



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
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August 12, 2008

Mr. Britt McKinney
Senior Vice President and
Chief Nuclear Officer
PPL Susquehanna, LLC
769 Salem Boulevard – NUCSB3
Berwick, PA 18603-0467

**SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION – NRC INTEGRATED
INSPECTION REPORT 05000387/2008003 AND 05000388/2008003**

Dear Mr. McKinney:

On June 30, 2008, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Susquehanna Steam Electric Station Units 1 and 2. The enclosed integrated inspection report presents the inspection results, which were discussed on July 11, 2008, with you and other members of your staff.

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

This report documents one NRC-identified finding of very low safety significance (Green). This finding was determined to involve a violation of NRC requirements. Additionally, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. However, because of the very low safety significance and because they are entered into your 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 NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Susquehanna Steam Electric Station.

In 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/

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

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

Enclosures: Inspection Report 05000387/2008003 and 05000388/2008003
Attachment: Supplemental Information

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Sincerely,
/RA/
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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-387, 50-388

License No: NPF-14, NPF-22

Report No: 05000387/2008003 and 05000388/2008003

Licensee: PPL Susquehanna, LLC

Facility: Susquehanna Steam Electric Station, Units 1 and 2

Location: Berwick, Pennsylvania

Dates: April 1, 2008 through June 30, 2008

Inspectors: F. Jaxheimer, Senior Resident Inspector
G. Ottenberg, Resident Inspector
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SUMMARY OF FINDINGS

IR 05000387/2008003, 05000388/2008003; 04/01/2008 – 06/30/2008; Susquehanna Steam Electric Station, Units 1 and 2; Operability Evaluations

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

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation (NCV) of Title 10 of the Code of Federal Regulation (CFR), Part 50, Appendix B, Criterion XVI, "Corrective Action" because PPL did not implement timely corrective actions for a degraded condition associated with the "A" and "C" emergency service water (ESW) pump emergency diesel generator (EDG) load sequence timers. Inspectors identified that PPL had multiple opportunities to correct this condition adverse to quality. The inability of ESW pump initiation timers to function as designed over the entire surveillance interval was identified by PPL following failed surveillance tests in 2002, 2004, and 2006. On April 9, 2008, during the performance of Unit 1 Division I diesel generator LOCA/LOOP testing, the "A" and "C" ESW pump start sequencing timers failed their acceptance criteria with times that were longer than specified. In response to the timer failures, and to ensure the operability of the associated diesel generators, the operators deactivated the "A" and "C" ESW pumps by opening the DC knife switches in accordance with procedure. This resulted in elevated online risk for Unit 2 because one Division of ESW was inoperable and unavailable for automatic or manual start. PPL initiated actions to restore the function of the timers and has entered the issue into the corrective action program. The ESW pumps were returned to an operable status on April 10, 2008.

This finding is greater than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone; and it negatively impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding is related to the Problem and Identification Resolution cross-cutting area (Corrective Action) because PPL did not take appropriate corrective actions to address a safety issue and adverse trend in a timely manner commensurate with its safety significance. (P.1(d)), (Section 1R15)

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Susquehanna Steam Electric Station (SSES) Unit 1 began the inspection period with the reactor shutdown for a scheduled maintenance and refueling outage which began on March 4, 2008. The reactor was restarted on April 17, 2008, and went through numerous power plateaus for Extended Power Uprate testing before reaching the authorized power level of 94.4 percent (3733 MWth) on May 7, 2008. Except for three brief power reductions, Unit 1 remained at the authorized power level of 94.4 percent rated thermal power for the remainder of the inspection period. On May 16, 2008, as part of scheduled extended power uprate (EPU) testing, operators tripped a condensate pump and reactor power was reduced to approximately 66 percent of licensed power level by the automatic runback. On June 9, 2008, Unit 1 experienced an unplanned plant transient when operators tripped a recirculation pump. Following a second low feedwater flow induced runback, power stabilized at 26 percent. Details of this unplanned transient are presented in Section 4OA3 of this report. On June 22, 2008, reactor power was reduced to approximately 67 percent reactor power for several hours to support a control rod sequence exchange.

Unit 2 began the inspection period at full rated thermal power (RTP). The unit remained at full RTP with the exception of three brief power reductions. On April 27, 2008, reactor power was reduced to approximately 77 percent reactor power for several hours to support a control rod sequence exchange. On April 29, 2008, reactor power was reduced to approximately 88 percent reactor power as operators lowered main generator output to 1000 MWe due to an emergency load reduction request from the regional grid operator. The load reduction was requested due to grid instabilities caused from the loss of a 500 kV power distribution line. The 500 kV line was promptly restored and the unit was returned to full RTP in less than 2 hours. On June 29, 2008, reactor power was reduced to approximately 71 percent reactor power for several hours to support a control rod sequence exchange.

Note: The licensed thermal power for Unit 1 is a reactor power of 3952 megawatts thermal. The EPU License Amendment for SSES was approved on January 30, 2008, and was implemented on Unit 1 in accordance with issued license conditions. For the current operating cycle, the Unit 1 authorized power level is 94.4 percent of the EPU licensed power limit. For the purposes of this report, full rated thermal power for Unit 2 remains at 3489 megawatts thermal. EPU power level increases have not yet been implemented for Unit 2.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 2 Samples)

.1 Adverse Weather – Readiness for Seasonal Susceptibilitiesa. Inspection Scope

During the week of May 19, 2008, the inspectors reviewed offsite power systems and procedures affecting the power systems including the communications protocols

between the plant staff and transmission system operator (TSO). Inspectors reviewed the actions to be taken when notified of unacceptable post-trip voltage and measures to monitor and maintain availability and reliability of both the onsite and offsite alternating current (AC) power systems. The review included a walkdown of the 230 kV, 500 kV, and T-10 substations to evaluate the adequacy of PPL's weather protection features. Inspectors also inspected the condition of underground vaults that contain portions of the offsite power system cabling which are needed to provide offsite power to the plant. Inspectors reviewed recent re-assessments of plant risk based on maintenance activities which could affect the offsite power system reliability for the station. Documents that were reviewed are listed in the attachment. The readiness of the following system was reviewed.

- Required sample offsite and alternate AC power readiness (manway #2, 500 kV, 230 kV and T-10 substations).

b. Findings

No findings of significance were identified.

.2 Adverse Weather – Impending Adverse Weather Conditions

a. Inspection Scope

During the week of June 9, 2008, the inspectors reviewed system operations during high ambient temperature conditions (> 90 degF) with pending thunderstorm conditions. This review included a review of containment gas and liquid temperatures for each Unit and the temperature of the ultimate heat sink or spray pond. Inspectors performed walkdowns to determine the adequacy of PPL's weather protection features and preparedness for high winds. The inspectors reviewed and evaluated plant ventilation system design and alarm limits, concentrating on Unit 1 since this was the first time the unit was operating at EPU conditions with ambient outside temperatures significantly above 90 degF. Documents reviewed are listed in the Attachment.

- Both Units readiness for hot weather conditions and thunderstorms (Unit 1, readiness for hot weather conditions at EPU power level of 3733 MWTH).

1R04 Equipment Alignment (71111.04 – 4 Samples)

.1 Partial Walkdown

a. Inspection Scope

The inspectors performed partial walkdowns to verify system and component alignment and to identify any discrepancies that would impact system operability. The inspectors verified that selected portions of redundant or backup systems or trains were available while certain system components were out of service. Accessible portions of piping and components were walked down to determine if vibration levels were unacceptable following modifications related to extended power uprate on Unit 1. The inspectors reviewed selected valve positions, electrical power availability, and the general condition of major system components. The walkdowns included the following systems:

- Unit 1, High Pressure Coolant Injection (HPCI) during power ascension to 3611 MWt;
- Common, “A” and “B” EDGs during “C” EDG swap and inoperability;
- Common, 4 kV power and control cable underground vault and manhole #16; and
- Common, 230 kV, 500 kV switchyards including direct current (DC) and AC control power (service station timeframes).

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q – 4 Samples)

.1 Fire Protection – Tours

a. Inspection Scope

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

- Unit 1, HPCI pump room, fire zone 1-1C, elevation 645’-0”, FP-113-103;
- Unit 1, remote shutdown panel room (I-109) access area (I-102) fire zones 1-2B, 1-2D, Elevation 670’, FP-113-109, Revision 5;
- Units 1 and 2, turbine deck, FP-113-234, FP-213-289; and
- Common, 500 kV and 230 kV switchyards and control houses.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed PPL’s inspection and eddy current activities and reviewed PPL’s evaluation of the as-found conditions for the “D” emergency diesel generator (EDG) jacket water cooler (0E507D). The inspectors ensured that PPL had appropriately verified that as-found results were compatible with design basis assumptions. Inspectors evaluated whether the cooler would perform its safety function under design basis accident conditions.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11Q – 1 Sample)

a. Inspection Scope

On April 22, 2008, the inspectors observed licensed operator simulator training during routine operator requalification training. The inspectors compared their observations to Technical Specifications (TSs), emergency plan implementation, and the use of system operating procedures. The inspectors also evaluated PPL's critique of the operators' performance to identify discrepancies and deficiencies in operator training. The following training was observed:

- Loss of Containment Instrument Gas System (CIG), Main Steam Isolation Valve (MSIV) closure, low power anticipated transient without scram (ATWS), EO-100-102 and EO 100-113 and loss of feedwater heating/loss of feedwater string, ON-164-002 and ON-147-002.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12 – 2 Samples)

a. Inspection Scope

The inspectors evaluated PPL's work practices and follow-up corrective actions for selected Structures, Systems, and Components (SSC) issues to assess the effectiveness of PPL's maintenance activities. The inspectors reviewed the performance history of those SSCs and assessed PPL's extent-of-condition determinations for these issues with potential common cause or generic implications to evaluate the adequacy of PPL's corrective actions. The inspectors reviewed PPL's problem identification and resolution actions for these issues to evaluate whether PPL had appropriately monitored, evaluated, and dispositioned the issues in accordance with PPL procedures and the requirements of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance." In addition, the inspectors reviewed selected SSC classification, performance criteria and goals, and PPL's corrective actions that were taken or planned, to verify whether the actions were reasonable and appropriate. In addition, the inspectors performed field walkdowns and interviewed PPL staff to evaluate whether the identified actions were appropriate to correct the extent-of-condition for identified performance issues. The following issues were reviewed:

- Unit 2, 2A control rod drive (CRD) pump bearing mis-installation; and
- Common, containment radiation monitors.

b. Findings

No findings of significance were identified.

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 to the requirements of 10 CFR Part 50.65(a)(4) and the recommendations of NUMARC 93-01, Section 11, "Assessment of Risk Resulting from Performance of Maintenance Activities." The inspectors evaluated the selected activities to determine whether risk assessments were performed when required and appropriate risk management actions were identified.

The inspectors reviewed scheduled and emergent work activities with licensed operators and work-coordination personnel to determine whether risk management action threshold levels were correctly identified. In addition, the inspectors compared the assessed risk configuration to the actual plant conditions and any in-progress evolutions or external events to evaluate whether the assessment was accurate, complete, and appropriate for the emergent work activities. The inspectors performed control room and field walkdowns to evaluate whether the compensatory measures identified by the risk assessments were appropriately performed. The selected maintenance activities included:

- Unit 1, emergent work control and post transient review and Plant Operating Review Committee meeting following recirculation pump trip;
- Units 1 and 2, risk assessment for scheduled ESW Division I pump curve generation, TP-054-065;
- Unit 2, equipment out-of-service (EOOS) risk yellow during "D" EDG, "D" ESW and Unit 2 "A" Standby Liquid Control (SLC) pump scheduled maintenance;
- Common, "B" ESW pump breaker emergent work and risk management; and
- Common, "E" EDG "A" loop of ESW unavailable due to supply valve HV-01110E failure.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 – 8 Samples)

a. Inspection Scope

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

- Unit 1, core spray injection valve worn bearing lockout failure, OFR 1004816 and 1007641;

- Unit 1, "A" and "C" ESW pump timer failures during LOCA/LOOP testing, AR 1013115, 1013355, 1013291, and 1013333;
- Unit 1, Scram discharge vent valve not meeting IST criteria, OFR 1024548;
- Unit 1, "B" Residual Heat Removal Service Water (RHRSW) IST trend;
- Unit 1, Minimum Critical Power Ratio (MCPR) operating limits post "A" reactor recirculating water pump runback, CR 1040313;
- Unit 2, "C" EDG operability with dual indication during 2C Engineering Safeguards System (ESS) bus transfer, OFR 1026380;
- Common, HV-01110E, ESW supply to "E" EDG failure to stroke open during surveillance; and
- Common, "1A" RHRSW ventilation fan damper actuator failure, CR 1042137.

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," in that, PPL did not implement timely corrective actions for a degraded condition associated with the "A" and "C" ESW pump EDG load sequence timers.

Discussion: On April 9, 2008, during the performance of Unit 1 Division I diesel generator Loss of Coolant Accident/Loss of Offsite Power (LOCA/LOOP) testing, the "A" and "C" ESW pump start sequencing timers failed their acceptance criteria with times that were longer than specified. The purpose of the sequence timers is to appropriately sequence the electrical loads onto the EDGs so that a large load coming onto the electrical bus does not overload the EDG. In response to the timer failures, and in order to ensure the operability of the associated diesel generators, the operators deactivated the "A" and "C" ESW pumps by opening the DC knife switches in accordance with the surveillance procedure. PPL initiated actions to restore the function of the timers and the ESW pumps were returned to an operable status on April 10, 2008.

During the performance of surveillance test SE-124-107, if the timer is out-of-specification, the associated ESW pump becomes unavailable and inoperable by procedure. This is done to ensure the operability of the associated EDG during a LOCA/LOOP event. Therefore, on April 9, 2008, the timer failures caused an elevated online risk for Unit 2 because one division of ESW becoming inoperable. Inspectors observed that PPL's online risk calculation provides a core damage frequency multiplier of 14.3 with one division of ESW inoperable.

The inspectors evaluated PPL's prior corrective actions for the time delay relay failures at Susquehanna including the past work history associated with the ESW pump timers and prior engineering evaluations. The inspectors identified that prior condition reports (CRs) 764953, 568629, and 394526, had been written on March 26, 2006; June 3, 2004; and March 31, 2002, respectively, due to the same timer failures. Additionally, CR 781800 was written to determine the best available method to reduce the risk of defeating the DC control to the ESW pumps, since this action prevents both an automatic and a manual start of the pumps. By March 2004, the following condition adverse to quality had been documented: The installed ESW LOCA/LOOP timer hardware failed to function within established acceptance criteria over the entire surveillance test interval.

When the timer failures occurred on April 9, 2008, for the fourth consecutive surveillance cycle, the inspectors determined that the same condition adverse to quality remained uncorrected. The inspectors concluded that PPL did not take appropriate action that would assure reliable ESW pump timer operation over the entire two year surveillance test interval. In addition, the inspectors determined PPL's failure to correct this condition adverse to quality resulted in elevated station risk, constituted a performance deficiency, and did not meet the requirements of 10 CFR 50 Appendix B, Criterion XVI, "Corrective Actions." The cause of this performance deficiency was within PPL's ability to foresee and prevent, because prior testing failures in 2002, 2004, and 2006 provided adequate time to evaluate and take corrective actions to ensure the ESW pumps timers would operate as designed for the entire two year surveillance interval.

Analysis: The inspectors determined this finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone; and it impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to take timely and appropriate corrective actions for the degraded ESW pump sequence timers, initially identified in March 2002, resulted in the repeated instances where ESW pumps were made unavailable to perform of their intended safety function and affected the reliability of the component. Traditional enforcement does not apply since there were no actual safety consequences or potential for impacting the NRC's regulatory function, and the finding was not the result of any willful violation of NRC requirements or PPL's procedures.

The inspectors evaluated this finding using IMC 0609, Attachment 4, "Phase 1- Initial Screening and Characterization of Findings" worksheet. This finding was determined to be of very low safety significance because, while it impacted the availability of one division of ESW, it was never (upon discovery) inoperable for greater than the technical specification allowed outage time, nor did it result in a complete loss of system safety function.

The inspectors determined that this finding had a cross-cutting aspect in the area of problem identification and resolution because PPL did not take appropriate corrective actions to address a safety issue and adverse trend in a timely manner commensurate with its safety significance. Specifically, the corrective actions for ESW pump sequence timer failures did not correct the condition adverse to quality which impacted the reliability of a safety-related component. The ESW system is a high risk contributor at Susquehanna and previous timer failures were not appropriately addressed commensurate with their safety significance. (P.1(d))

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, PPL failed to correct a condition adverse to quality in an appropriate manner, commensurate with its safety significance despite previous failures in March 2002, June 2004, and March 2006. Specifically, the corrective actions associated with the degraded ESW pump sequence timers did not include actions to sufficiently assure proper timer operation though one complete two-year surveillance interval. Because of the very low safety significance of this finding and because the finding was entered into PPL's corrective action program as CR 1013115 and CR 1013291, this violation is being

treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy.
(NCV 05000388/2008003-01, Inappropriate Corrective Actions in Response to Repeated ESW Pump Timer Failures)

1R19 Post-Maintenance Testing (71111.19 – 7 Samples)

a. Inspection Scope

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

- Unit 1, Division II, Residual Heat Removal (RHR) flow surveillance; system outage PMT, SO-149-B02;
- Unit 1, CRD scram time testing;
- Unit 1, Division I, 24 month RHR logic system functional test, SE-149-001, Revision 14;
- Unit 1, Electro-Hydraulic Control pressure regulator and main turbine valve cycling at EPU test conditions;
- Unit 1, condensate pump trip test, EPU test condition #103, TP-144-048;
- Unit 1, functional test of containment radiation monitor (1B CRM) following troubleshooting efforts, SC-173-105; and ESW LOOP "B" Supply Valve to "E" EDG static Quicklook test, PCWO 1037977; and
- Common, HV 01110E ESW valve quicklook test post actuator work, PCWO 034647.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 1 Sample)

.1 Unit 1 Refueling Outage

a. Inspection Scope

The inspectors monitored major system restoration activities, testing and restart activities that were conducted at the completion of the Unit 1 refueling outage from April 1, 2008 through April 17, 2008. Other portions of this refueling outage inspection sample were previously documented in IR 05000387/2008002. The inspectors observed and reviewed the following:

- Control rod testing,
- Core reload activities and core verification,
- Reactor coolant system hydrostatic testing,
- Primary Containment walkdown and closeout,

- Restoration of Secondary Containment,
- Reactor startup,
- Main steam and turbine valve testing,
- Main Turbine startup and loading of generator,
- Plant power ascension; and
- Implementation of EPU testing plan (EPU Testing in Modes 4 & 5).

During the conduct of the above refueling inspection activities, the inspectors reviewed the associated documentation to ensure that the tasks were performed safely and in accordance with plant TS requirements and operating procedures. Inspectors also reviewed all EPU test exceptions and verified that all testing conditions including schedules were in agreement with approved EPU license conditions and PPL's established testing plan.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22 – 6 Samples)

a. Inspection Scope

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

- Unit 1, Division I LOCA/LOOP testing;
- Unit 1, SI-164-305, 24 month calibration of recirculation motor-generator (MG) set positions – electrical and mechanical high speed stops (HSS), Revision 16;
- Unit 1, HPCI quarterly flow verification;
- Unit 1, ASME Class 1 boundary system leakage test, SE-100-002;
- Unit 1, MSIV closure testing at 72.7 percent reactor power, TP-183-013; and
- Unit 2, Division II, quarterly RHR system flow verification, SO-249-B02.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety (PS)

2OS1 Access Control to Radiologically Significant Areas (7112101 – 7 Samples)

a. Inspection Scope

The inspectors reviewed and assessed the adequacy of the PPL's internal dose assessment for any actual internal exposure greater than 50 mrem committed effective dose equivalent.

The inspectors examined PPL's physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools.

The inspectors verified adequate posting and locking of all entrances to high dose rate, high radiation areas, and very high radiation areas.

The inspectors reviewed radiation work permits for airborne radioactivity areas with the potential for individual worker internal exposures of greater than (>) 50 mrem committed effective dose equivalent (20 DAC-hrs). For these selected airborne radioactive material areas, the inspectors verified barrier integrity and engineering controls performance (e.g., HEPA ventilation system operation).

The inspectors reviewed documentation packages for all performance indicator events occurring since the last inspection. The inspectors determined if any of these performance indicator events involved dose rates >25 R/hr at 30 centimeters or >500 R/hr at 1 meter. If so, the inspectors determined what barriers had failed and if there were any barriers left to prevent personnel access. For unintended exposures >100 mrem total effective dose equivalent (or >5 rem skin dose equivalent or >1.5 rem lens dose equivalent), the inspectors determined if there were any overexposures or substantial potential for overexposure.

The inspectors reviewed radiological problem reports since the last inspection which found that the cause of the event was due to radiation worker errors. The inspectors determined if there was an observable pattern traceable to a similar cause. The inspectors determined if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. The inspectors discussed with the radiation protection manager any problems with the corrective actions planned or taken.

The inspectors reviewed radiological problem reports since the last inspection that found that the cause of the event was radiation protection technician error. The inspectors determined if there was an observable pattern traceable to a similar cause. The inspectors determined if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

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

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (7112102 – 3 Samples)

a. Inspection Scope

The inspectors reviewed the as-low-as-is-reasonably-achievable (ALARA) work activity evaluations, exposure estimates, and exposure mitigation requirements. The inspectors

determined if PPL had established procedures, engineering and work controls, based on sound radiation protection principles, to achieve occupational exposures that were ALARA. The inspectors determined if PPL had reasonably grouped the radiological work into work activities, based on historical precedence, industry standards, and/or special circumstances.

The inspectors compared the results achieved (dose rate reductions, person-rem used) with the intended dose established in PPL's ALARA planning for these work activities. The inspectors determined the cause for any inconsistencies between intended and actual work activity doses.

The inspectors reviewed the assumptions and basis for the current annual collective exposure estimate. The inspectors reviewed applicable procedures to determine the methodology for estimating work activity-specific exposures and the intended dose outcome. The inspectors evaluated both dose rate and man-hour estimates for reasonable accuracy.

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

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation (7112103 – 1 Sample)

a. Inspection Scope

The inspectors reviewed the plant FSAR to identify applicable radiation monitors associated with transient high and very high radiation areas including those used in remote emergency assessment.

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

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

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

.1 Review of Items Entered into the Corrective Action Program

a. Inspection Scope

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 all items

entered into PPL's corrective action program. This was accomplished by reviewing the description of each new action request/condition report and attending daily management meetings.

b. Findings

No findings of significance were identified.

.2 Annual Operator Work Around Review

a. Inspection Scope

The inspectors reviewed station documents, interviewed plant operators, and conducted in-plant tours to identify operator work around(s), challenges, and burdens previously identified by PPL and to look for those not yet identified. This inspection focused on identifying potential adverse impact(s) on the operating crew's ability to execute critical tasks required in off-normal or emergency operating procedures. The following work around(s), challenges, and burdens were identified and reviewed:

- Required operator actions to obtain "B" main steam line radiation data due to Unit 1 control room recorder not functioning; and
- Unit 1 HPCI steam admission valve leakby requiring operators to cycle the HPCI floor drain isolation valve daily to prevent HPCI drain overflow.

b. Findings and Observations

No findings of significance were identified.

The inspectors observed an alternate reading for the Unit 1 "B" main steam line radiation monitor, was required to be taken shiftly in the lower relay room between the dates of January 29, 2008, and June 4, 2008, due to the control room recorder, RR-D12-1R603, inoperability. On May 8, 2008, nightshift, the operator required to take the reading to meet the channel check requirements of Technical Requirements Manual surveillance TRS 3.3.6.1, did not take the reading within the 12 hour timeframe and additionally, did not meet the grace interval allowed by TRS 3.0.2 of 1.25 times the surveillance interval by 9 minutes, due to the operator responding to other emergent work. PPL documented this missed surveillance in CR 1027913. PPL issued PCAF 2008-5185 to SO-100-006, "Shiftly Surveillance Operating Log," to allow for an alternate reading using computer points to meet the surveillance requirements. This is not a violation of NRC requirements since the Technical Requirements Manual is not an NRC license condition; when identified the surveillance was promptly completed; and the equipment passed the surveillance when performed.

.3 Annual Sample: 2006 Culture Survey Evaluation and Actions

a. Inspection Scope

The inspectors reviewed licensee actions associated with the 2006 Culture Survey at Susquehanna. The inspection activities included a review of relevant documents including the improvement plans and corrective actions for functional groups and several interviews. Inspectors also conducted observations of station meetings and field activities to access the effectiveness of completed actions. The inspectors

reviewed a sample of the corrective actions from a wide cross-section of the functional groups and disciplines at the station. Inspectors did not pursue any specific allegation-related issues or related responses during this inspection.

b. Findings

No findings of significance were identified.

c. PI&R Assessment and Observations

Inspectors found the Culture Survey was done by the same vendor that had been involved for many years with these evaluations at PPL Susquehanna. Use of the same vendor provided good trending information and PPL staff have good familiarity with the process and results.

PPL management's decision to break the corrective action plans and improvement plans down to the functional group level was very beneficial. This provided for wider involvement as each functional unit was responsible for their improvement plans and the solutions. This decision allowed each functional group to develop the best fit solutions and facilitated the ownership of improvement plans.

Inspectors found that management did not rigorously oversee progress or evaluate the effectiveness of the actions as would be expected for an effort of this magnitude and level of importance for the organization. Inspectors found that some functional unit managers were not familiar with the status or the closeout of most items. Inspectors found that some managers who had transferred to other positions at Susquehanna did not know the status for their functional group. The station's overall progress on the 2006 Culture Survey did not appear well documented or well communicated to the management team.

Inspectors found that some actions remain open (approximately ten percent). Three functional groups had actions items that were not closed. One of the functional groups showed up in a status table as complete but still had a corrective action item that was not closed.

In addition, some follow-up surveys that were done as part of the 2006 Culture Survey corrective actions revealed work environment issues that did not appear to have actions associated with them. As was documented in 2007 for a PI&R Sample of Safety Conscious Work Environment, the inspectors did not find any evidence of workers being reluctant to report safety issues.

Inspectors found that the 2006 Culture Survey was developed and conducted with a solid plan, with a well conducted initial assessment of issues. However, the management of the aggregate effort was determined to be incomplete. As a result, it appears that some of the actions taken were not well incorporated into normal work process or procedures.

.4 Semi-Annual Review to Identify Trends

a. Inspection Scope

As required by IP 71152, Identification and Resolution to Problems, the inspectors performed a review of PPL's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. This trend review considered the results of daily inspector corrective action program item screening discussed in Section 4OA2.1. The review also included issues described in system health reports, QA audits, engineering work requests, PPL management meetings, inspector exit meetings, and maintenance rule assessments. This review concentrated on the six-month period from December 2007 to June 2008. Inspectors compared and contrasted their results with the results in PPL's latest integrated semi-annual corrective action trending report.

b. Findings

No findings of significance were identified.

c. Assessment and Observations

Inspectors did not identify any new adverse trends. However, the inspectors did evaluate the following four previously identified PI&R trends from 2007:

Control Rod Drive Hydraulic System Health:

In 2006, PPL experienced more than five hundred CRD accumulator alarms which was four times the industry average. In the first semi-annual trend review for 2007, inspectors described and evaluated the reduced control rod drive (CRD) performance at Susquehanna. This was based on the number of CRD high temperature alarms and other hydraulic control unit alarms; as well as, double notched control rod events, which placed Susquehanna well above the industry averages for all of these issues. As of June 2008, inspectors observed the number of initiated condition reports on a reducing trend. During the last six months, inspectors saw consistent evidence of CRD system health improving.

Annunciator and I&C Power Supply System Health:

In 2007, inspectors identified a potential adverse trend in control room alarm panel performance. As of the second semi-annual trend review for 2007 the number of condition reports on control room alarm and local panel annunciator panels was an increasing and adverse trend. As of June 2008, inspectors witnessed a drop in the number of initiated condition reports. During the last six months, inspectors observed evidence of annunciator power supply system health improving.

Procedure Adherence and Quality:

In the second half of 2007, inspectors identified an adverse trend in the area of procedure use and compliance. Inspectors had found an increase in the number of minor procedure violations during baseline inspection activities. PPL also identified human performance procedure related issues through their 3rd quarter 2007 operations department excellence plan (AR 908670). In the last six months, inspectors observed

a decrease in the number of procedure violations from the same period in 2007. However, inspectors observed that, "Confusing Procedure/Vague Guidance" remains a frequently applied Condition Report cause code in PPL's trending of Human Performance precursors and contributing causes. The inspectors have observed some improvement with procedure adherence and use; however, the quality of key reference documents and procedures is an area that still merits attention.

Control of Station Work and Work Package Quality:

In 2007, inspectors identified a potential adverse trend in the control of field work and work package quality. Inspectors found an increase in the number of work control issues encountered through baseline activities. PPL documented this NRC-identified trend in AR 870781 and developed an action plan to achieve improvements in the quality of work instructions, training and qualification of workers, and supervision reinforcing the use of station standards. Inspectors reviewed the control of field work at Susquehanna for the first six months of 2008 and determined that inspection findings, near misses, minor violations, and event precursors continued to result from less than optimum work plans, or the failure to follow work plans and less than adequate supervisory oversight. Inspectors noted the following examples of issues that have a strong work control root or contributing cause:

- NCV 2008002-001, "Inadequate Application of Work Instructions Resulted in Unavailable and Inoperable Engineering Safeguards Electrical Bus;"
- Recirculation pump control and operator trip of pump (Plant Transient);
- The number of surveillance tests beyond the due date ["in Grace"]. Inspectors observed that once surveillances are "in Grace," improvement is needed in managing the backlog and associated station risk;
- Radiation monitors out of service during irradiated fuel moves - licensee identified violation (CR 967350);
- May 8, 2008, nightshift, missed surveillance due to operator work around and staff responding to emergent work. Technical Requirements Manual surveillance TRS 3.3.6.1, was not done within the 12 hour timeframe or the grace interval allowed of 1.25 times the surveillance interval (CR 1027913). (See Section 40A2.2 of this report for additional details); and
- Inspectors also note the large number of ECP issues and initiatives as well as the significant number of heavy load handling issues during the Unit 1 spring refueling outage.

Inspectors did find the EPU testing and power maneuvers conducted in the current inspection period did provide some recent examples of well-conducted and planned field work. However, the inspectors observed from the last 6 month period data set that the identified trend in work control and work package quality has not been fully mitigated.

40A3 Event Followup (71153 – 1 Sample).1 Susquehanna Unit 1 Recirculation Pump Runback

On June 9, 2008, Susquehanna Unit 1 was operating at 100 percent power when operators identified that speed on the “1B” recirculation pump had unexpectedly dropped from 80 percent to 0 percent. A reactor high level alarm actuated, although there were no alarms to indicate a problem with the recirculation system. Control room operators took manual control of the affected pump and speed recovered. The maximum observed reactor power was around 101 percent. Approximately six minutes later, the “1B” recirculation pump speed dropped again, and operators made the decision to manually trip the pump.

Following the recirculation pump trip, reactor power dropped and stabilized at around 60 percent power. Based on the existing recirculation system flow, operators identified that the plant was in the restricted area of the power-to-flow map and inserted control rods. At about the time the 60 percent rod line was achieved, the operational limiter in the recirculation flow control system initiated a recirculation pump runback on the operating “1A” recirculation pump due to low flow (<20 percent) from one feedwater pump. This caused speed of the operating recirculation pump to rapidly drop. Plant conditions stabilized at around 26 percent power with the “1A” recirculation pump operating at around 50 percent speed.

PPL’s Investigation determined that the cause of speed oscillation on the “1B” recirculation pump was ongoing work in a cabinet in the plant’s lower relay room. Instrumentation and controls technicians were performing preventive maintenance to replace a power supply for a residual heat removal system instrument on the remote shutdown panel. While marking wires with tape in preparation for the replacement, they apparently bumped a signal isolator in the signal path from the “B” loop recirculation flow controller to the “B” motor-generator set scoop tube positioner. This component is physically located about three inches from the power supply. The signal isolator was subsequently determined to have a defective mounting bracket and several defective pins, which contributed to the event.

Both inspectors responded promptly to the control room and observed the operators taking actions to stabilize the plant. Inspectors reviewed several aspects of this event including the work control issues that contributed to the cause of the transient, and the compliance with core thermal limits during single recirculation pump operations. In addition, inspectors performed a focused review of the circumstances surrounding the reactor recirculation pump runback. Specifically, inspectors reviewed the design change package which altered the design of the runback logic. The reactor recirculation pumps are designed to runback speed if there is low flow from any one feed pump, low total feedpump flow, a loss of a condensate pump, or a loss of a circulating water pump. The original design protected against spurious runbacks by also requiring a low reactor water level to confirm the runback was necessary. A consequence of the confirmatory low reactor water level signal is that the runback is delayed.

PPL performed a modification to the runback logic to eliminate the confirmatory low reactor water level signal and have the runback occur immediately after a loss of a pump in the feedwater system. Inspectors reviewed engineering documents, corrective

action program entries, operating procedures, and training documents associated with the modification.

b. Findings

No findings of significance were identified.

4OA5 Other Activities (6 Samples)

.1 EPU Power Ascension (Integrated Plant Evolutions) (71111.20 and 71004)

a. Inspection Scope

Inspectors witnessed power ascension following the Unit 1 refueling outage. Inspectors witnessed portions of all reactivity changes made to achieve specific EPU test conditions and when operators increase reactor power to 94.4 percent reactor power (3433 MWth). Inspectors also reviewed operator actions, procedure adherence, and plant response during these integrated plant maneuvers. Unit 1 reached a reactor power level of 3733 MWth at 1:43 p.m. on May 6, 2008. Inspectors verified the completion of all EPU license commitments and the evaluation and resolution of all test exceptions.

This was a required sample IAW IP 71004 paragraph 02.02 d. The integrated plant startup and power operation procedures reviewed are provided in the Attachment to this report.

a. Findings

No findings of significance were identified.

.2 EPU Major Plant Tests (71111.19, 71111.22, and 71004)

a. Inspection Scope

Inspectors observed portions and reviewed the following major plant tests including the required sample of the main steam isolation valve (MSIV) closure test. Inspectors evaluated these test procedures before the performance of each test to ensure the test could be conducted safely and in accordance with design and licensing bases. Inspectors directly observed negative and positive reactivity additions and reviewed the results of each power ascension test to ensure the plant response was as expected. Plant parameters were evaluated for stability and response characteristics. Inspectors validated the Level 1 and Level 2 acceptance criteria were met. Each of the following tests was considered an inspection sample that meets the requirements of IP 71004, paragraph 02.02 e:

- Reactor recirculation control for MELLLA, TP-164-036;
- Setting plant conditions for main steam line vibration data collection for extended power uprate, TP-183-013;
- Main steam isolation valve closure testing at 72.7 percent reactor power, TP-183-013;
- EPU EHC pressure regulator testing and main turbine valve cycling,

- TP-193-041; and
• Condensate pump trip (special, infrequent or complex test/evolution),
TP-144-048.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On July 11, 2008, the resident inspectors presented their findings to Mr. Britt McKinney, and other members of his staff, who acknowledged the findings.

On June 6, 2008, the health physicist inspector presented inspection results to Mr. N. Gannon and other members of his staff. The licensee acknowledged the findings.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by PPL and is a violation of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a Non-Cited Violation.

- TS 5.7.1 requires that the licensee control access to areas where dose rates measured 30 centimeters from the source of radiation exceed 100 millirem per hour. These controls include use of a radiation work permit that includes specification of radiation protection measures, and that entry personnel are made knowledgeable of the dose rates in the area. Contrary to this requirement, on March 21, 2008, a worker entered the Unit 1 recombiner pipe tunnel room, a posted high radiation area, but was not on a radiation work permit which authorized entry into high radiation areas, nor had the worker been briefed on dose rates in the area. This was identified in the licensee's CAP as CR 998320. This finding is of very low safety significance because the worker immediately exited the area when the electronic dosimeter he was wearing alarmed due to the elevated dose rate, and the worker received only 0.2 millirem.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

- R. Bogar, Senior Engineer, Electrical / I&C Systems
- J. Buczynski, Work Week Manager
- M. Crowthers, Manager, Nuclear Regulatory Affairs
- N. D'Angelo, Manager, Station Engineering
- A. Fitch, Manager, Work Management
- C. Gannon, Vice President – Operations
- J. Grant, Manager, Nuclear Business Improvement
- J. Helsel, Manager, Nuclear Training
- J. Hirt, Supervisor, Reactor Engineering
- R. Hock, Radiation Protection Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None.

Opened/Closed

05000387, 388/2008003-01	NCV	Inappropriate Corrective Actions in Response to Repeated ESW Pump Timer Failures (IR15)
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BASELINE INSPECTION PROCEDURE PERFORMED

LIST OF DOCUMENTS REVIEWED

(Not Referenced in the Report)

Section 1R01: Adverse Weather Protection

Condition Reports:

1027677 and 1027681

Other:

IEEE 383-1974, IEEE Standard for Type test of Class 1E Electric Cables, Field Splices, and Connections for Nuclear Power Generating Stations
NEI 06-05, Medium Voltage Underground Cable

Section 1R04: Equipment Alignment

Drawings:

E-105, Unit 2 Schematic Diagram, 4.16 kV Bus 2CD/G Gen Ckt Bkr Control, Sheet 11, Revision 24

M-134, Common P&ID, A-D Diesel Auxiliaries Fuel Oil, Lube Oil, Air Intake & Exhaust & Jacket Water Cooling Systems, Sheet 1, Revision 45

M-155, Unit 1 P&ID, High Pressure Coolant Injection, Sheet 1, Revision 49

M-156, Unit 1 P&ID, H.P.C.I. Turbine-Pump, Sheet 1, Revision 32

D-159760-2, Plan Showing Transmission Lines 230 kV Connections, dated May 26, 1978

Condition Report:

1026154

Other:

TM-OP-004X-ST, Systems Training, Introduction to SSES Electrical Plant Distribution, Revision 3

Section 1R05: Fire Protection

Procedures:

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

FP-113-109, Remote Shutdown Panel Room (I-109), Access Area (I-102), Fire Zones 1-2B, 1-2D, Elevation 670'-0", Revision 5

Section 1R07: Heat Sink Performance

Condition Reports/Action Report:

1044050 and 1044430

Work Orders:

885110

Procedures:

MT-GM-025, Heat Exchanger Cleaning and Inspection, Revision 15

Section 1R11: Operator Re-qualification Program

Simulator Scenarios:

OP002-08-04-05, Loss of Feedwater heating/ Loss of Feedwater String, Revision 0

OP002-08-04-04, Loss of CIG, MSIV Closure, Low Power ATWS, Revision 0

Procedures:

EO-100-102, RPV Control, Revision 8

ON-125-001, Loss of Containment Instrument Gas, Revision 11

ON-147-002, Loss of Feedwater Heater String, Revision 25

ON-164-002, Loss of Reactor Recirculation Flow, Revision 19

Section 1R12: Maintenance Effectiveness

Condition Reports:

997720, 928741, 983905, 1001325, 1010335, 1010750, and 1023350

Procedures:

Work Instruction 984388

Work Orders:

RLWO 984737, 2P132A CRD Pump- Replace outboard bearing to correct hi vibration
PCWO 984389, 2P132A CRD Pump Outboard bearing has increased significantly
PCWO 995902, 2P132A CRD Pump- Replace outboard bearing to correct hi vibration
PCWO 920937, 2A CRD Pump Outboard Bearing Noisy
PCWO 968512, Predictive Maintenance to take vibration data after replacement of 2P132A
Minor Maintenance
PCWO 929512, 2P132A Replace with rebuilt pump

Other:

SKF angular contact ball bearings – your key to longer service life, 2003

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Condition Report:

1029493

Section 1R15: Operability Evaluations

Procedures:

SO-155-002, Quarterly SDV Vent and Drain Valves Operability Check, Revision 16
SO-116-B04, Residual Heat Removal Service Water (RHRSW) System Comprehensive Flow
Verification Division II, Revision 0
SO-054-002, Quarterly ESW Valve Exercising, Revision 18
SE-124-107, Unit 1 Division I Diesel Generator LOCA LOOP Test, Revision 16

Condition Reports:

985226, 1004816, 1004846, 1008824, 1013115, 1013355, 1013291, 1013333, 1024545,
1007236, 1026154, 1035634, 1035207, 1033654, 1040313, 1038458, 1038480, 394526,
568629, 1013115, 1013291, 764953, and 781800

Work Orders:

RTPM 712497, PCWO 1026174, PCWO 1034647, PCWO S60649, PCWO 394530,
PCWO 394531, RLWO 395130

Drawings:

M-147, Unit 1 P&ID, Control Rod Drive Part-B, Sheet 1, Revision 37
E-105, Unit 2 Schematic Diagram, 4.16 kV Bus 2CD/G Gen Ckt Bkr Control, Sheet 11,
Revision 24

Other:

NRC Regulatory Guide 1.106, Thermal Overload Protection for Electric Motors on Motor-Operated Valves, Revision 1
NRC IE Circular No. 79-04, Loose Locking Nut on Limitorque Valve Operators
DCP 686806, Extended Power Uprate Ultimate Heat Sink Modifications, Revision 1
NRC ENS Report 40646, Loss of Safety Function for Emergency Diesel Generators during Surveillance Testing
NRC ENS Report 38818, Diesel Generators Declared Inoperable for a Short Time Period EWR 649133
Operations Form 87-325
EC-054-0532, ESSW Pumphouse Transient Temperature Response to Ventilation Transients, Revision 4

Section 1R19: Post-Maintenance Testing

Procedures:

Quarterly Turbine Valve Cycling, SO-193-001, Revision 24;
SE-149-001, 24 Month RHR Logic System Functional Test (Division I) – Outage (Partial) Revision 14

Condition Report:

CR 1035634

Section 1R20: Refueling and Outage Activities

Procedures:

GO-200-002, Plant Startup, Heatup and Power Operation
SE-000-017, ASME Leak Inspection for Class 1, 2, and 3 Piping
NDAP-QA-0480, ASME Section XI and Component Pressure testing
NDAP-QA-507, Conduct of Refuel Floor
NDAP-QA-0612, Control of Heavy Loads
SR-155-004, Scram Time Measurement of Control Rods

Condition Reports:

CR 1010937 and CR 984455

Other:

Core Verification, Video and Final Loading Pattern
Startup Plant Operating Review Committee Meeting (Startup PORC), 4/11/08
OFR 936290, Fuel Spacer Damage

Section 1R22: Surveillance Testing

Procedures:

SO-249-B02, Quarterly RHR System Flow Verification Division II, Revision 13

Section 2OS1: Access Control to Radiologically Significant Areas

Condition Reports:

998278, 999778, and 998320

Section 2OS2: ALARA Planning and Controls

Report: Unit 1 RIO Radiological Status at Breaker Close

Section 2OS3: Radiation Monitoring Instrumentation and Protective Equipment

Updated Final Safety Analysis Report, Chapter 12

Section 4OA2: Identification and Resolution of Problems

Condition Reports:

1030756, 1024853, 1036290, 1021445, 1020934, and 845313

Procedures:

OI-AD-096, Operator Work-Arounds/Challenges, Revision 5

NDAP-QA-0300, Conduct of operations, Revision 23

EO-100-030, Unit 1 Response to Station Blackout, Revision 22

SO-100-006, Shiftly Surveillance Operating Log, Revision 57

Other:

Operator Aggregate Impact Index, June 2008

2006 Culture Survey CR's and Response Plans

Section 4OA3: Event Response

Condition Reports:

1040282, 1038458, 1038480, and 1040313

Procedures

TM-OP-064A-ST, Rev 8, Systems Training Student Text, Reactor Recirculation Control

TM-OP-045-ST, Rev 11, Systems Training Student Text, Reactor Feedwater

GO-100-009, Rev 16, Single Recirculation Loop Operation

GO-100-004, Rev 42, Plant Shutdown to Minimum Power

GO-100-002, Rev 55, Plant Startup, Heatup and Power Operation

ON-164-002, Rev 26, Loss of Reactor Recirculation Flow

GO-100-012, Rev 26, Power Maneuvers

ON-178-002, Rev 14, Core Flux Oscillations

Miscellaneous

Maintenance Rule Basis Document – System 64

Engineering Position Paper, Assessment To Assure The Adequacy of SSES Safety and Operational Margins, undated

ECO 618881, Unit 1 - Recirculation Pump Run Back Logic Change

Just In Time Training – Unit 1 Cycle 16 Plant Startup, Rev 0

Extended Power Uprate (EPU) Spring 2005 Project Update

Section 4OA5: Other

Engineering Work Design Documents

EC 618881, Recirculation Runback

M-1563, Specification for Extended Power Uprate (EPU) Startup Testing

EC-044-1019, Condensate/Feedwater Flow Analysis Model

EC-045-1043, RFP Suction Pressures During a Condensate Pump Trip

Procedures

GO-100-012, Power Maneuvers
 NDAP-QA-0320, Special Infrequent or Complex Tests Evolutions
 NDAP-QA-0406, Extended Power Uprate Test Program
 ON-100-101, Scram, Scram Imminent
 ON-145-001, RPV Level Control System Malfunction
 ON-164-002, Loss of Reactor Recirculation Flow
 ON-178-002, Core Flux Oscillations
 TP-144-042, Condensate Pump 1A Replacement
 TP-199-009, Extended Power Uprate Master Test Procedure

Miscellaneous

GE Task Report T0201, Power/Flow Map for ARTS/MELLLA
 GE Task Report T1005, Startup Test Specifications for ARTS/MELLLA
 NDAP-QA-0338, Reactivity Management and Controls Program

LIST OF ACRONYMS

AC	Alternating Current
ALARA	As Low As Is Reasonably Achievable
AR	Action Report
ASME	American Society of Mechanical Engineers
ATWS	Anticipated Transient Without Scram
CFR	Code of Federal Regulations
CIG	Containment Instrument Gas
CR	Condition Report
CRD	Control Rod Drive
DC	Direct Current
EDG	Emergency Diesel Generator
EOOS	Equipment Out-of-Service
EPU	Extended Power Uprate
ESW	Emergency Service Water
EWR	Engineering Work Request
FSAR	[SSES] Final Safety Analysis Report
GL	Generic Letter
HSS	High Speed Stops
HPCI	High Pressure Coolant Injection
HX	Heat Exchanger
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ISI	Inservice Testing
kV	Kilovolts
LER	Licensee Event Report
LHGR	Linear Heat Generation Rate
LLRT	Local leak Rate Test
LOCA	Loss of Coolant Accident
LOCA/LOOP	Loss of Coolant Accident/Loss of Offsite Power
LP	Low Pressure
LPCI	Low Pressure Coolant Injection

MELLLA	Maximum Extended Load Line Limit Analysis
MSIV	Main Steam Isolation Valve
NCV	Non-Cited Violation
NDAP	Nuclear Department Administrative Procedure
NDE	Non-Destructive Examination
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OA	Other Activities
OCC	Outage Control Center
ODCM	Offsite Dose Calculation Manual
OOS	Out-of-Service
PI	[NRC] Performance Indicator
PI&R	Problem Identification and Resolution
PIM	Plant Issues Matrix
PMT	Post-Maintenance Test
PPL	PPL Susquehanna, LLC
PT	Liquid Penetrant Examination
QA	Quality Assurance
RB	Reactor Building
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
RG	[NRC] Regulatory Guide
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
RMS	Radiation Monitoring System
RO	Reactor Operator
RP	Radiation Protection
RTP	Rated Thermal Power
RWCU	Reactor Water Cleanup
RWP	Radiation Work Permit
SDE	Skin Dose Equivalent
SDP	Significant Determination Process
SFP	Spent Fuel Pool
SLC	Standby Liquid Control
SSC	Structures, Systems and Components
SSES	Susquehanna Steam Electric Station
SW	Service Water
TEDE	Total Effective Dose Equivalent
TS	Technical Specifications
TSO	Transmission System Operator
WO	Work Order