



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

May 13, 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 05000387/2008002 AND 05000388/2008002**

Dear Mr. McKinney:

On March 31, 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 April 16, 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 self-revealing finding of very low safety significance (Green). This finding was determined to involve a violation of NRC requirements. Additionally, licensee-identified violations which were determined to be of very low safety significance are 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 05000387/2008002 and 05000388/2008002
Attachment: Supplemental Information

cc w/encl:

C. Gannon, Vice President, Nuclear Operations
R. Paley, General Manager, Plant Support
R. Pagodin, General Manager, Nuclear Engineering
R. Sgarro, Manager, Nuclear Regulatory Affairs
R. Smith, General Manager, Site Preparedness and Services
Supervisor, Nuclear Regulatory Affairs
M. Crowthers, Supervising Engineer, Nuclear Regulatory Affairs
R. Peal, Mgr, Training, Susquehanna
M. Rose, Manager, Quality Assurance
J. Scopelliti, Community Relations Manager, Susquehanna
B. Snapp, Esq., Associate General Counsel, PPL Services Corporation
Supervisor, Document Control Services
R. Osborne, Allegheny Electric Cooperative, Inc.
D. Allard, Dir, PA Dept of Environmental Protection
Board of Supervisors, Salem Township
J. Johnsrud, National Energy Committee, Sierra Club
E. Epstein, TMI-Alert (TMIA)
J. Powers, Dir, PA Office of Homeland Security
R. French, Dir, PA Emergency Management Agency

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Sincerely,

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

Distribution w/encl: (via e-mail)
 S. Collins, RA
 M. Dapas, DRA
 D. Lew, DRP
 J. Clifford, DRP
 P. Krohn, DRP
 R. Fuhrmeister, DRP
 T. Setzer, DRP
 F. Jaxheimer, DRP - Sr RI Susquehanna
 G. Ottenberg, DRP – Actg RI Susquehanna
 S. Farrell, DRP - OA Susquehanna
 S. Williams, RI OEDO
 R. Nelson, NRR
 M. Kowal, NRR
 J. Kim, NRR
 B. Vaidya, NRR, PM
 J. Hughey, Backup, NRR
ROPreportsResource@nrc.gov (All IRs)
 Region I Docket Room (with concurrences)

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REGION I

Docket No: 50-387, 50-388

License No: NPF-14, NPF-22

Report No: 05000387/2008002 and 05000388/2008002

Licensee: PPL Susquehanna, LLC

Facility: Susquehanna Steam Electric Station, Units 1 and 2

Location: Berwick, Pennsylvania

Dates: January 1, 2008 through March 31, 2008

Inspectors: F. Jaxheimer, Senior Resident Inspector
G. Ottenberg, Resident Inspector
J. Furia, Senior Health Physicist
P. Kaufman, Senior Reactor Inspector
H. Gray, Senior Reactor Inspector
T. O'Hara, Reactor Inspector
D. Orr, Senior Reactor Inspector

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

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SUMMARY OF FINDINGS

IR 05000387/2008002, 05000388/2008002; 01/01/2008 – 03/31/2008; Susquehanna Steam Electric Station, Units 1 and 2; Maintenance Effectiveness

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. A self-revealing, Green NCV was identified for failure to accomplish work in accordance with the appropriate instructions as required by 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings." Specifically, PPL did not complete the required actions that would properly protect the Unit 1 transformer 1X210 windings from moisture intrusion when heat was not applied to the transformer as specified by the work instructions and original equipment vendor manual. This resulted in high initial Doble test results, an investigation into cause, a drying out period, and additional Doble testing which caused an approximate 24-hour delay in the restoration of the safety-related 1A 4 KV ES bus. This electrical bus provides power to common safety-related loads which increased the online risk for Unit 2, the operating unit during the Unit 1 refueling outage. PPL applied concentrated heat and energized the primary windings to remove moisture from the windings prior to returning the transformer to service.

This finding is greater than minor because it adversely impacted the equipment performance attribute of the Mitigating Systems cornerstone and affected the objective to ensure the availability, reliability and the capability of systems that respond to initiating events to prevent undesirable consequences. This finding was considered to have very low safety significance (Green), using phase one of the significance determination process for Unit 2. A contributing cause of this finding is related to the Human Performance cross-cutting area, work control planning attribute H.3.(a). Specifically, PPL did not appropriately plan and coordinate the work activities by incorporating job site conditions, including environmental conditions. (Section IR12)

Licensee Identified Violations

Violations of very low safety significance, which were identified by PPL have been reviewed by the inspectors. Corrective actions taken or planned by PPL have been entered into PPL's corrective action program. These violations 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 at full rated thermal power (RTP). With the exception of brief power reductions to perform control rod sequence exchanges and control rod adjustments, the unit remained at full RTP until power coast down began on February 23, 2008. Unit 1 was shutdown for a scheduled maintenance and refueling outage on March 3, 2008, from 95 percent RTP. The reactor remained shutdown from March 4, 2008, through the remainder of the inspection period.

Unit 2 began the inspection period at full RTP. With the exception of a one-day power reduction to approximately 80 percent reactor power on February 17, 2008, for control rod scram time testing and a control rod sequence exchange, the unit remained at full RTP through the remainder of the inspection period.

Note: Rated thermal power for the purposes of this report is a reactor power of 3489 megawatts thermal for both units. The Extended Power Uprate (EPU) License Amendment for SSES was approved on January 30, 2008, and will be implemented for Unit 1 in accordance with the issued license conditions in the second quarter of 2008.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 Sample).1 Adverse Weather – Readiness for Seasonal Susceptibilitiesa. Inspection Scope

During the week of January 7, 2008, the inspectors reviewed system operations during extreme cold weather. Plant walkdowns for selected structures, systems, and components (SSCs) were performed to determine the adequacy of PPL's weather protection features. Inspectors reviewed operator actions to address failures of equipment due to freezing and compensatory actions during adverse cold weather conditions. The inspectors also reviewed and evaluated plant conditions resulting from cold weather and reviewed considerations in PPL's Maintenance Rule station risk assessment. Additional documents that were reviewed are listed in the attachment. The readiness of the following system was reviewed.

- Station blackout (SBO) diesel operation during subzero temperatures.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04 – 5 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. 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, recirculation system instrumentation and controls;
- Unit 1, supplemental decay heat removal (SDHR) system prior to Unit 1 refueling outage;
- Unit 1, Division 2 core spray during "A" 4 KV bus outage; and
- Unit 2, "B" control rod drive (CRD) during scheduled "A" CRD pump replacement.

.2 Complete Walkdown

a. Inspection Scope

The inspectors conducted a detailed review of the Unit 1, Division II, residual heat removal (RHR) during a Division I scheduled system outage window for emergency service water (ESW) piping replacement to the "C" and "A" RHR pump motors. The inspectors reviewed system operating procedures, the system design basis document, and system piping and instrumentation diagrams. The inspectors verified the system alignment following modification work to replace ESW piping to the "B" RHR pump motor and outstanding condition reports (CRs) associated with the RHR system to determine the effect on system health and reliability. The availability of the residual heat removal service water (RHRSW) and ESW as support systems was verified. The walkdown included the following system:

- Unit 1, RHR Division II during a Division I ("A" and "C") ESW piping motor replacement.

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, RHR pump room “A”, elevation 645’, fire zone 1-1F, during welding activities associated with ESW piping replacement to the “C” RHR pump motor;
- Unit 1, main condenser gallery, FP-113-212, FP-113-225, and FP-113-291;
- Common, standby gas treatment filter area elevation 806’, fire zone 0-30A; and;
- Station engineered safeguards service water (ESSW) pump house “A” and “B” pump rooms, fire zones 0-51 and 0-52.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

On January 15, 2008, the inspectors observed an unannounced fire brigade drill in the Unit 2 turbine building motor generator load center area. The drill was a simulated fire in an electrical load center. The inspector assessed PPL’s strategy to fight the simulated fire in this plant location and the general readiness of PPL to respond to fires. The drill included demonstrating fire fighting actions as well as search and rescue response.

The inspectors observed the fire brigade response to the fire scene. Inspectors verified that the fire brigade demonstrated sufficient knowledge, skill, and available resources including sufficient and proper equipment for combating the postulated fire. Inspectors verified that the fire brigade responded in accordance with procedures, and utilized the approved fire pre-plan. The inspectors observed communications between the brigade leader, brigade members, and the control room. Inspectors attended and reviewed the post-drill critique to evaluate whether drill performance met the established acceptance criteria.

- Station fire brigade unannounced drill, scenario 40, motor generator area load center fire.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06 – 2 Samples)

.1 Internal Flooding

a. Inspection Scope

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

Inspectors reviewed the specific operator actions taken to mitigate the approximately 200,000 gallon leak of circulating water out the B low pressure (LP) condenser waterbox manway on March 28, 2008. Inspectors promptly walked down the plant to verify no risk significant equipment was affected and that industrial safety hazards were identified and corrected. Inspectors interviewed the personnel involved in the discovery and mitigation of this internal flooding event. Inspectors evaluated the actions taken by PPL to sample and process the water. Inspectors witnessed the actions taken to prevent the spread of contamination within and beyond the radiologically controlled area of the facility. Inspectors reviewed the Emergency Plan and NRC event reporting criteria for applicability. Inspectors also verified that this flooding event was characterized, evaluated, and properly dispositioned after being entered into the PPL corrective action program. The following risk significant areas were reviewed:

- Unit 1, reactor building 749' elevation; and
- Unit 1, main condenser area flooded from water leak from "B" low pressure waterbox manway on March 28, 2008.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activities (71111.08 - 1 Sample)

a. Inspection Scope

A sample of non-destructive examination (NDE) activities were selected from the Susquehanna Unit 1 inservice inspection program plan for the second inspection period of the third inspection interval for observation and documentation review during the Susquehanna Steam Electric Station Unit 1 refueling outage 15RIO, to assess the effectiveness of the inservice inspection (ISI) program for monitoring degradation of vital system boundaries, reactor coolant system (RCS) and risk-significant piping system pressure boundaries. The sample selection was based on the inspection procedure objectives and risk priority of those components and systems where degradation would result in a significant increase in the risk of core damage.

Various NDE examinations were reviewed to verify that activities, including calibration, set-up, examination techniques, data analysis, and indications/defects were evaluated and dispositioned in accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 1998 Edition up through and including 2000 Addenda, selected relief requests, relevant ASME Code Cases, compliance with 10CFR 50.55a, and the recommendations of the Boiling Water Reactor Vessel Internals Program requirements.

The following automatic and manual ultrasonic (UT), liquid penetrant (PT), and visual (VT) testing examination activities and component repair replacement activities which involved welding processes were observed and examination data records reviewed to verify effectiveness of the examiner, test equipment, procedures, and process in identifying and repairing degradation of risk significant systems, structures and components in accordance with station procedures and ASME code requirements.

Automated UT

Phased Array - residual heat removal (RHR) stainless steel weld DCA1101-1-A.

Manual UT

RHR - 20" elbow to pipe carbon steel weld GBB1041-7-C.

Liquid Penetrant Examination (PT)

"A" Reactor Recirculation Loop - 4" chemical decon line welds - VRRB312-14-F/G; and
 "B" Reactor Recirculation Loop - 4" chemical decon line welds - VRRB312-3-F/G.

Reactor In-Vessel Visual Testing (VT-3)

A sample of video recordings of remote reactor in-vessel visual inspection (IVVI) of jet pump wedges and rods and MS bolt support ring upper gusset - C11 weld to separator.

Automated UT examination records of shroud horizontal welds H4 and H7 from refueling outage 13RIO that had relevant recordable indications were reviewed to evaluate crack growth for acceptability for continued service.

Records from two repair and replacement activities were reviewed for the replacement of Class 1 valve, XV-143-F009A and replacement of a 6" diameter ESW supply line to diesel generator cooler OE-507C. The welding activities, including the welding instructions, procedures, work orders, and NDE examination records were reviewed on these pressure boundary risk significant systems to verify that the welding and NDE activities were performed in accordance with ASME code requirements.

b. Findings

No findings of significance identified.

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

a. Inspection Scope

On February 13, 2008, the inspectors observed licensed operator simulator training during routine operator requalification training. The inspectors compared their observations to 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:

- Simulator activity, reactor pressure control, EO-100-102 and vessel level instrument malfunction, ON-145-004. Simulator scenario with reduced injection capability.

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 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 verify whether the identified actions were appropriate to correct the extent-of-condition for identified performance issues. The following issues were reviewed:

- Unit 1, "A" 480 Volt Engineering Safeguards System (ESS) load center supply transformer 1X210 maintenance; and
- Station, diesel fuel oil tanks, preventive maintenance.

b. Findings

Introduction: A Green, self-revealing, non-cited violation was identified for failure to have adequate work instructions and accomplish the work in accordance with the instructions as required by 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." Specifically, PPL did not complete the required actions that would properly secure the Unit 1 transformer 1X210 to protect windings from moisture intrusion when heat was not applied to the transformer as specified by the work instructions and the vendor manual. This resulted in moisture intrusion as indicated by high Doble test power factor results causing a 24 hour delay in the restoration of the safety-related 1A 4 KV engineering safeguards (ES) bus. The system outage for this electrical bus contained common safety-related loads which increased the risk of both Unit 1 and Unit 2.

Description: As part of the Unit 1 refueling outage, PPL planned a maintenance outage of the 1A 4 KV ES electrical bus. This electrical bus and associated step down transformer are located in the Unit 1 reactor building within the Zone 1 ventilation boundary. PPL implemented a schedule for this work which resulted in the suppression pool, the drywell, and one RHR heat exchanger (HX) being open to the Unit 1 reactor building for support of other ongoing outage work. In addition to the reactor building atmosphere being connected to these three humid environments, the reactor building was also open to the turbine building environment which was also high in humidity due to the outside weather and a steady, all-day rain. The bus outage maintenance also coincided with a scheduled maintenance shutdown of reactor building Zone 1 ventilation. This eliminated air flow to the electrical bus and transformer which was de-energized and vulnerable to the humid environment in the Unit 1 reactor building.

Work instruction E1394-01 required that workers review the schedule and apply heat if the transformer was to be de-energized for more than 24 hours. The vendor manual for

Type VU-9 ventilated-dry transformers also stated that if transformer shutdown occurs during a period of high humidity, precautions must be taken against condensation inside the transformer housing. The vendor manual instructed that space heaters placed inside the housing are usually sufficient protection and advises the transformer be kept a few degrees above ambient temperature in these circumstances. Despite the work and vendor manual instructions, PPL de-energized the 1X210 transformer two days prior to applying heat. Even with the unusual environmental conditions in the Unit 1 reactor building, PPL did not apply heat to transformer 1X210 as required by work instructions until the transformer had unusual Doble test results on March 19, 2008. Inspectors determined that the application of heat to a de-energized transformer of this type would also be appropriate based on plant specific operating experience which included the application of heat to dry out moisture in transformer 2X270 during the summer of 2004. Following drying, the 1X210 transformer was returned to service on March 21, 2008. PPL entered the issue into the corrective action program (CR 997061) and is evaluating longer term actions.

Following the initial testing on the 4 KV/480 volt stepdown transformer which provided high Doble test results, PPL began to evaluate potential causes, including moisture in the windings and apply local heat to the transformer in an attempt to dry out the transformer and prove that the test results were from moisture and not a degradation of the winding insulation. Inspectors observed that although PPL applied concentrated heat to dry out any potential moisture in the transformer windings and later energized the primary windings with no load on the transformer; PPL did not follow the described methods for drying in the original equipment vendor manual. Most notably, PPL did not apply any air flow or short out the secondary windings when applying voltage (no load) to the primary transformer windings as described in the vendors manual. These actions would have likely reduced the required drying time. The 1X210 transformer was out-of-service and unavailable for a total of 71 hours out of the 72 hour time period allowed before a plant shutdown was directed by Unit 2 Technical Specification 3.8.7.

The finding is a performance deficiency because PPL did not follow station work instructions and did not assure that the safety-related electrical transformer was protected from the humid environment. The result of moisture intrusion into the transformer windings required additional drying time and retesting which caused an approximate 24 hour delay in restoring the ES electrical bus and associated components to service.

Analysis: This finding is greater than minor because it adversely impacted the equipment performance attribute of the Mitigating Systems cornerstone and affected the objective to ensure the availability, reliability and the capability of systems that respond to initiating events to prevent undesirable consequences.

This finding was considered to have very low safety significance (Green), using phase one of the significance determination process for Unit 2. The issue was not associated with a design or Qualification deficiency, did not result in a loss of system safety function, did not represent an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time, did not represent an actual loss of safety function of one or more non-technical specification trains of equipment designated as risk significant per 10 CFR 50.65 for greater than 24 hours, and did not screen as potentially risk significant due to external events such as a fire, flood, or seismic event. Traditional enforcement does not apply because the issue did not have any actual safety

consequence, or potential for impacting the NRC's regulatory function, and is not the result of any willful violation of NRC requirements.

A contributing cause of this finding is related to the Human Performance cross-cutting area of work control, H.3.(a), because PPL did not plan and coordinate the work activities consistent with nuclear safety by incorporating job site conditions, including environmental conditions which had a negative impact on safety-related plant systems and components. PPL implemented the bus outage during a time which increased the potential for transformer winding water intrusion and PPL did not ensure that the work instructions were appropriate for the environmental conditions during the maintenance outage.

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." Contrary to this requirement, during March 2008, work instruction E1394-01 which required the application of heat if the 1X210 transformer was de-energized for more than 24 hours was not followed, and the work instructions did not adequately communicate the need to prevent moisture intrusion. Instructions for maintenance on the 4KV to 480 volt transformer are covered by Appendix B and as such are required to be appropriate for the circumstances. Because this failure to comply with 10 CFR 50, Appendix B, Criterion V, is of very low safety significance and the related inspection issue was entered into the Susquehanna corrective action program as CR 997061, this violation is being treated as a non-cited violation (NCV), consistent with Section VI.A.1 of the NRC enforcement Policy: **NCV 05000388/2008002-01, "Inadequate Application of Work Instructions Resulted in Unavailable and Inoperable Engineering Safeguards Electrical Bus."**

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 3 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 evaluate whether risk management action threshold levels were correctly identified. In addition, the inspectors compared the assessed risk configuration to the actual plant conditions and any in-progress evolutions or external events to evaluate whether the assessment was accurate, complete, and appropriate for the emergent work activities. The inspectors performed control room and field walkdowns to evaluate whether the compensatory measures identified by the risk assessments were appropriately performed. The selected maintenance activities included:

- Units 1 and 2, risk assessment and management action for removal of 1A203 4KV bus and offsite power transformer 0X211;
- Unit 2, scheduled "A" CRD pump replacement during "A" ESW loop modification; and
- Common, emergent work control with diesel driven fire pump and backup diesel-driven fire pump out-of-service (OOS).

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15 – 3 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 Technical Specifications (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, drywell floor drain PCIV did not meet IST criteria; CR 968132;
- Unit 2, remote shutdown panel suppression pool temperature instrumentation, CR 985226; and
- Station, compensatory measures for linear heat generation rate (LHGR), minimum critical power ratio (MCPR) and crediting the recirculation pump motor-generator (MG) set high speed stops.

b. Findings

No findings of significance were identified.

1R17 Evaluations of Changes, Tests, or Experiments & Permanent Plant Modifications (71111.17 – Two, 10 CFR 50.59 screens and 2 permanent plant modifications)

a. Inspection Scope

The inspectors reviewed two permanent plant modifications and associated 10 CFR 50.59 screens that were required to support the Susquehanna Steam Electric Station (SSES) Unit 1 EPU. The selected permanent plant modifications were Engineering Change (EC) 687729, MSIV high flow isolation setpoint change and EC 738965, Appendix R Unit 1 RHR logic change. The EPU 10 CFR 50.59 screen inspection was conducted to determine if changes and tests were evaluated and documented in accordance with 10 CFR 50.59; and, if required, PPL obtained NRC approval prior to implementation. The permanent plant modifications inspection verified that EPU modifications were in accordance with licensing and design bases, licensee commitments, and the Updated Final Safety Analysis Report (UFSAR) and the

performance capability of associated structures, systems, or components was not degraded through plant modifications.

The inspectors assessed the adequacy of the 10 CFR 50.59 screens and permanent plant modifications through interviews with PPL personnel and review of supporting information, such as calculations, engineering analyses, design change documentation, modification packages, drawings, plant procedures, the UFSAR, and technical specifications. For permanent plant modifications, the inspectors also performed field walkdowns of the installed changes. The two permanent plant modifications and associated 10 CFR 50.59 screenings were selected based on the safety significance of the affected structures, systems, and components (SSCs) in addition to supporting the SSES Unit 1 EPU. The inspectors also reviewed issues that were entered into the corrective action program to determine whether PPL was effective in identifying and resolving problems associated with the EPU implementation. A listing of documents reviewed is provided in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18 - 1 Sample, 71004)

Temporary Modification

a. Inspection Scope

The inspectors reviewed PPL EC 978361 and the associated 10 CFR 50.59 evaluation against the system design bases documentation, including the Susquehanna Final Safety Analysis Report and Technical Specifications. Inspectors verified that this design change did not affect system operability or reliability. Inspectors verified this temporary plant modification resolved EPU license condition 2.C.(39), which describes the following regulatory commitment: "PPL will ensure that actions required to assure consistency between the constant pressure power uprate containment analysis and SSES procedures will be implemented prior to operation above the current licensed power level." Inspectors reviewed available HX test data to determine if the empirical data utilized was appropriate and that the revised analysis conservatively bounded the collected test data for the Unit 1 RHR HXs. Inspectors also reviewed the uncertainty analysis used to support the calculation of a revised RHR HX fouling factor and shell side design flow. Inspectors evaluated the combined effects of this temporary design change and all existing identified open work items on the residual heat removal and residual heat removal service water systems. References reviewed are provided in the attachment.

- Unit 1 RHR HX Design Flow and Fouling Factor Reduction to Support Emergency Operating Procedures, EC 978361.

Other issues associated with this sample regarding emergency operating procedures, suppression pool cooling, and primary containment conditions are discussed in NRC inspection report 05000387; 388/2008006.

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 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, double testing of 1X210 transformer following “A” 4KV bus outage, RTPM 792631;
- Unit 1, 24 month vacuum relief breaker valve position switch/channel calibration, SM-159-001;
- Unit 1, “D” channel 125 VDC battery discharge and charger capability test, following maintenance RTSV 833724;
- Common, ESW flow verification SO-054-A03 and ESW flow balance TP-054-076 following RHR motor cooler modification ECD 739040; and
- Common, 230 KV substation capacitor bank, EC 823774, acceptance tests on March 28, 2008.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20 – 1 Sample).1 Unit 1 Refueling OutageInspection ScopeOutage Risk Assessment

The inspectors reviewed the outage risk management plan for the Unit 1 refueling outage, planned for March 3 to April 7, 2008, 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.

Outage Activities

During the refueling outage, the inspectors observed and/or reviewed the outage activities listed below.

- Plant shutdown and cool down activities;
- Establishment of a reactor vessel cool down rate;
- Transition to RHR shutdown cooling method of decay heat removal;
- Outage configuration controls including:
 - 1) availability and accuracy of reactor coolant system instrumentation;

- 2) electrical power alignments;
- 3) decay heat removal system operation, including spent fuel pool cooling system and supplemental decay heat removal system;
- 4) availability of reactor inventory makeup water systems; and
- 5) secondary containment controls and integrity.
- Drywell, suppression chamber, and refuel floor walkdowns after shutdown and prior to final closeout;
- 4 KV emergency buses and supplemental decay heat removal equipment clearances;
- Heavy load lift controls and evolutions as recommended by Operating Experience Smart Sample (OPESS) FY2007-03, "Crane and Heavy Lift Inspection, Supplemental Guidance for IP-71111.20;"
- Fuel bundle rechanneling activities on the refuel floor; and
- Other fuel handling operations including fuel movement, control of reactivity, fuel assembly tracking, and core verification activities.

During the conduct of the refueling inspection activities, the inspectors reviewed the associated documentation to ensure that the tasks were performed safely and in accordance with plant Technical Specification requirements and operating procedures.

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 field and reviewed test data results. The inspectors compared the test results to the established acceptance main steam isolation criteria and the applicable TS or Technical Requirements Manual operability and surveillance requirements to evaluate whether the systems were capable of performing their intended safety functions. The observed or reviewed surveillance tests included:

- Unit 1, "A" and "C" valve (MSIV) local leak rate tests (LLRTs), SE-159-02 and SE-159-023;
- Unit 2, quarterly standby liquid control (SBLC) flow verification, SO-253-004;
- Unit 2, quarterly high pressure coolant injection (HPCI) flow verification, SO-252-002;
- Unit 2, quarterly reactor core isolation cooling (RCIC) flow verification, SO-250-002; and
- Common, full load reject testing of "E" emergency diesel generator (EDG) SE-024-E01.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06 - 1 Sample)

a. Inspection Scope

The inspectors reviewed the combined functional drill scenario (2008 Green Team Emergency Drill) that was conducted on January 22, 2008, and observed selected portions of the drill at the simulator control room and technical support center. The inspection focused on PPL's ability to properly conduct emergency action level classification, notification, and protective action recommendation activities and on the evaluators' ability to identify observed weaknesses and/or deficiencies within these areas. Ten performance indicator (PI) opportunities were included in the scenario. The inspectors attended the evaluators' post-drill critique and compared identified weaknesses and deficiencies including missed performance indicator opportunities against those identified by PPL to determine whether PPL was properly identifying failures in these areas.

- Green team E-plan drill on January 22, 2008.

b. Findings

No findings of significance were identified.

RADIATION SAFETY

Cornerstone: Occupational Radiation Safety (PS)

2OS1 Access Control to Radiologically Significant Areas (7112101 – 8 Samples)

a. Inspection Scope

Based on the PPL's schedule of work activities during the spring Unit 1 outage (1RO15), the inspectors selected three jobs being performed in radiation areas, airborne radioactivity areas, or high radiation areas (<1 R/hr) for observation (nozzle and vessel in-service inspection; external power uprate dryer instrumentation modification; and scaffolding work in the drywell). The inspectors observed work that was estimated to result in the highest collective doses, involved diving activities in or around spent fuel or highly activated material, or that involved potentially changing (deteriorating) radiological conditions. The inspectors reviewed all radiological job requirements (radiation work permit requirements and work procedure requirements). The inspectors observed job performance with respect to these requirements. The inspectors determined if radiological conditions in the work area were adequately communicated to workers through briefings and postings.

During job performance observations, the inspectors verified the adequacy of radiological controls, such as: required surveys (including system breach radiation, contamination, and airborne surveys), radiation protection job coverage (including audio and visual surveillance for remote job coverage), and contamination controls.

For high radiation work areas with significant dose rate gradients (factor of 5 or more), the inspectors reviewed the application of dosimetry to effectively monitor exposure to personnel.

During job performance observations, the inspectors observed radiation worker performance with respect to stated radiation protection work requirements. The inspectors determined if the workers were aware of the significant radiological conditions in their workplace, and the radiation work permit controls/limits in place, and that their performance took into consideration the level of radiological hazards present.

During job performance observations, the inspectors observed radiation protection technician performance with respect to all radiation protection work requirements. The inspectors determined if they were aware of the radiological conditions in their work area and the radiation work permit controls/limits, and if their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

The inspectors identified exposure significant work areas within radiation areas, high radiation areas (<1 R/hr), or airborne radioactivity areas in the plant and reviewed associated PPL controls and surveys of these areas to determine if controls (e.g., surveys, postings, barricades) were acceptable. Areas observed included upper elevations of the drywell, undervessel in the drywell, and spent fuel pool cooling pump room.

With a survey instrument, the inspectors walked down these areas or their perimeters to determine: whether prescribed radiation work permits, procedure, and engineering controls were in place, whether PPL surveys and postings were complete and accurate, and whether air samplers were properly located.

The inspectors reviewed radiation work permits used to access these and other high radiation areas and identify what work control instructions or control barriers had been specified. The inspectors used plant-specific Technical Specification high radiation area requirements as the standard for the necessary barriers. The inspectors reviewed electronic personal dosimeter alarm setpoints (both integrated dose and dose rate) for conformity with survey indications and plant policy. The inspectors verified that workers knew what actions were required when their electronic personal dosimeter noticeably malfunctioned or alarmed.

The inspector evaluated PPL performance against the requirements contained in 10 CFR 20 and Plant Technical Specification 6.12.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (7112102 – 4 Samples)

a. Inspection Scope

The inspectors obtained from PPL a list of work activities ranked by actual/estimated exposure that were in-progress or that had been completed during the last outage and selected the three work activities of highest exposure significance (listed in Section 2OA1 above).

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 and 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 norms, 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 reviewed, where applicable, inconsistencies between intended and actual work activity doses.

Based on scheduled work activities and associated exposure estimates, the inspectors selected three work activities in radiation areas, airborne radioactivity areas, or high radiation areas for observation. The inspectors concentrated on work activities that presented the greatest radiological risk to workers. The inspectors evaluated PPL's use of ALARA controls for these work activities by evaluating PPL's use of engineering controls to achieve dose reductions.

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

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation (7112103 – 1 Sample)

a. Inspection Scope

The inspectors identified the types of portable radiation detection instrumentation used for job coverage of high radiation area work, other temporary area radiation monitors currently used in the plant, and continuous air monitors associated with jobs with the potential for workers to receive 50 mrem committed effective dose equivalent.

The inspectors evaluated PPL 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.

Cornerstone: Public Radiation Safety

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems
(7112201-3 Samples)

a. Inspection Scope

The inspectors reviewed appropriate program documents, procedures, and evaluations from PPL related to the radiological effluent controls program. These included:

- Offsite Dose Calculation Manual (ODCM) revisions and associated technical justifications for ODCM changes;
- New or applicable procedures for effluent programs (e.g., including groundwater monitoring programs);
- Source terms and Part 61 analyses;
- Evaluations of abnormal effluent discharges (leaks and spills);
- 10 CFR 50.59 reviews (e.g., system changes, advanced water chemistry methods);
- New entries into 10 CFR 50.75(g) files;
- Corrective action program CRs;
- Licensee Event Reports, or special reports, and
- Self-assessments and QA audits.

The inspectors verified that each of the Radiological Effluent Controls Program requirements were being implemented as described in Radiological Effluent Technical Specifications (RETS).

For each system modification, the inspectors reviewed changes to the liquid or gaseous radioactive waste system design, procedures, or operation as described in the Updated Final Safety Analysis Report (UFSAR) and plant procedures. The inspectors verified that any changes made to the liquid or gaseous waste systems were effective and maintained effluent releases to the public ALARA

The inspectors reviewed changes to the ODCM made by PPL since the last inspection. The inspectors reviewed changes to ensure consistency is maintained with respect to guidance in NUREG-1301, 1302 and 0133, and Regulatory Guides 1.109, 1.21 and 4.1.

For effluent monitoring instrumentation, the inspectors reviewed documentation to ensure adequate methods and monitoring of effluents. For changes to effluent radiation monitor set-point calculation methodology, the inspectors evaluated the basis for the changes to ensure an adequate justification.

The inspectors reviewed PPL's program for identifying, assessing, and controlling contaminated spills and leaks. For significant, new effluent discharge pathways (such as significant continuing leakage to ground water that continues to impact the environment if not remediated), the inspectors ensured the ODCM was updated to include the new pathway.

The inspectors reviewed the Radiological Effluent Release Report(s) since the last inspection.

The inspectors determined if anomalous or unexpected results were identified by PPL and entered in the corrective action program and adequately resolved.

For significant changes in reported dose values (compared to the previous Radiological Effluent Release Report) (e.g., a factor of 5, or increases approaching Appendix I criteria), the inspectors evaluated the factors which may have resulted in the change.

The inspectors reviewed the plant's correlation between the effluent release reports and the environmental monitoring.

The inspectors reviewed the results from QA audits to determine whether PPL met the requirements of the RETS/ODCM.

The inspectors walked-down selected components of the gaseous and liquid discharge systems (e.g., gas compressors, demineralizers and filters in use or standby, tanks, and vessels). The inspectors reviewed current system configuration with respect to the description in the FSAR, temporary waste processing activities, system modifications and the equipment material condition. For equipment or areas that are not readily accessible, the inspectors reviewed PPL's material condition surveillance records.

The inspectors walked-down and review selected point of discharge effluent radiation monitoring systems and flow measurement devices. The inspectors reviewed effluent radiation monitor alarm setpoint values for agreement with RETS/ODCM requirements.

The inspectors observed selected portions of the routine processing and discharge of radioactive gaseous effluent (including sample collection and analysis). The inspectors verified that appropriate treatment equipment is used and that the radioactive gaseous effluent was processed and discharged in accordance with RETS/ODCM requirements. The inspectors reviewed several radioactive gaseous effluent discharge permits, including the projected doses to members of the public.

The inspectors observed the routine processing and discharge of effluents (including sample collection and analysis). The inspectors verified that appropriate effluent treatment equipment is being used and that radioactive liquid waste was being processed and discharged in accordance with procedure requirements. The inspectors observed the sampling and compositing of liquid effluent samples. The inspectors reviewed several radioactive liquid waste discharge permits, including a review of the projected doses to members of the public.

The inspectors reviewed a sample of effluent discharges made with inoperable (declared out-of-service) effluent radiation monitors. The inspectors determined if appropriate compensatory sampling and radiological analyses were being conducted at the required frequency specified in the RETS/ODCM. For compensatory sampling methods, the inspectors verified that representative samples are being obtained. The inspectors also evaluated whether the facility is routinely relying on the use of compensatory sampling in lieu of adequate system maintenance or calibration.

The inspectors reviewed surveillance test results on non-safety related ventilation and gaseous discharge systems (HEPA and charcoal filtration). The inspectors ensured that the system was operating within acceptance criteria. The inspectors reviewed the methodology PPL uses to determine stack and vent flow rates. The inspectors verified that the flow rates are consistent with RETS/ODCM or FSAR values.

The inspectors determined if PPL has identified any non-radioactive systems that have become contaminated. The inspectors ensured that 10 CFR 50.59 evaluations have been performed per IE Bulletin 80-10. The inspectors determined if any of the newly contaminated systems have an unmonitored effluent discharge path to the environment. The inspectors determined whether any required ODCM revisions were made to

incorporate these new pathways and whether the effluents were reported in accordance with Regulatory Guide 1.21.

The inspectors reviewed instrument maintenance and calibration records (i.e., both installed and counting room equipment) associated with effluent monitoring equipment. The inspectors reviewed quality control records for the radiation measurement instruments.

The inspectors evaluated the methods used to determine the isotopes that are included in the source term to ensure all applicable radionuclides are included, within detectability standards. The inspectors reviewed the Part 61 analyses to ensure hard-to-detect radionuclides are included in the source term.

The inspectors reviewed the meteorological dispersion and deposition factors and hydrogeologic characteristics used in the ODCM and effluent dose calculations to ensure appropriate factors are being used for public dose calculations.

The inspectors reviewed the land-use census and verified that any new public dose receptors or pathways have been considered when performing member of the public dose assessments.

The inspectors reviewed a selection of monthly, quarterly, and annual dose calculations to ensure that PPL has properly demonstrated compliance with 10 CFR 50, Appendix I and Technical Specifications dose criteria.

The inspectors verified PPL is continuing to implement the voluntary NEI/Industry Ground Water Protection Initiative (GPI). Since the last inspection, the inspectors:

- Reviewed changes made to the GPI;
- Reviewed monitoring results of the GPI;
- Reviewed identified leakage or spill events and entries made into 10 CFR 50.75(g) records;
- Reviewed evaluations of leaks or spills, and reviewed any remediation actions taken for effectiveness; and
- Verified voluntary reporting of leaks and spills to local and State authorities.

For abnormal effluent discharges, where applicable, the inspectors:

- Reviewed the records of any abnormal gaseous or liquid tank discharges (e.g., discharges resulting from misaligned valves, valve leak-by, etc). Ensured the abnormal discharge was monitored by the discharge point effluent monitor. If abnormal discharges were made with inoperable effluent radiation monitors, ensured that an evaluation was made of the discharge to account for the source term and projected doses to the public (if needed).
- Reviewed onsite contamination events involving contamination of ground water. The inspectors assessed whether the source of the leak or spill was identified and mitigated.

- For unmonitored spills, leaks, or unexpected liquid or gaseous discharges, ensured that an evaluation was performed to determine the type and amount of radioactive material that was discharged.
- a) Assessed whether sufficient radiological surveys were performed to evaluate the extent of the contamination and the radiological source term. The inspectors verified that a survey/evaluation has been performed to include consideration of hard-to-detect radionuclides.
- b) Evaluated analyses of any new or additional effluent discharge pathways as a result of a spill, leak, abnormal, or unexpected liquid discharge or gaseous discharges. Verified that the ODCM has been revised for any significant, long term ground water discharges (i.e., significant in that the discharge constitutes a significant exposure pathway if not remediated).
- c) Verified that significant leaks and spills have been properly documented in the sites corrective action program and/or in the decommissioning file, per 10 CFR 50.75 (g).
- d) Verified that the dose assessments have been performed for off-site members of the public that may have been exposed to the abnormal effluent discharges (e.g., may have consumed contaminated ground water).
- e) Determined whether PPL completed any required (or voluntary) offsite notifications (state, local, and if appropriate, the NRC).
- Verified that abnormal discharges are assessed and reported as part of the Annual Radiological Effluent Release Report per Regulatory Guide 1.21.

No events of the above type have occurred since the last inspection of this area.

The inspectors assessed evaluations of discharges from onsite surface water bodies (ponds, retention basins, lakes) that contain or potentially contain radioactivity, and the potential for ground water leakage from these onsite surface water bodies. The inspectors determined if licensees are properly accounting for discharges from these surface water bodies as part of their effluent release reports. The inspectors reviewed routine groundwater monitoring results to assess whether PPL was monitoring for unknown leakage. The inspectors evaluated if PPL sufficiently evaluates the monitoring results, properly documents and reports the results, enters abnormal results into its corrective action program, and implements adequate corrective actions. The inspectors reviewed self-assessments, audits, and licensee event reports that involved unanticipated offsite discharges of radioactive material. No events of this type have occurred since the last inspection of this area.

The inspectors reviewed the results of the inter-laboratory comparison program to verify the quality of radioactive effluent sample analyses. The inspectors reviewed assessments of any identified bias in the sample analysis results and the overall effect on calculated projected doses to members of the public.

The inspectors verified that PPL was maintaining adequate effluent sampling records (sampling locations, sample analyses results, flow rates, and source term for radioactive liquid and gaseous effluent (i.e., information needed to satisfy the requirements of 10 CFR 20.1501)).

The inspectors determined if problems identified by PPL through audits, self-assessments, and monitoring results are entered into the corrective action program. The inspectors determined if PPL implements immediate and long term corrective actions that appear to sufficiently address the cause(s) for each identified issue. The inspectors interviewed staff and reviewed documents to determine if the follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk:

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

For repetitive deficiencies or significant individual deficiencies in problem identification and resolution identified above, the inspectors determined if PPL's self-assessment activities were also identifying and addressing these deficiencies. No events of this type have occurred since the last inspection of this area.

The inspectors evaluated PPL's performance against the requirements contained in Technical Specifications 6.5.1.6.m, 6.5.2.8.j, 6.8.1.h, 6.8.1.i, 6.8.2, 6.9.1.8, 6.10.2.d, 6.14; and 10 CFR 50.36a and 10 CFR 50, Appendix I, Section IV.B.1.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (71152)

.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 Corrective Actions Associated with NDE Activities

a. Inspection Scope

A sample of CRs associated with NDE activities and operational experience from other plants including OE25711 (reactor recirculation inlet safe end to nozzle dissimilar metal weld circumferential flaw) in 2007 and OE21884 (small torus crack) in 2005 were reviewed to verify that flaws and other nonconforming conditions, including operating experience were being properly identified, reported at an appropriate threshold, characterized, evaluated, and appropriately dispositioned.

Additionally, PPL Quality Assurance biennial audit No. 744368 of ISI/IST activities performed from November 15 thru December 7, 2007, focused self-assessment of ISI ASME Section XI Program from July 9-13, 2007, and related CRs were reviewed to verify that identified problems were adequately documented with corrective actions identified.

b. Findings

No findings of significance were identified.

.3 Corrective Actions Associated with the Unit 1 Steam Dryer Replacement

a. Inspection Scope

For the Unit 1 replacement steam dryer, the inspector questioned the extent of project oversight and how identified problems were documented and tracked to resolution.

b. Findings

While no findings of significance were identified, follow-up to the inspector's questions determined that items requiring contractor action identified during fabrication shop inspection by PPL had not been entered into the corrective action program even though 4 of the 9 items were not resolved more than a month after their identification. Additionally, review of the applicable procedure NDAP-QA-0702 by site engineering concluded that it did not require deficiencies identified during a source surveillance to be documented in a CR. Two CRs, 964852 and 964861 were issued to provide for evaluation of these conditions.

.4 Corrective Actions Associated with Flow Accelerated Corrosion (FAC) Program

a. Inspection Scope

The inspector reviewed a sample of corrective action reports (ARs) and CRs relating to the EC/FAC program shown in the attachment which identified program conditions discovered during the current operating cycle. The inspector verified that the program conditions and other deficiencies identified were reported, characterized, evaluated and appropriately dispositioned, and entered into the corrective action program.

b. Findings

No findings of significance were identified.

40A3 Event Followup (71153 – 2 Samples).1 (Closed) License Event Report (LER) 05000387/2007-002-00, ESSW Pump House Ventilation Inoperable Following Modification

On June 20, 2007, it was determined that due to a modification of the engineered safeguard service water (ESSW) pump house for security purposes, the station was placed outside of its design basis relative to single failure requirements for the pump house ventilation. In response to the condition, PPL gagged two ventilation dampers in the pump house in the open position to ensure adequate air circulation in the event of a divisional failure of the ESSW pump house ventilation. This condition was identified during a previous NRC inspection and NCV 05000387; 05000388/2007007-01, "Inadequate ESSW Pump House Ventilation Lineup" was issued in NRC Component Design Basis Inspection Report 05000387/2007007 and 05000388/2007007. The identified condition was entered into PPL's corrective action process under CR 883500.

Inspectors reviewed this LER, CR 883500, PPL's follow-up actions, and planned action. No additional findings of significance were identified. The inspectors found that the planned action to update the FSAR was completed, and a more permanent measure to restore pump house ventilation is being evaluated under EWR/PC 895066. This LER is closed.

.2 (Closed) LER 05000388/2007-001-00, Automatic Actuation of "C" Emergency Service Water Pump due to Improper alignment During Emergency Diesel Generator Testing

On May 24, 2007, with both Susquehanna units at rated full power, the "C" ESW pump automatically started when the "E" EDG was manually started as part of testing. At the time of this event the "E" EDG was aligned as a substitute for the "C" EDG and both the "A" and "B" ESW pumps were running. The "C" ESW pump started as designed and the system alignment was adequate to support EDG cooling and all other system safety functions. Plant procedures described the proper alignment of the ESW system to prevent the automatic start of an ESW pump. Operators failed to follow the prerequisites as intended. The failure to perform a formal pre-job brief, peer checking, and less than adequate management oversight contributed to this event. Also contributing to the operator performance was the fact that the system alignment guidance was not in a procedure action step but was contained in a prerequisite note.

This LER was reviewed by the inspectors and no findings of significance were identified. The inspectors reviewed PPL's cause evaluation and found that the implemented corrective actions addressed all the causal factors and contributors in the cause evaluation results. The issue and corrective actions are captured in CR 877727 and CR 958190. This LER is closed.

40A5 Other Activities (4 Samples).1 EC/FAC Program Review Power Uprate (71004)a. Inspection Scope

The objectives of this inspection are to determine whether PPL activities relative to EC/FAC monitoring and maintenance are being accomplished in accordance with 10 CFR 50.65, the Maintenance Rule; licensee commitments to implement Generic Letter

89-08, Erosion/Corrosion Induced Pipe Wall Thinning; and licensee approved procedures. The inspector verified that PPL has taken the required actions to detect adverse effects (wall thinning) on systems and components as a result of operating changes related to EPU such as increased flow in primary or secondary systems including their interfacing systems. The inspector confirmed that responsibility for the implementation of the Susquehanna Steam Electric Station EC/FAC program is delegated by controlled procedure, to the FAC program manager. The FAC program manager within the Nuclear Engineering Department is delegated responsibility for the overall program management, administration, and execution.

The inspector verified PPL's implementation of a long term EC/FAC monitoring program that is based on NUREG-144, GL 89-08, and the guidelines in Electric Power Research Institute (EPRI) Report NSAC-202L-R2. Also, the inspector confirmed that procedures and administrative controls are in place to ensure the structural integrity of high energy (two phase and single phase) carbon steel systems are maintained. The inspector verified that PPL established an EC/FAC program to monitor the degradation of piping and components and that it is described in procedures to ensure the examination activities are managed, maintained, and documented.

The inspector verified the program was well defined and included systematic methods for predicting which systems and specific locations within those systems are susceptible to EC/FAC. The inspector confirmed the licensee utilizes the industry sponsored predictive program (CHECKWORKS) to verify the selection of the most susceptible locations for inspection and additional locations based on unique operating conditions. Inspection results are compared to the locations predicted as most susceptible to high wear to verify the program's predictive accuracy. The inspector verified that results of the inspection and analysis of the most susceptible piping components were clearly documented. Also, the inspector reviewed how inspection data was trended to determine EC/FAC wear rates and identify the future inspection period. The inspector verified that PPL had upgraded to the latest version of CHECKWORKS and has acquired the FAC Manager Program to monitor susceptible non-modeled components in anticipation of implementing the EPU.

A documentation review was performed to confirm examination activities were performed in accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code requirements. The inspector verified that the EC/FAC program contained specific guidance for actions to be taken when wall thinning is detected. Those actions included additional inspection, engineering evaluation, and repair or replacement of those components identified as unlikely to maintain wall thickness in excess of the specified minimum for the next operating cycle. The inspector verified that repair or replacement of components determined or predicted to wear below minimum requirements was to be performed in accordance with the licensee's ASME Section XI program or, the original design code requirements. The inspector reviewed the inspection procedures used and found them to be current, properly reviewed, and approved for use. Additionally, PPL's method of performing ultrasonic testing (UT) of carbon steel for material thickness measurement was found to be adequately described in site approved procedures. The equipment used in the performance of the test(s) was within its calibration intervals and had been calibrated against known standards for the type of material and range of thickness to be measured. Personnel conducting the non-destructive examinations were documented as qualified to perform thickness measurements.

The inspector selected several non destructive examination (NDE) data sheets from FAC inspections conducted during the most recent refueling outage for Unit 2, in March 2007, for review of the licensee's EC/FAC monitoring effectiveness. The sample selection was based on the inspection procedure objectives and the risk priority of those components and systems where accelerated wear rates were predicted to cause wall thinning. The inspector performed a walkdown of available plant piping and components to verify the as-built configuration of the plant matches the plant specific EC/FAC program sketches. Also, the inspector verified the location of selected high wear rate locations were as represented on the Corrosion Inspection Program Component Location Sketches. The inspector examined selection of EC/FAC program component sketches of the feedwater system which identified susceptible locations for EC/FAC during the initial system evaluation. The inspector confirmed a sample of locations which were identified as susceptible by the CHECKWORKS predictive model. The inspector verified that the specified acceptance criteria for required wall thickness for the main steam and feedwater systems provided sufficient margin above the applicable code limits to permit evaluation of the recorded data and to determine appropriate corrective actions to prevent failures.

b. Findings

No findings of significance were identified.

Several comments and observations about opportunities to improve the FAC Program were shared with PPL management at an exit meeting on February 8, 2008. The licensee has captured those comments in CR 971723.

.2 Steam Dryer Replacement Welding and NDE for the Unit 1 Power Uprate (71004 and 55050)

a. Inspection Scope

Inspection was performed on welding and non-destructive examination (NDE) of the steam dryer to confirm the adequacy of procedures including the Work Order, personnel training /qualification, the equipment and records of the work done and documentation of visual and dye penetrant inspection of the welds. Observation was made of completed welds for comparison to the engineering design drawings and requirements. The extent of QA and QC coverage of the work including the work instruction package documentation were evaluated. Additionally, the plans for cutting the old steam dryer apart and preparation for storage were reviewed.

For dryer welding, samples of finished weld surface, welder performance qualification, welding procedure variables, the weld procedure qualification record (PQR) and tack weld control were topics for inspection.

For NDE, personnel qualification records, penetrant test (PT) and visual examination (VT) acceptance criteria, the PT procedure adequacy versus the ASME Code Section V, T-621 minimum elements, PT practices, light intensity measurement for VT and the VT procedure adequacy versus the ASME V, T-941 elements were included in the inspection scope.

b. Findings

No findings of significance were identified.

.3 Unit 1 Extended Power Uprate and Plant Modifications (IP 71004 and 71111.17)

a. Inspection Scope

The inspectors reviewed two permanent plant modifications and associated 10 CFR 50.59 screens that were required to support the SSES Unit 1 EPU. The selected permanent plant modifications were EC 687729, "MSIV high flow isolation setpoint change" and EC 738965, "Appendix R Unit 1 RHR logic change." The details of the inspection scope are documented in this inspection report in section 1R17, Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications.

b. Findings

No findings of significance were identified.

.4 EPU License condition # 2.C.(39) (IP 71004 and 71111.18)

a. Inspection Scope

Inspectors reviewed a temporary modification which supports a PPL commitment for power uprate to assure mitigating systems could perform their safety function in accordance with the constant pressure power uprate containment analysis. Specifically, inspectors reviewed EC 978361, the associated 10 CFR 50.59 evaluation and all engineering design calculations, and FSAR description changes which supported the resolution of EPU license condition 2.C.(39). This inspection sample verified the specific actions taken were appropriate to assure that the constant pressure power uprate containment analysis is consistent with the SSES Unit 1 operating and emergency procedures as communicated by PPL Letter, Susquehanna Steam Electric Station Unit 1 Operating License No. NPF-14 License Condition 2.C.(39), PLA-6342, from B. T. McKinney to U.S. Nuclear Regulatory Commission, dated April 4, 2008. Inspectors verified that the temporary design change supports operation with the existing emergency operating procedures and resolves the identified lack of consistency between the SSES emergency operating procedures (EOPs) and the FSAR containment analysis. Since a permanent change to the EOPs are expected to be completed prior to Unit 2 exceeding 3489 MWth in 2009, this design change and inspection sample is applicable to Unit 1 only. Additional inspection scope for this sample is provided in Section 1R18 of this report.

- Unit 1 RHR HX Design Flow and Fouling Factor Reduction to Support Emergency Operating Procedures, EC # 978361.

Other issues associated with this sample regarding emergency operating procedures, suppression pool cooling, and primary containment conditions are discussed in NRC inspection report 05000387, 388/2008006.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On April 16, 2008, the inspectors presented their findings to Mr. C. Gannon, Vice President - Nuclear Operations, and other members of his staff, who acknowledged the findings.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by PPL and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as Non-Cited Violations.

- TS 6.12.2 requires that the licensee provide locked doors to prevent unauthorized entry into areas where a major portion of the whole body could receive in one hour a dose greater than 1000 mrem. Contrary to this, an opening at the bottom of the door leading to the Unit 1 fuel pool HX pump room (reactor building elevation 749), an area with dose rates greater than 1000 mrem per hour, existed for four days which could allow circumventing of the locked door to prevent unauthorized entry. This was identified in PPL's CAP as CR 967199. This finding is of very low safety significance because no person entered the fuel pool HX pump room while this condition existed, and therefore no unplanned exposures occurred.
- Technical Specifications require that refuel floor high exhaust radiation monitors be operational during the movement of irradiated fuel. Specifically, TS tables 3.3.6.2-1 and 3.3.7.1-1 requires radiation monitors be operational for conditions such as core alterations and during movement of irradiated fuel assemblies in secondary containment. Contrary to these requirements, on February 5, 2008, irradiated fuel moves were performed (six irradiated bundles) with both the Unit 1 and Unit 2 refuel floor high exhaust radiation monitors bypassed. The function of the high exhaust radiation monitor instrumentation is to initiate systems that limit fission product release during and following postulated fuel handling accidents. This issue is captured in PPL's corrective action program as CR 967350. NRC management determined this finding to be of very low safety significance because no event occurred that would require the high radiation monitor interlocks to function; the time period of TS inoperability was brief (less than a 12 hour shift); and all other preventive and mitigation features for the postulated design basis fuel handling accident remained available.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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

G. Birmingham, Design Engineer
 D. Brophy, Acting Regulatory Affairs Supervisor
 C. Coddington, Nuclear Regulatory Affairs, Senior Engineer
 N. Gannon, Vice President – Operations
 E. Gerlach, SDE, Senior Engineer
 M. Hanover, Senior Engineering Program
 J. Helsel, Manager Nuclear Operations
 R. Hock, Acting Radiation Protection Manager
 K. Horsfall, I&C Supervisor
 K. Kelinski, Project Manager
 R. Linden, ISI Specialist
 R. Pagodin, General Manager, Nuclear Engineering
 G. Ruppert, Manager Nuclear Maintenance
 S. Sienkiewicz, Design Engineer, ISI
 J. Schleicher, Supervisor – Design Engineering
 B. Yu, Design Engineer
 L. Vnuk, Plant Chemist
 B. Voss, SF Floor Manager
 R. Wehry, ISI Senior Engineer
 J. Williams Operations Staff
 B. Worobec, Welding Engineer

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSEDOpened

None.

Opened/Closed

05000387, 388/2008002-01	NCV	Inadequate Application of Work Instructions Resulted in Unavailable and Inoperable Engineering Safeguards Electrical Bus (Section IR12)
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Closed

05000387/2007-002-00	LER	ESSW Pump House Ventilation Inoperable Following Modification (Section 40A3.1)
05000388/2007-001-00	LER	Automatic Actuation of “C” Emergency Service Water Pump Due to Improper Alignment During Emergency Diesel Generator Testing (Section 40A3.2)

BASELINE INSPECTION PROCEDURE PERFORMED

LIST OF DOCUMENTS REVIEWED

(Not Referenced in the Report)

Section 1R01: Adverse Weather Protection

EWR 798290

System 02D Engineering Journal Report

EO-100-030, Unit 1 Response to Station Blackout, Revision 21

ES-002-001, Supplying 125V DC Loads with Portable Diesel Generator, Revision 10

OP-002-001, Station Portable Diesel Generator, Revision 14

Condition Reports:

CR 971978 and CR 920119

Section 1R04: Equipment Alignment

Drawings:

M-112, Unit 1 P&ID, RHR Service Water System, Sheet 1, Revision 49

M-151, Unit 1 P&ID, Residual Heat Removal, Sheet 3, Revision 21

M-151, Unit 1 P&ID, Residual Heat Removal, Sheet 4, Revision 17

M-112, Common P&ID, RHR Service Water System, Sheet 2, Revision 18

M-111, Unit 1 P&ID, Emergency Service Water System "B" Loop, Sheet 3, Revision 17

M-2146, P&ID Unit 2 Control Rod Drive Part A, Revision 32

M-152, Unit 1 P&ID Core Spray, Sheet 1, Revision 37

M-110, Unit 1 P&ID Service Water, Sheet 1, Revision 41

Procedures:

OP-149-001, RHR System, Revision 32

OP-149-002, RHR Shutdown Cooling, Revision 40

ON-255-007, Loss of CRD System Flow, Revision 18

TP-135-011, Refuel Outage Decay Heat Removal and Tie-in of the SDHR Temporary Cooling Equipment, Revision 6

OI-000-001, Miscellaneous Equipment Operating Log, Revision 0

OP-011-001, SDHR (Supplemental Decay Heat Removal) System, Revision 11

Condition Reports:

CR 475235, CR 556885, CR 739364, and CR 969050

Other:

PCWO 557207

DBD014, Design Basis Document for Residual Heat Removal System, Revision 3

Section 1R05: Fire Protection

FP-013-200, Revision 4.0 and FP-013-201, Revision 4.0
FP-113-106, RHR Pump Room "A" (1-14), Fire Zone 1-1F, Elevation 645'-0", Revision 4
FP-013-187, Standby Gas Treatment Filter Area (C-900 thru C-912) Fire Zone 0-30A Elevation
806'-0", Revision 7
Fire Brigade Quarterly Drill, Scenario 40, Motor Generator Area Load Center Fire

Section 1R06: Flood Protection Measures

Condition Reports/Action Report:

CR 1004556 and CR 1004679

Drawings:

M-110, Unit 1 P&ID Service Water, Sheet 1, Revision 41

Calculations:

EC-RISK-0539, Internal Flooding Analysis for PRA, Revision 1

Procedures:

ON-169-002, Flooding in Reactor Building, Revision 3
ON-169-001, Flooding in Turbine Building, Revision 2
ON-142-001, Circulating Water System Leak, Revision 15
MT-043-001, Main Condenser Leak Detection, Tube Pulling, Waterbox Inspection and Cleaning,
Revision 13
AR-122-001, Main Condenser Area Flooded (F02), Revision 19

Section 1R08: Inservice Inspection Activities

Condition Reports/Action Reports:

CR 571492, CR 890230, CR 890231, CR 890232, CR 890233, CR 890234, CR 890235,
CR 890236, CR 890237, CR 890238, CR 890239, CR 890240, CR 890241, CR 954831,
CR 954835, CR 954837, CR 954841, CR 954845, and CR 990178

Repair-Replacement Work Orders:

PCWO 611318 Replacement of Class 1 valve XV-143-F009A
PCWO 807057 Replacement of a 6" diameter emergency service water supply line to diesel
generator cooler OE-507C
NDT Examination Reports
PT-08-002, VRRB312-3-G, 4" chemical decon line "B" reactor recirculation loop
PT-08-003, VRRB312-3-F, 4" chemical decon line "B" reactor recirculation loop
PT-08-005, VRRB311-14-F, 4" chemical decon line "A" reactor recirculation loop
PT-08-006, VRRB311-14-G, 4" chemical decon line "A" reactor recirculation loop
1-AUG2.0023, Automated phased array, RHR weld DCA1101-1-A

PCWO 736945, Manual UT, RHR 20" elbow to pipe carbon steel weld GBB104-1-7-C
In Vessel Remote Visual Examination (IVVI)
VT-1, Jet pump wedges & rods and moisture separator bolt support ring upper gusset –
C11 weld to separator
NDT Examination Procedures
NDE-UT-042, Revision 3, GE Procedure GE-UT-300 for Manual Examination of Reactor Vessel
Assembly Welds in Accordance with PDI
NDE-LP-001, Revision 3, Color Contrast Liquid Penetrant Examination
NDE-VT-001, Revision 4, Visual Examination VT-1
NDE-VT-003, Revision 6, Visual Examination VT-3
NDE-UT-001, Revision 6, Manual Ultrasonic Examination of Austenitic Pipe Welds for IGSCC
NDE-UT-002, Revision 4, Manual Ultrasonic Examination of Ferritic Welds
NDE-UT-034, Revision 4, Automated Ultrasonic Examination of Dissimilar Metal Welds, and
Nozzle to Safe End Welds
NDE-UT-013, Revision 2, Manual Ultrasonic Examination of Dissimilar Metal Piping Welds
NDAP-00-0019, Revision 8, Conduct and Control of Supplemental Personnel At Susquehanna
Plant
NDAP-QA-1214, Revision 6, ASME Code Section XI Repairs Or Replacements And National
Board Inspection Code Repairs and Alterations
NDAP-QA-1608, Revision 10, Inservice Inspection
NEPM-QA-1154, Revision 6, Procedure for the Nuclear Department NDE Training, Qualification
and Certification Program
NEPM-QA-1160, Revision 5, Inservice Inspection Program
NEIM-00-1162, Revision 3, ISI Data Review and Approval
NEIM-00-1163, Revision 4, Storage, Control, and Maintenance of ISI Calibration Standards
PPL ISI Program Plan for the Third Interval, Revision 3

Miscellaneous:

BWRVIP-76, BWR Core Shroud Inspection and Flaw Evaluation Guidelines
BWRVIP-20, BWR Core Shroud Distributed Ligament Length (DLL) Computer Program
Calculation EC-062-1117, Rev. 0, Unit 1 13th Outage Shroud Inspection Defect Evaluation
Station Health Reports, Units 1, 2 & 0, Programs/Components, PRIV-BWRVIP IVVI Program
1st, 2nd and 3rd Quarter 2007

Section 1R12: Maintenance Effectiveness

Condition Reports:

CR 1008723, CR 997061, CR 997139.

Procedures:

MT-IT-001, AC Insulation Dielectric Loss and Power Factor Checking, Revision 11
TP-105-006, Load Center 1B210 Outage Coordination Procedure, Revision 2

Other:

Station Logs (Work Management SOMS Log)
Doble Insulation Test Results for 1X210 Transformer (1979 and 2008)
Vendor Manual 1B-11.1.7-2, Unit Substation Transformers, ITE Imperial Corporation

ANSI/IEEE C57.94-1982, IEEE Recommended Practice for Installation, Application, Operation, and Maintenance of Dry-Type General Purpose Distribution and Power Transformers
Work Instruction E1394-01
ERPM 792631, 1B210/1X210 OOS to Clean and Inspect ESS 480V Load Center/Transformer

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

PSP-25, Configuration Risk Identification, Assessment, Management, and Documentation, Revision 1
PSP-26, ORAM-EOOS Program, Revision 4
NDAP-QA-1902, Maintenance Rule Risk Assessment and Management Program, Revision 1

Section 1R15: Operability Evaluations

Procedures:

SO-169-001, Quarterly Liquid Radwaste Valve Exercising, Revision 15

Condition Report: CR 985226

Section 1R17: Evaluation of Changes, Tests, or Experiments and Permanent Plant Modifications

10 CFR 50.59 Safety Evaluation Screens:

50.59 SD 00006, MSIV High Flow Isolation Setpoint Change, Revision 1
50.59 SD 00345, EC 738965 Appendix R RHR Logic Change, Revision 0

Engineering Changes:

EC 738965, Unit 1 Appendix R RHR Logic Change
EC 687729, MSIV High Flow Isolation Setpoint Change

Action Requests:

798396, 850909, 893703, and 964419
MRA 851101, MRA 851102, MRA 851105, MRA 851106

Condition Reports:

CR 739371, CR 896251, CR 916873, and CR 959670

Procedures:

ON-013-001, Response to Fire, Revision 23
SI-183-305, 24 Month Calibration of Main Steam Line A Flow Channels FIS-B21-1N006C&D and Main Steam Line B Flow Channels FIS-B21-1N007C&D, Revision 13.
SE-149-001, 24 Month RHR Logic System Functional Test (Div. 1) – Outage (Partial), Revision 14
TP-149-083, EC 738965 Post-Mod Testing, Revision 0
MFP-QA-1220, Engineering Change Process Handbook, Revision 2

NDAP-QA-1220, Engineering Change Process, Rev. 2
NDAP-QA-0726, 10CFR 50.59 and 10 CFR 72.48 Implementation, Revision 10

Calculations:

EC-002-1070, Coordination Analysis for Bussman NON-3 Fuse with ITE EHB 70 Amp Breaker, Revision 0
EC-002-0502, Unit 1 125 Vdc System 1D640 1D643 ED2 ED6 ER2 125 Vdc Unit 1 Battery Load Profile, Revision 15
EC-002-0552, 125Vdc Utilization Voltage & Load Profile for Circuit 1D624-31 & 2D624-35, Revision 5
EC-002-0553, 125Vdc Utilization & Voltage Load Profile for Circuit 1D634-31 & 2D634-32, Revision 8
EC-002-0554, 125Vdc Utilization & Voltage Load Profile for Circuit 1D644-31 & 2D644-32, Revision 8
EC-002-0567, 125Vdc Utilization & Voltage Load Profile for Circuit 1D614-31 & 2D614-32, Revision 7
EC-002-1031, Unit 1 & Unit 2 125Vdc Battery Load Profile for Performance Surveillance Test and Modified Performance Per Its Surveillance Test, Revision 8
EC-083-0639, Main Steam High Flow Interlock Setpoint/FIS-B21-1(2)N006A/B/C/D
FIS-B21-1(2)N007A/B/C/D, FIS-B21-1(2)N008A/B/C/D, FIS-B21-1(2)N009A/B/C/D, Revision 3
GE NE 0000-0038-8052 Susq-EPU-T506-MSLHiFlo-Calc-2006, Main Steam Line High Flow MSIV Isolation, Revision 0

Other:

PCWO 821593
E-1012, Nuclear Engineering Specification for Electrical Separation Criteria, Revision 2
Licensing Document Change Notice 4524, Appendix R Unit 1 RHR Logic Change, dated 2/28/08
Licensing Document Change Notice 4413, Main Steam Isolation Valve High Flow Setpoint Change – Unit 1, dated 5/23/07
EIP3390, Electrical Installation Procedure for EC 738965 Unit 1 Appendix R RHR Logic Change, Revision 0
Susquehanna Steam Electric Station Proposed License Amendment No. 285 for Unit 1 Operating License No. NPF-14 and Proposed License Amendment No. 253 for Unit 2 Operating License No. NPF-22 EPU Applications Re: Instrumentation and Controls Technical Review Request for Additional Information Responses PLA-6204, dated 6/1/07

Section 1R18: Plant Modifications:

Condition Reports:

CR 739731, CR 745463, and CR 593310

Drawings:

MI-E11-3, sheets 1 and 2
PI&D M-151

Calculations:

EC-HXPM-1016, Thermal Performance for 1E205A
EC-HXPM-1026
EC-049-1071

Other:

EC 978361, RHR HX Design Flow and Fouling Factor Reduction to Support EOP's
LDCN 4584, Unit 1 FSAR Changes Associated with the temporary Design Change
FSAR Section 6.2.2.2, Containment Cooling System Design
FSAR Section 6.2.2.3.1, Summary of Containment Cooling Analysis
FSAR Section 6.3.2.2.4, Low Pressure Coolant Injection (LPCI) System
FSAR Section 15.6.5.2.1, Loss of Coolant Accidents Inside Containment
50.59 SE.00010, Revision 0, System 149 and 016
BWROG EGP/SAG and Appendix B Bases, Revision 2
EO-000-002, RPV Control, Revision 2
EO-000-114-1, RPV Flooding, Revision 5
EO-100-103-1, Primary Containment Control, Revision 9
NDAP-QA-1220, Engineering Change Process, Revision 2

Section 1R19: Post-Maintenance Testing

Procedures:

SM-102-D03, 24 Month Channel "D" 1D640 125 VDC Battery Service Discharge Test and
1D643 Battery Charger Capability Test, Revision 17, performed March 27, 2008
MT-IT-001, AC Insulation Dielectric Loss and Power Factor Checking, Revision 11

Work Orders:

RTSV 833724 and RTPM 792631

Condition Reports: CR 997061 and CR 997139

Other:

ANSI/IEEE C57.94-1982, IEEE Recommended Practice for Installation, Application, Operation,
and Maintenance of Dry-Type General Purpose Distribution and Power Transformers

Section 1R20: Refueling and Outage Activities

Risk Management Documents

Procedures:

OP-149-002, RHR Shutdown Cooling, Revision 40
ME-1RF-100, Unit 1 Reactor Vessel Disassembly, Revision 5
GO-100-002, Plant Startup, Heatup and Power Operation, Revision 54
OP-ORF-007, Underwater Fuel Inspection and Repair, Revision 8
OP-ORF-008, Fuel and Blade Guide handling Activities, Revision 9

ON-009-001, Loss of River Water Makeup, Revision 14
MT-199-001, Reactor Building Crane Operating Procedure (1H213), Revision 15
MT-299-001, Reactor Building Crane Operating Procedure (2H213), Revision 14
EC-HVLD-0501, Heavy Loads Evaluation of Refueling Outage Activities, Revision 6
TP-104-013, Bus 1C (1A203) Outage Coordination Procedure, Revision 4

Condition Reports:

CR 985360, CR 989362 CR 982356, CR 981565, and CR 988037 CR 986293, CR 988353,
CR 92004, CR 988647, CR 984591, CR 988896, and CR 986174

Work Order: 884030

Other:

EWR 986293, Request an Increase in Allowable Lift Height
U1-15RIO Risk Assessment, Revision 1

Section 1R22: Surveillance Testing

Procedures:

SO-250-002, Quarterly RCIC Flow Verification, Revision 35, performed 1/23/08
SO-252-002, Quarterly HPCI Flow Verification, Revision 40, performed 2/29/08
SE-159-021, LLRT of "A" Mainsteam Isolation Valves Penetration Number X-7A, Revision 13,
performed 3/12/08
SE-159-023, LLRT of "C" Mainsteam Isolation Valves Penetration Number X-7C, Revision 13,
performed 3/12/08
NDAP-QA-0412, Leakage Rate Test Program, Revision 10

Work Orders: RTSV 836571 and RTSV 836573

Condition Reports: CR 949247 and CR 982454

Section 1EP6: Drill Evaluation

CR 959591

Section 2OS1: Access Control to Radiologically Significant Areas

Radiation Work Permits: 2008-1002 (ISI [in vessel, dryer, separator]; CRB; and LPRM
Exchange Activities); 2008-1320 (Scaffolding Work in Drywell); 2008-1370 (Nozzle and Vessel
ISI and Associated Support); 2008-1372 (ISI: Piping/Hangers/Erosion Corrosion Outside of
Bioshield [Nozzle] Doors); 2008-1387 (EPU Dryer Instrumentation Mod)

Condition Reports:

CR 988134; CR 977830; CR 953906; CR 917252; CR 905250; CR 889020; CR 988694; and
CR 943775

Section 2OS2: ALARA Planning and Controls

Unit 1 Re-channel Outage Radiological Performance Report

ALARA Pre Job Reviews: 20081002; 20081320; 20081370; 2008-1372; 2008-1387

Condition Reports: CR 982185; CR 963743; and CR 968614

Section 2OS3: Radiation Monitoring Instrumentation and Protective Equipment

Condition Report: CR 905567

Section 2PS1: Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

Susquehanna Steam Electric Station 2006 Annual Radioactive Effluent Release Report

Susquehanna Steam Electric Station Offsite Dose Calculation Manual (2006 revision)

Susquehanna Steam Electric Station Technical Requirements Manual (2006 revision)

Quality Assurance Audit 691257, Effluents Audit Report, August 18, 2006

Tritium and Noble Gas Activity Reports: Unit 1/unit 2 Reactor Building Vent (12/4/07; 12/10/07; 12/29/07); Unit 1/Unit 2 Turbine Building Vent (12/3/07; 12/5/07; 12/6/07); Standby Gas Treatment Vent (12/3/07; 12/5/07)

Liquid Radwaste Prerelease Sampling and Analysis (12/1/07; 12/3/07 [2])

Vent Weekly Iodine and Particulate Activity: Unit 1

Reactor Building (11/27/07; 12/4/07); Unit 2

Reactor Building (12/4/07; 12/11/07); Standby Gas Treatment (12/11/07)

Condition Reports:

CR 797651; CR 797589; CR 797583; CR 797580; CR 797578; CR 797576; CR 797551; CR CR 797545; CR 797542; CR 797531

Procedure NDAP-QA-1180, Rev 4, Radiological Effluent Monitoring and Control

Conduct of Chemistry – Chemistry Laboratory Activities: 3/14/07; 7/2/07; 8/9/07; 10/25/07; 11/16/07; 11/20/07; 12/6/07

Radiation Monitoring System Calibrations

Liquid Radwaste Discharge Monitor

Supplemental Decay Heat Effluent Radiation Monitor

Service Water Effluent Radiation Monitor

Unit 1A RHR Service Water Radiation Monitor

Unit 1B RHR Service Water Radiation Monitor

Unit 2 Service Water Effluent Radiation Monitor

Unit 2 Supplemental Decay Heat Removal Service Water Radiation Monitor

Unit 2A RHR Service Water Radiation Monitor

Unit 2B RHR Service Water Radiation Monitor

#2 Reactor Building Vent Low Range Noble Gas Channel

#1 Turbine Building Vent Low Range Noble Gas Channel

#1 Reactor Building Vent Low Range Noble Gas Channel

Standby Gas Treatment Vent Low Range Noble Gas Channel

#2 Turbine Building Vent Low Range Noble Gas Channel

Monthly Waterborne and Airborne Effluent Dose Calculations, 11/07
 Gaseous Release and Dose Summary Report, 2007
 Interlaboratory Radiochemical Results, 2007

Procedures:

SI-069-307, Revision 10, 24 Month Calibration of Liquid Radwaste Effluent Flow Monitor
 FT-06434

SI-141-301, Revision 14, 24 Month Calibration of the Cooling Tower Discharge Flow Monitor
 Channel FT-21503

SI-204-301, Revision 17, 24 Month Calibration of the Cooling Tower Discharge Flow Monitor
 Channel FT-21503

SI-179-335, Revision 8, 24 Month Calibration of Reactor Building Ventilation System Effluent
 and Sampler Flow Rate Monitor

SI-179-235, Revision 6, Quarterly Functional Test of the Reactor Building Ventilation Monitoring
 System Effluent and Sampler Flow Rate Monitors

SI-279-335, Revision 8, 24 Month Calibration of Reactor Building Ventilation System Effluent
 and Sampler Flow Rate Monitors

SI-279-335, Revision 6, 24 Month Calibration of Reactor Building Ventilation System Effluent
 and Sampler Flow Rate Monitors

SI-179-334, Revision 8, 24 Month Calibration of Turbine Building Ventilation System Effluent
 and Sampler Flow Rate Monitors

SI-179-234, Revision 4, Quarterly Functional Test of the Reactor Building Ventilation Monitoring
 System Effluent and Sampler Flow Rate Monitors

SI-279-334, Revision 10, 24 Month Calibration of Turbine Building Ventilation System Effluent
 and Sampler Flow Rate Monitors

SI-279-234, Revision 7, Quarterly Functional Test of the Turbine Building Ventilation Monitoring
 System Effluent and Sampler Flow Rate Monitors

SI-079-337, Revision 11, 24 Month Calibration of Standby Gas Treatment System (SGTS)
 Effluent and Sampler Flow Rate Monitors

SI-079-237, Revision 6, Quarterly Functional Test of Standby Gas Treatment System (SGTS)
 Effluent and Sampler Flow Rate Monitors

SE-030-A09, Revision 4, "A" CREOAS HEPA Filter and Charcoal Adsorber In-Place Leak Test

SE-030-A10, Revision 4, "A" CREOAS Charcoal Radionuclide Penetration and Retention Test

SE-030-B09, Revision 4, "B" CREOAS HEPA Filter and Charcoal Adsorber In-Place Leak Test

SE-030-B10, Revision 4, "B" CREOAS Charcoal Radionuclide Penetration and Retention Test

SE-133-A01, Revision 3, Turbine Building "A" H&V HEPA Filter and Charcoal Adsorber
 Efficiency Test (1F157A and 1F158A)

SE-133-B01, Revision 3, Turbine Building "B" H&V HEPA Filter and Charcoal Adsorber
 Efficiency Test (1F157B and 1F158B)

SE-133-C1A, Revision 1, Turbine Building H&V Charcoal Radionuclide Penetration and
 Retention Test (1F158A)

SE-133-C1B, Revision 1, Turbine Building H&V Charcoal Radionuclide Penetration and
 Retention Test (1F158B)

SE-233-A01, Revision 3, Turbine Building "A" H&V HEPA Filter and Charcoal Adsorber
 Efficiency Test (2F157A and 2F158A)

SE-233-B01, Revision 4, Turbine Building "A" H&V HEPA Filter and Charcoal Adsorber
 Efficiency Test (2F157B and 2F158B)

SE-233-C2A, Revision 1, Turbine Building H&V Charcoal Radionuclide Penetration and
 Retention Test (2F158A)

SE-233-C2B, Revision 2, Turbine Building H&V Charcoal Radionuclide Penetration and

Retention Test (2F158B)
 SE-070-A09, Revision 4, "A" SGTS HEPA Filter and Charcoal Adsorber In-Place Leak Test
 SE-070-A10, Revision 4, 24 Month "A" SGTS Charcoal Test Canister Analysis for 0F169A
 SE-070-B09, Revision 4, "B" SGTS HEPA Filter and Charcoal Adsorber In-Place Leak Test
 SE-070-B10, Revision 4, 24 Month "B" SGTS Charcoal Test Canister Analysis for 0F169B
 SE-134-Z3A, Revision 3, Reactor Building Zone 3 "A" H&V HEPA Filter and Charcoal Adsorber Efficiency Test (1F216A, 1F217A, and 1F218A)
 SE-134-Z3B, Revision 3, Reactor Building Zone 3 "B" H&V HEPA Filter and Charcoal Adsorber Efficiency Test (1F216B, 1F217B, and 1F218B)
 SE-134-C3A, Revision 2, Reactor Building H&V Charcoal Radionuclide Penetration and Retention Test (1F217A)
 SE-134-C3B, Revision 2, Reactor Building H&V Charcoal Radionuclide Penetration and Retention Test (1F217B)
 SE-134-Z1A, Revision 3, Reactor Building Zone 1 "A" H&V HEPA Filter and Charcoal Adsorber Efficiency Test (1F255A, 1F257A, and 1F258A)
 SE-134-Z1B, Revision 3, Reactor Building Zone 1 "B" H&V HEPA Filter and Charcoal Adsorber Efficiency Test (1F255B, 1F257B, and 1F258B)
 SE-134-C1A, Revision 2, Reactor Building H&V Charcoal Radionuclide Penetration and Retention Test (1F257A)
 SE-134-C1B, Revision 2, Reactor Building H&V Charcoal Radionuclide Penetration and Retention Test (1F257B)
 SE-234-Z3A, Revision 3, Reactor Building Zone 3 "A" H&V HEPA Filter and Charcoal Adsorber Efficiency Test (2F216A, 2F217A, and 2F218A)
 SE-234-Z3B, Revision 3, Reactor Building Zone 3 "B" H&V HEPA Filter and Charcoal Adsorber Efficiency Test (2F216B, 2F217B, and 2F218B).
 SE-234-C3A, Revision 2, Reactor Building H&V Charcoal Radionuclide Penetration and Retention Test (2F217A)
 SE-234-C3B, Revision 2, Reactor Building H&V Charcoal Radionuclide Penetration and Retention Test (2F217B)
 SE-234-Z2A, Revision 3, Reactor Building Zone 2 "A" H&V HEPA Filter and Charcoal Adsorber Efficiency Test (2F255A, 2F257A, and 2F258A)
 SE-234-Z2B, Revision 3, Reactor Building Zone 2 "B" H&V HEPA Filter and Charcoal Adsorber Efficiency Test (2F255B, 2F257B, and 2F258B)
 SE-234-C2A, Revision 2, Reactor Building H&V Charcoal Radionuclide Penetration and Retention Test (2F257A)
 SE-234-C2B, Revision 2, Reactor Building H&V Charcoal Radionuclide Penetration and Retention Test (2F257B)

Section 40A5: Other

Procedures:

Welding Procedure Specification for GTAW, 1713-1, Revision 0
 Welding Procedure Specification for FCAW, 1713-2, Revision 2
 Welding Procedure Specification for GTAW, 1713-5, Revision 0
 Welding Procedure Specification for GTAW, 1713-10, Revision 0
 Welding Procedure Specification for RSW, 1713-15, Revision 0
 General Welding Repair Procedure, GE Steam Dryer, GWRP-1713, Revision 2
 Visual Examination Procedure, VT-1713, Revision 0
 Liquid Penetrant Examination Procedure, PT-1713, Revision 0
 Cleaning Procedure, CL-1713, Revision 0

Thermal Cutting Procedure, TC-1713, Revision 1
Control of Temporary Attachment Welds, QA Procedure QAP-950, Revision 4
Weld Material Control, QA Procedure QAP-810, Revision 2
GE Steam Dryer Vibration Instrumentation Installation Procedure 26A7416, Revision 0

Drawings/Isometrics:

Steam Dryer Assembly DWG # 223D5360, Revision 2

Other:

GE Steam Dryer Fabrication Specification 26A6274, Revision 14
Traveler No. 1713-7050, Revision 0, for SSES-1 Steam Dryer Lift Lugs
Traveler No. 1713-7000, Revision 0, for SSES-1, Old Steam Dryer Removal
BWRVIP-84, 1000248, Oct 2000, Materials for BWR Internal Components (XM-19)

Procedures:

NDAP-QA-1106, Revision 1, 10/31/06; Flow Accelerated Corrosion Program
NEPM-QA-1172, Revision 2, 10/24/07; Guidelines For Flow-Accelerated Corrosion Program Activities
NDE-UT-014, Revision 4, 9/28/07; Ultrasonic Thickness Examination
NDAP-QA-0801, Revision 7, 9/27/07; Management Of Non-Process Computer Software and Data

50.59 Applicability Determination:

AR951173

Calculations:

EC-FACP-0001, Revision 1, 10/29/07; Susquehanna Steam Electric Station FAC System Susceptibility Evaluation
EC-FACP-0015, Revision 0, 7/5/07; Impacts of EPU on SSES FAC Program Predicted Wear Rates for CHECKWORKS Modeled Piping Systems
EC-EPU-20300, Revision 0, 3/17/06; EPU Task Report TO300 – Nuclear Boiler System
EC-EPU-20307, Revision 0, 3/17/06; EPU Task Report TO307 – Reactor Recirculation System
EC-093-1018, Revision 2, 11/29/06; Siemens Turbine Thermal Kit
EC-PUPC-20308, Revision 0, 3/21/06; Task Report TO308 – Reactor Coolant Pressure Boundary Piping Evaluation
EC-PUPC-20309, Revision 0, 3/17/06; Task Report TO309 – Reactor Core Isolation Cooling
EC-PUPC-20310, Revision 0, 3/17/06; EPU Task Report TO310 – Residual Heat Removal System
EC-PUPC-20311, Revision 0, 3/28/06; Task Report TO311 – Reactor Water Cleanup System
EC-PUPC-20312, Revision 0, 3/21/06; Task Report TO312 – BOP Piping
EC-PUPC-20404, Revision 0, 4/10/06; EPU Task Report TO404 – High Pressure Coolant Injection System
EC-PUPC-20405, Revision 0, 3/17/06; EPU Task Report TO405 – Core Spray System
EC-PUPC-20700, Revision 0, 3/6/06; EPU Task Report TO700 – Turbine Generator
EC-PUPC-20701, Revision 0, 4/3/06; Final Task Report For EPU Task TO701 & TO703; BOP Power Cycle Thermal & Mechanical Performance

EC-PUPC-20702, Revision 0, 3/10/06; EPU Task Report TO702 – Condensate Demineralizer and Filter System
EC-PUPC-20800, Revision 0, 3/8/06; EPU Task Report TO800 – Liquid and Solid Waste Management System
EC-PUPC-20801, Revision 0, 3/9/06; EPU Task Report TO801 – Gaseous Waste Management System
EC-FACP-0002, Revision 1, 10/29/07; Susquehanna Steam Electric Station FAC Susceptible Non-Modeled (SNM) Systems
EC-FACP-0006, Revision 0, 3/28/05; Susquehanna Steam Electric Station FAC Isometrics and Component Labels, Unit 2
EC-FACP-0001, Revision 1, 10/29/07; SSES FAC System Susceptibility Evaluation (SSE)
EC-FACP-0002, Revision 1; Susquehanna FAC Susceptible Non-Modeled (SNM) Program, Appendix D Color Coded Flow Diagrams
EC-FACP-0004, Revision 2, 11/14/07; CHECKWORKS SFA Model Unit 2 SSES
EC-FACP-0001, Revision 4, 12/16/05; CHECKWORKS SFA Model Unit 2 SSES
EC-045-1022, Revision 1, 12/11/03; FAC Analysis of Feedwater System from RFP Discharge to Reactor Nozzles

Diagrams and Drawings:

Heat Flow Diagram, NR.11197-S312, 1/24/06; Susquehanna Uprate to 3952.8 MWt, WB-10628-2, Nominal Back Pressure
Bechtel Dwg. SP-EBO-211-5, Revision B; PPL H.P.S.V. Below Seat Drain To I.P. Condenser 2E-108B

Program and System Health Reports:

PRFC - Flow Accelerated Corrosion Monitoring Program, Second Period 2007, (Yellow)
PRFC - Flow Accelerated Corrosion Monitoring Program, Third Period 2007, (Yellow)
System Health Report, Unit 1 Condensate System, 5/1/07 to 8/31/07
System Health Report, Unit 1 Feedwater System, 5/1/07 to 8/31/07
System Health Report, Unit 1 Feedwater Heaters System, 5/1/07 to 8/31/07
System Health Report, Unit 1 RCIC System, 5/1/07 to 8/31/07
System Health Report, Unit 1 HPCI System, 5/1/07 to 8/31/07
System Health Report, Unit 1 RWCU, 5/1/07 to 8/31/07
System Health Report, Unit 1 Main Steam System, 5/1/07 to 8/31/07
System Health Report, Unit 2 Condensate System, 5/1/07 to 8/31/07
System Health Report, Unit 2 Feedwater System, 5/1/07 to 8/31/07
System Health Report, Unit 2 Feedwater Heaters System, 5/1/07 to 8/31/07
System Health Report, Unit 2 RCIC System, 5/1/07 to 8/31/07
System Health Report, Unit 2 HPCI System, 5/1/07 to 8/31/07
System Health Report, Unit 2 RWCU, 5/1/07 to 8/31/07
System Health Report, Unit 2 Main Steam System, 5/1/07 to 8/31/07

Outage Summary Reports:

Susquehanna Steam Electric Station Unit 2 Cycle 13 And 13th RIO FAC Program Summary
PLI-94498, 10/17/07
Susquehanna Steam Electric Station Unit 2 12th RIO FAC Program Summary PLI-93687,
9/25/05

Action Reports:

458667, 458668, 458972, 459019, 459027, 459184, 459789, 460346, 460670, 460672, 460681, 460688, 460689, 460879, 460882, 460886, 460951, 460959, 461222, 461552, 461946, 461949, 462412, 462937, 462940, 462942, 463265, 463272, 463511, 463516, 463812, 463814, 464199, 464205, 465877, 468816, 475398, 531679, 555269, 555555, 556520, 558176, 561273, 563033, 564849, 566493, 595434, 609598, 614412, 650636, 651595, 651692, 651871, 652174, 652301, 652522, 654284, 654740, 655429, 655575, 655580, 655985, 721681, 721805, 723257, 723586, 725690, 763291, 763705, 763929, 763964, 775019, 806699, 808793, 819325, 854881, 855224, 856093, 857238, 858906, 859961, 858565, 872437, 880532, 905460, 912315, 912520, 935074, 951173, 954837, 966852, 951173, 954740, 955681, 952203, 953135, 953800, 955685, 971723

FAC UT Analysis Reports:

Component: 0.5-1SLBVP-U2-1030-E, 3/6/07, PASS
Component: 1-EAD-214-1-1105-E, 3/6/07, PASS
Component: 1-G3D-233-12-1010-E, 3/17/07, PASS
Component: 2E102A-N5, 3/23/07, PASS
Component: 3-GBD-204-2-1065-E, 3/16/07, PASS
Component: 3-HBD-214-1-1040-E, 3/19/07, PASS
Component: 3-HBD-214-1-1040-E-DSX, 3/19/07, PASS
Component: 6-GBD-215-12-1515-P, 3/23/07, PASS
Component: 6-GFD-203-1-1030-T, 3/17/07, PASS

Inspection Data Reports:

3-HBD-214-1-1040-E, 3/19/07
3-HBD-214-1-1040-E-DSX, 3/19/07
6-GBD-215-12-1515-P, 3/23/07, (3 pages)
6-GFD-203-1-1030-T, 3/17/07, (3 pages)

Engineering Work Requests:

EWR 856486, 3/12/07 and EWR 655571, 3/13/05

Work Requests:

PCWO951294, PCWO954611, and PCWO954761

Self-Assessments:

Focused Self-Assessment/Formal Benchmarking Trip Report, Flow Accelerated Corrosion Program, November 13 – 16, 2007
SSES Flow Accelerated Corrosion Program Assessment, December 5 – 6, 2002

Personnel Qualifications:

Engineering Task Qualification Card, Maintain FAC Program Data Using FAC Manager Software, EG-285, Revision 0, Mark Hanover
Engineering Task Qualification Card, Analyze FAC Program Data Using FAC Manager Software, EG-284, Revision 0, Mark Hanover

Engineering Task Qualification Card, Generate a FAC Program Outage Inspection Scope,
EG-283, Revision 0, Mark Hanover
Engineering Task Qualification Card, Perform FAC Program Analysis Using CHECKWORKS
Software, EG-286, Revision 0, Mark Hanover

Miscellaneous:

Recommendations for an Effective Flow-Accelerated Corrosion Program (NSAC-202L-R3),
May 2006

Condition Reports:

CR 964852* and CR 964861*

* Indicates this was generated as a result of this inspection.

LIST OF ACRONYMS

ALARA	As Low As Is Reasonably Achievable
AR	Action Report
ASME	American Society of Mechanical Engineers
BWRVIP	Boiling Water Reactor Vessel Internals Project
CFR	Code of Federal Regulations
CR	Condition Report
CRD	Control Rod Drive
CREOAS	Control Room Emergency Outside Air Supply
EC	Engineering Change
EC/FAC	Erosion Corrosion/Flow Accelerated Corrosion
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedure
EPRI	Electric Power Research Institute
EPU	Extended Power Uprate
ES	Engineering Safeguards
ESS	Engineering Safeguards System
ESSW	Engineered Safeguard Service Water
ESW	Emergency Service Water
EWR	Engineering Work Request
FAC	Flow Accelerated Corrosion
FSAR	[SSES] Final Safety Analysis Report
GL	Generic Letter
GPI	Groundwater Protection Initiative
HPCI	High Pressure Coolant Injection
HX	Heat Exchanger
IGSCC	Inter-Granular Stress Corrosion Cracking
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ISI	Inservice Testing
IVVI	In-Vessel Visual Inspection
KV	Kilovolts
LER	Licensee Event Report
LHGR	Linear Heat Generation Rate

LLRT	Local leak Rate Test
LP	Low Pressure
LPCI	Low Pressure Coolant Injection
MCPR	Minimum Critical Power Ratio
MG	Motor-Generator
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
PMT	Post-Maintenance Test
PPL	PPL Susquehanna, LLC
PQ	Procedure Qualification Record
PT	liquid Penetrant Examination
QA	Quality Assurance
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
RETS	Radiological Effluent Technical Specification
RG	[NRC] Regulatory Guide
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
RP	Radiation Protection
RT	Radiographic Testing
RTP	Rated Thermal Power
RWCU	Reactor Water Cleanup
RWP	Radiation Work Permit
SBO	Station Blackout
SDHR	Supplemental Decay Heat Removal
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
UFSAR	Updated Final Safety Analysis Report
TS	Technical Specifications
UT	Ultrasonic Examination
VT	Visual Examination