

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

Region I

Report No. 50-220/78-14

Docket No. 50-220

License No. DPR-63 Priority -- Category C

Licensee: Niagara Mohawk Power Corporation

300 Erie Boulevard West

Syracuse, New York 13202

Facility Name: Nine Mile Point Nuclear Station, Unit 1

Inspection at: Lycoming, New York

Inspection conducted: September 25-27, 1978

Inspectors: J. J. Kottan

J. J. Kottan, Radiation Specialist

D. M. Gloski, Co-Op

10/19/78
date signed

date signed

date signed

Approved by: J. P. Stohr

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

10/19/78
date signed

Inspection Summary:

Inspection on September 25-27, 1978 (Report No. 50-220/78-14)

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 the NRC regional based inspector. Results: Of the four areas inspected, no items of noncompliance were identified.

812010041



DETAILS

1. Persons Contacted

Principal Licensee Employees

- *T. Perkins, Plant Superintendent
- *J. Duell, Assistant Chemistry and Radiation Protection Supervisor
- E. Leach, Radiation Protection and Radiochemistry Supervisor

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

* denotes those present at exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Infraction (77-22-02): Mercuric thiocyanate reagent dating. The inspector examined the mercuric thiocyanate used for chloride analysis and noted the reagent was properly labeled as required.

(Closed) Unresolved item (77-22-01): Action point indication on weekly iodine and particulate filter analysis sheet. The inspector noted that Procedure N1-CRP-3, Stack Release Sampling and Analysis, contains an action point of 1×10^{-2} uCi/sec on the weekly iodine and particulate filter analysis sheet.

(Closed) Unresolved item (76-25-05): MDA and error calculation inconsistency. The inspector determined by hand calculations that the licensee could meet the MDA's required by his technical specifications even though his multichannel analyzer system indicated higher MDAs. The inspector noted this was a computer problem, and since the licensee was meeting the required MDA and would continue to resolve this problem this item is considered closed.

3. Laboratory QC Program

The inspector reviewed the licensee's program for quality control of analytical measurements and noted that the licensee's program remains the same as documented in NRC Inspection Report 50-220/77-22. The QC program is detailed in Section II of Volume III of the Site Chemistry and Radiation Protection Manual.

The inspector discussed laboratory QC with the licensee. The inspector also discussed various aspects of NRC Regulatory Guide 4.15, Quality



Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment. 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 QA audit list. The inspector reviewed Audit SR-78-023 dated August 14-22, 1978, which was the last audit 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 1.

6. Records and Procedures

The inspector reviewed the following records and procedures:

- a. Gaseous effluent analysis data (January 1978 to August 1978).
- b. Liquid effluent analysis data (January 1977 to August 1978).



- c. Counter calibration and check records (January 1978 to August 1978).
- d. Laboratory QC sample analyses (January 1977 to August 1978).
- e. The following procedures:
 - (1) PSP-4, Liquid Waste Sampling, Analysis, and Record Keeping
 - (2) PSP-7, Radioactive Airborne Radwaste Sampling and Analysis
 - (3) S-CAP-11, Chloride Ion Analysis in Water
 - (4) N1-CRP-3, Stack Release Sampling and Analysis
 - (5) N1-CRP-8, Reactor Water Isotopic Analysis

7. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on September 27, 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

NINE MILE POINT - 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				
Waste Hold Up Tank 1125 9/26/78	I-131	(8.42±0.63)E-6	(1.07±0.17)E-5	Agreement
	Cs-134	(7.74±0.09)E-5	(7.79±0.30)E-5	Agreement
	Cs-137	(1.84±0.02)E-4	(1.91±0.04)E-4	Agreement
	Co-60	(2.35±0.12)E-5	(2.53±0.20)E-5	Agreement
Off Gas 0730 9/25/78	Xe-133	(1.67±0.01)E-2	(2.29±0.02)E-2	Possible Agreement
	Xe-135	(1.85±0.01)E-1	(1.93±0.19)E-1	Agreement
	Kr-85m	(2.50±0.20)E-2	(4.69±?)E-2	Possible Agreement



TABLE 1

NINE MILE POINT - 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				
Stack Charcoal 9/26/78	I-131	(2.19±0.10)E-11	(1.37±0.05)E-11	Possible Agreement
	I-133	(9.24±0.46)E-10	(2.98±0.25)E-10	Possible Agreement
Stack Particulate 9/22/78	I-131	(1.74±0.07)E-12	(2.74±0.32)E-12	Possible Agreement
	Co-60	(5.56±0.94)E-13	(9.22±1.91)E-13	Agreement
	I-133	(8.08±0.17)E-11	(1.20±0.17)E-10	Possible Agreement
Stack Charcoal 9/19/78	I-131	(2.25±0.11)E-11	(2.407±?)E-11	Agreement
Stack Particulate 9/19/78	Co-60	(2.06±0.21)E-12	(2.310±?)E-12	Agreement
	I-131	(1.70±0.17)E-12	(2.573±?)E-12	Agreement



TABLE 1

NINE MILE POINT - 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				
Reactor Water	I-131	(8.51±0.41)E-4	(8.207±?)E-4	Agreement
1100	I-132	(3.07±0.16)E-2	(3.88±?)E-2	Agreement
9/25/78	I-133	(1.28±0.06)E-2	(1.08±?)E-2	Agreement
	I-134	(1.09±0.05)E-1	(1.347±?)E-1	Agreement
	I-135	(3.24±0.16)E-2	(2.787±?)E-2	Agreement



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>	RATIO= $\frac{\text{LICENSEE VALUE}}{\text{NRC REFERENCE VALUE}}$	
		<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.

SECRET

