

February 1, 2007

Mr. Britt T. M^cKinney
Senior Vice President, and
Chief Nuclear Officer
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Berwick, PA 18603-0467

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION - NRC INTEGRATED
INSPECTION REPORT 05000387/2006005 AND 05000388/2006005

Dear Mr. M^cKinney:

On December 31, 2006, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Susquehanna Steam Electric Station Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on January 12, 2007 with Mr. Robert Saccone and other members of your staff.

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

The report documents two NRC-identified findings of very low safety significance (Green). Both of these findings were determined to involve a violation of NRC requirements. However, because of the very low safety significance and because they are entered into your corrective action program, 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 NCVs in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Susquehanna Steam Electric Station.

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,

/RA/

Mel Gray, Chief
Projects Branch 4
Division of Reactor Projects

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

Enclosures: Inspection Report 05000387/2006005 and 05000388/2006005
w/ Attachment 1: Supplemental Information

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REGION I

Docket Nos.: 50-387, 50-388

License Nos.: NPF-14, NPF-22

Report No.: 05000387/20060005 and 05000388/2006005

Licensee: PPL Susquehanna, LLC (PPL)

Facility: Susquehanna Steam Electric Station, Units 1 and 2

Location: Berwick, Pennsylvania

Dates: October 1, 2006 through December 31, 2006

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TABLE OF CONTENTS

SUMMARY OF FINDINGS	iii
REPORT DETAILS	1
REACTOR SAFETY	1
1R01 Adverse Weather Protection	1
1R04 Equipment Alignment	2
1R05 Fire Protection	2
1R06 Flood Protection Measures	3
1R11 Licensed Operator Requalification Program	4
1R12 Maintenance Effectiveness	5
1R13 Maintenance Risk Assessments and Emergent Work Control	7
1R15 Operability Evaluations	8
1R19 Post-Maintenance Testing	9
1R20 Refueling and Other Outage Activities	9
1R22 Surveillance Testing	10
1R23 Temporary Plant Modifications	10
1EP4 Emergency Action Level and Emergency Plan Changes	11
RADIATION SAFETY	12
2PS2 Radioactive Material Processing and Transportation	12
OTHER ACTIVITIES	13
4OA1 Performance Indicator Verification	13
4OA2 Identification and Resolution of Problems	14
4OA3 Event Follow-up	17
4OA5 Other Activities	19
4OA6 Meetings, Including Exit	21
ATTACHMENT: SUPPLEMENTAL INFORMATION\	
KEY POINTS OF CONTACT	A-1
LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED	A-1
LIST OF DOCUMENTS REVIEWED	A-2
LIST OF ACRONYMS	A-5

SUMMARY OF FINDINGS

IR 05000387/2006-005, 05000388/2006-005; 10/01/2006 - 12/31/2006; Susquehanna Steam Electric Station, Units 1 and 2; Maintenance Effectiveness and Identification and Resolution of Problems.

The report covered a 3-month period of inspection by resident inspectors, an announced inspection by a regional senior health physicist, and in-office reviews by regional specialists of changes to the emergency plan and the results of the annual operator licensing exams. Two Green findings, both of which were non-cited violations (NCVs), were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). 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 3, dated July 2000.

A. NRC Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. 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 work instructions appropriate for the disassembly and inspection of an emergency service water (ESW) check valve conducted as part of the inservice test (IST) program. 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 entered the finding into the corrective action program (CR 824522) and plans to revise its IST work order instructions.

The finding is more than minor because it is associated with the Procedure Quality attribute of the Mitigating System Cornerstone and 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 (Green) in the Phase 1 screening conducted per Appendix A of the SDP because it was not a design or qualification deficiency, did not result in a loss of safety function, did not result in the actual loss of the safety function for a single train of equipment longer than its technical specification allowed outage time, did not result in the actual loss of safety function of a train of risk significant non-technical specification equipment for greater than 24 hours, nor did it screen as potentially significant for seismic, flooding, or severe weather events. 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).

- Green. The inspectors identified a non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because PPL did not identify and correct a long standing condition adverse to quality with regard to RPS 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 action program (CR 710737) and plans to modify the 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).

B. Licensee-Identified Violations.

None.

REPORT DETAILS

Summary of Plant Status

Susquehanna Steam Electric Station (SSES) Unit 1 began the inspection period at 100 percent reactor power. On November 17, 2006, an automatic recirculating system flow runback to 48 percent pump speed decreased reactor power to 73 percent reactor power. The cause of the automatic runback was a protective trip of the 'C' circulating water pump when operators were attempting to restore this pump to service following maintenance. The unit was restored to 100 percent power later that same day. On November 25, 2006, the Unit 1 reactor scrammed due to a main generator lockout and turbine trip. The lockout and trip of the main generator was due to unexpected response of the main generator automatic voltage regulator following a 230 KV breaker failure at the East Palmerton 230 KV switch yard. Unit 1 was restarted on November 30, 2006 and reached full power on December 2, 2006. With the exception of brief power reductions to perform control rod pattern adjustments and perform control rod friction testing, the unit remained at full power for the rest of the inspection period.

Unit 2 began the inspection period with the reactor shut down to perform maintenance and fuel assembly re-channeling. The unit was restarted on October 18, 2006, and reached full power operation on October 23, 2006. With the exception of brief power reductions to perform control rod pattern adjustments and perform control rod scram time testing, the unit remained at full power for the rest of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01- 1 Sample)

a. Inspection Scope

During November 2006, the inspectors reviewed PPL's preparations for cold weather. Plant walkdowns of selected risk significant structures, systems and components (SSCs) were performed to assess the adequacy of PPL's cold weather protection activities. The inspectors verified that cold weather protection features, such as heat tracing, space heaters, and weatherized enclosures were adequately monitored and were operational to support operability of the SSC that they protect. The inspectors also reviewed and evaluated plant conditions during cold weather conditions the week of December 8, 2006. The following risk significant SSCs were reviewed.

- Unit - 1 condensate water storage tank,
- Unit - 2 condensate water storage tank and,
- excavated sections of the yard fire main.

b. Findings

No findings of significance were identified.

Enclosure

1R04 Equipment Alignment (71111.04 - 3 Samples).1 Partial Walkdown (2 samples)a. Inspection Scope

The inspectors performed a partial walkdown of a redundant train or backup safety system, during periods when the related or diverse system or train was out-of-service (OOS) for maintenance and/or testing, or of the safety system following its restoration from maintenance, to verify the system was properly aligned and to note any discrepancies that could impact the system's operability. The inspectors determined the required component alignments based on review of station drawings and procedures. The position/condition for selected valves, electrical power sources, and main control board indications and controls were verified to be in the correct position based on field observation. The following partial system walkdowns were performed:

- Common, 13 KV power to security load center, tie breaker and relays,
- Unit 2 Division I and II residual heat removal (RHR) system.

b. Findings

No findings of significance were identified.

.2 Complete Walkdown (1 sample)a. Inspection Scope

The inspectors conducted a detailed review of the alignment and condition of the Unit 2 residual heat removal (RHR) system, including the associated RHR service water support system. 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 walkdown included entry into a locked high radiation area to inspect the RHR loop that was operating in the shutdown cooling mode to support the Unit 2 outage work.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05 - 8 Samples)a. Inspection Scope

The inspectors reviewed PPL's fire protection program to determine the required fire protection design features, fire area boundaries, and combustible loading requirements for the selected areas identified below. The inspectors walked down the selected areas

and assessed PPL's control of transient combustible material and ignition sources, the fire detection and suppression capabilities within the area, the condition of fire barriers, and the adequacy of compensatory measures that were in place. The areas inspected included:

- Common, radwaste building elevation 676', fire zone 0-63A,
- Common, radwaste building elevation 660', fire zone 0-62 and elevation 690' fire zone 0-64B,
- Common, security control center, fire zone 0-83, FP-013-360,
- Units 1 and 2 ESW pump house fire zones 0-51 and 0-52,
- Common, standby gas treatment area, control structure, FP-013-187,
- Unit 1, turbine building upper and lower switchgear rooms, FP-113-231 and FP-113-222,
- Unit 2, turbine building upper and lower switchgear rooms, FP-213-287 and FP-213-279, and
- Unit 2 reactor feed pump lube oil reservoirs and battery room 11-58, FP-213-273.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 - 2 Samples)

.1 Internal Flooding (1 sample)

a. Inspection Scope

The inspectors reviewed documents and inspected safety-related and risk significant SSCs to evaluate the adequacy of PPL's internal flood protection measures for the Unit 2, Division I and II residual heat removal compartments. The inspectors toured the RHR rooms and observed the condition of the equipment for monitoring water level in the compartments and verified that adequate procedures were in place to identify and respond to flooding.

b. Findings

No findings of significance were identified.

.2 External Flooding (1 sample)

a. Inspection Scope

The inspectors reviewed documents and inspected SSCs to evaluate the adequacy of PPL's external flood protection measures for the emergency service water pump house for Units 1 and 2. The inspectors interviewed plant personnel and performed walkdowns of the relevant areas within the ESW pump house to verify the adequacy of watertight

Enclosure

doors, manholes, flood mitigation doors, site topography, and other flood protection features. The inspectors also verified that equipment was installed and maintained as described in the Updated Final Analysis Safety Report (UFSAR) , Chapter 3.4, "Water Level (Flood) Design."

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

.1 Resident Inspector Quarterly Review (71111.11Q - 1 Sample)

a. Inspection Scope

On November 14, 2006, the inspectors observed licensed operator simulator training during routine operator requalification training. The inspectors compared the operators' actions to Technical Specification requirements, emergency plan procedures, and the emergency operating procedures. The inspectors also assessed command and control, communication, and crew interaction during the scenario. The inspectors evaluated PPL's critique of the operators' performance to identify discrepancies and deficiencies in operator training. The training scenario consisted of a dual unit loss of offsite power (LOOP) followed by a loss of coolant accident (LOCA).

b. Findings

No findings of significance were identified.

.2 Review of the Annual Operator License Exams (71111.11B -1 sample)

a. Inspection Scope

On November 28, 2006, the inspectors conducted an in-office review of licensee annual operating test results and comprehensive written exam results for 2006. The inspection assessed whether pass rates were consistent with the guidance of NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process." The inspectors verified that:

- Crew failure rate was less than 20 percent. (Crew failure rate was 0 percent).
- Individual failure rate on the dynamic simulator test was less than or equal to 20 percent. (Individual failure rate was 0 percent).
- Individual failure rate on the walk-through test was less than or equal to 20 percent. (Individual failure rate was 1 percent).
- Individual failure rate on the comprehensive written exam was less than or equal to 20 percent. (Individual failure rate was 0 percent).
- Overall pass rate among individuals for all portions of the exam was greater than or equal to 75 percent. (Overall pass rate was 99 percent).

Enclosure

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q - 3 Samples)

a. Inspection Scope

The inspectors evaluated PPL's work practices and follow-up 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 those issues with potential common cause or generic implications.

The inspectors reviewed PPL's response to the failure of ESW check valve 011514 and also reviewed the previous maintenance and surveillance testing for this component and similar components in the Susquehanna inservice testing (IST) program. The inspectors compared the surveillance activities with ASME code requirements and NRC positions described in Generic Letter (GL) 89-04 and NUREG 1482, "Guidelines for Inservice Testing at Nuclear Power Plants."

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. The following issues were reviewed:

- Unit 1 and 2, 4KV circuit breaker truck operated cell (TOC) switch failures,
- Unit 1 and 2 reactor protection system electrical protective assembly (EPA) circuit breaker failures
- Unit 1 and 2, motor operated valve maintenance and GL 89-10 testing,
- Unit 1 and 2, changes to preventive maintenance (PM) scope for IST check valves in sample disassembly groups.

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings." because PPL did not provide work instructions appropriate for check valve disassembly and inspection activities required to accomplish IST program activities.

Description. On September 17, 2006, PPL discovered the failure of emergency service water check valve 011514 which provides separation between the two divisions (loops) of the ESW at the cooling water supply header for the 'E' emergency diesel generator.

Enclosure

The valve disk had rotated up and over the anti-rotation lugs and became wedged at an abnormal angle which failed the valve in the open position. PPL determined that corrosion between the hinge arm and the valve disk allowed the rotation of the disk. PPL personnel repaired the valve by installing a new hinge arm and disk.

The inspectors determined that PPL's previous inspections of check valve 011514 and other similar check valves were not performed using a procedure or instruction that included a required degree of disassembly or the need for tolerance or critical dimension checks. PPL is committed to the 1998 ASME Operation and Maintenance code. Paragraphs ISTC-9200 and ISTC-5221 of the ASME code describe the requirement for test plans to contain the details of the sample disassembly examination programs. The inspectors found that PPL had retained the procedural requirement to ensure full stroke motion of the obturator; but over time, PPL removed the level of check valve disassembly, as well as dimension checks and tolerances from the work instruction scope.

The inspectors determined that work instructions utilized for the disassembly and inspection of the 011513 valve (same IST valve group) were lined out (pen and ink change) and not performed in 2002, eliminating the inspection details required by procedure MT-GM-003, "Valve Disassembly, Repair and Reassembly." The last valve disassembly and inspection for the 011514 valve was performed in July 2004 and consisted of a stroke of the obturator with no additional inspection criteria provided in the work package. PPL did not have technical evaluations to support these changes to the work scope. The inspectors determined that work instructions were changed to allow the field maintenance supervisors to determine on a case by case basis the disassembly and the inspection data to be obtained and recorded. In response to the inspectors' observations, PPL took corrective action to re-establish the appropriate level of inspection scope for the related emergency service water check valve IST activities.

Analysis. PPL's elimination of maintenance work instructions to the extent that the implemented disassembly and inspection activities of IST check valves were not appropriate to demonstrate the operational readiness of these safety components constituted a performance deficiency. The finding is greater than minor because it is associated with the Mitigating System Cornerstone attribute of Procedure Quality and affects the cornerstones objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inadequate work instructions resulted in the failure of check valve 011514 which was discovered on September 17, 2006. The check valve failure affected reliability of the ESW system by diverting approximately 1000 gallons per minute (gpm) of system flow into an idle 'A' loop of ESW.

The inspectors performed a Phase 1 screening using NRC Manual Chapter 0609, "Significance Determination Process" Appendix A, and determined the finding to be of very low safety significance (Green) because the condition did not involve an actual failure of a system safety function, did not involve loss of safety function of one or more trains of Technical Specification equipment, and was not risk significant due to external events. PPL provided an evaluation which demonstrated that with this check valve

Enclosure

failure, ESW would still have provided the required cooling of safety related components under limiting design conditions. This evaluation was based on the current 'B' loop ESW flow operating design margin of 1300 gpm above the assumed accident design flow requirements and the expected diversion (or loss) of only 1000 gpm into an idle loop of ESW when the 011514 check valve was failed open.

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.

Enforcement. 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires that, "Activities affecting quality shall be prescribed by documented instructions, procedures or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished." Contrary to this requirement, repetitive task # V0701-13 and other IST activities did not include appropriate quantitative or qualitative acceptance criteria to assess the operational readiness of check valves. The inappropriate work instructions to inspect check valves, due to the reductions in work package scope, resulted in the failure of the ESW check valve 011514 on September 17, 2006. Because this failure was of very low safety significance and has been entered into PPL's corrective action program, (CR 824522), this violation is being treated as a NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as:

NCV 05000387, 388/2006005-01, Inadequate Work Instructions for the Disassembly and Inspection of Check Valves.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 5 Samples)

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 (RMAs) to the requirements of 10 CFR 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 required and appropriate RMAs were identified.

The inspectors reviewed scheduled and emergent work activities with licensed operators and work-coordination personnel to verify whether RMAs 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 reviewed PPLs on-line risk monitor

Enclosure

“Equipment Out-of-Service” (EOOS) inputs and results to gain insights into the risk associated with these plant configurations when appropriate. The inspectors performed control room and field walkdowns to verify whether the compensatory measures identified by the risk assessments were appropriately performed. The selected maintenance activities included:

- Common, fire system valve replacement, Engineering Change 640735,
- Common, 'A' and 'D' ESW pump relay replacement, CR 829765,
- Common, failure of 'B' pump supply breaker, CR 835002,
- Units 1 and 2, 'D' EDG jacket water heater failure, CR 816614, and
- Unit 2, mode change risk evaluation for dry well cooler ODM 819724.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 - 4 Samples)

a. Inspection Scope

The inspectors reviewed operability determinations selected based on risk insights, to assess the adequacy of the evaluations, the use and control of compensatory measures, and compliance with the Technical Specifications (TS). In addition, the inspectors reviewed the selected operability determinations to verify whether the determinations were performed in accordance with NDAP-QA-0703, "Operability Assessments." The inspectors used the TS, Technical Requirements Manual (TRM), USFAR, and associated design basis documents as references during these reviews. The issues reviewed included:

- Common, emergency service water 'B' loop flow observed during 'A' loop operation, CR 819715,
- Unit 1, UFSAR transient impact and SRV pressure relief function with 1D SRV inoperable, CR 828428,
- Unit 2, reactor head spider piping snubbers at zero (bottomed out) setting, OFR 818771, and
- Unit 2, nitrogen leak from primary containment, CR 824362.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19 - 5 Samples)a. Inspection Scope

The inspectors observed portions of post-maintenance testing activities to determine whether the tests were performed in accordance with the approved procedures. The inspectors assessed the test's adequacy by comparing the test to the scope of maintenance work performed. In addition, the inspectors evaluated the test acceptance criteria to verify whether the test demonstrated that the tested components satisfied the applicable design and licensing bases and the TS requirements. The inspectors reviewed the recorded test data to determine whether the acceptance criteria were satisfied. The post-maintenance testing activities reviewed included:

- Common, repair of 'A' Control Structure Emergency Outside Air Supply System damper FD-07816A, AR 827966 and work instruction (WI) 750752,
- Common, 'E' EDG testing following overhaul, TP-024-149,
- Unit 1, main generator Alterex excitation stability tests following cable repair, WI 828394,
- Unit 1, troubleshooting and repair of turbine building chiller following total loss of turbine building chilling function, and
- Unit 2, repair of 250 volt DC bus battery charger 2D143B, PCWO 826317 and RLWO 826496.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20 - 1 Sample).1 Other Outage Activities: Unit 2 Rechanneling Outagea. Inspection Scope

The inspectors reviewed the outage risk management plan for the Unit 2 outage for increased unidentified leakage and fuel assembly rechanneling, conducted from September 30, 2006 to October 18, 2006, to confirm that PPL had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. During the rechanneling outage, the inspector observed or reviewed the outage activities listed below.

- Establishment of a reactor vessel cool down rate,
- Establishment of shutdown cooling using the 'A' residual heat removal system,
- Outage configuration controls including:
 - 1) availability and accuracy of reactor coolant system instrumentation;
 - 2) availability of nuclear instrumentation;
 - 3) electrical power alignments;

Enclosure

- 4) decay heat removal system operation;
- 5) availability of reactor inventory makeup water systems; and
- 6) secondary containment controls and integrity.
- Drywell walkdown after shutdown and prior to final closeout,
- Fuel bundle rechanneling work on the refueling floor,
- Review of the observed control cell friction for control rod 42-51 and additional corrective actions including emergent core configuration changes,
- Core verification, and
- Reactor startup, control rod scram time tests, reactor power increases before and after turbine generator online.

During the conduct of the maintenance outage activities, the inspectors reviewed the associated documentation to ensure that the tasks were performed in accordance with plant TS requirements and operating procedures. Documents reviewed are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 - 5 Samples)

a. Inspection Scope

The inspectors observed portions of selected surveillance test activities in the control room and in the plant and reviewed the test results. The inspectors compared the test results to the acceptance criteria and the applicable TS or TRM operability and surveillance requirements to evaluate whether the systems were capable of performing their intended safety functions. The observed or reviewed surveillance tests included:

- Common, IST quarterly ESW flow verification, SO-054-B03,
- Unit 1, HPCI valve exercising, SO-152-004,
- Unit 2, HPCI turbine overspeed test, TP-252-006,
- Unit 2, dynamic testing of motor operated valve RHR HV-251-F007B, TP-249-070, and
- Unit 2, HPCI quarterly flow verification, cold quick start SO-252-002.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23 - 1 Sample)

a. Inspection Scope

The inspectors reviewed the temporary plant modification to determine whether the temporary changes adversely affected system or support system availability, or

Enclosure

adversely affected a function important to plant safety, or would impact the initiating events cornerstone. The inspectors reviewed the associated system design bases, including the UFSAR, TS, and assessed the adequacy of the safety determination screenings and evaluations. The inspectors also assessed configuration control of the temporary changes by reviewing selected drawings and procedures to verify whether appropriate updates had been made. The inspectors compared the actual installation to the temporary modification documents to determine whether the implemented changes were consistent with the approved documents. The inspectors reviewed selected post installation test results to verify whether the actual impact of the temporary changes had been adequately demonstrated by the test. The following temporary modification was included in the review:

- Unit 1, installation of monitoring equipment on the main generator auto voltage regulator, EWR 8322223 and PCWO 828906

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

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

a. Inspection Scope

An NRC senior emergency preparedness specialist performed an in-office review of recent changes made to the Susquehanna emergency action levels, the emergency plan, and its implementing procedures. These changes were made in accordance with 10 CFR 50.54(q), which PPL had determined did not result in a decrease in effectiveness to the emergency plan, concluded that the emergency plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR 50. During this in-office inspection, the inspector conducted a sampling review of the changes that could potentially result in a decrease in effectiveness. This review does not constitute an approval of the changes and, as such, the changes are subject to future NRC inspection. The inspector sampled associated 10 CFR 50.54(q) reviews for recent changes. The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 4. The requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety (PS)

2PS2 Radioactive Material Processing and Transportation (71122.02 - 6 Samples)

a. Inspection Scope

The inspectors reviewed the solid radioactive waste system description in the UFSAR and the recent radiological effluent release report for information on the types and amounts of radioactive waste disposed, and reviewed the scope of PPL's audit program to verify that it meets the requirements of 10 CFR 20.1101(c).

The inspectors walked down the liquid and solid radioactive waste processing systems to verify and assess that the current system configuration and operation agree with the descriptions contained in the UFSAR and in the Process Control Program (PCP); reviewed the status of any radioactive waste process equipment that is not operational and/or is abandoned in place; verified that the changes were reviewed and documented in accordance with 10 CFR 50.59, as appropriate; and, reviewed current processes for transferring radioactive waste resin and sludge discharges into shipping/disposal containers to determine if appropriate waste stream mixing and/or sampling procedures, and methodology for waste concentration averaging provide representative samples of the waste product for the purposes of waste classification as specified in 10 CFR 61.55 for waste disposal.

The inspectors reviewed the radiochemical sample analysis results for each of PPL's radioactive waste streams; reviewed PPL's use of scaling factors and calculations used to account for difficult-to-measure radionuclides; verified that the program assures compliance with 10 CFR 61.55 and 10 CFR 61.56 as required by Appendix G of 10 CFR Part 20; and, reviewed PPL's program to ensure that the waste stream composition data accounts for changing operational parameters and thus remains valid between the annual or biennial sample analysis update.

The inspectors observed shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and PPL verification of shipment readiness; verified that the requirements of any applicable transport cask Certificate of Compliance have been met; verified that the receiving licensee is authorized to receive the shipment packages; and, observed radiation workers during the conduct of radioactive waste processing and radioactive material shipment preparation activities. The inspectors determined that the shippers were knowledgeable of the shipping regulations and that shipping personnel demonstrate adequate skills to accomplish the package preparation requirements for public transport with respect to NRC Bulletin 79-19 and 49 CFR Part 172 Subpart H, and verified that PPL's training program provides training to personnel responsible for the conduct of radioactive waste processing and radioactive material shipment preparation activities.

Enclosure

The inspectors sampled non-excepted package shipment records and reviewed these records for compliance with NRC and Department of Transportation (DOT) requirements.

The inspectors reviewed PPL's Licensee Event Reports, Special Reports, audits, state agency reports, and self-assessments related to the radioactive material and transportation programs performed since the last inspection and determined that identified problems were entered into the corrective action program for resolution. The inspector also reviewed corrective action reports written against the radioactive material and shipping programs since the previous inspection.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151 - 12 Samples)

a. Inspection Scope

The inspectors reviewed PPL's performance indicator (PI) data for the period of December 2004 through November 2006, to verify 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." The following Performance Indicators were included in this review:

Initiating Event Performance Indicators

- Units 1 & 2 Unplanned Scrams per 7000 Critical Hours
- Units 1 & 2 Scrams With Loss of Normal Heat Removal
- Units 1 & 2 Unplanned Power Changes per 7000 Critical Hours

Mitigating Systems Performance Indicators

- Units 1 & 2 Safety System Functional Failures

Barrier Integrity Performance Indicators

- Units 1 & 2 Reactor Coolant System (RCS) Activity
- Units 1 & 2 RCS Identified Leak Rate

b. Findings

No findings of significance were identified.

Enclosure

4OA2 Identification and Resolution of Problems (71152 - 3 Sample)

.1 Daily Review of Items Entered into the Corrective Action Program

As required by Inspection Procedure (IP) 71152, Identification and Resolution of Problems, and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed screening of items entered into PPL's corrective action program. This was accomplished by reviewing the description of each new action request and condition report and attending daily management meetings.

.2 PIR Annual Samples

EPA Molded case circuit breaker failures

a. Inspection Scope

The inspectors reviewed condition reports, failure analyses, root cause evaluations, and vendor information associated with the reactor protection system (RPS) emergency power assembly (EPA) molded case circuit breakers, which have exhibited repeated failures over an extended period, most notably 2002-2006. Additionally, the inspector interviewed PPL personnel involved with testing and the conduct of prior and ongoing evaluations of the EPA breaker failures.

b. Findings:

Introduction: The inspectors identified a NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," of very low safety significance (Green) because PPL failed to identify and correct a long standing condition adverse to quality with regard to the failures of the RPS EPA circuit breakers.

Description: In 2002, four Unit 2 EPA breakers failed to trip open following receipt of a valid test trip signal. PPL's investigation under CR 429174 noted that three of the four failures were associated with breakers purchased under the same purchase order. Based on this information, PPL concluded the failures were a result of a manufacturing error and three of the four failed breakers were sent to the original equipment manufacture (OEM) for failure analysis. PPL received the OEM's failure analysis report on March 14, 2003. The failure analysis report did not identify any abnormal operation or sticking components. The OEM recommended PPL follow industry guidance to exercise the breakers more frequently to ensure that the lubricant remained loose and that sticking/binding did not occur. PPL did not reconcile the discrepancy between their assumption of a malfunction and the OEM's failure analysis, which found no abnormal conditions.

A second opportunity to identify and correct the increased failure rate presented itself in 2004. Four additional Unit 2 EPA breakers failed to trip during testing in October and November. The root cause analysis, performed under CR 610892, identified the most

Enclosure

likely cause for the breaker failures was the Unit 2 environmental conditions. The report notes that the ambient temperature normally exceeded the EPA's quality certification temperature of 85 degrees Fahrenheit (°F). The report identified further analysis was necessary to better understand the impact of the environmental conditions. In response, one of the failed EPA breakers was sent to the OEM for failure analysis and PPL scheduled non intrusive predictive maintenance data collection (vibration, thermography, record current readings and air temperatures) on the EPA breakers. However, PPL did not subsequently perform the predictive maintenance. The OEM's failure analysis was received on June 5, 2005, and identified that a ring of corrosion was present on the brass throat of the undervoltage relay coil. The OEM stated that the corrosion may have caused additional friction/binding. The report indicated that elevated temperatures would increase the rate of corrosion buildup and that more frequent testing or operation of the EPA breaker would reduce the buildup of corrosion in the throat area.

On September 12, 2005, the Unit 1 'B' alternate reactor protection system EPA breaker failed to trip open during surveillance testing. Two additional Unit 1 EPA breakers failed to trip open during testing on September 19. An independent contractor performed a failure analysis on two of the three breakers. The failure analysis report, lab No. QR-0297, was received on November 11, 2005. The report concluded that internal misalignment coupled with degradation of the grease within the breaker's undervoltage relay (UVR) unit resulted in binding of the breaker mechanism which led to the failure-to-trip condition. Additional testing, conducted on a controlled (new) EPA breaker, identified that after heating, the breaker's trip mechanism was more difficult to operate due to increased friction/binding due to a change in the alignment of the moving parts. The report further noted that the grease had degraded, losing its lubricating properties, causing additional binding of the tripping mechanism. The analysis concluded that over time the environmental conditions can adversely effect the lubrication of the EPA breakers and in conjunction with misalignment led to failures.

PPL's root cause analysis, for CR 710737, issued on November 11, 2005, revealed that the vendor manual identified the need to replace the EPA breaker on a 7.4 year cycle. This was based on ambient temperature of 70°F to maintain the 40-year qualified life of the EPA. Historically, Unit 1 operated at 83°F and Unit 2 operated at 92°F and could reach 98°F in the summer months. The majority of the EPA breaker failures, on both units, had occurred after the breaker exceeded the vendor manual identified qualified life of 7.4 years. PPL concluded that the EPA circuit breaker replacement frequency was less than adequate and established corrective actions to change the replacement frequency to a six year interval pending future actions based on the results of additional failure analysis and testing.

Analysis: The failure of PPL to adequately evaluate prior breaker failures and incorporate vendor technical information pertaining to the preventive maintenance necessary to ensure satisfactory operation is a performance deficiency. 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

Enclosure

initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance (Green) in accordance with Appendix A to the SDP because the finding did not result in an actual loss of safety function and the finding is not 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 the PPL failed to thoroughly evaluate similar breaker problems and to take into account vendor information such that the extent of condition was considered and the problem resolved.

Enforcement: 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires in-part that measures be established to assure that conditions adverse to quality, such as failures, malfunctions, and deficiencies be promptly identified and corrected. Contrary to the above, PPL did not properly evaluate prior breaker failures to identify a condition adverse to quality with respect to not following recommended preventive maintenance replacement activities. As a result, subsequent additional breaker problems occurred. Because the finding is of very low safety significance and has been entered into PPL's corrective action program (CR 710737), this violation is being treated as a NVC, consistent with Section VI.A of the NRC Enforcement Policy. **NCV 05000387, 388/2006005-02) Inadequate Evaluation of EPA Breaker Failures.**

.3 Annual Sample: Review of PPL Comprehensive Cultural Assessment

a. Inspection Scope:

The inspectors reviewed the results of PPL's 2006 Comprehensive Cultural Assessment which was completed by an independent consultant in late 2006. The inspectors discussed the survey with PPL personnel and contractor personnel. Staff considered the scope and results of the survey in their review. At the time of the inspection, the licensee was in the process of planning the roll-out of the results to Susquehanna site staff and was still evaluating the results to determine what actions would be taken based on the survey results.

b. Findings

No findings of significance were identified. The scope of the cultural survey covered: the nuclear safety culture; general culture and work environment; leadership, management and supervisory skills and practices; and special topics of interest. The inspectors noted that the industry database used for a comparison of the results contained a reasonable quantity of data points. Overall, the results of the survey indicated that PPL has a strong nuclear safety culture and continues to make progress in improving the overall organizational culture, work environment and leadership team. In addition, the results of the survey show an improving trend as compared to the previous cultural assessment performed at Susquehanna in 2003. There were a few specific areas/topics in which PPL identified a need to take further actions. PPL was in the process of determining the next steps at the time of the inspection.

Enclosure

.4 Semi-Annual Trend Review of the Corrective Action Program

a. Inspection Scope

The inspectors reviewed a list of action requests from July 2006 to December 2006. The inspection focused on action requests with the subtype "Management Action" because these issues were not specifically designated as condition reports (CR), and therefore, in accordance with PPL's program, received less oversight in PPL's corrective action program. The inspectors evaluated the action requests against the requirements of NDAP-QA-0702, "Action Request and Condition Report Process," and 10 CFR, Appendix B. Additionally, the inspectors reviewed two negative trends, previously identified by PPL, associated with implementation of the process for controlling work hours and worker training and qualifications.

b. Findings and Observations

No findings of significance were identified. The inspectors did not identify any new trends that were not previously identified by PPL through their process defined in NDAP-QA-0710, "Station Trending Program." An improving trend from the prior assessment was identified by the inspectors with regard to the number of incidents related to temporary scaffolding; including the tracking, removal, storage, and the leaning of poles or constructing scaffold platforms against or too close to qualified equipment.

4OA3 Event Follow-up (71153 - 3 Samples)

1. (Closed) LER 05000388/2006002-00 Missed Technical Specification LCO 3.8.1 Entry for Unit 2 During Unit 1 Engineered Safeguards System Bus Testing

On April 19, 2006, during an investigation of an event involving a late entry into a TS limiting condition for operation (LCO), PPL identified that a similar event had occurred during a previous refueling outage on March 6, 2004. The 2004 event was determined to be reportable because the actions required by the LCO were not performed within the time Unit 2 would have been required to be placed in Mode 3. The event was not safety significant because although the LCO actions (verification of breaker alignments and offsite power availability) were not performed, a review of operator logs indicated that offsite power and the emergency diesel generators were available. Corrective actions taken included providing additional interim guidance to the operators for the LCO entries and additional actions are planned to change the TS and/or TS bases to clarify the requirements. This finding constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. This issue is documented in condition report 759209. This LER is closed.

Enclosure

.2 Recirculation Flow/Reactor Power Runback

a. Inspection Scope

On November 17, 2006, Susquehanna Unit 1 experienced an automatic recirculating flow runback to 48 percent speed which brought the unit to 74 percent reactor power. The cause of the runback was a protective trip of the 'C' circulating water (CW) pump which occurred as operators attempted to return this pump to service following planned maintenance.

PPL determined that the CW pump discharge valve did not properly stroke open on the pump start. A delay timer allows the valve to travel open. A few seconds after start the circulating water pump protective circuit not tripped the pump because the discharge valve was not fully open.

The inspectors observed plant parameters at the reduced power level and reviewed the plant and operator response to the transient. The inspectors also witnessed the reset of the reactor recirculating pump flow limiters, the reactivity brief for power increase, and a portion of the power ascension back to full reactor power. No plant equipment issues or operator performance issues were identified.

b. Findings

No findings of significance were identified.

.3 Susquehanna Unit 1 Reactor Scram on Main Generator Lockout/Trip

a. Inspection Scope

On November 25, 2006, the Susquehanna Unit 1 reactor scrammed due to a main generator loss of field. The reactor tripped, as designed, on a main generator lockout/turbine trip. Susquehanna operators were notified that, at the same time as the reactor scram, the 230 KV system had experienced a lockout on the East Palmerton / Siegfried 230 KV line. The PPL transmission group later notified Susquehanna that a breaker failure had occurred at the East Palmerton 230 KV switch yard.

The inspectors responded to the site and observed reactor shutdown conditions. The inspectors observed that all control rods inserted, reactor pressure was being maintained using bypass valves to the main condenser as a heat sink, and reactor level was being maintained using normal feedwater. The inspectors verified that the operators' response to the reactor scram were in accordance with procedures and that safety-related equipment performed as expected. The 'D' main steam safety relief valve prematurely opened at 1091 psig, which is prior to its setpoint of 1136 psig, but the valve reseated properly and this equipment issue did not complicate the transient. The inspectors reviewed PPL's evaluation of the 230 KV grid disturbance and the unexpected main generator auto voltage regulator response to the grid disturbance. Unit 2 remained at full power and stable following the grid disturbance. The inspectors

Enclosure

continued to follow the root cause evaluation and corrective actions for the main generator auto voltage regulator control as well as the operability of the safety relief valve functions under other baseline inspection modules.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Temporary Instruction (TI) - 2515/169, "Mitigating System Performance Index Verification"

a. Inspection Scope

The objective of TI 2515/169 is to verify that the licensee has correctly implemented the Mitigating Systems Performance Index (MSPI) guidance for voluntarily reporting unavailability and unreliability of the monitored safety systems. On a sampling basis, the inspector validated the accuracy of the unavailability and unreliability input data used for both the 12-quarter period of baseline performance and for the first reported results (second calendar quarter 2006). Specific attributes examined by the inspectors included: surveillance activities which, when performed, do not render the train unavailable for greater than 15 minutes; surveillance activities which, when performed, do not render the train unavailable due to credit for prompt operator recovery actions; and for each MSPI system, on a sampling basis, the inspectors independently confirmed the accuracy of baseline planned unavailability, actual planned and unplanned unavailability, and the accuracy of the failure data (demand, run, and load, as appropriate) for the monitored components.

b. Findings

No findings of significance were identified.

Question 1: For the sample selected, did the licensee accurately document the baseline planned unavailability hours for the MSPI systems?

Answer: Baseline planned unavailability calculations were reviewed to ensure baseline data for the MSPI indices were calculated correctly. Overall, PPL identified the correct information to include in the baseline planned unavailability calculation, however, there were some minor discrepancies noted.

One instance was found where 2 hours of previously reported "planned" unavailability was charged to "unplanned" unavailability for the 'A' and 'C' EDG for the purposes of calculating the MSPI. This discrepancy required a revision to the MSPI basis document, however, the error would have resulted in a more conservative MSPI value. PPL generated AR's 823052 and 824220 to correct the values in the MSPI basis document.

Enclosure

The inspector reviewed MSPI monitoring of the cooling water systems (RHRSW and ESW) to determine if SSES had correctly accounted for planned and unplanned unavailability resulting from cascading support system unavailability. One instance was identified where approximately 5 hours of RHRSW system outage was unaccounted for because the train of RHR that it would normally support was in a maintenance outage and the RHR system unavailability had already been accounted for. It was unclear whether or not the RHRSW train would have been required to be available since there is a cross-tie between units, and that train of RHRSW could have provided a cooling water function to the other unit. The licensee intends to submit an FAQ regarding this, and has generated AR 823614.

Question 2: For the sample selected, did the licensee accurately document the actual unavailability hours for the MSPI systems?

Answer: The inspector reviewed control room narrative logs and AR's to verify the accuracy and completeness of the reported actual unavailability data. No errors were identified.

Question 3: For the sample selected, did the licensee accurately document the actual unreliability information for each MSPI monitored component?

Answer: The inspector reviewed SSES unreliability data, and reviewed logs and AR's to confirm that PPL accurately classified:

- valve and breaker failures on demand,
- emergency diesel generator failures to start, load, or run; and
- pump failures on demand and failures to run

No errors in the reported unreliability information were identified.

Question 4: Did the inspector identify significant errors in the reported data, which resulted in a change to the indicated index color? Describe the actual condition and corrective actions taken by the licensee, including the date when the revised PI information was submitted to the NRC.

Answer: No significant errors were identified that would have resulted in a change to the indicated index color.

Question 5: Did the inspector identify significant discrepancies in the basis document which resulted in (1) a change to the system boundary; (2) an addition of a monitored component; or (3) a change in the reported index color? Describe the actual condition and corrective actions taken by the licensee, including the date of when the bases document was revised.

Answer: No significant discrepancies were identified that would have resulted in a change to a system boundary, an addition of a monitored component, or a change in the reported index color.

Enclosure

4OA6 Meetings, Including Exit

Exit Meeting Summary

On January 12, 2007, the resident inspectors presented the inspection results to Mr. Robert Saccone and other members of the PPL staff, who acknowledged the findings. Susquehanna management stated that none of the information reviewed by the inspectors was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Bogar, Senior Engineer - Emergency AC
D. Coffin, Supervisor - Nuclear Emergency Planning
D. D'Angelo, Manager, Station Engineering
D. Filchner - Regulatory Affairs
J. Folta, System Engineer, RPS
J. Grisewood, Manager, Corrective Action
J. Helsel, Nuclear Operations Manager
J. Jeanguenat, Senior Engineer - ESW
R. Kessler, Senior health Physicist - ALARA
H. Koehler, Senior Engineer - RCIC
M. Micca, Health Physicist - Waste Shipping
G. Rupert, Nuclear Maintenance Manager
V. Schuman, Radiological Protection Manager
D. Shane, Technical Training
R. Stigers, Senior Health Physicist - Waste Processing
B. Stitt, Supervisor - LOR
T. Walters, Senior Engineer - RHR/RHRSW
J. Young- Senior Engineer - Plant Analysis
J. Vandenberg, Senior Engineer - HPCI

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

NONE

Opened and Closed

NCV 05000387, 388/2006005-01	Inadequate Work instructions for the disassembly and inspection of IST check valves.
NCV 05000397, 388/2006005-02	Inadequate Corrective Actions for EPA Breaker Failures.

Closed

LER 05000388/2006002-00,	Missed Technical Specification LCO 3.8.1 Entry for Unit 2 During Unit 1 ESS Bus Testing
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LIST OF DOCUMENTS REVIEWED
(Not Referenced in the Report)

Section 1R01: Adverse Weather Protection

Report WMXRwinter, "PM activities for winterization sorted by activity number"
NDAP-00-0024, winter operations preparations completed checklist

Section 1R04: Equipment Alignment

OP-216-001, RHR Service Water, Rev. 22
OP-249-001, RHR System, Rev. 31
TM-OP-016-ST, RHR Service Water System Training Material, Rev. 01
TM-OP-049-ST, Residual Heat Removal System Training Material, Rev. 02
System Health Report 216-RHRSW, First Period 2006
System Health Report 249-RHR, First Period 2006
Piping and Instrumentation Drawings —112, RHR Service Water System
Piping and Instrumentation Drawings —151, Residual Heat Removal System

Section 1R05: Fire Protection

FP-013-321, radwaste HVAC areas (r)-310, R-311, R-312), fire zone 0-64B elevation 691'
FP-013-306, radwaste building elevation 660', fire zone 0-62

Section 1R06: Flood Protection Measures

RTPM 572677I, Unit 2 six year area flooding detector test
FSAR section 3.4, water level (flood) design
FSAR 9.2.5.6, ESW pipe crack leakage detection
FSAR 9.2.6.6, RHRSW pipe crack leakage detection
FSAR 9.2.7.3, safety evaluation, ultimate heat sink
EC-RISK-0539, flooding analysis calculation

Section 1R11: Licensed Operator Requalification Program

CR 827660
Logs: TSC Emergency Plan Communicator, Unit 1 reactor operator, EOF, communicator, PA
emergency management agency logs, and EOF lead controller

Critiques: EOF critique notes, drill critique presentation, November 14, 2006, and
EP-PS-212I-D

Section 1R12: Maintenance Effectiveness

Station health report May 31, 2006 - August 31, 2006

Maintenance rule basis document - system 58

TS 3.3.8.2

CR 617245, Loss of indication for 'B' emergency service water pump

CR 768835, 'C' emergency service water pump started while racking out breaker

CR 811196, 1A20903 circuit breaker TOC contacts 5 and 6 not made up

D107252, Sheet 9, Schematic Diagram - 4.16KV Bus 1C Incoming Feeder Breaker from ESS Transformer 211, Rev. 23

D107300, Sheet 31, Schematic Diagram - Reactor Recirculation RPT Breaker 3A, Rev. 16

EWR 632645, Loss of Indication for 'B' Emergency Service Water Pump

EWR 811738, 4 KV Circuit Breaker Operability

Maintenance Rule Basis Document - System 04 (4.16 KV System)

Maintenance Rule Basis Document - System 54 (Emergency Service Water System)

MT-GE-048, Cutler Hammer Type DHP-VR 4.16KV Circuit Breaker and Switchgear Inspection and Maintenance, Rev. 4

OP-000-001, Breakers, Rev. 18

OP-104-001, 4 KV Electrical System, Rev. 7

PCWO 333120, 2B RHRSW pump did not have trip enable light at panel 2C601

PCWO 388221, Replace truck operated cell (TOC) switch for pump 1P401A

PCWO 438214, Replace TOC switches and agastat relay

PCWO 538591, 1A20309 - Perform installation and testing of new 4KV vacuum breaker

PCWO 560590, 2A20208 - Replace TOC switches

PCWO 581574, 2A20502 - Replace contact block and perform breaker PM E0255-51

PCWO 593960, 1A20404 - Clean TOC switch and control switch contacts

PCWO 617252, 1A20208 - Replace defective TOC switch

PCWO 624804, Troubleshoot failure of 'B' emergency service water pump to start

PCWO 811203, Repair/replace TOC switch in 1A20309

TP-104-021, Initial Installation of Unit 1 ESS Bus Incoming Feeder Vacuum Circuit Breakers, Rev. 1

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

ODM 819724, Unit 2 operational decision to enter L.C.O. 3.0.4.b to allow mode change with 2V 414B, drywell area unit cooler not operable

Section 1R15: Operability Evaluations

CR 824362 and CR 828429

ME-2RF-101, reactor vessel disassembly and reassembly

Section 1R22: Surveillance Testing

CR 830292

IOM 157, high pressure coolant injection instruction manual, CR 816824

SO-249-B05, quarterly RHR loop 'B' valve exercising

Section 2OS: Occupational Radiation Safety

Condition Reports:

Section 2PS2: Radioactive Material Processing and Transportation

Condition Reports:

813041; 827872; 801025

Sample Activity Comparison (Form WM-PS-155-1) for RWCU Filter Media

Correlation Factor Comparisons (Form WM-PS-155-2): DAW Smears; CRD; LRW Filter Media;
CFS Backwash Filter Media; Bead Resin CD/RW

Assessment Reports:

800140 - RAMQC Shipment Activities; 698427-Shipping Activities

Procedures:

NDAP-QA-0641, Rev 6, Waste Management Program
WM-GP-009, Rev 7, Hazardous Material Transportation Accident Immediate Response
Information Transmittal
WM-PS-100, Rev 10, Shipment of Radioactive Waste
WM-PS-110, Rev 6, General Shipment of Radioactive Material
WM-PS-180, Rev 8, Advanced Notification of Applicable States
NDAP-QA-0646, Rev 10, Process Control Program
NTP-QA-53.3, Rev 4, Hazardous Materials Handling, Packaging, Shipping and Transportation
Training Program
WM-PS-155, Rev 4, 10CFR61 Sample Shipping and Correlation Factor Determination
TVA Nuclear Technical Program Reliability Assessment Report 2006-U02 (Duratek-Hittman)
Susquehanna Steam Electric Station NUPIC Commercial Grade Survey of Race, LLC, Audit
No. 19364
Radioactive Material Shipment Records: 06-021; 06-087; 06-089; 06-090; 06-094

Training Material:

HP230, Rev 1, HAZMAT Training for Health Physics Technicians
HS053, Rev 2, HAZMAT Training for Container Handlers

Section 4OA1: Performance Indicator Verification

Susquehanna monthly operating reports
SC-176-102, Unit 1 primary coolant specific activity - dose equivalent I-131
NDAP-QA-0737, Reactor Oversight Process (ROP) Performance Indicators
Units 1 & 2 Control Room Logs
NDAP-QA-0737, "Regulatory Performance Assessment"

Technical Specification 3.4.4, "RCS Operational Leakage"
SO-100/200-006, "Shiftly Surveillance Operating Log"
SC-176/276-102, "Reactor Coolant Dose Equivalent Iodine-131"
Units 1 & 2 Licensee Event Reports

Section 40A2: Identification and Resolution of Problems

CR 376987, 413814, 423467, 427600, 429174, 429452, 610892, 610979, 710737, 611380, and 727426
NDAP-QA-0702, Rev. 11, 19, and 14
IOM641/GEK 94988B
PCWO 627034, 627033, 623491, 627034
Gene letter failure evaluation of QTFJ224175WLUVATRS
Lab report QR-0297
Calculation EC-EQQL-1004
Test specification TS-646-06-001, Rev. 0
SM-158-004, Rev 8

Section 40A3: Event Followup

Section 40A5: Implementation of TI 2515/169 - Mitigating Systems Performance Index Verification

NDAP-QA-0737, Rev 3, NRC PI Data Source / Independent Reviewer Certification
PL-NF-06-002, Rev 0, Susquehanna MSPI Basis Document
SO-152-004, Rev 24, Quarterly HPCI Valve Exercising
SO-252-004, Rev 20, Quarterly HPCI Valve Exercising
SO-150-004, Rev 25, Quarterly RCIC Valve Exercising
SO-250-004, Rev 24, Quarterly RCIC Valve Exercising
SE-124-207, Unit 1, Division II LOCA/LOOP Test
OP-102-002, Rev 12, Operations of 125V DC Common Load Manual Transfer Switches
AR's: 481930, 451668, 444904, 461684, 463064, 472586, 473099, 474340, 544894, 506771, 553728, 377547, 382003, 381290, 439411, 394611, 575087, 575766, 452047, 452477, 376231, 617245, 535885
AR's generated during inspection: AR's 822988, 822621, 823052, 822748, 823614, 824220

LIST OF ACRONYMS

ADAMS	Agencywide Document and Access Management System
ALARA	as low as is reasonably achievable
CFR	Code of Federal Regulations
CR	condition report
CRD	control rod drive
CW	circulating water
DOT	Department of Transportation
EDG	emergency diesel generator
EOOS	equipment out of service

EPA	emergency power assemblies
ESW	emergency service water
°F	degrees Fahrenheit
FAQ	Frequently Asked Question
FSAR	final safety analysis report
GL	generic letter
gpm	gallons per minute
HPCI	high-pressure coolant injection
HP	health physics
IMC	inspection manual chapter
IP	inspection procedure
LER	licensee event report
LCO	limiting condition for operation
LOCA	loss of coolant accident
LOOP	loss of offsite power
MSPI	Mitigating Systems Performance Index
NCV	non-cited violation
NDAP	nuclear department administrative procedure
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NUPIC	Nuclear Utilities Procurement Issues Council
ODM	operational decision making
OOS	out-of-service
PARS	publically available records
PCP	process control program
PCWO	plant component work orders
PI	performance indicator
PM	preventive maintenance
PS	public radiation safety
PPL	PPL Susquehanna, LLC
RCS	reactor coolant system
RHR	residual heat removal
RHRSW	residual heat removal service water
RMAs	risk management actions
RPS	reactor protection system
SDP	significant determination process
SSC	structures, systems, and components
SSES	Susquehanna Steam Electric Station
TI	temporary instruction
TOC	truck operated cell
TRM	technical requirements manual
TS	technical specifications
UVR	undervoltage relay
WI	Work Instruction
WO	Work Order