NOV 18 1986

Docket Nos. 50-220
50-410

Niagara Mohawk Power Corporation
ATTN: Mr. C. V. Mangan
Senior Vice President
300 Erie Boulevard West
Syracuse, New York 13202

Gentlemen:

Subject: Combined Inspection Report Nos. 50-220/86-20; 50-410/86-55

This refers to the routine safety inspection conducted by Mr. H. Zibulsky of this office on October 7-9, 1986 of activities authorized by NRC License Nos. DPR-63 and CPPR-112 and to the discussions of our findings held by Mr. Zibulsky with Mr. J. Aldrich and other members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the NRC Region I Inspection Report which is enclosed with this letter. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

Within the scope of this inspection, no violations were observed.

No reply to this letter is required. Your cooperation with us in this matter is appreciated.

Sincerely,

Original Signed By:
Donald R. Bellamy
for Thomas T. Martin, Director
Division of Radiation Safety
and Safeguards

Enclosure: Combined NRC Region I Inspection Report Numbers 50-220/86-20 and 50-410/86-55

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cc w/encl:
T. E. Lempges, Vice President, Nuclear Generation
J. A. Perry, Vice President, Quality Assurance
T. Perkins, General Superintendent, Nuclear Generation
W. Hansen, Manager of Quality Assurance
T. Roman, Station Superintendent
J. Aldrich, Supervisor, Operations
W. Drews, Technical Superintendent
D. Quamme, Manager of Quality Assurance
C. Beckham, NMPC QA Manager
R. B. Abbott, Station Superintendent
Troy B. Conner, Jr. Esquire
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DRP Section Chief
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RI:DRSS	RI:DRSS	RI:DRSS	RI:DRSS
Zibulsky/rw	Pascjak	Bellamy	TMartin
11/13/86	11/17/86	11/17/86	11/ /86

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-220/86-20
50-410/86-55

Docket No. 50-220
50-410

License No. DPR-63
CPPR-112 Priority - Category C
B

Licensee: Niagara Mohawk Power Corporation

300 Erie Boulevard West

Syracuse, New York 13202

Facility Name: Nine Mile Point, Units 1 and 2

Inspection At: Scriba, New York

Inspection Conducted: October 7-9, 1986

Inspectors: Harvey Zibulsky 11-13-86
H. Zibulsky, Chemist date

Approved by: W. J. Pasciak 11-17-86
W. J. Pasciak, Chief, Effluents Radiation Protection Section, DRSS date

Inspection Summary: Inspection on October 7-9, 1986 (Combined Report Nos. 50-220/86-20; 50-410/86-55)

Areas Inspected: Routine, announced inspection of the nonradiological chemistry program. Areas reviewed included measurement control and analytical procedure evaluations.

Results: No violations were identified.

DETAILS

1.0 Individuals Contacted

* J. Aldrich, Operations Superintendent, Unit 1
* E. Leach, Superintendent, Chemistry and Radiation Management
* J. Duell, Supervisor, Chemistry and Radiation Protection
* J. Blasiak, Supervisor, Chemistry, Unit 1
* A. Ross, Supervisor, Chemistry, Unit 2
* J. Coates, Chief Technician A
  T. Roman, Station Superintendent, Unit 1
  J. Moser, Chemistry Technician, Unit 1

* denotes those present at the exit interview.

The inspector also interviewed other licensee employees including members of the chemistry staff.

2.0 Measurement Control Evaluation

This is a verification of the licensee's measurement capabilities on actual plant water samples.

Samples from the Effluent and Influent were taken and spiked with an anion standard and a metal standard. Each sample, with the spikes, were divided into two. The licensee will analyze one sample and the other was sent to Brookhaven National Laboratory (BNL) for independent verification. On completion of the analyses by both laboratories, a statistical evaluation will be made (Inspector Follow-up Item 50-220/86-20-01).

The inspector observed that the licensee used one standard stock solution for calibration purposes. A separate control solution is needed to provide an analytical cross check on the continuing quality of the stock solutions. The licensee agreed to maintain two standard stock solutions.

Some of the calibration curves were not statistically fit to the data points but were graphically approximated. This could produce as much as 15 percent error as may have been the case in the licensee's analysis of the NRC blind standard for chloride. The licensee agreed to use a statistical method to draw the calibration curves.

3.0 Analytical Procedures Evaluation

During the inspection, standard chemical solutions were submitted by the inspector to the licensee for analysis. The standard solutions were prepared by BNL for NRC Region 1, and were analyzed by the licensee using normal methods and equipment. The analysis of standards is used to verify the various plant systems with respect to Technical Specification and other regulatory requirements. In addition, the analysis of standards is

used to evaluate the licensee's analytical procedures with respect to accuracy and precision.

The results of the standard measurements comparison indicated that five out of thirty-three comparisons were in disagreement under the criteria used for comparing results (see Attachment 1). The results of the comparisons are listed in Table 1.

The NRC boron standard solutions were analyzed by the licensee but were not reported because the concentrations were not in the range that is usually determined.

The specific ion electrode chloride disagreement was due to the licensee graphically approximating the data points on the calibration curve instead of statistically fitting the curve. The spectrophotometric chloride disagreement was due to the insensitivity of the procedure at levels less than 50 ppb chloride.

The silica disagreement was due to the improper size cuvette that was used. A 1 cm cell was used instead of a 5 cm cell, as Unit #2 used. For any silica concentration less than 30 ppb, a larger cuvette size should be used to increase sensitivity.

The chromium disagreement seemed to be due to a sampling error.

The sodium disagreement and determination of the 3 NRC standards showed a positive bias. This may be due to contamination from the potassium nitrate that was added to the sample before analysis. The licensee is going to investigate the cause of this systematic bias.

The inspector advised the licensee that they should consider purchasing an ion chromatograph. This instrument will enable the licensee to analyze sulfate concentrations as low as 20 ppb, which is the EPRI Guideline parameter. The licensee's turbidimetric procedure is not sensitive enough to meet the EPRI requirement for sulfate.

4. Exit Interview

The inspector met with the licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on October 9, 1986, and summarized the scope and findings of the inspection. At no time during this inspection was written material provided to the licensee by the inspector.

TABLE 1

CAPABILITY TEST RESULTS

NINE MILE POINT, UNITS 1 AND 2

Chemical Parameter	NRC Value	Lic. Value	Ratio (Lic)/(NRC)	Comparison
		Results in parts per billion (ppb)		
Fluoride	23.1±0.5	22.3±0.6	0.97±0.03	Agreement
(Sp. Ion Electrode) #2	43.5±1.9	41.7±0.6	0.96±0.04	Agreement
	80.5±2.2	80.3±0.6	1.0	Agreement
Chloride	24.1±3.1	19±1	0.79±0.11	Disagreement
(Sp. Ion Electrode) #1	37.4±1.2	36.7±0.6	0.98±0.04	Agreement
	80.5±2.2	81.0±1.7	1.0	Agreement
Chloride	24.1±3.1	37.0±1.7	1.53±0.21	Disagreement
(Spectrophotometry) #1	37.4±1.2	37.0±13.1	1.0	Agreement
	80.5±2.2	73.3±4.6	0.91±0.06	Agreement
Chloride	24.1±3.1	24.0±6.0	1.0	Agreement
(Spectrophotometry) #2	37.4±1.2	38.3±2.5	1.02±0.07	Agreement
	80.5±2.2	74.0±5.2	0.92±0.07	Agreement
Silica	10.9±1.1	12.0±0	1.10±0.11	Agreement
(Spectrophotometry) #1	21.8±1.4	18.0±0	0.83±0.05	Disagreement
	32.0±1.0	29.7±2.5	0.93±0.08	Agreement
Silica	10.9±1.1	12.0±0	1.10±0.11	Agreement
(Spectrophotometry) #2	21.8±1.4	23.3±1.5	1.07±0.10	Agreement
	32.0±1.0	32.0±2.0	1.0	Agreement
		Results in parts per million (ppm)		
Iron	0.587±0.04	0.613±0.01	1.04±0.07	Agreement
(Atomic Absorption)	1.15±0.04	1.21±0.02	1.05±0.04	Agreement
	1.76±0.05	1.73±0.02	0.98±0.03	Agreement
Copper	0.562±0.03	0.606±0.01	1.08±0.06	Agreement
(Atomic Absorption)	1.16±0.06	1.18±0.01	1.02±0.05	Agreement
	1.74±0.07	1.76±0.01	1.01±0.04	Agreement

Table 1

Chemical Parameter	NRC Value	Lic. Value	Ratio (NRC)	Comparison
Nickel (Atomic Absorption)	0.611±0.03	0.621±0.01	1.02±0.05	Agreement
	1.22±0.04	1.20±0	0.98±0.03	Agreement
	1.84±0.05	1.73±0.03	0.94±0.03	Agreement
Chromium (Atomic Absorption)	0.612±0.04	0.638±0.04	1.04±0.09	Agreement
	1.13±0.04	1.29±0.04	1.14±0.05	Disagreement
	1.72±0.10	1.82±0.01	1.06±0.06	Agreement
Sodium (Atomic Absorption)	0.183±0.02	0.240±0	1.31±0.14	Disagreement
	0.369±0.03	0.431±0	1.17±0.10	Agreement
	0.576±0.03	0.625±0	1.09±0.06	Agreement

ATTACHMENT 1

CRITERIA FOR COMPARING ANALYTICAL MEASUREMENTS

This attachment provides criteria for comparing results of capability tests. In these criteria, the judgement limits are based on the uncertainty of the ratio of the licensee's value to the NRC value. The following steps are performed:

(1) the ratio of the licensee's value to the NRC value is computed

$$\left(\text{ratio} = \frac{\text{Licensee Value}}{\text{NRC Value}}\right);$$

(2) the uncertainty of the ratio is propagated.[1]

If the absolute value of one minus the ratio is less than or equal to twice the ratio uncertainty, the results are in agreement.

($|1-\text{ratio}| \leq 2$ uncertainty)

[1] $Z = \frac{x}{y}$, then $\frac{Sz^2}{Z^2} + \frac{Sx^2}{x^2} + \frac{Sy^2}{y^2}$

[1](From: Bevington, P. R., Data Reduction and Error Analysis for the Physical Sciences, McGraw-Hill, New York, 1969)