

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No. 50-387/82-27

Docket No. 50-387

License No. CPPR-101 Priority -- Category B

Licensee: Pennsylvania Power and Light Company

2 North Ninth Street

Allentown, Pennsylvania 18101

Facility Name: Susquehanna Steam Electric Station, Unit 1

Inspection At: Berwick, Pennsylvania

Inspection Conducted: July 6-9, 12-15, and August 16-18, 1982

Inspectors: R. L. Nimitz
R. L. Nimitz, Radiation Specialist

8/30/82
date

D. J. Collins
D. J. Collins, Radiation Specialist

8/30/82
date

Approved By: Edward G. Greenman
E. G. Greenman, Acting Chief,
Facilities Radiation Protection Section

8/31/82
date

Inspection Summary:

Inspection on July 6-9, 12-15 and August 16-18, 1982 (Report No. 50-387/82-27)

Areas Inspected: Routine, announced preoperational inspection of the licensee's radiation protection and radioactive waste management programs including: licensee action on previous inspection findings; licensee action on IE Bulletin No. 79-19 and 80-10 and IE Circular No. 81-07; organization and staffing; qualifications, training and retraining; radiation protection equipment; preoperational/acceptance testing; and external and internal dosimetry programs. The inspection involved 130 inspector-hours on site by two region-based inspectors. Results: No violations were identified.

DETAILS

1. Persons Contacted

- (3) L. Adams, Supervisor of Operations
- R. Byram, Supervisor of Maintenance
- (2)(3) M. R. Buring, Health Physics Supervisor
- (1) S. H. Cantone, Manager - Nuclear Support
- (2) F. Eisenhuth, Senior Compliance Engineer
- (1) J. P. Felock, Integrated Start-up Group
- N. W. Granus, Health Physics Specialist - Nuclear Support
- J. D. Green, QA Supervisor - Operations
- (1) D. L. Hagan, Health Physics Specialist - Nuclear Support
- (1) R. M. Harris, Project Licensing Specialist
- H. R. Helmholtz, Consultant - NWT Corporation
- (2) J. M. Hettinger, Radioactive Waste Supervisor
- F. P. Jaeger, Health Physics Foreman
- (4) H. W. Keiser, Station Superintendent
- W. H. Lowthert, Supervisor Technical Training
- (1) T. O. Martin, Consultant - T. O. Martin Associates, Inc.
- (1) D. W. Miller, Radiological and Environmental Services Supervisor - Nuclear Support
- (2) D. G. Mitchell, Plant Staff - Compliance
- W. E. Morrissey, Health Physics Specialist - Radwaste
- H. L. Riley, Senior Results Engineer
- (1) M. Rochester, Health Physics Specialist - Dosimetry
- R. Swetnam, Consultant - Magnetronics, Inc.
- (2) D. J. Thompson, Assistant Superintendent of Plant
- (2) R. C. Yoder, Radiological Group Supervisor - Nuclear Support

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- (2) G. G. Rhoads, Senior Resident Inspector
- J. F. McCann, Resident Inspector

(1) Denotes those present at the exit interview on July 9, 1982.

(2) Denotes those present at the exit interview on July 9 and 15, 1982.

(3) Denotes those present at the exit interview on August 18, 1982.

(4) Denotes presence at exit interview on July 15, 1982.

The inspectors also contacted other licensee personnel during the inspection.

2. Purpose of Inspection

The purpose of this inspection was to complete the preoperational inspection of the licensee's radiation protection and radioactive waste management programs.

3. Previous Inspection Findings

- 3.1 (Closed) Follow-up Item (50-387/82-02-01). Complete preoperational inspection of radiation protection and radioactive waste management programs. This report completes the program review.
- 3.2 (Closed) Follow-up Item (50-387/82-02-02). Station documents did not reflect current Radiation Protection Organization. The inspector review of Procedure Change No. 82-415, dated June 24, 1981, indicated the change updated the organization description of Procedure AD-QA-100, "Station Organization and Responsibilities." The licensee remains to update the FSAR organization charts and staffing levels to reflect the current minimum staffing level needed to implement the Radiation Protection Program. The licensee plans to update the charts and staffing level in accordance with 10 CFR 50.71.
- 3.3 (Closed) Follow-up Item (50-387/82-02-03). Review adequacy of Radiation Protection Organization staffing level and training program for contractor personnel brought onsite to augment the staff. The review of the licensee's staffing level indicated adequate staffing was in place (Details Paragraph 5).
- The review of contractor Radiation Protection Technician training indicated the licensee adequately trained contractor personnel (Details Paragraph 6.2).
- 3.4 (Closed) Follow-up Item (50-387/82-02-04). The licensee had not established job position descriptions for all positions in the Radiation Protection Organization. The review of this item indicated that the licensee established job position descriptions for all technician, specialist, and supervisory level positions within the organization.
- 3.5 (Closed) Follow-up Item (50-387/82-02-05). Selection criteria for Health Physics Foreman not consistent with industry standards. The licensee revised the job position description to conform to ANSI/ANS-3.1, 1978, "American National Standard for Selection and Training of Nuclear Power Plant Personnel." The inspector's review of the description indicated it met the standard.
- 3.6 (Closed) Follow-up Item (50-387/82-02-06). Selection criteria for Radiological Support Supervisor not consistent with industry standards. The licensee revised the job position description to meet ANSI/ANS-3.1, 1978, "American National Standard for Selection and Training of Nuclear Power Plant Personnel." The inspector's review of the description indicated it met the standard.
- 3.7 (Closed) Follow-up Item (50-387/82-02-07). Selection criteria for Health Physics Specialists not consistent with industry standards. The licensee established three addendums to the generic Health

Physics Specialist job position description. The addendums describe the position responsibilities, knowledge, and experience needed to enter the positions of Health Physics Specialist - ALARA, Health Physics Specialist - Respiratory Protection and Internal Dosimetry, and Solid Radioactive Waste. A proposed revision to the job position description, which specifies the level of training acceptable in lieu of practical experience, was also made to the job description.

- 3.8 (Closed) Follow-up Item (50-387/82-02-08). Review experience of Level II Radiation Protection Technician whose resume indicated the technician did not have the necessary experience for the position. Inspector review of an expanded resume and discussions with licensee representatives indicated the technician had the minimum experience needed.
- 3.9 (Closed) Follow-up Item (50-387/82-02-09). Review extent of Health Physics Section training and status of Phase II Health Physics training. The review of this item indicated the licensee trained the Health Physics Section in accordance with station procedures. In addition, procedure NTI-QA-3071, Revision 0, "Health Physics Technician Certification Program," dated June 30, 1982, was established and describes the Phase II training program. Inspector review indicated all Health Physics Technicians were trained in accordance with the NTI. The licensee has also established a program for training Health Physics Technicians in procedure changes (Details Paragraph 6.2).
- 3.10 (Closed) Follow-up Item (50-387/82-02-10). Review General Employee Health Physics Training Program and extent of training provided. The review of Health Physics Training provided indicated it met the requirements of 10 CFR 19.12 and that appropriate individuals had been trained (Details Paragraph 6.3).
- 3.11 (Closed) Follow-up Item (50-387/82-02-11). Licensee to establish and implement a training program for contractor Health Physics technicians. The review of this item indicated the licensee has established procedure NTI-QA-3071, Revision 0, "Health Physics Technician Certification Program," dated June 30, 1982. The NTI provides adequate guidance for training contractor Health Physics technicians. Inspector review of training documentation indicated all licensee and contractor Health Physics Technicians were trained in accordance with the NTI.
- 3.12 (Closed) Follow-up Item (50-387/82-02-12). Review status and development of the External Dosimetry Program and oversight of vendor supplied dosimetry services. The review of this item indicated the licensee has established additional program procedures and has upgraded the oversight of vendor supplied dosimetry devices (Details Paragraph 9.1).

- 3.13 (Closed) Follow-up Item (50-387/82-02-13). Complete review of the Internal Exposure Control Program. The review of this item indicated the licensee has established additional program procedures and has verified the thyroid calibration for the whole body counter (Details Paragraph 9.2).
- 3.14 (Open) Follow-up Item (50-387/82-02-14). Complete review of the Respiratory Protection Program. Licensee representatives indicated that a fully established program was to be in place by first refueling.
- 3.15 (Closed) Follow-up Item (50-387/82-02-15). Licensee to establish guidance for dosimeter placement for monitoring of beta radiation fields and monitoring exposure to noble gas atmospheres. The inspector's review of Procedure Change No. 82-714, dated July 8, 1982, indicated that Procedure HP-TP-215, "Issuance, Use, and Evaluation of Personnel Dosimetry," was changed to include guidance for placement of dosimetry when the potential for an exposure to the skin exists. Inspector review of Procedure AD-00-735, Revision 1, "External Dosimetry Program," dated July 15, 1982, indicated the procedure was revised to include the statement that thermoluminescent dosimeters will be used as the primary method for monitoring exposure of personnel to noble gases. The review of procedure HP-TP-215 indicated it provided adequate guidance for issuance of personnel dosimetry.
- 3.16 (Closed) Follow-up Item (50-387/82-02-16). Complete review of Health Physics facilities. The inspectors reviewed, and discussed with licensee representatives, the Health Physics facilities currently in place and those under construction. The review and discussions indicated the facilities were adequate to support Health Physics activities and, with some exceptions, were consistent with the Facility Safety Analysis Report. The exceptions included: 1) Use of the laundry area in the Radwaste Building as a respirator cleaning, repair and issuance area (laundry is to be sent to contractor cleaning service); 2) use of the Radwaste Hot Machine shop as an instrument repair shop (the licensee had constructed a new Hot Machine shop); and 3) the construction of new Radiation Protection office and access control areas.
- 3.17 (Closed) Follow-up Item (50-387/82-02-17). Develop procedures for handling and counting charcoal canisters or cartridges and silver zeolite cartridges under routine and emergency conditions. The review of Procedure HP-TP-720, Revision 2, "Airborne Concentration Sampling and Evaluation," indicated it provided guidance for counting cartridges under routine conditions. The handling and counting of the cartridges during emergency conditions was reviewed during Inspection 50-387/82-12 and was found acceptable.
- 3.18 (Closed) Follow-up Item (50-387/82-02-18). The modification of the Beta Air Monitor Model AMS-3 to use charcoal cartridges and the use

of these cartridges is not addressed in procedures. The licensee has revised HP-272, "Use and Operation of the AMS-3," to include guidance for using charcoal cartridges with the AMS-3. The procedure revision also includes precautions for handling post-accident filters and/or cartridges from the AMS-3.

- 3.19 (Closed) Follow-up Item (50-387/82-02-19). Procedures for calibration and alarm point setting for the NMC continuous monitors are not established. The licensee has established procedures for calibration of the NMC monitors. Frequency for calibration and guidance for alarm point setting is specified in established procedures.
- 3.20 (Closed) Follow-up Item (50-387/82-02-20). Review Radwaste Facility staffing and Health Physics Section responsibilities for Radwaste. The licensee provided a trained and qualified staff for operating the Radwaste Facility. In addition, Health Physics personnel were selected to implement the Health Physics responsibilities for Radwaste functions.
- 3.21 (Open) Follow-up Item (50-387/82-02-21). Review licensee implementation of IE Bulletin No. 80-10. In addition to other actions, the licensee established and implemented a procedure for sampling potentially contaminated effluent release paths. However, no activity level (e.g., minimum detectable activity) was established above which corrective action must be initiated for the potentially contaminated system (Details Paragraph 4.1).
- 3.22 (Open) Follow-up Item (50-387/82-02-22). Review radioactive effluent monitoring instrumentation and collection efficiency determination. Effluent monitor calibration procedures were reviewed and found acceptable (Inspection Report No. 50-387/82-25). As of August 24, 1982, the licensee remains to calibrate the Reactor Building Closed Cooling Water Monitor and remains to verify the ability of the gaseous effluent monitoring system to sample and collect particulates and halogens.
- 3.23 (Open) Follow-up Item (50-387/82-02-23). Review program for control of radioactive effluent releases. The licensee has established procedures for control and release of radioactive effluents. The inspector's preliminary review indicated the procedures appear adequate to comply with regulatory requirements.

4. Licensee Action on IE Bulletins and Circulars

4.1 IE Bulletin No. 80-10

Documents Reviewed

IE Bulletin No. 80-10, "Contamination of Nonradioactive System and Resulting Potential for Unmonitored, Uncontrolled Release to Environment," dated May 6, 1980.

AD-QA-300, Revision 0, "Conduct of Operations," dated December 21, 1981, and Temporary Change No. 82-044 dated February 20, 1982.

AD-QA-302, Revision 0, "System Status and Equipment Control," dated June 1, 1982.

AD-QA-306, Revision 2, "System/Equipment Release," dated June 1, 1982.

AD-QA-307, Revision 0, "Electrical and Mechanical Bypass Control," dated May 13, 1982.

CH-CI-001, Revision 0, "Chemistry Sampling, Analysis and Instrument Standardization Frequencies."

The inspector's review of the licensee's actions taken with respect to IE Bulletin No. 80-10 indicated the facility design and operation was reviewed to identify systems that are considered as nonradioactive but could possibly become radioactive through interfaces with radioactive systems.

The licensee's review identified five normally contaminated systems that required the establishment of additional controls to prevent cross contamination. The licensee established administrative controls to preclude cross contamination and perform sampling where additional controls could not be used. The licensee also revised administrative procedures to assure proper system line-up prior to operation and for use of temporary hoses, temporary system modifications, and control of locked valves.

The inspector's review of the routine sampling and analysis program for monitoring normally noncontaminated systems, which could become contaminated, indicated that the sampling procedure (CH-CI-001) did not specify a minimum detectable activity to be met for the sampling and analysis program nor did it specify an activity level above which corrective action and/or additional evaluation was to be initiated for the potentially contaminated system.

Licensee chemistry representatives stated that procedure revisions would be made to include a sample activity above which additional actions and/or evaluations are to be initiated. The inspector stated that this matter remains an open item (50-387/82-02-21).

4.2 IE Circular No. 81-07

Documents Reviewed

IE Circular No. 81-07, "Control of Radioactivity Contaminated Material," dated May 14, 1981.

AD-00-720, Revision 0, "Contamination Control," dated January 15, 1982.

HP-TP-602, Revision 1, "Survey and Release of Tools, Equipment and Material," dated November 4, 1981.

ANSI-N 13.12, "Control of Radioactive Surface Contamination on Materials, Equipment, and Facilities to be Released for Uncontrolled Use (Draft)," dated August 1978.

The inspector's review of the licensee's actions taken with respect to IE Circular No. 81-07 indicated the licensee has established adequate radioactive contaminated material control procedures, has established removable and fixed contamination limits, and has on hand instruments capable of detecting the established limits.

The inspector found that the removable and fixed contamination limits specified in Procedure HP-TP-602 were different from those specified in Procedure AD-00-720.

Licensee representatives stated that the procedures would be revised to provide uniform guidance prior to initial criticality. This matter remains open (50-387/82-27-01).

4.3 IE Bulletin No. 79-19

Documents Reviewed

IE Bulletin No. 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," dated August 10, 1979.

AD-QA-111, Revision 0, "Radwaste Management Program," dated February 2, 1982.

AD-QA-304, Revision 0, "Operator Selection, Training, and Qualification," dated January 30, 1982.

AD-QA-311, Revision 0, "Solid Waste Process Control," dated July 14, 1982.

AD-QA-765, Revision 1, "Solid Radwaste Program," dated July 14, 1982.

The inspector reviewed the licensee's actions taken with respect to IE Bulletin No. 79-19 and discussed the Radioactive Waste Management Program with licensee Radwaste, Radiation Protection, and Quality Assurance representatives.

The bulletin required licensees to take certain actions to assure safe transfer, packaging, and transport of low-level radioactive waste. The following actions were reviewed:

- 4.3.1 Maintain a current set of DOT and NRC regulations concerning the transfer, packaging and transport of low-level radioactive waste material.

The licensee maintains current DOT and NRC regulations concerning the transfer, packaging, and transport of low-level radioactive waste material. The regulations are distributed to and used by the cognizant licensee Radioactive Waste Organization representatives.

- 4.3.2 Maintain a current set of requirements (license) placed on the waste burial firm by the Agreement States of Nevada, South Carolina, or Washington before packaging low-level radioactive waste material for transfer and shipment to the Agreement State licensee. If a waste collection contractor is used, obtain the appropriate requirements from the contractor.

The licensee receives and maintains current Agreement State requirements placed on the waste burial sites. The requirements are distributed to and used by the cognizant licensee Radioactive Waste Organization representatives.

- 4.3.3 Designate, in writing, people in your organization who are responsible for the safe transfer, packaging, and transport of low-level radioactive material.

The licensee has designated in approved procedures those individuals responsible for the safe transfer, packaging, and transport of radioactive material.

- 4.3.4 Provide management-approved, detailed instructions and operating procedures to all personnel involved in the transfer, packaging, and transport of low-level radioactive material. Special attention should be given to controls on the chemical and physical form of the low-level radioactive material and on the containment integrity of the packaging.

The licensee has established approved, detailed procedures for all personnel involved in the transfer, packaging, and transport of low-level radioactive material. The licensee has also given special attention to (i.e., established procedures for) controls on the chemical and physical form of the material and containment integrity of packaging.

- 4.3.5 Provide training and periodic retraining in the DOT and NRC regulatory requirements, the waste burial license requirements, and in your instructions and operating procedures for all personnel involved in the transfer, packaging, and

transport of radioactive material. Maintain a record of training dates, attendees, and subject material for future inspections by NRC personnel.

The licensee established a procedure (NTI-QA-3020) for training personnel involved in the transfer, packaging, and transport of radioactive material. The procedure provides for maintaining appropriate records.

Inspector review of training documentation and discussion with licensee representatives indicated all personnel involved in transfer, packaging, and transport of radioactive materials were trained in accordance with the procedure.

- 4.3.6 Provide training and periodic retraining to those employees who operate the processes which generate waste to assure that the volume of low-level radioactive waste is minimized and that such waste is processed into acceptable chemical and physical form for transfer and shipment to a low-level radioactive waste burial facility.

The licensee has established a training program for those employees who operate the processes which generate waste to assure that radwaste volume is minimized and the waste form is acceptable. The training is described in Procedure AD-QA-304.

Inspector discussions with licensee Radwaste representatives and review of records indicated all Radwaste operations personnel completed the Radioactive Waste Training/Qualification Program.

- 4.3.7 Establish and implement a management-controlled audit function of all transfer, packaging, and transport activities to provide assurance that personnel, instructions and procedures, and process and transport equipment are functioning to ensure safety and compliance with regulatory requirements.

The licensee has established and implemented a management-controlled audit function to assure that Radioactive Waste Program elements are functioning to ensure safety and compliance with regulatory requirements.

In a letter dated April 2, 1982, to the Office of Nuclear Material Safety and Safeguards, NRC, the licensee committed to apply its Operational Quality Assurance Program (10 CFR 50, Appendix B) to the packaging of radioactive waste.

Inspector discussions with licensee Quality Assurance representatives indicated an audit of the Radioactive Waste Program, with respect to IE Bulletin No. 79-19, was performed in February 1982 by the licensee's Nuclear Quality Assurance Group. The results of the audit were transmitted to the Plant Superintendent.

In addition, a contractor performed a Preoperational Radioactive Waste Management Program audit at the station during January and February 1982. The licensee received the final report in March 1982. Radioactive Waste Program improvement recommendations and subsequent actions were transmitted to the Plant Superintendent.

Inspector discussions with licensee Quality Assurance representatives indicated a Radwaste Program audit is to be completed in September 1982.

The inspector's review of Radioactive Waste Program procedures indicated quality assurance hold points and sign-offs were included in radwaste packaging, handling, and shipping procedures.

The review of this area indicated the licensee remains to receive NRC acknowledgement of approval of the licensee's 10 CFR 71.51(d) Radwaste Quality Assurance Program. This matter remains open (50-387/82-27-02).

No violations were identified.

5. Radiation Protection Organization Staffing Level

The inspector reviewed the current Radiation Protection Organization staffing level to determine if the level is adequate to support fuel load and routine operations. The following table depicts the staffing level indicated by the Health Physics Supervisor that would be needed to support fuel load (Inspection Report 50-387/82-02) and the current level.

Radiation Protection Organization Staffing Level

| <u>Position</u> | <u>Level Needed For Fuel Load</u> | <u>Current Level</u> |
|----------------------------|---------------------------------------|--------------------------------------|
| RPM | 1 | 1 |
| Engineers (HP Specialists) | 4 | 4 |
| Foremen | 2 | 3 - 1 Foreman 2 Assistant Foremen |

| | | |
|----------------------|---|---------------------------------|
| Technicians | | |
| --ANSI Qualified | 8 | 10 - 4 licensee 6 contractor |
| --Non ANSI Qualified | 8 | 11 - 5 licensee 6 contractor |
| Technical Supervisor | 1 | 0 ¹ |
| Clerks | 5 | 4 ² |

¹ Position oversight responsibilities currently implemented by Corporate Radiological Group Supervisor.

² Radwaste clerk functions currently performed by contractor.

Based on the above information and discussions with licensee Radiation Protection representatives, the organization's current staffing level is adequate to support fuel load and normal operations.

Inspector discussions with licensee representatives indicated the Radiation Protection Organization staffing level would be augmented with additional qualified personnel to support outage activities.

6. Qualification, Training, and Retraining

6.1 Qualifications

The inspector reviewed the qualifications of selected members of the licensee's Radiation Protection Organization who were selected to fill responsible positions subsequent to the NRC Preoperational Radiation Protection and Radioactive Waste Management Program inspection conducted during March 1982 (Inspection Report No. 50-387/82-02). The review was performed to determine if the individuals currently filling the previously open positions met the minimum qualification requirements.

The review of the resume of the individual filling the position of Health Physics Specialist - Respiratory Protection and Internal Dosimetry indicated the individual did not possess the minimum experience requirements for the position as described in the job position description.

The inspector discussed the above with licensee Radiation Protection representatives. The licensee subsequently formally assigned the oversight responsibilities of the various program areas effected to qualified individuals. The licensee plans to maintain the oversight pending review and evaluation of the position experience requirements.

The inspector reviewed the resumes of all licensee and contractor Level II Radiation Protection Technicians with respect to ANSI-N18.1, 1971, "Selection and Training of Nuclear Power Plant Personnel." The technicians were found to possess the minimum experience required.

No violations were identified.

6.2 Radiation Protection Training/Retraining

The inspector reviewed the training provided Radiation Protection Technicians.

The review of training records and discussions with licensee representatives indicated all licensee and contractor Radiation Protection Technicians were trained in accordance with Procedure AD-00-730, Revision 1, "Health Physics Training Program," dated April 20, 1982. In addition, all Radiation Protection Technicians received Radiation Protection Procedure training and practical factors training in accordance with Procedure NTI-QA-3071, Revision 0, "Health Physics Technician Certification Program," dated June 30, 1982.

The inspector's discussions with licensee representatives, indicated that the licensee also identified to the technicians those systems and areas with the potential for high radiation dose rates.

The review of the training provided indicated the licensee adequately trained both contractor and permanent Radiation Protection Technicians.

The inspector found that the licensee did not have a program established to train the technicians in procedure changes (i.e., new procedures or procedure revisions).

The licensee subsequently established Health Physics Instruction HP-HI-006, Revision 0, "Health Physics Work Instruction," and issued a letter to all Radiation Protection supervisory personnel to ensure technicians were trained in procedure changes prior to performing the task described by the procedure.

Regarding retraining, the review of procedure NTI-QA-3071 indicated recertification was described. However, excluding the requirement for complete recertification every five years, no defined program between initial training and the five year recertification was described. The procedure required an evaluation by a Health Physics Foreman every two years of the work history of the Radiation Protection Technician and the completion of an HP Technician Comprehensive Performance/Oral Certification Examination sheet. The sheet listed topics to be discussed with the technician, however neither the extent nor depth of the technicians required knowledge/performance was specified. The inspector discussed the above with licensee representatives.

Licensee representatives stated that the retraining program was being reviewed and a defined retraining program would be in place by January 30, 1983. This matter remains open (50-387/82-27-03).

No violations were identified.

6.3 General Employee Training

The inspector discussed the General Employee Training Program with the licensee's Supervisor-Technical Training to determine the number of individuals remaining to receive the training. The discussions indicated a number of contractor personnel remained to receive the training. However, these individuals are unable to enter the Controlled Area due to security controls which require personnel to receive Radiation Protection Training prior to unescorted access being permitted.

The inspector selected nine individuals from various station departments (e.g., Maintenance, Administration, Security, Instrumentation and Control, etc.) and reviewed their training records to determine if the individuals had received General Employee Training. The review indicated the individuals were trained in accordance with station procedures.

The review of the General Employee Training lesson plans indicated the training provided conformed to 10 CFR 19.12.

Based on the above review, the licensee has provided General Employee Training to appropriate personnel and has established a program to prevent untrained individuals from entering the Controlled Area.

No violations were identified.

7. Equipment

7.1 Radiation Protection Instrumentation

The inspector reviewed the quantity and types of Radiation Protection instrumentation on-hand with respect to that described in Facility Safety Analysis Report (FSAR) Chapter 12, "Radiation Protection Program," and the licensee's letter dated March 27, 1981, to the NRC. The review was made to determine if the licensee had adequate instrumentation to support fuel load and facility start-up. The review included portable radiation survey instrumentation, fixed air sampling instruments (non-effluent monitoring), and laboratory instruments.

The inspector's review indicated that, based on a comparison of instruments on-hand and that described in the licensee's FSAR and letter, adequate instrumentation was on-hand to support initial criticality and normal plant operations.

7.2 Radiation Protection Instrument Calibration

The inspector's review of licensee calibration of portable radiation survey instrumentation indicated a contractor was providing calibration services to the licensee. The inspector found that the licensee had not established an oversight program for the contractor supplied services or audited the contractor to assure that the equipment was calibrated properly.

On July 30, 1982, the licensee performed an audit at the contractor's calibration facility. The audit used an inspection and review check list for instrument calibration and repair and the guidance contained in ANSI-N323, "Radiation Protection Instrument Test and Calibration."

The licensee's representative, who performed the audit, observed an instrument calibration, reviewed procedures and records, and verified calibration source traceability to NBS. The licensee determined that the calibrations being performed were acceptable. The licensee identified several contractor calibration program deficiencies dealing with instrument control, maintenance of records, and procedure approval.

The licensee has initiated a letter, to be sent to the contractor, outlining the audit findings, suggested resolutions and a timetable for completion (January 3, 1983) of the deficiencies. The licensee plans a follow-up audit before January 30, 1983.

The licensee established Nuclear Support Instruction (NSI) No. 2.06, Portable Radiation Protection Instrumentation, dated August 23, 1982. The procedure provides the methodology to review and evaluate the maintenance and calibration of portable radiation protection instrumentation used by the licensee.

The licensee's current procedures provide for source checking instruments prior to use.

No violations were identified.

7.3 Respiratory Protection Equipment

The inspector reviewed the quantity and types of Respiratory Protection equipment on-hand with that described in FSAR, Chapter 12, and the licensee's letter, dated April 16, 1981, to the NRC.

The review of the types and quantities of respirators on-hand, with respect to that described in the licensee's letter, indicated an adequate supply of respiratory protection equipment was on-hand to support normal operation of Unit 1.

8. Pre-Operational/Acceptance Testing

Documents Reviewed

Procedure AD-7.6, Revision 4, "Preoperational/Acceptance Test Procedure Control," dated February 18, 1982.

Procedure AD-7.7, Revision 3, "Preoperational/Acceptance Test Implementation," dated July 18, 1981.

Procedure AD-TY-194, Revision 1, "Test Review Board," dated April 8, 1982.

Facility Safety Analysis Report, Chapter 14, "Initial Tests Program."

8.1 Area, Process, and Radioactive Effluent Monitor Testing

Documents Reviewed

Procedure P79.2a, Revision 2, "Preoperational/Process and Effluent Monitoring and Sampling System - Main Steam Line Subsystem Test."

Procedure P79.2c, Revision 2, "Process and Effluent Radiological Monitoring and Sampling System - Air Intake and Ventilation Exhaust Monitoring Subsystem."

Procedure P79.1, Revision 2, "Area Radiation Monitoring System."

Procedure P79.2E, Revision 1, "Process and Effluent Radiological Monitoring and Sampling System - Liquid Radwaste Effluent."

Procedure P79.2b, Revision 1, "Process and Effluent Radiological Monitoring and Sampling System - Liquid Process Subsystem."

Procedure P79.2h, Revision 1, "Process and Effluent Radiological Monitoring and Sampling Systems - Reactor, Turbine, and SBGTS Vent Stack Radiation Monitoring Subsystem."

The inspector's review of the original tests indicated the licensee had performed adequate preoperational acceptance testing of the Area, Process, and Radioactive Effluent Monitoring Systems to demonstrate that the systems are ready for operation. Although the review of the tests indicated test exceptions were identified, test change notices were written and were processed in accordance with Procedure AD-707. The licensee reviewed the test exceptions and determined that they did not effect reactor fuel load and initial criticality. The status of the exceptions for procedure P79.2h will be reviewed during a subsequent inspection (50-387/82-27-06).

The licensee has established surveillance test and calibration procedures for Area, Process, and Radioactive Effluent Monitors. The licensee remains to calibrate the Reactor Building Closed Cooling Water monitor. This matter remains open (50-387/82-02-22).

The inspector verified that the Area, Process, and Effluent Monitoring systems in place were as described in the Final Safety Analysis Report.

No violations were identified.

8.2 Solid Radioactive Waste System Testing

Documents Reviewed

Procedure A68.1, Revision 1, "Solid Radioactive Waste System."

Procedure A68.2, Revision 1, "Solid Radioactive Waste System 068GP.2 - Spent Resin Tank Subsystem."

The review of original test procedure A68.1 and A68.2 indicated the licensee had performed adequate preoperational and acceptance testing of the Solid Radioactive Waste System to demonstrate that the systems are ready for operation. The procedure included testing of the trash compactor system.

The review of original procedure A68.1 indicated all test exceptions were cleared on August 4, 1982 and the review of original test procedure A68.2 indicated the test had been completed with no test exceptions outstanding.

The inspector verified that the major components of the solid waste system (described in FSAR Section 11.4) were installed.

No violations were identified.

8.3 Liquid Radioactive Waste System Testing

Documents Reviewed

Procedure P69.1, Revision 1, "Preoperational Liquid Radwaste Collection."

Procedure A69.2, Revision 1, "Preoperational Liquid Radwaste System."

The review of the original test procedures indicated the licensee had performed adequate preoperational and acceptance testing of the Liquid Radwaste Collection and Processing System to demonstrate that the system was ready for operation. The licensee remains to clear one test exception for procedure A69.2. The test exception was reviewed by the licensee and determined not to affect fuel load or

initial criticality. The status of this test exception will be reviewed during a subsequent inspection (50-387/82-27-05).

The inspector verified that the major components of the Liquid Waste System (described in FSAR Section 11.2) were installed.

No violations were identified.

8.4 Gaseous Radioactive Waste System Testing

Documents Reviewed

Procedure A72.1, Revision 1, "Gaseous Radwaste System - Off Gas Recombiner System."

Procedure ST37.0, Revision 1, "Gaseous Radwaste System and Containment Inerting."

Procedure ST37.1, Revision 0, "Gaseous Radwaste Data Collection."

The review indicated the licensee performed operational testing of the Off Gas Recombiner to demonstrate the ability of the system to operate properly. In addition, the licensee has established test procedures, to be performed during start-up, to demonstrate that the Gaseous Radwaste System operates within Technical Specification and design limits.

The inspector verified that the major components of the Gaseous Radwaste System (described in FSAR Section 11.3) were installed.

No violations were identified.

8.5 Ventilation System Testing

Documents Reviewed

Procedure P70.1, Revision 3, "Preoperational/Standby Gas Treatment System."

Procedure SE-00-006, "Standby Gas Treatment System Filter Testing."

Procedure SE-00-007, "Standby Gas Treatment System Charcoal Test Data."

Procedure P30.1, Revision 1, "Preoperational/Control Structure H and V System."

Procedure SE-00-009, "CREOASS Filter Testing."

Procedure SE-00-010, "CREOASS Charcoal Analysis."

The inspector's review indicated the licensee had performed adequate preoperational testing of the Standby Gas Treatment System (SBGTS) and the Control Room Emergency Outside Air Supply System (CREOASS) to demonstrate proper operation of the systems.

The licensee's Technical Specifications require that the charcoal and high efficiency particulate filter trains of the Control Room Emergency and Standby Gas Treatment Systems be tested and meet certain requirements specified therein.

On August 18, 1982, the inspector reviewed and discussed the filter and charcoal test data for the above systems with cognizant licensee representatives. The inspector was unable to determine if all test data met the Technical Specification requirements. Portions of the charcoal test data for the Control Room Emergency Outside Gas Supply System had apparently been lost and the licensee had apparently not compared all test data for the Standby Gas Treatment System and Control Room Emergency Outside Air Supply System to Technical Specification requirements and could not assure the inspector that all test results met the requirements. Licensee representatives were notified that this matter is unresolved (50-387/82-27-04).

9. External and Internal Dosimetry Programs

9.1 External Dosimetry Program Documents Reviewed

Procedure AD-00-735, Revision 1, "External Dosimetry Program," dated July 15, 1982.

Procedure HP-TP-214, Revision 0, "Operation and Calibration of the Harshaw Model 2000C TLD System," dated July 6, 1982.

Procedure HP-TP-215, Revision 1, "Issuance, Use and Evaluation of Personnel Dosimetry," dated August 12, 1982.

Procedure HP-TP-217, Revision 1, "Exposure Records," dated May 17, 1982.

Nuclear Support Instruction NSI-2.5, Revision 0, "Dosimetry Performance Verification," dated July 9, 1982.

The review of this area indicated the licensee has established and implemented adequate procedures for issuance and use of vendor supplied personnel monitoring equipment and evaluation of personnel radiation exposures. The licensee also established and implemented procedures for maintenance of exposure records.

The inspector determined that the licensee has established a program for verifying the adequacy of vendor-supplied dosimetry services which are currently used at Susquehanna Steam Electric Station.

However, the inspector found that the licensee had not evaluated the vendor-supplied personnel monitoring equipment to assure appropriate equipment is being supplied to personnel in accordance with 10 CFR 20.202, "Personnel Monitoring."

On August 17, 1982, the licensee performed an audit of the vendor supplying dosimetry services to Susquehanna Steam Electric Station (SSES). The audit included review of procedures and records, processing techniques, and data analysis techniques. The licensee found that the vendor's procedures, processing techniques, and Quality Assurance Program were acceptable.

The licensee reviewed the dosimeter design and data analysis methods to determine if the personnel monitoring devices supplied could measure the radiation environment expected at SSES.

The licensee's review of the vendor's neutron monitoring device, supplied for use at SSES, indicated the device met industry standards for measurement of the dose from moderated Cf-252 neutrons. The neutron energy spectrum from this moderated source is similar to the spectra encountered in typical nuclear power plants. The response of the device, however, was found to change when different energy spectra are encountered. As a result, the licensee plans to develop specific calibration factors for the device during start-up. The development will be performed with the assistance of a university and national laboratory. In the interim, the licensee plans to use conservative calibration factors for the neutron monitoring device and use physical measurements to verify the factors. The licensee's actions will be consistent with Regulatory Guide 8.14, Revision 1, "Personnel Neutron Dosimeters."

The results of the licensee's neutron calibration factor for dosimetry devices will be reviewed during a subsequent inspection (50-387/82-27-07).

The licensee reviewed the ability of the monitoring device to measure doses from exposure to expected gamma radiation at SSES and concluded that the dosimeter and data analysis methods are suitable for personnel dose measurements.

The inspector's review of the ability of the vendor supplied personnel monitoring device to measure personnel exposure resulting from noble gas atmospheres indicated the licensee remains to confirm the ability of the dosimeter to respond to low energy beta radiation produced by the noble gases.

In the interim, the licensee will control exposure to noble gases by use of air sampling and calculation of airborne exposures in accordance with 10 CFR 20.103, "Exposure of Individuals to Concentrations of Radioactive Materials in Air in Restricted Areas." Appropriate procedures have been established for this purpose.

No violations were identified.

9.2 Internal Dosimetry Program

Documents Reviewed

Procedure AD-00-740, Revision 1, "Internal Dosimetry Program," dated July 20, 1982.

Procedure HP-TP-218, Revision 0, "Operation of the RMC, Whole Body Counting System," dated July 16, 1982.

Procedure HP-TP-200, Revision 0, "Indirect Bioassay," dated July 13, 1982.

Nuclear Support Instruction NSI-2.1, Revision 0, "Evaluation of SSES Internal Dosimetry Program," dated July 13, 1982.

The review of this area indicated the licensee has established and implemented adequate procedures for the performance of direct and indirect bioassays, the evaluation of bioassay data, the operation and calibration of the whole body counter, and the maintenance of exposure records.

The inspector found that the licensee had not evaluated the thyroid calibration of the whole body counter.

The licensee subsequently evaluated the calibration by use of two phantoms in which mock I-131 and other radioactive sources were inserted. The licensee determined that the current thyroid calibration efficiency was conservative and may result in an over-estimation of intake by about 10%. The licensee has elected to retain the initial calibration efficiency.

No violations were identified.

10. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. One unresolved item is discussed in Paragraph 8.5.

11. Exit Interview

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection. The inspector summarized the scope and findings of the inspection.