevent recurrence, minimize the problem or mitigate its effects.

Inspection Report# : [2005003\(pdf\)](#)

Mitigating Systems

G**Significance:** Mar 31, 2006

Identified By: NRC

Item Type: FIN Finding

Incomplete Corrective Actions contribute to CRD Flow control failure.

The inspectors identified a finding for not implementing Corrective Action procedure, NDAP-QA-702, which requires all actions to correct and prevent recurrence be completed before the closure of a condition report. Following electrolytic capacitor failures at Susquehanna corrective actions were not completed which directly contributed to loss of control rod drive hydraulic flow on February 22, 2006. PPL has entered this issue into their corrective action program.

This finding is greater than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone. The finding negatively affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences because the failure resulted in increased scram times on 20 control rods. The finding was determined to be of very low significance (Green) since the finding does not represent a loss of safety function and is not potentially risk significant due to external events. The cause of the problem is related to the Problem Identification and Resolution cross-cutting area. (Section 1R12)

Inspection Report# : [2006002\(pdf\)](#)**G****Significance:** Feb 10, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify Scaffolding that Affected the Safety-Related RHR Discharge Pressure Instrument Tubing Input to Automatic Depressurization System

The inspectors identified a NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for failure to identify, for greater than a year, that a scaffold was constructed contacting a safety-related instrument sensing line which provided an input to the automatic depressurization system (ADS). The affected system was declared inoperable until the scaffold was removed. The licensee took prompt corrective action to remove the subject scaffold and entered the issue into the corrective action program. The licensee conducted an extensive plant walk-down that

identified other scaffolds which were not properly constructed. The licensee subsequently determined that ADS was operable but degraded. This finding was greater than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of the ADS system that responds to initiating events to prevent undesirable consequences. The inspectors noted the issue was also greater than minor, based on a review of NRC Inspection Manual Chapter (IMC) 0612, Appendix E, "Examples of Minor Issues and Cross-Cutting Aspects," Example 4.a - the issue is not minor if later evaluation determined that safety-related equipment was adversely affected. The finding was determined to be of very low safety significance (Green) because the performance deficiency did not represent a design deficiency and did not result in the loss of a safety function. The finding had a cross-cutting aspect related to the area of Problem Identification and Resolution; specifically, station personnel did not identify that the incorrect construction of the scaffolding was a condition adverse to quality. (Section 40A2.1.b.(1))
Inspection Report# : [2006006\(pdf\)](#)

Significance:  Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Foreign Material Exclusion Procedural Instructions Associated with EDG Work

A Green, self-revealing non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified because PPL failed to provide adequate procedural instructions associated with foreign material controls when working in emergency diesel generator (EDG) bays or work areas. As a result, foreign material caused a failure of the "C" EDG turbocharger during its biennial 24 hour endurance run and the associated inoperability of the "C" EDG. PPL entered this issue for resolution in their corrective action program and have incorporated Foreign Material Exclusion (FME) controls for all EDG work areas in station procedures.

The finding is more than minor because it is associated with the Mitigating System cornerstone attribute of equipment reliability and availability and affected the cornerstone's objective of ensuring that safety-related equipment is capable of responding to initiating events to prevent undesirable consequences. This finding was considered to have very low safety significance (Green) using Phase 1 of the significance determination process because it did not result in an actual loss of safety function and it was not potentially risk-significant due to external events.

Inspection Report# : [2005005\(pdf\)](#)

Significance:  Dec 02, 2005

Identified By: NRC

Item Type: FIN Finding

Fire Brigade Drill Program Not Consistent With Regulatory Guidance and Industry Standards

The inspectors identified a Green finding regarding the implementation of the fire brigade drill program. The finding involves practices that are not consistent with regulatory guidance (Branch Technical Position (BTP) SPLB 9.5.1 and Regulatory Guide (RG) 1.189) and industry standards for the performance and crediting of fire brigade drills. Specifically, the program does not result in the five member, on-shift, fire brigade practicing as a team during drills and consequently does not allow for an effective assessment of the brigade's performance during drills. In addition, two examples were identified where the licensee failed to implement specific drill program requirements. The licensee has entered these issues into their corrective action program for review and resolution.

The finding is more than minor because it affected the Protection Against External Factors attribute of the Mitigating Systems Cornerstone, in that it impacted manual fire suppression (fire brigade) capability; and affected the cornerstone objective of ensuring the availability of systems that respond to initiating events. This finding has been reviewed by NRC management and is determined to be a finding of very low safety significance (Green). (Section 1R05.04)

Inspection Report# : [2005009\(pdf\)](#)

Significance:  Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Maintenance Performance Contributed to a Failure of 125 Volt DC Battery Charger 2D633

The inspectors identified a self-revealing non-cited violation of Technical Specifications Section 5.4.1 "Administrative Controls - Procedures," for not correctly pre-planning and implementing a surveillance on the 2D633 battery charger. This resulted in not identifying and correcting a degraded condition which contributed to the failure of the battery charger and subsequent Unit 2 shutdown on April 10, 2005. Following the shutdown, PPL initiated actions to improve the battery charger inspection work plans and preventive maintenance procedures as well as provide improvements in training.

This finding is greater than minor because the loss of 125 Volt DC battery charger 2D633 affected the Mitigating Systems cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. The SDP Phase 1 screening determined that a Phase 2 evaluation was required, because the finding represented an actual loss of a safety function of a single train, for greater than its Technical Specification Allowed Outage Time. A Phase 3 evaluation was performed instead of a Phase 2 evaluation because the Phase 3 evaluation was able to more accurately characterize the risk of this subsystem failure. A Phase 3 Risk Assessment determined this finding to be of very low safety significance (Green).

The inspectors identified that a contributing cause of this finding is related to the organizational performance category of the Human Performance cross-cutting area because the lack of adequate pre-planned work instructions resulted in maintenance individuals not inspecting all wires in battery charger 2D633 as required by the work instructions. Therefore, the degraded wires were not identified and repaired in March 2005, and as a result the battery charger failed on April 10, 2005.

Inspection Report# : [2005003\(pdf\)](#)

G**Significance:** Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Evaluation for a Degraded Emergency Service Water Ventilation Damper

The NRC identified a non-cited violation for not implementing the Temporary Change procedure, in accordance with Technical Specification 5.4.1.a, "Administrative Controls - Procedures." The temporary change performed in the field resulted in a loss of seismic qualification of the "D" emergency service water (ESW) ventilation subsystem. When this was discovered the "D" ventilation subsystem and the "D" ESW pump were declared inoperable in accordance with the Technical Requirements Manual, Section 3.7.6.E. The inspectors determined that failure to implement the temporary change procedure as required by Technical Specifications caused the loss of the seismic qualification of the "D" ESW ventilation subsystem, which provides cooling for the ESW pumps. PPL declared the "D" ESW ventilation subsystem and the "D" ESW pump inoperable, performed an engineering evaluation (EWR 681288) and approved the use of a special tool to secure and maintain the seismic qualification of the damper. PPL installed this tool and declared the damper operable on June 7, 2005.

This finding is more than minor because the loss of seismic qualification affected the "Protection Against External Factors" Attribute of the Mitigating Systems cornerstone and the objective of ensuring capability of a system (ESW) that responds to initiating events to prevent undesirable consequences. This finding is of very low safety significance because the qualification deficiency did not result in the loss of function.

The inspectors identified that a contributing cause of this finding was related to the organizational performance category of the Human Performance cross-cutting area because operations and maintenance did not recognize the need to have engineering evaluate the method that was used to secure the damper in accordance with NDAP-QA-1218, "Plant Changes."

Inspection Report# : [2005003\(pdf\)](#)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

G**Significance:** Jun 30, 2005

Identified By: NRC

Item Type: FIN Finding

Additional Collective Radiation Exposure Due to Inadequate Preparation for RHR Valve Work

The inspectors identified a self-revealing finding having very low safety significance due to a deficiency in ALARA performance. During the Susquehanna Unit 2 refueling outage (2RI012), rework on the residual heat removal (RHR) F050A and F050B valves resulted in a collective exposure of 17.006 person-rem, against a goal of 6.830 person-rem. This additional collective exposure was principally the result of problems associated with the seat lapping tool and an inability to effectively hydrolaze the work area.

The performance deficiency was due to an inability to effectively lap the valve seat on the RHR F050A and F050B valves. Susquehanna's three-year rolling average (2001-2003) is below the significance determination process (SDP) criteria of 240 person-rem for boiling water reactors; therefore, overall ALARA performance has been effective and this finding is of very low safety significance.

The inspectors identified that a contributing cause of this finding was related to the organizational performance category of the Human Performance cross-cutting area because health physics and maintenance personnel did not adequately prepare for the work to be performed, and did not review the documentation and lessons learned of similar work performed in earlier outages.

Inspection Report# : [2005003\(pdf\)](#)

Public Radiation Safety

Physical Protection

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

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 : May 25, 2006