August 10, 2001

EA-01-187

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

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION - NRC INSPECTION REPORT 50-387/01-06, 50-388/01-06

Dear Mr. Byram:

On June 30, 2001, 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 July 5, 2001, with Mr. R. Ceravolo, General Manager SSES - Maintenance, 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. An examination of emergency planning corrective action and minimum staffing activities was also conducted during this inspection. Within these areas, the inspections consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, one preliminary finding of low to moderate safety significance (White) was identified. The finding is associated with the several occasions your on-shift staffing was below the minimum on-shift staffing requirements as defined in your Emergency Plan. The finding has a low to moderate safety significance because at the reduced on-shift staffing levels, certain emergency preparedness functions for an emergency at the site would not be met. These functions were: emergency communication, monitoring the unaffected unit for safety, and operations support center coordination duties. The failure to maintain adequate on-shift staffing to provide initial facility emergency response is an apparent violation of 10 CFR Part 50.47(b)(2) and is being considered for escalated enforcement action in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Action" (Enforcement Policy), NUREG-1600. The current Enforcement Policy is accessible from the NRC Web Site at http://www.nrc.gov.

We believe that we have sufficient information to make our final significance determination for the issue of on-shift staffing below the minimum level. Nevertheless, you have the opportunity to either request a regulatory conference to discuss your evaluation and any differences with the NRC evaluation of this issue, or to send us your position in writing. Please contact

Mr. Richard Conte at (610) 337-5183 within 7 days of the date of this letter to inform the NRC of your intentions. If we have not heard from you in writing regarding a conference within 10 days, we will continue with our significance determination and enforcement decision, and you will be advised by separate correspondence of the results. Since the NRC has not made a final determination in this matter, no Notice of Violation is being issued at this time. In addition, please be advised that the characterization of the apparent violation described in the enclosed report may change as a result of further review.

The NRC also identified one issue of very low safety significance (Green). This issue involved a violation of NRC requirements. Because of its very low safety significance and because it has been 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. If you deny this non-cited violation, 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, DC 20555-0001; and the NRC Resident Inspector at the Susquehanna Steam Electric Station.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publically Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (The Public Electronic Reading Room).

If you have any questions please contact Mohamed Shanbaky of my staff at 610-337-5209.

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 50-387/01-06, 50-388/01-06

Attachments: (1) Supplemental Information

cc w/encl:
B. L. Shriver, Vice President - Nuclear Site Operations
G. T. Jones, Vice President - Nuclear Engineering and Support
R. Anderson, General Manager - SSES Operations
R. L. Ceravolo, General Manager - SSES Maintenance
G. A. Williams, General Manager - Nuclear Assurance
G. D. Miller, Manager - Nuclear Plant Services
R. R. Sgarro, Supervisor, Nuclear Licensing - SSES
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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos.:	50-387, 50-388
License Nos.:	NPF-14, NPF-22
Report No.:	50-387/01-06 50-388/01-06
Licensee:	PPL Susquehanna, LLC
Facility:	Susquehanna Steam Electric Station
Location:	Post Office Box 35 Berwick, PA 18603
Dates:	May 13, 2001 to June 30, 2001
Inspectors:	S. Hansell, Senior Resident Inspector J. Richmond, Resident Inspector N. McNamara, Emergency Preparedness Inspector, DRS
Approved by:	M. Shanbaky, Chief Projects Branch 4 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000387/2001-006, 05000388/2001-006, on 05/13-06/30/2001; PPL Susquehanna, LLC; Susquehanna Steam Electric Station; Units 1&2. Permanent Plant Modifications, Emergency Response Organization Augmentation Testing

The inspection was conducted by resident inspectors and a regional emergency preparedness inspector. The inspection identified one preliminary White finding and one Green finding. The significance of most findings are 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 are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process web site at http://www.nrc.gov/NRR/OVERSIGHT/index.html.

A. Inspector Identified Findings

Cornerstone: Emergency Preparedness

- **Preliminarily White**. This inspection identified an apparent violation of planning standard 10 CFR 50.47(b)(2) because on several occasions in 2000 and 2001, PPL's operation on-shift staff was below the minimum staffing requirements specified in the Emergency Plan for the positions of plant control operator and the assistant unit supervisor.

  The safety significance of this finding was of low to moderate safety significance because, on these occasions, the emergency preparedness function associated with these on-shift staff positions was not met. The emergency preparedness function that was not met associated with the plant control operator was either the emergency communicator function in the control room or the function to monitor for safety in the unaffected unit during an emergency at the site. The emergency preparedness function that was not met associated with the assistant unit supervisor was that of the operations support center coordinator. (Section 1EP3).

Cornerstone: Mitigating Systems and Barrier Integrity

- **Green**. The inspectors identified a non-cited violation for failure to have procedures or instructions to maintain the required environmental qualification configuration associated with motor T-drains for motor-operated valve actuators located within the primary containment (10 CFR 50 Appendix B, Criterion III, "Design Control")

  This violation was of very low safety significance because the specific component qualification deficiency was determined not to result in a loss of safety function, and therefore, did not impact system or component operability. In addition, the finding did not represent an actual open pathway in the primary containment since the redundant isolation valves, located outside of the primary containment, were not affected and remained operable. (Section 1R17.1)

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Report Details

Summary of Plant Status

Susquehanna Steam Electric Station (SSES) Unit 1 operated at or near full power for the report period, with exceptions for control rod pattern adjustments and main turbine control valve testing.

Unit 2 began the period at full power. On May 19, reactor power was reduced to approximately 58%, for main condenser tube leak investigation and repair. The unit was returned to full power on May 21, and operated at or near full power for the remainder of the report period, with exceptions for control rod pattern adjustments and main turbine control valve testing.

1. REACTOR SAFETY
Initiating Events, Mitigating Systems, Barrier Integrity, [Reactor - R]

1R04 Equipment Alignments (71111.04)

.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 that selected portions of redundant or backup systems or trains were available while the system was 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 Common "A", "B", and "C" Emergency Diesel Generators (EDGs), while the "D" EDG was unavailable due to maintenance, and with the station in a 72-hour Technical Specification Limiting Condition for Operation

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors reviewed the Fire Protection Review Report to determine the required fire protection design features, fire area boundaries, and combustible loading requirements for the areas examined during this inspection. The inspectors walked down these 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 Common Emergency Service Water Pump House
- Unit 2 Emergency Core Cooling Systems Pump Rooms

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

On June 12, 2001, the inspectors observed licensed operator performance in the simulator during an emergency preparedness exercise. The inspectors assessed the operators' adherence to Technical Specifications, emergency plan implementation, and the use of emergency operating procedures. The inspectors reviewed the ability of the simulator to model the actual plant performance. In addition, the inspectors observed PPL's critique of the operators' performance.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors evaluated the follow-up actions for selected system, structure, or component (SSC) issues and reviewed the performance of these SSCs to assess the effectiveness of PPL's maintenance activities. 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(a)(1) and (a)(2), "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 that the actions were reasonable and appropriate. The following issues and documents were reviewed:

Equipment Issues

- Unit Common Standby Gas Treatment System (SGTS) Damper Failures, FD07551B2 & HD27602B
- Unit 2 Turbine Building Closed Cooling Water (TBCCW) System "B" Pump seal failure
- Unit Common "D" emergency diesel generator (EDG) removed from service to install a modification to the air supplied engine cooldown function.

Procedures and Documents

- Maintenance Rule Basis Documents for SGTS and TBCCW
- System Health Reports for SGTS and TBCCW
- NDAP-QA-0413, "SSES Maintenance Rule Program"
- EC-RISK-0528, "Risk Significant SSCs for the Maintenance Rule"
- EC-RISK-1054, "SSC Availability Performance Criteria for the Maintenance Rule"

- EC-RISK-1060, "Acceptable Number of Failures for Risk Significant SSCs"
- Condition Reports 336058, 339248, 271146, and 341168
- Work Orders 336072 and 341252

b. Findings

No findings of significance 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 assess 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 verify 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. The inspectors assessed those activities to evaluate whether appropriate implementation of risk management actions were performed in accordance with the following PPL procedures:

- NDAP-QA-1902, "Maintenance Rule Risk Assessment and Management Program"
- NDAP-QA-0340, "Protected Equipment Program"
- PSP-22, "Susquehanna Sentinel Program"
- SSES Team Manual

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 2 residual heat removal and core spray low pressure permissive switch replacement, PIS-B21-2N021A
- Unit Common "D" EDG unavailable with no identified risk management actions due to a revision in the plant risk model
- Unit 1 "B" control rod drive (CRD) pump unavailable with "A" CRD flow control valve in a degraded condition
- Unit 2 uninterruptible power supply 2D130 unavailable with no identified risk management actions

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions and Events (71111.14)

.1 Feedwater Pump Oil Soaked Insulation Resulted in Smoke

a. Inspection Scope

The inspectors reviewed operating logs, interviewed plant operators, and reviewed CR 333197 following a non-routine unplanned reduction of power from 87% to 75% that had occurred on May 8, 2001. PPL reduced power when they discovered that the insulation on the “C” feedwater pump began to smolder and put dense smoke into the area of the feedwater pump. The inspector independently determined what occurred and evaluated the initiating cause. The inspectors assessed personnel performance to determine whether the operator response was appropriate and in accordance with procedures and training.

b. 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. 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:

- Unit 2 Secondary Containment Bypass Leakage Limit Exceeded (CR 314150)
- Unit Common "C" EDG Through-wall Pin-hole Leak on ESW Piping (CR 338305)

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

.1 Unit 2 Reactor Core Isolation Cooling System Inboard Steam Supply Valve Rework

a. Inspection Scope

The inspectors reviewed Licensee Event Report (LER) 05000388/01-001-00 to determine whether the cause of the event and the corrective actions were consistent

and whether the event involved a potential generic issue. The LER described the failure, cause, and corrective actions for the Unit 2 reactor core isolation cooling (RCIC) system inboard steam supply valve that failed to fully close on January 31, 2001.

b. Findings

The inspectors identified a Green non-cited violation because PPL did not have adequate procedures or instructions in place to maintain the required environmental qualification configuration for motor-operated valve actuators located within the Unit 1 and Unit 2 primary containment.

In January 2001, PPL determined that the RCIC inboard steam supply isolation valve, HV-249F007 (a primary containment isolation valve), would not fully close (condition report 310810). PPL determined that the motor-operated valve actuator torque switch contacts had failed to close which prevented the valve actuator's motor from fully closing the valve. PPL determined that the cause of the torque switch failure was grease on the switch contacts. Grease from the actuator's limit switch gear box located directly above the torque switch had leaked onto the switch contacts. As one of PPL's corrective actions, PPL rotated the valve actuator 90 degrees so that the limit switch gear box was side by side with the torque switch. Initially, the motor was vertical on the top of the valve actuator and ended up horizontal on the side of the valve actuator.

The inspectors concluded that the manner in which PPL rotated the valve actuator for HV-249F007 did not preserve the environmental qualification (EQ) of the valve actuator's motor in that PPL had not re-oriented the motor T-drains when the motor was rotated from a vertical position to a horizontal position. The inspectors determined that the EQ configuration for the valve actuator's motor required two T-drains to be installed on the lower side of the motor case in accordance with the SSES Environmental Qualification Assessment Report EQAR-084, "Limitorque Valve Actuators." The purpose of the motor T-drains was, in part, to allow any moisture which might enter the motor housing to drain out and thereby prevent a high pressure steam environment, during a loss of coolant accident, from shorting out the motor.

PPL's review of this issue identified that there were no procedures, instructions, or drawings in place to ensure that the required T-drains had been installed during past motor replacement activities. PPL identified that 10 of the 15 EQ motor-operated valve actuators located in the Unit 1 primary containment had only one T-drain installed (WO 100574) and that all Unit 2 motor-operated valve actuators in containment had at least one T-drain installed on each motor, but could not determine if a second T-drain was installed on any of the motors (WO 226319). In addition, PPL was unable to determine whether any of the T-drains were correctly oriented on the lower side of the motor case. The affected valves had safety functions which included primary containment isolation and isolation of a large pipe break (i.e., recirculation pump isolation valves). PPL's operability assessment concluded that safety functions of the affected valves would remain operable.

The inspectors concluded that the installed configuration of numerous safety-related EQ motor-operated valve actuators located inside both of the Unit 1 and Unit 2 primary containment did not meet EQ requirements in that they did not have the required number of motor T-drains installed and there was not reasonable assurance that the T-

drains were properly oriented. In addition, the inspectors concluded that PPL's failure to maintain the EQ configuration of HV-249F007 was not an isolated occurrence.

The inspectors determined that the issue of not having adequate procedures or instructions to maintain the required EQ configuration (i.e., two T-drains) for motor-operated valve actuators located within the Unit 1 and Unit 2 primary containments is a violation of 10 CFR 50 Appendix B, Criterion III, "Design Control," which requires, in part, that requirements and the design basis be translated into specifications, drawings, procedures, and instructions. This violation was more than minor because, if left uncorrected it could become a more significant safety concern in that without adequate procedures to maintain the EQ configuration for motor operated valve actuators within primary containment, the valve actuator motors could be installed with no T-drains and thus lead to a failure of the valve and inability to perform its safety function when required during a design basis accident. This violation could affect the Barrier Integrity Cornerstone because the issue involved valves which are used to maintain primary containment integrity and also the Mitigating System cornerstone because the issue involved valves which isolate recirculation loops during a design basis accident and would directly affect the function of systems used to mitigate the design basis accident. The violation was considered to have very low safety significance (Green) using the Significance Determination Processes for Reactor Inspection Findings for At-Power Situations and for Containment Integrity because the specific component qualification deficiency was determined not to result in a loss of safety function, and therefore, did not impact system or component operability. In addition, the finding did not represent an actual open pathway in the primary containment since the redundant isolation valves, located outside of the primary containment, were not affected and remained operable. This violation of 10 CFR 50 Appendix B, Criterion III, is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the NRC Enforcement Policy, issued on May 1, 2000 (65FR25368). This violation is documented in PPL's corrective action program as condition reports 337946 and 337965. **(NCV 05000387,388/2001-006-01)**

.2 Routine Modification Reviews

a. Inspection Scope

The inspectors reviewed portions of selected modifications to risk significant systems, structures, or components (SSCs). The inspectors assessed whether the design and licensing basis and the performance capability of the SSC functions had been degraded by the modification. In addition, the inspectors compared the post-modification configuration to the pre-modification configuration to evaluate whether PPL had appropriately considered potential impacts of the physical changes on interfacing SSCs.

The inspectors reviewed the modification design and the installation work activities to assess whether the modifications could impair off-normal or emergency operating procedures, SSC risk significant functions, or impact operator response to off-normal plant conditions. The inspectors observed selected in-progress modification work activities and reviewed the installation work plans to verify whether the activities were properly performed in accordance with the approved design change package. In addition, the inspectors reviewed PPL's risk management for the modification work

activities to verify whether appropriate risk management actions had been identified and adequately performed.

The inspectors reviewed the post-modification tests to determine whether the tests were adequate to verify design assumptions and demonstrate operability of the affected SSCs. The inspectors observed selected portions of the testing and reviewed the test data to evaluate whether the test acceptance criteria were satisfied and whether any unintended system interactions had been identified. The following modifications and documents were reviewed:

Modifications and Design Change Packages

- Unit Common ECO 334518, "D" EDG In-line Air Filter for Control Air to Fuel Control Solenoid Valves

Procedures and Documents

- 50.59 Screening Determination for ECO-334518
- Work Orders 334943, 334956, and 334972
- FSAR Section 8.3.1.4
- NDAP-QA-1202, "Nuclear Department Modification Program"

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors observed portions of post-maintenance testing activities and reviewed selected test data. The inspectors assessed the adequacy of the test methodology, based on the scope of maintenance work performed, and evaluated whether the acceptance criteria demonstrated that the tested components satisfied the design and licensing bases requirements. The specific issues reviewed included:

- Unit Common “C" EDG Predictive Maintenance Monitoring Vibration Checks, MT-024-028, during 24-hour rated-load test run

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed selected surveillance tests, test data results, and the applicable Technical Specification requirements. In addition, the inspectors observed the performance of portions of surveillance tests to verify whether the systems and

components were capable of performing their design basis functions. The observed or reviewed surveillance tests included:

- Unit Common ESW 24-month Logic System Functional Test, SE-054-001
- Unit Common "D" ESW Pump Quarterly Flow Verification Test, SO-054-B03
- Unit Common "D" EDG 24-hour Rated-load Test, SE-024-D01
- Unit 2 Upper and Lower Relay Room Halon System Functional Tests, SI-213-252/253

b. Findings

No findings of significance were identified.

Emergency Preparedness [EP]

1EP3 Emergency Response Organization (ERO) Augmentation Testing

a. Inspection Scope

An inspection of PPL's on-shift staffing was conducted to ensure that the commitments as described in the Emergency Plan (E-Plan), Table 6.2, "Minimum On-Site and Off-Site Emergency Organization Capabilities," were met. In addition to the E-Plan, the inspector reviewed several condition reports (CR), Administrative Procedure, NDAP-QA-0300, "Conduct of Operations," Rev. 11, the 1997-2001 drill/exercise reports, and the 1999 and 2000 audit reports. The inspector conducted interviews with several Nuclear Emergency Response Organization (NERO) personnel to determine their understanding of the E-Plan requirements with respect to on-shift staffing. The CRs and other documents reviewed are listed in the Attachment to this report. The review was conducted in accordance with NRC Inspection Procedure 71114, Attachment 03, "Emergency Response Organization Augmentation".

b. Findings

This inspection identified a finding of low to moderate safety significance (White), which is also an apparent violation of planning standard 10 CFR 50.47(b)(2), because on several occasions in 2000 and 2001, PPL's operation on-shift staff was below the minimum staffing requirements specified in Section 6.1 and Table 6.2 of the Emergency Plan for the positions of Plant Control Operator (PCO) and the Assistant Unit Supervisor (AUS). As a result, on these occasions, the emergency preparedness function associated with these on-shift staff positions was not met. The emergency preparedness function that was not met associated with the PCO was either the emergency communicator function in the control room or the function to monitor for safety in the unaffected unit during an emergency at the site. The emergency preparedness function that was not met associated with the AUS was the operations support center (OSC) coordinator function.

Plant Control Operator On-shift Staffing

PPL's E-Plan requires that four licensed reactor operators (referred to as Plant Control Operators-PCOs) are "immediately" available for responding to an event. The emergency preparedness functions provided by the four PCOs were as follows: Two PCOs to respond to the emergency at the affected unit; one PCO for safety monitoring at the unaffected unit; one PCO to be the emergency communicator. To meet these requirements, PCOs are required to be "on-shift" 24 hours a day.

On thirteen occasions between 2000 and 2001, the on-shift complement included only three PCOs instead of the E-plan required four PCOs. This occurred for all or a good part of a twelve hour shift on the following dates: May 21, June 4, 14, 26, 28, 30, July 25, December 15,16, 2000, and January 21, February 11, March 2, and April 4, 2001.

Administrative procedure NDAP-QA-0300, Revision 11, dated June 9, 2000, permits the use of only three PCOs, provided that this staffing level is approved by Operation Management. The apparent violation of failure to meet the E-plan staffing requirements did not result in a Technical Specification (TS) violation, since the plant TS require only three PCOs on shift. The administrative procedure appeared to accommodate the TS requirements but did not account for the fact that the E-plan assigns explicit AUS and PCOs staffing levels and duties (see next paragraph). The inspector determined that either of two emergency preparedness functions would not be fulfilled with only three PCOs, namely, the emergency communicator function or the function to monitor the unaffected unit for safety in case of an emergency at the affected unit.

Assistant Unit Supervisor On-shift Staffing

The inspector determined that on five occasions between 1999 and 2001, the Assistant Unit Supervisor (AUS) position was vacant. This occurred for all or a good part of a twelve hour shift on the following dates: October 1, 1999, May 25, June 10, and 11, 2000, and January 7, 2001.

The E-Plan, section 6.1 and Table 6-2, requires one AUS on-shift at all times. Administrative procedure NDAP-QA-0300, Revision 11, dated June 9, 2000, permitted

the licensee not to staff the AUS position on shift, if Operation Management approval is granted. An AUS on-shift is not required by the Technical Specification staffing requirements. The inspector determined that the emergency preparedness function of a qualified OSC coordinator would not have been fulfilled with no AUS on-shift.

Safety Significance

The issue of staffing at a level below the minimum staffing requirements specified in the Emergency Plan for the positions of PCO and AUS is more than minor issue because it has a credible impact on safety in that PPL did not have qualified staff available for these positions of the NERO in order to effectively respond to an emergency at the affected unit and monitor the unaffected unit for safety.

The issue affects the Emergency Planning cornerstone because this issue is a failure to meet a regulatory requirement that is also a planning standard, specifically 10 CFR 50.47(b)(2) which requires, in part, that adequate staffing to provide initial facility accident response in key functional areas is maintained at all times.

The inspector used Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," and determined that the issue is a finding of low to moderate safety significance (White). The issue involved a failure to meet or implement a regulatory requirement, that is also a planning standard, (10 CFR 50.47(b)(2) and the related E-Plan requirements as noted above). For those occasions in which PPL did not staff with four PCOs, PPL did not meet either of two emergency preparedness functions, namely, the emergency communicator function or the function to monitor the unaffected unit for safety in case of an emergency at the affected unit. For those occasions in which PPL did not staff with an AUS, PPL did not meet the emergency preparedness function of having a qualified OSC coordinator on shift in case of an emergency at the affected unit.

Staffing at a level below the minimum staffing requirements specified in the Emergency Plan for the positions of PCO and AUS is an apparent violation. 10 CFR 50.54(q) and 10 CFR 50.47(b)(2) requires, in part, that adequate staffing to provide initial facility accident response in key functional areas is maintained at all times. **(AV 05000387, 05000388/2001-006-02)**

Apparent Underlying Cause of the Finding

NDAP-QA-0300 did not contain clear guidance to ensure that E-Plan requirements were met in that this procedure allowed Operations Management to authorize on-shift staffing levels that were less than that required by the E-Plan. The minimum staffing level in the procedure for the AUS and NPO positions was less that the minimum requirements of the E-Plan. PPL revised NDAP-QA-0300 by PCAF No. 2001-1484, dated June 9, 2001, to ensure that the stated complement of minimum staffing coincides with the staffing requirements in the E-Plan.

Cross Cutting - Problem Identification and Resolution

The interface between Operations and Emergency Planning personnel was deficient in that Emergency Planning personnel did not participate in the review and did not provide

comments or recommendations during the corrective action review for the various condition reports associated with the minimum staffing issue. The PPL CR process assigned the corrective actions to the department that was directly affected by the problem. In this case corrective action responsibility was assigned to operations personnel. The operations personnel did not discuss staffing issues with the E-planning staff. If the problem is linked to other departments, individuals in these other departments may not have the opportunity to review the corrective action to ensure its effectiveness related to their respective department's responsibilities.

Station personnel had deficient knowledge associated with portions of the emergency plan and specifically NRC regulation 10 CFR 50.54(q), which requires a review of all proposed E-Plan changes to ensure that the changes did not decrease the effectiveness of the E-Plan. Discussions with management and operation personnel indicated that there was a misunderstanding related to NRC regulation 10 CFR 50.54(q), which requires a review of all proposed E-Plan changes to ensure that the changes did not decrease the effectiveness of the E-Plan. Personnel interviewed (aside from Emergency Preparedness personnel) erroneously indicated that the licensee can reduce the E-Plan staffing levels or place a person in the position if they were capable of performing the function without completing qualifications and training requirements for the position.

The inspector reviewed player drill comments from emergency drills conducted in 1997 thru 2000 and noted that AUSs had stated that on several occasions they were concurrently assigned multiple positions within the Nuclear Emergency Response Organization (NERO). These multiple position included: fire brigade team leader, hazardous material specialist, and the OSC coordinator. During a postulated fire event, the AUS would be assigned as a fire brigade team leader and would not be able to perform as the OSC Coordinator. While it is acceptable for NERO personnel to be qualified for multiple positions, that individual could not reasonably serve in these positions simultaneously during an emergency. To resolve these drill comments, PPL's immediate corrective action was to have the Nuclear Plant Operators (NPOs) assume the OSC coordinator duties. The inspector determined the NPOs did not receive all the necessary training as described in the E-Plan to perform the duties of the OSC Coordinator. Therefore, the inspector determined that the initial corrective actions were weak because the licensee would not have been capable of filling that position with a qualified individual. Although appropriate resolution of emergency drill critiques appears to be a separate issue, the inspector considered it as directly related to the White findings since appropriate and timely resolution of drill issues may have prevented the recurrence of failure to meet the minimum on-shift staffing. Subsequently, on June 22, 2001, PPL informed the NRC that six NPOs completed the OSC Coordinator qualification requirements and were evaluated as OSC Coordinators in an EP mini-drill. The six NPOs will provide an additional qualified person on each operating shift to fill the OSC coordinator position for potential fire events. The inspector found no occasions in which an actual emergency existed and there were conflicting duties for the AUS.

Other Related Information

PPL identified that they had inadvertently removed the specific EP staffing requirements from procedure NDAP-QA-0620 "Conduct of Health Physics" and procedure NDAP-QA-0630 "Conduct of Chemistry" did not contain a reference to the E-Plan minimum staffing

commitments. PPL subsequently corrected these procedures. The inspector determined that there were no occasions when the health physics and chemistry staff had gone below their E-Plan minimum staffing requirements.

1EP4 Emergency Action Level (EAL) Revision Review

a. Inspection Scope

Due to the on-shift minimum staffing issues described above, the inspector reviewed PPL's E-Plan, Table 6.2, "Minimum On-Site and Off-Site Emergency Organization Capabilities," to ensure that other positions were being sufficiently filled and that changes made to the table would not have decreased the effectiveness of the E-Plan (10 CFR 50.54(q)). The review was conducted in accordance with NRC Inspection Procedure 71114, Attachment 04, "Emergency Action Level and Emergency Plan Changes."

b. Findings

The inspector found several E-Plan changes to the earlier E-Plan versions (Version 4, 5, 6, 7) in which the documentation of the change was not readily available. These include:

1. Repair duties for the mechanical maintenance, electrical maintenance, and the I&C technician positions were removed from the on-shift position and are now 60 minute responders.

2. Two individuals assigned to off-site survey teams were removed as 60 minute responders and not replaced.

3. Five HP qualified personnel were removed as responders and not replaced.

Some of these changes may conflict with NUREG 0654, which is the guidance document for review of licensee emergency plans, and would have required NRC staff review prior to implementation. Due to the large number of E-Plan changes in the previous years, PPL was unable to provide the documentation for some of the changes. PPL stated that they would complete their review of the associated 10 CFR 50.54(q) changes, determine if they submitted such changes for NRC staff review, and inform the NRC staff of their conclusions when their review is completed. Therefore, this issue is being treated as an Unresolved Item and will be further reviewed upon completion of the PPL's evaluation. **(URI 05000387, 05000388/2001-006-03)**

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

a. Inspection Scope

During a 1997 biennial exercise (NRC Inspection Report Nos. 05000387/1999-08, 05000388/1999-08), PPL was not able to demonstrate that they could activate their emergency operations facility (EOF) within the 90 minute time requirements as described in their E-Plan. During the 2000 biennial exercise (NRC Inspection Report Numbers 05000387/2000-010, 05000388/2000-010), PPL again was unable to meet the 90 minute requirement. The NRC issued a Non-Cited Violation (Green finding) for inadequate corrective actions. During this inspection, the inspector reviewed the corrective actions associated with this issue. The review was conducted in accordance with NRC Inspection Procedure 71114, Attachment 05, "Correction of Emergency Planning Weaknesses and Deficiencies," and included a review of PPL's corrective action time line and discussions with site management.

b. Findings

Historical data from 1997-2000 for the activation time of the EOF indicated times of up to 120-130 minutes or approximately 30-40 minutes beyond the E-Plan requirement of 90 minutes. Corrective actions reduced the activation time closer to 90 minutes, but still late by about 10-15 minutes. A PPL emergency response exercise performed on June 12, 2001, noted another occurrence in which the EOF was not staffed within 90 minutes indicating unnecessary delay in the corrective actions on the problem.

PPL's EOF would be staffed with personnel from its corporate office located in Allentown, PA. In December 2000, PPL determined that, due to the distance of approximately
75 miles and unpredictable road conditions from Allentown to the EOF, they were not able to significantly further reduce EOF staff activation time. This is evident in Condition Report (CR) No. 301977, which contains PPL's evaluation and root cause analysis of the EOF staffing delays. The root cause analysis was completed in response to the issued green finding related to corrective actions. PPL identified methods to achieve timely staffing of the EOF.

The inspector discussed with the licensee the repeated failure to staff the EOF within the required 90 minutes during emergency drills and the delays in affecting appropriate and lasting corrective action in this area. The licensee indicated during the summer of 2001, PPL plans to train the individual responders and will also conduct E-Plan drills to ensure they can meet the 90-minute time requirement. PPL plans to initiate this change by the end of September 2001. PPL representatives reported that, in the interim, the EOF functions can be fulfilled by other centers such as the Technical Support Center or the Joint News Center.

4. OTHER ACTIVITIES [OA]

4OA1 Performance Indicator Verification (71151)

.1 Residual Heat Removal System Unavailability

a. Inspection Scope

The inspectors reviewed the NRR response to Unresolved Item (URI) 05000387, 388/2001003-01, "Residual Heat Removal System Unavailability PI Verification." The issue was submitted by PPL for NRR review as a frequently asked question (FAQ) to NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," regarding unavailability of the residual heat removal system (RHR) while in suppression pool cooling (SPC) mode.

FAQ 276, Posted July 12, 2001

Susquehanna Analysis has shown that when RHR is operated in the Suppression Pool Cooling (SPC) Mode, the potential for a water-hammer in the RHR piping exists for design basis accident conditions of LOCA with simultaneous LOOP. SPC is used during normal plant operation to control suppression pool temperature within Tech Spec requirements, and for quarterly Tech Spec surveillance testing. PPL does not enter an LCO when SPC mode is used for routine suppression pool temperature control or surveillance testing because, as stated in the FSAR, the system's response to design basis LOCA/LOOP events while in SPC configuration determined that a usage factor of 10% is acceptable. The probability of the event of concern is 6.4 E-10.

If the specified design basis accident scenario occurs while the RHR system is in SPC mode, there is a potential for collateral equipment damage that could subsequently affect the ability of the system to perform the safety function. If the time RHR is run in SPC mode must be counted as unavailability, then our station RHR system indicator will be forever white due to the number of hours of normal SPC run time (approximately 300 hours per year). This would tend to mask any other problems, which would not be visible until the indicator turned yellow at 5.0%. Should our station count unavailability for the time when RHR is operated in SPC mode for temperature control or surveillance testing?

b. Findings

NRR responded that the time the RHR system was operated in the SPC mode did not need to be counted as system unavailability time, because the plant was being operated in accordance with Technical Specifications. Unresolved Item 05000387, 388/2001-003-01 is closed.

4OA2 Problem Identification and Resolution

See Section 1EP3 and 1EP5 regarding issues associated with problem identification and resolution in the emergency preparedness cornerstone.

4OA3 Event Follow-up (71153)

.1 (Closed) LER 05000388/01-001-00 Main Steam Line Containment Penetration Maximum Path Leakage Total Exceeded Technical Specification Limit

On January 31, 2001, the Unit 2 reactor core isolation cooling system inboard steam supply primary containment isolation valve failed to fully close. This event was discussed in detail in NRC Inspection Report 05000387,388/2001-002. The inspectors' review of this licensee event report (LER) identified one new issue, and is discussed in section 1R17.2 of this report. This event was documented in condition report 310810. This LER is closed.

4OA6 Meetings

.1 Exit Meeting Summary

On July 5, 2001, the resident inspectors presented the inspection results to Mr. R. Ceravolo, General Manager SSES - Maintenance, and other members of your staff., and other members of your staff who acknowledged the findings.

The inspectors asked PPL whether any items discussed during the exit meeting should be considered proprietary. No proprietary information was identified.

.2 Annual Assessment of Safety Performance

On June 28, 2001, the NRC met with PPL, in the Susquehanna Energy Information Center in Berwick, PA, to discuss the NRC's annual assessment of the safety performance of the Susquehanna Steam Electric Station. The meeting was open to the public. A copy of the slides can be found in ADAMS (Ascension Number ML011800407).

Attachment 1 **SUPPLEMENTAL INFORMATION**

LIST OF DOCUMENTS REVIEWED

Procedures

NDAP-QA-0300, "Conduct of Operations," Rev. 11
EP-PS-126, "Control Room Communicator," Rev. 15
EP-PS-132, "OSC Coordinator," Rev. 10
EP-PS-100, "Emergency Director, Control Room," Rev. 14
EP-PS-131, "Damage Control Team Coordinator," Rev. 6
EP054, "In-Plant Team Management," Rev. 3
OI-AD-026, "Overtime Work-Operator Selection," Rev. 12
NTP-QA-52.1, "Emergency Plan Training," Rev. 9

Condition Reports

CR 308330	Operations shift manning below administrative limits for PCO's
CR 331111	Control room PCO manning below admin limit for 1.5 hours
CR 313040	Shift manning less than admin limit for PCO's
CR 316038	Apparent conflict between NDAP-QA-0300 Attachment C and Section 6.1 of the emergency plan with respect to the minimum number of PCOs required per shift
CR 316815	Unit supervisor substituted for a PCO who reported off duty
CR 338841	Potential discrepancies and inconsistencies in emergency plan staffing requirement tables
CR 305179	Operations shift manning below administrative limits for the AUS
CR 340544	Trend CR, on 4 occasions the on-shift operating crew were without an AUS
CR 316038	The senior resident NRC inspector identified an apparent conflict between NDAP-QA-0300 Attachment C and Section 6.1 of the emergency plan with respect to the minimum number of PCOs required per shift
CR 315513	Operations shift manning below administrative limits
CR 335563	The evaluation for NRC IN 91-77 needs to be reviewed for potential inaccuracies and updated
CR 338405	Emergency plan manning requirements were not adequately incorporated into some functional unit administrative procedures

Emergency Preparedness Exercise/Drill Critiques
PLI-0084349, October 10, 1997
PLI-0084624, December 2, 1997
PLI-85917, August 7, 1998
PLI-86851, January 14, 1999
PLI-88208, September 28, 1999
PLI-88513, November 29, 1999
PLI-88395, October 28, 1999
PLI-89596, July 31, 2000
PLI-89849, October 9, 2000
PLI-90057, December 1, 2000

Other Documents

NRC Information Notice 91-77, "Shift Staffing at Nuclear Power Plants"
NUREG-0654, "Planning Standards and Evaluation Criteria"
Operations Shift Supervisor Logs for the Years 1999, 2000, and 2001
Operations Phone Message Logs for the Years 2000 and 2001
Operations Hot Box 01-51, "PCAF to NDAP-QA-0300 Changing the Minimum Shift Manning Requirements"
OSC Coordinator Mini-Drills for February/March 2000
PPL Emergency Plan Revision Nos. 0 thru 7
PPL 1999 and 2000 Emergency Preparedness Quality Assurance Audit Reports

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000387, 388/2001006-02	AV	Not Maintaining Minimum On-shift Staffing and failure to activate the EOF in accordance with the E-Plan (section 1EP3)
05000387, 388/2001006-03	URI	Changes Made to Staffing Table 6.2 of E-Plan (section 1EP4)

Opened and Closed

05000387, 388/2001006-01	NCV	No procedure to maintain the environmental qualification associated with T-drains on motors inside primary containment. (section 1R17.2)

Closed

05000387, 388/2001003-01	URI	Residual Heat Removal System Unavailability PI Verification (section 4OA1.1)
05000388/01-001-00	LER	Main Steam Line Containment Penetration Maximum Path Leakage Total Exceeded Technical Specification Limit (section 4OA3.1)

Discussed

None

LIST OF ACRONYMS USED

AUS	Assistant Unit Supervisor
AV	Apparent Violation
CFR	Code of Federal Regulations
CR	Condition Report
CRD	Control Rod Drive
CS	Core Spray
EAL	Emergency Action Level
EDG	Emergency Diesel Generator
EOF	Emergency Operations Facility
E-Plan	Emergency Plan
EQ	Environmentally Qualified
ERO	Emergency Response Organization
ESW	Emergency Service Water
FAQ	Frequently Asked Question
FSAR	[SSES] Final Safety Analysis Report
HP	Health Physics
LCO	[Technical Specification] Limiting Condition for Operation
LER	Licensee Event Report
NCV	Non-cited Violation
NERO	Nuclear Emergency Response Organization
NRC	Nuclear Regulatory Commission
NRR	[NRC] Nuclear Reactor Regulation
OSC	Operations Support Center
PCO	Plant Control Operator
PPL	PPL Susquehanna, LLC
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
SDP	Significance Determination Process
SGTS	Standby Gas Treatment System
SPC	Suppression Pool Cooling
SSC	Structure, System, or Component
SSES	Susquehanna Steam Electric Station
TBCCW	Turbine Building Closed Cooling Water
TS	Technical Specification
URI	[NRC] Unresolved Item