

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 85-22

Docket No. 50-244

License No. DRP-18 Priority - Category C

Licensee: Rochester Gas and Electric Company
49 East Avenue
Rochester, New York 14649

Facility Name: R. E. Ginna Nuclear Power Plant

Inspection At: Ontario, New York

Inspection Conducted: October 7 - 11, 1985

Inspectors: Richard K. Struckmeyer 11/5/85
Richard K. Struckmeyer, Radiation Specialist date

for Richard K. Struckmeyer 11/5/85
Anthony A. Weadock, Radiation Specialist date

Approved by: Mohamed M. Shanbaky 11/5/85
Mohamed M. Shanbaky, Chief date
PWR Radiation Protection Section, EPRPB

Inspection Summary: Inspection on October 7 - 11, 1985 (Report No. 50-244/85-22)

Areas Inspected: Routine, unannounced inspection of the licensee's radio-chemical measurements program using the NRC: I Mobile Radiological Measurements Laboratory and laboratory assistance provided by DOE radiological and Environmental Sciences Laboratory. Areas reviewed included: program for the quality control of analytical measurements, performance on radiological analyses of split actual effluent samples, and records and procedures. The inspection involved 80 inspector hours onsite by two NRC region-based inspectors.

Results: Within the areas inspected, no violations were identified.

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DETAILS

1. Individuals Contacted

Licensee Personnel

- R. Burt - Assistant Training Coordinator
- * D. Fillion - Radiochemist
- * D. Filkins - Manager, Health Physics and Chemistry
- R. Gasper - HP and Chemistry Technician
- W. Goodman - HP Foreman
- * N. Kiedrowski - HP and Chemistry Technician
- M. Klueber - HP and Chemistry Technician
- * T. Myer - Superintendent, Support Services
- * B. Quinn - Corporate Health Physicist
- S. Spector - Superintendent, Nuclear Production

US NRC

- * T. Kim - Resident Inspector

* Indicates those present at exit meeting on October 11, 1985

2. Laboratory Quality Control (QC) Program

The licensee's QC program is contained in Procedure HP-10.1, Quality Control of Counting Systems. This procedure provides for operational checks of counting equipment including backgrounds, source checks and periodic chi-squared tests, and where applicable, gain and resolution checks. The inspector reviewed selected QC data for 1984 and 1985 to date and determined that the licensee was implementing the QC program per procedure HP-10.1.

3. Confirmatory Measurements

During the inspection, actual liquid and gas samples, as well as a simulated particulate filter sample were analyzed by the licensee and NRC for the purpose of intercomparison. The samples are actual effluent and inplant samples normally analyzed by the licensee, and a simulated filter sample supplied by the NRC, containing known quantities of suitable radionuclides. The samples were analyzed by the licensee using normal methods and equipment, and by the NRC using the NRC:I Mobile Radiological Measurements Laboratory. Joint analyses of such samples are used to verify the licensee's capability to measure radioactivity in effluent samples with respect to Technical Specification requirements and other regulatory requirements.

In addition, a liquid effluent 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 samples 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 gamma isotopic measurements comparisons indicated that all of the measurements except I-135 in reactor coolant were in agreement under the criteria used for comparing results (see Attachment 1). The results of the comparisons are listed in Table I.

The comparisons of the principal radioisotopes of iodine in reactor coolant indicated agreement for I-131, I-132, I-133, and I-134, and disagreement for I-135. The inspector reviewed the licensee's radioisotopic library and determined that the gamma-ray abundances for I-131 through I-134 were in close agreement to those used by the NRC, while those for I-135 were not. The licensee's values for two principal gammas, at 1131.5 KeV and 1260.4 KeV, were about 20% larger than the values used by the NRC. When the licensee's result for I-135 was recalculated using the NRC values for gamma-ray abundances, the results were in agreement. The inspector stated that the licensee should update its' values for I-135 to agree with those used by the NRC, and further recommended that the licensee review its entire radionuclide library to determine whether additional updating is warranted. The licensee stated that it would do so, and added that it intends to upgrade its gamma-ray spectroscopy system in approximately six to twelve months, including the acquisition of new software, which would include an updated radionuclide library. This will be reviewed in a future inspection (244/85-22-01).

4. Procedures and Records

The inspector reviewed selected procedures and records in the areas of radiochemistry and effluent control, as well as selected calibration records for the Ge(Li) detector in the chemistry counting room. The inspector also reviewed the licensee's Semiannual Effluent Release Reports covering the periods July - December, 1984 and January - June, 1985. These were in compliance with the licensee's Technical Specifications.

5. Training

The inspector reviewed the licensee's program for qualification and training of radiological chemistry technicians by the following methods:

- review of selected technician experience files,
- discussions with licensee training, supervisory, and technician personnel
- review of the "standing orders" and "procedure change" books,

- review of the following procedures:
 - A-103.10, Radiation Protection Technician Training and Responsibility Limits
 - A-103.11, Chemistry Technician Training

Experience and qualifications of reviewed radiation protection and secondary chemistry technicians were found to meet the requirements of ANSI N18.1 - 1971, "Selection and Training of Nuclear Power Plant Personnel". ANSI N18.1 requires technicians in a responsible position to have a minimum of two years working experience and a minimum of one year related technical training. The inspector noted, however, that procedures A-103.10 and A-103.11 did not accurately reflect the requirements of ANSI N18.1 in that:

- A-103.10 did not require radiation protection technicians to have one year of related technical training, and
- A-103.11 did not require qualified chemistry technicians to have either two years of working experience or one year of technical training.

Procedure A-103.11 also failed to identify or define the responsibilities of trainee level technicians who did not meet the full ANSI criteria. The licensee indicated the above procedures would be revised to reflect ANSI N18.1 requirements and define the position and responsibilities of individuals not yet meeting the requirements for qualified technician. These revisions will be reviewed during a subsequent inspection (244/85-22-02).

Procedure A-103.10, section 3.3.6 requires that procedure changes and new procedures will be read and signed off as they are received by radiation protection technicians. The inspector determined the licensee maintains a "procedural change" book to meet the above procedural requirement. This book contains new procedures and revisions, along with sign-off sheets for the technicians to indicate their review.

The inspector reviewed the "procedure change" book and determined that procedures were not being reviewed and signed off in a timely manner by either the radiation protection technicians or staff. The licensee indicated that, although procedural sign-offs were not being formally kept up to date, specific measures were made to insure technicians were kept up to date on procedural changes. These included:

- supervisor discussion of procedural changes with technicians,
- posting of new procedures in the HP office area, and
- inclusion of major procedural changes in the "standing orders" book, requiring initialing by all technicians.



The inspector reviewed the "standing orders" book and interviewed several technicians and determined that although the "procedural change" book was not up to date, technicians were aware of recent procedural changes and revisions. The licensee indicated that revisions would be made to the procedural review system to insure the timely, formal sign-off of all new procedures by the radiation protection and chemistry technicians. This area will be reviewed in a subsequent inspection (244/85-22-03).

No violations were identified in this area.

6. QA Audits

The inspector reviewed the following audits of the Ginna Station Health Physics and Chemistry Department:

83-40: JB, Ginna Station Health Physics and Chemistry,
84-51: JB, Ginna Station Health Physics and Chemistry.

The inspector reviewed the audit checklists and summary reports for the above audits and determined the scope of the audits were adequate in evaluating compliance with Technical Specification required performance of chemistry surveillances.

The audits did not provide, however, a technical review of the chemistry department's procedures or performance. The inspector discussed the auditor's qualifications with licensee QA management and determined the auditor's chemistry experience was limited to previous work experience as an Senior Reactor Operator. The licensee indicated that additional technical expertise would be brought in prior to the performance of the 1985 Health Physics and Chemistry audit. Technical depth of the 1985 audit will be reviewed in a subsequent inspection (244/85-22-04).

The inspector noted that the audit checklists for the "Training" portion of the 84.51: JB audit identified as a concern the failure of radiation protection technicians to sign-off on new or revised procedures in a timely manner (see section 5). This concern, however, was not included in the summary and consequently was not communicated to the appropriate personnel for in-house resolution of the concern. The licensee indicated that a more in-depth review of the auditor's checklists and audit summary by QA management would forestall such an occurrence in future audits.

7. Exit Interview

The inspector met with the licensee representatives denoted in Paragraph 1 at the conclusion of the inspection on October 11, 1985. The inspector summarized the purpose and scope of the inspection and the inspection findings.

The licensee agreed to perform the analyses listed in Paragraph 3 and report the results to the NRC.

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 judgment 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.

$$\text{Resolution} = \frac{\text{NRC REFERENCE VALUE}}{\text{REFERENCE VALUE UNCERTAINTY}}$$

$$\text{Ratio} = \frac{\text{LICENSEE VALUE}}{\text{NRC REFERENCE VALUE}}$$

<u>Resolution</u>	<u>Agreement (Ratio)</u>
<3	0.4 - 2.5
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

TABLE I

GINNA VERIFICATION TEST RESULTS

SAMPLE	ISOTOPE	RESULT IN $\mu\text{Ci/ml}$		COMPARISON
		NRC VALUE	LICENSEE VALUE	
Reactor Coolant B Loop 1323 hrs 10-8-85	I-131	(4.8 ± 0.3) E-03	(4.3 ± 0.2) E-03	Agreement
	I-132	(9.0 ± 0.2) E-02	(1.01 ± 0.01) E-01	Agreement
	I-133	(6.12 ± 0.08) E-02	(5.11 ± 0.06) E-02	Agreement
	I-134	(1.54 ± 0.18) E-01	(1.78 ± 0.06) E-01	Agreement
	I-135	(1.26 ± 0.04) E-01	(8.4 ± 0.3) E-02	Disagreement*
Reactor Coolant Off-Gas 1320 hrs 10-8-85	Ar-41	(2.2 ± 0.1) E-02	(2.3 ± 0.1) E-02	Agreement
	Kr-85m	(4.9 ± 0.2) E-03	(4.6 ± 0.2) E-03	Agreement
	Kr-87	(9.9 ± 0.9) E-03	(9.8 ± 0.5) E-03	Agreement
	Kr-88	(1.12 ± 0.06) E-02	(1.15 ± 0.08) E-02	Agreement
	Xe-133	(2.19 ± 0.04) E-02	(2.33 ± 0.06) E-02	Agreement
	Xe-135	(3.54 ± 0.03) E-02	(3.36 ± 0.04) E-02	Agreement
Containment Charcoal Cartridge 2113 hrs 10-8-85	I-131	(2.79 ± 0.16) E-11	(2.75 ± 0.17) E-11	Agreement
	I-133	(1.24 ± 0.03) E-10	(9.86 ± 0.33) E-11	Agreement
Waste Holdup Tank (Liquid) 1440 hrs 10-8-85	Co-58	(3.2 ± 0.2) E-05	(2.8 ± 0.3) E-05	Agreement
	Co-60	(1.74 ± 0.04) E-04	(1.72 ± 0.05) E-04	Agreement
	I-131	(1.14 ± 0.23) E-05	(1.10 ± 0.31) E-05	Agreement
	Cs-134	(2.30 ± 0.04) E-04	(2.12 ± 0.05) E-04	Agreement
	Cs-137	(6.48 ± 0.06) E-04	(6.29 ± 0.11) E-04	Agreement
	La-140	(1.59 ± 0.21) E-05	(1.24 ± 0.23) E-05	Agreement
Waste Gas Decay Tank "A" 1645 hr 10-10-85	Kr-85	(1.50 ± 0.16) E-04	(1.63 ± 0.25) E-04	Agreement
	Xe-133	(6.52 ± 0.06) E-05	(7.62 ± 0.12) E-05	Agreement

*Agreement was obtained using gamma-ray abundance data from NRC spectra library; see text.

11-11-11



TABLE I

GINNA VERIFICATION TEST RESULTS

<u>SAMPLE</u>	<u>ISOTOPE</u>	<u>RESULT IN Total μCi</u>		<u>COMPARISON</u>
		<u>NRC VALUE</u>	<u>LICENSEE VALUE</u>	
NRC Spiked Filter 1400 hrs 2-22-84	Ce-144	(3.46 \pm 0.02) E-02	(4.12 \pm 0.13) E-02	Agreement
	Co-60	(2.68 \pm 0.02) E-02	(3.21 \pm 0.03) E-02	Agreement
	Cs-137	(1.50 \pm 0.02) E-02	(1.85 \pm 0.03) E-02	Agreement
	Mn-54	(1.47 \pm 0.02) E-02	(1.69 \pm 0.06) E-02	Agreement