

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-333/78-20

Docket No. 50-333

License No. DPR-59 Priority -- Category C

Licensee: Power Authority of the State of New York

10 Columbus Circle

New York, New York 10019

Facility Name: James A. FitzPatrick Nuclear Power Plant

Inspection at: Scriba, New York

Inspection conducted: September 27-29, 1978

Inspectors: J. J. Kottan
J. J. Kottan, Radiation Specialist

10/14/78
date signed

D. M. Gloski, Co-op

date signed

Approved by: J. P. Stohr
J. P. Stohr, Chief, Environmental and Special
Projects Section, FF&MS Branch

date signed
10/19/78
date signed

Inspection Summary:

Inspection on September 27-29, 1978 (Report No. 50-333/78-20)

Areas Inspected: Routine, unannounced inspection of the licensee's chemical and radiochemical measurements program using NRC:I Mobile Radiological Measurements Laboratory and laboratory assistance provided by DOE Radiological and Environmental Services Laboratory. Areas reviewed included: program for quality control of analytical measurements, audit results, performance on radiological analyses of split actual effluent samples, and effluent control records and procedures. The inspection involved 20 inspector-hours onsite by one NRC regional based inspector.

Results: Of the four areas inspected, no items of noncompliance were identified.

7812010036

DETAILS

1. Persons Contacted

Principal Licensee Employees

- *J. Leonard, Resident Manager
- *R. Pasternak, Superintendent of Power
- *R. Burns, Radiological and Environmental Services Superintendent
- *E. Mulcahey, Radiation Protection and Radiochemistry Supervisor
- *B. Gorman, Environmental Supervisor
- *R. Shropshire, New York Office Senior Radiological Engineer
- M. McMahon, Radiation and Environmental Technician
- M. Cosgrove, Site QA Engineer

The inspector also interviewed other licensee employees including members of the chemistry and health physics staffs.

* denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved item (77-28-01): Computer procedure for handling gaseous effluent data. The inspector noted the licensee performs daily calculations to determine compliance with gaseous effluent release limits and includes the gaseous effluent release data from the Nine Mile Point Nuclear Station in these calculations. This item is closed.

(Closed) Unresolved item (77-28-02): Tritium measurement disagreement. The inspector noted that the results of a sample split during a previous inspection (Inspection Report 50-333/78-11) indicated the tritium measurement on a Waste Collector Tank sample was in agreement. This item is closed.

(Closed) Unresolved item (78-11-01): Cs-134 measurement in liquid samples. The inspector determined, based on measurements made during this inspection, that the licensee was able to measure Cs-134 in liquid samples. Refer to Table I. This item is closed.

3. Laboratory QC Program

The inspector reviewed the licensee's program for the quality control of analytical measurements and noted the licensee had made modifications to his QC program. The inspector noted the modification included a

documented preplanned radiological and nonradiological program for split, spiked, duplicate, and interlaboratory QC sample analyses. The modification to the QC program was approved by the licensee's review committee in May 1978. The inspector reviewed the licensee's QC data since this modification had been approved. The inspector noted the licensee was following the QC sample analysis schedule, and the various sample analyses were reviewed and acknowledged by the Radiation Protection and Radiochemistry Supervisor. The inspector noted that with the exception of the modification the licensee's QC program remains the same as documented in Inspection Report 50-333/77-28 with the QC program being detailed in Section II of Volume III of the Site Chemistry and Radiation Protection Manual.

The inspector noted the licensee had no regulatory requirements in the area of laboratory QC and had no further questions in this area. No items of noncompliance were identified.

4. Audit Results

The inspector determined that the licensee's effluent monitoring program was on the corporate QA audit list. The inspector reviewed PASNY Standard Audit Nos. 263 dated June 13, 1978; 267 dated July 7, 1978; and 273 dated August 4, 1978 which were the last audits performed in this area. The inspector had no further questions in this area. No items of noncompliance were identified.

5. Confirmatory Measurements

During the inspection, actual liquid and gaseous effluent samples were split between the licensee and NRC:I for the purpose of intercomparison. The effluent samples were analyzed by the licensee using his normal methods and equipment, and the NRC using the NRC:I Mobile Radiological Measurements Laboratory. Joint analyses of actual effluent samples determine the licensee's capability to measure radioactivity in effluent samples.

In addition, a liquid effluent sample was sent to the NRC reference laboratory, Department of Energy, Radiological and Environmental Services Laboratory (RESL), for analyses requiring wet chemistry. The analyses to be performed on the sample are: Sr-89, Sr-90, gross alpha, gross beta and tritium. These results will be compared with the licensee's results when received at a later date, and will be documented in a subsequent inspection report.

The results of the sample measurements compared, indicated that all of the measurements were in agreement, or possible agreement, under the criteria used for comparing results. (See Attachment 1) The results of the comparisons are listed in Table I.

6. Records and Procedures

The inspector reviewed the following records and procedures:

- a. Gaseous effluent analysis data (January 1978 to September 1978).
- b. Liquid effluent analysis data (January 1977 to September 1978).
- c. Counter calibration and check records (January 1978 to August 1978).
- d. Laboratory QC sample analyses (May 1978 to September 1978).
- e. The following procedures:
 - (1) PSP-5, Radioactive Airborne Sampling, Analysis and Equipment Calibration.
 - (2) PSP-4, Waste Water Sampling and analysis.
 - (3) CAP-9, Chloride Ion Analysis in Water.

7. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on September 29, 1978. The inspector summarized the purpose and scope of the inspection and the inspection findings.

The licensee agreed to perform the analyses listed in paragraph 5 and report the results to the NRC.

TABLE 1
FITZPATRICK VERIFICATION - TEST RESULTS

<u>SAMPLE</u>	<u>ISOTOPE</u>	<u>NRC VALUE</u>	<u>LICENSEE VALUE</u>	<u>COMPARISON</u>
RESULTS IN MICROCURIES PER MILLILITER				
Rad Waste 1035 9/28/78	Cs-134	(4.21 \pm 0.50)E-6	(5.18 \pm 0.77)E-6	Agreement
	Cs-137	(7.77 \pm 0.39)E-6	(7.03 \pm 0.80)E-6	Agreement
	Mn-54	(1.27 \pm 0.04)E-5	(1.27 \pm 0.10)E-5	Agreement
	Co-60	(2.08 \pm 0.08)E-5	(2.00 \pm 0.15)E-5	Agreement
Reactor Water 1020 9/28/78	Cs-134	(3.08 \pm 0.09)E-3	(3.09 \pm 0.05)E-3	Agreement
	Cs-137	(3.45 \pm 0.06)E-3	(3.36 \pm 0.05)E-3	Agreement
	I-131	(2.24 \pm 0.04)E-3	(2.20 \pm 0.03)E-3	Agreement
	Co-60	(1.19 \pm 0.02)E-2	(1.14 \pm 0.01)E-2	Agreement
	Mn-54	(1.59 \pm 0.01)E-2	(1.57 \pm 0.01)E-2	Agreement
	Zn-65	(2.12 \pm 0.09)E-3	(1.75 \pm 0.06)E-3	Agreement
	Co-58	(9.94 \pm 0.08)E-3	(9.88 \pm 0.07)E-3	Agreement

TABLE 1

FITZPATRICK VERIFICATION - TEST RESULTS

<u>SAMPLE</u>	<u>ISOTOPE</u>	<u>NRC VALUE</u>	<u>LICENSEE VALUE</u>	<u>COMPARISON</u>
RESULTS IN TOTAL MICROCURIES				
Turbine Bldg. Charcoal Cartridge 1648 9/26/78	I-131	(5.78±0.40)E-3	(5.95±0.21)E-3	Agreement
Turbine Bldg. Particulate Filter 1200 9/11/78	I-131	(2.66±0.17)E-3	(3.34±0.24)E-3	Agreement
	Co-60	(1.37±0.10)E-3	(1.37±0.14)E-3	Agreement
	Mn-54	(3.81±0.33)E-4	(4.02±0.66)E-4	Agreement
	Ba-140	(1.13±0.25)E-3	(1.39±0.29)E-3	Agreement

TABLE 1
FITZPATRICK VERIFICATION - TEST RESULTS

<u>SAMPLE</u>	<u>ENERGY (keV)</u>	<u>NRC VALUE</u>	<u>LICENSEE VALUE</u>	<u>COMPARISON</u>
RESULTS IN GAMMA PER MINUTE				
NRC Simulated Off Gas Sample*	81	(3.14±0.17)E+5	(1.96)E+5	Possible Agreement
	303	(1.74±0.11)E+5	(1.41)E+5	Agreement
	346	(2.89±0.17)E+6	(2.47)E+6	Agreement
	356	(5.19±0.34)E+5	(3.99)E+5	Agreement
	779	(1.39±0.10)E+6	(1.09)E+6	Agreement
	964	(1.56±0.10)E+6	(1.25)E+6	Agreement
	1408	(2.21±0.17)E+6	(1.79)E+6	Agreement

* At the time of the inspection the licensee's facility was shut down for refueling, and, therefore, no offgas sample was available. An NRC simulated offgas sample was given to the licensee. The results for the various photo peaks in the spectrum were compared in gammas per minute emitted from the sample.

Attachment 1

Criteria for Comparing Analytical Measurements

This attachment provides criteria for comparing results of capability tests and verification measurements. The criteria are based on an empirical relationship which combines prior experience and the accuracy needs of this program.

In these criteria, the judgement limits are variable in relation to the comparison of the NRC Reference Laboratory's value to its associated uncertainty. As that ratio, referred to in this program as "Resolution", increases the acceptability of a licensee's measurement should be more selective. Conversely, poorer agreement must be considered acceptable as the resolution decreases.

<u>Resolution</u>	<u>Agreement</u>	<u>RATIO= NRC $\frac{\text{LICENSEE VALUE}}{\text{REFERENCE VALUE}}$</u>	
		<u>Possible Agreement A</u>	<u>Possible Agreement B</u>
<3	0.4 - 2.5	0.3 - 3.0	No Comparison
4 - 7	0.5 - 2.0	0.4 - 2.5	0.3 - 3.0
8 - 15	0.6 - 1.66	0.5 - 2.0	0.4 - 2.5
16 - 50	0.75 - 1.33	0.6 - 1.66	0.5 - 2.0
51 - 200	0.80 - 1.25	0.75 - 1.33	0.6 - 1.66
>200	0.85 - 1.18	0.80 - 1.25	0.75 - 1.33

"A" criteria are applied to the following analyses:

Gamma Spectrometry where principal gamma energy used for identification is greater than 250 Kev.

Tritium analyses of liquid samples.

Iodine on absorbers

"B" criteria are applied to the following analyses:

Gamma Spectrometry where principal gamma energy used for identification is less than 250 Kev.

89Sr and 90Sr Determinations.

Gross Beta where samples are counted on the same date using the same reference nuclide.