ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9402110005 DOC.DATE: 93/12/31 NOTARIZED: NO DOCKET #
FACIL:50-244 Robert Emmet Ginna Nuclear Plant, Unit 1, Rochester G 05000244
AUTH.NAME AUTHOR AFFILIATION
MECREDY,R.C. Rochester Gas & Electric Corp.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: "Semiannual Radioactive Effluent Release Rept, Jul-Dec 1993." W/940301 ltr.

DISTRIBUTION CODE: IE48D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 23
TITLE: 50.36a(a)(2) Semiannual Effluent Release Reports

NOTES:License Exp date in accordance with 10CFR2,2.109(9/19/72). 05000244

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME		COPIES LTTR	COPIES ENCL
	PD1-3 LA	3	3	PD1-3 PD		1	1
	JOHNSON,A	1	1				
INTERNAL:	NRR/DRSS/PRPB11	2	2	REG FILE	01	1	1
	RGN1 DRSS/RPB	2	2	RGN1 FILE	02	1	1
EXTERNAL:	BNL TICHLER,J03	1	1	EG&G SIMPSON,F		2	2
	NRC PDR	1	1				

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK, ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTTR 15 ENCL 15

RIDS/ADDS

RIDS/ADDS

ROCHESTER GAS AND ELECTRIC CORPORATION ○ 89 EAST AVENUE, ROCHESTER N.Y. 14649-0001

ROBERT C. MECREDY
Vice President
Ginna Nuclear Production

TELEPHONE
AREA CODE 716 546-2700

March 01, 1994

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

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

Robert C. Mecredy
Vice President

IE48
1/1

Copies to:

Mr. T. Martin
Regional Administrator
U.S. Nuclear Regulatory Commission
Region 1
475 Allendale Road
King of Prussia, PA 19406

Resident NRC Inspector
Ginna Station

Ms. Donna Ross
New York State Energy Office
Empire State Plaza
Albany, NY 12223

American Nuclear Insurers
MAELU
Suite 3005
29 S. Main St.
West hartford, CT 06107-2445
ATTN: Winthrop Hayes

Central Records, Ginna Station
Category 2.22.2

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

R. E. GINNA NUCLEAR PLANT

ROCHESTER GAS AND ELECTRIC

DOCKET NO. 50-244

JULY - DECEMBER, 1993

TABLE OF CONTENTS

LIST OF TABLES

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, 1993 through December 31, 1993.

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.

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 $\leq$ 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 $\leq$ 7.5 mrem to any organ.

(ii) During any calendar year to $\leq$ 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 $\leq$ 1.5 mrem to the total body and to $\leq$ 5 mrem to any organ, and

(ii) During any calendar year to $\leq$ 3 mrem to the total body and to $\leq$ 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 0.277 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:	1.71 E+02
2.	Total time period for batch releases:	3.86 E+04 min.
3.	Maximum time period for a batch release:	2.67 E+03 min.
4.	Average time period for batch releases:	2.25 E+02 min.
5.	Minimum time period for a batch release:	3.6 E+01 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:	1.28E+04 min.
3.	Maximum time period for a batch release:	2.57E+03 min.
4.	Average time period for batch releases:	6.09E+02 min.
5.	Minimum time period for a batch release:	6.0E+01 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 1993 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 CENSUS 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.

Table 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES
JULY - DECEMBER 1993

A. Fission & activation gases	Unit	Quarter 3rd	Quarter 4th	Est. Total Error, %
1. Total release	Ci	1.97E+01	1.35E+01	6.60E+00
2. Average release rate for period	uCi/sec	2.48E+00	1.69E+00	
3. Percent of technical specification limit	%	3.94E-04	2.69E-04	
B. Iodines				
1. Total Iodine-131	Ci	1.19E-05	3.30E-05	1.80E+01
2. Average release rate for period	uCi/sec	1.50E-06	4.16E-06	
3. Percent of technical specification limit	%	3.30E-03	9.13E-03	
C. Particulates				
1. Particulates with half-lives > 8days	Ci	1.24E-06	1.58E-06	4.00E+01
2. Average release rate for period	uCi/sec	1.57E-07	1.99E-07	
3. Percent of technical specification limit	%	1.18E-05	1.50E-05	
4. Gross alpha radioactivity	Ci			
D. Tritium				
1. Total release	Ci	1.15E+01	1.18E+01	3.20E+00
2. Average release rate for period	uCi/sec	1.44E+00	1.48E+00	
3. Percent of technical specification limit	%	1.70E-04	1.74E-04	
E. Carbon-14				
1. Total release	Ci	7.95E-01	7.17E-01	3.00E+01
2. Average release rate for period	uCi/sec	1.00E-01	9.02E-02	
3. Percent of technical specification limit	%	5.32E-06	4.80E-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	6.63E-02	1.38E-01	5.66E-02	4.76E-02
krypton-85	Ci			2.73E-01	1.99E-01
krypton-85m	Ci	5.54E-02	6.18E-02	7.53E-04	3.35E-03
krypton-87	Ci	7.43E-02	7.21E-02	1.35E-04	
krypton-88	Ci	7.35E-02	1.02E-01		3.07E-04
xenon-131m	Ci			1.39E-02	4.64E-02
xenon-133	Ci	1.42E+01	5.70E+00	1.31E+00	3.09E+00
xenon-133m	Ci	1.46E-02	1.85E-02	1.04E-02	1.61E-02
xenon-135	Ci	2.64E+00	2.87E+00	1.90E-02	6.39E-02
xenon-135m	Ci	7.15E-01	7.55E-01		1.50E-04
xenon-138	Ci	2.58E-01	2.76E-01		
others (specify)	Ci				
	Ci				
	Ci				
	Ci				
Total for period	Ci	1.81E+01	9.99E+00	1.69E+00	3.47E+00
2. Iodines					
Iodine-131	Ci	1.19E-05	1.26E-05	1.54E-08	2.04E-05
Iodine-133	Ci	1.32E-05	1.32E-05	9.02E-08	4.16E-05
Iodine-135	Ci				
Total for period	Ci	2.51E-05	2.58E-05	1.06E-07	6.20E-05
3. Particulates					
strontium-89	Ci				
strontium-90	Ci				
cesium-134	Ci				
cesium-137	Ci	1.24E-06	1.58E-06		
Nb-95	Ci				
cobalt-58	Ci				
cobalt-60	Ci				
Total for period	Ci	1.24E-06	1.58E-06		
unidentified	Ci				

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 1993

A. Fission and activation products	Unit	Quarter 3rd	Quarter 4th	Est.Total Error, %
1. Total release (not including tritium, gases, alpha)	Ci	1.78E-02	5.38E-02	7.00E+00
2. Average diluted concentration during period	uCi/ml	1.03E-10	3.18E-10	
3. Percent of applicable limit	%	2.18E-03	1.86E-02	
B. Tritium				
1. Total release	Ci	3.34E+01	5.05E+01	3.20E+00
2. Average diluted concentration during period	uCi/ml	1.92E-07	2.99E-07	
3. Percent of applicable limit	%	6.40E-03	9.97E-03	
C. Dissolved and entrained gases				
1. Total release	Ci	5.15E-04	8.53E-02	4.00E+01
2. Average diluted concentration during period	uCi/ml	2.96E-12	5.05E-10	
3. Percent of applicable limit	%	1.48E-06	2.53E-04	
D. Gross alpha radioactivity				
1. Total release	Ci	N/A	N/A	
E. Vol. of waste released (prior to dilution)	Liters	3.84E+07	2.65E+07	5.00E+00
F. Vol. of dilution water used during period	Liters	1.74E+11	1.69E+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				1.30E-04
iron-59	Ci				
cobalt-58	Ci			7.08E-05	3.70E-04
cobalt-60	Ci	3.16E-07		4.95E-05	7.74E-05
zinc-65	Ci				
strontium-89	Ci				1.99E-04
strontium-90	Ci				
zirconium/niobium-95	Ci			7.44E-06	4.42E-06
molybdenum-99	Ci		4.05E-05		2.02E-05
silver-110m	Ci				
antinony-122	Ci				
antinony-124	Ci			6.65E-04	3.37E-04
antinony-125	Ci			6.87E-04	1.29E-03
iodine-131	Ci	5.07E-06	5.06E-04	6.45E-04	4.61E-03
iodine-133	Ci	1.86E-04	2.92E-04	1.15E-04	9.23E-03
iodine-135	Ci	4.25E-05	5.30E-05		7.13E-03
cesium-134	Ci	3.45E-06	6.20E-04	8.13E-03	1.45E-02
cesium-136	Ci				1.49E-04
cesium-137	Ci	1.53E-04	7.60E-04	7.07E-03	1.33E-02
barium/lanthanum-140	Ci				9.59E-05
cerium-141	Ci				
Ru-106	Ci				
Ru-103	Ci				
Total for period (above)	Ci	3.90E-04	2.27E-03	1.74E-02	5.15E-02
unidentified	Ci				
xenon-133	Ci			4.85E-04	5.82E-02
xenon-135	Ci			2.97E-05	2.71E-02

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

July - December 1993

A. Solid waste shipped offsite for burial or disposal (NOT irradiated fuel)

	TYPE OF WASTE	UNIT	6 MONTH PERIOD	EST. TOTAL ERROR
a.	Spent resins, filtersludges, evaporator bottoms, etc.	m^3 Ci	8.04 E 0 1.97 E 1	7.0 E 0 7.0 E 0
b.	Dry compressible waste, contaminated equipment, etc.	m^3 Ci	1.02 E 2 1.1 E -1	7.0 E 0 7.0 E 0
c.	Irradiated components, control rods, etc.	m^3 Ci		
d.	Other (describe)	m^3 Ci		

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

a.			b.		
Fe-55	%	3.1 E 1	Fe-55	%	3.8 E 1
Co-60	%	3.0 E 1	Co-60	%	1.0 E 1
Ni-63	%	1.9 E 1	Nb-95	%	1.0 E 1
Cs-137	%	7 E 0	Cs-137	%	9.0 E 0
C-14	%	5 E 0	Zr-95	%	7 E 0
H-3	%	2 E 0	Co-58	%	7 E 0
Sb-125	%	2 E 0	Cr-51	%	6 E 0
	%		Ce-144	%	5 E 0
	%		Ni-63	%	4 E 0
	%		Cs-134	%	2 E 0
	%		Mn-54	%	1 E 0
	%			%	

3. Solid Waste Disposition

NUMBER OF SHIPMENTS	MODE OF TRANSPORTATION	DESTINATION
2	Sole use truck	Barnwell, SC
2	Sole use truck	Oak Ridge, TN

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
First Quarter

	ADULT			TEEN			CHILD			INFANT		
	T.BODY	THYRD	SKIN	T.BODY	THYRD	SKIN	T.BODY	THYRD	SKIN	T.BODY	THYRD	SKIN
N	7.60E-08	8.90E-08	1.10E-07	7.80E-08	9.50E-08	1.10E-07	7.80E-08	9.60E-08	1.10E-07	6.50E-08	8.20E-08	1.10E-07
NNE	7.20E-08	7.90E-08	1.00E-07	7.50E-08	8.30E-08	1.00E-07	7.50E-08	8.50E-08	1.00E-07	6.30E-08	7.20E-08	1.00E-07
NE	6.10E-08	6.60E-08	9.50E-08	6.30E-08	6.90E-08	9.50E-08	6.40E-08	7.10E-08	9.50E-08	5.50E-08	6.10E-08	9.50E-08
ENE	9.10E-08	9.90E-08	1.70E-07	9.20E-08	1.00E-07	1.70E-07	9.10E-08	1.00E-07	1.70E-07	8.10E-08	9.10E-08	1.70E-07
E	7.10E-07	7.50E-07	1.10E-06	7.20E-07	7.70E-07	1.10E-06	7.20E-07	7.70E-07	1.10E-06	6.30E-07	6.80E-07	1.10E-06
ESE	7.70E-07	8.30E-07	1.10E-06	7.90E-07	8.70E-07	1.10E-06	8.00E-07	8.80E-07	1.10E-06	6.80E-07	7.60E-07	1.10E-06
SE	8.20E-07	8.80E-07	1.20E-06	8.60E-07	9.30E-07	1.20E-06	8.80E-07	9.50E-07	1.20E-06	7.50E-07	8.20E-07	1.20E-06
SSE	3.20E-07	3.40E-07	5.10E-07	3.20E-07	3.50E-07	5.10E-07	3.20E-07	3.50E-07	5.10E-07	2.80E-07	3.10E-07	5.10E-07
S	1.40E-06	1.50E-06	2.40E-06	1.50E-06	1.60E-06	2.40E-06	1.50E-06	1.60E-06	2.40E-06	1.30E-06	1.40E-06	2.40E-06
SSW	4.50E-07	4.90E-07	6.60E-07	4.60E-07	5.00E-07	6.60E-07	4.50E-07	5.00E-07	6.60E-07	3.90E-07	4.40E-07	6.60E-07
SW	5.80E-07	6.10E-07	6.30E-07	6.00E-07	6.40E-07	6.30E-07	5.90E-07	6.30E-07	6.30E-07	4.80E-07	5.10E-07	6.30E-07
WSW	5.20E-07	6.00E-07	3.60E-07	5.40E-07	6.40E-07	3.60E-07	5.30E-07	6.40E-07	3.60E-07	4.00E-07	5.00E-07	3.60E-07
W	5.20E-07	6.00E-07	3.60E-07	5.40E-07	6.40E-07	3.60E-07	5.30E-07	6.40E-07	3.60E-07	4.00E-07	5.00E-07	3.60E-07
WNW	2.10E-07	2.20E-07	3.20E-07	2.20E-07	2.30E-07	3.20E-07	2.20E-07	2.30E-07	3.20E-07	1.90E-07	2.00E-07	3.20E-07
NW	2.00E-08	2.30E-08	2.40E-08	2.10E-08	2.40E-08	2.40E-08	2.00E-08	2.40E-08	2.40E-08	1.60E-08	1.90E-08	2.40E-08
NNW	4.70E-08	5.60E-08	6.00E-08	4.90E-08	6.00E-08	6.00E-08	4.80E-08	6.10E-08	6.00E-08	4.00E-08	5.10E-08	6.00E-08
MAX.	1.40E-06	1.50E-06	2.40E-06	1.50E-06	1.60E-06	2.40E-06	1.50E-06	1.60E-06	2.40E-06	1.30E-06	1.40E-06	2.40E-06

Table 5A
Radiation Doses to Nearest Individual Receptor
From Gaseous Releases in Rem
Second Quarter

	ADULT			TEEN			CHILD			INFANT		
	T.BODY	THYRD	SKIN	T.BODY	THYRD	SKIN	T.BODY	THYRD	SKIN	T.BODY	THYRD	SKIN
N	3.90E-08	4.00E-08	2.30E-08	4.00E-08	4.10E-08	2.30E-08	3.80E-08	3.90E-08	2.30E-08	2.70E-08	2.80E-08	2.30E-08
NNE	3.90E-08	4.00E-08	2.30E-08	4.00E-08	4.10E-08	2.30E-08	3.80E-08	3.90E-08	2.30E-08	2.70E-08	2.80E-08	2.30E-08
NE	4.20E-08	4.30E-08	2.50E-08	4.30E-08	4.40E-08	2.50E-08	4.10E-08	4.20E-08	2.50E-08	2.90E-08	3.00E-08	2.50E-08
ENE	4.00E-08	4.10E-08	2.20E-08	4.30E-08	4.30E-08	2.20E-08	4.20E-08	4.30E-08	2.20E-08	3.00E-08	3.10E-08	2.20E-08
E	2.50E-06	2.60E-06	2.30E-06	3.60E-06	3.60E-06	3.20E-06	7.20E-06	7.30E-06	6.70E-06	3.00E-06	3.10E-06	2.80E-06
ESE	2.50E-06	2.60E-06	2.20E-06	3.50E-06	3.50E-06	3.10E-06	7.00E-06	7.20E-06	6.50E-06	4.80E-06	5.00E-06	4.60E-06
SE	5.50E-07	5.70E-07	5.20E-07	6.50E-07	6.90E-07	6.10E-07	1.00E-06	1.10E-06	9.50E-07	1.00E-06	1.10E-06	9.70E-07
SSE	3.70E-07	3.80E-07	3.90E-07	4.50E-07	4.60E-07	4.50E-07	7.10E-07	7.30E-07	6.80E-07	8.20E-07	8.40E-07	8.00E-07
S	6.20E-07	6.40E-07	5.70E-07	7.10E-07	7.30E-07	6.40E-07	1.00E-06	1.00E-06	9.00E-07	1.10E-06	1.10E-06	1.00E-06
SSW	5.40E-07	5.50E-07	5.90E-07	6.20E-07	6.30E-07	6.60E-07	9.20E-07	9.40E-07	9.20E-07	1.20E-06	1.30E-06	1.20E-06
SW	1.20E-06	1.20E-06	1.40E-06	1.50E-06	1.50E-06	1.60E-06	2.40E-06	2.40E-06	2.40E-06	3.60E-06	3.60E-06	3.40E-06
WSW	1.00E-06	1.00E-06	7.50E-07	1.30E-06	1.30E-06	9.30E-07	2.00E-06	2.10E-06	1.60E-06	2.10E-06	2.10E-06	1.80E-06
W	5.50E-07	5.50E-07	4.50E-07	6.80E-07	6.90E-07	5.50E-07	1.10E-06	1.20E-06	9.50E-07	8.30E-07	8.30E-07	7.50E-07
WNW	3.00E-07	3.10E-07	2.40E-07	3.20E-07	3.20E-07	2.40E-07	3.20E-07	3.20E-07	2.40E-07	2.50E-07	2.50E-07	2.30E-07
NW	1.40E-08	1.50E-08	7.40E-09	1.50E-08	1.50E-08	7.40E-09	1.40E-08	1.50E-08	7.40E-09	1.00E-08	1.00E-08	7.40E-09
NNW	2.60E-08	2.60E-08	1.40E-08	2.70E-08	2.70E-08	1.40E-08	2.60E-08	2.70E-08	1.40E-08	1.90E-08	1.90E-08	1.40E-08
MAX.	2.50E-06	2.60E-06	2.30E-06	3.60E-06	3.60E-06	3.20E-06	7.20E-06	7.30E-06	6.70E-06	4.80E-06	5.00E-06	4.60E-06

Table 5A
Radiation Doses to Nearest Individual Receptor
From Gaseous Releases in Rem
Third Quarter

	ADULT			TEEN			CHILD			INFANT		
	T.BODY	THYRD	SKIN	T.BODY	THYRD	SKIN	T.BODY	THYRD	SKIN	T.BODY	THYRD	SKIN
N	4.00E-08	4.00E-08	4.10E-08	4.10E-08	4.10E-08	4.10E-08	3.90E-08	3.90E-08	4.10E-08	3.00E-08	3.00E-08	4.10E-08
NNE	5.60E-08	5.70E-08	6.20E-08	5.70E-08	5.80E-08	6.20E-08	5.50E-08	5.60E-08	6.20E-08	4.40E-08	4.40E-08	6.20E-08
NE	5.70E-08	5.70E-08	5.30E-08	5.90E-08	5.90E-08	5.30E-08	5.80E-08	5.80E-08	5.30E-08	4.40E-08	4.50E-08	5.30E-08
ENE	3.30E-08	3.30E-08	2.50E-08	3.50E-08	3.50E-08	2.50E-08	3.60E-08	3.70E-08	2.50E-08	2.70E-08	2.80E-08	2.50E-08
E	2.40E-06	2.40E-06	2.30E-06	3.60E-06	3.60E-06	3.50E-06	8.00E-06	8.00E-06	7.70E-06	3.00E-06	3.00E-06	2.90E-06
ESE	1.90E-06	1.90E-06	1.70E-06	2.60E-06	2.70E-06	2.40E-06	5.50E-06	5.60E-06	5.10E-06	3.20E-06	3.30E-06	3.20E-06
SE	7.90E-07	8.30E-07	7.70E-07	9.80E-07	1.00E-06	9.30E-07	1.70E-06	1.70E-06	1.50E-06	7.40E-07	8.10E-07	8.30E-07
SSE	5.80E-07	6.00E-07	5.80E-07	7.20E-07	7.50E-07	7.10E-07	1.30E-06	1.30E-06	1.20E-06	8.00E-07	8.40E-07	8.30E-07
S	2.50E-06	2.60E-06	2.60E-06	3.40E-06	3.50E-06	3.50E-06	6.60E-06	6.80E-06	6.50E-06	5.10E-06	5.20E-06	5.40E-06
SSW	9.00E-07	9.40E-07	8.60E-07	1.20E-06	1.20E-06	1.10E-06	2.40E-06	2.40E-06	2.20E-06	1.90E-06	2.00E-06	2.00E-06
SW	2.00E-06	2.00E-06	2.00E-06	2.70E-06	2.80E-06	2.70E-06	5.70E-06	5.80E-06	5.60E-06	7.40E-06	7.50E-06	7.50E-06
WSW	2.30E-06	2.30E-06	2.20E-06	3.50E-06	3.50E-06	3.30E-06	7.80E-06	7.90E-06	7.60E-06	3.60E-06	3.70E-06	3.50E-06
W	1.10E-06	1.20E-06	1.10E-06	1.70E-06	1.70E-06	1.60E-06	3.70E-06	3.70E-06	3.50E-06	1.60E-06	1.60E-06	1.50E-06
WNW	6.10E-07	6.10E-07	6.40E-07	9.40E-07	9.40E-07	9.50E-07	2.10E-06	2.10E-06	2.10E-06	8.20E-08	8.20E-08	1.20E-07
NW	1.70E-08	1.70E-08	1.40E-08	1.70E-08	1.70E-08	1.40E-08	1.70E-08	1.70E-08	1.40E-08	1.30E-08	1.30E-08	1.40E-08
NNW	1.90E-08	1.90E-08	1.70E-08	2.00E-08	2.00E-08	1.70E-08	2.00E-08	2.00E-08	1.70E-08	1.50E-08	1.50E-08	1.70E-08
MAX	2.50E-06	2.60E-06	2.60E-06	3.60E-06	3.60E-06	3.50E-06	8.00E-06	8.00E-06	7.70E-06	7.40E-06	7.50E-06	7.50E-06

Table 5A
Radiation Doses to Nearest Individual Receptor
From Gaseous Releases in Rem
Fourth Quarter

	ADULT			TEEN			CHILD			INFANT		
	T.BODY	THYRD	SKIN	T.BODY	THYRD	SKIN	T.BODY	THYRD	SKIN	T.BODY	THYRD	SKIN
N	3.60E-08	3.60E-08	2.60E-08	3.70E-08	3.80E-08	2.60E-08	3.50E-08	3.60E-08	2.60E-08	2.60E-08	2.70E-08	2.60E-08
NNE	4.30E-08	4.40E-08	3.20E-08	4.40E-08	4.60E-08	3.20E-08	4.40E-08	4.50E-08	3.20E-08	3.30E-08	3.40E-08	3.20E-08
NE	2.30E-08	2.30E-08	1.50E-08	2.30E-08	2.40E-08	1.50E-08	2.30E-08	2.30E-08	1.50E-08	1.70E-08	1.70E-08	1.50E-08
ENE	1.70E-08	1.80E-08	1.00E-08	1.80E-08	1.80E-08	1.00E-08	1.80E-08	1.80E-08	1.00E-08	1.30E-08	1.30E-08	1.00E-08
E	6.40E-07	6.70E-07	6.60E-07	7.90E-07	8.20E-07	8.10E-07	1.30E-06	1.40E-06	1.30E-06	1.10E-06	1.10E-06	1.20E-06
ESE	3.00E-07	3.20E-07	3.20E-07	3.40E-07	3.60E-07	3.70E-07	5.10E-07	5.40E-07	5.30E-07	2.50E-07	2.80E-07	3.20E-07
SE	3.20E-07	3.40E-07	3.50E-07	3.60E-07	3.80E-07	3.90E-07	5.00E-07	5.30E-07	5.30E-07	2.40E-07	2.60E-07	3.10E-07
SSE	3.10E-07	3.20E-07	3.10E-07	3.70E-07	3.80E-07	3.70E-07	5.80E-07	6.00E-07	5.90E-07	7.40E-07	7.60E-07	7.80E-07
S	8.70E-07	9.00E-07	1.10E-06	1.00E-06	1.10E-06	1.30E-06	1.70E-06	1.70E-06	1.90E-06	9.50E-07	1.00E-06	1.30E-06
SSW	1.70E-07	1.80E-07	1.50E-07	1.90E-07	1.90E-07	1.60E-07	2.40E-07	2.50E-07	2.20E-07	1.20E-07	1.20E-07	1.30E-07
SW	2.50E-07	2.60E-07	2.60E-07	2.80E-07	2.90E-07	2.80E-07	3.50E-07	3.70E-07	3.40E-07	3.00E-07	3.20E-07	3.30E-07
WSW	1.50E-07	1.60E-07	1.70E-07	1.80E-07	1.90E-07	1.80E-07	2.40E-07	2.60E-07	2.40E-07	1.80E-07	2.00E-07	2.00E-07
W	2.40E-07	2.50E-07	2.60E-07	2.70E-07	2.80E-07	2.80E-07	3.70E-07	3.80E-07	3.70E-07	2.50E-07	2.60E-07	2.80E-07
WNW	1.40E-07	1.50E-07	1.80E-07	1.50E-07	1.70E-07	1.90E-07	1.90E-07	2.10E-07	2.30E-07	1.10E-07	1.20E-07	1.70E-07
NW	8.40E-09	8.50E-09	4.70E-09	8.90E-09	9.10E-09	4.70E-09	8.90E-09	9.10E-09	4.70E-09	6.50E-09	6.60E-09	4.70E-09
NNW	1.70E-08	1.70E-08	1.20E-08	1.80E-08	1.80E-08	1.20E-08	1.80E-08	1.80E-08	1.20E-08	1.40E-08	1.40E-08	1.20E-08
MAX.	8.70E-07	9.00E-07	1.10E-06	1.00E-06	1.10E-06	1.30E-06	1.70E-06	1.70E-06	1.90E-06	1.10E-06	1.10E-06	1.30E-06

Table 5B

Radiation Dose To Nearest Individual From Liquid Releases In REM

	ADULT	TEEN	CHILD	INFANT
First Quarter				
T.BODY	9.10E-06	5.20E-06	2.00E-06	1.60E-08
BONE	6.90E-06	7.20E-06	9.00E-06	1.20E-07
THYRD	5.10E-07	4.60E-07	7.80E-07	8.00E-07
Second Quarter				
T.BODY	6.80E-06	3.90E-06	1.50E-06	1.10E-08
BONE	4.90E-06	5.20E-06	6.40E-06	8.50E-08
THYRD	2.80E-08	2.50E-08	4.10E-08	4.10E-08
Third Quarter				
T.BODY	9.90E-06	5.60E-06	2.20E-06	1.60E-08
BONE	7.10E-06	7.40E-06	9.30E-06	1.20E-07
THYRD	1.10E-07	9.70E-08	1.60E-07	1.60E-07
Fourth Quarter				
T.BODY	1.40E-05	8.20E-06	3.10E-06	2.50E-08
BONE	1.10E-05	1.10E-05	1.40E-05	1.80E-07
THYRD	6.30E-07	5.70E-07	9.70E-07	1.00E-06

TABLE 6A

ROCHESTER GAS & ELECTRIC CORPORATION GINNA STATION
NUMBER OF PERSONNEL AND MAN-REM BY WORK AND JOB FUNCTION
FOR 93/01/01 - 93/12/31

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	110	43	50	1.040	1.052	0.182
	OPERATING PERSONNEL	0	27	0	0.000	4.728	0.000
	HEALTH PHY. PERSONNEL	48	13	0	2.233	1.136	0.000
	SUPERVISORY PERSONNEL	12	14	16	0.284	1.179	0.637
	ENGINEERING PERSONNEL	4	1	2	0.202	0.041	0.143
ROUTINE MAINTENANCE	MAINTENANCE PERSONNEL	141	43	75	7.305	5.994	3.630
	OPERATING PERSONNEL	0	20	0	0.000	0.249	0.000
	HEALTH PHY. PERSONNEL	51	13	3	14.109	4.378	0.330
	SUPERVISORY PERSONNEL	13	14	15	0.345	1.480	0.677
	ENGINEERING PERSONNEL	3	1	2	0.562	0.162	0.054
INSERVICE INSPECTION	MAINTENANCE PERSONNEL	54	27	44	4.464	1.511	2.617
	OPERATING PERSONNEL	0	6	0	0.000	0.228	0.000
	HEALTH PHY. PERSONNEL	28	8	0	1.377	0.173	0.000
	SUPERVISORY PERSONNEL	10	11	14	1.224	0.870	3.346
	ENGINEERING PERSONNEL	1	0	2	0.020	0.000	0.056
SPECIAL MAINTENANCE	MAINTENANCE PERSONNEL	132	42	77	12.567	8.672	8.857
	OPERATING PERSONNEL	0	22	0	0.000	1.419	0.000
	HEALTH PHY. PERSONNEL	34	11	3	2.651	1.267	0.015
	SUPERVISORY PERSONNEL	9	5	14	0.667	0.513	0.632
	ENGINEERING PERSONNEL	2	1	1	0.149	0.035	0.000
WASTE PROCESSING	MAINTENANCE PERSONNEL	24	14	5	0.452	0.291	0.106
	OPERATING PERSONNEL	0	1	0	0.000	0.093	0.000
	HEALTH PHY. PERSONNEL	18	5	3	0.634	0.261	0.131
	SUPERVISORY PERSONNEL	1	1	3	0.018	0.021	0.111
	ENGINEERING PERSONNEL	0	0	0	0.000	0.000	0.000
REFUELING	MAINTENANCE PERSONNEL	33	18	27	9.426	0.609	2.160
	OPERATING PERSONNEL	0	8	0	0.000	2.143	0.000
	HEALTH PHY. PERSONNEL	13	2	0	0.754	0.339	0.000
	SUPERVISORY PERSONNEL	3	2	5	0.100	0.285	0.120
	ENGINEERING PERSONNEL	1	1	0	0.128	0.448	0.000
MODIFICATIONS	MAINTENANCE PERSONNEL	87	14	12	8.142	0.447	0.216
	OPERATING PERSONNEL	0	0	0	0.000	0.000	0.000
	HEALTH PHY. PERSONNEL	21	3	0	1.769	0.079	0.000
	SUPERVISORY PERSONNEL	5	4	4	0.331	0.083	0.012
	ENGINEERING PERSONNEL	1	0	1	0.000	0.000	0.015
TOTAL	MAINTENANCE PERSONNEL	172	43	77	43.397	18.576	17.768
	OPERATING PERSONNEL	0	27	0	0.000	8.859	0.000
	HEALTH PHY. PERSONNEL	53	13	3	23.527	7.634	0.476
	SUPERVISORY PERSONNEL	14	14	16	2.968	4.431	5.535
	ENGINEERING PERSONNEL	4	1	2	1.061	0.686	0.268
GRAND TOTAL	==========	241	97	98	70.953	40.186	24.047

Table 6B

STANDARD REPORT OF PERSONNEL WHOLE BODY EXPOSURE 1993

DOSE (REM)	NUMBER OF PEOPLE
00.000 - 00.000	759
00.001 - 00.100	370
00.101 - 00.250	224
00.251 - 00.500	153
00.501 - 00.750	58
00.751 - 01.000	31
01.001 - 02.000	20
02.001 - 03.000	0
03.001 - 04.000	0
04.001 - 05.000	0

Total number of personnel monitored 1615

The total collective dose for 1993 is 193.13 person-rem based on the sum of all personnel TLD badge readings.

FIVE HIGHEST EXPOSURES FOR THE YEAR

A	1.838 rem
B	1.452 rem
C	1.441 rem
D	1.436 rem
E	1.338 rem

This report contains all personnel monitored during 1993.