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Subject: Semiannual Radioactive Effluent Release Report
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Sirs:

This Semiannual Radioactive Effluent Release Report is being submitted in accordance with the requirements of Technical Specification Section 6.9.1.4.

Very truly yours,

Robert C. Mecredy
Vice President

Cert No P746978208

IE48
1/1

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

R. E. GINNA NUCLEAR PLANT

ROCHESTER GAS AND ELECTRIC

DOCKET NO. 50-244

JULY - DECEMBER, 1991

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1.0 INTRODUCTION

This Semiannual Radioactive Effluent Release Report is for the Rochester Gas and Electric Corporation R.E. Ginna plant and is submitted in accordance with the requirements of Technical Specification Section 6.9.1.4. The report covers the period from July 1, 1991 through December 31, 1991.

This report includes a summary of the quantities of radioactive gaseous and liquid effluents and solid waste released from the plant presented in the format outlined in appendix B of Regulatory Guide 1.21, Revision 1, June 1974.

Corrected forms for liquid effluents released during the January-June 1991 period are included as Tables 7A and 7B to show data that was not available when the earlier report was prepared.

All gaseous and liquid effluents discharged during this reporting period were in compliance with the limits of the R.E. Ginna Technical Specifications.

2.0 SUPPLEMENTAL INFORMATION

2.1 Regulatory Limits

The Technical Specification limits applicable to release of radioactive material in liquid and gaseous effluents are:

2.1.1 Fission and Activation Gases

The instantaneous dose rate, as calculated in the ODCM, due to noble gases released in gaseous effluents from the site shall be limited to a release rate which would yield $\leq$ 500 mrem/yr to the total body and $\leq$ 3000 mrem/yr to the skin if allowed to continue for a full year.

The air dose, as calculated in the ODCM, due to noble gases released in gaseous effluents from the site shall be limited to the following:

(i) During any calendar quarter to $\leq$ 10 mrad for gamma radiation and to $\leq$ 20 mrad for beta radiation.

2.1.2 Radioiodine, Tritium and Particulates

The instantaneous dose rate, as calculated in the ODCM, due to radioactive materials released in gaseous effluents from the site as radioiodines, radioactive materials in particulate form, and radionuclides other than noble gases with half-lives greater than 8 days

shall be limited to a release rate which would yield ≤ 1500 mrem/yr to any organ if allowed to continue for a full year.

The dose to an individual, as calculated in the ODCM, from radioiodine, radioactive materials in particulate form and radionuclides other than noble gases with half-lives greater than eight days released with gaseous effluents from the site shall be limited to the following:

(i) During any calendar quarter to ≤ 7.5 mrem to any organ.

(ii) During any calendar year to ≤ 15 mrem to any organ.

2.1.3 Liquid Effluents

The release of radioactive liquid effluents shall be such that the concentration in the circulating water discharge does not exceed the limits specified in accordance with Appendix B, Table II, Column 2 and notes thereto of 10CFR20. For dissolved or entrained noble gases the total activity due to dissolved or entrained noble gases shall not exceed 2 E-4 uCi/ml.

The dose or dose commitment to an individual as calculated in the ODCM from radioactive materials in liquid effluents released to unrestricted areas shall be limited:

(i) During any calendar quarter to ≤ 1.5 mrem to the total body and to ≤ 5 mrem to any organ, and

(ii) During any calendar year to ≤ 3 mrem to the total body and to ≤ 10 mrem to any organ.

2.2 Maximum Permissible Concentrations (MPC)

2.2.1 For gaseous effluents, maximum permissible concentrations are not directly used in release rate calculations since the applicable limits are stated in terms of dose rate at the unrestricted area boundary.

2.2.2 For liquid effluents, the maximum permissible concentration values specified in 10CFR20, Appendix B, Table II, column 2 are used to calculate release rates and permissible concentrations at the unrestricted area boundary. A value of 2E-04 uCi/ml is used as the MPC for dissolved and entrained noble gases in liquid effluents.

2.3 Release Rate Limits

The release rate limits for fission and activation gases from the R.E. Ginna plant are not based on the average energy of the radionuclide mixture in gaseous effluents; therefore, this value is not applicable. However, the average energy of the radionuclide mixture was 0.230 Mev.

2.4 Measurements and Approximations of Total Radioactivity

Gamma spectroscopy was the primary analysis method used to determine the radionuclide composition and concentration of gaseous and liquid effluents. Composite samples were analyzed for Sr-89, Sr-90 and Fe-55 by a contract laboratory. Tritium and alpha analysis were done using liquid scintillation and gas flow proportional counting respectively.

The total radioactivity in effluent releases was determined from the measured concentration of each radionuclide present and the total volume of effluents released.

2.5 Batch Releases

2.5.1 Liquid

1.	Number of batch releases:	2.51 E+02
2.	Total time period for batch releases:	2.93 E+04 min.
3.	Maximum time period for a batch release:	6.70 E+02 min.
4.	Average time period for batch releases:	1.17 E+02 min.
5.	Minimum time period for a batch release:	1.9 E+00 min.
6.	Average stream flow (LPM) during periods of release effluent into a flowing stream:	1.29 E+06 LPM

2.5.2 Gaseous

1.	Number of batch releases:	2.8E+01
2.	Total time period for batch releases:	1.10E+05 min.
3.	Maximum time period for a batch release:	5.17E+04 min.
4.	Average time period for batch releases:	3.92E+03 min.
5.	Minimum time period for a batch release:	1.49E+02 min.

2.6 Abnormal Releases

There were no abnormal releases of liquid or gaseous effluents during the reporting period.

3.0 SUMMARY OF GASEOUS RADIOACTIVE EFFLUENTS

The quantities of radioactive material released in gaseous effluents are summarized in tables 1A and 1B. All releases were considered to be elevated releases.

4.0 SUMMARY OF LIQUID RADIOACTIVE EFFLUENTS

The quantities of radioactive material released in liquid effluents are summarized in tables 2A and 2B.

5.0 SOLID WASTES

The quantities of radioactive material released in shipments of solid waste transported from the site during the reporting period are summarized in Table 3. Principal nuclides were determined by gamma spectroscopy and non-gamma emitters were calculated from scaling factors determined by an independent laboratory from representative samples of that waste type.

6.0 LOWER LIMIT OF DETECTION NOT MET

There were no gamma emitting radionuclides that did not meet the required lower limit of detection for liquid releases.

7.0 RADIOLOGICAL IMPACT

An assessment of doses to the maximally exposed individual from gaseous and liquid effluents was performed for locations representing the maximum dose. In all cases, doses were well below Technical Specification limits. Doses were assessed upon actual meteorological conditions considering the noble gas exposure, inhalation, ground plane and ingestion pathways. The ingestion pathways considered were the produce, vegetable, goat's milk, cow's milk and meat pathway. The results of this assessment are presented in Tables 5A and 5B.

8.0 METEOROLOGICAL DATA

The annual summary of hourly meteorological data collected during 1991 is not included with this report, but can be made available at the R.E. Ginna Plant as allowed by Technical Specifications.

9.0 LAND USE CHANGES

There were no changes in critical receptor location for dose calculations during the reporting period.

10.0 ANNUAL TABULATION OF PERSONNEL EXPOSURE

The annual tabulation of the number of station, utility and other personnel receiving exposures greater than 100 mRem/yr and their associated man-Rem exposure

according to work and job function required by Technical Specification 6.9.2.2 and 10CFR20.407 is included as Tables 6A and 6B.

11.0 LEAK TEST OF SEALED SOURCES

No sealed sources were found to be leaking when smeared by both wet and dry smears.

12.0 CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL (ODCM)

There were no changes to the ODCM during the report period.

13.0 CHANGES TO THE PROCESS CONTROL PROGRAM (PCP)

There were no changes to the PCP during the reporting period.

14.0 MAJOR CHANGES TO RADWASTE TREATMENT SYSTEMS

There were no major changes to the Radwaste Treatment Systems during the reporting period.

ROCHESTER GAS ELECTRIC CORPORATION

Table 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES
JULY - DECEMBER 1991

	Unit	Quarter 3rd	Quarter 4th	Est. Total Error, %
A. Fission & activation gases				
1. Total release	Ci	1.84E+02	2.01E+02	1.50E+01
2. Average release rate for period	uCi/sec	2.32E+01	2.53E+01	
3. Percent of technical specification limit	%	3.68E-03	4.02E-03	
B. Iodines				
1. Total iodine-131	Ci	3.01E-04	4.97E-05	2.50E+01
2. Average release rate for period	uCi/sec	3.79E-05	6.25E-06	
3. Percent of technical specification limit	%	8.33E-02	1.37E-02	
C. Particulates				
1. Particulates with half-lives > 8days	Ci	1.81E-06		4.50E+01
2. Average release rate for period	uCi/sec	2.27E-07		
3. Percent of technical specification limit	%	1.71E-05		
4. Gross alpha radioactivity	Ci			
D. Tritium				
1. Total release	Ci	1.81E+01	2.22E+01	3.20E+00
2. Average release rate for period	uCi/sec	2.27E+00	2.79E+00	
3. Percent of technical specification limit	%	2.68E-04	3.28E-04	
E. Carbon-14				
1. Total release	Ci	7.44E-01	4.34E-01	3.00E+01
2. Average release rate for period	uCi/sec	9.36E-02	5.46E-02	
3. Percent of technical specification limit	%	4.98E-06	2.90E-06	

Note: Isotope for which no value is given were not identified in applicable releases.

Table 1B
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
GASEOUS EFFLUENTS - ELEVATED RELEASE

		Continuous Mode		Batch Mode	
Nuclides released	Unit	Quarter 3rd	Quarter 4th	Quarter 3rd	Quarter 4th
1. Fission gases					
argon-41	Ci	8.42E-02	2.68E-02	1.80E+00	1.78E+00
krypton-85	Ci			4.12E+00	1.22E+00
krypton-85m	Ci	9.23E-02	1.13E+00	2.08E-01	2.05E-01
krypton-87	Ci	8.50E-02	3.40E-02	1.62E-02	
krypton-88	Ci	1.51E-01	8.61E-01	1.76E-01	1.66E-01
xenon-131m	Ci	1.27E-01	5.96E-02	1.57E+00	9.18E-01
xenon-133	Ci	3.70E+01	6.54E+01	9.14E+01	1.05E+02
xenon-133m	Ci	3.34E-02	1.30E-02	1.91E+00	1.21E+00
xenon-135	Ci	4.21E+01	1.97E+01	2.78E+00	2.88E+00
xenon-135m	Ci	5.88E-01	2.16E-01		
xenon-138	Ci	1.69E-01	6.54E-02		
others (specify)	Ci				
	Ci				
	Ci				
	Ci				
Total for period	Ci	8.04E+01	8.76E+01	1.04E+02	1.14E+02
2. Iodines					
iodine-131	Ci	3.01E-04	4.97E-05	1.89E-08	
iodine-133	Ci	3.83E-04	1.33E-04	5.53E-09	
iodine-135	Ci				
Total for period	Ci	6.84E-04	1.83E-04	2.45E-08	
3. Particulates					
strontium-89	Ci				
strontium-90	Ci				
cesium-134	Ci				
cesium-137	Ci	1.81E-06			
other (specify)	Ci				
cobalt-58	Ci				
cobalt-60	Ci				
Total for period	Ci	1.81E-06			
unidentified	Ci	1.19E-05	8.77E-06		

Note: Isotope for which no value is given were not identified in applicable releases.

ROCHESTER GAS ELECTRIC CORPORATION

Table 2A
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES
JULY - DECEMBER 1991

A. Fission and activation products	Unit	Quarter 3rd	Quarter 4th	Est.Total Error, %
1. Total release (not including tritium, gases, alpha)	Ci	5.87E-02	2.79E-02	1.20E+01
2. Average diluted concentration during period	uCi/ml	3.44E-10	1.63E-10	
3. Percent of applicable limit	%	2.29E-02	2.11E-03	
B. Tritium				
1. Total release	Ci	6.55E+01	6.07E+01	3.00E+00
2. Average diluted concentration during period	uCi/ml	3.84E-07	3.56E-07	
3. Percent of applicable limit	%	1.28E-02	1.19E-02	
C. Dissolved and entrained gases				
1. Total release	Ci	2.22E-03	4.54E-03	2.60E+01
2. Average diluted concentration during period	uCi/ml	1.30E-11	2.66E-11	
3. Percent of applicable limit	%	6.52E-06	1.33E-05	
D. Gross alpha radioactivity				
1. Total release	Ci			
E. Vol. of waste released (prior to dilution)	Liters	3.91E+07	2.47E+07	5.00E+00
F. Vol. of dilution water used during period	Liters	1.71E+11	1.71E+11	5.00E+00

Note: Isotope for which no value is given were not identified in applicable releases.

Table 2B
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT
LIQUID EFFLUENTS

		Continuous Mode		Batch Mode	
Nuclides Released	Unit	Quarter	Quarter	Quarter	Quarter
		3rd	4th	3rd	4th
chromium-51	Ci				
manganese-54	Ci				
iron-55	Ci				4.24E-05
iron-59	Ci				
cobalt-58	Ci			1.47E-04	7.64E-06
cobalt-60	Ci	9.17E-07		3.01E-04	2.55E-04
zinc-65	Ci				
strontium-89	Ci				8.33E-08
strontium-90	Ci	7.47E-04		4.23E-04	1.79E-05
zirconium/niobium-95	Ci			1.20E-05	
molybdenum-99	Ci				
silver-110m	Ci				
antinony-122	Ci			1.82E-03	
antinony-124	Ci			6.58E-04	1.45E-04
antinony-125	Ci			8.35E-05	1.22E-04
iodine-131	Ci	5.50E-04	4.94E-05	7.53E-03	3.46E-04
iodine-133	Ci	1.12E-04	6.73E-05	4.56E-03	1.31E-06
iodine-135	Ci	5.04E-05	4.38E-05	1.85E-03	
cesium-134	Ci	1.36E-04	3.74E-06	1.92E-02	1.29E-02
cesium-136	Ci	2.52E-06		3.39E-03	
cesium-137	Ci	2.75E-04	1.48E-04	1.67E-02	1.37E-02
barium/lanthanum-140	Ci			1.96E-04	
cerium-141	Ci				
other (specify)	Ci				
	Ci				
Total for period (above)	Ci	1.87E-03	3.12E-04	5.68E-02	2.76E-02
unidentified	Ci				
xenon-133	Ci			1.82E-03	4.41E-03
xenon-135	Ci			4.02E-04	1.34E-04

Note: Isotope for which no value is given were not identified in applicable releases.

Table 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

1. Type of waste	Unit	6-month Period	Est. Total Error %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m^3	1.37 E+01	2.0E+00
	Ci	3.02 E-03	2.0E+01
b. Dry compressible waste, contaminated equip, etc.	m^3*	1.48 E+01	2.0E+00
	Ci*	4.64 E-03	2.0E+01
c. Irradiated components, control rods, etc.	m^3	0	0
	Ci	0	0
d. Other (describe)	m^3	0	0
	Ci	0	0

2. Estimate of major nuclide composition (by type of waste)

a. H-3	%	4.76 E+01
Zn-65	%	9.25 E+00
Cs-137	%	8.85 E+00
Co-60	%	8.06 E+00
Sb-124	%	7.07 E+00
Cs-134	%	6.24 E+00
Co-58	%	4.03 E+00
Fe-55	%	3.42 E+00
Ni-63	%	2.32 E+00
Sb-125	%	1.04 E+00
Mn-54	%	1.35 E+00
b. Cs-137	%	1.94 E+01
Co-60	%	1.55 E+01
Ni-63	%	1.32 E+01
Co-58	%	7.08 E+00
Cs-134	%	6.71 E+00
Sr-90	%	2.23 E+00
Sb-125	%	1.16 E+00

* Volume and activity buried by waste processor during this period.

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
** 2	Sole use truck	Oak Ridge, TN

** Shipped to waste processor for volume reduction.

B. IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments	Mode of Transportation	Destination
None	N/A	N/A

Table 4

RELEASE PERMITS NOT MEETING LLD REQUIREMENTS

No.	Date	Isotopes	Cause
None			

TABLE 5A

RADIATION DOSES TO NEAREST INDIVIDUAL RECEPTOR
FROM GASEOUS RELEASES IN REM

1991 QUARTER 1

	Adult			Teen			Child			Infant		
Direction	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid
N	6.9E-8	1.2E-7	7.5E-8	7.1E-8	1.2E-7	7.8E-8	7.2E-8	1.2E-7	8.0E-8	6.2E-8	1.2E-7	6.9E-8
NNE	6.1E-8	8.8E-8	6.4E-8	6.2E-8	8.8E-8	6.5E-8	6.0E-8	8.8E-8	6.4E-8	5.0E-8	8.8E-8	5.4E-8
NE	9.2E-8	1.4E-7	9.6E-8	9.3E-8	1.4E-7	9.8E-8	9.0E-8	1.4E-7	9.6E-8	7.7E-8	1.4E-7	6.2E-8
ENE	9.4E-8	1.4E-7	1.0E-7	9.5E-8	1.4E-7	1.1E-7	9.3E-8	1.4E-7	1.1E-7	7.8E-8	1.4E-7	9.0E-8
E	7.0E-7	1.5E-6	8.0E-7	7.1E-7	1.5E-6	8.4E-7	6.9E-7	1.5E-6	8.4E-7	6.0E-7	1.5E-6	7.3E-7
ESE	8.4E-7	1.6E-6	8.8E-7	8.5E-7	1.6E-6	9.0E-7	8.3E-7	1.6E-6	8.9E-7	7.1E-7	1.6E-6	7.7E-7
SE	3.7E-7	4.9E-7	3.9E-7	3.8E-7	4.9E-7	4.0E-7	3.7E-7	4.9E-7	3.9E-7	3.0E-7	4.9E-7	3.3E-7
SSE	3.7E-7	5.3E-7	3.8E-7	3.8E-7	5.3E-7	4.0E-7	3.8E-7	5.3E-7	4.0E-7	3.2E-7	5.3E-7	3.3E-7
S	7.1E-7	1.2E-6	8.1E-7	8.1E-7	1.2E-6	8.4E-7	8.1E-7	1.2E-6	8.4E-7	6.9E-7	1.2E-6	7.1E-7
SSW	6.9E-7	9.7E-7	7.1E-7	7.3E-7	9.7E-7	7.5E-7	7.4E-7	9.7E-7	7.6E-7	6.2E-7	9.7E-7	6.4E-7
SW	8.6E-7	1.2E-6	9.7E-7	8.8E-7	1.2E-6	1.0E-6	8.7E-7	1.2E-6	1.0E-6	7.4E-7	1.2E-6	8.9E-7
WSW	3.5E-7	5.2E-7	3.8E-7	3.6E-7	5.2E-7	4.0E-7	3.7E-7	5.2E-7	4.1E-7	3.2E-7	5.2E-7	3.5E-7
W	1.3E-7	1.9E-7	1.5E-7	1.4E-7	1.9E-7	1.5E-7	1.3E-7	1.9E-7	1.5E-7	1.1E-7	1.9E-7	1.5E-7
WNW	5.0E-8	6.2E-8	6.3E-8	5.2E-8	6.2E-8	6.8E-8	5.1E-8	6.2E-8	6.9E-8	4.2E-8	6.2E-8	5.8E-8
NW	3.2E-8	4.3E-8	3.7E-8	3.2E-8	4.3E-8	3.8E-8	3.1E-8	4.3E-8	3.8E-8	2.6E-8	4.3E-8	3.2E-8
NNW	5.9E-8	8.0E-8	6.7E-8	6.0E-8	8.0E-8	6.9E-8	5.8E-8	8.0E-8	6.8E-8	4.7E-8	8.0E-8	5.7E-8

TABLE 5A

RADIATION DOSES TO NEAREST INDIVIDUAL RECEPTOR
FROM GASEOUS RELEASES IN REM

1991 QUARTER 2

	Adult			Teen			Child			Infant		
Direction	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid
N	5.4E-8	4.5E-8	6.4E-8	5.5E-8	4.5E-8	6.9E-8	5.4E-8	4.5E-8	6.9E-8	4.1E-8	4.5E-8	5.4E-8
NNE	6.8E-8	6.2E-8	7.7E-8	7.0E-8	6.2E-8	8.1E-8	6.8E-8	6.2E-8	8.0E-8	5.2E-8	6.2E-8	6.3E-8
NE	6.7E-8	5.0E-8	7.7E-8	7.0E-8	5.0E-8	8.2E-8	6.9E-8	5.0E-8	8.2E-8	5.0E-8	5.0E-8	6.3E-8
ENE	5.3E-8	3.6E-8	6.0E-8	5.5E-8	3.6E-8	6.3E-8	5.2E-8	3.6E-8	6.1E-8	3.8E-8	3.6E-8	4.6E-8
E	1.3E-8	9.8E-7	1.5E-6	1.6E-8	1.2E-6	1.8E-6	2.5E-6	2.0E-6	2.8E-6	1.3E-8	1.2E-6	1.5E-6
ESE	9.2E-7	8.1E-7	1.0E-6	1.1E-6	9.6E-7	1.2E-6	1.8E-6	1.5E-6	2.0E-6	1.5E-6	1.4E-6	1.7E-6
SE	6.7E-7	6.9E-7	7.1E-7	7.8E-7	7.7E-7	8.3E-7	1.1E-6	1.1E-6	1.2E-6	9.2E-7	9.6E-7	1.0E-6
SSE	6.0E-7	6.1E-7	6.4E-7	7.2E-7	7.0E-7	7.7E-7	1.1E-6	1.0E-6	1.2E-6	1.1E-6	1.1E-6	1.2E-6
S	1.3E-6	1.3E-6	1.5E-6	1.6E-6	1.5E-6	1.8E-6	2.6E-6	2.3E-6	2.9E-6	1.9E-6	1.9E-6	2.2E-6
SSW	1.3E-6	1.4E-6	1.4E-6	1.5E-6	1.6E-6	1.7E-6	2.4E-6	2.3E-6	2.6E-6	2.0E-6	2.1E-6	2.2E-6
SW	3.8E-6	3.7E-6	4.2E-6	5.2E-6	5.0E-6	5.6E-6	1.0E-5	9.7E-6	1.1E-5	1.5E-5	1.5E-5	1.6E-5
WSW	1.9E-6	1.7E-6	2.0E-6	2.4E-6	2.2E-6	2.6E-6	4.5E-6	4.1E-6	4.7E-6	5.8E-6	5.5E-6	6.0E-6
W	3.0E-7	2.3E-7	3.5E-7	3.6E-7	2.7E-7	4.3E-7	5.5E-7	4.2E-7	6.3E-7	3.9E-7	3.4E-7	4.7E-7
WNW	2.2E-7	2.3E-7	2.7E-7	2.4E-7	2.3E-7	3.0E-7	2.6E-7	2.4E-7	3.3E-7	2.1E-7	2.3E-7	2.8E-7
NW	2.2E-8	1.3E-8	2.5E-8	2.3E-8	1.3E-8	2.7E-8	2.3E-8	1.3E-8	2.7E-8	1.7E-8	1.3E-8	2.0E-8
NNW	2.6E-8	1.5E-8	3.1E-8	2.7E-8	1.5E-8	3.4E-8	2.6E-8	1.5E-8	3.4E-8	1.9E-8	1.5E-8	2.6E-8

TABLE 5A

RADIATION DOSES TO NEAREST INDIVIDUAL RECEPTOR
FROM GASEOUS RELEASES IN REM

1991 QUARTER 3

	Adult			Teen			Child			Infant		
Direction	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid
N	1.7E-7	3.4E-7	1.7E-7	1.7E-7	3.4E-7	1.7E-7	1.7E-7	3.4E-7	1.7E-7	1.5E-7	3.4E-7	1.5E-7
NNE	1.3E-7	2.4E-7	1.3E-7	1.3E-7	2.4E-7	1.4E-7	1.3E-7	2.4E-7	1.3E-7	1.2E-7	2.4E-7	1.2E-7
NE	1.3E-7	2.4E-7	1.3E-7	1.3E-7	2.4E-7	1.3E-7	1.3E-7	2.4E-7	1.3E-7	1.2E-7	2.4E-7	1.2E-7
ENE	9.8E-8	1.7E-7	9.9E-8	1.0E-7	1.7E-7	1.0E-7	1.0E-7	1.7E-7	1.0E-7	8.8E-8	1.7E-7	9.0E-8
E	1.5E-6	2.2E-6	1.8E-6	1.9E-6	2.5E-6	2.1E-6	3.1E-6	3.6E-6	3.5E-6	1.6E-6	2.4E-6	2.1E-6
ESE	2.4E-6	3.0E-6	2.8E-6	3.1E-6	3.7E-6	3.6E-6	5.9E-6	6.3E-6	6.6E-6	3.6E-6	4.3E-6	4.4E-6
SE	1.2E-6	1.5E-6	1.3E-6	1.6E-6	1.9E-6	1.7E-6	3.0E-6	3.2E-6	3.2E-6	1.5E-6	1.9E-6	1.9E-6
SSE	1.7E-6	2.2E-6	1.8E-6	2.2E-6	2.7E-6	2.3E-6	4.0E-6	4.4E-6	4.3E-6	3.3E-6	3.9E-6	3.7E-6
S	2.9E-6	4.8E-6	3.1E-6	3.4E-6	5.3E-6	3.6E-6	5.3E-6	7.0E-6	5.8E-6	4.6E-6	6.5E-6	5.2E-6
SSW	1.2E-6	1.7E-6	1.2E-6	1.3E-6	1.9E-6	1.4E-6	2.1E-6	2.5E-6	2.2E-6	1.8E-6	2.3E-6	2.0E-6
SW	2.0E-6	3.2E-6	2.1E-6	2.3E-6	3.5E-6	2.5E-6	3.6E-6	4.6E-6	3.9E-6	3.2E-6	4.4E-6	3.7E-6
WSW	6.7E-7	8.4E-7	6.9E-7	8.3E-7	9.8E-7	8.5E-7	1.4E-6	1.5E-6	1.5E-6	1.3E-6	1.4E-6	1.4E-6
W	3.1E-7	3.8E-7	3.2E-7	3.9E-7	4.5E-7	4.0E-7	7.1E-7	7.3E-7	7.2E-7	4.3E-7	5.1E-7	4.6E-7
WNW	6.1E-8	1.2E-7	6.1E-8	6.2E-8	1.2E-7	6.2E-8	6.6E-8	1.2E-7	6.6E-8	5.8E-7	1.2E-7	5.8E-8
NW	8.6E-8	1.9E-8	8.6E-8	8.7E-8	1.9E-8	8.7E-8	8.7E-8	1.9E-8	8.7E-8	8.1E-8	1.9E-8	8.2E-8
NNW	9.1E-8	1.7E-8	9.2E-8	9.4E-8	1.7E-8	9.5E-8	9.5E-8	1.7E-8	9.6E-8	8.4E-8	1.7E-8	9.5E-8

TABLE 5A

RADIATION DOSES TO NEAREST INDIVIDUAL RECEPTOR
FROM GASEOUS RELEASES IN REM

1991 QUARTER 4

	Adult			Teen			Child			Infant		
Direction	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid
N	1.5E-7	2.6E-7	1.5E-7	1.5E-7	2.6E-7	1.5E-7	1.5E-7	2.6E-7	1.5E-7	1.3E-7	2.6E-7	1.3E-7
NNE	1.6E-7	2.9E-7	1.6E-7	1.6E-7	2.9E-7	1.6E-7	1.6E-7	2.9E-7	1.6E-7	1.4E-7	2.9E-7	1.4E-7
NE	1.6E-7	3.0E-7	1.6E-7	1.6E-7	3.0E-7	1.6E-7	1.6E-7	3.0E-7	1.6E-7	1.4E-7	3.0E-7	1.5E-7
ENE	1.2E-7	2.3E-7	1.2E-7	1.2E-7	2.3E-7	1.2E-7	1.2E-7	2.3E-7	1.2E-7	1.1E-7	2.3E-7	1.1E-7
E	1.5E-6	2.5E-7	1.6E-7	1.6E-7	2.6E-7	1.7E-7	1.9E-6	2.8E-7	2.0E-7	1.4E-6	2.6E-7	1.5E-7
ESE	9.8E-7	1.5E-6	1.0E-6	1.0E-6	1.5E-6	1.1E-6	1.3E-6	1.7E-6	1.4E-6	8.6E-7	1.5E-6	1.0E-6
SE	1.2E-6	2.0E-6	1.2E-6	1.2E-6	2.1E-6	1.2E-6	1.3E-6	2.2E-6	1.4E-6	1.2E-6	2.2E-6	1.3E-6
SSE	4.5E-7	7.0E-7	4.6E-7	4.7E-7	7.1E-7	4.8E-7	5.3E-7	7.7E-7	5.5E-7	4.3E-7	7.3E-7	4.6E-7
S	9.6E-7	1.4E-6	1.0E-6	1.0E-6	1.5E-6	1.1E-6	1.3E-6	1.7E-6	1.4E-6	8.8E-7	1.5E-6	1.0E-6
SSW	5.9E-7	9.5E-7	6.1E-7	6.3E-7	9.8E-7	6.4E-7	7.3E-7	1.1E-6	7.7E-7	5.2E-7	9.6E-7	5.6E-7
SW	1.2E-6	2.2E-6	1.3E-6	1.3E-6	2.3E-6	1.4E-6	1.7E-6	2.6E-6	1.8E-6	1.1E-6	2.2E-6	1.2E-6
WSW	5.2E-7	7.3E-7	5.4E-7	6.2E-7	8.2E-7	6.5E-7	1.0E-6	1.2E-6	1.0E-6	4.8E-7	7.4E-7	5.6E-7
W	6.4E-7	1.2E-6	6.4E-7	6.7E-7	1.3E-6	6.8E-7	8.0E-7	1.4E-6	8.1E-7	6.3E-7	1.3E-6	6.5E-7
WNW	1.4E-7	2.9E-7	1.4E-7	1.5E-7	2.9E-7	1.5E-7	1.7E-7	3.1E-7	1.7E-7	1.2E-7	2.8E-7	1.2E-7
NW	8.1E-8	1.7E-7	8.2E-8	8.3E-8	1.7E-7	8.3E-8	8.3E-8	1.7E-7	8.4E-8	7.7E-8	1.7E-7	7.8E-8
NNW	1.1E-7	2.1E-7	1.1E-7	1.1E-7	2.1E-7	1.1E-7	1.1E-7	2.1E-7	1.1E-7	9.7E-8	2.1E-7	9.9E-8

TABLE 5B

RADIATION DOSE TO NEAREST INDIVIDUAL
FROM LIQUID RELEASES IN REM

	Adult	Teen	Child	Infant
First Quarter				
Total Body	3.9E-5	2.2E-5	1.1E-5	2.7E-6
Bone	2.8E-5	3.0E-5	3.7E-5	5.4E-7
Thyroid	5.7E-6	4.7E-6	8.0E-6	8.0E-6
Second Quarter				
Total Body	2.0E-5	1.1E-5	5.3E-6	1.1E-6
Bone	1.4E-5	1.5E-5	1.9E-5	2.7E-7
Thyroid	1.3E-6	1.0E-6	1.8E-6	1.7E-6
Third Quarter				
Total Body	6.5E-5	3.7E-5	1.6E-5	1.3E-6
Bone	4.7E-5	4.9E-5	6.1E-5	1.5E-6
Thyroid	4.5E-6	3.9E-6	6.6E-6	6.6E-6
Fourth Quarter				
Total Body	4.5E-5	2.6E-5	1.1E-5	9.7E-7
Bone	3.3E-5	3.5E-5	4.4E-5	5.8E-4
Thyroid	9.0E-7	6.7E-7	1.2E-6	1.2E-6

Table 6A

PROG: RDMS002 [28A]
DATE: 92/02/10

ROCHESTER GAS & ELECTRIC CORPORATION GINNA STATION
NUMBER OF PERSONNEL AND MAN-REM BY WORK AND JOB FUNCTION
FOR 91/01/01 - 91/12/31

TIME: 11:36:53

ACTUAL WHOLE BODY DOSE		NO. OF PERSONNEL (> or = 100)			TOTAL MAN-REM		
WORK PERMIT CATERGORY	WORK GROUP	CONTRACT WORKERS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS	STATION EMPLOYEES	UTILITY EMPLOYEES
REACTOR OPERATIONS & SURV	MAINTENANCE PERSONNEL	172	38	82	1.314	1.476	0.134
	OPERATING PERSONNEL	3	25	2	1.349	5.642	0.466
	HEALTH PHY. PERSONNEL	54	12	4	17.264	2.226	0.288
	SUPERVISORY PERSONNEL	27	17	12	0.654	2.817	0.297
	ENGINEERING PERSONNEL	9	1	1	0.102	0.030	0.000
ROUTINE MAINTENANCE	MAINTENANCE PERSONNEL	248	41	164	45.933	9.170	16.504
	OPERATING PERSONNEL	2	21	1	0.014	0.578	0.005
	HEALTH PHY. PERSONNEL	52	9	4	8.296	1.206	0.174
	SUPERVISORY PERSONNEL	26	17	12	2.096	1.772	2.733
	ENGINEERING PERSONNEL	7	1	1	0.312	0.001	0.000
INSERVICE INSPECTION	MAINTENANCE PERSONNEL	33	4	39	1.555	0.178	3.034
	OPERATING PERSONNEL	0	2	0	0.000	0.042	0.000
	HEALTH PHY. PERSONNEL	4	0	0	0.086	0.000	0.000
	SUPERVISORY PERSONNEL	10	6	10	0.727	0.713	0.875
	ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
SPECIAL MAINTENANCE	MAINTENANCE PERSONNEL	258	39	161	74.011	6.795	52.814
	OPERATING PERSONNEL	2	20	2	0.008	0.668	0.167
	HEALTH PHY. PERSONNEL	30	5	2	1.162	0.089	0.125
	SUPERVISORY PERSONNEL	21	15	12	5.148	0.550	3.123
	ENGINEERING PERSONNEL	8	1	1	0.788	0.000	0.014
WASTE PROCESSING	MAINTENANCE PERSONNEL	12	1	6	0.500	0.000	0.008
	OPERATING PERSONNEL	0	3	0	0.000	0.000	0.000
	HEALTH PHY. PERSONNEL	5	1	0	0.171	0.000	0.000
	SUPERVISORY PERSONNEL	2	1	0	0.000	0.000	0.000
	ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
REFUELING	MAINTENANCE PERSONNEL	79	17	27	9.418	0.850	2.427
	OPERATING PERSONNEL	0	6	1	0.000	1.780	0.034
	HEALTH PHY. PERSONNEL	3	2	0	0.143	0.040	0.000
	SUPERVISORY PERSONNEL	9	2	4	0.282	0.258	0.179
	ENGINEERING PERSONNEL	0	0	1	0.000	0.000	0.283
MODIFICATIONS	MAINTENANCE PERSONNEL	109	12	8	18.970	0.095	0.662
	OPERATING PERSONNEL	0	1	0	0.000	0.000	0.000
	HEALTH PHY. PERSONNEL	0	0	0	0.000	0.000	0.000
	SUPERVISORY PERSONNEL	19	4	2	1.762	0.348	0.184
	ENGINEERING PERSONNEL	5	1	0	0.188	0.072	0.000
TOTAL	MAINTENANCE PERSONNEL	273	41	164	151.700	18.564	75.582
	OPERATING PERSONNEL	3	25	2	1.371	8.711	0.672
	HEALTH PHY. PERSONNEL	54	12	4	27.122	3.561	0.587
	SUPERVISORY PERSONNEL	30	18	12	10.670	6.458	7.391
	ENGINEERING PERSONNEL	9	1	1	1.390	0.103	0.297
GRAND TOTAL	==========	367	94	183	192.253	37.397	84.529

Table 6B

STANDARD REPORT OF PERSONNEL WHOLE BODY EXPOSURE 1991

DOSE (REM)	NUMBER OF PEOPLE
00.000 - 00.000	889
00.001 - 00.100	320
00.101 - 00.250	182
00.251 - 00.500	198
00.501 - 00.750	113
00.751 - 01.000	71
01.001 - 02.000	63
02.001 - 03.000	0
03.001 - 04.000	0
04.001 - 05.000	0
05.001 - 06.000	0
06.001 - 07.000	0
07.001 - 08.000	0
08.001 - 09.000	0
09.001 - 10.000	0
10.001 - 11.000	0
11.001 - 12.000	0
12.001 - 99.999	0

Total number of personnel monitored 1836

The total collective dose for 1991 is 328 person-rem based on the sum of all personnel TLD badge readings.

FIVE HIGHEST EXPOSURES FOR THE YEAR

A	1.990
B	1.902
C	1.892
D	1.862
E	1.735

This report contains all personnel monitored during 1991.

ROCHESTER GAS ELECTRIC CORPORATION

Table 7A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

CORRECTED REPORT

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

JANUARY - JUNE 1991

A. Fission and activation products	Unit	Quarter 1st	Quarter 2nd	Est.Total Error, %
1. Total release (not including tritium, gases, alpha)	Ci	4.27E-02	2.30E-02	5.60E+00
2. Average diluted concentration during period	uCi/ml	3.23E-10	1.95E-10	
3. Percent of applicable limit	%	2.41E-02	4.14E-03	
B. Tritium				
1. Total release	Ci	1.75E+02	7.47E+01	3.20E+00
2. Average diluted concentration during period	uCi/ml	1.32E-06	6.36E-07	
3. Percent of applicable limit	%	4.41E-02	2.12E-02	
C. Dissolved and entrained gases				
1. Total release	Ci	8.53E-02	2.14E-02	6.00E+00
2. Average diluted concentration during period	uCi/ml	6.46E-10	1.82E-10	
3. Percent of applicable limit	%	3.23E-04	9.11E-05	
D. Gross alpha radioactivity				
1. Total release	Ci			
E. Vol. of waste released (prior to dilution)	Liters	3.10E+07	2.26E+07	
F. Vol. of dilution water used during period	Liters	1.32E+11	1.17E+11	

Note: Isotope for which no value is given were not identified in applicable releases.

ROCHESTER GAS ELECTRIC CORPORATION

Table 7B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

LIQUID EFFLUENTS

CORRECTED REPORT

		Continuous Mode		Batch Mode	
Nuclides Released	Unit	Quarter	Quarter	Quarter	Quarter
		1st	2nd	1st	2nd
chromium-51	Ci				2.82E-04
manganese-54	Ci			6.79E-05	7.77E-05
iron-55	Ci				
iron-59	Ci			2.31E-06	
cobalt-58	Ci		1.43E-05	3.89E-03	5.07E-03
cobalt-60	Ci	1.13E-07	7.05E-05	1.05E-03	1.45E-03
zinc-65	Ci				
strontium-89	Ci			6.31E-07	1.06E-04
strontium-90	Ci			4.08E-05	1.03E-05
zirconium/niobium-95	Ci			5.65E-05	6.70E-05
molybdenum-99	Ci			1.73E-05	
silver-110m	Ci			2.11E-04	
antinony-122	Ci			1.49E-03	2.03E-04
antinony-124	Ci		7.82E-05	1.22E-03	2.78E-03
antinony-125	Ci			8.27E-05	2.39E-04
iodine-131	Ci	2.72E-04	7.40E-05	7.62E-03	9.15E-04
iodine-133	Ci	1.69E-04	3.57E-05	3.09E-03	
iodine-135	Ci	2.16E-05	2.27E-05	5.79E-04	
cesium-134	Ci	1.30E-04	1.61E-04	9.88E-03	5.15E-03
cesium-136	Ci			2.58E-04	
cesium-137	Ci	1.79E-04	2.41E-04	1.22E-02	5.83E-03
barium/lanthanum-140	Ci			1.76E-04	7.40E-05
cerium-141	Ci				
other (specify)	Ci				
	Ci				
Total for period (above)	Ci	7.72E-04	6.97E-04	4.20E-02	2.23E-02
unidentified	Ci				
xenon-133	Ci			8.17E-02	2.14E-02
xenon-135	Ci	2.74E-05		3.61E-03	

Note: Isotope for which no value is given were not identified in applicable releases.