

U. S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 89-23

Docket No. 50-353

License No. CPPR-107 Priority - Category B

Licensee: Philadelphia Electric Company  
P.O. Box 7520  
Philadelphia, PA 19101

Facility Name: Limerick Unit 2

Inspection At: Sanatoga, Pennsylvania

Inspection Conducted: June 5-7, 1989

Inspectors: M.A. Austin 6/15/89  
M.A. Austin, Radiation Specialist date  
J.T. Furia 6/15/89  
J.T. Furia, Radiation Specialist date  
Jason C. Jang 6/15/89  
J.C. Jang, Sr. Radiation Specialist date  
Approved by: Robert J. Bores 6/15/89  
R.J. Bores, Chief, Effluents Radiation date  
Protection Section, FRSSB, DRSS

Inspection Summary: Inspection on June 5-7, 1989 (Inspection Report Number 50-353/89-23)

Areas Inspected: Routine, unannounced preoperational inspection of the licensee's liquid and gaseous radioactive effluent control programs, and solid radioactive waste program including installations, testings, and calibrations of the effluent control systems, and implementing procedures for the above programs.

Inspection Results: Within the areas evaluated, the licensee has completed preoperational testing of equipment and has developed procedures for the operation of Unit 2. Within the scope of the review in the above areas, the licensee has established the programs required for the fuel load.

## DETAILS

### 1.0 Individuals Contacted

J. Barbour, Startup Engineer (Bechtel)  
R. Barclay, Health Physicist, Effluents  
M. Boyda, System Engineer, Chemistry  
\*M. Christinziano, Health Physics Technical Support Supervisor  
J. Diaz, Test Engineer  
\*R. Dubiel, Superintendent-Plant Services  
K. Gordon, Supervisory Chemist  
B. Graber, Health Physicist, Effluents  
R. Hall, Startup Group Supervisor (Bechtel)  
C. Hetrick, Support Supervisory Chemist  
\*T. Jackson, Senior Chemist  
P. Jacobson, Startup Engineer, General Electric Company  
W. Maguire, Physicist, Radwaste Services  
T. Moore, Systems Engineer  
C. Mudrick, Test Engineer  
\*G. Murphy, Senior Health Physicist  
\*D. Neff, Licensing Engineer  
L. Wells, Supervisory Physicist, Radwaste Services

\* Denotes those present at the exit meeting on June 7, 1989.

### 2.0 Purpose

The purpose of this preoperational inspection was to determine if the licensee's radioactive effluent control programs were consistent with regulatory requirements and commitments made in the Final Safety Analysis Report (FSAR) with respect to the following areas.

- o Solid Radioactive Waste Program
- o Liquid Radioactive Effluent Control Program
- o Gaseous Radioactive Effluent Control Program

### 3.0 Status of Previously Identified Item

(Closed) Inspector Followup Item (352/88-05-01; 353/88-03-01): TLD Program conducted by a contractor should be audited by the Quality Assurance (QA) Group annually. The licensee updated the Annual QA Audit Checklist to include the contractor's TLD program. The inspector reviewed the QA Audit Report (Audit Number D-228, conducted on September 27-28, 1988) and noted that the contractor's TLD Program was audited thoroughly. This item is closed.

### 4.0 Solid Radwaste

Solid radwaste systems at Unit 2 are common with those of the operating

Unit 1 facility. Equipment in place was designed for a two-reactor site, and thus no additional mechanical systems were needed or planned by the licensee. The radwaste program was previously inspected in November, 1988 (Inspection Report 50-352/88-23) with no violations noted.

#### 4.1 Personnel

The Operations Department staffs the Radwaste Control Room and performs all valve manipulations, under the direction of the Radwaste Operations Supervisor. This Supervisor reports to both the Shift Supervisor and the Senior Engineer-Radwaste. Packages are surveyed and wipe tested by members of the Health Physics staff. Classification, documentation and labeling of packages is the responsibility of the Supervisory Physicist-Radwaste Services. Staffing levels within Radwaste Services and Operations (for the Radwaste Control Room) appeared adequate for the level of operations expected for a two-unit facility.

#### 4.2 Processes

The licensee currently generates spent resin, contaminated tools and materials, laundry and Dry Active Wastes (DAW). Spent resins are processed by dewatering in the High Level Storage Area (HLSA), utilizing a vendor supplied and operated system. Contaminated tools and equipment are cleaned on site both by the licensee and via a vendor-operated mobile decontamination unit, or are shipped to a vendor facility for decontamination. Laundry is sorted by the licensee, with contaminated laundry cleaned by a vendor off site. DAW is segregated into "clean" and "hot", then all material is sent to a vendor facility for verification and disposal.

#### 4.3 Facilities

Under present utilization conditions, the HLSA may have to be modified and/or procedures amended to accommodate the startup of Unit 2. Presently the licensee has eleven large storage pits available for the dewatering and storage of radwaste liners. Six of these pits are typically in use at any one time, with the empty pits used for empty liner storage or as a reserve area. The Unit 2 startup can be expected to double the volume of spent resins generated at the facility, and thus may cause all the pits in the HLSA to be filled, with no reserve space available. The licensee was aware of this potential restraint and was formulating plans to address this, including reducing the storage time of filled liners in the HLSA prior to shipping.

#### 5.0 Liquid Radwaste Systems

Batch releases of liquid wastes are handled through the Radwaste Control Room. Releases are approved by the Shift Supervisor, with both Chemistry



and Health Physics providing technical support. Staffing levels within these departments appeared adequate to handle the additional work generated by the operation of Unit 2.

### 5.1 Process Radiation Monitoring

The licensee's liquid process radiation monitors (Process Radiation Monitoring System) consist of the Service Water monitors, Reactor Enclosure Cooling Water monitors and the Residual Heat Removal Service Water monitors. Monitors utilized in Unit 2 are of the same design as those currently in use at Unit 1. Preoperational testing of these monitors has been completed in accordance with Procedure 2P-79.2D, Rev 0, "Liquid Process Radiation Monitoring System Startup Subsystem 79E". Documentation associated with this testing included Test Change Notices and a Test Exception Log. Calibration of the monitors was also included as part of this preoperational testing procedure.

The inspector reviewed Procedure ST-2-009-600-0, "Radioactive Liquid Effluent Monitoring- Cooling Tower Blowdown Discharge Line Flow Calibration/Functional Test". This test was completed satisfactorily on March 24, 1989.

### 5.2 Effluent Releases

Sampling and analysis of liquid effluents prior to batch release are the responsibility of the Chemistry Department. Discharge permits are initiated by Operations in accordance with Procedure CH-1017, Rev 10, "Procedure for Preparation and Control of Liquid Rad Waste Discharge Permits". Offsite dose calculations for each release were performed by the Health Physics staff, which also prepared monthly release summaries and the semiannual effluent release reports.

## 6.0 Post Accident Monitoring

### 6.1 Wide Range Accident Monitor (WRAM)

The WRAM noble gas channel monitors the noble gas effluent from the north stack for Units 1 and 2 during the event of any accidents. The calibration and functional tests of the WRAM were reviewed and no violations were identified (Inspection Report Number 352/88-23, conducted November 14-18, 1988).

### 6.2 Post Accident Sampling System (PASS)

The PASS installed in Unit 2 is of the same design and manufacture as that installed in Unit 1. At the time of this inspection, the system had been tested in accordance with Preoperational Test Procedure 2P-76.2, Rev 0, "Post Accident Sample System (PASS)", and was being

reviewed by the licensee for acceptance of this system. The system will be utilized on an annual basis for the routine sampling of seven different counting geometries as addressed in the procedures listed below.

- RT-5-030-579-2, Rev 0, "Routine RHR Large Volume Liquid Sampling From PASS"
- RT-5-030-578-2, Rev 0, "Routine Jet Pump Large Volume Liquid Sampling From PASS"
- RT-5-030-577-2, Rev 0, "Routine RHR Small Volume Liquid Sampling From PASS"
- RT-5-030-576-2, Rev 0, "Routine Jet Pump Small Volume Liquid Sampling From PASS"
- RT-5-030-575-2, Rev 0, "Routine Suppression Pool Atmosphere Sampling From PASS"
- RT-5-030-574-2, Rev 0, "Routine Drywell Atmosphere Sampling From PASS"
- RT-5-030-573-2, Rev 0, "Routine Secondary Containment Atmosphere Sampling From PASS"

## 7.0 Gaseous Radioactive Waste System

The licensee has completed and approved the preoperational tests for the gaseous radioactive waste system. No deviations or unacceptable test conditions were identified by the inspector.

### 7.1 Gaseous Effluent and Process Monitoring

The licensee has completed and approved the preoperational tests for the South Stack gaseous effluent monitoring system and the process monitoring system. The inspector reviewed the results of calibrations and tests conducted in accordance with the following procedures.

- o 2P-79-2G, Rev.0, "Preoperational Test Procedure, South Stack Effluent Radiation Monitoring System"
- o TL-11-00001, "Calibration of Plant Instrument and Equipment (South Stack Flow Rate Calibration)"
- o TL-11-00385, "Calibration of General Atomic Particulate, Iodine, and Gas Radiation Monitor (South Stack)"
- o 2P-79-2B, Rev.0, "Air Ejector Effluent Radiation Monitoring System"
- o 2P-79-2E, Rev.0, "Reactor Enclosure and Refuel Floor Vent Radiation Monitoring System"
- o 2P-79-2F, Rev.0, "Gaseous Effluent Vent Exhaust Radiation Monitoring System"

The inspector had no further questions in this area.

### 7.2 Gaseous Effluent Controls



The licensee had completed the implementing procedures for the sampling, analysis, and control of gaseous effluent releases. The inspector evaluated the licensee's implementation of the proposed Technical Specification 3/4 11.2, "Gaseous Effluents" for Unit 2 by reviewing the following procedures.

- o ST-5-076-808/809-2, "A/B Reactor Enclosure Equipment Compartments Exhaust Charcoal Analysis"
- o ST-5-076-810-2, "Unit 2 South Stack Monthly Noble Gas and Tritium Sampling and Analysis"
- o ST-5-076-815-2, "Unit 2 South Stack Weekly Charcoal Analysis"
- o ST-5-076-820-2, "Unit 2 South Stack Weekly Particulate Analysis"
- o ST-5-076-821-2, "Unit 2 South Stack Quarterly Composite Particulate Analysis"

The inspector also reviewed the current Offsite Dose Calculation Manual (ODCM, Revision 6). Based on the review of the above surveillance procedures and the ODCM, the inspector determined that the licensee has established the gaseous effluent control program as required for fuel load.

## 8.0 Air Cleaning Systems

The inspector toured the offgas system, standby gas treatment system, and control room emergency fresh air supply system. These systems are common between Units 1 and 2 except for the offgas system.

### 8.1 Offgas System

During the tour, the inspector verified the installation of the steam air ejector condenser, offgas pre-treatment monitor, recombiner, ambient charcoal treatment system, and the offgas control panel. The ambient charcoal treatment system consists of a cooler condenser, guard bed, main charcoal bed, and outlet high efficiency particulate air (HEPA) filter. The inspector noted that the in-place leakage test for HEPA was completed and test result was accepted (0.0086% leak). The calculations of the charcoal holdup time for xenon and krypton were 38 days and 52 hours, respectively. No violations or deviations were identified.

### 8.2 Reactor Enclosure Recirculation System

The inspector reviewed Procedure TT1-13, "HVAC HEPA and Adsorber Filter Efficiency Test", and test results for the reactor enclosure recirculation system (Trains A and B). Tests consisted of air flow rate, visual inspection, and in-place penetration and bypass leakage. The inspector noted that all tests were completed except for the in-place leakage test for the Train B. This test will be completed before plant startup. The inspector stated that this item will be

reviewed during the startup test (50-353/89-23-01).

### 8.3 Other Air Cleaning Systems

The inspector reviewed surveillance test results for other air cleaning systems, such as standby gas treatment system and the control room emergency fresh air supply system. These two systems are common for both units. The surveillance tests consisted of visual inspection, HEPA filter in-place leakage, adsorption filter in-place bank leakage, and the laboratory test for the charcoal canisters. These surveillance tests were performed during January 1989. All test results were accepted as required by the Technical Specifications.

### 9.0 Conclusions

Within the areas evaluated, the licensee has completed preoperational testing of equipment and has developed procedures for the operation of Unit 2. Within the scope of the review in the above areas, the licensee has programs in place for the fuel load.

### 10.0 Exit Interview

The inspector met with licensee representatives (denoted in Section 1) on June 7, 1989. The inspector summarized the purpose, scope, and findings of the inspection at the exit interview.