# U.S. NUCLEAR REGULATORY COMMISSION REGION I

Keport Nos. 50-387/85-07 50-388/85-07	
Docket No. 50-337; 50-338	
License No. NPF-14; NPF-22 Priority	Category <u>C</u>
Licensee: Pennsylvania Power and Light Company	
2 North Ninth Street	
Allentown, Pennsylvania 18101	
Facility Name: Susquehanna Steam Electric Station	
Units 1 and 2	
Inspection At: Berwick, Pennsylvania	
Inspection Conducted: February17-22, 1985	
Inspectors: R.L. Nimitz, Senior Radiation Specialist	<u>3/14/85</u> date
L. Hendricks, Health Physicist	<u>3114185</u> date
Approved by: N.J. Pasciak, Chief, BWR. Radiation Protection Section	3/27/85 date

Inspection Summary: Inspection on February 17-22, 1985, Combined Report No. 50-387/85-07; 50-388/85-07

Areas Inspected: Routine, unannounced inspection of the Radiological Controls Program during refueling including: organization and staffing; selection, qualification and training; audits; ALARA; internal and external exposure control; radioactive material/contamination control; on-going work reviews; respiratory protection; instrument calibration; secondary containment integrity; and ARM/process monitor calibrations. Upon arrival at the site on February 17, 1985, the inspector toured the controlled areas to examine adherence to applicable Radiological Controls Program requirements. The inspection involved 80 inspector-hours on site by one region based inpector and one headquarters based health physicist.

8504080434 850402 PDR ADOCK 05000387 G PDR <u>Results</u>: One violation was identified in one area (failure to adhere to radiation protection procedures, one example, Paragraph 9.0).

The licensee was found to be implementing an effective ALARA Program.

# DETAILS

# 1.0 Individuals contacted

# 1.1 Pennsylvania Power and Light

- M. Buring, Radiological Protection Supervisor
- \*J. Blakeslee, Health Physics/Chemistry Supervisor
- H. Riley, Acting Radtiological Operations Supervisor
- \*D. Thompson, Assistant Station Superintendent
- H. Keiser, Station Superintendent
- \*J. Todd, Compliance Engineer
- \*R. Prego, QA Supervisor, Operations

## 1.2 NRC

\*R. Jacobs, Senior Resident Inspector \*L. Plisco, Resident Inspector

\*denotes those individuals attending the exit meeting on February 22, 1985.

The inspectors also contacted other personnel (licensee and contractor).

# 2.0 Purpose of Inspection

The purpose of this routine unannounced inspection was to examine the following program elements:

Unit 1 and 2

- Radiation Protection Organization
- Radiation Protection Personnel Selection, Qualification and Training Program
- General Employee Training
- Audits
- Exposure control
  - Internal
  - External
- ALARA
- Radioactive Material/Contamination Control

### Unit 1

- Initial Fuel Movement
- On-going work review
- Secondary containment Integrity
- Calibration and Operation of Process, and Area Monitors needed to support fuel movement.

### 3.0 Organization and Staffing

The inspection reviewed the organization and staffing of the Radiological Controls Organization with respect to criteria contained in the following:

- Technical Specification 6.2, "Organization", (Unit 1 and 2)
- Regulatory Guide 8.8, Revision 3, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Is Reasonably Achievable"

The licensee's performance in this area was based on:

- review of documentation
- discussion with licensee representatives
- review of radiological coverage of on-going work
- review of back-shift staffing and organization

Within the scope of the review, no violations were identified. The licensee established and staffed a defined, augmented Radiological Controls Organization to support outage work. The licensee also established a special procedure (HP-HI-033) to provide guidelines for conduct of health physics activities at manned control points. No apparent shortage of personnel or extensive use of overtime was identified.

Within the scope of this review, the following matters requiring licensee attention were identified:

 The licensee revised the Radiological Controls Organization, depicted in the Technical Specifications (Reference: Licensee Memorandum dated February 8, 1985), to establish the position of Health Physics/Chemistry Supervisor. Reporting to this position are the Radiological Protection Supervisor, Radiclogical Operations Supervisor, and the Chemistry Supervisor. The licensee has yet to:

- docket a request for a change to the current Technical Specifications addressing this change and
- revise applicable station administrative procedures to clearly identify the responsibilities, and authorities for the new positions. Also, the licensee should establish minimum selection and qualification requirements for the department head level position of Health Physics/Chemistry supervisor.

The licensee's action on the matter will be reviewed during a subsequent inspection (50-387/85-07-01).

- The current division of responsibilities for radiation protection instrument calibration were not as specified in applicable procedures. The licensee should review this matter and clarify instrument calibration responsibilities.
- The inspector brought to the licensee's attention the current Technical Specification requirement that an individual, meeting the requirements of Regulatory Guide 1.8 be a member of the Plant Operations Review Committee. The inspector noted that the individuals currently filling the positions of Radiological Protection Supervisor and Radiological Operation Supervisor are so qualified. The new Health Physics/Chemistry Supervisor is not Regulatory Guide 1.8 qualified. Licensee representatives acknowledged the current technical specification requirement to have a Regulatory Guide 1.8 qualified individual as a PORC member.

These matters will be reviewed during a subsequent inspection (50-387/85-07-07).

### 4.0 Selection, Qualification, and Training

The inspector reviewed selected aspects of the licensees Radiation Protection personnel selection, qualification and training program. The review was with respect to criteria contained in the following:

- Unit 1 and Unit 2 Technical Inspection 6.3, "Unit Staff Qualifications"
- Unit 1 and Unit 2 Technical Specification 6.4, "Training"
- Applicable licensee procedures.

The review was performed to determine the following:

- radiation protection personnel (licensee and contractor) acting in responsible positions were properly trained and qualified.
- contractor radiation protection personnel, brought on site to perform

speciality functions, were properly trained and qualified commensurate with their responsibilities

 appropriate personnel were being instructed in procedure changes and new procedures which effect the performance of their tasks.

The licensee's performance in this area was based on:

- review of selected radiation protection personnel training records including those of personnel performing back-shift radiation protection coverage
- discussion with cognizant licensee personnel

Within the scope of the review, no violations were identified. The The licensee was selecting, training and qualifying personnel consistent with procedure requirements. Within the scope of the review, the following item for improvement was identified:

 Develop and implement a contractor radiation protection personnel training and qualification program. The program should be based on a job-task analysis of each position's responsibility. Also appropriate, uniform evaluation criteria should be established with which to use to evaluate an individual's knowledge of applicable program procedures. The current contractor training program consists of a selection of applicable elements of the long-term training program based on a general review of the individual's work to be performed. No defined contractor radiation protection technician training program is in place.

This matter will be reviewed during a subsequent inspection (50-387/85-07-08).

# 5.0 Audits

The inspector reviewed recent audits of the Radiological Controls Program with respect to criteria contained in Technical Specification 6.5.2.8, "Audits".

The review was performed to determine the following:

- the audits met the requirements of Technical Specifications
- the Audits adequately assessed the quality of the program
- that licensee corrective action was timely and technically sound

The licensee's performance in the area was based on:

discussions with cognizant individuals

- review of the following audit:
  - NQA Audit No. 0-84-19, "Susquehanna Review Committee Audit of the SSES Health Physics Program"

(Also reviewed was the 1985 INPO Audit Findings.)

Within the scope of the review, no violations were identified. The NQA audit was considered in-depth for the specific radiological controls program areas reviewed. The licensee followed up on findings needing resolution in a timely manner.

Within the scope of this review, the following matters were not reviewed and will be reviewed during a subsequent inspection:

- licensee audits of the external and internal dosimetry program
- licensee audits of the Respiratory Protection Program
- licensee audits of the training and qualification program for Radiation Protection personnel

The review of the above audits will be performed during a subsequent inspection (50-387/85-07-02).

### 6.0 ALARA

The inspector reviewed selected aspects of the licensee's ALARA Program for the current outage. The review was with respect to criteria contained in the following:

- Regulatory Guide 8.8., Revision 3, "Information relevant to Ensuring that occupation exposures at Nuclear Power Plants Will Be As Low As Reasonably Achievable,"
- Regulatory Guide 8.10, 1975, "Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As Reasonably Achievable" current outage.

The review was performed to determine if:

- the licensee was properly organized to handle the additional ALARA review work load relating to the current outage
- the licensee had a method in place to input, and monitor accumulated exposure for purposes of ALARA review and evaluation
- the licensee had established appropriate criteria for use in evaluation on-going work needing additional review and evaluation.

- discussions with cognizant personnel.
- review of in-field activities

Within the scope of this review, no violations were identified. The licensee was performing effective ALARA planning prior to work and maintaining effective ALARA oversight of on-going work.

Within the scope of this review, the following was noted:

- The licensee defined and implemented an augmented ALARA organization to support outage work. Appropriate responsibilities for the augmented organization were defined.
- The licensee obtained, via contract, a computer based RWP/ALARA processing and dose tracking system. The system has the capability to compare actual task man-hours, man-rem, and percent man-hours, and man-rem, to estimated man-hours and man-rem in order to identify situations requiring additional ALARA reviews and/or corrective actions. The licensee is using the contractor provided system pending completion of his own in-house RWP/ALARA processing and dose tracking system.
- The licensee utilized shielding in an effective manner in the drywell to minimize general area dose rates.
- The licensee performed a comprehensive review of the potential for increased radiation levels in the Drywell during fuel movement. A special survey was conducted during the first irradiated fuel element movement to identify any increased levels. Portable monitors were installed to minimize risk to personnel.

#### 7.0 External Exposure Control

The inspector reviewed the following aspects of the licensee's external exposure control program:

- issuance and adequacy of radiation work permits
- performance, documentation and maintenance of radiation surveys
- use of approximate, properly calibrated radiation survey instrumentation
- posting and/or access control to radiation and high radiation areas
- generation and maintenance of external exposure records an/or exposure reports

The review was with respect to criteria contained in the following:

- Unit 1 and Unit 2 Technical specification 6.8, "Procedures and Programs"
- Unit 1 and Unit 2 Technical Specification 6.11, "Radiation Protection Program"
- Unit 1 and Unit 2 Technical Specification 6.12, "High Radiation Area"
- 10 CFR 20, "Standards for Protection Against Radiation"
- Applicable licensee radiation protection procedures

Within the scope of this review, no violations were identified. The licensee is implementing an adequate exposure control program.

Within the scope of this review, the following improvement item was identified:

 Contractor personnel arriving at the site were providing licensee dosimetry personnel with copies of NRC Form 5's from other stations in lieu of completing a Form 4. However, the Form 5's proviced were not consecutively numbered. As a result, it was not clear whether a particular contractor worker's exposure history package included all previous exposure. Licensee representatives indicated this matter would be reviewed. The inspector did not identify any apparent missing data from selected worker exposure history files reviewed.

Within the scope of this review, the following matters requiring licensee attention were identified:

Fully establish the beta radiation exposure control program.

The licensee immediately initiated action to address these matters. The licensee's actions on these matters were reviewed during a subsequent inspection (50-387/85-07-03).

#### 8.0 Internal Exposure Control

The inspector reviewed the following aspects of the licensee's internal exposure control program

- performance of appropriate airborne radioactivity surveys
- use of engineering controls to minimize airborne radioactivity
- performance of appropriate bioassays

- generation and maintenance of internal exposure records and/or exposure reports
- operation and calibration of whole body counters

The review was with respect to criteria contained in the following:

- Unit 1 and Unit 2 Technical Specification 6.11, "Radiation Protection Program"
- 10 CFR 20, "Standards for Protection Against Radiation"
- Applicable licensee radiation protection procedures

The licensee's performance in this area was based on:

- discussions with congnizant licensee personnel
- review of on-going work
- review of documentation

Within the scope of the review, no violations were identified. The licensee was implementing an adequate internal exposure control program.

The following was noted:

• The licensed made extensive use of containments and other engineering controls to minimize airborne radioactivity. For example, the licensee constructed a large containment structure on the Turbine Deck to place turbine parts into while sand blasting. The structure included an air lock and utilized multiple high efficiency air particle filter systems to clean-up air inside the structure and minimize exfiltration.

Within the scope of this review, the following items for improvement were identified:

• The licensee was using a contractor supplied whole body counter to augment the licensee's currently installed whole body counter capability. The licensee's procedures for operation of the contractor counter did not contain sufficient guidance to ensure the system was operating properly. The procedures did not contain guidance relative to quantification of a fixed amount of radioactivity (i.e. source check). However, this quantification check was being partially performed in an informal manner. The licensee revised procedures in a timely manner to include a control chart and appropriate statistical error limits.

- The licensee was using numerous portable high efficiency particulate air (HEPA) filter systems to minimize airborne radioactivity. However, the operating procedures for the units did not contain sufficient guidance to ensure that the pressure differential operability check, would be properly performed in that:
  - multiple pressure drops could be obtained across components of one model of systems installed and it was not clear as to which pressure drop the procedure limit applied and
  - the pressure drop limit specified in the procedure was apparently not applicable to one model in use ("home made units"). The licensee should revise applicable procedures to clearly specify allowable pressure drop across the units.

Licensee representative indicated this matter would be reviewed and appropriate action taken. The inspector did not identify any units operating in a degraded condition.

The licensee initiated action to review these matters.

This matter remains open. (50-387/85-07-09)

#### 9.0 Respiratory Protection

The inspector reviewed the following aspects of the licenseee's Respiratory Protection Program:

- proper in-field use of equipment
- proper control and issuance of equipment
- establishment and maintenance of training and qualification records
- adequacy of retraining program
- use of engineering controls in lieu of respiratory protection equipment use
- training and qualification of personnel using equipment

The review was with respect to criteria contained in the following:

- Unit 1 and Unit 2 Technical Specification 6.11, "Radiation Protection Program"
- 10 CFR 20, "Standards for Protection Against Radiation"
- Applicable Licensee Procedures

The evaluation of the licensee's performance in the area was based on

- inspector observation of in-field issuance, use, and control of respiratory protective equipment
- attendance at licensee Respiratory Protection Equipment Retraining/Requalification Program
- discussions with cognizant licensee personnel
- review of documentation including training records of equipment users.

Within the scope of this inspection one violation dealing with adherence to procedures for equipment use was identified:

 Unit 1 Technical Specification 6.11 requires in part, that procedures for personnel radiation protection be prepared and adhered to for all operations involving personnel radiation exposure. Radiation Protection Procedure HP-TP-752, Revision 1, "Use and Maintenance of the DEL-MONOX Air Purification System," requires, in part, in section 8 that Service Air Drops be tagged as follows: "BREATHING AIR IN USE. DO NOT SHUT OFF. CONTACT HP." This section also requires that breathing air lines be tagged as follows: "FOR USE WITH BREATHING AIR ONLY."

Contrary to the above, at about 10:00 p.m. on February 21, 1985, and for an undetermined period of time prior to the time, the Service Air Drops and breathing air lines associated with two DEL-MONOX Air Purification Systems, providing breathing air for personnel performing Control Rod Drive Work, were not tagged as required.

This matter was brought to the attention of licensee radiation protection personnel who immediately posted the drops and air lines. Inspector review of DEL-MONOX System pressure setting and tracing of air lines did not identify any condition which appeared to affect the health and safety of personnel using breathing air from the system.

Within the scope of this review, the following matters requiring licensee attention were identified:

- One individual, wearing a full face respirator and preparing to enter the Unit 1 Drywell, was observed to be wearing a skull cap which protruded into the sealing surface of the respirator. This matter was brought to the attention of licensee radiation protection personnel who corrected this instance.
- One individual, preparing to don a full face respirator prior to entering the Unit 1 Drywell, was observed to have large sideburns which could protrude into the sealing surface of the respirator. This matter was brought to the attention of licensee radiation protection

personnel who corrected this instance by requiring the individual to shave prior to use of the full face respirator.

Excluding the above, no other deficiencies were identified.

## 10. Radioactive Material /Contamination Control

The inspector reviewed the following aspects of the licensee's radioactive material and contamination control program.

- posting of radioactive material storage locations
- labeling of radioactive/contaminated material
- control of contaminated areas/material
- personnel frisking practices

The review was with respect to criteria contained in the following:

- Unit 1 and Unit 2 Technical Specification 6.11, "Radiation Protection Program"
- Applicable Licensee Procedures

The evaluation of the licensee's performance in this area was based on:

- review of on-going work
- performance of independent surveys by the inspector
- discussions with cognizant licensee personnel

Within the scope of this review no violations were identified. The licensee was implementing an acceptable radioactive material/contamination control program.

Within the scope of this review, one item requiring licensee attention was identified:

One individual was identified improperly using a portal monitor.

This matter was brought to the licensee's attention who initiated action to address this matter.

11. Radiological Controls Implementation Review

The inspector reviewed the implementation of radiological controls for various on-going tasks observed. The following matters were reviewed.

- personnel adherence to radiation work permit requirements
- adequacy of radiation/contamination and airborne radioactivity surveys made to support on-going work
- adequacy of radiation protection personnel oversight of on-going work
- use of properly trained and qualified radiation protection personnel for performing responsible oversight of on-going radiological work

The review was with respect to the following:

- Unit 1 and Unit 2 Technical Specifications 6-11, "Radiation Pro-tection Program"
- Applicable Licensee Procedures

The evaluation of the licensee's performance in this area was based on:

- review of on-going work throughout the plant
- performance of independent radiation surveys
- discussions with cognizant licensee personnel

Within the scope of the review, no violations were identified. The licensee was providing acceptable oversight of on-going radiological work. The following matter requiring licensee attention were identified:

- Improve contamination control at the control rod drive cleaning and disassembly area. Contamination control practices were not effectively used. For example, step off pads and used clothing barrels were not positioned in a manner to preclude inadvertent personnel contamination. Provisions for changing gloves during drive work were not established. Licensee representations indicated the matter would be reviewed and appropriate action taken.
- Provide guidance/administration controls to preclude personnel from removing and handling material taken from fuel storage pools, reactor vessel, or reactor cavity without the material first being surveyed. The licensee initiated action to address this matter in a timely manner.
- Consider placement of radiation survey hold points in control Rod Drive Removal/Disassembly Procedures.

### 12. Calibration of Radiation Protection Instrumentation

The inspection reviewed in-field use of radiation, contamination, and airborne radioactivity monitoring or survey equipment to ensure equipment

used in the field was properly calibrated.

The licensee's performance in the area was based on

- review of calibration records of selected instrumentation
- discussions with cognizant personnel.

Within the scope of this review, no violations were identified. The licensee was implementing the procedurally specified instrument calibration program.

Within the scope of the review, the following matter requiring licensee attention was identified:

 Review the adequacy of the calibration source used to determine beta calibration factors for survey instrumentation. It was not clear that the average energy of beta radiation from the source was comparable to that observed at the station. This matter is unresolved (50-387/ 85-07-04).

#### 13.0 Secondary Containment Integrity

The inspector reviewed the following aspects of the licensee's Secondary Containment Integrity:

- Operability of Zones I, II, and III ventilation during fuel movement
- status of our locks during fuel movement
- implementation of 18 month testing requirements
- implementation of 60 month testing requirements

The review was with respect to criteria contained in the following:

- Unit 1 Technical Specification 3/4 .6.5.1, "Secondary Containment Integrity"
- Unit 2 Technical Specification 3/4 .6.5.1, "Secondary Containment Integrity"

The evaluation of licensee's performance in the area was based on:

- review of air lock status during fuel movement
- review of the status of Zones I, II, and III ventilation
- review of completed surveillance tests

discussions with cognizant licensee personnel

Within the scope of the review, no violations were identified. The licensee was maintaining Secondary Containment Integrity consistent with the selected Technical Specification requirements reviewed.

### 14.0 Area/Process Monitor Calibration

The inspector reviewed the operability and calibration of selected area/ process monitors to support refueling operation. These include

- refueling bridge area monitor
- criticality detectors
- exhaust ventilation monitors
- main Control Room Air Intake Monitors

The review was with respect to criteria contained in the following:

- Unit 1 Technical Specification 3/4 .3.2, "Isolation Activation Instrumentation"
- Unit 1 Technical Specification 3/4 .3.7, "Monitoring Instrumentation"

The evaluation of the licensee's performance in the area was based on:

- review of calibration data
- review of current monitor operabilities
- review of completed surveillance test data
- discussions with cognizant personnel

Within the scope of the review, no violations were identified. The licensee implemented the selected Technical Specification reviewed. Calibration/Surveillance records were well maintained and available.

Within the scope of this review, the following matter requiring licensee attention was identified:

 The fuel bridge Area Radiation Monitor was not reviewed on a periodic basis between calibrations. Licensee representatives indicated this matter will be reviewed and appropriate action taken. Within the scope of the review, the following matter remains open and will be reviewed during a subsequent inspection:

 surveillance testing of Refuel Floor Exhaust Monitors. The inspector was unable to complete the review of this area (50-387/85-07-05).

## 15. Exit Interview

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on February 22, 1985. The inspector summarized the purpose, scope and findings of the inspection. At no time during the inspection did the inspector provide written material to the licensee.