U.S. NUCLEAR REGULATORY COMMISSION
REGION I

DOCKET/REPORT NO.: 50-244/95-18/DPR-18

LICENSE NO.: DPR-18

LICENSEE: Rochester Gas and Electric Corporation
49 East Avenue
Rochester, New York 14649

FACILITY: R. E. Ginna Nuclear Generating Station

INSPECTION AT: Ontario, New York

INSPECTION DATES: October 2-6, 1995

INSPECTORS: N. T. McNamara for — 10/20/95
J. Kottan, Laboratory Specialist — Date

N. T. McNamara — 10/20/95
N. McNamara, Laboratory Specialist — Date

APPROVED BY: 10/20/95
J. White, Chief — Date
Radiation Safety Branch

Areas Inspected: Announced inspection of the radiological chemistry program. Areas reviewed included: Confirmatory Measurements - Radiological, Laboratory QA/QC, and Audits.

Results: The licensee had in place effective programs for measuring radioactivity in process and effluent samples. No safety concerns or violations of regulatory requirements were observed.

DETAILS

1.0 INDIVIDUALS CONTACTED

Principal Licensee Employees

R. Bergstrom, System Engineer
B. Dahl, Plant Chemist
* D. Filion, Radiochemist
* R. Gaspar, Lead Technician
* A. Harhay, Radiation Protection & Chemistry Manager
* N. Leoni, Technical Assessment Coordinator
* J. Widay, Plant Manager

Licensee Contractors

G. Snajder, QA Engineer, QMS, Inc.

NRC Employees

P. Drysdale, Sr. Resident Inspector
E. Knutson, Resident Inspector

* Denotes those present at the exit meeting on October 6, 1995.

The inspectors also interviewed other licensee personnel including members of the chemistry and radiation protection staffs.

2.0 PURPOSE

The purpose of this inspection was to review the following areas.

1. The licensee's ability to measure radioactivity in plant systems samples and effluent samples.

2. The licensee's ability to demonstrate the acceptability of analytical results through implementation of a laboratory QA/QC program.

3.0 CONFIRMATORY MEASUREMENTS - RADIOCHEMISTRY

During the inspection liquid, airborne particulate (filter) and iodine (charcoal cartridge), and gas samples were analyzed by the licensee's chemistry department and the NRC for the purpose of intercomparison. The samples were actual split samples with the exception of the particulate filter and charcoal cartridge samples. In these cases, the samples could not be split and the same samples were analyzed by the licensee and the NRC. Where possible, the samples were actual effluent samples or in-plant samples which duplicated the counting geometries used by the licensee for effluent sample analyses. The samples were analyzed by the licensee using routine methods and equipment and by the NRC Region I Mobile Radiological Measurements Laboratory. Joint analyses of actual samples were used to verify the licensee's capability to measure radioactivity concentrations in effluent and other samples with respect to Technical Specifications and other regulatory requirements.

In addition, a liquid sample was sent to the NRC reference laboratory, Department of Energy, Radiological and Environmental Sciences Laboratory (RESL), for analyses requiring wet chemistry. The analyses to be performed on the sample were Sr-89, Sr-90, H-3, Fe-55, and gross alpha. The results of these analyses 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 a liquid sample split between the licensee and the NRC during a previous inspection on September 14-18, 1992 (Inspection Report No. 50-244/92-14) were also compared during this inspection.

The comparisons for the sample results that were available indicated that all of the measurements were in agreement under the criteria for comparing results (see Attachment 1 to Table I). The data are presented in Table I. While performing the above data comparisons, the inspector noted that the licensee's Kr-85m data appeared to be biased in comparison to the NRC data. The inspector determined that the licensee was using a different gamma branching ratio than the NRC for Kr-85m. After a review of references and discussions with the licensee, the licensee stated that they would use the same branching ratio as the NRC and modify their radionuclide library accordingly.

In addition, a post accident sampling system (PASS) reactor coolant sample was analyzed by both the licensee and the NRC. A comparison of the PASS reactor coolant sample radioiodine results to the routine reactor coolant sample radioiodine results indicated that, for the radionuclides I-131 through I-135, the results were, on average, within six percent. While the NRC has no criteria, for the purposes of this inspection, for comparing PASS sample results to routine reactor water sample results, results within plus or minus 50 percent are considered acceptable.

The inspector had no further questions in this area. No safety concerns or violations were identified in this area.

4.0 LABORATORY QA/QC

The licensee's laboratory QA/QC program was described in a number of procedures, including Procedure Nos. HP-10.0, Health Physics and Chemistry Quality Control Review; HP-10.1, Quality Control of Counting Systems; CHA-QV-Interlab, Chemistry Quality Verification Interlaboratory Guidelines; CH-QV-MCA, Multichannel Analyzer Quality Verification; WC-25, Chemistry Quality Control; and WC-25.2, Duplicate and Spiked Sample Analysis. These procedures, as well as other licensee procedures, provided for the control of analytical results through a number of mechanisms including: personnel responsibilities, the use of traceable standards, instrument control checks, and participation in an interlaboratory QC program.

The instrument control checks consisted of the use of control charts for trending and assessing instrument performance. The interlaboratory QC program consisted of the analysis of unknown samples received from an outside laboratory, and the submission of spiked samples to the vendor laboratory used for the analysis of effluent samples requiring wet radiochemical analyses. The inspector reviewed selected data generated by the licensee's laboratory QA/QC program for 1993, 1994 and 1995 to date, and, based on this review,

noted that the licensee was implementing the laboratory QA/QC program as required. The inspector noted that the licensee's laboratory QA/QC program was comprehensive, the licensee reviewed and assessed the QC data, and the interlaboratory QC data was trended over the long term. However, the inspector noted that control charts for the gamma spectrometry system were reviewed on a weekly basis rather than a daily basis. The inspector discussed this matter with the licensee and stated that control charts should provide real time control of the measurement process, but when they are reviewed after the fact the control charts only provide an historical record. The licensee stated that this area would by reviewed and appropriate action taken. Additionally, the inspector noted that licensee did not include the Fe-55 and Sr-89/90 results as part of the review and analysis of the interlaboratory QC data. The licensee stated that these results would be added to the interlaboratory QC data review. Finally, the inspector noted that the licensee was planning to combine the laboratory QA/QC procedures listed above into one comprehensive laboratory QA/QC program that included all aspects of the laboratory operations such as primary and secondary activities as well as provisions for self assessment. The inspector stated that this appeared to be a good initiative on the part of the licensee. The inspector had no further questions in this area. No safety concerns or violations were identified.

5.0 AUDITS ACTIVITIES

The inspector reviewed Audit Report No. AINT-1995-0010-GFS, Radiation Protection, Chemistry, and Radwaste, conducted from June 26, 1995 to July 31, 1995. The inspector also discussed this audit with the licensee and reviewed the audit field notes. Based on this review and discussions, the inspector determined that the audit was conducted utilizing an audit plan and detailed checklists, and the audit team included technical specialists. The audit contained no safety significant findings in the chemistry area. The inspector also reviewed Audit Report No. 94-21:GFS, Radiation Protection and Chemistry Programs, conducted from June 20 to July 14, 1994. This audit also included a technical specialist as a member of the audit team. A review of the audit schedule indicated that chemistry activities were to be audited on an annual basis.

The inspector reviewed surveillances of specific chemistry activities which were conducted in 1993, 1994 and 1995 to date. The inspector discussed the surveillance activities with the licensee. The inspector noted that surveillance activities were not conducted at a specific frequency, but were conducted as necessary utilizing input from various sources such as plant occurrences, industry events, or department requests.

Based on the above reviews and discussions, the inspector determined there was effective independent oversight and assessment of chemistry activities. The audits were of sufficient technical depth to assess chemistry activities and probe for programmatic weaknesses. No safety concerns or violations were identified in this area.

6.0 WATER CHEMISTRY

The inspector reviewed the licensee's chemical and radiochemical control programs for selected plant systems. This included a review of selected chemical and radiochemical analytical results from reactor coolant samples, steam generator samples, spent fuel pool samples, condensate/feed water samples, and storage tanks for 1994 and 1995 to date. The inspector also reviewed data from the licensee's non-radiological chemistry QC program. The inspector discussed this data with the licensee. The inspector also discussed with the licensee the current steam generator chemical control program. In addition, the inspector reviewed Procedure Nos. CHA-SEC-GUIDE, Secondary Water Chemistry Guidelines; CH-PRI-REPORT, Daily Chemistry Analysis Results; and CH-PRI-SCHED, Primary System Analysis Schedule and Limits.

Based on the above reviews and discussions, the inspector determined that the licensee had in place effective chemical and radiochemical controls for various plant systems. The above programs were being implemented in accordance with existing procedures and controls. The licensee was committed to maintaining chemical and radiochemical controls within industry and owners group guidelines. No safety concerns or violations were identified in this area.

7.0 EXIT MEETING

The inspector met with the licensee representatives denoted in Section 1.0 of this report at the conclusion of the inspection on October 6, 1995. The inspector summarized the purpose, scope and findings of the inspection. The licensee acknowledged the inspection findings.

TABLE I

Ginna Radiochemistry Test Results

SAMPLE	ISOTOPE	NRC VALUE	LICENSEE VALUE	COMPARISON
		Results in microCuries per milliliter		
Air Ejector Gas	Kr-85m	(7.03±0.09)E-6	(8.59±0.08)E-6	Agreement
0907 hrs			(6.78±0.06)E-6*	Agreement
10/03/95	Kr-87	(1.39±0.02)E-5	(1.212±0.016)E-5	Agreement
(Detector #1)	Kr-88	(1.63±0.03)E-5	(1.60±0.03)E-5	Agreement
	Xe-133	(8.08±0.05)E-5	(8.67±0.04)E-5	Agreement
	Xe-135m	(1.187±0.008)E-4	(1.280±0.008)E-4	Agreement
	Xe-135	(9.76±0.03)E-5	(8.73±0.02)E-5	Agreement
	Xe-138	(4.38±0.08)E-5	(4.53±0.08)E-5	Agreement
	Ar-41	(2.81±0.04)E-5	(2.91±0.03)E-5	Agreement
Reactor Coolant Gas	Kr-85m	(7.4±0.6)E-3	(8.1±0.4)E-3	Agreement
0841 hrs			(6.4±0.3)E-3*	Agreement
10/04/95	Kr-87	(1.2±0.2)E-2	(1.16±0.09)E-2	Agreement
(Detector #2)	Kr-88	(1.7±0.2)E-2	(1.73±0.14)E-2	Agreement
	Xe-133	(6.00±0.11)E-3	(6.25±0.12)E-2	Agreement
	Xe-135	(5.36±0.08)E-2	(4.89±0.08)E-2	Agreement
	Ar-41	(3.2±0.2)E-2	(2.92±0.16)E-2	Agreement
Reactor Coolant	Cr-51	(4.19±0.06)E-5	(4.6±0.3)E-5	Agreement
Particulate Filter	Co-58	(7.59±0.03)E-5	(8.21±0.10)E-5	Agreement
0205 hrs	Co-60	(1.17±0.08)E-6	(1.5±0.2)E-6	Agreement
09/28/95	Sb-124	(4.22±0.14)E-6	(4.5±0.5)E-6	Agreement
(Detector #1)	Zr-95	(7.11±0.16)E-6	(8.5±0.6)E-6	Agreement
Steam Generator	I-131	(2.5±0.2)E-7	(2.5±0.3)E-7	Agreement
Blowdown	I-132	(1.04±0.03)E-6	(1.16±0.06)E-6	Agreement
1400 hrs	I-133	(1.77±0.03)E-6	(1.73±0.04)E-6	Agreement
10/04/95	I-134	(1.06±0.12)E-6	(1.06±0.06)E-6	Agreement
(Detector #2)	I-135	(2.22±0.13)E-6	(2.02±0.13)E-6	Agreement

*Kr-85m result using same branching ratio as NRC

TABLE I

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SAMPLE	ISOTOPE	NRC VALUE	LICENSEE VALUE	COMPARISON
		Results in microCuries per milliliter		
Spent Fuel Pool	Co-58	(8.55±0.05)E-5	(8.31±0.08)E-5	Agreement
0915 hrs	Co-60	(1.463±0.007)E-4	(1.490±0.012)E-4	Agreement
10/03/95	Sb-125	(7.84±0.10)E-5	(7.88±0.16)E-5	Agreement
(Detector #2)	Cs-134	(7.1±0.3)E-6	(6.0±0.5)E-6	Agreement
	Cs-137	(8.71±0.05)E-5	(8.53±0.08)E-5	Agreement
Containment	I-131	(2.19±0.04)E-11	(2.21±0.06)E-11	Agreement
Charcoal Cartridge	I-133	(1.8±0.2)E-11	(1.9±0.2)E-11	Agreement
1238 hrs				
10/03/95				
(Detector #2)				
Auxiliary Building	Co-60	(3.42±0.09)E-5	(3.43±0.10)E-5	Agreement
Sub-basement Water	Cs-137	(2.208±0.005)E-3	(2.200±0.006)E-3	Agreement
0900 hrs	Cs-134	(4.2±0.5)E-6	(3.7±0.6)E-6	Agreement
09/01/95				
(Detector #1)				
Reactor Coolant	I-134	(6.48±0.06)E-2	(7.12±0.14)E-2	Agreement
0844 hrs				
10/04/95				
(First Count)				
(Detector #2)				
Reactor Coolant	I-131	(1.53±0.06)E-3	(1.4±0.2)E-3	Agreement
0844 hrs	I-132	(3.65±0.02)E-2	(3.67±0.11)E-2	Agreement
10/04/95	I-133	(1.961±0.010)E-2	(1.81±0.03)E-2	Agreement
(Second Count)	I-135	(3.71±0.04)E-2	(3.70±0.12)E-2	Agreement
(Detector #2)				

*Kr-85m result using same branching ratio as NRC

TABLE I

Ginna Radiochemistry Test Results

SAMPLE	ISOTOPE	NRC VALUE	LICENSEE VALUE	COMPARISON
		Results in microCuries per milliliter		
Reactor Coolant PASS Sample 1307 hrs 10/03/95 (First Count) (Detector #2)	I-134	(5.74±0.07)E-2	(6.3±0.2)E-2	Agreement
Reactor Coolant PASS Sample 1307 hrs 10/03/95 (Second Count) (Detector #2)	I-131	(1.58±0.09)E-3	(1.8±0.2)E-3	Agreement
	I-132	(3.37±0.04)E-2	(3.65±0.10)E-2	Agreement
	I-133	(1.84±0.02)E-2	(1.73±0.03)E-2	Agreement
	I-135	(3.41±0.08)E-2	(3.68±0.12)E-2	Agreement
Waste Holdup Tank 0110 hrs 09/16/92	Fe-55	(8.2±0.4)E-5	(8.25±0.82)E-5	Agreement
	gross alpha	(10±3)E-8	Not Reported	No Comparison
	H-3	(1.23±0.01)E-1	(9.88±0.19)E-2	Agreement
	Sr-89	(1.50±0.16)E-6	(1.24±0.21)E-6	Agreement
	Sr-90	(6.8±0.5)E-7	(7.28±0.80)E-7	Agreement

ATTACHMENT 1 TO TABLE I

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 the 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.

Resolution[1]	Ratio for Comparison[2]
<4	No Comparison
4 - 7	0.5 - 2.0
8 - 15	0.6 - 1.66
16 - 50	0.75 - 1.33
51 - 200	0.80 - 1.25
>200	0.85 - 1.18

1. Resolution = (NRC Reference Value/Reference Value Uncertainty)

2. Ratio = (Licensee Value/NRC Reference Value)