December 4, 2000

Mr. Robert G. Byram
Senior Vice President, Nuclear
PPL Susquehanna, LLC
Susquehanna Steam Electric Station
2 North Ninth Street
Allentown, PA 18101

SUBJECT: NRC'S SUSQUEHANNA STEAM ELECTRIC STATION INTEGRATED REPORT 05000387/2000-008, 05000388/2000-008

Dear Mr.Byram:

On November 11, 2000, the NRC completed an inspection at the Susquehanna Steam Electric Station Nuclear Power Plant. The enclosed report presents the results of that inspection. The results of this inspection were discussed on November 20, 2000, with Mr. R. Ceravolo and other members of your staff.

This inspection was an examination of 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. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel.

No findings of significance were identified.

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If you have any questions please contact me at 610-337-5233.

Sincerely,

/RA/

Curtis J. Cowgill, Chief
Projects Branch 4
Division of Reactor Projects

Docket Nos. 05000387, 05000388
License Nos. NPF-14, NPF-22

Enclosure: Inspection Report 05000387/2000-008, 05000388/2000-008

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REGION I

Docket Nos.:	05000387, 05000388
License Nos.:	NPF-14, NPF-22
Report No.:	2000-008
Licensee:	PPL Susquehanna, LLC
Facility:	Susquehanna Steam Electric Station
Location:	Post Office Box 35 Berwick, PA 18603
Dates:	October 1, 2000 to November 11, 2000
Inspectors:	S. Hansell, Senior Resident Inspector J. Richmond, Resident Inspector A. Blamey, Resident Inspector J. Noggle, Senior Health Physicist
Approved by:	Curtis Cowgill, Chief Projects Branch 4 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000387/2000-008, 5000388/2000-008, on 10/01-11/11/2000; PPL Susquehanna, LLC; Susquehanna Steam Electric Station; Units 1&2. Resident inspector and radiation specialist report.

The report covered a six week period of resident inspection and an announced inspection by a regional senior health physicist inspector. No findings of significance were identified.

Report Details

Summary of Plant Status

Susquehanna Steam Electric Station (SSES) Units 1 and 2 began the period at full power and operated at or near full power for the entire report period with exceptions for testing and control rod pattern adjustments.

1. REACTOR SAFETY
Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness

1R04 Equipment Alignments (71111.04)

a. Inspection Scope

The inspectors performed partial system walkdowns to verify system and component alignment and note any discrepancies that would impact system operability on the following:

- Unit 1 “B” core spray system; “A” core spray out of service, Sentinel Risk yellow
- Unit 2 “A” electro hydraulic control (EHC) system; “B” EHC pump out of service for replacement and motor repairs

b. Issues and Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors performed walkdowns of various plant 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. The areas included:

- Unit 1 “B” core spray pump room and valve area
- Unit 2 reactor protection system instrument racks

b. Issues and Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

The inspectors reviewed PPL's maintenance, testing, inspection, and evaluation of the "E" emergency diesel generator intercooler/air intake and jacket water heat exchangers, using the following documents:

NDAP-QA-0504, "Heat Exchanger Program"
MT-GM-025, "Heat Exchanger Cleaning and Inspection"
MT-024-029, "Diesel Generator Intercooler Cleaning, Inspection, and Coating"
PCWO 241584, "Clean and Inspect the Diesel Generator Intercooler OE505E1/OE505E2"

The inspectors observed heat exchanger cleaning, acceptance criteria, and trending of results.

b. Issues and Findings

No findings of significance were identified.

1R11 Licensed Operator Re-qualification (71111.11)

a. Inspection Scope

On October 19, 2000, the inspectors observed the licensed operator performance in the simulator during an emergency preparedness exercise. The review assessed the operator performance and emergency plan implementation. The inspectors reviewed the emergency response organization's evaluation of the crew's performance.

b. Issues and Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors reviewed PPL's follow-up actions for selected structure, system, or component (SSC) issues, to assess the effectiveness of PPL's maintenance activities. The inspectors reviewed the performance of selected SSCs to verify that problem identification and resolution of Maintenance Rule related issues had been appropriately monitored, evaluated, and dispositioned in accordance with the requirements of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance," and PPL procedure NDAP-QA-0413, "SSES Maintenance Rule Program." In addition, the inspectors reviewed selected SSC classification, performance criteria, goals, and corrective actions to verify that the actions were reasonable and appropriate. The specific issues included:

- “C” emergency diesel generator air compressor failures (CR 291021 and CR 290907)

- HV-251-F040, residual heat removal to radwaste isolation valve motor overhaul (RLWO292457)

b. Issues and Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessment and Emergent Work (71111.13)

a. Inspection Scope

The inspectors observed selected portions of planned and emergent maintenance work activities to assess PPL's risk management. The inspectors attended planning meetings and discussed the risk management aspect of the activities with maintenance personnel, operators, system engineers, and work coordinators for the following issues:

- Unit 2 reactor building closed cooling water/emergency service water check valve 210052 disk failure (CR 292179)

- Unit 2 reactor recirculation motor generator oil leak

- Control room ventilation supply damper failed closed (HD07802A)

- Unit 2 concurrent system/equipment outages and concurrent degraded conditions:

  - "B" EHC pump and motor replacement
  - "A" reactor building closed cooling water system pump motor breaker work (CR 288162)
  - "B" circulating water pump motor inspection
  - “B" control rod drive train sticking pump discharge check valve (CRs 284859, 286438)
  - “B" turbine closed cooling water sticking pump discharge check valve (CR 287211)
  - "C1" and "D2" emergency diesel generator air compressors out of service (CR 287829)

b. Issues and Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed selected operability determinations to assess the adequacy of the evaluations, the use and control of compensatory measures, compliance with the Technical Specifications, and the risk significance of the issue. The inspectors verified that the operability determinations were performed as required by procedure NDAP-QA-0703, Operability Assessments. The inspectors used the Technical Specifications, Technical Requirements Manual, Final Safety Analysis Report, and associated Design Basis Documents as references. The specific issues reviewed included:

- "E" emergency diesel generator fuel oil tank excessive sludge (CR 289642)
- "E" emergency diesel generator lube oil line foreign material (CR 290606)
- "C" residual heat removal pump discharge check valve leakage (CR 292836)

b. Issues and Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors observed post-maintenance testing activities and reviewed the PPL test data. The inspectors verified the test success criteria addressed in the procedures was in compliance with Technical Specification requirements. The specific issues reviewed included:

- Unit 2 control rod drive (CRD) motor replacement; TP-055-014, "CRD Pump Performance Curve"
- Unit 2 high pressure coolant injection auxiliary oil pump operation following turbine trip valve modification

b. Issues and Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed the performance of selected portions of surveillance tests and reviewed portions of the test results to verify that the tested systems and components were capable of performing their safety functions, including:

- 24 month “A” standby gas treatment zone 3 Isolations (SO-070-002)
- Unit 1 standby liquid control flow test (SO-153-004)
- 24 month ESS auxiliary bus 1B 93% degraded grid voltage test (SE-104-203)

b. Issues and Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS3 Radiation Monitoring Instrumentation (71121.03)

a. Inspection Scope

The inspector reviewed calibration methods and documentation of current calibration of the following sources used for the calibration of radiation monitoring instrumentation:

- Shepherd 89 calibrator
- Shepherd 89-139 calibrator
- Shepherd panoramic calibrator
- AmBe neutron source
- Area Radiation Monitor (ARM) portable calibrator

The following radiation monitoring instrument current calibrations were reviewed to indicate their accuracy in radiation measurement for the protection of occupational workers. These instruments at both Units 1 and 2 included:

- Standby gas treatment system exhaust radiation monitor
- Refuel floor high and wall exhaust duct monitors
- Pretreatment off-gas radiation monitors
- Containment radiation monitors
- Transverse In-core Probes (TIP) drive
- TIP chamber shield ARMs
- Refuel floor area radiation monitors
- Post-accident Sample System instruments

Portable health physics survey instrument calibration methods and selected in-use instrument calibration documents were reviewed for the following radiation survey instruments and personnel electronic dosimeters:

- Eberline 6112B teletectors
- Eberline RO-2/2A ion chambers
- Eberline AMS-3 continuous air monitors
- Eberline PCM-1B personnel contamination monitors
- Radose Rad 51 electronic dosimeters

Nine self contained breathing apparatus (SCBAs) specified in the emergency plan for the control room and technical support center were examined for operability and PPL inspection history. The current control room shift staffing roster was utilized to review selected plant operators for currency of SCBA use qualifications.

Condition reports with respect to radiation monitoring instrumentation or emergency SCBA use were reviewed from January 1, 2000 through October 16, 2000.

b. Issues and Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA3 Event Follow-up (71153)

.1 (Closed) LER 05000387/00-007-00 Multiple Test Failures of Main Steam Safety Relief Valves

On April 14, PPL identified that five of the eight main steam safety relief valves (SRVs), did not open within the required Technical Specification (TS) pressure band during SRV testing. TS 3.4.3, “Safety Relief Valves,” provides an allowable pressure band of +/- 1% for individual SRVs. Four of the SRVs opened below the required band (range of -1.08 to -3.43%) and one opened above the band (+2.07%). PPL determined that these SRVs opened outside of the required band because of the exposure to in-service operation and seat leakage. All eight SRVs were replaced with valves that were tested and verified to open within the allowable TS band.

This issue is more than minor because, if left uncorrected, the SRV lift setpoints would further degrade under the same in-service operation and seat leakage and become a more significant safety concern. This finding affects the Mitigating Systems Cornerstone and is considered to have very low safety significance (green) using the Significance Determination Process, because the SRVs would have functioned to prevent over-pressurization of the reactor vessel during the most limiting postulated over-pressure events. This PPL identified violation is discussed in Section 4AO7. This issue was documented in PPL’s corrective action program as condition report 249300. This LER is closed.

.2 (Closed) LER 05000387/99-06-01 "C" and “D” Emergency Service Water Pumps Inoperable Greater than 7 Days Due to Interaction with “A” and “B” Pumps

PPL determined that the “C” and “D” emergency service water pumps may not achieve the required minimum flow. The original LER was reviewed and closed in Inspection Report 05000387, 388/2000001. This LER revision updated PPL’s corrective actions, no additional issues or violations were identified. This LER is closed.

4OA5 Other

.1 Performance Indicator Data Collecting & Reporting Process (TI 2515/144)

a. Inspection Scope

The inspectors reviewed PPL's performance indicator (PI) data collecting and reporting process to assess whether PPL had a clear understanding of the indicator definitions, data reporting elements, calculational methods, definitions of terms, and clarifying notes, consistent with the guidance contained in Nuclear Energy Institute document 99-02, revision 0, "Regulatory Assessment Performance Indicator Guideline." The following indicators and PPL documents were included in this review:

NRC Performance Indicators
- Occupational Exposure Control Effectiveness
- Protected Area Security Performance Index
- Emergency Response Organization Drill Participation

PPL Documents
- NDAP-QA-0737, "Regulatory Performance Assessment"
- Quality Assurance audit 2000-015, "NRC-PI Verification Audit," dated July 5, 2000
- HP-TP-902, "Health Physics Regulatory Performance Assessment Program"
- HP-TP-221, "External Dose Investigation and Evaluation"
- EP-AD-022, "Nuclear Emergency Planning Performance Indicators"
- SI-SSM-009, “Security Performance Indicator Assessment”

b. Issues and Findings

The inspectors identified a minor issue related to the calculation of the normalization factors. This was considered a minor issue because the change in the PI value was small and resulted in a new value further away from the PI's threshold. PPL entered this issue into their corrective action program as condition report 289839.

4OA6 Meetings

.1 Exit Meeting Summary

On November 20, 2000, the resident inspectors presented the inspection results to Mr. R. Ceravolo and other members of your staff who acknowledged the findings.

The inspectors asked PPL whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee Identified Violations

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

NCV Tracking Number	Requirement Licensee Failed to Meet
NCV 05000387/2000008-01	Technical Specification (TS) 3.4.3, "Safety Relief Valves (SRVs)," requires an allowable pressure band of +/- 1% for opening individual SRVs. Five of eight SRVs tested on April 14, 2000, opened outside of the TS band, as described in condition report 249300.

DOCUMENTS REVIEWED
(not listed in the body of the inspection report)

EC-RISK-0528	Risk Significant Systems, Structures, and Components for the Maintenance Rule and Generic Letter 89-10 Components
EC-RISK-1054	SSC Availability Performance Criteria for the Maintenance Rule
EC-RISK-1060	Acceptable Number of Failures for Risk Significant SSCs in the Maintenance Rule
OP-AD-001	Conduct of Operations
OI-AD-0301	Protected Equipment Program
NDAP-QA-0737	Regulatory Performance Assessment
NDAP-QA-0413	SSES Maintenance Rule Program

NEI 99-02, revision 0, "Regulatory Assessment Performance Indicator Guideline"
SSES Maintenance Rule Basis Document - System 24, Emergency Diesel Generators

24 Month Calibration of Standby Gas Treatment Effluent and Sampler Flow Rate Monitor, SI-079-337, Rev. 10
24 Month Calibration of Refuel Floor High Exhaust Duct Radiation Monitor, SI-079-325, Rev. 12
Quarterly Functional Test of Refuel Floor High Exhaust Duct Radiation Monitor, SI-079-225, Rev.7
24 Month Calibration of Refuel Floor Wall Exhaust Duct Radiation Monitor, SI-079-326, Rev. 12
Quarterly Functional Test of Refuel Floor Wall Exhaust Duct Radiation Monitor, SI-079-336, Rev.9
24 Month Calibration of Main Condenser Off-Gas Pretreatment Radiation Detector, SI-179-310, Rev.3
24 Month Calibration Test of Main Condenser Off-Gas Pretreatment Radiation Monitor, SI-179-330, Rev. 6
Channel Calibration of Area Radiation Monitors, IC-079-10, Rev. 4
Inventory, Inspection, Operational Testing, and Calibration of Emergency Equipment and Supplies, EP-AD-013, Rev. 8
Health Physics Instrument Laboratory Work Activities, HP-HI-047, Rev. 24
Health Physics Instrumentation Program, NDAP-QA-0622, Rev. 0
Calibration of Eberline Model RO-2/RO-2A, HP-TP-101, Rev. 12
Calibration of Eberline AMS-3/3A, HP-TP-110, Rev. 9
Eberline PCM-1B Calibration, HP-TP-130, Rev. 10
Area Radiation Monitor Calibrator Certification Checks, HP-TP-226, Rev. 4
Calibration of Eberline Area Radiation Monitor, HP-TP-299, Rev. 4
Calibration of Eberline Model 6112 Teletector, HP-TP-122, Rev. 2

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

05000387/2000008-01	NCV	Multiple Test Failures of Main Steam Safety Relief Valves (section 4AO7)

Closed

05000387/00-007-00	LER	Multiple Test Failures of Main Steam Safety Relief Valves (section 4AO3.1)
05000387/99-006-01	LER	"C" and "D" Emergency Service Water Pumps Inoperable Greater than 7 Days Due to Interaction With "A" and "B" Pumps (section 4AO3.2)

LIST OF ACRONYMS USED

ARM	Area Radiation Monitor
CFR	Code of Federal Regulations
CR	Condition Report
FSAR	[SSES] Final Safety Analysis Report
HP	Health Physics
LER	Licensee Event Report
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PI	Performance Indicator
PPL	PPL Susquehanna, LLC
QA	Quality Assurance
SCBA	Self-Contained Breathing Apparatus
SRV	Safety Relief Valves
SSC	Structure, System, or Component
SSES	Susquehanna Steam Electric Station
TIP	Transverse In-Core Probe
TS	Technical Specification

ATTACHMENT 1

NRC's REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
● Initiating Events	● Occupational	● Physical Protection
● Mitigating Systems	● Public	
● Barrier Integrity		
● Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.