U. S. NUCLEAR REGULATORY COMMISSION
REGION I

50-352/90-16
Report Nos. 50-353/90-15

50-352
Docket Nos. 50-353

NPF-39
License Nos. NPR-85

Licensee: Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19105

Facility Name: Limerick Generating Station, Units 1 and 2

Inspection At: Limerick Generating Stations and Wayne, Pennsylvania

Inspection Conducted: May 7-11, 1990

Inspector: Jason C. Jang 5-21-90
J. C. Jang, Sr. Radiation Specialist date
Effluents Radiation Protection Section (ERPS),
Facilities Radiological Safety and Safeguards
Branch (FRSSB)

Approved by: Robert J. Bores 5-24-90
R. J. Bores, Chief, ERPS, FRSSB, Division of date
Radiation Safety and Safeguards

Inspection Summary: Inspection on May 7-11, 1990 (Combined Inspection Report Numbers 50-352/90-16 and 50-353/90-15)

Areas Inspected: Routine, unannounced inspection of the licensee's radiological environmental monitoring program and liquid and gaseous effluent control program for operations including: management controls; quality control program for analytical measurements; effluent/process monitor calibrations; meteorological monitoring program; and implementation of the above programs.

Results: Within the scope of this inspection, no violations were identified.

DETAILS

1.0 Individuals Contacted

1.1 Limerick Generating Stations

R. Barclay, Effluent Surveillance Physicist
J. Burke, QA Auditor
*M. Cnristinziano, Health Physics Technical Support Supervisor
R. Dickinson, Engineering Supervisor, Technical Section
*R. Dubiel, Superintendent-Plant Services
*K. Gordon, Chemistry Technical Assistant
B. Graber, Effluent Monitoring Physicist
*T. Jackson, Senior Chemist
*M. Karney, I&C Foreman, Radiation Instrumentation
*M. McCormick, Jr., Plant Manager
J. Melaugh, I&C Foreman
*G. Murphy, Senior Health Physicist
*D. Neff, Licensing
*D. Shaner, Licensing

1.2 Corporate Office, Wayne, Pennsylvania

J. Ballentine, Supervisor, Environmental Group
D. Wahl, Health Physicist, Environmental Group
R. Scholz, Manager, Radiation Control and Chemistry Section

1.3 Testing and Laboratories Division, King of Prussia, Pennsylvania

G. Annabel, Supervisory Engineering Technician

1.4 Radiological Monitoring Corporation (RMC), Contractor

J. Kostige, Environmental Consultant

1.5 NRC Personnel

*M. Evans, Resident Inspector

*T. Kenny, Senior Resident Inspector
*L. Scholl, Resident Inspector

* Denotes those individuals present at the exit interview on May 11, 1990. Other licensee personnel were also contacted during the course of this inspection.

2.0 Purpose

The purpose of this inspection was to review the licensee's ability to control and quantify radioactive liquids, gases, and particulates, and to conduct the radiological environmental monitoring program during normal and emergency operations.

3.0 Audits

The inspector reviewed the following audits of the Radiological Environmental Monitoring Program (REMP), Radioactive Effluent Control Program (RECP), Meteorological Monitoring Program (MMP), and the Offsite Dose Calculation Manual (ODCM) with respect to Technical Specification requirements.

o Audit # VA89-21; Teledyne Isotopes, Inc. (Analytical Laboratory for REMP samples), September 26-28, 1989

o Audit # LA89-013; REMP, MMP, and Radiological Monitoring Corporation (REMP sample collection contractor), April 12-28, 1989

o Audit # LA89-022, RECP and ODCM June 21-July 21, 1989

These audits appeared to cover the stated objectives and to be reasonably thorough and complete; they addressed both acceptable and unacceptable findings and corrective actions, as appropriate. The inspector noted that objectives of Audit #LA89-013 appeared to be excellent and performance of the audit was noteworthy. The inspector also noted that the licensee's followup of identified items was good. No violations were identified in this area.

4.0 Radiological Environmental Monitoring Program (REMP)

4.1 Program Changes

The inspector reviewed the licensee's management controls for the REMP due to a recent reorganization. The REMP is administered by the PECo Corporate Environmental Group Supervisor, who has responsibility for review of the contractors' performance of the REMP. The supervisor reports to the Manager of the Radiation Control and Chemistry Section. He, in turn, reports to the Vice President of Nuclear Engineering and Services through the Manager of Nuclear Engineering and Services, Nuclear Support Division. Radiological analyses for environmental samples and QA samples continue to be contracted to Teledyne Isotopes and Clean Harbors of Natick, respectively.

The inspector determined that the reorganization did not reduce the effectiveness of the REMP.

4.2 Direct Observation

The inspector examined sampling stations, including air samplers for iodines and particulates, milk sampling locations, thermoluminescent dosimeter (TLD) stations, and the intake water composite sampling station. All air sampling and composite water sampling equipment at the selected stations was operational at the time of this inspection. Milk samples appeared to be available at the sampling locations. TLDs were placed at the designated monitoring stations. None of the observed REMP sampling stations deviated from the descriptions of the sampling stations in the Offsite Dose Calculation Manual (ODCM).

4.3 Review of Annual Reports

The inspector reviewed the Annual Radiological Environmental Reports for 1988 and 1989. These reports provided a comprehensive summary of the results of the REMP around the Limerick Generating Stations and met the Technical Specification reporting requirements. No violations were identified in this area.

4.4 Quality Control Program for REMP

The inspector reviewed the licensee's program for quality control of analytical measurements for the radiological analyses of environmental media including the EPA Cross-check Program. The inspector reviewed selected samples of quality control data submitted to the licensee by its two contractors, Teledyne Isotopes and Clean Harbors of Natick. These data indicated, with few exceptions, agreement between EPA spike samples and the contractor's results. Where discrepancies were found, reasons for the differences were investigated and resolved satisfactorily.

Based on the above review, the inspector determined that the licensee was implementing an effective quality control program for the REMP. No violations were identified in this area.

4.5 Implementation of the REMP

The inspector reviewed the licensee's implementation of the REMP by means of discussions with the licensee personnel, review of analytical procedures and analytical results for REMP samples, review of the air sampler calibration procedure, and the most recent calibration results for the air samplers. The Testing and Laboratories Division has a responsibility to perform semiannual calibration of air samplers. Based on the above reviews and discussions with the Environmental Group staff members, the inspector concluded the following.

- The Environmental Group staff members understood the importance of the REMP and implemented the program professionally and effectively.
- The Environmental Group staff members contacted the contractor laboratories frequently for discussions of analytical results and to assure appropriate control of procedures.
- The licensee had an effective REMP.

5.0 Meteorological Monitoring Program

The inspector reviewed the 1988 and 1989 meteorological instrumentation calibration results for wind speed, wind direction, wind direction linearity, temperature, and delta temperature. Semiannual calibration of meteorological equipment for the primary and secondary systems was performed as required by Technical Specifications. All reviewed calibration results were within the licensee's acceptance criteria.

The inspector also examined the recorder charts in the equipment house for both the primary and secondary meteorological towers. All instrumentation appeared to be operating properly at the time of this inspection. The inspector also noted that the licensee inspected the meteorological systems for both the primary and secondary meteorological towers twice each week. The inspector observed the licensee inspection activities at the primary meteorological tower equipment house during this inspection.

Based on the above reviews and observations, the inspector determined that the licensee had an effective meteorological monitoring program. No violations were identified in this area.

6.0 Liquid and Gaseous Effluent Controls

6.1 Program Changes

There were no significant changes in the licensee's radioactive liquid and gaseous effluent control programs since the previous inspection (June 1989) in this area. The Health Physics Department has responsibility for liquid and gaseous effluent controls, and calculated projected radiation exposures to the public. The Chemistry Department has responsibility to measure radioactivity in effluent samples.

6.2 Review of Semiannual Reports

The inspector reviewed the semiannual radioactive effluent release reports for 1988 and 1989. No obvious mistakes, anomalous measurements, omissions or trends were noted. These reports provided total released radioactivity for liquid and gaseous effluents, including projected radiation exposures to the public.

6.3 Radioactive Liquid and Gaseous Effluent Controls

The inspector reviewed the following selected radioactive effluent release control procedures (Health Physics and Chemistry Departments) and also reviewed selected radioactive liquid and gaseous release permits to determine the adequacy of implementation of the Technical Specifications and the ODCM requirements.

Chemistry Procedures

- o ST-5-057-810-0, "North Stack Containment Purge Sampling and Analysis"
- o ST-5-057-810-1&2, "South Stack Containment Purge Sampling and Analysis (for Units 1&2)"
- o ST-5-061-570-0, "Batch Liquid Waste Pre-Release Sampling and Analysis"

Health Physics Procedures

- o ST-0-104-878-0, "Monthly Liquid Release Dose Calculation"
- o ST-0-104-879-0, "Monthly Gaseous Release Dose Calculation"
- o ST-0-026-862-0, "Verification of Lotus 1-2-3 Computational Models Developed to Calculate Quantities of Radioiodine and Noble Gas Released"

The inspector noted that the above procedures were found to be detailed and well written. The inspector's review of the liquid and gaseous release permits determined that the permits met the requirements for sampling and analyses at the frequencies established in the Technical Specifications. Procedure ST-0-026-826-0 was developed by the licensee based on an NRC recommendation made during the previous inspection. This procedure verifies the licensee-developed computer code which calculates the amounts of released radioiodines and noble gases.

Based on the above review, the inspector determined that the licensee was implementing Technical Specification requirements. No violations were identified.

6.4 Calibration of Effluent/Process Radiation Monitors

The inspector reviewed the most recent calibration results for the following effluent/process monitors to determine the implementation of the Technical Specification requirements.

Unit 1:
- o Liquid Radwaste Effluent Monitor
- o Service Water Effluent Monitor
- o Main Steam Line Monitors
- o Hot Maintenance Shop Vent Monitor
- o South and North Stack Effluent Monitors
- o Wide Range Accident Monitor
- o Cooling Tower Blowdown Flow Rate Calibration

Unit 2:
- o Containment Leak Detector
- o Offgas Monitor
- o Main Steam Line Monitors
- o RHR Service Water Effluent Monitor
- o South Stack Vent Monitor
- o Cooling Tower Blowdown Flow Rate Calibration

The I&C Department has the responsibility to perform electronic and radiological calibrations for some of the effluent/process monitors and the Chemistry Department has responsibility to perform radiological calibrations for certain effluent monitors (e.g., liquid effluent radiation monitor). The Chemistry Department also has responsibility to perform alarm set point calculations required by the ODCM. The inspector reviewed alarm set point calculations for the following monitors.

- o Liquid Radwaste Effluent Monitor
- o RHR/Service Water Effluent Monitors
- o Service Water Monitors
- o Reactor Enclosure Cooling Water Monitors

Based on the above review, the inspector determined that the licensee is meeting the Technical Specification and the ODCM requirements. No violations were noted in this area.

6.5 Air Cleaning Systems

The inspector reviewed the licensee's most recent surveillance test results to determine the implementation of the Technical Specifications for the (1) standby gas treatment systems, (2) control room emergency fresh air supply systems, and (3) reactor enclosure recirculation systems. For the above systems, the inspector reviewed the results of the following inspections and surveillance tests.

- o Visual Inspections
- o In-Place HEPA Leak Tests
- o In-Place Charcoal Leak Tests
- o Pressure Drop Tests
- o System Air Flow Rate Tests
- o Laboratory Tests for the Iodine Collection Efficiencies

While reviewing the above test results, the inspector noted that the licensee installed a duct air monitor device (MONT-Aire Duct Air Monitor Device) to measure air capacity of the reactor enclosure recirculation systems. This device consists of an air straightening section to eliminate turbulent airflow and multi-point self-averaging pitot tubes to measure air pressure. The inspector reviewed the most recent air capacity test results which were obtained using this device for the reactor enclosure recirculation systems with Procedure ST-1-076-322-1. The results were within the Technical Specification limits.

Based on the above review, the inspector determined that the licensee was implementing the Technical Specification requirements for the air cleaning systems effectively. No violations were identified.

7.0 Exit Interview

The inspector met with licensee representatives, denoted in Section 1.0 of the report, on May 11, 1990. The inspector summarized the purpose, scope, and findings of the inspection.