

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Report Nos.: 50-387/88-11; 50-388/88-14

Docket Nos.: 50-387; 50-388

License Nos.: NPF-14; NPF-22

Licensee: Pennsylvania Power and Light Company  
2 North Ninth Street  
Allentown, Pennsylvania 18101

Facility Name: Susquehanna Steam Electric Station

Inspection At: Salem Township, Pennsylvania

Inspection Conducted: June 5, 1988 - July 2, 1988

Inspectors: F. Young, Senior Resident Inspector, SSES  
J. Stair, Resident Inspector, SSES

Approved By:

  
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Reactor Projects Section No. 3B  
Division of Reactor Projects

8-3-88

Date

Inspection Summary:

Areas Inspected: Routine resident inspection of plant operations, physical security, plant events, surveillance, and Unit 2 refueling activities.

Results: Startup of both units was performed in a controlled and safe manner. Refueling modifications were properly performed, incorporated in procedure revisions, and included in operator training. Routine review of maintenance and surveillance activities noted good control and performance. Licensee event reports (LERs) and monthly reports were complete and accurate. A review of the licensee's program to qualify QC inspectors was performed due to an allegation about cheating on QC examinations. It was determined that the licensee's program is adequate to ensure qualified individuals are working on site.

In general, adequate management involvement and attention was applied.

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## DETAILS

### 1.0 Introduction and Overview

#### 1.1 NRC Staff Activities

The purpose of this inspection was to assess licensee activities for the startup, power operation, and refueling/shutdown modes as they related to reactor safety and worker radiation protection. Within each area, the inspectors documented the specific purpose of the area under review, scope of inspection activities and findings, along with appropriate conclusions. This assessment is based on actual observation of licensee activities, interviews with licensee personnel, measurement of radiation levels, or independent calculation and selective review of applicable documents.

#### 1.2 Unit 1 Summary

Unit 1 entered the inspection period in cold shutdown following an automatic reactor scram which occurred on June 1. Details of the scram were included in Inspection Report 387/88-10. The unit was maintained in cold shutdown until June 10 in order to replace sections of feedwater heater and main steam drain lines which were eroded (See Detail 2.2). Full power operation was restored on June 13 and continued for the remainder of the inspection period.

#### 1.3 Unit 2 Summary

On June 19, the licensee placed Unit 2 in startup ending its second refueling outage which lasted 106 days. Major work accomplished during the scheduled outage was the replacement of 236 fuel bundles, 24 control rod drives, and complete overhaul of the main turbine including replacement of the three low pressure turbine rotors. Major modifications to address issues associated with Loss of Offsite Power, Anticipated Transient Without Scram, and Appendix R were also accomplished. The unit was originally scheduled to commence startup during the first week in May, however, delays occurred due to the accidental backflushing of two fuel pool cooling system filter/demineralizers and damage to several feedwater sparger nozzles during reactor reassembly. These events were covered in previous routine Inspection Reports 388/88-06, 88-09, and 88-13. The unit was taken critical and heatup commenced, but held at 60 psig when a pin hole leak from a capped drain line off the circulating water system 'B' intermediate pressure waterbox outlet was discovered. The end cap was replaced and startup recommenced on June 24. The unit reached 87 percent power, but was returned to condition 2 on July 1 in order to replace two broken U-bolts on main steam hangers located between the main steam control valves and high pressure turbine. The unit remained in hot standby until the evening of July 4, when startup again recommenced.

#### 1.4 Persons Contacted

During the course of the inspection, the inspector interviewed, discussed issues, and received information from various licensee employees.

Listed below are the senior people and/or those individuals who supplied substantive information. Members who attended the exit interview on July 5, 1988 are indicated by an asterisk.

- \* J. Blakeslee, Assistant Superintendent of Plant, SSES
- \* F. Butler, Supervisor of Maintenance
- \* R. Byram, Superintendent of Plant, SSES
- \* T. Dalpiaz, Supervisor of Technical Support
  - J. Doxsey, Reactor Engineering Supervisor
  - A. Dominguez, Senior Results Engineer, Operations
- \* E. Figard, Supervisor of I&C/Computer
  - J. Graham, Assistant Manager, NQA - Operations
  - T. Markowski, Day Shift Supervisor
  - D. McGann, Compliance Engineer
  - H. Riley, Supervisor of Health Physics/Chemistry
- \* D. Roth, Senior Compliance Engineer
- R. Stotler, Supervisor of Security

### 2.0 Routine Periodic Inspections

#### 2.1 Scope of Review

The NRC resident inspectors periodically inspected the facility to determine the licensee's compliance with the general operating requirements of Section 6 of the Technical Specifications (TS) in the following areas:

- review of selected plant parameters for abnormal trends;
- plant status from a maintenance/modification viewpoint, including plant housekeeping and fire protection measures;
- control of ongoing and special evolutions, including control room personnel awareness of these evolutions;
- control of documents, including logkeeping practices;
- implementation of radiological controls;
- implementation of the security plan, including access control, boundary integrity, and badging practices;

- control room operations during regular and backshift hours, including frequent observation of activities in progress, and periodic reviews of selected sections of the unit supervisor's log and control room operator's log and other control room daily logs;
- followup items on activities that could affect plant safety or impact plant operations;
- areas outside the control room; and,
- selected licensee planning meetings.

Also, the inspectors reviewed specific events in more detail as described in the sections that follow.

## 2.2 Unit 1 Startup

On June 10, the licensee took Unit 1 critical after an outage of nine days. The shutdown was due to an automatic reactor scram which occurred on a turbine trip. Major work accomplished during the forced outage was the replacement of sixty feet of the two inch feedwater heater drain line from the steam seal system evaporator and five feet of the main steam system drain line due to the occurrence of erosion. The piping sections which required replacement were located at pressure reduction points within the systems. Preliminary findings are that those portions of the systems were exposed to a water/steam mixture that accelerated the erosion of the piping. These items were discussed in Inspection Report 387/88-10. Inspection of similar drain pipes in Unit 1 determined that the erosion had occurred only within these two systems. The licensee's resolution and corrective actions pertaining to the eroded piping were reviewed and found acceptable.

The inspector observed the licensee's activities associated with startup of the unit and performed a control panel check to assure that major systems were lined up properly to support plant operation. Full power operation was achieved on June 14.

## 2.3 Allegation Associated with Cheating on QC Exam

On April 29, 1988, Region I received an allegation that cheating had occurred on quality control inspector examinations. The individual stated that while taking the QC inspector examination several individuals in the same room openly worked together and passed the answers to the questions around freely. He stated that at the time of the examinations, the proctor was not continuously present and it was very easy for individuals to cheat on the examination. The alleger was asked some key questions concerning specific dates, times and location(s). He stated that he could not answer those questions,

but would examine his notes and recontact Region I. To date, the algeber has not reestablished contact with Region I. In order to resolve and substantiate this information, on May 13, the Senior Resident informed the licensee that an allegation had been made associated with Quality Control (QC) inspector examinations.

On June 5, the licensee informed the Senior Resident of the findings of their preliminary investigation. The licensee reviewed their internal QC examinations process to determine if cheating had occurred. The licensee found that QC as an organization, does not collectively give examinations on site. The only examinations that are administered are given by the training department or QC checkouts which are given by a qualified inspector on a one-on-one basis. Review of the established practice of proctoring examinations given at the training center indicated that a proctor is present at all times. Review by the licensee also determined that no QC examinations had been given to any contract personnel while on site other than a one-on-one type situation.

The licensee, however, questioned several contractors who were supplying the individuals for performing quality assurance checks. In one case, the licensee determined that one of its contractors gave examinations to individuals with groups of three to four in the same room without continous proctoring. No actual instances of collaboration were identified.

Discussions with the QC manager and the auditor who performed the investigation on site resulted in a determination by the inspector that the licensee had adequately demonstrated that no cheating had occurred at Susquehanna Steam Electric Station (SSES). However, it appears that the allegation may have merit based on information received about a specific vendor qualification program. The inspector questioned the licensee concerning the records of personnel on site to determine that those individuals being used as QC inspectors are qualified to perform in that position. Review of the in-place program for qualifying QC inspectors determined that the licensee has a comprehensive program that assures that any individual performing QC inspections at SSES meets the required qualifications. The inspector determined that proper documentation and additional checkouts of contract personnel performing inspections at SSES substantiated that the licensee was using qualified personnel.

The inspector was not able to determine within the scope of this inspection whether personnel supplied by this vendor at other sites go through the same vigorous requirements that are incorporated at SSES. At the conclusion of the discussion with the licensee, the inspector requested to review the licensee's final report following completion of their investigation.

Based on the information found by the licensee, the inspector informed Region I of the status of this allegation. NRC Region I informed the NRC:NRR Vendor Inspection Program Branch in order to evaluate any potential generic applicability of this allegation. Based on the information from the preliminary investigation by the licensee, the inspector determined even though the allegation may have merit, the specific allegation did not adversely affect the proper operation of SSES Unit 1 and 2.

Subsequent to the end of the inspection period, the licensee informed NRC Region I that the issue of exam proctoring has been discussed with the contractor. The contractor has indicated that potential for collaboration is small due to diversity of exams and the exam room arrangement. Nevertheless, the contractor has indicated that procedures will be changed to require continuous proctoring of all exams. The licensee indicated that he plans to followup further with the vendor in this matter.

### **3.0 Surveillance and Maintenance Activities**

On a sampling basis, the inspector selected several surveillance and maintenance activities to ensure that specific programmatic elements described below were being met. Details of this review are documented in the following sections.

#### **3.1 Surveillance Observations**

The inspector observed the performance of surveillance and special tests to determine that: the test procedure conformed to Technical Specification requirements; administrative approvals and tagouts were obtained before initiating the test; testing was accomplished by qualified personnel in accordance with an approved procedure; test instrumentation was calibrated; limiting conditions for operations were met; test data was accurate and complete; removal and restoration of the affected components was properly accomplished; test results met Technical Specification and procedural requirements; deficiencies noted were reviewed and appropriately resolved; and the surveillance was completed at the required frequency.

These observations included:

- SO-284-001, 31 Day Functional Test MSIV Closure RPS Instrumentation, performed on June 19, 1988

No unacceptable conditions were identified.

### 3.2 Maintenance Observation

The inspector observed portions of selected maintenance activities to determine that the work was conducted in accordance with approved procedures, regulatory guides, Technical Specifications, and industry codes or standards. The following items were considered during this review: Limiting Conditions for Operation were met while components or systems were removed from service; required administrative approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and QC hold points were established where required; functional testing was performed prior to declaring the particular component(s) operable; activities were accomplished by qualified personnel; radiological controls were implemented; fire protection controls were implemented; and the equipment was verified to be properly returned to service.

These observations included:

- Construction Work Order C80474, Perform Cold Check and Energized Control Scheme Test For Heat Trace Circuits ET-273-1A/B, 2A/B, 3A/B, 4A/B and 5A/B, performed on June 10, 1988.

No unacceptable conditions were identified.

## 4.0 Licensee Reports

### 4.1 In-Office Review of Licensee Event Reports

The inspector reviewed LERs submitted to the NRC:RI office to verify that details of the event were clearly reported, including the accuracy of description of the cause and adequacy of corrective action. The inspector determined whether further information was required from the licensee, whether generic implications were involved, and whether the event warranted onsite followup. The following LERs were reviewed:

#### Unit 1

88-009-00 HPCI System Inverter Trips Causing Single Train Safety System To Become Inoperable

#### Unit 2

88-009-00 MSIV Isolation Signal Initiated When Printed Circuit Card Was Reinserted

The above LERs were found acceptable.

#### 4.2 Review of Periodic and Special Reports

Upon receipt, periodic and special reports submitted by the licensee were reviewed by the inspector. The reports were reviewed to determine that they included the required information; that test results and/or supporting information were consistent with design predictions and performance specifications; that planned corrective action was adequate for resolution of identified problems; and whether any information in the report should be classified as an abnormal occurrence.

The following report was reviewed:

- Monthly Operating Report - May, 1988, dated June 13, 1988

The above report was found acceptable.

#### 5.0 Susquehanna Restart Inspection (Unit 2)

An inspection at the end of the Unit 2 Second Refueling Outage was conducted to determine the readiness of the unit for its return to operation. Areas inspected included modifications and accompanying procedure changes, operator training on modifications, valve and breaker lineups, radiological controls, housekeeping, licensee management evaluation of restart readiness and observing portions of the startup.

##### 5.1 Modifications

Five modification packages were reviewed by the inspectors for completeness, timeliness, procedural and drawing revisions, and testing.

The following specific packages were reviewed:

- PMR 85-3098B - SLC Control Circuit Modifications
- PMR 85-3101B - ARI Control Panel Changes
- PMR 85-3101C - ARI Conduit and Cables
- PMR 86-3002C - UPS To Instrument AC Panel 2Y128
- PMR 86-3002D - UPS To Instrument AC Panel 2Y218

##### 5.2 Training

The inspector reviewed the licensee's program for modification training of licensed operators. Lesson plans describing the modifications were clear, complete, and well organized.

All of the licensed operators had completed the training. The inspector noted that the training performed on modifications depended on one individual. One key individual (who is a licensed operator) basically took the modification packages and reviewed them for subsequent information that needed to be placed in the training program for licensed operators. The inspector noted that there was no internal review of his assessment of the modification packages by individuals such as the systems engineer who could pick up noted discrepancies in the training being performed. In addition, from discussions with a licensed operator trainer, the inspector noted that if a modification was changed or deleted there was no internal feedback to the training department to ensure that this information was reflected in the training program. In several instances, training was conducted on modifications that were eventually deleted and not performed. This appears to be a potentially significant weakness in the licensee's otherwise adequate program. The inspector discussed this weakness with the licensee and they stated that it would be reviewed.

### 5.3 Startup Preparation

The inspectors found the licensee's preparations for startup to be adequate. This was evidenced during the startup PORC meeting which took place on June 2, 1988. During the meeting, senior management was presented with pertinent, updated information on the resolution of problems or issues noted during the outage. All major issues appeared to have been adequately resolved or on schedule for resolution prior to the startup. Housekeeping and material conditions of the plant were found to be adequate.

Selected review of documentation of system status required for startup properly characterized the current condition of the system. Noted discrepancies were identified and properly resolved for startup.

The inspector verified that the licensee had completed mechanical and electrical system lineups for all emergency core cooling systems, reactor core isolation cooling (RCIC), emergency service water (ESW), control rod drive (CRD), reactor manual control system (RMCS), rod sequence control system (RSCS), and reactor protection system (RPS). The inspector reviewed all corresponding completed checklists and walked down portions of core spray, high pressure coolant injection and RCIC to assure that these systems were properly lined up for normal standby operation.

#### 5.4 Conclusion

The inspectors determined that modifications, training, valve and breaker lineups, and procedure changes were adequately accomplished; radiological controls and housekeeping were effectively implemented and in a state as to support unit startup; and that licensee management evaluation of restart readiness was comprehensive and accurate. Based on their review, the inspectors, concluded that the unit was operationally ready for restart.

#### 6.0 Exit Meeting

On July 5, 1988, the inspector discussed the findings of this inspection with station management. Based on NRC Region I review of this report and discussions held with licensee representatives, it was determined that this report does not contain information subject to 10 CFR 2.790 restrictions. At the conclusion, the licensee acknowledged the NRC findings and did not disagree with the findings or their characterization.