

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-387/90-16  
50-388/90-16

Docket No. 50-387  
50-388

License No. NPF-14  
NPF-22

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

Facility Name: Susquehanna Steam Electric Station, Units 1 & 2

Inspection At: Berwick, Pennsylvania

Inspection Conducted: August 13-17, 1990

Inspector: Alexander Bares for 9/6/90  
J. Furia, Radiation Specialist, Effluents  
Radiation Protection Section (ERPS), Facilities  
Radiological Safety and Safeguards Branch (FRSSB),  
Division of Radiation Safety and Safeguards (DRSS)  
date

Approved by: Alexander Bares for 9/6/90  
R. Bares, Chief, ERPS, FRSSB, DRSS  
date

Inspection Summary: Inspection on August 13-17, 1990 (Combined Inspection  
Report Nos. 50-387/90-16; 50-388/90-16)

Areas Inspected: Routine, unannounced inspection of the transportation and solid radioactive waste programs including: management controls; audits; quality assurance; and implementation of the above programs.

Results: Within the areas inspected, one violation in radwaste (scaling factors) was identified (See Section 3.1).

## DETAILS

### 1. Personnel Contacted

#### 1.1 Licensee Personnel

- G. Appel, Chemist
- J. Fritzen, Radiological Operations Supervisor
- \* D. Hagan, Radiation Protection Supervisor
- \* F. Jaeger, Health Physics Radwaste Foreman
- J. Lex, Nuclear General Training Supervisor
- \* R. Prego, Quality Assurance Supervisor - Operations
- D. Rarick, Quality Control Inspector
- H. Riley, Health Physics Supervisor
- \* M. Sawicki, Radwaste Operations Engineer
- J. Schmidt, Nuclear Quality Assurance Analyst
- \* H. Stanley, Superintendent of Plant
- G. Walker, Health Physics Technician
- R. Wehry, Compliance Engineer
- V. Zukauskas, Assistant Health Physics Radwaste Foreman

#### 1.2 Commonwealth of Pennsylvania

- \* D. Ney, Department of Environmental Resources, Bureau of Radiation Protection

#### 1.3 NRC Personnel

- \* S. Barber, Senior Resident Inspector
- \* J. Stair, Resident Inspector

\* Denotes those present at the exit interview on August 17, 1990.

### 2. Purpose

The purpose of this routine inspection was to review the licensee's program for the preparation, packaging and transportation of radioactive materials.

### 3. Transportation and Radwaste

The licensee's program for the packaging and transportation of radioactive materials, including solid radwaste, was conducted jointly by the Operations and Health Physics Departments. Spent resins and filters were processed and placed in liners by the Operations Department, with shipping casks procured and shipping documentation prepared by the Health Physics Department. Dry Active Waste (DAW) was collected and sorted by contractor personnel under the direction of the Health Physics Department.

### 3.1 Radwaste

The licensee produced waste streams of solid radwaste, spent resins, spent filters and DAW. Resins were typically dewatered in High Integrity Containers (HICs) utilizing a dewatering system supplied and operated by Scientific Ecology Group (SEG). SEG also provided filtration services which allowed the licensee to bypass the existing radwaste evaporator systems. DAW was shipped for segregation and disposal to SEG. In addition, the licensee had an extensive system for the analysis and sorting of "clean" trash removed from the radiation controlled areas, utilizing a Hydro Nuclear sorting, shredding and monitoring system, to ensure that no radioactive materials were improperly released from the site.

As part of this inspection, the following procedures were reviewed.

AD-QA-100, Rev 7, "Station Organization and Responsibilities"

AD-QA-311, Rev 9, "Solid Radioactive Waste Process Control Program"

CH-TP-055, Rev 1, "Solid Radwaste 10 CFR 61 Correlation Factor Determination"

HP-TP-800, Rev 14, "Shipment of Radioactive Waste Material"

HP-TP-801, Rev 9, "General Shipment of Radioactive Material"

HP-TP-804, Rev 10, "Shipment of Contaminated Laundry Via Exclusive Use Vehicle"

HP-TP-807, Rev 5, "Specific Site Criteria for Radwaste Shipment to the Chem-Nuclear Systems, Inc. Barnwell, South Carolina Disposal Site"

HP-TP-851, Rev 10, "Radwaste Curie Calculations"

HP-TP-852, Rev 1, "Use of the HN-215H Shipping Package"

HP-TP-860, Rev 5, "Transfer of Radioactive Material to the Low Level Radwaste Holding Facility (LLRWHF)"

HP-TP-862, Rev 2, "LLRWHF Container Inspection"

HP-TP-880, Rev 0, "Operation and Use of the Wastetrak Code"

OP-068-121, Rev 3, "Transfer and Dewatering Bead Resin In Radlock Containers to Less Than 1% Free Water"

All procedures were found to be complete and to accurately reflect existing plant processes, with the exception of AD-QA-100, which has not been updated to reflect major changes to the Health Physics Department organizational structural.

The licensee submitted plant samples to SAIC, Inc. for analysis of isotopic content every 9 to 12 months. Results of these analyses were then entered into the Wastetrak computer data base for development of waste stream specific scaling factors. Beginning in 1984, the licensee began dewatering some spent resin streams instead of the previously utilized solidification process. However, the licensee continued to sample the wet waste stream and base their radiochemical analyses on a wet waste stream, resulting in under reporting the activities of most isotopes in these radwaste shipments. In addition, the licensee in February 1989 began utilizing a new resin in the Reactor Water Clean-Up System. A liner containing a mixture of this new resin and the previously utilized resin was shipped without first analyzing and developing a scaling factor for this waste stream. This is an apparent violation of 10 CFR 61.55(a)(8) which permits the utilization of scaling factors if they can be directly correlated to actual plant conditions (50-387/90-16-01; 50-388/90-16-01). Although the licensee did identify this violation in May, 1990, there was available guidance from both the NRC and the industry on the appropriate development of scaling factors which could have prevented the licensee from improperly quantifying the wastes.

In June, 1990, the licensee discovered that anaerobic microbial organisms were in the liquid radwaste spent resin system, causing the generation of methane gas in dewatered HICs. At the time of this inspection, the licensee had suspended shipments of this type of spent resin, and were investigating various methods for treating this waste stream to prevent gas generation. This item remains unresolved pending licensee actions (50-387/90-16-02; 50-388/90-16-02).

### 3.2 Transportation

Shipment of radioactive materials was the responsibility of the Health Physics Department. The Radwaste Section prepared all shipping manifests through the utilization of the Impell Corporation's Wastetrak computer code.

As part of this inspection, the following 21 waste shipment records were reviewed.

<u>Shipment</u>	<u>Activity (Ci)</u>	<u>Volume (cu ft)</u>	<u>Type</u>
90-040	7.13E-01	195.2	Resin
90-043	2.76E+01	114.9	Filters
90-044	2.34E-05	0.5	Samples

<u>Shipment</u>	<u>Activity (Ci)</u>	<u>Volume (cu ft)</u>	<u>Type</u>
90-046	2.42E-01	195.4	Resin
90-048	2.13E-04	132.0	RHR Motor
90-051	4.18E-02	720.0	Laundry
90-054	3.87E-01	177.3	Resin
90-055	1.35E-05	0.5	Samples
90-056	1.35E-05	0.5	Samples
90-057	1.18E+00	1280.0	DAW
90-059	2.71E-01	195.2	Resin
90-060	1.04E-03	0.5	Samples
90-061	1.02E-01	720.0	Laundry
90-062	6.01E-02	224.0	Equipment
90-063	4.34E-04	0.5	Samples
90-064	1.98E+00	195.2	Resin
90-065	2.91E-01	195.2	Resin
90-066	1.60E-05	0.5	Samples
90-067	1.60E-05	0.5	Samples
90-068	3.06E+00	195.2	Resin
90-071	3.62E-01	2560.0	DAW

All shipments were determined to meet the requirements of 10 CFR and 49 CFR.

### 3.3 Interim Radwaste Storage

As part of this inspection, the licensee's plans for the storage of radioactive wastes on site were examined. Currently the licensee has access to the three low-level waste disposal sites until January, 1993. The licensee is located within the Appalachian Compact, which is not scheduled to have a disposal site open until 1996. In preparation for the loss of offsite disposal, the licensee had constructed a Low Level Radwaste Holding Facility (LLRWHF), designed to hold up to five years of plant generated radwaste. Based upon current generation rates, the licensee has more than sufficient storage capacity in the LLRWHF. The licensee has by procedure HP-TP-860 prohibited the storage of dewatered wastes in the LLRWHF. Dewatering of spent resins is currently utilized extensively by the licensee. The issue of dewatered spent resin storage was raised with the licensee during the previous inspection of this area in July, 1989. This item remains unresolved awaiting licensee analysis and potential changes to the safety analysis report and procedures associated with the LLRWHF (50-387/90-16-03; 50-388/90-16-03).

### 3.4 Quality Assurance

The licensee's program for the assurance of quality in the radwaste area involved four sections of the Nuclear Quality Assurance (NQA) Department. Staff Auditing was responsible for conducting periodic audits of the in plant radwaste program and of



principle vendors supplying services and materials in support of the radwaste program. Procurement Quality was tasked with ensuring that materials involved in the radwaste program arriving at the plant met the terms and conditions of the various contracts in place. Quality Surveillance conducted periodic surveillances of various radwaste evolutions. Quality Control inspected all shipments of radioactive material prior to leaving the plant.

As part of this inspection, the most recent audits of the plant radwaste program and of the principle vendors for this program listed below were reviewed.

Audit 89-027, December 21, 1989, Subject: Solid Radioactive Waste Process Control Program

Audit 88-032, May 5, 1988, Subject: Westinghouse - Hittman Nuclear, Inc.

Audit 88-087, December 28, 1988, Subject: Scientific Ecology Group, Inc.

Audit 88-022, May 18, 1988, Subject: Chem-Nuclear Systems, Inc.

There were no findings as a result of these audits. The scope and technical depth of the audits was determined to be excellent.

Two surveillances conducted in the radwaste area during 1990 were examined as part of this inspection. Quality Assurance Surveillance Report (QASR) 90-001 was a general review of radwaste operations while QASR 90-025 included a surveillance of the processing of contaminated waste oil by a vendor. The technical depth of these surveillances was determined to be very good.

Overall, the program for the assurance of quality in the radwaste area was determined to be a notable strength.

### 3.5 Training

The licensee's training program for radwaste personnel continues to be one of excellent training quality, and meets or exceeds the requirements of NRC IE Bulletin 79-19. At the time of this inspection, the licensee was revising procedure NTP-QA-42.3, "Radwaste Worker Training", to expand and clarify the listing of those personnel required to take at least one of the training modules or approved off-site training courses offered by the Training Department. With this clarification, the licensee has improved the assurance that all personnel involved in the radwaste program receive appropriate training.



4. Exit Interview

The inspector met with the licensee representatives denoted in Section 1 at the conclusion of the inspection on August 17, 1990. The inspector summarized the purpose, scope and findings of the inspection.