November 12, 2002

EA 02-216

Mr. Bryce L. Shriver
Senior Vice President and
Chief Nuclear Officer
Susquehanna Steam Electric Station
PPL Susquehanna, LLC
769 Salem Blvd., NUCSB3
Berwick, PA 18603-0035

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION - NRC INTEGRATED INSPECTION REPORT 50-387/02-05, 50-388/02-05; 72-28/02-01

Dear Mr. Shriver:

On September 28, 2002, the NRC completed an inspection at your Susquehanna Steam Electric Station Units 1 and 2. The enclosed report documents the inspection findings which were discussed on October 7, 2002, 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.

Based on the results of this inspection, the NRC identified one apparent violation and one finding of very low safety significance (Green).

The apparent violation was a violation of NRC requirements and is being considered for escalated enforcement action in accordance with the "General Statement of Policy and Procedures for NRC Enforcement Actions" (Enforcement Policy), NUREG-1600, Supplement VI. The current Enforcement Policy is included on the NRC's website at www.nrc.gov/what-we-do/regulatory/enforcement.html. This violation concerns pressurizing a Dry Shielded Cannister (DSC) with a mixture of Argon and Helium gas rather than 100% Helium gas as required by the Certificate of Compliance (CoC) for the Susquehanna Dry Spent Fuel Storage System (NUHOMS-52B), CoC No.1004. The details of this violation are discussed in Section 4OA5 of the enclosed Inspection Report. The NRC became aware of this event on
July 26, 2002, when you identified the condition and made a prompt notification to the NRC Operations Center. This violation did not represent an immediate safety concern and was corrected by your staff.

As discussed with your staff, inspections of independent spent fuel storage activities are covered under NRC Inspection Manual Chapter 2690, and are not covered under a reactor safety cornerstone in the revised oversight program's (ROPs) significant determination process (SDP). Therefore, this apparent violation is to be addressed under the traditional enforcement process.

In addition, since you identified the violation and based on our understanding of your corrective actions, a civil penalty may not be warranted in accordance with Section VI.C.2 of the Enforcement Policy. The final decision will be based on your confirming that the corrective actions previously described to the staff have been or are being taken.

Before the NRC makes its enforcement decision, we are providing you an opportunity to either (1) respond to the apparent violation addressed in this inspection report within 30 days of the date of this letter or (2) request a predecisional enforcement conference. If a conference is held, it will be open for public observation. The NRC will also issue a press release to announce the conference. Please contact Dr. Ronald Bellamy at (610) 337-5200 within 7 days of the date of this letter to notify the NRC of your intended response.

If you choose to provide a response, it should be clearly marked as a "Response to An Apparent Violation in Inspection Report Nos. 50-387/2002-05, 50-388/2002-05, 72-28/2002-01; EA 02-216 and should include for the apparent violation: (1) the reason for the apparent violation, or, if contested, the basis for disputing the apparent violation, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance was achieved. Your response may reference or include previous docketed correspondence, if the correspondence addresses the required response. If an adequate response is not received within the time specified or an extension of time has not been granted by the NRC, the NRC will proceed with its enforcement decision or schedule a predecisional enforcement conference.

In addition, please be advised that the number and characterization of the apparent violation described in the enclosed inspection report may change as a result of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

The Green finding was a violation of NRC requirements. However, because of the very low safety significance and because the issue was entered into your corrective action program, the NRC is treating this issue as a Non-cited Violation, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. Violations of very low safety significance identified by PPL are listed in Section 4OA7 of the report. If you contest any Non-cited Violation in this report, you should provide a response within 30 days of the date of this letter, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 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.

The NRC has increased security requirements at Susquehanna in response to terrorist acts on September 11, 2001. Although the NRC is not aware of any specific threat against nuclear facilities, the NRC has issued an Order and several threat advisories to commercial power reactors to strengthen licensees' capabilities and readiness to respond to a potential attack. The NRC continues to inspect the licensee's security controls and its compliance with the Order and current security regulations.

In accordance with 10CFR2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if you choose to provide one) will be made available electronically for public inspection in the NRC Public Document Room or from the Publically 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). To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

If you have any questions please contact me at 610-337-5229.

Sincerely,

/RA/

A. Randolph Blough, Director
Division of Reactor Projects

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

Enclosure: Inspection Report 50-387/02-05, 50-388/02-05, 72-28/02-01

Attachment 1 - Supplemental Information

cc w/encl: J. H. Miller, President - PPL Generation, LLC
R. Anderson, Vice President - Nuclear Operations for PPL Susquehanna LLC
R. A. Saccone, General Manager - Nuclear Engineering
A. J. Wrape, III, General Manager, Nuclear Assurance
T. L. Harpster, General Manager - Plant Support
W. W. Hunt, Manager, Nuclear Training
G. F. Ruppert, Manager, Nuclear Operations
J. D. Shaw, Manager, Station Engineering
T. P. Kirwin, Manager, Nuclear Maintenance
R. M. Paley, Manager, Work Management
Director, Bureau of Radiation Protection
R. E. Smith, Jr., Manager, Radiation Protection
W. F. Smith, Jr., Manager, Corrective Action & Assessments
D. F. Roth, Manager, Quality Assurance
R. R. Sgarro, Manager, Nuclear Regulatory Affairs
R. Ferentz, Manager - Nuclear Security
C. D. Markley, Supervisor - Nuclear Regulatory Affairs
M. H. Crowthers, Supervising Engineer
G. DallaPalu, PPL Nuclear Records
H. D. Woodeshick, Special Office of the President
B. A. Snapp, Esquire, Associate General Counsel, PPL Services Corporation
R. W. Osborne, Allegheny Electric Cooperative, Inc.
Commonwealth of Pennsylvania (c/o R. Janati, Chief, Division of Nuclear Safety, Pennsylvania Bureau of Radiation Protection)

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H. Nieh, RI EDO Coordinator
S. Richards, NRR (RidsNrrDipmlpdi)
R. Guzman, PM, NRR
T. Colburn, PM, NRR (Backup)
Region I Docket Room (with concurrences)

*HQ Concurrence by Leigh Trocine, OE on 11/8/02

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.: 05000387, 05000388, 72-28

License Nos.: NPF-14, NPF-22

Report No.: 50-387/2002-05, 50-388/2002-05, 72-28/2002-01

Licensee: PPL Susquehanna, LLC

Facility: Susquehanna Steam Electric Station

Location: 769 Salem Boulevard
Berwick, PA 18603

Dates: June 30, 2002 to September 28, 2002

Inspectors: S. Hansell, Senior Resident Inspector
J. Richmond, Resident Inspector
J. Wray, Health Physicist
J. Noggle, Senior Health Physicist
J. Jang, Senior Radiation Specialist
A. Della Greca, Senior Reactor Inspector

Approved by: Mohamed M. Shanbaky, Chief
Projects Branch 4
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000387-02-05, IR 05000388-02-05; PPL Susquehanna, LLC; on 06/30-09/28/2002; Susquehanna Steam Electric Station; Units 1&2. Event Follow-up and Operation of an Independent Spent Fuel Storage Installation.

The report covered a 13 week period of inspection by resident inspectors and a senior health physicist, senior radiation specialist, senior reactor inspector, and a health physicist. The inspection identified one Green finding and one apparent violation, not subject to the SDP, that will be assigned a severity level in a separate correspondence. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609 “Significance Determination Process” (SDP). Findings for which the SDP does not apply, such as the apparent violation, will be indicated by a severity level of the applicable violation. The NRC’s program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000. The NRC’s program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspection Findings

Miscellaneous

- **TBD/Apparent Violation.** An apparent violation (severity level yet to be determined) was identified that resulted in an unanalyzed condition for the spent fuel dry storage system. PPL filled a spent fuel storage cannister with Argon and Helium gases instead of using all Helium gas as required by the Certificate of Compliance No. 1004 for the NUHOMS-52B Dry Cask Fuel Storage System.

  The 10 CFR Part 72 Technical Specification 1.2.3, "24P and 52B DSC Helium Backfill Pressure," requires a helium backfill pressure of 2.5 pounds per square inch (psig) +/- 2.5 psig (stable for 30 minutes after filling). This issue is considered an apparent violation that resulted in an unanalyzed condition for a storage system designed to prevent or mitigate a serious safety event being degraded to the extent that a detailed evaluation was required to determine its operability. The issue is being considered for escalated enforcement in accordance with the NRC Enforcement Policy, NUREG 1600, Supplement VI, "Fuel Cycle and Materials Operations." (section 4OA5)

- **Green.** The inspectors identified a non-cited violation of Technical Specification 5.2.2.e for failure to maintain adequate shift coverage without routine heavy use of overtime to meet the objective of operating personnel working a nominal 40 hour week while both units are operating. A majority of operations personnel have routinely worked in excess of approximately 50 hours per week (25% overtime) to provide adequate shift coverage while both units are operating.

  This violation of Technical Specification Section 5.2.2.e, "Administrative Controls - Unit Staff," is greater than minor because if left uncorrected the excessive work hours would contribute to an increased likelihood of human performance errors during normal

operation and plant events. The finding is not suitable for SDP evaluation, but has been reviewed by NRC management and is determined to be a Green finding of very low significance, and is not greater than very low significance because there were no significant events or human performance issues that were linked directly to personnel fatigue as a result of the hours worked. (section 4OA3)

B. 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.

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Report Details

Summary of Plant Status

Susquehanna Steam Electric Station (SSES) Unit 1 began the inspection period at full power. On September 8, 2002, reactor power was reduced to approximately 62% to repair a feedwater heater level control problem. The unit was returned to full power on September 9, and operated at or near full power during the remainder of the report period except for control rod pattern adjustments and main turbine control valve testing.

Unit 2 operated at or near full power during the inspection period except for control rod pattern adjustments and main turbine control valve testing.

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

1R04 Equipment Alignments (71111.04Q)

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns to verify system and component alignment and to note any discrepancies that would impact system operability. The inspectors verified 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:

- Emergency Diesel Generators (EDGs) during hot weather conditions and a PJM electrical grid Maximum Generation Alert, July 22, 2002.
- Units 1 and 2 condensate transfer system walk down to verify adequate keepfill pressure for the emergency core cooling water systems. The walkdown was performed during the extended out of service time for the "A" condensate transfer pump due to an oil leak, August 26-28, 2002.
- "A" and "B" EDG air start subsystems, following an "A" air start dryer valve failure (CR 417588) that resulted in the "A" EDG air start pressure below the Technical Specification required minimum value, on August 14.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Routine Plant Area Inspections (71111.05Q)

a. Inspection Scope

The inspectors reviewed PPL's fire protection program to determine the required fire protection design features, fire area boundaries, and combustible loading requirements for 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 areas and documents reviewed included:

Plant Areas and Fire Zones

- Unit Common refuel floor (Fire Zone 0-8A), during dry fuel processing activities, on August 1
- Unit 1 reactor protection system (RPS) instrument racks (Fire Zone 1-5A-S) and RPS motor-generator area (Fire Zone 1-5A-W), on August 3
- Unit 2 high pressure coolant injection (HPCI) pump room (Fire Zone 2-1C), on September 23
- Unit 2 reactor core isolation cooling (RCIC) (Fire Zone 2-1D), on September 23
- Unit 1 & 2 13.8kV Startup (Fire Zones 1-33A & 2-33A) and Auxiliary (Fire Zones 1-34A & 2-34A) electrical bus rooms, on September 23
- Unit 1 Residual Heat Removal (RHR) pump rooms (Fire Zones 1-1F & 1-1E), during RHR maintenance activities, on September 26

Pre-fire Plans Procedures and Documents

- FP-113-119, "RPS MG Set Room (I-517), Elevation 762 feet"
- FP-013-132, "Common Refuel Floor"
- FP-213-238, "Unit 2 HPCI Pump Room"
- FP-213-239, "Unit 2 RCIC Pump Room"
- FP-113-222, "Unit 1 Lower 13.8kV Switchgear Room"
- FP-113-231, "Unit 1 Upper 13.8kV Switchgear Room"
- FP-113-105, "Unit 1 "B" RHR Pump Room, Elevation 645 feet"
- FP-113-106, "Unit 1 "A" RHR Pump Room, Elevation 645 feet"
- FP-213-279, "Unit 2 Lower 13.8kV Switchgear Room"
- FP-213-287, "Unit 2 Upper 13.8kV Switchgear Room"
- NDAP-QA-0449, "Fire Protection Program"
- NDAP-QA-0440, "Control of Transient Combustible & Hazardous Material"
- NDAP-QA-0441, "Fire Protection System Status Control"

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

.1 External Flood Protection (71111.06A)

a. Inspection Scope

The inspectors reviewed PPL's external flood analysis, flood mitigation procedures, and design features to verify whether they were consistent with the PPL design requirements and industry standards. The inspectors walked down selected risk significant plant areas, including the moats and surrounding areas for large on-site tanks. The inspectors evaluated the condition and adequacy of flood detectors, sump pumps, sump level alarm circuits, and other flood protection design features to assess whether the flood protection design features were adequate and operable. During the walk downs, the inspectors also evaluated whether there were any unidentified or unanalyzed sources of flooding, including holes and un-sealed penetrations in floors and walls. The specific areas included:

- Unit Common Diesel Building
- Unit Common Emergency Service Water (ESW) Building
- ESW / RHRSW Valve Vault, Manholes, and Handholes (external only)
- Units 1 and 2 Condensate Storage Tanks
- Refueling Water Storage Tank

The inspectors reviewed PPL's flood mitigation procedures, flood alarm response procedures, and selected preventative maintenance tasks and surveillance tests for flood detectors and flood barriers to evaluate whether component functionality was routinely verified. In addition, the inspectors reviewed PPL's corrective action program, including system health reports, and interviewed selected system engineers and maintenance personnel to verify whether previous flood related issues had been appropriately identified, evaluated, and resolved. The following procedures were included in the review:

- NE-94-001, Section 5.2, "Susquehanna Individual Plant Evaluation for External Events - Floods"
- FSAR Section 2.4.2, "Hydrologic Engineering - Floods"
- FSAR Section 3.4, "Water Level (Flood) Design"
- EC-RISK-1024, "External Flood Effects"
- EC-PIPE-1032, Section 4.2, 4.3, and 4.5, "Moderate Energy Pipe Crack Evaluation - ESW Pumphouse, ESW Valve Vault, and Diesel Generator Bldg"
- RTPM 234589
- Work Order 353963, "RHR / ESW Manhole Monthly Inspection"
- Work Orders 357914 & 357915, Rework of D/G Sump Storm Drain Lines
- Condition Reports 98-2182, 261868, 291092, 356111, 357712, and 412978

b. Findings

No findings of significance were identified.

.2 Internal Flood Protection (71111.06S)

a. Inspection Scope

The inspectors reviewed PPL's internal flooding evaluation, flood mitigation procedures, and design features, to verify whether they were consistent with the SSES design requirements and industry standards. The inspectors walked down selected risk significant plant areas to verify whether room flood detectors, watertight doors, sump pumps, and other flood protection design features were adequate and operable. During the walk downs, the inspectors also evaluated whether there were any unidentified or unanalyzed sources of flooding, including holes and un-sealed penetrations in floors and walls, between flood areas, and between common drain systems and sumps and the flood areas. The specific areas included:

- Unit 1 and 2 Residual Heat Removal (RHR) system pump rooms
- Unit 1 and 2 High Pressure Coolant Injection (HPCI) system pump rooms
- Unit 1 and 2 Reactor Core Isolation Cooling (RCIC) system pump rooms
- Unit 1 and 2 Core Spray pump rooms
- Unit 1 and 2 Control Structure Elevation 771, DC power distribution areas

The inspectors reviewed PPL's preventative maintenance tasks and surveillance tests for room flood detectors, flood barriers, and watertight doors to evaluate whether component functionality was routinely verified. In addition, the inspectors reviewed PPL's corrective action program, including system health reports, and interviewed selected system engineers and maintenance personnel to verify whether previous flood related issues had been appropriately identified, evaluated, and resolved. The specific procedures and documents reviewed included:

- NDAP-QA-0302, Section 6.14, "Internal Flooding and Floor Drain Covering"
- HPCI, RCIC, RHR, and Core Spray alarm response procedures for "Pump Room Flooded"
- ON-169-002, "Flooding in the Reactor Building"
- EO-000-104, "Secondary Containment Control"
- NL-92-026, "Safety Evaluation for EO-000-104"
- FSAR Section 3.4, "Water Level (Flood) Design"
- FSAR Section 9.3.3, "Equipment and Floor Drainage System"
- NPE-91-001, Section F.4, "Susquehanna Individual Plant Evaluation - Internal Floods"
- EC-PIPE-1032, Section 4.6, "Moderate Energy Pipe Crack Evaluation - Reactor Building"
- Maintenance Rule Basis Documents and System Health Reports for Plant Leak Detection System
- RTPMs 103373, 103389, 297116, and 297123
- Condition Report 412133

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

On September 18, 2002, the inspectors observed licensed operator performance in the simulator during the operator re-qualification annual examinations. In addition, the inspectors evaluated PPL's critique of the operators' performance to identify discrepancies and deficiencies in operator training. The inspectors compared their observations to Technical Specifications, emergency plan implementation, and the use of emergency operating procedures. The inspectors' evaluation focused on the operating crew's satisfactory completion of crew critical tasks. Critical tasks are operational limits placed on key reactor plant and containment parameters that will ensure safety margins are maintained during the simulated malfunctions. In addition, the inspectors reviewed the ability of the simulator to model the actual plant performance. The observed training scenario's included:

- OP002-604, "RFPT Trip / RCIC High Temperature Isolation / MSIV Isolation / Hydraulic ATWS"
- OP002-403, "SLC Inoperable / Circulating Water Pump Trip / Recirculation Pump Runback / Main Turbine Trip / LOCA"

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12Q)

a. Inspection Scope

The inspectors evaluated PPL's work practices and follow-up corrective actions for selected system, structure, or component (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. The following issues were reviewed:

Equipment Issues

- Unit 2 High Pressure Coolant Injection (HPCI) turbine exhaust check valve removal, inspection, and replacement, September 8, 2002

Procedures and Documents

- Maintenance Rule Basis Documents for HPCI
- System Health Reports for HPCI
- Maintenance Rule Basis Documents for HPCI
- NDAP-QA-0413, "SSES Maintenance Rule Program"

- EC-RISK-0528, "Risk Significant SSCs for the Maintenance Rule"
- EC-RISK-1054, "Maintenance Rule SSC Availability Performance Criteria"
- EC-RISK-1060, "Risk Significant SSC Acceptable Failure Limits"

b. Findings

No significant observations or findings were identified.

1R13 Maintenance Risk Assessment and Emergent Work (71111.13)

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 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 verify 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 issue. The inspectors performed control room and field walkdowns to verify whether the compensatory measures identified by the risk assessments were appropriately performed. The selected maintenance activities included:

- Unit 1 Un-interruptible power supply 1D240 and 1D130 work, on July 15-18.
- Unit 1 Main Steam Line "D" Flow Instrument FIS-B21-1N009D, indication not responding as expected for plant conditions, replaced the indicator gear, CR 414158, July 22-23, 2002.
- Unit 2 Reactor Protection System Electronic Protection Assembly breaker replacement, PCWO 414221, July 26, 2002.
- Unit 2 loss of electrical panel 2Y219, which resulted in the loss of Reactor Building Chillers, increase in drywell temperature, and a loss of Reactor Water Cleanup system, CR 420462, August 23, 2002.
- Unit 2 offsite power transformer T-20 tap changer work, coincident with Unit 1 RCIC out of service, diesel fire pump out of service, and Unit 2 offgas recombiner out of service, on July 31.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

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 the Technical Specifications. In addition, the inspectors reviewed the selected operability determinations to verify whether the determinations were performed in accordance with NDAP-QA-0703, "Operability Assessments." The inspectors used the Technical Specifications, Technical Requirements Manual, Final Safety Analysis Report (FSAR), and associated Design Basis Documents as references during these reviews. The issues reviewed included:

- Dry Shielded Cannister No. 18, back-filled with argon gas instead of the required Helium gas, Part 72 Technical Specification 1.2.3, CR 415339, August 1, 2002.
- Unit 2 Main Steam Line "B" Flow Instrument FIS-B21-2N007B, indication not responding as expected for plant conditions, CR 414152 on July 21, and CR 414522 on July 31.
- Unit 1 Primary Containment nitrogen leakage increased for a two week period, then returned to the previous lower leak rate, CRs 403181 and 41219 on August 21, and CR 421255, revision 2 on September 16.
- Unit 2 offsite power transformer tap changer, CR 415927 & WO 415964, on July 31.
- Unit 2 residual heat removal suppression pool cooling valve (HV-251-F024B) failed Limitorque motor operated valve dynamic test, CR 417587, on August 8-14

b. Findings

No findings of significance were identified other than the Dry Shielded Canister No. 18 apparent violation identified in Section 40A5 of this report.

1R19 Post Maintenance Testing (71111.19)

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's adequacy by comparing the test methodology to the scope of maintenance work performed. In addition, the inspectors evaluated the test acceptance criteria to verify whether the test demonstrated that the tested components satisfied the applicable design and licensing bases and the Technical Specification requirements. The inspectors reviewed the recorded test data to determine whether the acceptance criteria were satisfied. The post maintenance testing activities reviewed included:

- Unit 2 Reactor Protection System Electronic Protection Assembly Under-voltage, Over-voltage, and Under-frequency trip test after breaker replacement, MT-RC-060, "EPA Assembly calibration Procedure," July 26, 2002.
- "A" Condensate Transfer Pump, after the pump was overhauled to correct a repeat oil leak, condition report 419152, August 19, 2002.
- Unit 1 Main Steam Line "D" Flow Instrument FIS-B21-1N009D, indication not responding as expected for plant conditions, replaced the indicator gear, CR 414158, July 22-23, 2002.

- Unit 2 High Pressure Coolant Injection turbine exhaust valve local leak rate test following valve removal, inspection, and replacement, September 8, 2002.
- Unit Common diesel fire pump retest, following replacement of jacket water cooling pressure control valve (PCV-02263), WO 415458 and SO-013-001, on August 1.
- Unit 1 RCIC retest, following scheduled system outage window, on July 31.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed portions of selected surveillance test activities in the control room and in the field and reviewed the test data results. The inspectors compared the test result to the established acceptance criteria and the applicable Technical Specification 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 2 "B" and "D" Core Spray pump surveillance test in the Reactor Building; and Unit 1 "B" Core Spray pump surveillance test in the control room, July 18-19, 2002.
- Unit 1 "A," "C," and "E" Average Power Range Monitor surveillance test, SI-178-209A,C,&E, "Functional Test of APRM A, C, & E," July 25, 2002.
- Unit 1 RCIC Quarterly flow test, SO-150-002 and SE-150-301, on July 31.
- Unit 2 LITS-B21-2N026D 24-month calibration, SI-280-309, "RWCU, PCIS, SCIS Isolation, and CREOASS Initiation on Reactor Low Water Level-2, and MSIV Isolation on Reactor Low Water Level-1, in conjunction with WOs 397232 (inspect setpoint locking mechanism), 401152 (replace locking mechanism lock-washers), and 288630 (re-align micro-switches to prevent potential binding), on Sept 25
- Unit 2 “A” RHRSW System Quarterly Flow Verification surveillance test, SO-216-003, performed after planned system maintenance on September 27, 2002.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas

c. Inspection Scope

The inspector reviewed the high radiation area radiological access controls associated with the Waste Mix Tanks preventive maintenance work activity conducted on September 24-25, 2002. Pre-job ALARA discussions and resulting work scope reductions were observed and the radiological controls as specified by radiation work permit (RWP) 2002-0084, its associated ALARA review, and electronic dosimeter setpoints were reviewed. This review was with respect to the high radiation area entry requirements specified in Technical Specification 5.7 and 10 CFR 20.1601 and applicable radiation surveys.

d. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls

a. Inspection Scope

The inspector reviewed licensee ALARA performance during the Spring 2002 Unit 2 11th refueling and inspection outage. The overall exposure performance of 152 person-rem was below the outage goal of 165 person-rem. Areas reviewed included an evaluation of radiation work permit (RWP) exposure estimates and actual RWP exposure results for the 5 highest exposure outage work activities that resulted in greater than 5 person-rem.

a. main steam isolation valve modifications
b. recirculation system chemical decontamination
c. drywell temporary shielding
d. drywell scaffolding
e. drywell insulation

The Susquehanna Unit 1 12th Refuel and Inspection Outage Radiological Performance Report, radiation work permit data records, ALARA post-job reviews, applicable ALARA procedures, and interviews with the radiological engineering staff regarding exposure estimating methods, were utilized to perform the review. Recent radiological source term dose rate data and results of the Unit 1 recirculation system chemical decontamination project and applicable project reports were reviewed and interviews were conducted with applicable chemistry and chemical decontamination project management staff. The inspection review criteria utilized for this inspection area was with respect to the ALARA requirements in 10 CFR 20.1101(b).

b. Findings

No findings of significance were identified.

3. SAFEGUARDS
Cornerstone: Physical Protection

3PP3 Response to Contingency Events (71130.03)

The Office of Homeland Security (OHS) developed a Homeland Security Advisory System (HSAS) to disseminate information regarding the risk of terrorist attacks. The HSAS implements five color-coded threat conditions with a description of corresponding actions at each level. NRC Regulatory Information Summary (RIS) 2002-12a, dated August 19, 2002, "NRC Threat Advisory and Protective Measures System," discusses the HSAS and provides additional information on protective measures to licensees.

a. Inspection Scope

On September 10, 2002, the NRC issued a Safeguards Advisory to reactor licensees to implement the protective measures described in RIS 2002-12a in response to the Federal government declaration of threat level "orange." Subsequently, on September 24, 2002, the OHS downgraded the national security threat condition to "yellow" and a corresponding reduction in the risk of a terrorist threat.

The inspector interviewed licensee personnel and security staff, observed the conduct of security operations, and assessed licensee implementation of the threat level "orange" protective measures. Inspection results were communicated to the region and headquarters security staff for further evaluation.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Reactor Safety Indicators

a. Inspection Scope

The inspectors reviewed PPL's performance indicator (PI) data to verify whether the PI data was accurate and complete. The inspectors examined selected samples of PI data, PI data summary reports, cornerstone assessment reports, and plant records, which included selected Technical Specification limiting condition for operation logs, licensee event reports, and condition reports for the previous twelve quarters (previous 4 months for Unplanned Scrams and Unplanned Power Changes). In addition, the inspectors interviewed the responsible system engineers. The inspectors compared the PI data against the guidance contained in Nuclear Energy Institute (NEI) 99-02, revision

2, "Regulatory Assessment Performance Indicator Guideline." The following indicators and PPL documents were included in this review:

NRC Initiating Events Performance Indicators

- Unplanned Scrams per 7000 Critical Hours
- Scrams With Loss of Normal Heat Removal
- Unplanned Power Changes per 7000 Critical Hours

NRC Mitigating Systems Performance Indicators

- Unit 2 High Pressure Coolant Injection (HPCI) System Unavailability

NRC Barrier Integrity Performance Indicators

- Unit 2 Reactor Coolant System dose equivalent Iodine-131 specific activity
- Unit 2 Reactor Coolant System Identified leak rate measured by the drywell leakage calculation

PPL Documents

- Units 1 and 2 Control Room Logs
- NDAP-QA-0737, "Regulatory Performance Assessment"
- LI-00-018, "Preparation of Performance Indicator Data, NRC Submittals, and Cornerstone Assessment Reports"
- Technical Specification 3.4.4, "RCS Operational Leakage"
- SO-200-006, "Shiftly Surveillance Operating Log"
- SC-276-102, "Unit 2 Reactor Coolant Dose Equivalent Iodine-131"
- Technical Specification 3.4.7, "Reactor Coolant System Specific Activity"

b. Findings

No findings of significance were identified.

.2 Occupational Radiation Safety Performance Indicator

a. Inspection Scope

The inspector reviewed implementation of the licensee's Occupational Exposure Control Effectiveness Performance Indicator (PI) Program to verify that occurrences meeting the criteria specified in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 2, were identified and reported as Performance Indicator occurrences. Specifically, the inspector reviewed occupational exposure-related Condition Reports, RCA personnel exit dose data, and dosimetry evaluation reports pertaining to the applicable time period, for occurrences involving locked high radiation areas, very high radiation areas, and unplanned personnel exposures covering the fourth quarter 2001 through the second quarter 2002, against the specified criteria.

b. Findings

No findings of significance were identified.

.3 Public Radiation Safety Performance Indicator

a. Inspection Scope

The inspector reviewed the following documents to ensure the licensee correctly identified all of the radiological effluent performance indicator occurrences covering the third quarter 2001 through the second quarter 2002:

- monthly projected dose assessment results due to radioactive liquid and gaseous effluent releases;
- quarterly projected dose assessment results due to radioactive liquid and gaseous effluent releases; and
- associated procedures.

The information contained in these records was compared to the criteria contained in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 2, to verify that all conditions that met the NEI criteria were recognized, correctly identified, and reported as Performance Indicator occurrences. The inspector also performed an independent verification of the licensee's capability for calculating projected doses to the public resulting from simulated discharges of radioactive liquid and gases. The licensee used its computer code (RETDAS) for radioactive gas, particulates, and liquid releases. The NRC used the NRC's PC-DOSE computer code. Comparison of the projected dose results were evaluated.

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Occupational Radiation Safety

a. Inspection Scope

The inspector reviewed fifteen Condition Reports (CRs) that were initiated from January through September 2002 and were associated with the occupational radiation safety cornerstone. The purpose of the review was to evaluate the licensee's effectiveness at properly identifying, characterizing, investigating and resolving problems in implementing the licensee's radiation protection program.

b. Findings

No findings of significance were identified.

.2 Reactor Water Level Switch Single Failure Potential

a. Inspection Scope

The inspector reviewed condition report (CR) 380387 to ensure that the corrective actions for the associated plant issue were appropriate. This issue was selected for follow-up review due to its potential safety significance in the event initiation and mitigation cornerstones. CR 380387 addressed the failure of a reactor level indicating switch, LIS-B21-N031C, that resulted in PPL entering a dual Unit Technical Specification shutdown limiting condition for operation (LCO). Specifically, during a calibration test of the ITT Barton switch, PPL found that a switch contact could not be locked in place and, therefore, its set-point could not be assured for long term operation. The switch contact, provided an input for a loss of coolant accident (LOCA) signal to many components. In particular, its failure prevented the shedding of unessential loads from the affected emergency buses and allowed the concurrent start of two major loads on the same bus. This could result in the transfer of the affected buses from the available offsite electrical power source to the emergency diesel generator. This issue was reported to the NRC on January 24, 2002, with Event Notification (EN) No. 38648, but the EN was later retracted, following a detailed review of the event by PPL who concluded that the event was not reportable.

The inspector reviewed the circumstances surrounding the event, the identification process, and the event evaluation performed by the licensee, including the apparent and root cause evaluations. The inspector verified that the corrective actions were commensurate with the significance of the issue, reasonable, adequately supported by PPL's analyses, and implemented correctly. The inspector also reviewed PPL's actions regarding extent of condition, generic implications, timeliness of corrective actions, actions to prevent recurrence, and identification of the root and contributing causes of the problem. Applicable records, including test activities, vendor and industry data, switch application, design drawings and calculations were reviewed. Lastly, the inspector discussed the human performance issues pertaining to the event with PPL personnel.

b. Findings

No findings of significance were identified. The following do not meet the level of findings but are included in the report as observations in accordance with Manual Chapter 0612, Appendix D.

The inspector concluded that, when the level switch failure was identified, PPL readily recognized the implications and initiated reasonable actions to correct the deficiency. PPL's actions included notifying ITT Barton, the switch manufacturer, of the potential defect. The notification resulted in the issuance of a 10 CFR Part 21 report by General Electric, the switch supplier. The inspector also concluded that some actions were narrowly focused. For instance, PPL performed a generic operability assessment of the switch impact during and following a postulated seismic event, but failed to address the

resolution of the degraded and non conforming switch condition in accordance with the guidance of Generic Letter No. 91-18. PPL planned to inspect the affected safety-related switches during normal maintenance calibrations. Some of the calibrations were scheduled as late as in 2005. Also, the performance of overcurrent relays for affected pumps under expected low voltage conditions had not been specifically addressed. The inspector identified no concerns with the results of PPL's evaluations during the inspection.

4OA3 Event Follow-up (71153)

.1 Work Hours of Operations Personnel

a. Inspection Scope

The inspectors reviewed the number of hours worked by operation department personnel from January 1, 2002 to July 31, 2002. The hours worked were compared to the Technical Specification and PPL administrative requirements. Specifically, Technical Specifications 5.2.2.e, "Administrative Controls - Unit Staff," requires, in part, that adequate shift coverage shall be maintained without routine heavy use of overtime. Also, the objective shall be to have operating personnel work a nominal 40 hour week while both units are operating.

b. Inspection Findings

Introduction

The inspectors identified a non-cited violation of very low safety significance (Green) of Technical Specifications section 5.2.2.e. The NCV involved the failure to maintain adequate shift coverage without routine heavy use of overtime to meet the objective of operating personnel working a nominal 40 hour week while both units are operating.

Description

The inspectors identified that from January 1, 2002, thru July 31, 2002, a majority of operations personnel have routinely worked in excess of approximately 50 hours per week (25% overtime) to provide adequate shift coverage while both units are operating. The 25% overtime hours for senior reactor operator (SRO), reactor operator (RO), and non-licensed operators excluded the hours worked during the Unit 1 refuel and maintenance outage.

The inspectors review of operation department overtime between 1997 and 2002, has noted an increase in the number of operations personnel routinely working greater than 25% overtime each year.

On occasion licensed reactor operators worked their normal 12 hour shift then were assigned by plant management to remain onsite for an additional 12 hours off shift and resting but readily available to fill emergency plan required positions.

Analysis

The finding that the work hours of the majority of the operating personnel work exceeded the nominal Technical Specification value is a performance deficiency because PPL management had the ability over the long run through staffing and personnel assignments to control the work hours of its operating personnel to meet the Technical Specification values. 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 was not the result of any willful violation of NRC requirements or PPL procedures. This finding was determined to be more than minor because, if left uncorrected, the excessive work hours would increase the likelihood of a human performance error during normal operation and plant events. The finding is not suitable for SDP evaluation, but has been reviewed by NRC management and is determined to be a Green finding of very low significance, and is not greater than very low significance because there were no human performance issues that were linked directly to personnel fatigue as a result of the hours worked. NRC management would have considered this issue as potentially greater than very low significance if fatigue had been linked to significant events and performance issues.

Enforcement

Technical Specification Section 5.2.2.e, "Administrative Controls - Unit Staff," requires that adequate shift coverage shall be maintained without routine heavy use of overtime to meet the objective of operating personnel working a nominal 40 hour week while both units are operating. Contrary to the above, PPL has not met the objective of operating personnel working a nominal 40 hour week while both units are operating and has relied on routine heavy use of overtime to maintain adequate shift coverage from January 1, 2002 to July 31, 2002. Specifically the majority of the operations personnel have routinely worked in excess of approximately 50 hours per week (25% overtime) to provide adequate shift coverage while both units are operating. Because this issue was of very low safety significance and PPL entered this finding into their corrective action program, this violation is being treated as a non-cited violation (NCV), consistent with Section VI.A of the NRC Enforcement Policy. This violation is documented in PPL's corrective action program as condition reports 415340 and 415363. **(NCV 05000387,388/2002005-01)**

PPL has taken actions to hire additional personnel to address the excessive overtime. In addition, PPL has updated previously licensed operator's status and added them to the on-shift work force. For non-licensed operators, training was compressed to qualify the individuals for on-shift duties in a shorter time period. PPL expects that the amount of overtime worked by licensed SROs and non-licensed operators should decrease by the end of this year. The ability to provide relief for licensed ROs is a long term issue that will require additional time to resolve due to the length of time needed to train and qualify new ROs. An action request, AR 392803, was initiated by PPL to review excessive overtime that existed in 2001 and 2002.

.2 (Closed) LER 50-387/2002-001-00 Temporary Loss of Control Structure Chillers

On February 22, 2002, the "B" chiller automatically started when the "A" control structure chiller tripped during a post maintenance test. After an operator placed the "B" chilled water pump control switch from "Auto" to "Start," the "B" control structure chiller tripped. The "B" chiller tripped when an associated control room fan breaker

unexpectedly opened. The tripped fan breaker was checked and re-closed satisfactorily allowing re-start of the "B" chiller.

Operating procedures will be revised to provide the proper configuration control for a control chiller that starts in the automatic mode of operation. No new findings were identified in the inspector's review. This is a minor violation not subject to formal enforcement. PPL entered this finding into their corrective action program as condition report 386100. This LER is closed.

.3 (Closed) LER 05000387/2002-002-00 Main Steam Isolation Valve Total Leakage Exceeded Technical Specification Limit

On March 3, 2002, PPL determined that the "as-found" leakage for the main steam isolation valves (MSIVs) was in excess of the Technical Specification (TS) limit, 300 standard cubic feet per hour (scfh), as specified in TS 3.6.1.3, "Primary Containment Isolation Valves." PPL determined that the test failures resulted from a poor valve design that resulted in the misalignment of the poppet to valve body seating surfaces when closed. After modification of all eight MSIVs, the total "as-left" leakage was approximately 10 scfh. PPL entered this finding into their corrective action program as condition report 388086. This licensee-identified violation is described in report Section O4A7. This LER is closed.

.4 (Closed) LER 50-387/2002-003-00 Operation Prohibited by Technical Specifications due to Inoperable ATWS-RPT Circuit Breaker

On March 4, 2002, during a logic system functional test, the Anticipated Transient without Scram (ATWS) trip function for a Unit 1 Recirculation Pump Trip (RPT) 4.16 kV circuit breaker failed to function. Specifically, a truck operated cell (TOC) switch, on the circuit breaker, failed to close when the circuit breaker was previously racked-in, approximately 2 years earlier. The TOC switch provided a breaker racked-in interlock in the ATWS-RPT trip logic circuit. The trip channel did not have any indication or alarm that would have alerted personnel that this particular trip channel was inoperable due to an open contact on the TOC switch (e.g., a blind switch contact). PPL determined the apparent causes to be (1) that style TOC switch could mechanically over-travel, resulting in a failure to close when the circuit breaker was racked-in, and (2) inadequate work practices and procedures which did not require verification that "blind" TOC contacts, and associated functions, were operable following breaker rack-in.

This PPL identified violation is discussed in section 4OA7. The inspectors reviewed PPL's apparent cause evaluation and corrective actions taken and planned, to verify whether they appeared reasonable. No new issues were identified in the inspectors' review. This finding was documented in PPL's corrective action program as condition report 388219. This LER is closed.

.5 (Closed) LER 50-388/2002-001-00 Operation Prohibited by Technical Specifications due to Mis-positioned 125 VDC Transfer Switches

On March 12, 2002, PPL identified that the Division-2 Common 125V DC control power had not been properly transferred from the Unit 1 battery to the Unit 2 battery prior to removing the Unit 1 battery from service. Specifically, the work control center failed to

give plant operators both pages of a two page transfer switch list (Appendix-J of OP-102-002). As a result, the operators failed to align the transfer switches listed on page 1 of the procedure attachment to the Unit 2 battery. PPL properly aligned the DC control power transfer switches approximately 6 hours after the Unit 1 battery was removed from service. PPL determined the root causes to be (1) Operations personnel had less than adequate knowledge of page control for procedures, forms, and attachments, and (2) Operations personnel did not normally use self-check or peer-check techniques for administrative tasks.

This PPL identified violation was documented in NRC Inspection Report 50-387,388/2002-002, section 4OA7 (licensee identified non-cited violation). The inspectors reviewed PPL's root cause analysis and corrective actions taken and planned, to verify whether they appeared reasonable. No new issues were identified in the inspectors' review. This issue was documented in condition report 390276. This LER is closed.

.6 (Closed) LER 50-388/2002-002-00 Loss of Control Structure Chiller Safety Function when 4.16 kV Breakers Found Racked-Out

On March 16, 2002, PPL identified that the Unit 1 "A" and "D" 4kV emergency buses were not operable when an operator discovered that a 4kV breaker, in each bus, had been racked-out and left in the bus cubical without the required seismic restraints installed. As a result, both divisions of the control room emergency outside air supply (CREOASS) system were determined to have been inoperable for the 8 day period that the condition existed. PPL restored the 4kV buses to an operable condition approximately 30 minutes after the condition was discovered. PPL determined the apparent causes to be (1) seismic analysis did not support bus operability with the breakers in the racked-out position, (2) inadequate change management for the energy control process, and (3) work management did not use the existing operations procedure for 4kV breaker manipulations.

This PPL identified violation was documented in NRC Inspection Report 50-387,388/2002-002, section 4OA7 (licensee identified non-cited violation). The inspectors reviewed PPL's apparent cause evaluation and corrective actions taken and planned, to verify whether they appeared reasonable. No new issues were identified in the inspectors' review. This issue was documented in condition report 391452. This LER is closed.

.7 (Closed) LER 50-388/2002-003-00 Low Service Water Flow Causes Temporary Loss of Control Structure Chillers

On March 29, 2002, the "A" control structure chiller tripped due to low service water flow. The low service water flow also resulted in the failure of the "B" control structure chiller to automatically start. Operators attempted to start the "A" chiller using emergency service water (ESW) for cooling. The "A" chiller failed to start due to a design limitation in the chiller control logic and unclear procedure guidance to re-start a tripped chiller. The "B" chiller was re-started using ESW for cooling and plant systems were returned to a normal alignment.

A modification was initiated to correct the control structure chiller control logic problem. In addition, operating procedures will be revised to provide the direction to reset a tripped chiller and place the chiller in operation. No new findings were identified in the inspector's review. This is a minor violation not subject to formal enforcement. PPL entered this finding into their corrective action program as condition report 394404. This LER is closed.

.8 (Closed) LER 50-387/2002-004-00 Manual Scram After "B" Recirculation Pump Tripped

On April 22, 2002 the Unit 1 "B" reactor recirculation pump tripped as the result of a loose electrical fuse connection. In response to the recirculation pump trip, operators initiated a manual actuation of the reactor protection system. The faulty fuse connector was replaced and the reactor recirculation pump was re-started.

This event was reviewed and discussed in detail in NRC Inspection Report No. 05000387/2002-003 (Section 4OA3). The inspectors identified a Green non-cited violation of Technical Specification section 5.4.1, because Off Normal procedure ON-164-002, "Loss of Reactor Recirculation Flow," did not provide adequate directions to the operators to adequately determine total core flow following a single reactor recirculation pump trip at low reactor power conditions, and based on the total core flow readings take the appropriate actions. PPL entered this issue into their corrective action program as condition reports 399751, 399089, 398697, 398665 and 398663. The LER was reviewed by inspectors and no additional findings were noted. This LER is closed.

4OA5 Other

.1 Operation of an Independent Storage Installation (IP 60855, 60857)

a. Inspection Scope

On July 26, 2002, PPL filled a spent fuel storage cannister with Argon and Helium gases instead of using all Helium gas as required by the Certificate of Compliance (CoC) No. 1004 for the NUHOMS-52B Dry Cask Fuel Storage System. At the time, the dry shielded cannister (DSC) was loaded with 52 spent fuel bundles, vacuum dried, and the outer cover was welded onto the cannister. A maintenance worker realized that the helium gas backfill rig was connected to an Argon bottle after the backfill evolution was completed. All dry fuel storage work was stopped. PPL initiated a multi-discipline Event Response Team to review the issue and contacted Transnuclear, the cannister vendor, to determine the impact of the wrong gas on the spent fuel and the options to resolve the issue.

The inspectors reviewed the actions that resulted in PPL personnel filling the DSC with the wrong gas. Three telephone conference calls were held between NRC Region I, NRC Nuclear Reactor Regulations, NRC Spent Fuel Project Office, PPL, and Transnuclear staff. In general, the inspectors reviewed PPL's significance determination evaluation, root cause investigation, and corrective actions.

The review included the following documents and work activities:

- The PPL and Transnuclear operability determination for the Dry Shielded Cannister No. 18, back-filled with argon gas;
- PPL's four hour report to the NRC as required by 10 CFR 50 72.75(b)(2) and 72.75(b)(3), "reduction in effectiveness of a spent fuel confinement system";
- The Part 72 Technical Specification 1.2.3, "24P and 52B DSC Helium Backfill Pressure," that requires the use of helium in the dry shielded cannister;
- The DSC external temperatures and radiological conditions until a permanent repair was made to the cannister;
- The Transnuclear 72.48 Safety Evaluation, SE 72-1778, that documented the acceptability of the compensatory measures that were performed from the time the argon gas was discovered in the cannister until permanent repairs were completed;
- PPL's root cause evaluation and corrective action review board (CARB) review of the event described in condition report (CR 415339)
- PPL's DSC repair preparation activities including use of a full scale DSC mockup to practice the cutting, welding and refinement of the repair procedure;
- The transfer of the DSC to the horizontal storage module after repairs were completed.

b. Findings

The DSC provides confinement and criticality control for the storage and transfer of irradiated fuel. Helium fill gas ensures a non-corrosive atmosphere for the fuel and ensures adequate heat removal. The thermal conductivity of argon gas is approximately a factor of ten less effective in removing heat than that of helium. Therefore, a higher equilibrium fuel temperature would be reached if argon is used. Inspection of the gas bottle rig following the gas fill operation indicated that a mixture of 50% helium and 50% argon gases were used in the DSC.

The design heat load of the cannister is 18.3 kilo-Watts (kW) with 100% helium fill gas and spent fuel that is five years old. DSC No. 18 contained fuel that had a heat load of 6.01 kW and was ten years old. Design maximum clad temperatures are 1058 degrees F (short term limit) and 790 degrees F (long term limit for storage). PPL's operability determination for DSC No. 18 indicated that the fuel cladding temperature would peak at approximately 717 degrees F with the argon/helium mixture. In addition, PPL determined that the cover gas mixture would not pose an immediate threat to the fuel or the health and safety of the public. PPL determined that the best corrective action was to drill into the steel cannister, evacuate the helium/argon gas mixture, refill the DSC with helium gas, and weld repair the cannister. The inspectors reviewed the analysis and proposed corrective actions and identified no safety concerns.

The inspectors reviewed PPL's recovery procedures and observed repair activities. Adequate work controls were incorporated into the work plans. No radiological safety concerns were identified during recovery operations. Adequate management and Quality Assurance oversight were observed. The inspectors verified that the requirements of the CoC were satisfied following repairs. No safety concerns were identified. The cannister was repaired and filled with 100% helium gas on August 11, 2002.

Based on the inspectors' review, one issue was identified that appears to be contrary to PPL's license requirements of 10 CFR 72. This regulation is applicable because PPL did not apply for a specific license to build and operate their onsite Independent Spent Fuel Storage Installation (ISFSI) and, therefore, the general license requirements of 10CFR72 apply. 10CFR72.212(b)(7) requires the licensee to comply with the CoC. The Part 72 Technical Specification 1.2.3, "24P and 52B DSC Helium Backfill Pressure," requires a helium backfill pressure of 2.5 pounds per square inch (psig) +/- 2.5 psig (stable for 30 minutes after filling). On July 26, 2002, PPL filled a spent fuel storage cannister with Argon and Helium gases instead of using all Helium gas as required by the Certificate of Compliance No. 1004 for the NUHOMS-52B Dry Cask Fuel Storage System. This issue is considered an apparent violation that resulted in an unanalyzed condition for the storage system and a system designed to prevent or mitigate a serious safety event being degraded to the extent that a detailed evaluation was required to determine its operability. The issue is being considered for escalated enforcement in accordance with the NRC Enforcement Policy, NUREG 1600, Supplement VI, "Fuel Cycle and Materials Operations." **(AV 05000387,388/2002005-02)**

4OA6 Meetings

.1 Exit Meeting Summary

On October 7, 2002, the resident inspectors presented the inspection results to Mr. B. Shriver, and other members of PPL's staff, who acknowledged the findings.

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

4OA7 Licensee Identified Violations

The following findings 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 (NCVs).

.1 Main Steam Isolation Valve

Technical Specification 3.6.1.1 requires that the Main Steam Isolation Valve (MSIV) combined leakage is less than 300 standard cubic feet per hour (scfh). On March 3, 2002, PPL determined that the "as-found" leakage for the MSIVs was in excess of 300 scfh, as described in condition report CR 388086. Because the postulated offsite radiation doses would have been less than one percent of the limits, this violation is considered to have very low safety significance (green), and is being treated as a Non-Cited Violation. (see section 4OA3.2)

.2 Recirculation Pump Circuit Breakers

Technical Specification 3.3.4.2, required that the recirculation pump circuit breakers be operable, including the ATWS-RPT trip function. Contrary to this, from approximately May 2000 to March 2002, the ATWS-RPT trip function for the 1A20502 circuit breaker was not operable. This was identified in PPL's corrective action program as condition report 388219. This finding is only of very low safety significance because there was no actual loss of safety function. (see section 4OA3.3)

ATTACHMENT 1
SUPPLEMENTAL INFORMATION

a. **KEY POINT OF CONTACT**

J. P. Akus	Senior Electrical Engineer
C. Coddington	Engineering
M. Crowthers	Manager Nuclear Regulatory Affairs
R. D. Pagodin	Manager - Nuclear Design
R. A. Saccone	General Manager - Nuclear Engineering
R. R. Sgarro	Manager - Regulatory Affair
J. D. Shaw	Manager - Station Engineering
B. L. Shriver	Senior Vice President - Chief Nuclear Officer
W. Smith	Manager - Corrective Action and Assessment
J. P. Tripoli	Senior Engineer - Regulatory Affairs
J. Vernarr	Engineering
A. Wrape	General - Nuclear Assurance
M. Yackoski	Engineering

b. **LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

Opened

05000387,388/2002005-02	AV	Spent Fuel Cannister Filled with Wrong Gas

Opened and Closed

05000387,388/2002005-01	NCV	Excessive Worker Overtime

Closed

50-387/2002-001-00	LER	Temporary Loss of Control Structure Chillers
50-387/2002-002-00	LER	Main Steam Isolation Valve Total Leakage Exceeded Technical Specification Limit
50-387/2002-003-00	LER	Operations Prohibited By Technical Specifications Due to Inoperable ATWS Recirculation Pump Trip Breaker
50-388/2002-001-00	LER	Operation Prohibited by Technical Specifications Due to Mispositioned 125 VDC Transfer Switches
50-388/2002-002-00	LER	Loss Of Control Structure Chiller Safety Function When 4.16 kV Breakers Found "Racked-Out"
50-388/2002-003-00	LER	Low Service Water Flow Causes Temporary Loss of Control Structure Chillers

50-387/2002-004-00	LER	Manual Scram After "B" Recirculation Pump Tripped

Discussed

None

c. **LIST OF DOCUMENT REVIEWED**
NOT REFERENCED IN THE REPORT

Susquehanna Unit 1 12th Refuel and Inspection Outage Radiological Performance Report
ALARA Program and Policy, procedure NDAP-QA-1191, Rev. 1
RWP ALARA Reviews and Evaluations, procedure HP-AL-400, Rev. 13
ALARA Job History Files: #11 Drywell Shielding and #47 Main Steam Isolation Valves
Unit 1 Spring 2002 Outage ALARA post-job reviews: Chem decon, drywell shielding and main steam isolation valves
Condition reports: 395420, 388006, 390686, 412209, 414281, 414349, 402961, 378906, 388018, 388088, 388185, 389738, 389922, 393490, 396828

Partial List of Documents Reviewed

Condition Reports/Action Requests
380387, 397414

Calculations/Studies

EC-004-1022	Evaluation of AC System Response for Single Failures in Core Spray Instrumentation, Revision 0, Unit 2
EC-004-1023	Evaluation of AC System Response for Single Failures in Core Spray Instrumentation, Revision 0, Unit 1

Technical Specification Bases Change Notices

3395	ECCS Instrumentation, Unit 2
3398	ECCS Instrumentation, Unit 1

Drawings

D107251, Sh. 1	Schematic Diagram, 13.8kV Bus 11A Start-up Incoming Feeder Breaker 1A10104, Rev 14
D107251, Sh. 2	Schematic Diagram, 13.8kV Bus 11B Start-up Incoming Feeder Breaker 1A10204, Rev 14
D107251, Sh. 32	Schematic Diag, Plant Aux Ld Shedding Init Circuit & Intlkd Div I, Rev 16
D107295, Sh. 1	Schematic Diagram Emergency Service Water Pump A Common, Rev. 19
D107333, Sh. 2	Schematic Diagram Diesel Generator A Auto Start Signals, Rev 19
D107333, Sh. 4	Schematic Diagram LOCA Isolation Signals, Unit 1, Rev 7
E107154, Sh. 1&2	Single Line Meter and Relay Diagram, 4.16kV Eng. Safeguards Power System, Units 1 & 2
FF124510	Elementary Diagram, Residual Heat Removal System Sh. 6604 & 6607
FF126510	Elementary Diagram, Core Spray System, Sh. 3503 -3508.

Miscellaneous Documents
Barton Nuclear Industry Advisory
General Electric 10 CFR Part 21 Notification
RHR and ESW Pumps Time-Current Curves
RHR and ESW Pumps Speed-Torque-Current Curves
PCWO 397323 Tracking of Barton Switch Inspection

None.

d. **LIST OF ACRONYMS**

ALARA	As Low As is Reasonably Achievable
ATWS	Anticipated Transient without Scram
CARB	Corrective Action Review Board
CFR	Code of Federal Regulations
CoC	Certificate of Compliance
CR	Condition Report
CREOASS	Control Room Emergency Outside Air Supply System
EDG	Emergency Diesel Generator
EN	Event Notification
ESW	Emergency Service Water
FSAR	[SSES] Final Safety Analysis Report
HPCI	High Pressure Coolant Injection
HSAS	Homeland Security Advisory System
LCO	License Condition for Operation
LOCA	Loss of Coolant Accident
MSIV	Main Steam Isolation Valves
NCV	Non-cited Violation
NEI	Nuclear Energy Institute, Inc.
NRC	Nuclear Regulatory Commission
OHS	Homeland Security
PPL	PPL Susquehanna, LLC
QA	Quality Assurance
RHR	Residual Heat Removal
RIS	Regulatory Information Summary
ROP	Revised Oversight Program
RPT	Recirculation Pump Trip
RWP	Radiation Work Permit
SCFH	Standard Cubic Feet Per Hour
SDP	Significant Determination Process
SSC	Structure, System, or Component
SSES	Susquehanna Steam Electric Station
TOC	Truck Operated Cell
WO	Work Order