U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-334/88-09
50-412/88-05

Docket No. 50-334
50-412

License No. DPR-66
NPF-64

Priority -

Category C

Licensee: Duquesne Light Company
P.O. Box 4
Shippingport, Pennsylvania 15077

Facility Name: Beaver Valley Power Station

Inspection At: Shippingport, Pennsylvania

Inspection Conducted: February 22-26, 1988

Inspectors: Barry S. Davidson
Barry S. Davidson, Radiation Specialist — 3/31/88 date

Approved by: Walter J. Pasciak
Walter J. Pasciak, Chief, Effluent Radiation Protection Section, FRSSB, DRSS — 4/4/88 date

Inspection Summary: Inspection on February 22-26, 1988
(Combined Inspection Report Nos. 50-334/88-09;50-412/88-05)

Areas Inspected: Routine unannounced inspection of the licensee's solid radwaste and transportation program including; management control, shipments of radioactive materials, training, procedures, package selection and quality control.

Results: Two violations of NRC requirements were identified, failure to account for the total activity in one shipment and failure to include the radioactivity in four waste drums on shipping papers.

DETAILS

1.0 Persons Contacted

During the course of this inspection, the following personnel were contacted or interviewed.

1.1 Licensee Personnel

* D. Girdwood, Director Rad Operations
* F. Lipchick, Sr. Licensing Supervisor
* B. Sepelak, Licensing Engineer
* J. Sieber, Vice President, Nuclear
* D. Szucs, Sr. Engineer, Licensing
* J. Belfiore, Sr. QA Specialist
* D. Roman, Supv. QA Maintenance
* D. Hunkele, Director QA-Operations
* J. Crockett, Sr. Manager - Nuclear Operations
* J. Kosmal, Manager - Radiological Control
* M. Pergar, QC Supervisor
* W. Canan, SHPS - Radcon
* C. Hill, ISEG
* J. Vassello, Director - Licensing
* W. Brady, HP Supervisor
* A. Castagnacci, SHPS
* D. Blair, Director, Rad Health Services

B. Haney, Instructor
M. Shaw, Instructor
R. Snowden, QC
R. Caione, QC

1.2 NRC

* W. Pasciak, Chief, ERPS
* D. Limroth, Project Engineer
* S. Pindale, RI

* Denotes those individuals who attended the exit interview on February 26, 1988.

2.0 Actions on Previously Identified Items

2.1 (Closed) Inspector Follow-Up Item (50-334/84-31-01) Assign Responsibility for Radwaste Processing. The Radwaste Coordinator is responsible for routine processing of radwaste. Additional details, section 3. This item is closed.

2.2 (Closed) Inspector Follow-Up Item (50-334/86-05-05) Licensee did not have procedures for QA/QC receipt inspection of shipping casks. The licensee has implemented cask receipt inspection surveillances. This item is closed.

2.3 (Closed) Unresolved Item (50-334/87-15-03)
Review circumstances regarding radwaste shipment to an outside contractor for further processing. This item has been upgraded to a potential violation of NRC requirements. Details, section 5. This item is closed.

3.0 Management Controls

3.1 Organization

The organizational structure of the licensee for management control of solid radwaste processing, preparation, packaging and shipping activities and oversight of contractor supplied analyses and shipping containers/casks were reviewed. The Beaver Valley Power Station Operations Support group has responsibilities for resin transfer/dewatering, evaporator bottoms solidification, and mechanical filter radwaste processing operations. Processing and packaging of dry active waste (DAW) is performed by the Radiological Controls (Rad Con) staff who report to the Manager, Rad Con.

The operations staff report to the Nuclear Operating Supervisor, Operations Support, who reports to the Plant Manager. Both Managers report to the Senior Manager, Nuclear Operations who reports to the Vice President, Nuclear.

An in-house computer code is used to generate classification under 10 CFR 61.55, LSA, Type "A" and "B" determinations under 10 CFR 71 and reportable quantity determinations under 49 CFR 171.8.

The Site Quality Control group performs package receipt inspections and inspections for each radwaste shipment in a surveillance program. The Quality Assurance group performance group performs comprehensive audits of the radwaste program. The inspector noted the depth of knowledge of radwaste generator and transportation requirements demonstrated by the cognizant QA auditor.

Site Administrative Procedure (SAP), Chapter 43, "Radioactive Materials Transportation Section Administration" is an approved but unissued procedure which addresses all the requirements of the Transportation Program and details the functional responsibilities of individuals and departments. A new job description of Transportation Supervisor was created for the assignment of key responsibility for all aspects of the Transportation Program. As there is no individual assigned to this position, the procedure was not issued. The inspector stated that this item would be reviewed in a subsequent inspection (50-334/88-09-01; 50-412/88-05-01).

3.2 Procedures

The inspector reviewed selected procedures used in the preparation, packaging, classification and shipping of the thirteen shipments,

relative to criteria in 10 CFR 20.311, 10 CFR 71.5, 10 CFR 71.12, Technical Specification 6.8 and 10 CFR 50, Appendix B, Criterion V, including:

- Radcon Procedure 3.C, "Radioactive Shipment Record"
- Radcon Procedure 3.29, "Inspection of Radioactive Material Packaging Prior to Shipment"
- Radcon Procedure 3.11, "Shipping Radioactive Material for Burial - Drums"
- Radcon Procedure 3.12, "Shipping Solid Radioactive Material for Burial - Liners"
- Radcon Procedure 3.32, "Radioactive Waste Shipment Manifest Requirements"

The first two procedures were recently revised to require retention of all records including handwritten records and double verification sign-offs as to the numbers of packages in a waste shipment, in response to the shipment on September 8, 1987 when four more packages were present in the shipment than accounted for in the manifest for Shipment Number 0951.

4.0 Quality Assurance/Quality Control

The provisions of 10 CFR 71, Subpart H require the establishment of a QA program for the packaging and transportation of radioactive materials. A Commission approved QA program which satisfies the applicable criteria of 10 CFR 50, Appendix B and which is established, maintained, and executed with regard to transport packages is acceptable to meet the requirements of 10 CFR 71, Subpart H. The licensee elected to use their currently established 10 CFR 50, Appendix B, QA program to the packaging and shipment of radioactive materials.

Specific quality control (QC) requirements to assure compliance with 10 CFR 61.55 and 61.56 are mandated by 10 CFR 20.311 in addition to the general QC requirements required by 10 CFR 50, Appendix B. The implementation of QA/QC activities for the preparation, packaging and transportation of the thirteen shipments was reviewed.

4.1 Radwaste Generator QC Program

The licensee's performance on providing a QC program under 10 CFR 20.311(d)(3) was evaluated by review of dewatering and solidification procedures and records related to the shipments of solidified evaporator bottoms, filter media, dewatered resins and dry active waste (DAW). Independent determinations of waste classification under 10 CFR 61.55 for one shipment of each type was performed.

Within the scope of this review, no violations were noted. The four shipments for which classification was reviewed appeared to be adequately classified and meeting waste form requirements. Specific

holdpoints related to dewatering were provided and implemented. The cement feed rate requirement in the process control program was calibrated prior to use.

4.2 Audits

Under the licensee's QA program, an audit of radwaste preparation, packaging and shipping activities, number BV-1-87-08 was performed on February 23-27, 1987 and included a shipment surveillance, number RDC-0187 in March 1987. The audit and audit check list were reviewed and found adequate. In addition, the inspector interviewed the lead auditor and discussed the audit and determined the knowledge of the auditor to be commensurate with the level needed to adequately review the transportation area.

5.0 Implementation

From October 1986 through February 1988 the licensee made thirteen (13) shipments of radioactive waste. These shipments were reviewed against criteria contained in:

- 10 CFR 20.311, 61.55 and 61.56;
- 10 CFR 71;
- 49 CFR 170-189; and
- Station Technical Specifications and Procedures.

5.1 Waste Generator Requirements

The following waste generator requirements were reviewed and discussed with the licensee:

- Waste Manifests under 10 CFR 20.311(d)(4) and 20.311(b) and (c);
- Waste Classification under 10 CFR 20.311(d)(1) and 10 CFR 61.55;
- Waste Form and Characterization under 10 CFR 20.311(d)(1) and 10 CFR 61.56;
- Waste Shipment Labeling under 10 CFR 20.311(d)(2) and 10 CFR 61.55;
- Tracking of Waste Shipments under 10 CFR 20.311(d), (e), (f) and (h); and
- Disposal site license conditions.

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

- 10 CFR 20.311(b) requires, in part, that the manifest accompanying radioactive waste shipments indicate as completely as practicable the radionuclide identity and quantity and the total radioactivity in the shipment.

- 10 CFR 20.311(c) requires, in part, certification by the waste generator that the transported materials are properly described.

Contrary to these requirements, the manifest accompanying licensee shipment number 0951 did not identify the existence and quantity of radioactive wastes contained in four of the eighty-four drums of the shipment. As a result, the total activity was in error. Further, the certification which accompanied the manifest was also in error. Failure to account for the activity in the four drums and the total activity in the shipment constitute a violation of 10 CFR 20.311(b). Certification that shipment number 0951 was properly described when it was not constitutes a violation of 10 CFR 20.311(c) (50-334/88-09-02).

5.2 Procurement and Selection of Package

The licensee's selection of packages for the thirteen shipments was reviewed relative to requirements in 49 CFR 173 and 10 CFR 71.12, interviews with BVPS Rad Con and QC personnel, and review of documents, procedures, and shipping records.

Within the scope of this review, no violations were found.

5.3 Preparation of Packages for Shipment

The licensee's preparation of packages for shipment, pursuant to the requirements of 49 CFR 172 and 173 and 10 CFR 71.87 was reviewed. The licensee's performance relative to these criteria was determined by interviews with the BVPS Rad Con staff and review of procedures, shipping records and other documents.

Within the scope of this review, no violations were noted.

5.4 Delivery of Packages to Carriers

The licensee's delivery of package to carriers was reviewed against criteria in:

- 10 CFR 71.5(a)(1)(iii), "Placarding;"
- 10 CFR 71.5(a)(1)(vi), "Shipping Manifests;"
- 10 CFR 71.5(a)(1)(iv), "Public Highway-49CFR177;" and
- Technical Specification and procedural requirements.

The licensee's performance relative to these was evaluated by review of shipping records and discussions with licensee personnel.

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

- 10 CFR 71.5(a)(1)(vi) requires preparation of shipping papers in accordance with 49 CFR 172, Subpart C. 49 CFR 172.203(d)(iii) requires the activity of each package in the shipment be included in the shipping papers.

Contrary to these requirements, the licensee did not include the activities contained in four of the eighty-four packages in the shipping papers associated with shipment number 0951. Failure to include the activities of the four packages constitutes a violation of 10 CFR 71.5(a)(1)(vi) (50-334/88-09-03).

5.5 Shipment Number 0951, September 8, 1987

Shipment number 0951 was sent from the licensee's facility to Chem-Nuclear's super compaction facility in Cohanan, Illinois on September 8, 1987. On October 13, 1987, Chem-Nuclear contacted the licensee and reported (4) more drums of waste than were identified on the shipping papers. The manifest reported 80 drums and Chem-Nuclear reported that they processed 84 drums. A computer check of the serial numbers for these drums indicated that they should have been in storage for a future shipment.

As a result of this incident, the licensee notified the NRC Resident Inspector, conducted a meeting with cognizant personnel and evaluated consequences and initiated corrective actions. The radiological consequence of this omission of four drums on the manifest was determined to be minimal. The total activity was 179 microcuries for the four drums. The total activity of the shipment was approximately 143 millicuries. Maximum radiation levels for the four drums was 0.08 mR/hr compared to several described drums exhibiting radiation levels greater than 100 mR/hr contact and 5 to 7 mR/hr at one meter.

The activity present in the four drums and the radiation levels which they exhibited were small fractions of what was present in the remainder of the shipment. Consequently, the carrier or recipient would have been expected to exercise adequate controls on the shipment; no greater potential for personnel exposure or contamination, or improper transfer of materials was expected; and the licensee made timely notification of the incident and its potential violation of NRC requirements.

6.0 Respiratory Protection Program

Review of problems with the Chemox breathing apparatus for supplying oxygen during entry into the Unit 1 and Unit 2 containments during subatmospheric conditions was conducted. Problems with these respirators were identified by the licensee in containment debriefing records. According to one licensee representative, about 5 entries of several people each are made on an average into the containments per month. The problems noted below represent a small fraction of the times these respirators are used for containment entries. Based on containment entry debriefing records, the following problems were noted during entries since May 1987:

Date of Entry	Remarks
02/20/88	4 Chemox units failed 5 canisters did not work.
02/14/88	Some canisters lasted only 10 minutes.
11/10/87	3 units did not have an inspection sticker. 1 unit did not function.
11/08/87	1 unit did not function. A crooked plunger was identified.
10/21/87	Unit worked for 30 minutes. After 30 minutes the user could not get the respirator to continue working properly. The worker ultimately experienced heat exhaustion and was transported to a hospital.
10/02/87	Lungs collapsed after the start of work. Worker tried to inflate with 3 spare canisters; lungs reinflated and soon collapsed again in each case. Work had to be terminated.
08/28/87	Right lung did not inflate properly.

Date of Entry	Remarks
08/14/87	Lungs of respirator collapsed after about 20 minutes of use. Could not get them reinflated. An oxygen bottle was used for exit. Another worker experienced respirator problems as a lung collapsed. He was able to get it restarted.
05/30/87	5 canisters did not function properly. 1 respirator malfunctioned.
05/20/87	2 respirators failed due to bad canisters. Entry was terminated for one person.
05/19/87	Problems encountered with 2 respirators.

Problems include defective respirators in a few cases, but in most cases, licensee's studies indicate problems were due to improper insertion of the canister into the respirator. Information provided to the licensee by the vendor indicates that secure insertion of the canister is required for proper operation of the apparatus. According to licensee representatives, improper insertion of the canister is largely due to inexperienced personnel and difficulty of inserting the canister while wearing protective clothing, in particular, under extreme environmental conditions present in the containment.

Licensee containment entry sheets require that spare canisters are brought into the containment. In one entry it was identified that the entry sheet had not been checked in this area, in another entry no extra canisters were taken. Additional attention to following entry procedures in this area is warranted.

Licensee containment exit sheets indicate when problems are encountered with respiratory protection devices. Typically these problems are reviewed by the respiratory protection specialist. Frequently the review is limited to inspection of the respirators and if no problem is found the follow-up is terminated. The licensee representatives postulated that the majority of these problems were due to lack of experience in inserting the canister under containment conditions. Licensee personnel said that consideration would be given to more extensive follow-up of problems, particularly in providing additional instructions regarding respirator use and canister insertion to individuals that experience problems.

The licensee is in the process of purchasing Biopack-240 respirators. These units will alleviate the problems encountered with canister insertion. The Chemox units will be retained only for fire fighting purposes, according to licensee representatives.

This area will be reviewed during a future inspection (50-334/88-09-04; 50-412/88-05-02).

7.0 Low Level Waste Storage Facility

The inspector toured and reviewed the licensee's low level waste storage facility. The design and construction of this facility was reviewed against NRC Generic Letter 81-38, "Storage of Low-Level Radioactive Wastes at Power Reactor Sites" November 10, 1981, Regulatory Guide 1.143 and performed under DCP568. A safety evaluation under 10 CFR 50.59 was performed in 1985 and submitted in 1986 to the NRC.

The inspector noted that the licensee does not store combustibles in the facility and that any liquids collected in the storage area would be collected in a sump. The licensee stated that the sump water would be sampled prior to release.

Within the scope of this review, no concerns were identified.

8.0 Exit Interview

The inspector met with licensee representatives (noted in Section 1.0) at the conclusion of the inspection on February 26, 1988. The inspector summarized the scope of the inspection and findings as described in the inspection report.

At no time during this inspection was written material provided to the licensee by the inspector.