

U. S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-333/94-24  
Docket No. 50-333  
License No. DPR-59  
Licensee: New York Power Authority  
Post Office Box 41  
Lycoming, New York 13093  
Facility Name: James A. FitzPatrick Nuclear Power Plant  
Inspection At: Lycoming, New York, and the JAF Environmental Laboratory,  
Fulton, New York  
Inspection Conducted: September 12 - 16, 1994

Inspector: *Richard K. Struckmeyer* 9/27/94  
Richard K. Struckmeyer Date  
Sr. Radiation Specialist  
Effluents Radiation Protection Section (ERPS)  
Facilities Radiological Safety and Safeguards Branch (FRSSB)

Approved by: *Jason C. Jang* 9-27-94  
Jason C. Jang, Chief, ERPS, FRSSB Date  
Division of Radiation Safety and Safeguards

Areas Inspected: Announced safety inspection of the Radiological Environmental Monitoring Program and Meteorological Monitoring Program including: management controls, quality assurance audits, calibration of measuring and test equipment (air samplers and meteorological instrumentation), and implementation of the above programs.

Results: Within the areas inspected, the licensee implemented effective Radiological Environmental Monitoring and Meteorological Monitoring programs. The responsible individuals were knowledgeable with respect to the implementation of the above programs. No safety concerns or violations of regulatory requirements were identified.

## DETAILS

### 1.0 Individuals Contacted

#### 1.1 Licensee Personnel

- \* N. Avrakatos, Emergency Planning Coordinator
- \* R. Barrett, General Manager, Operations
- \* M. Colomb, General Manager, Support Services
- \* R. Converse, Senior Assessment Engineer
- \* B. Gorman, Chemistry Environmental Supervisor
- K. Hayes, Environmental Technician (Niagara Mohawk)
- S. Juravich, Procedures Coordinator, I&C
- M. Koeneke, Lab Manager (Ecological Analysts Science and Technology)
- \* D. Lindsey, General Manager, Maintenance
- J. McCarty, Senior Quality Assurance Engineer
- \* A. McKeen, Chemistry General Supervisor
- \* E. Mulcahey, Senior Licensing Engineer
- M. Prarie, Assistant Emergency Planning Coordinator
- \* J. Sipp, Manager, Radiological Environmental Services
- E. Salvetti, Chief Journeyman
- J. Scott, Quality Assurance Auditor
- \* G. Tasick, Quality Assurance Manager
- B. Zacharek, Environmental Protection Coordinator, Radiological (Niagara Mohawk)

#### 1.2 Nuclear Regulatory Commission (NRC) Personnel

- \* W. Cook, Senior Resident Inspector
- \* J. Jang, Chief, Effluents Radiation Protection Section

- \* Denotes those present at the exit interview on September 16, 1994.

Other licensee employees were contacted and interviewed during this inspection.

### 2.0 Purpose

The purpose of this routine inspection was to review the licensee's implementation of the Radiological Environmental Monitoring Program (REMP) and Meteorological Monitoring Program (MMP).

### 3.0 Management Controls

The inspector reviewed the licensee's management controls for the REMP, including assignment of responsibility, program audits, and corrective actions for licensee identified inadequacies and problem areas in the program.

#### 3.1 Organization and Program Changes

The inspector reviewed the organization and administration of the REMP. There have been no significant changes since the previous inspection. Sample collections are performed by personnel from the Niagra Mohawk

Power Corporation (Nine Mile Point Nuclear Station) and from Ecological Analysts Science and Technology. The J.A.F. environmental laboratory performs the sample analyses. The program is administered by the Chemistry Environmental Supervisor, who reports to the Chemistry General Supervisor. This individual reports to the Manager, Radiological Environmental Services, who reports through the Operations General Manager to the site Resident Manager.

### 3.2 Quality Assurance (QA) Audits

The inspector reviewed the following QA Audit Report as part of the evaluation of the implementation of the Technical Specification (TS) requirements.

Audit No. 94-05J: Radiological Environmental Monitoring Program and Regulatory Guide 4.1

This audit was conducted by the Quality Assurance Department, during the period February 28 to March 10, 1994. No items of safety significance were identified in this audit. The audit was of sufficient technical depth to properly assess the implementation of the REMP and MMP programs. The inspector noted that the audit documented one finding and two recommendations relevant to the REMP. A due date of October 24, 1994, was established for the required response to the finding. The status of this item will be reviewed during a subsequent NRC inspection.

The inspector had no further questions in this area.

### 4.0 Implementation of the Radiological Environmental Monitoring Program

#### 4.1 Direct Observation

The inspector examined selected sampling stations, including air samplers for iodines and particulates, vegetation, water, sediment, and milk sampling locations, and thermoluminescent dosimeter (TLD) stations. All air sampling equipment at the selected locations was operational at the time of the inspection. At dairy farms visited by the inspector, samples were available, but no sample collection was observed. TLDs were placed at locations designated in the Offsite Dose Calculation Manual (ODCM).

The licensee effectively accomplished a change from vendor- to licensee-operation of the environmental dosimetry program. Good procedures were in place for operation of the program, and proper calibrations and quality control checks were performed.

#### 4.2 Review of Annual Reports

The inspector reviewed the REMP Annual Report for 1993. This report provided a comprehensive summary of the results of the REMP around the J.A. FitzPatrick Nuclear Power Plant and met the TS and ODCM reporting



requirements. The reports were complete and the reviewed data indicated no adverse radiological impact on public health or the environment.

The inspector also reviewed selected data sheets pertaining to samples collected during 1994 to date. The review indicated that samples were analyzed as required. No unusual results were noted.

#### 4.3 Review of REMP Procedures

The inspector reviewed selected licensee environmental monitoring procedures, including those for sample tracking ("chain of custody"). Samples were properly handled and accounted for. Based on this review, the inspector determined that the licensee has good procedures for implementation of the REMP.

The inspector also reviewed procedures for operation of selected laboratory equipment, including the liquid scintillation counter and the low-background alpha-beta counter. In conjunction with the procedures, the inspector also reviewed calibration data, control charts for efficiency and background, and system performance test data. Calibrations were performed as scheduled, and results were within the licensee's acceptance criteria. The inspector noted that the licensee employed an excellent self-absorption curve fitting technique for gross beta analysis.

#### 4.4 Intercomparison of TLD Results

The U.S. Nuclear Regulatory Commission (NRC) Direct Radiation Monitoring Network is operated by the NRC (Region I) to provide continuous measurements of the ambient radiation levels around nuclear power plants throughout the United States. Each site is monitored by arranging approximately 30 to 50 TLD stations in two concentric rings extending to about five miles from the power plant. The monitoring results are published in NUREG-0837 quarterly.

One of the purposes of this program is to serve as a basis of comparison with similar programs conducted by individual utilities which operate nuclear power plants. Five NRC TLDs are collocated with licensee TLDs at the FitzPatrick / Nine Mile Point site. The locations of these TLDs are as indicated in Table 1.

The licensee monitors the environmental radiation levels with sets of TLDs that are exchanged and read quarterly. The licensee's dosimeters are Panasonic Model 814, which contain one element of lithium borate activated with copper ( $\text{Li}_2\text{BO}_3:\text{Cu}$ ), and three elements of calcium sulfate activated with thulium ( $\text{CaSO}_4:\text{Tm}$ ). The NRC uses the Panasonic Model 801 dosimeter, which contains two elements of lithium borate activated with copper ( $\text{Li}_2\text{BO}_3:\text{Cu}$ ), and two elements of calcium sulfate activated with thulium ( $\text{CaSO}_4:\text{Tm}$ ). Both the licensee and the NRC use only the calcium sulfate elements for routine environmental monitoring.

The licensee quarterly monitoring periods correlate well with the quarterly periods of the NRC. Table 2 lists the dates of TLD exchange for the NRC and for the licensee over the period for which the comparison was undertaken.

During this inspection the monitoring results of collocated TLDs were compared, and the results are listed in Table 3. The NRC "historical average" data are also provided as a basis for comparison of NRC results with those of the licensee. The historical averages shown here are the same as reported in NUREG-0837, Vol. 14, No. 3, for these collocated stations. These reported values are the mean +/- 1 standard deviation for all quarters (starting in 1983) for which net data were available. The relatively small standard deviations indicate that the NRC results have remained consistent over the ten-year period. The licensee results are generally in agreement with those of the NRC. Differences of up to several milliroentgen (mR) per quarter are not unexpected, and may be due to variations in calibration methods, transit times, exposures encountered during transit, etc.

#### 4.5 Quality Control Program for REMP

The inspector reviewed the licensee's program for quality control of analytical measurements for radiological environmental samples. One aspect of quality control consists of participation in the EPA cross-check program. The data indicate, with few exceptions, agreement between the J.A.F. environmental laboratory and the EPA cross-check samples. Where discrepancies are found, reasons for the differences are investigated and resolved to the extent possible.

The inspector had no further questions in this area.

#### 5.0 Meteorological Monitoring Program

The inspector examined the licensee's MMP through direct observation, discussions with personnel, and examination of procedures and records for calibration of equipment. The meteorological sensors, located on the primary, backup, and inland towers, are maintained and calibrated by Niagra Mohawk Power Corporation (Nine Mile Point Nuclear Station). The primary meteorological tower is equipped with wind speed, wind direction, and temperature sensors at the 30, 100, and 200-foot elevations. The inspector observed the sensors and their readouts in the equipment house at the base of the primary tower, as well as the readouts in the J.A. FitzPatrick control room and Technical Support Center. The meteorological data are available in the control room and in the Technical Support Center via digital display from the system computer and via analog strip chart recorders.

Although the licensee's Technical Specifications contain no requirement for meteorological monitoring, the licensee performs routine maintenance and calibration of the meteorological strip chart recorders on a quarterly basis. The inspector reviewed selected calibration records, with emphasis on the wind speed, wind direction, and temperature

sensors. All reviewed calibration results were within the licensee's defined acceptance criteria.

The inspector noted that at the time of the inspection, two strip chart recorders in the Control Room apparently were not properly synchronized, in that the data (including the time) printed on the charts lagged behind the current data by as much as one to two hours. These recorders are used as a backup to the computer system that normally supplies meteorological data in both the Control Room and the Technical Support Center. The licensee corrected this problem before the conclusion of the inspection.

The inspector had no further questions in this area at this time.

#### 6.0 Exit Interview

The inspector met with the licensee representatives (denoted in Section 1.1 of this inspection report) at the conclusion of the inspection on September 16, 1994. The inspector summarized the purpose, scope, and findings of the inspection.



Table 1  
Collocated Environmental TLDs at J.A. FitzPatrick

NRC No.	Distance*	Azimuth**	JA FitzPatrick Loc. No.	Distance*	Direction***
3	8.4	122	D-2	9.0	117
4	11.0	76	D-1	11.4	80
12	6.1	230	G	5.3	225
24	8.0	196	F	7.7	190
25	7.2	168	E	7.2	160

\* Distance measured in miles

\*\* Azimuth measured in degrees

NOTE: Distances and azimuths were measured independently and do not necessarily agree; however, collocation of these TLDs has been confirmed.

Table 3

Environmental TLD Monitoring Results (mR/quarter)\*  
 Comparison of NRC TLDs Collocated with J.A. FitzPatrick TLDs

Monitoring Period	NRC no.: JAF no.:	3 D-2	4 D-1	12 G	24 F	25 E
1993/1st Quarter	NRC	11.8 ± 0.7	12.7 ± 0.7	13.2 ± 0.7	missing	12.3 ± 0.7
	JAF	10.2 ± 0.6	11.7 ± 0.6	13.2 ± 1.2	11.4 ± 0.6	10.5 ± 0.6
2nd Quarter	NRC	13.6 ± 0.6	15.1 ± 0.6	14.7 ± 0.6	14.6 ± 0.6	13.8 ± 0.6
	JAF	9.6 ± 0.6	11.1 ± 1.2	12.4 ± 1.5	10.5 ± 0.3	9.9 ± 0.6
3rd Quarter	NRC	13.2 ± 0.6	14.9 ± 0.6	15.3 ± 0.6	14.6 ± 0.6	14.9 ± 0.6
	JAF	15.6 ± 1.2	15.6 ± 1.2	16.2 ± 0.9	16.8 ± 0.6	14.1 ± 0.9
4th Quarter	NRC	14.0 ± 0.7	damaged	15.2 ± 0.8	13.9 ± 0.7	14.4 ± 0.8
	JAF	12.6 ± 1.5	13.2 ± 1.2	13.2 ± 1.5	12.9 ± 1.8	13.2 ± 2.4
1994/1st Quarter	NRC	10.9 ± 0.6	11.8 ± 0.6	13.2 ± 0.6	9.4 ± 0.5	11.4 ± 0.6
	JAF	9.6 ± 0.6	9.9 ± 0.3	11.1 ± 0.6	9.3 ± 0.6	9.0 ± 0.3
2nd Quarter	NRC	14.1 ± 0.5	14.3 ± 0.5	14.8 ± 0.5	damaged	14.7 ± 0.5
	JAF	11.7 ± 0.6	12.3 ± 0.9	12.6 ± 0.3	12.9 ± 0.6	12.6 ± 0.6
NRC Historical Average	NRC no.:	3	4	12	24	25
From 1983/1st Qtr to 1994/2nd Qtr	average	14.3 ± 1.7	14.9 ± 1.1	15.4 ± 1.3	14.3 ± 1.7	14.2 ± 1.3

\* All results are in milliroentgens and are normalized to a 90-day quarter (NRC) or 91-day quarter (JAF).

All data are shown as Result ± 1 standard deviation.

JAF data are from Teledyne system for the 1st, 2nd, and 3rd quarters of 1993, and from Panasonic system for the remaining quarters.