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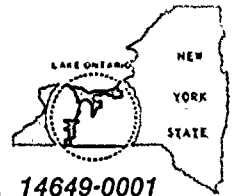
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March 1, 1989

U.S. Nuclear Regulatory Commission
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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

xc: Mr. William T. Russell
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U.S. Nuclear Regulatory Commission
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Ms. Donna Ross
New York State Energy Office
Empire State Plaza
Albany, NY 12223

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SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

R. E. GINNA NUCLEAR PLANT

ROCHESTER GAS AND ELECTRIC

DOCKET NO. 50-244

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1.0

INTRODUCTION

This Semiannual Radioactive Effluent Release Report is for Rochester Gas and Electric 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, 1988 through December 31, 1988.

This report includes summaries 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 ≤ 500 mrem/yr to the total body and ≤ 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 ≤ 10 mrad for gamma radiation and to ≤ 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.

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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.

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2.3 Release Rate Limits

The release rate limits for fission and activation gases from the R.G.&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 0.237 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 analyses were performed using liquid scintillation and gas flow proportional counting respectively.

The total radioactivity in effluent release 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:	2.85 E+02
2.	Total time period for batch releases:	2.22 E+04 min
3.	Maximum time period for a batch release:	1.21 E+03 min
4.	Average time period for batch releases:	7.7 E+01 min
5.	Minimum time period for a batch release:	1.3 E+01 min
6.	Average stream flow (LPM) during periods of release effluent into a flowing stream:	1.25 E+06

2.5.2 Gaseous

1.	Number of batch releases:	1.2 E+01
2.	Total time period for batch releases:	4.95 E+03 min
3.	Maximum time period for a batch release:	7.74 E+02 min
4.	Average time period for batch releases:	4.12 E+02 min
5.	Minimum time period for a batch release:	3.48 E+02 min

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2.6 Abnormal Releases

There was one abnormal release of a gas decay tank into the Auxiliary Building through a valve being worked on. The gases were removed by the normal ventilation system and discharged through the normal plant vent system.

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 wake split 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 2 liquid releases for which 1 or more gamma emitting radionuclide did not meet the required lower limit for detection. These are listed by release number in Table 4.

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 based 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 B.

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8.0 METEOROLOGICAL DATA

The annual summary of hourly meteorological data collected during 1988 is not included with this report, but can be made available at the R.G.&E. Ginna Plant as allowed by our Technical Specifications.

9.0 LAND USE CHANGES

There were no changes in critical receptor location for dose calculations during the reporting period. There were no land use changes within 5 miles of plant, although several private homes were built.

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.

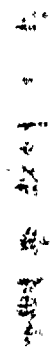


Table 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

July 1 - December 31, 1988

	Unit	Quarter	Quarter	Est. Total Error %
A. Fission & activation gases		3	4	
1. Total release	Ci	1.46E+01	1.26E+01	7.0E+00
2. Average release rate for period	uCi/sec	1.84E+00	1.58E+00	
3. Percent of technical specification limit	%	2.92E-04	2.51E-04	
B. Iodines				
1. Total iodine-131	Ci	3.94E-06	4.25E-06	4.3E+01
2. Average release rate for period	uCi/sec	4.96E-07	5.35E-06	
3. Percent of technical specification limit	%	1.09E-03	1.18E-03	
C. Particulates				
1. Particulates with half-lives > 8 days	Ci	9.28E-01	8.38E-01	3.0E+01
2. Average release rate for period	uCi/sec	1.17E-01	1.05E-01	
3. Percent of technical specification limit	%	6.21E-05	5.61E-06	
4. Gross alpha radioactivity	Ci	1.50E-07	2.29E-07	
D. Tritium				
1. Total release	Ci	1.98E+01	5.07E+01	3.2E+00
2. Average release rate for period	uCi/sec	2.49E+00	6.38E+00	
3. Percent of technical specification limit	%	2.93E-04	7.50E-04	

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Table 1B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

GASEOUS EFFLUENTS - ELEVATED RELEASE

July 1 - December 31, 1988

Nuclides Released	Unit	CONTINUOUS MODE		BATCH MODE	
		Quarter	Quarter	Quarter	Quarter
1. Fission gases		3	4	3	4
krypton-85	Ci				
krypton-85m	Ci	1.84E-02	2.72E-02		8.82E-05
krypton-87	Ci	3.08E-02	4.48E-02		
krypton-88	Ci	4.11E-02	6.07E-02		
xenon-133	Ci	1.27E+01	9.00E+00	8.34E-01	1.75E-01
xenon-135	Ci	2.08E-01	2.29E+00	9.97E-04	9.23E-03
xenon-135m	Ci	3.84E-01	5.12E-01		
xenon-138	Ci	1.48E-01	1.82E-01		
Others (specify)	Ci				
argon-41	Ci	1.50E-01	1.98E-01		2.33E-02
xenon-131m	Ci	4.34E-02	7.53E-02		
xenon-133m	Ci			7.23E-03	
Total for period	Ci	1.37E+01	1.24E+01	8.42E-01	2.08E-01
2. Iodines					
iodine-131	Ci	3.94E-06	4.25E-06		
iodine-133	Ci		1.55E-05		
iodine-135	Ci				
Total for period	Ci	3.94E-06	1.97E-05		
3. Particulates					
strontium-89	Ci				
strontium-90	Ci				
cesium-134	Ci				
cesium-137	Ci				
barium-lanthanum-140	Ci				
Others (specify)	Ci				
carbon-14 (a)	Ci	3.88E-01	3.86E-01	5.40E-01	4.52E-01
	Ci				
unidentified	Ci	6.56E-06	7.02E-06		

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

(a) Carbon-14 is estimated based on a study conducted at the R.E. Ginna Nuclear Plant in 1980-81.

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Table 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

July 1 - December 31, 1988

	Unit	Quarter 3	Quarter 4	Est. Total Error, %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	7.58E-03	2.35E-03	1.1E+01
2. Average diluted concentration during period	uCi/ml	4.46E-11	1.42E-11	
3. Percent of applicable limit	%	1.03E-02	9.22E-03	
B. Tritium				
1. Total release	Ci	3.62E+01	9.70E+01	3.2E+00
2. Average diluted concentration during period	uCi/ml	2.13E-07	5.85E-07	
3. Percent of applicable limit	%	7.10E-03	1.95E-02	
C. Dissolved and entrained gases				
1. Total release	Ci	(a)	1.71E-03	3.0E+01
2. Average diluted concentration during period	uCi/ml		1.03E-11	
3. Percent of applicable limit	%		5.15E-06	
D. Gross alpha radioactivity				
1. Total release	Ci	(b)	(b)	
E. Volume of waste released (prior to dilution)				
	liters	2.41E+07	2.52E+07	5.0E+00
F. Volume of dilution water used during period				
	liters	1.70E+11	1.66E+11	5.0E+00

(a) There were no dissolved and entrained gases greater than the ILD measurement for this quarter.

(b) There was no alpha radioactivity greater than the ILD measurement for this quarter.



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Table 2B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

LIQUID EFFLUENTS

July 1 - December 31, 1988

Nuclides Released	Unit	CONTINUOUS MODE		BATCH MODE	
		Quarter 3	Quarter 4	Quarter 3	Quarter 4
strontium-89	Ci				
strontium-90	Ci				
cesium-134	Ci	2.60E-04	8.55E-05	3.55E-04	1.65E-05
cesium-137	Ci	2.82E-04	5.00E-04	1.22E-03	6.87E-04
iodine-131	Ci	6.86E-06	1.30E-05	5.18E-03	5.24E-04
cobalt-58	Ci				
cobalt-60	Ci		3.45E-04	6.93E-05	3.68E-05
iron-59	Ci				
zinc-65	Ci				
manganese-54	Ci			1.41E-05	
chromium-51	Ci				
zirconium-niobium-95	Ci			1.44E-05	
molybdenum-99	Ci				
technetium-99m	Ci				
barium-lanthanum-140	Ci				
cerium-141	Ci				
Other (specify)	Ci				
iodine-132 (a)	Ci	2.96E-05	3.00E-05		
iodine-133 (a)	Ci	3.70E-05	3.95E-05		
iodine-134 (a)	Ci	2.41E-05	2.46E-05		
iodine-135 (a)	Ci	4.96E-05	5.34E-05		
silver-110m	Ci			3.47E-05	7.42E-07
unidentified	Ci				
Total for period (above)	Ci	6.89E-04	1.09E-03	6.89E-03	1.26E-03
xenon-133	Ci			9.79E-04	
xenon-135	Ci			7.30E-04	

NOTE: Isotopes for which no value is given were not identified in applicable releases.

- (a) The release of short-lived iodines is due to the release of steam generator blowdown while the plant operated with a primary to secondary leak of 0.016 gpm.

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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 Ci	7.66E1 1.79E2	
b. Dry compressible waste, contaminated equip, etc.	m ³ Ci	4.46E1 2.03E1	
c. Irradiated components, control rods, etc.	m ³ Ci	None	
d. Other (describe)	m ³ Ci	None	

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

a. Co-60	%	4.66E1
Ni-63	%	1.53E1
Cs-137	%	1.47E1
Cs-134	%	9.67E0
H-3	%	7.57E0
Fe-55	%	4.72E0
b. Fe-55	%	5.7E1
Co-58	%	2.4E1
Co-60	%	1.6E1
Ni-63	%	1.5E0

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
7	Highway Vehicle	Barnwell, SC

B. IRRADIATED FUEL SHIPMENTS (Disposition)

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
None		

Table 4

RELEASE PERMITS NOT MEETING LLD REQUIREMENTS

No.	Date	Isotopes	Cause
488	7/16/88	Ce-141	a.
489	7/17/88	Fe-59, Zn-65, Ce-141	a.

- a. Activity from other isotopes caused an increased background resulting in the LLD calculation exceeding $5\text{E}-07$ uCi/ml for the listed isotopes.

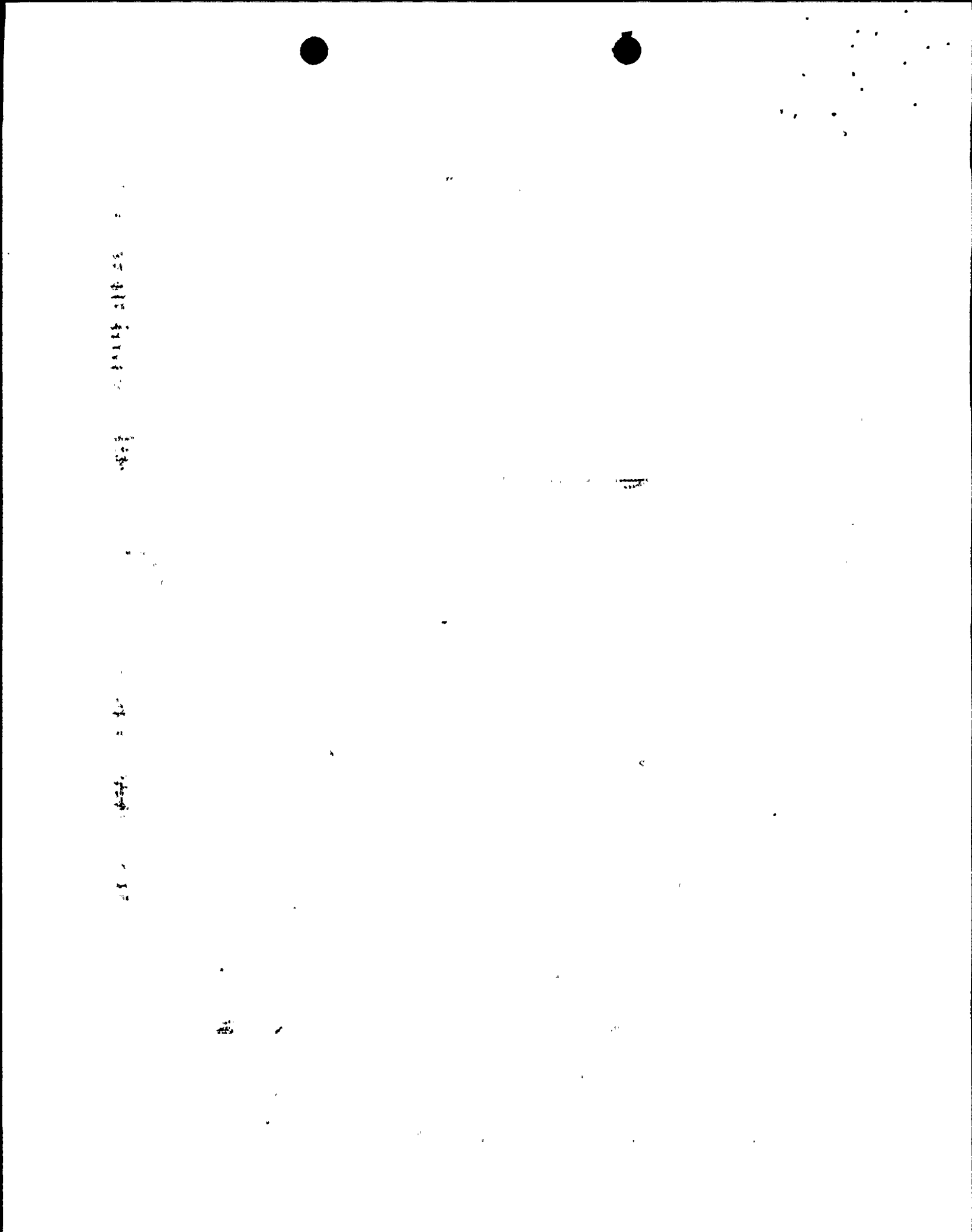


TABLE 5A

RADIATION DOSES TO NEAREST INDIVIDUAL RECEPTOR
FROM GASEOUS RELEASES IN REM

1988 QUARTER 1

Direction	Adult			Teen			Child			Infant		
	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid
N	2.5E-7	2.2E-7	2.2E-7	2.7E-7	2.2E-7	2.3E-7	2.8E-7	2.2E-7	2.2E-7	2.1E-7	2.2E-7	1.7E-7
NNE	1.7E-7	1.3E-7	1.6E-7	1.9E-7	1.3E-7	1.6E-7	1.9E-7	1.3E-7	1.6E-7	1.4E-7	1.3E-7	1.2E-7
NE	1.7E-7	1.5E-7	1.6E-7	1.8E-7	1.5E-7	1.7E-7	1.8E-7	1.5E-7	1.6E-7	1.4E-7	1.5E-7	1.2E-7
ENE	1.8E-7	7.7E-7	1.6E-7	2.0E-7	7.7E-7	1.7E-7	2.0E-7	7.7E-7	1.6E-7	1.4E-7	7.7E-7	1.2E-7
E	3.8E-7	4.1E-7	3.3E-7	4.2E-7	4.1E-7	3.4E-7	4.5E-7	4.1E-7	3.3E-7	3.4E-7	4.1E-7	2.7E-7
ESE	2.2E-6	7.8E-7	1.9E-6	2.3E-6	7.8E-7	2.0E-6	2.4E-6	7.8E-7	1.9E-6	1.6E-6	7.8E-7	1.3E-6
SE	1.8E-6	5.0E-7	1.7E-6	1.9E-6	5.0E-7	1.7E-6	1.8E-6	5.0E-7	1.6E-6	1.2E-6	5.0E-7	1.0E-6
SSE	8.1E-7	3.1E-7	7.6E-7	8.4E-7	3.1E-7	7.7E-7	8.1E-7	3.1E-7	7.1E-7	5.5E-7	3.1E-7	4.8E-7
S	7.8E-7	4.7E-7	7.1E-7	8.2E-7	4.7E-7	7.2E-7	8.1E-7	4.7E-7	6.8E-7	5.9E-7	4.7E-7	4.9E-7
SSW	8.4E-7	3.6E-7	6.7E-7	9.3E-7	3.6E-7	6.9E-7	1.0E-6	3.6E-7	6.6E-7	7.1E-7	3.6E-7	4.7E-7
SW	3.1E-7	1.5E-7	2.9E-7	3.2E-7	1.5E-7	2.9E-7	3.0E-7	1.5E-7	2.7E-7	2.1E-7	1.5E-7	1.9E-7
WSW	3.6E-7	9.3E-8	3.4E-7	3.8E-7	9.3E-8	3.4E-7	3.6E-7	9.3E-8	3.1E-7	2.3E-7	9.3E-8	2.0E-7
W	4.2E-7	1.3E-7	4.0E-7	4.5E-7	1.3E-7	4.1E-7	4.4E-7	1.3E-7	3.9E-7	2.9E-7	1.3E-7	2.6E-7
WNW	2.6E-7	9.0E-8	2.3E-7	2.8E-7	9.0E-8	2.3E-7	2.9E-7	9.0E-8	2.2E-7	2.0E-7	9.0E-8	1.5E-7
NW	3.1E-8	9.3E-9	3.1E-8	3.3E-8	9.3E-9	3.2E-8	3.1E-8	9.3E-9	3.0E-8	2.0E-8	9.3E-9	2.0E-8
NNW	9.6E-8	7.0E-8	9.4E-8	1.0E-7	7.0E-8	9.8E-8	1.0E-7	7.0E-8	9.5E-8	7.2E-8	7.0E-8	7.0E-8

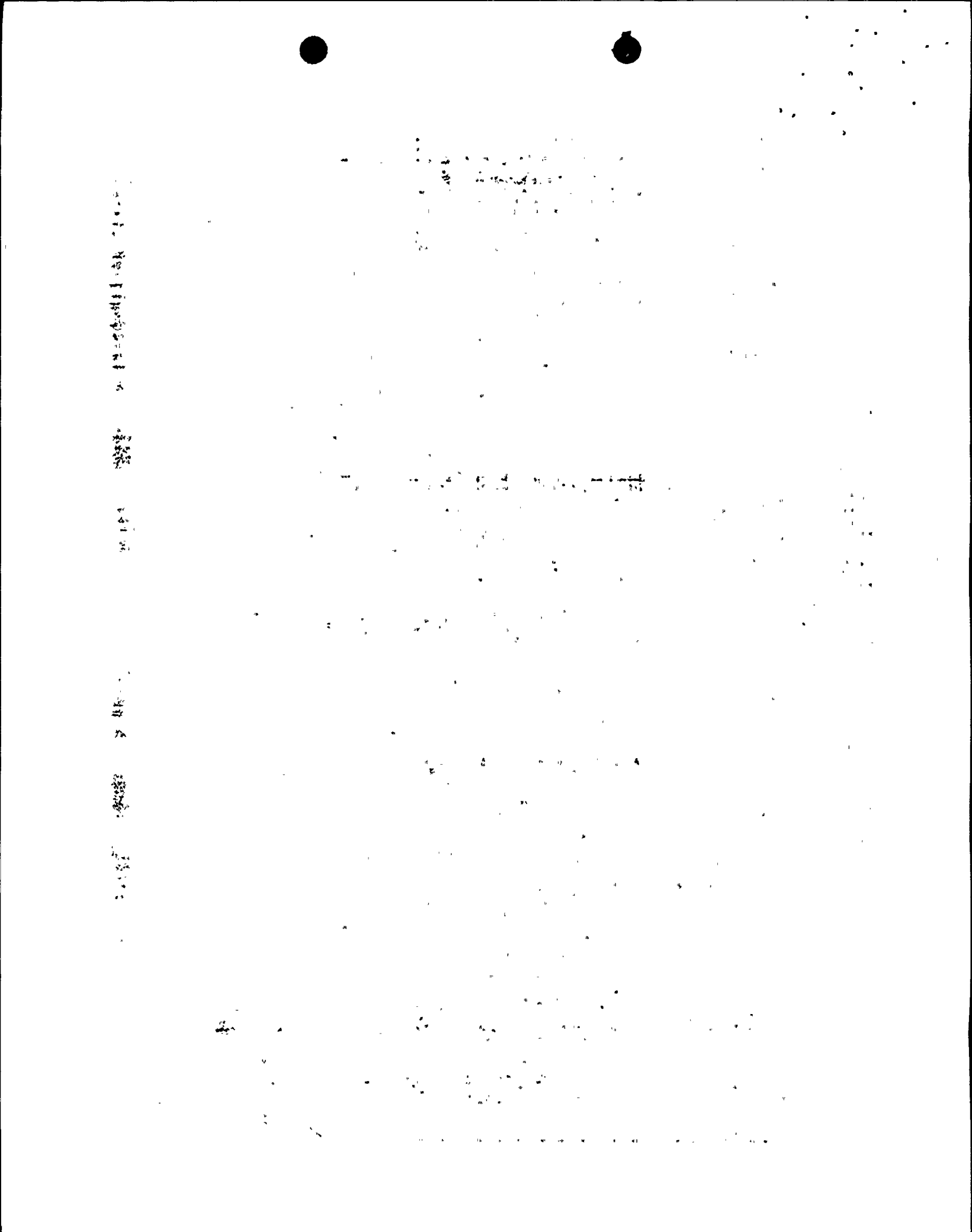


TABLE 5A

RADIATION DOSES TO NEAREST INDIVIDUAL RECEPTOR
FROM GASEOUS RELEASES IN REM

1988 QUARTER 2

Direction	Adult			Teen			Child			Infant		
	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid
N	9.4E-8	2.6E-8	8.4E-8	1.0E-7	2.6E-8	8.6E-8	1.0E-7	2.6E-8	7.9E-8	6.6E-8	2.6E-8	5.2E-8
NNE	7.9E-8	2.7E-8	7.6E-8	8.1E-8	2.7E-8	7.7E-8	7.6E-8	2.7E-8	7.1E-8	5.0E-8	2.7E-8	4.7E-8
NE	1.2E-7	3.6E-8	1.1E-7	1.2E-7	3.6E-8	1.1E-7	1.1E-7	3.6E-8	1.0E-7	7.2E-8	3.6E-8	6.7E-8
ENE	1.4E-7	3.6E-8	1.3E-7	1.4E-7	3.6E-8	1.3E-7	1.3E-7	3.6E-8	1.2E-7	8.4E-8	3.6E-8	7.7E-8
E	3.2E-6	1.4E-6	3.1E-6	3.6E-6	1.6E-6	3.6E-6	5.0E-6	2.5E-6	5.0E-6	2.5E-6	1.7E-6	2.5E-6
ESE	5.8E-6	2.3E-6	5.8E-6	6.5E-6	2.7E-6	6.5E-6	8.8E-6	4.1E-6	8.8E-6	4.2E-6	2.6E-6	4.2E-6
SE	2.8E-6	1.8E-6	2.8E-6	3.2E-6	2.1E-6	3.2E-6	4.8E-6	3.3E-6	4.7E-6	4.4E-6	3.8E-6	4.5E-6
SSE	2.5E-6	2.1E-6	2.4E-6	3.3E-6	2.8E-6	3.3E-6	6.3E-6	5.6E-6	6.3E-6	8.6E-6	8.1E-6	8.6E-6
S	2.2E-6	1.5E-6	2.1E-6	2.6E-6	1.8E-6	2.6E-6	4.1E-6	3.1E-6	4.1E-6	4.8E-6	4.1E-6	4.8E-6
SSW	1.4E-6	8.4E-7	1.4E-6	1.5E-6	9.4E-7	1.5E-6	2.1E-6	1.3E-6	2.1E-6	1.3E-6	1.1E-6	1.4E-6
SW	2.4E-6	1.6E-6	2.4E-6	2.9E-6	2.1E-6	2.9E-6	4.9E-6	3.7E-6	4.9E-6	5.1E-6	4.6E-6	5.1E-6
WSW	1.2E-6	7.3E-7	1.2E-6	1.4E-6	8.6E-7	1.4E-6	2.2E-6	1.3E-6	2.2E-6	1.5E-6	1.1E-6	1.5E-6
W	1.1E-6	8.7E-7	1.0E-6	1.2E-6	9.7E-7	1.2E-6	1.7E-6	1.3E-6	1.7E-6	1.2E-6	1.1E-6	1.2E-6
WNW	1.5E-7	2.0E-7	1.5E-7	1.6E-7	2.0E-7	1.6E-7	1.7E-7	2.1E-7	1.7E-7	1.2E-7	1.9E-7	1.2E-7
NW	2.6E-8	5.0E-9	2.5E-8	2.7E-8	5.0E-9	2.6E-8	2.5E-8	5.0E-9	2.3E-8	1.6E-8	5.0E-9	1.4E-8
NNW	5.0E-8	1.2E-8	4.8E-8	5.1E-8	1.2E-8	4.9E-8	4.8E-8	1.2E-8	4.4E-8	3.0E-8	1.2E-8	2.8E-8

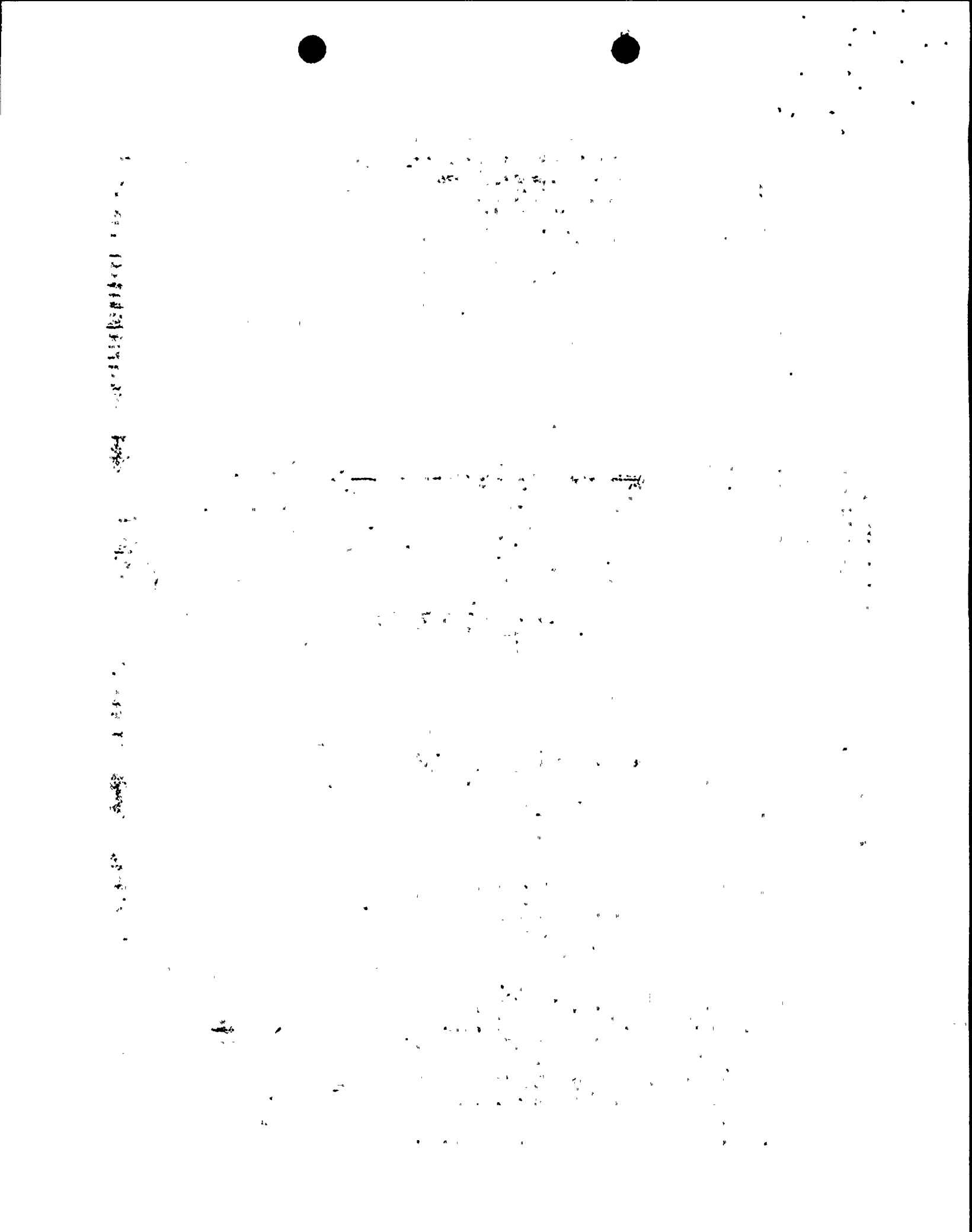


TABLE 5A

RADIATION DOSES TO NEAREST INDIVIDUAL RECEPTOR
FROM GASEOUS RELEASES IN REM

1988 QUARTER 3

Direction	Adult			Teen			Child			Infant		
	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid
N	5.1E-8	8.3E-8	4.5E-8	5.4E-8	8.3E-8	4.6E-8	5.7E-8	8.3E-8	4.5E-8	4.8E-8	8.3E-8	3.9E-8
NNE	7.1E-8	5.2E-8	5.8E-8	7.8E-8	5.2E-8	6.0E-8	8.3E-8	5.2E-8	5.8E-8	6.2E-8	5.2E-8	4.3E-8
NE	1.3E-7	1.6E-7	1.1E-7	1.5E-7	1.6E-7	1.2E-7	1.6E-7	1.6E-7	1.1E-7	1.2E-7	1.6E-7	9.3E-8
ENE	6.5E-8	4.8E-8	5.3E-8	7.2E-8	4.8E-8	5.4E-8	7.6E-8	4.8E-8	5.2E-8	5.7E-8	4.8E-8	4.0E-8
E	1.9E-6	1.9E-6	1.9E-6	2.6E-6	2.5E-6	2.5E-6	5.0E-6	4.7E-6	4.9E-6	4.1E-6	4.0E-6	4.0E-6
ESE	2.6E-6	2.2E-6	2.5E-6	3.4E-6	2.9E-6	3.4E-6	6.6E-6	5.7E-6	6.5E-6	5.3E-6	4.7E-6	5.3E-6
SE	2.1E-6	2.1E-6	2.0E-6	2.7E-6	2.6E-6	2.6E-6	4.9E-6	4.6E-6	4.9E-6	4.4E-6	4.1E-6	4.5E-6
SSE	1.2E-6	1.1E-6	1.2E-6	1.6E-6	1.5E-6	1.6E-6	3.2E-6	3.0E-6	3.2E-6	4.6E-6	4.4E-6	4.6E-6
S	2.3E-6	2.2E-6	2.3E-6	3.3E-6	3.1E-6	3.3E-6	7.0E-6	6.8E-6	7.1E-6	1.1E-5	1.0E-5	1.1E-5
SSW	2.7E-6	2.6E-6	2.7E-6	3.9E-6	3.7E-6	3.9E-6	8.6E-6	8.2E-6	8.5E-6	1.1E-5	1.1E-5	1.1E-5
SW	2.6E-6	2.4E-6	2.6E-6	3.8E-6	3.5E-6	3.7E-6	8.1E-6	7.7E-6	8.1E-6	1.2E-5	1.1E-5	1.2E-5
WSW	4.9E-7	3.6E-7	4.9E-7	6.4E-7	4.8E-7	6.4E-7	1.2E-6	9.0E-7	1.2E-6	1.0E-6	8.5E-7	1.1E-6
W	2.2E-7	1.6E-7	2.2E-7	2.9E-7	2.1E-7	2.9E-7	5.4E-7	4.2E-7	5.4E-7	3.4E-7	2.8E-7	3.5E-7
WNW	6.2E-8	6.0E-8	6.2E-8	7.5E-8	7.1E-8	7.5E-8	1.2E-7	1.1E-7	1.2E-7	2.9E-8	4.3E-8	2.7E-8
NW	1.2E-8	7.5E-9	1.1E-8	1.3E-8	7.5E-9	1.1E-8	1.3E-8	7.5E-9	1.0E-8	9.1E-9	7.5E-9	7.2E-9
NNW	1.4E-8	9.4E-9	1.3E-8	1.5E-8	9.4E-9	1.3E-8	1.5E-8	9.4E-9	1.2E-8	1.1E-8	9.4E-9	8.9E-9

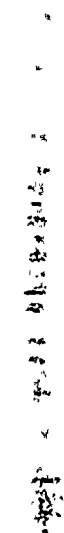


TABLE 5A

RADIATION DOSES TO NEAREST INDIVIDUAL RECEPTOR
FROM GASEOUS RELEASES IN REM

1988 QUARTER 4

Direction	Adult			Teen			Child			Infant		
	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid	Total Body	Skin	Thyroid
N	9.0E-8	4.0E-8	8.4E-8	9.5E-8	4.0E-8	8.5E-8	9.2E-8	4.0E-8	7.8E-8	6.3E-8	4.0E-8	5.3E-8
NNE	1.5E-7	5.8E-8	1.3E-7	1.6E-7	5.8E-8	1.3E-7	1.6E-7	5.8E-8	1.2E-7	1.1E-7	5.8E-8	8.2E-8
NE	2.7E-7	9.4E-8	2.0E-7	3.1E-7	9.4E-8	2.1E-7	3.4E-7	9.4E-8	2.0E-7	2.4E-7	9.4E-8	1.4E-7
ENE	2.4E-7	1.0E-7	2.1E-7	2.5E-7	1.0E-7	2.1E-7	2.6E-7	1.0E-7	2.0E-7	1.8E-7	1.0E-7	1.3E-7
E	9.1E-7	6.8E-7	8.3E-7	1.0E-7	7.6E-7	9.3E-7	1.4E-7	1.1E-6	1.2E-6	7.8E-7	7.1E-7	6.8E-7
ESE	1.1E-6	6.0E-7	1.0E-6	1.2E-6	6.6E-7	1.1E-6	1.4E-6	8.6E-7	1.3E-6	7.9E-7	6.1E-7	7.3E-7
SE	4.9E-7	4.2E-7	4.7E-7	5.8E-7	4.9E-7	5.6E-7	8.7E-7	7.4E-7	8.4E-7	4.0E-7	4.2E-7	4.0E-7
SSE	4.0E-7	3.9E-7	3.9E-7	4.6E-7	4.3E-7	4.4E-7	6.3E-7	5.8E-7	6.0E-7	3.9E-7	4.3E-7	3.8E-7
S	3.2E-7	2.7E-7	3.1E-7	3.8E-7	3.2E-7	3.8E-7	6.0E-7	5.2E-7	6.0E-7	2.6E-7	2.7E-7	2.6E-7
SSW	2.7E-7	2.2E-7	2.7E-7	3.4E-7	2.7E-7	3.3E-7	5.6E-7	4.7E-7	5.6E-7	1.8E-7	1.8E-7	1.8E-7
SW	2.4E-7	2.4E-7	2.4E-7	3.0E-7	3.0E-7	3.0E-7	5.3E-7	4.9E-7	5.3E-7	3.2E-7	3.3E-7	3.3E-7
WSW	1.5E-7	1.2E-7	1.5E-7	2.0E-7	1.6E-7	2.0E-7	3.6E-7	3.0E-7	3.6E-7	1.6E-7	1.4E-7	1.6E-7
W	1.1E-7	7.6E-8	1.1E-7	1.3E-7	9.1E-8	1.2E-7	1.9E-7	1.5E-7	1.8E-7	9.4E-8	8.3E-8	9.2E-8
WNW	6.1E-8	7.2E-8	6.1E-8	7.1E-8	8.0E-8	7.0E-8	1.1E-7	1.1E-7	1.0E-7	3.9E-8	5.9E-8	3.6E-8
NW	1.7E-8	7.0E-9	1.6E-8	1.8E-8	7.0E-9	1.6E-8	1.7E-8	7.0E-9	1.5E-8	1.1E-8	7.0E-9	9.9E-9
NNW	3.2E-8	1.5E-8	3.0E-8	3.3E-8	1.5E-8	3.0E-8	3.2E-8	1.5E-8	2.8E-8	2.2E-8	1.5E-8	1.9E-8

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TABLE 5B

RADIATION DOSE TO NEAREST INDIVIDUAL
FROM LIQUID RELEASES IN MREM

	<u>Adult</u>	<u>Teen</u>	<u>Child</u>	<u>Infant</u>
First Quarter				
Total Body	5.5E-3	3.3E-3	2.3E-3	1.3E-3
Bone	3.7E-3	3.9E-3	4.9E-3	9.2E-5
Thyroid	1.2E-3	8.6E-4	1.6E-3	1.5E-3
Second Quarter				
Total Body	2.2E-3	1.3E-3	7.7E-4	3.4E-4
Bone	1.7E-3	1.8E-3	2.2E-3	3.3E-5
Thyroid	1.2E-3	1.0E-3	1.7E-3	1.8E-3
Third Quarter				
Total Body	1.8E-3	1.0E-3	6.3E-4	2.7E-4
Bone	1.4E-3	1.5E-3	1.8E-3	2.9E-5
Thyroid	1.3E-3	1.2E-3	1.9E-3	1.9E-3
Fourth Quarter				
Total Body	1.6E-3	1.0E-3	1.2E-3	9.8E-4
Bone	8.8E-4	9.4E-4	1.2E-3	1.6E-5
Thyroid	9.1E-4	6.7E-4	1.2E-3	1.1E-3

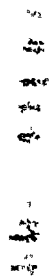
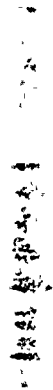


TABLE 6A

RG&E GINNA STATION
NUMBER OF PERSONNEL AND MAN-REM BY WORK AND JOB FUNCTION (1988)
REGULATORY GUIDE 1.16 REPORT

WORK PERMIT SUFFIX & WORK GROUP	NO. OF PERSONNEL (>100 MREM)			TOTAL MAN-REM		
	CONTRACT WORKERS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACT WORKERS	STATION EMPLOYEES	UTILITY EMPLOYEES
REACTOR OPERATIONS & SURVEILLANCE						
Maintenance Personnel	85	50	84	0.548	4.738	3.603
Operating Personnel	0	29	0	0.000	9.143	0.000
Health Physics Personnel	25	11	1	7.445	4.597	0.003
Supervisory Personnel	23	16	12	1.868	2.659	0.260
Engineering Personnel	8	0	4	0.519	0.000	0.386
ROUTINE MAINTENANCE						
Maintenance Personnel	147	49	140	25.642	21.842	21.152
Operating Personnel	0	21	0	0.000	0.446	0.000
Health Physics Personnel	24	11	4	3.010	2.926	0.875
Supervisory Personnel	25	16	13	7.043	2.434	2.357
Engineering Personnel	23	0	2	10.120	0.000	0.234
INSERVICE INSPECTION						
Maintenance Personnel	39	5	20	2.959	0.010	0.445
Operating Personnel	0	1	0	0.000	0.000	0.000
Health Physics Personnel	9	1	0	0.080	0.000	0.000
Supervisory Personnel	7	5	6	0.217	0.075	0.176
Engineering Personnel	1	0	0	0.000	0.000	0.000
SPECIAL MAINTENANCE						
Maintenance Personnel	122	47	136	33.588	4.284	46.865
Operating Personnel	0	12	0	0.000	0.148	0.000
Health Physics Personnel	19	9	4	0.485	0.508	0.030
Supervisory Personnel	21	11	11	2.956	0.504	1.058
Engineering Personnel	11	0	2	0.746	0.000	0.098
WASTE PROCESSING						
Maintenance Personnel	24	11	14	1.120	0.412	0.095
Operating Personnel	0	8	0	0.000	0.080	0.000
Health Physics Personnel	8	8	4	0.925	0.116	0.685
Supervisory Personnel	1	1	0	0.000	0.000	0.000
Engineering Personnel	3	0	0	0.000	0.000	0.000
REFUELING						
Maintenance Personnel	62	20	134	8.590	2.313	31.721
Operating Personnel	0	6	0	0.000	0.020	0.000
Health Physics Personnel	14	8	2	0.880	2.719	0.045
Supervisory Personnel	7	5	7	0.690	0.115	0.080
Engineering Personnel	17	0	0	5.844	0.000	0.000
TOTAL						
Maintenance Personnel	159	50	151	72.447	33.599	103.881
Operating Personnel	0	29	0	0.000	9.837	0.000
Health Physics Personnel	25	11	6	12.825	10.866	1.638
Supervisory Personnel	25	16	14	12.774	5.787	3.931
Engineering Personnel	25	0	4	17.229	0.000	0.718
GRAND TOTAL	228	96	170	115.275	60.089	110.168

NOTE: This report is based on SRPD (Self Reading Pocket Dosimeter) exposures taken from the WORK PERMITS.

TABLE 6B

R.G.&E. CORPORATION'S
GINNA STATION

WHOLE BODY EXPOSURES FOR THE YEAR OF 1988

DOSE RANGE (REM)		NUMBER OF INDIVIDUALS
	0.000	606
0.000 -	0.100	404
0.100 -	0.250	169
0.250 -	0.500	126
0.500 -	0.750	81
0.750 -	1.000	49
1.000 -	2.000	66
2.000 -	3.000	2
3.000 -	4.000	0
4.000 -	5.000	0
5.000 -	6.000	0
6.000 -	7.000	0
7.000 -	8.000	0
8.000 -	9.000	0
9.000 -	10.000	0
10.000 -	11.000	0
11.000 -	12.000	0
12.000 -		0
TOTAL NUMBER OF INDIVIDUALS MONITORED		1503

THE FIVE HIGHEST EXPOSURES FOR THE YEAR

- A. 2.261 REM
- B. 2.231 REM
- C. 1.959 REM
- D. 1.767 REM
- E. 1.735 REM

