

Attachment 1
to 0CAN020405

Annual Radioactive Release Report for 2003

ARKANSAS NUCLEAR ONE

UNIT 1 AND UNIT 2

OPERATING LICENSE NOS. DPR-51 AND NPF-6

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

JANUARY 1 THROUGH DECEMBER 31, 2003

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1. INTRODUCTION

Arkansas Nuclear One (ANO) is a two unit site consisting of a Babcock & Wilcox (Unit 1) and a Combustion Engineering (Unit 2) nuclear steam supply system. Both liquid and gaseous effluents are released in accordance with the Offsite Dose Calculation Manual (ODCM). This report is a summary of the effluent data in accordance with Unit 1 TS 5.6.3 and Unit 2 TS 6.9.3. This report provides the following information:

- A. Routine radioactive effluent release reports covering the operation of the units and the independent spent fuel storage installation (ISFSI) during the reporting period.
- B. Description of unplanned releases to unrestricted areas.
- C. Description of changes to the Offsite Dose Calculation Manual (ODCM).
- D. Description of changes to the Process Control Program (PCP).
- E. Summary of radiation doses due to radiological effluents during the previous calendar year.
- F. Radiation dose to members of the public due to activities inside the site boundary.
- G. Description of licensee initiated major changes to the radioactive waste systems during the previous calendar year.
- H. Items to be reported in the annual Radioactive Effluent Release Report per other miscellaneous ODCM requirements.

This report covers the period from January 1 through December 31, 2003.

2. REGULATORY LIMITS

The ODCM contains the limits to which ANO must adhere. Because of the "as low as reasonably achievable" (ALARA) philosophy at ANO, an attempt is made to reduce the amount of radiation released to the environment. Liquid and gaseous release data show that the dose from both Unit 1 and Unit 2 is considerably below the ODCM limits. This data reveals that the radioactive effluents have an overall minimal dose contribution to the surrounding environment. The following are the limits required by the ODCM:

A. Gaseous Effluents

1. Dose rate due to radioactive materials released in gaseous effluent to unrestricted areas shall be limited to the following:

- a. Noble gases

- Less than or equal to 500 mrem/year to the total body
Less than or equal to 3000 mrem/year to the skin

- b. Iodine-131, tritium, and for all radionuclides in particulate form with half lives greater than 8 days

- Less than or equal to 1500 mrem/yr to any organ

2. Dose - Noble Gases

Quarterly

Less than or equal to 5 mrads gamma
Less than or equal to 10 mrads beta

Yearly

Less than or equal to 10 mrads gamma
Less than or equal to 20 mrads beta

3. Dose - Iodine-131, Tritium, and Radionuclides in Particulate Form

Quarterly

Less than or equal to 7.5 mrem to any organ

Yearly

Less than or equal to 15 mrem to any organ

B. Liquid Effluents

1. Concentration

The concentration of radioactive material released to the discharge canal shall be limited to the concentration specified in 10CFR20, Appendix B, Table II, Column 2, for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the total concentration released shall be limited to $2\text{E-}4$ microcuries/ml.

2. Dose

Quarterly

Less than or equal to 1.5 mrem total body
Less than or equal to 5 mrem critical organ

Yearly

Less than or equal to 3 mrem total body
Less than or equal to 10 mrem critical organ

3. SUMMARY OF LIQUID EFFLUENT DATA

As required by Regulatory Guide 1.21, Rev. 1, *Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants*, a summary of data for liquid releases is provided in the annual Radioactive Effluent Release Report. This summary covers releases from January 1 through December 31, 2003. The summary of liquid effluents for both Unit 1 and Unit 2 is as follows:

	<u>Unit 1</u>	<u>Unit 2</u>
Number of releases:	293	104
Total time for all releases (minutes):	566249	492508
Maximum time for a release (minutes):	10430	10420
Average time for a release (minutes):	1933	4736
Minimum time for a release (minutes):	20	55

The Unit 1 liquid releases consisted of:

293 Planned Releases
0 Unplanned Releases

The Unit 2 liquid releases consisted of:

104 Planned Releases
0 Unplanned Releases

**ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL LIQUID EFFLUENTS)
January 1 through June 30, 2003**

Unit 1

Type of Effluent	Units	Quarter 1	Quarter 2	Est. Total Error %
<u>A. Fission and Activation Products</u>				
1. Total Release (Not Including Tritium, Gases, Alpha)	Curies	1.428E-03	9.290E-03	25
2. Average Diluted Concentration During Period	μCi/ml	4.925E-12	2.586E-11	
3. Percent of Applicable Limit	%	1.642E-03	8.620E-03	
<u>B. Tritium</u>				
1. Total Release	Curies	2.100E+01	4.364E+01	25
2. Average Diluted Concentration During Period	μCi/ml	7.245E-08	1.215E-07	
3. Percent of Applicable Limit	%	2.415E-03	4.050E-03	
<u>C. Dissolved and Entrained Gases</u>				
1. Total Release	Curies	0.000E+00	0.000E+00	25
2. Average Diluted Concentration During Period	μCi/ml	0.000E+00	0.000E+00	
3. Percent of Applicable Limit	%	0.000E+00	0.000E+00	
<u>D. Gross Alpha Radioactivity</u>				
1. Total Release	Curies	2.709E-03	0.000E+00	25
<u>E. Waste Vol Released (Pre-Dilution)</u>				
	Liters	1.820E+07	2.329E+07	25
<u>F. Volume of Dilution Water Used</u>				
	Liters	2.898E+11	3.592E+11	25

**ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL LIQUID EFFLUENTS)
July 1 through December 31, 2003**

Unit 1				
Type of Effluent	Units	Quarter 3	Quarter 4	Est. Total Error %
<u>A. Fission and Activation Products</u>				
1. Total Release (Not Including Tritium, Gases, Alpha)	Curies	2.148E-03	2.137E-02	25
2. Average Diluted Concentration During Period	μCi/ml	5.516E-12	7.144E-11	
3. Percent of Applicable Limit	%	1.839E-03	2.381E-02	
<u>B. Tritium</u>				
1. Total Release	Curies	1.621E+02	2.365E+02	25
2. Average Diluted Concentration During Period	μCi/ml	4.164E-07	7.908E-07	
3. Percent of Applicable Limit	%	1.388E-02	2.636E-02	
<u>C. Dissolved and Entrained Gases</u>				
1. Total Release	Curies	2.094E-03	1.771E-02	25
2. Average Diluted Concentration During Period	μCi/ml	5.378E-12	5.921E-11	
3. Percent of Applicable Limit	%	2.689E-06	2.960E-05	
<u>D. Gross Alpha Radioactivity</u>				
1. Total Release	Curies	0.000E+00	0.000E+00	25
<u>E. Waste Vol Released (Pre-Dilution)</u>				
	Liters	2.220E+07	2.763E+07	25
<u>F. Volume of Dilution Water Used</u>				
	Liters	3.893E+11	2.990E+11	25

UNIT 1**REPORT CATEGORY : ANNUAL LIQUID CONTINUOUS AND BATCH
RELEASES****: TOTALS FOR EACH NUCLIDE RELEASED****TYPE OF ACTIVITY : ALL RADIONUCLIDES****REPORTING PERIOD : QUARTER # 1 AND QUARTER # 2 YEAR 2003**

NUCLIDE	UNIT	CONTINUOUS RELEASES		BATCH RELEASES	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
I-131	CURIES	0.00E+00	0.00E+00	1.57E-06	0.00E+00
NB-95	CURIES	0.00E+00	0.00E+00	1.83E-06	0.00E+00
NB-97	CURIES	0.00E+00	0.00E+00	7.56E-06	0.00E+00
I-133	CURIES	0.00E+00	0.00E+00	9.12E-06	0.00E+00
G-ALPHA	CURIES	1.63E-03	0.00E+00	1.08E-03	0.00E+00
CS-134	CURIES	0.00E+00	0.00E+00	5.73E-07	2.60E-06
CO-60	CURIES	0.00E+00	0.00E+00	4.70E-05	7.76E-05
CO-58	CURIES	0.00E+00	0.00E+00	5.09E-04	2.63E-04
CS-137	CURIES	0.00E+00	0.00E+00	6.80E-05	4.80E-04
SB-125	CURIES	0.00E+00	0.00E+00	5.93E-04	5.61E-04
FE-55	CURIES	1.90E-04	5.05E-03	0.00E+00	2.86E-03
H-3	CURIES	1.59E-01	2.46E-01	2.08E+01	4.34E+01
Total for Period	CURIES	1.61E-01	2.51E-01	2.08E+01	4.34E+01

UNIT 1

REPORT CATEGORY : ANNUAL LIQUID CONTINUOUS AND BATCH
RELEASES

: TOTALS FOR EACH NUCLIDE RELEASED

TYPE OF ACTIVITY : ALL RADIONUCLIDES

REPORTING PERIOD : QUARTER # 3 AND QUARTER # 4 YEAR 2003

NUCLIDE	UNIT	CONTINUOUS RELEASES		BATCH RELEASES	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
NB-97	CURIES	0.00E+00	0.00E+00	3.85E-06	0.00E+00
I-131	CURIES	0.00E+00	0.00E+00	0.00E+00	5.93E-05
CS-134	CURIES	0.00E+00	0.00E+00	4.05E-07	6.73E-05
MN-54	CURIES	0.00E+00	0.00E+00	6.47E-06	7.91E-05
I-133	CURIES	0.00E+00	0.00E+00	0.00E+00	8.59E-05
AG-110M	CURIES	0.00E+00	0.00E+00	4.29E-05	1.88E-04
CS-137	CURIES	0.00E+00	0.00E+00	1.34E-04	4.23E-04
CO-60	CURIES	0.00E+00	0.00E+00	2.17E-04	7.82E-04
CR-51	CURIES	0.00E+00	0.00E+00	0.00E+00	9.29E-04
XE-135	CURIES	0.00E+00	0.00E+00	3.13E-05	9.36E-04
ZR-95	CURIES	0.00E+00	0.00E+00	2.12E-05	1.39E-03
NA-24	CURIES	0.00E+00	1.81E-03	0.00E+00	0.00E+00
NB-95	CURIES	0.00E+00	0.00E+00	8.45E-05	2.11E-03
KR-85	CURIES	0.00E+00	0.00E+00	0.00E+00	3.43E-03
SB-125	CURIES	0.00E+00	0.00E+00	4.97E-04	4.71E-03
CO-58	CURIES	0.00E+00	0.00E+00	1.14E-03	8.72E-03
XE-133	CURIES	0.00E+00	0.00E+00	2.06E-03	1.33E-03
H-3	CURIES	3.35E-01	1.71E-01	1.62E+02	2.37E+02
Total for Period	CURIES	3.35E-01	1.73E-01	1.62E+02	2.37E+02

**ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL LIQUID EFFLUENTS)
January 1 through June 30, 2003**

Unit 2				
Type of Effluent	Units	Quarter 1	Quarter 2	Est. Total Error %
<u>A. Fission and Activation Products</u>				
1. Total Release (Not Including Tritium, Gases, Alpha)	Curies	7.110E-03	6.964E-04	25
2. Average Diluted Concentration During Period	μCi/ml	2.453E-11	1.938E-12	
3. Percent of Applicable Limit	%	8.177E-03	6.462E-04	
<u>B. Tritium</u>				
1. Total Release	Curies	2.528E+02	1.492E+02	25
2. Average Diluted Concentration During Period	μCi/ml	8.723E-07	4.154E-07	
3. Percent of Applicable Limit	%	2.908E-02	1.385E-02	
<u>C. Dissolved and Entrained Gases</u>				
1. Total Release	Curies	0.000E+00	1.495E-04	25
2. Average Diluted Concentration During Period	μCi/ml	0.000E+00	4.161E-13	
3. Percent of Applicable Limit	%	0.000E+00	2.081E-07	
<u>D. Gross Alpha Radioactivity</u>				
1. Total Release	Curies	0.000E+00	0.000E+00	25
<u>E. Waste Vol Released (Pre-Dilution)</u>				
	Liters	7.518E+06	7.895E+06	25
<u>F. Volume of Dilution Water Used</u>				
	Liters	2.898E+11	3.592E+11	25

**ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL LIQUID EFFLUENTS)
July 1 through December 31, 2003**

Unit 2

Type of Effluent	Units	Quarter 3	Quarter 4	Est. Total Error %
<u>A. Fission and Activation Products</u>				
1. Total Release (Not Including Tritium, Gases, Alpha)	Curies	1.121E-02	1.778E-02	25
2. Average Diluted Concentration During Period	μCi/ml	2.879E-11	5.944E-11	
3. Percent of Applicable Limit	%	9.596E-03	1.981E-02	
<u>B. Tritium</u>				
1. Total Release	Curies	2.746E+02	2.543E+01	25
2. Average Diluted Concentration During Period	μCi/ml	7.053E-07	8.504E-08	
3. Percent of Applicable Limit	%	2.351E-02	2.835E-03	
<u>C. Dissolved and Entrained Gases</u>				
1. Total Release	Curies	9.632E-02	2.206E-03	25
2. Average Diluted Concentration During Period	μCi/ml	2.474E-10	7.376E-12	
3. Percent of Applicable Limit	%	1.237E-04	3.688E-06	
<u>D. Gross Alpha Radioactivity</u>				
1. Total Release	Curies	0.000E+00	0.000E+00	25
<u>E. Waste Vol Released (Pre-Dilution)</u>				
	Liters	8.108E+06	1.434E+07	25
<u>F. Volume of Dilution Water Used</u>				
	Liters	3.893E+11	2.990E+11	25

UNIT 2

**REPORT CATEGORY : ANNUAL LIQUID CONTINUOUS AND BATCH
RELEASES**

: TOTALS FOR EACH NUCLIDE RELEASED

TYPE OF ACTIVITY : ALL RADIONUCLIDES

REPORTING PERIOD : QUARTER # 1 AND QUARTER # 2 YEAR 2003

NUCLIDE	UNIT	CONTINUOUS RELEASES		BATCH RELEASES	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
NB-95	CURIES	0.00E+00	0.00E+00	4.23E-05	0.00E+00
ZR-95	CURIES	0.00E+00	0.00E+00	4.82E-05	0.00E+00
MN-54	CURIES	0.00E+00	0.00E+00	9.98E-05	0.00E+00
CR-51	CURIES	0.00E+00	0.00E+00	2.13E-04	0.00E+00
CO-58	CURIES	0.00E+00	0.00E+00	8.65E-04	1.33E-05
NB-97	CURIES	0.00E+00	0.00E+00	0.00E+00	1.47E-05
CS-137	CURIES	0.00E+00	0.00E+00	9.63E-05	5.54E-05
SB-125	CURIES	0.00E+00	0.00E+00	3.85E-04	6.19E-05
AG-110M	CURIES	0.00E+00	0.00E+00	4.72E-03	9.54E-05
CO-60	CURIES	0.00E+00	0.00E+00	6.36E-04	1.44E-04
XE-133	CURIES	0.00E+00	0.00E+00	0.00E+00	1.49E-04
NA-24	CURIES	0.00E+00	3.12E-04	0.00E+00	0.00E+00
H-3	CURIES	1.04E-01	9.20E-02	2.53E+02	1.49E+02
Total for Period	CURIES	1.04E-01	9.23E-02	2.53E+02	1.49E+02

UNIT 2

REPORT CATEGORY : ANNUAL LIQUID CONTINUOUS AND BATCH
RELEASES

: TOTALS FOR EACH NUCLIDE RELEASED

TYPE OF ACTIVITY : ALL RADIONUCLIDES

REPORTING PERIOD : QUARTER # 3 AND QUARTER # 4 YEAR 2003

NUCLIDE	UNIT	CONTINUOUS RELEASES		BATCH RELEASES	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
NB-97	CURIES	0.00E+00	0.00E+00	1.56E-05	0.00E+00
AR-41	CURIES	0.00E+00	0.00E+00	1.66E-05	0.00E+00
CS-138	CURIES	0.00E+00	0.00E+00	3.44E-05	0.00E+00
I-131	CURIES	0.00E+00	0.00E+00	7.58E-05	0.00E+00
XE-135	CURIES	0.00E+00	0.00E+00	5.88E-04	0.00E+00
XE-133M	CURIES	0.00E+00	0.00E+00	8.34E-04	0.00E+00
CS-134	CURIES	0.00E+00	0.00E+00	0.00E+00	4.19E-06
CS-137	CURIES	0.00E+00	0.00E+00	4.61E-04	1.21E-04
NA-24	CURIES	3.10E-04	1.50E-04	0.00E+00	0.00E+00
AG-110M	CURIES	0.00E+00	0.00E+00	2.84E-03	1.56E-04
SB-125	CURIES	0.00E+00	0.00E+00	1.88E-03	1.60E-04
MN-54	CURIES	0.00E+00	0.00E+00	2.19E-04	2.86E-04
CO-60	CURIES	0.00E+00	0.00E+00	1.55E-03	5.01E-04
FE-59	CURIES	0.00E+00	0.00E+00	3.47E-05	6.00E-04
ZR-95	CURIES	0.00E+00	0.00E+00	1.74E-04	8.00E-04
NB-95	CURIES	0.00E+00	0.00E+00	1.44E-04	1.11E-03
XE-133	CURIES	0.00E+00	0.00E+00	9.49E-02	2.21E-03
CR-51	CURIES	0.00E+00	0.00E+00	1.25E-03	5.37E-03
CO-58	CURIES	0.00E+00	0.00E+00	2.22E-03	8.52E-03
H-3	CURIES	1.97E-02	7.11E-02	2.75E+02	2.53E+01
Total for Period	CURIES	2.00E-02	7.13E-02	2.75E+02	2.54E+01

4. SUMMARY OF GASEOUS EFFLUENT DATA

As required by Regulatory Guide 1.21, Rev. 1, a summary of data for gaseous releases is provided in the annual Radioactive Effluent Release Report. This summary covers releases from January 1 to December 31, 2003. The summary of gaseous effluents for both Unit 1 and Unit 2 is as follows:

	<u>Unit 1</u>	<u>Unit 2</u>
Number of releases:	133	121
Total time for all releases (minutes):	1022574	904022
Maximum time for a release (minutes):	10581	10499
Average time for a release (minutes):	7688	7471
Minimum time for a release (minutes):	0.1	7

The Unit 1 gaseous releases consisted of:

133 Planned vent & tank releases
0 Unplanned releases

The Unit 2 gaseous releases consisted of:

121 Planned vent & tank releases
0 Unplanned releases

**ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL AIRBORNE EFFLUENTS)
January 1 through June 30, 2003**

Type of Effluent	Unit 1			
	Units	Quarter 1	Quarter 2	Est. Total Error %
<u>A. Fission and Activation Products</u>				
1. Total Release	Curies	4.049E-02	1.523E-01	25
2. Average Release Rate for Period	μCi/Sec	5.207E-03	1.937E-02	
3. Percent of Applicable Limit	%	7.290E-05	2.711E-04	
<u>B. Radioiodines</u>				
1. Total Iodine-131	Curies	0.000E+00	0.000E+00	25
2. Average Release Rate for Period	μCi/Sec	0.000E+00	0.000E+00	
3. Percent of Applicable Limit	%	0.000E+00	0.000E+00	
<u>C. Particulates</u>				
1. Particulates (Half-Lives > 8 Days)	Curies	0.000E+00	0.000E+00	25
2. Average Release Rate for Period	μCi/Sec	0.000E+00	0.000E+00	
3. Percent of Applicable Limit	%	0.000E+00	0.000E+00	
4. Gross Alpha Radioactivity	Curies	0.000E+00	0.000E+00	
<u>D. Tritium</u>				
1. Total Release	Curies	1.065E+01	1.067E+01	25
2. Average Release Rate for Period	μCi/Sec	1.369E+00	1.357E+00	
3. Percent of Applicable Limit	%	1.917E-03	1.900E-03	

**ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL AIRBORNE EFFLUENTS)
July 1 through December 31, 2003**

Unit 1

Type of Effluent	Units	Quarter 3	Quarter 4	Est. Total Error %
<u>A. Fission and Activation Products</u>				
1. Total Release	Curies	0.000E+00	0.000E+00	25
2. Average Release Rate for Period	μCi/Sec	0.000E+00	0.000E+00	
3. Percent of Applicable Limit	%	0.000E+00	0.000E+00	
<u>B. Radioiodines</u>				
1. Total Iodine-131	Curies	0.000E+00	0.000E+00	25
2. Average Release Rate for Period	μCi/Sec	0.000E+00	0.000E+00	
3. Percent of Applicable Limit	%	0.000E+00	0.000E+00	
<u>C. Particulates</u>				
1. Particulates (Half-Lives > 8 Days)	Curies	0.000E+00	0.000E+00	25
2. Average Release Rate for Period	μCi/Sec	0.000E+00	0.000E+00	
3. Percent of Applicable Limit	%	0.000E+00	0.000E+00	
4. Gross Alpha Radioactivity	Curies	0.000E+00	0.000E+00	
<u>D. Tritium</u>				
1. Total Release	Curies	9.536E+00	7.271E+00	25
2. Average Release Rate for Period	μCi/Sec	1.200E+00	9.147E-01	
3. Percent of Applicable Limit	%	1.679E-03	1.281E-03	

UNIT 1

**REPORT CATEGORY : ANNUAL AIRBORNE GROUND LEVEL
CONTINUOUS AND BATCH RELEASES
: TOTALS FOR EACH NUCLIDE RELEASED
TYPE OF ACTIVITY : FISSION GASES, IODINES, AND PARTICULATES
REPORTING PERIOD : QUARTER # 1 AND QUARTER # 2 YEAR 2003**

NUCLIDE	UNIT	CONTINUOUS RELEASES		BATCH RELEASES	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2

Fission Gases

KR-85	CURIES	0.00E+00	0.00E+00	4.05E-02	1.52E-01
Total for Period	CURIES	0.00E+00	0.00E+00	4.05E-02	1.52E-01

Iodines

NONE	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for Period	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Particulates

NONE	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for Period	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Other

H-3	CURIES	0.00E+00	0.00E+00	1.06E+01	1.07E+01
Total for Period	CURIES	0.00E+00	0.00E+00	1.06E+01	1.07E+01

UNIT 1

REPORT CATEGORY : ANNUAL AIRBORNE GROUND LEVEL
CONTINUOUS AND BATCH RELEASES
: TOTALS FOR EACH NUCLIDE RELEASED
TYPE OF ACTIVITY : FISSION GASES, IODINES, AND PARTICULATES
REPORTING PERIOD : QUARTER # 3 AND QUARTER # 4 YEAR 2003

NUCLIDE	UNIT	CONTINUOUS RELEASES		BATCH RELEASES	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4

Fission Gases

NONE	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for Period	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Iodines

NONE	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for Period	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Particulates

NONE	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for Period	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Other

H-3	CURIES	0.00E+00	0.00E+00	9.54E+00	7.27E+00
Total for Period	CURIES	0.00E+00	0.00E+00	9.54E+00	7.27E+00

**ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL AIRBORNE EFFLUENTS)
January 1 through June 30, 2003**

Type of Effluent	Unit 2			
	Units	Quarter 1	Quarter 2	Est. Total Error %
<u>A. Fission and Activation Products</u>				
1. Total Release	Curies	0.000E+00	0.000E+00	25
2. Average Release Rate for Period	μCi/Sec	0.000E+00	0.000E+00	
3. Percent of Applicable Limit	%	0.000E+00	0.000E+00	
<u>B. Radioiodines</u>				
1. Total Iodine-131	Curies	0.000E+00	0.000E+00	25
2. Average Release Rate for Period	μCi/Sec	0.000E+00	0.000E+00	
3. Percent of Applicable Limit	%	0.000E+00	0.000E+00	
<u>C. Particulates</u>				
1. Particulates (Half-Lives > 8 Days)	Curies	0.000E+00	0.000E+00	25
2. Average Release Rate for Period	μCi/Sec	0.000E+00	0.000E+00	
3. Percent of Applicable Limit	%	0.000E+00	0.000E+00	
4. Gross Alpha Radioactivity	Curies	0.000E+00	0.000E+00	
<u>D. Tritium</u>				
1. Total Release	Curies	6.610E+00	4.710E+00	25
2. Average Release Rate for Period	μCi/Sec	8.501E-01	5.991E-01	
3. Percent of Applicable Limit	%	1.190E-03	8.387E-04	

**ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL AIRBORNE EFFLUENTS)
July 1 through December 31, 2003**

Unit 2

Type of Effluent	Units	Quarter 3	Quarter 4	Est. Total Error %
<u>A. Fission and Activation Products</u>				
1. Total Release	Curies	3.886E-01	0.000E+00	25
2. Average Release Rate for Period	μCi/Sec	4.889E-02	0.000E+00	
3. Percent of Applicable Limit	%	6.845E-04	0.000E+00	
<u>B. Radioiodines</u>				
1. Total Iodine-131	Curies	1.001E-06	0.000E+00	25
2. Average Release Rate for Period	μCi/Sec	1.259E-07	0.000E+00	
3. Percent of Applicable Limit	%	3.526E-07	0.000E+00	
<u>C. Particulates</u>				
1. Particulates (Half-Lives > 8 Days)	Curies	0.000E+00	0.000E+00	25
2. Average Release Rate for Period	μCi/Sec	0.000E+00	0.000E+00	
3. Percent of Applicable Limit	%	0.000E+00	0.000E+00	
4. Gross Alpha Radioactivity	Curies	0.000E+00	0.000E+00	
<u>D. Tritium</u>				
1. Total Release	Curies	5.484E+00	8.307E+00	25
2. Average Release Rate for Period	μCi/Sec	6.900E-01	1.045E+00	
3. Percent of Applicable Limit	%	9.660E-04	1.463E-03	

UNIT 2

**REPORT CATEGORY : ANNUAL AIRBORNE GROUND LEVEL
CONTINUOUS AND BATCH RELEASES
: TOTALS FOR EACH NUCLIDE RELEASED**
TYPE OF ACTIVITY : FISSION GASES, IODINES, AND PARTICULATES
REPORTING PERIOD : QUARTER # 1 AND QUARTER # 2 YEAR 2003

NUCLIDE	UNIT	CONTINUOUS RELEASES		BATCH RELEASES	
		QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2

Fission Gases

NONE	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for Period	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Iodines

NONE	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for Period	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Particulates

NONE	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for Period	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Other

H-3	CURIES	0.00E+00	0.00E+00	6.61E+00	4.71E+00
Total for Period	CURIES	0.00E+00	0.00E+00	6.61E+00	4.71E+00

UNIT 2

REPORT CATEGORY : ANNUAL AIRBORNE GROUND LEVEL
CONTINUOUS AND BATCH RELEASES
: TOTALS FOR EACH NUCLIDE RELEASED
TYPE OF ACTIVITY : FISSION GASES, IODINES, AND PARTICULATES
REPORTING PERIOD : QUARTER # 3 AND QUARTER # 4 YEAR 2003

NUCLIDE	UNIT	CONTINUOUS RELEASES		BATCH RELEASES	
		QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4

Fission Gases

XE-135	CURIES	0.00E+00	0.00E+00	2.32E-02	0.00E+00
XE-133	CURIES	0.00E+00	0.00E+00	3.65E-01	0.00E+00
Total for Period	CURIES	0.00E+00	0.00E+00	3.89E-01	0.00E+00

Iodines

I-131	CURIES	0.00E+00	0.00E+00	1.00E-06	0.00E+00
Total for Period	CURIES	0.00E+00	0.00E+00	1.00E-06	0.00E+00

Particulates

NONE	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total for Period	CURIES	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Other

H-3	CURIES	0.00E+00	0.00E+00	5.48E+00	8.31E+00
Total for Period	CURIES	0.00E+00	0.00E+00	5.48E+00	8.31E+00

5. SUMMARY OF RADIATION DOSES

The following is a summary of the annual radiation doses due to radiological effluents during 2003 calculated in accordance with the Offsite Dose Calculation Manual.

UNIT 1

Liquid Radwaste Effluents

Dose Limits (mRem): Total Body = 1.5/Qtr 3/Yr, Other Organs = 5/Qtr 10/Yr

<u>Organ</u>	<u>Qtr 1</u>	<u>%</u>	<u>Qtr 2</u>	<u>%</u>	<u>Qtr 3</u>	<u>%</u>	<u>Qtr 4</u>	<u>%</u>	<u>Year</u>	<u>%</u>
TBody	0.0001	0.00	0.0003	0.02	0.0003	0.02	0.0006	0.04	0.0012	0.04
Bone	0.0000	0.00	0.0003	0.01	0.0001	0.00	0.0002	0.00	0.0006	0.01
Liver	0.0001	0.00	0.0004	0.01	0.0003	0.01	0.0007	0.01	0.0015	0.02
Thyroid	0.0000	0.00	0.0001	0.00	0.0001	0.00	0.0004	0.01	0.0007	0.01
Kidney	0.0001	0.00	0.0002	0.00	0.0002	0.00	0.0005	0.01	0.0009	0.01
Lung	0.0000	0.00	0.0001	0.00	0.0002	0.00	0.0004	0.01	0.0008	0.01
GI-LLI	0.0000	0.00	0.0001	0.00	0.0002	0.00	0.0008	0.02	0.0011	0.01

Gaseous Radwaste Effluents

Iodine, H-3, and Particulate (ITP) - Dose Limits (mRem) = 7.5/Qtr 15/Yr

<u>Organ</u>	<u>Qtr 1</u>	<u>%</u>	<u>Qtr 2</u>	<u>%</u>	<u>Qtr 3</u>	<u>%</u>	<u>Qtr 4</u>	<u>%</u>	<u>Year</u>	<u>%</u>
TBody	0.0066	0.09	0.0066	0.09	0.0059	0.08	0.0045	0.06	0.0235	0.16
Bone	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
Liver	0.0066	0.09	0.0066	0.09	0.0059	0.08	0.0045	0.06	0.0235	0.16
Thyroid	0.0066	0.09	0.0066	0.09	0.0059	0.08	0.0045	0.06	0.0235	0.16
Kidney	0.0066	0.09	0.0066	0.09	0.0059	0.08	0.0045	0.06	0.0235	0.16
Lung	0.0066	0.09	0.0066	0.09	0.0059	0.08	0.0045	0.06	0.0235	0.16
GI-LLI	0.0066	0.09	0.0066	0.09	0.0059	0.08	0.0045	0.06	0.0235	0.16

Noble Gas Air Dose Limits (mRad) = Gamma 5/Qtr 10/Yr, Beta 10/Qtr 20/Yr

<u>Type</u>	<u>Qtr 1</u>	<u>%</u>	<u>Qtr 2</u>	<u>%</u>	<u>Qtr 3</u>	<u>%</u>	<u>Qtr 4</u>	<u>%</u>	<u>Year</u>	<u>%</u>
Gamma	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
Beta	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00

UNIT 2

Liquid Radwaste Effluents

Dose Limits (mRem): Total Body = 1.5/Qtr 3/Yr, Other Organs = 5 /Qtr 10/Yr

<u>Organ</u>	<u>Qtr 1</u>	<u>%</u>	<u>Qtr 2</u>	<u>%</u>	<u>Qtr 3</u>	<u>%</u>	<u>Qtr 4</u>	<u>%</u>	<u>Year</u>	<u>%</u>
TBody	0.0005	0.03	0.0002	0.02	0.0005	0.04	0.0001	0.01	0.0013	0.04
Bone	0.0001	0.00	0.0000	0.00	0.0002	0.00	0.0001	0.00	0.0004	0.00
Liver	0.0005	0.01	0.0002	0.00	0.0006	0.01	0.0002	0.00	0.0015	0.02
Thyroid	0.0004	0.01	0.0002	0.00	0.0002	0.01	0.0000	0.00	0.0010	0.01
Kidney	0.0004	0.01	0.0002	0.00	0.0004	0.01	0.0001	0.00	0.0012	0.01
Lung	0.0004	0.01	0.0002	0.00	0.0004	0.01	0.0001	0.00	0.0011	0.01
GI-LLI	0.0005	0.01	0.0002	0.00	0.0005	0.01	0.0003	0.01	0.0014	0.01

Gaseous Radwaste Effluents

Iodine, H-3, and Particulate - Dose Limits (mRem) = 7.5/Qtr 15/Yr

<u>Organ</u>	<u>Qtr 1</u>	<u>%</u>	<u>Qtr 2</u>	<u>%</u>	<u>Qtr 3</u>	<u>%</u>	<u>Qtr 4</u>	<u>%</u>	<u>Year</u>	<u>%</u>
Tbody	0.0041	0.05	0.0029	0.04	0.0034	0.05	0.0051	0.07	0.0155	0.10
Bone	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
Liver	0.0041	0.05	0.0029	0.04	0.0034	0.05	0.0051	0.07	0.0155	0.10
Thyroid	0.0041	0.05	0.0029	0.04	0.0036	0.05	0.0051	0.07	0.0157	0.10
Kidney	0.0041	0.05	0.0029	0.04	0.0034	0.05	0.0051	0.07	0.0155	0.10
Lung	0.0041	0.05	0.0029	0.04	0.0034	0.05	0.0051	0.07	0.0155	0.10
GI-LLI	0.0041	0.05	0.0029	0.04	0.0034	0.05	0.0051	0.07	0.0155	0.10

Noble Gas Air Dose Limits (mRad) = Gamma 5/Qtr 10/Yr, Beta 10/Qtr 20/Yr

<u>Type</u>	<u>Qtr 1</u>	<u>%</u>	<u>Qtr 2</u>	<u>%</u>	<u>Qtr 3</u>	<u>%</u>	<u>Qtr 4</u>	<u>%</u>	<u>Year</u>	<u>%</u>
Gamma	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
Beta	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0001	0.00

6. SUMMARY OF DOSE TO MEMBERS OF THE PUBLIC

The following is a summary of the annual radiation dose to members of the public (in mrem) due to activities inside the site boundary.

UNIT 1

	<u>BONE</u>	<u>LIVER</u>	<u>TBODY</u>	<u>THYROID</u>	<u>KIDNEY</u>	<u>GI-LLI</u>	<u>LUNG</u>	<u>SKIN</u>
<u>Gaseous Effluent</u>								
Iodine/Tritium	0.00E+00	3.90E-03	3.90E-03	3.90E-03	3.90E-03	3.90E-03	3.90E-03	
Particulate								
Noble Gas			8.43E-08					7.12E-06
<u>Liquid Effluent</u>								
Fish	6.08E-04	1.52E-03	1.24E-03	7.17E-04	9.49E-04	7.80E-04	1.13E-03	
Sediment			2.68E-05					3.14E-05
Unit 1 Total	6.08E-04	5.42E-03	5.17E-03	4.62E-03	4.85E-03	4.68E-03	5.03E-03	3.85E-05

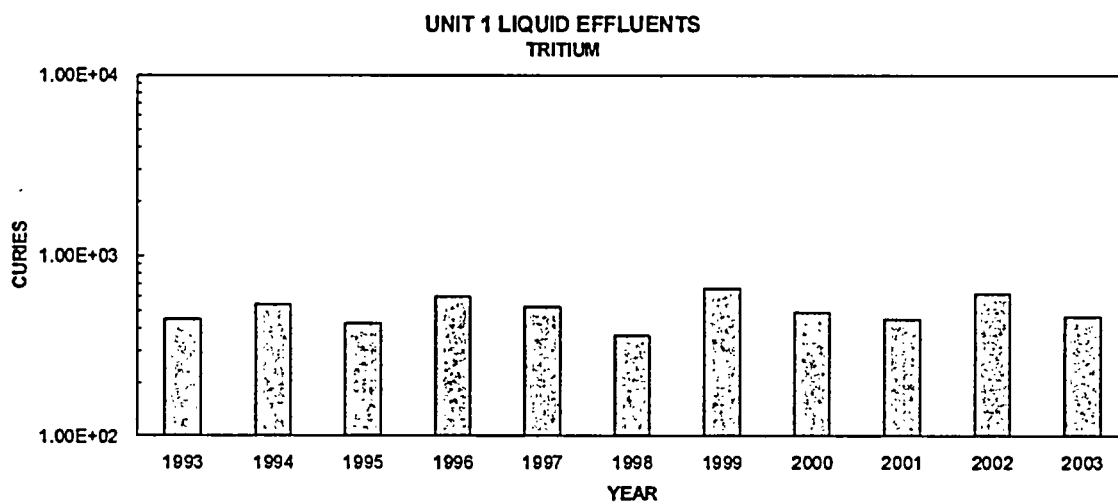
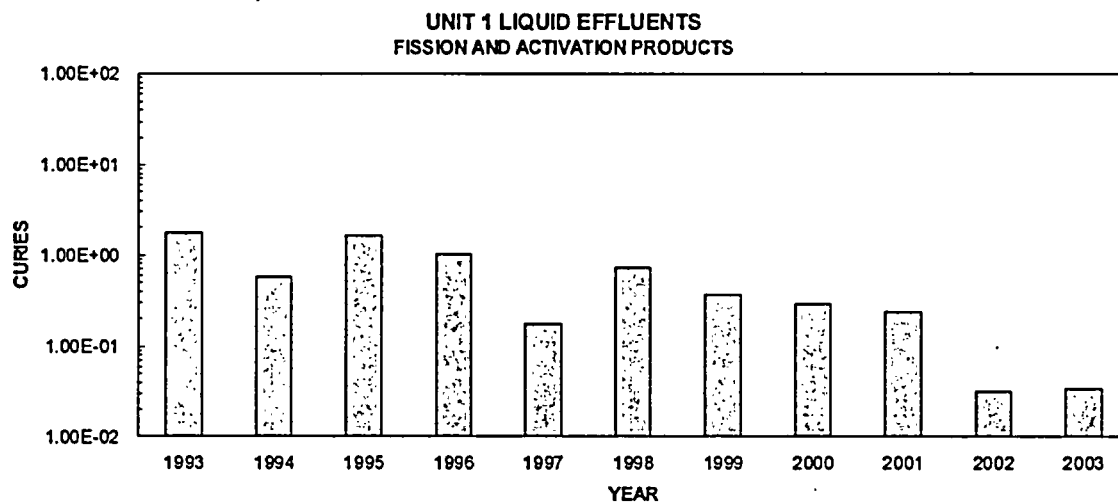
UNIT 2

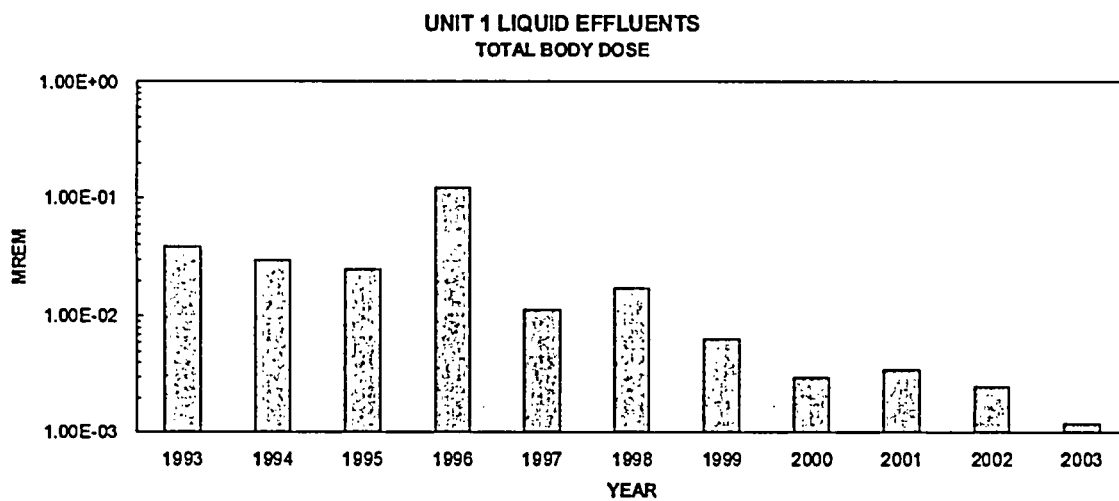
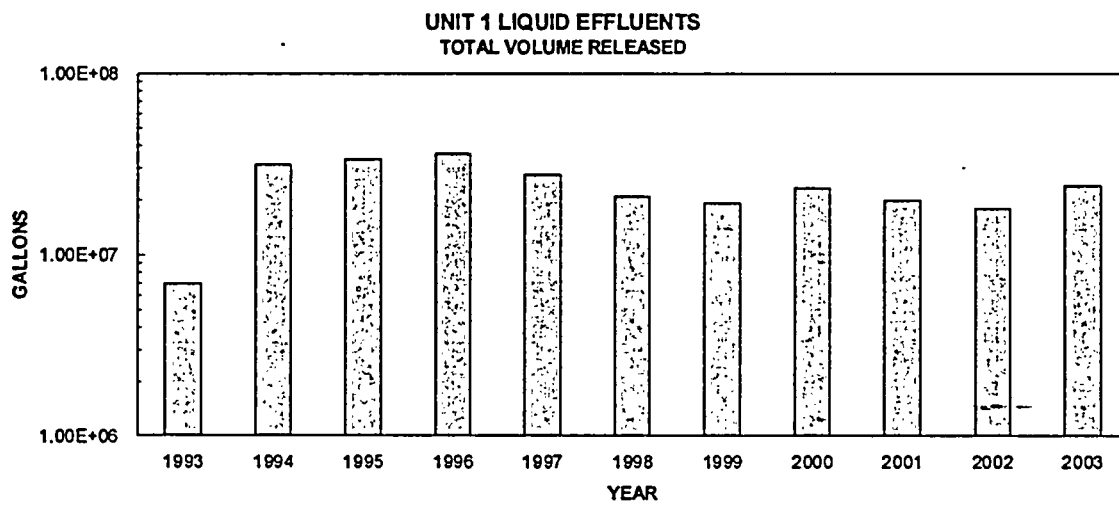
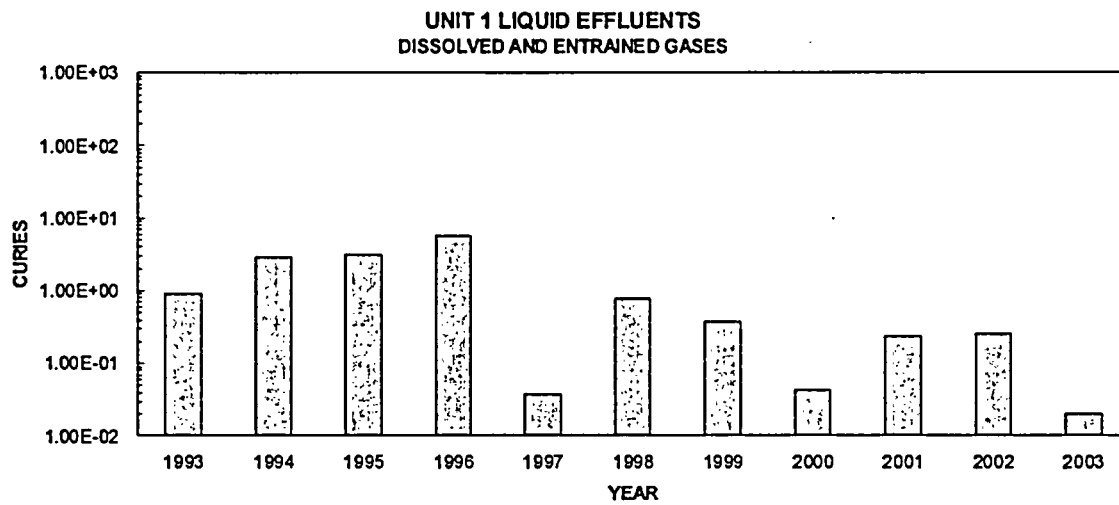
<u>Gaseous Effluent</u>								
Iodine/Tritium	1.09E-07	2.57E-03	2.57E-03	2.60E-03	2.57E-03	2.57E-03	2.57E-03	
Particulate								
Noble Gas			4.06E-06					9.39E-06
<u>Liquid Effluent</u>								
Fish	3.51E-04	1.52E-03	1.35E-03	1.04E-03	1.17E-03	1.06E-03	1.45E-03	
Sediment			6.51E-05					7.63E-05
Unit 2 Total	3.51E-04	4.09E-03	3.99E-03	3.64E-03	3.74E-03	3.63E-03	4.02E-03	8.57E-05

Site Total	9.59E-04	9.51E-03	9.16E-03	8.26E-03	8.59E-03	8.31E-03	9.05E-03	1.24E-04
Limit (40CFR190)	25	25	25	75	25	25	25	25
% Limit	3.84E-03	3.80E-02	3.66E-02	1.10E-02	3.44E-02	3.32E-02	3.62E-02	4.97E-04

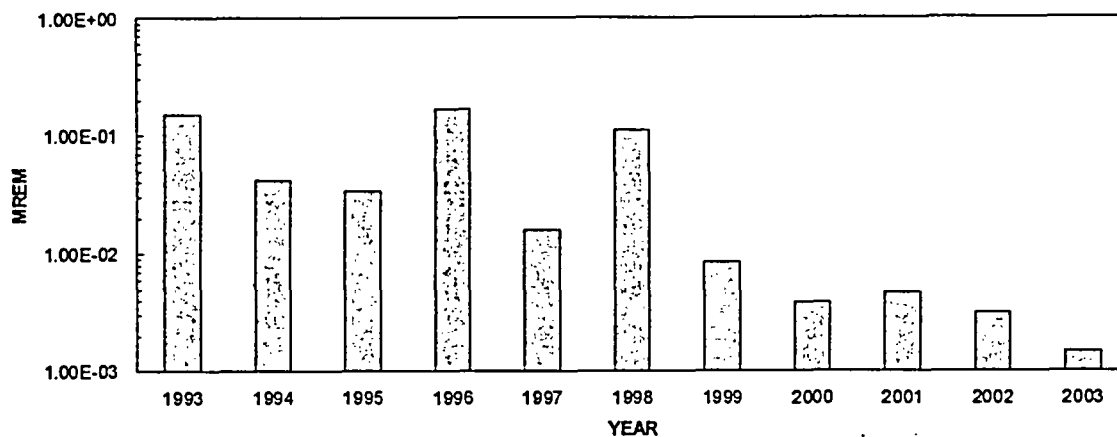
7. HISTORICAL EFFLUENT DATA

The following graphs show the historical release data for both units on a yearly basis. These graphs compare data from 1993 through 2003.

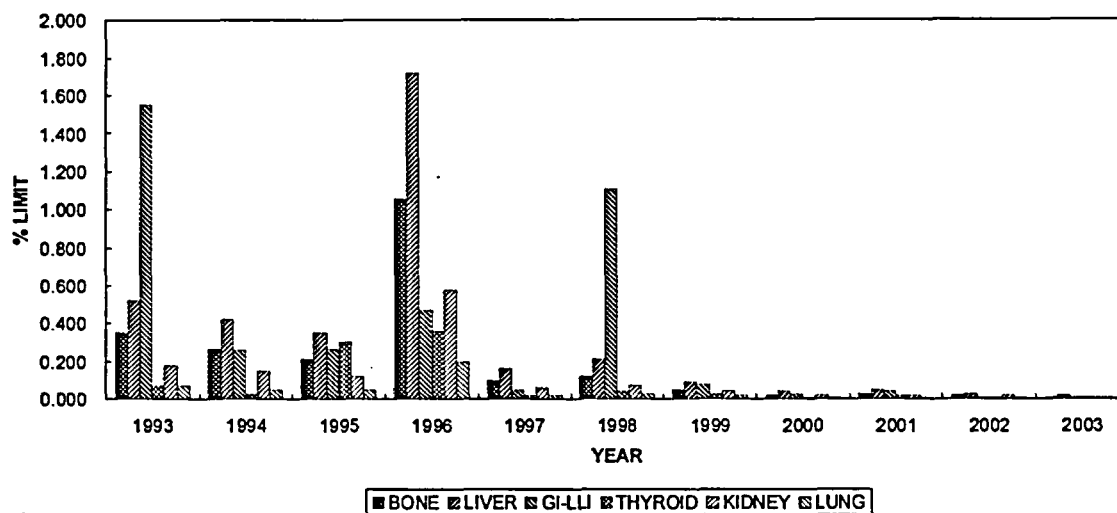




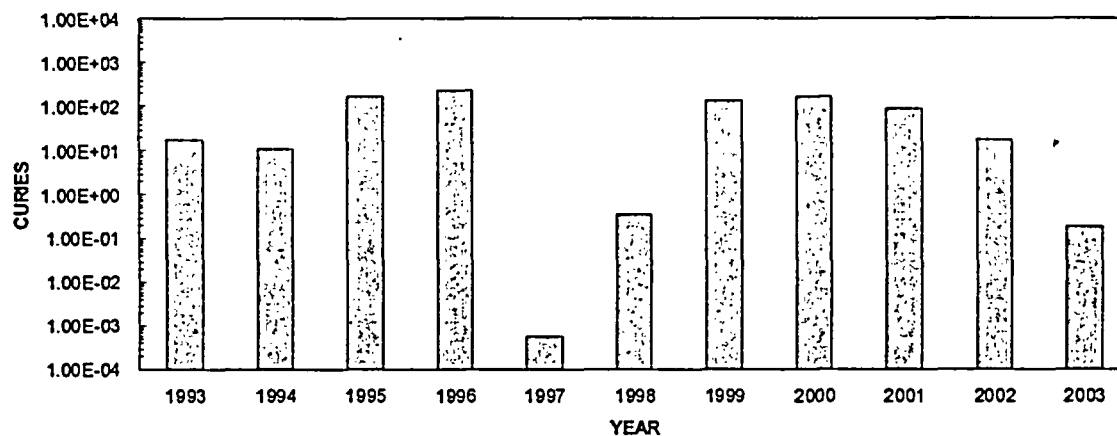
**UNIT 1 LIQUID EFFLUENTS
CRITICAL ORGAN DOSE**



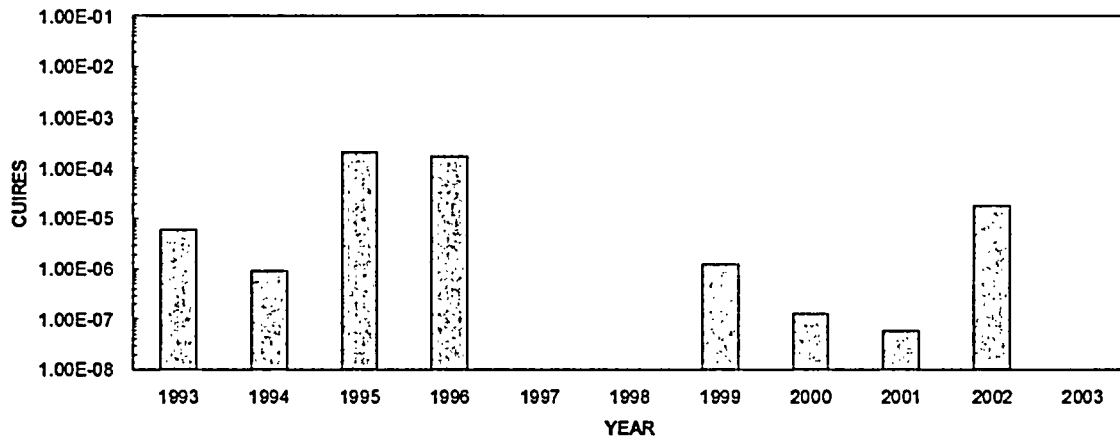
**UNIT 1 LIQUID EFFLUENTS
COLLECTIVE DOSES**



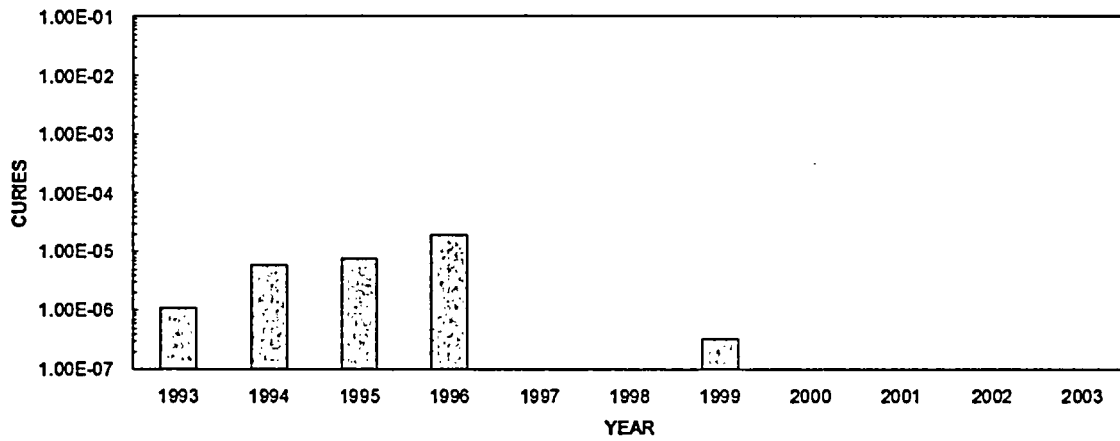
**UNIT 1 GASEOUS EFFLUENTS
FISSION AND ACTIVATION PRODUCTS**



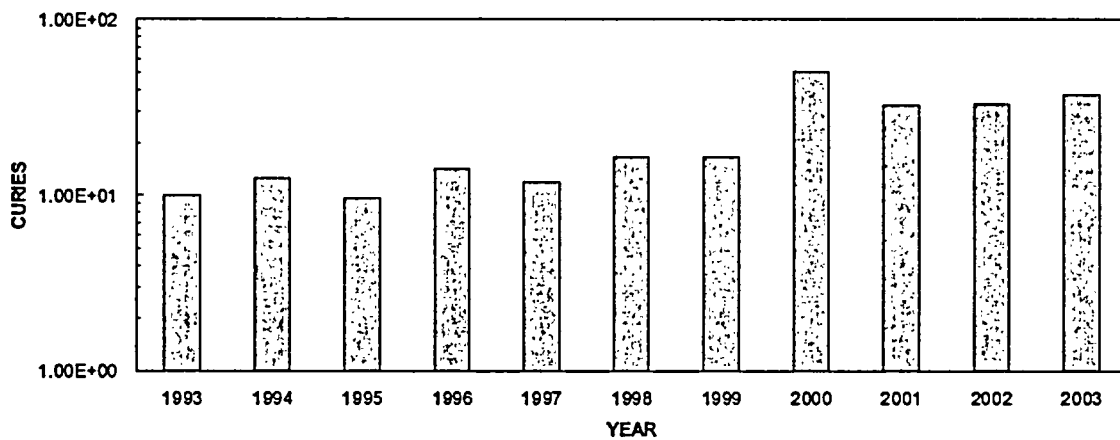
**UNIT 1 GASEOUS EFFLUENTS
RADIOIODINES**

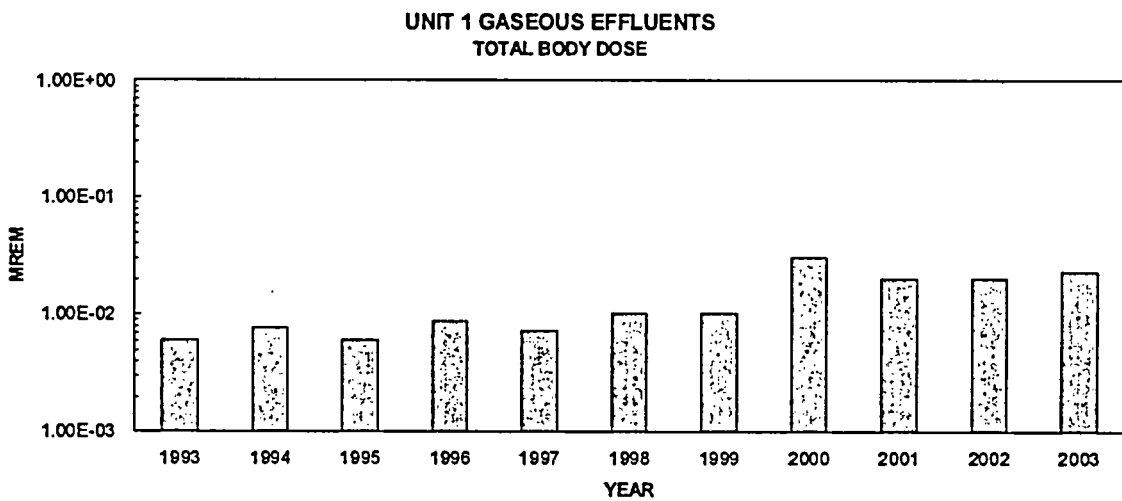
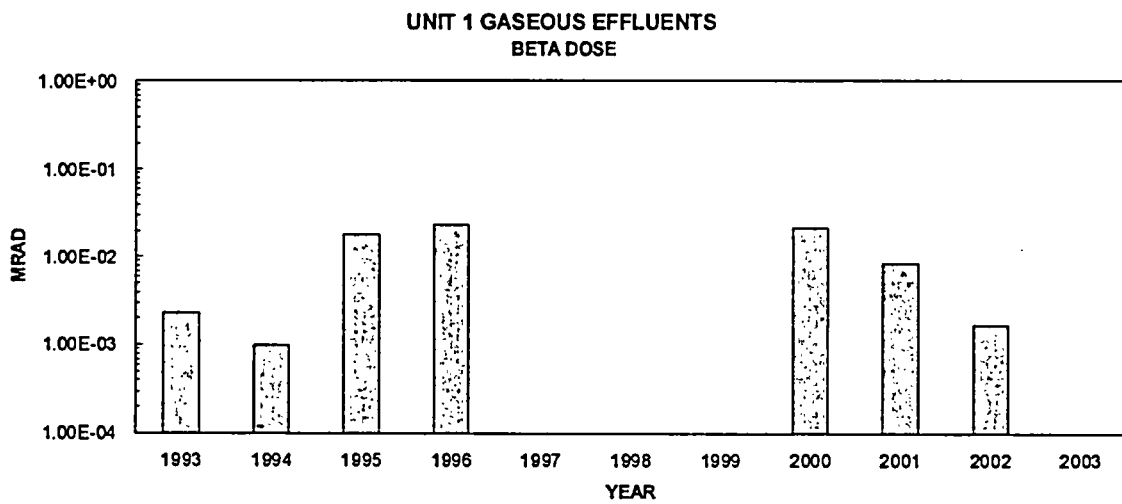
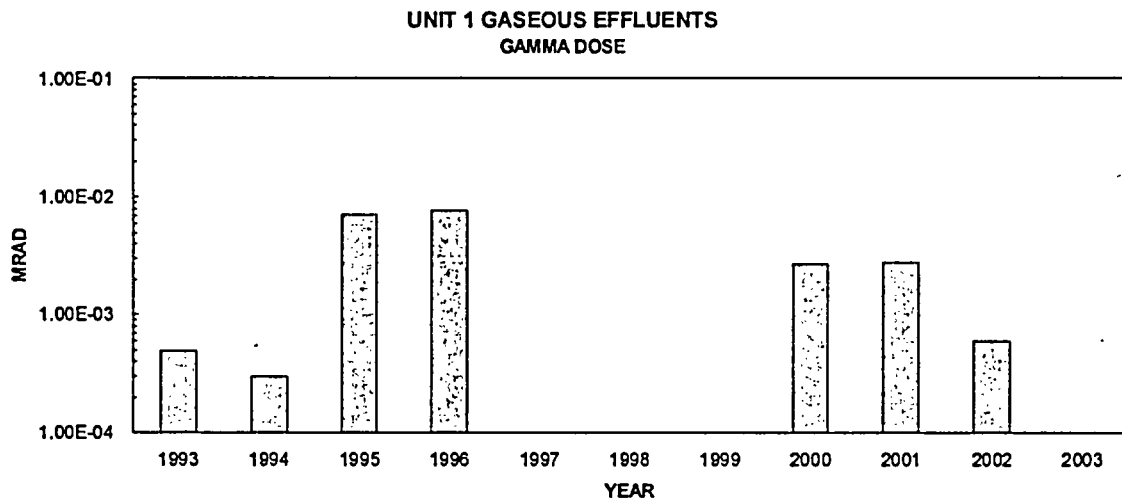


**UNIT 1 GASEOUS EFFLUENTS
PARTICULATES**

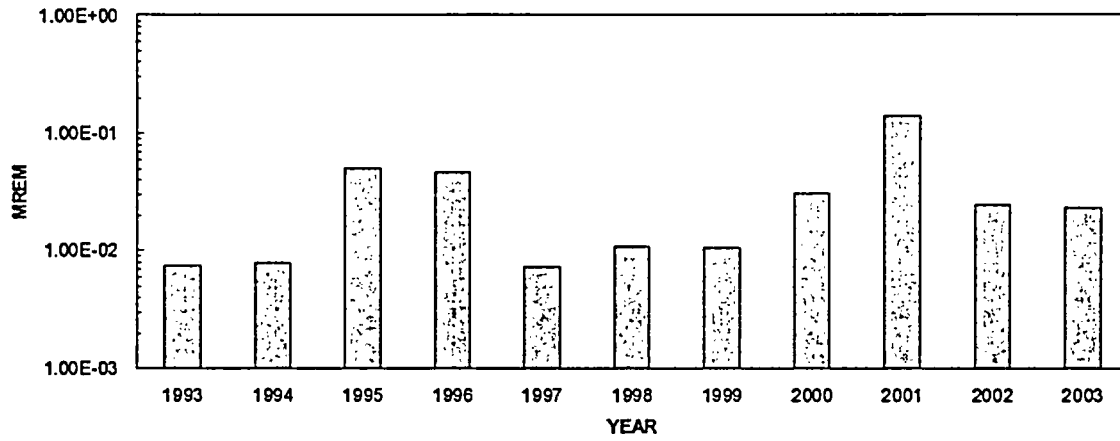


**UNIT 1 GASEOUS EFFLUENTS
TRITIUM**

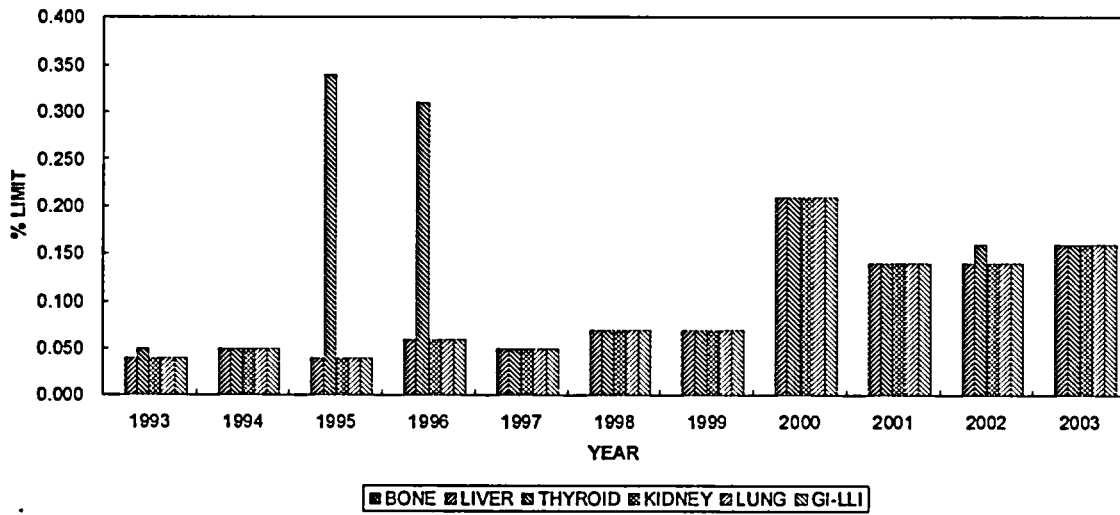




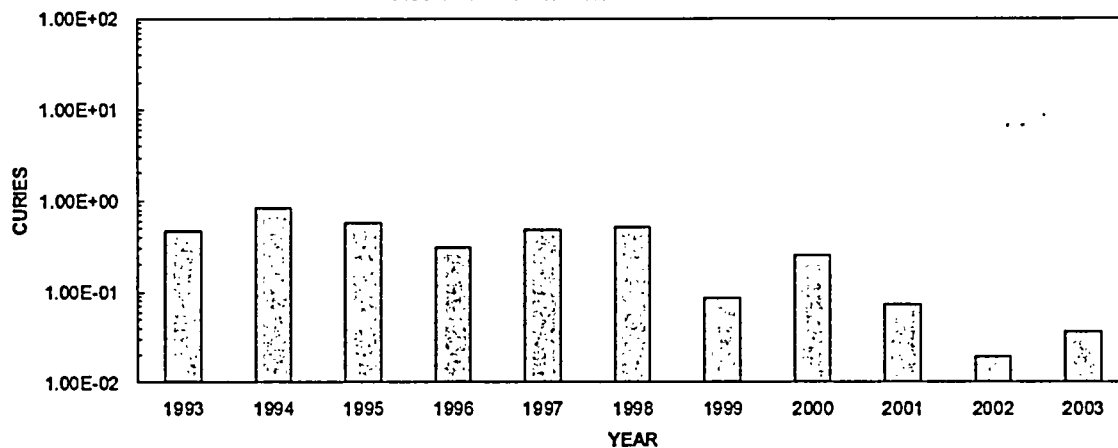
**UNIT 1 GASEOUS EFFLUENTS
CRITICAL ORGAN DOSE**



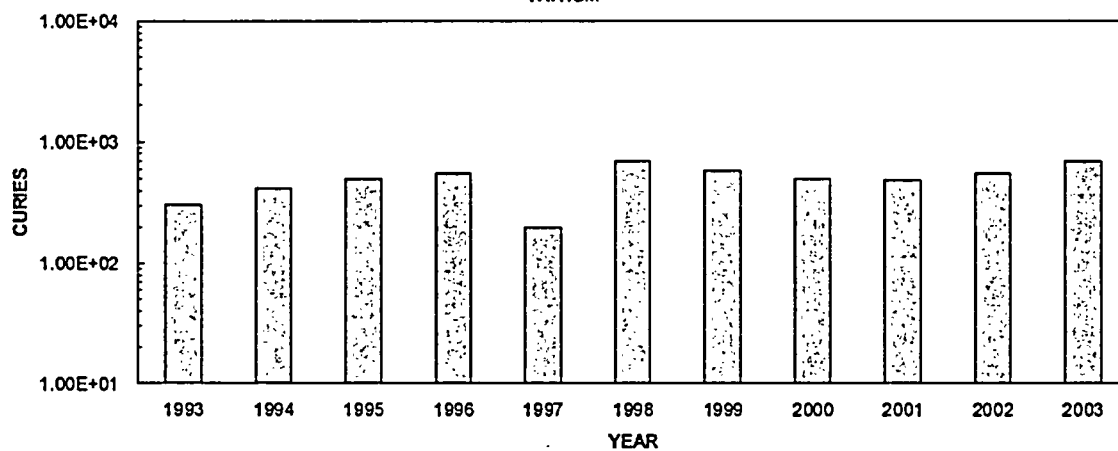
**UNIT 1 GASEOUS EFFLUENTS
COLLECTIVE DOSES**



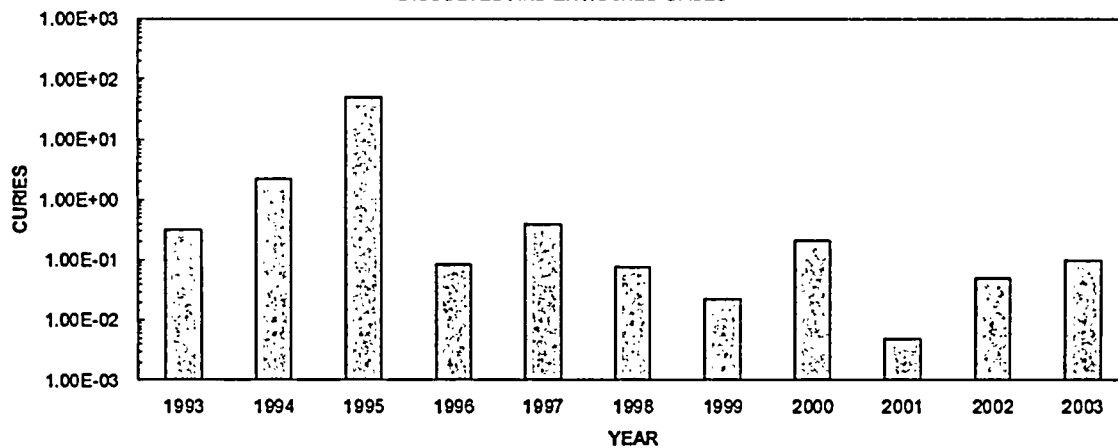
**UNIT 2 LIQUID EFFLUENTS
FISSION AND ACTIVATION PRODUCTS**

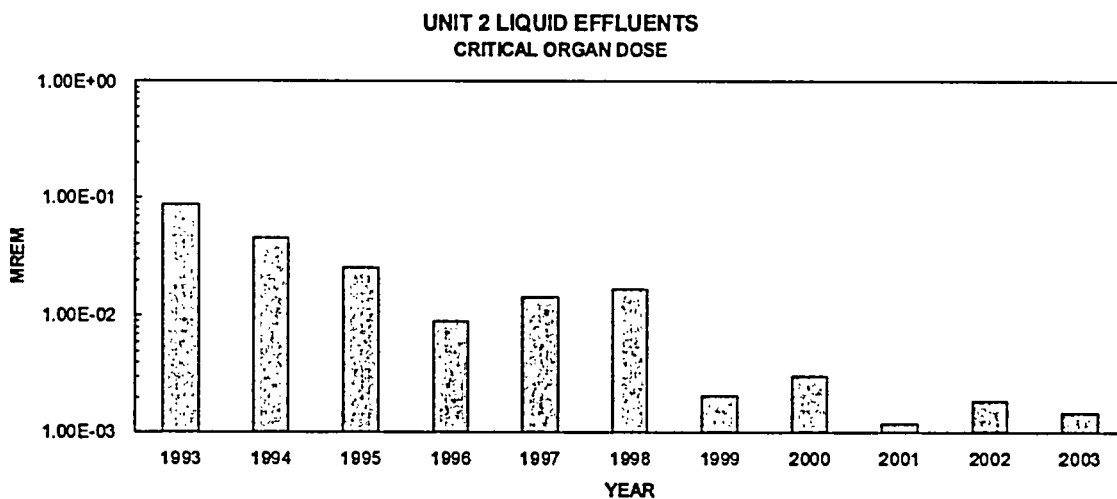
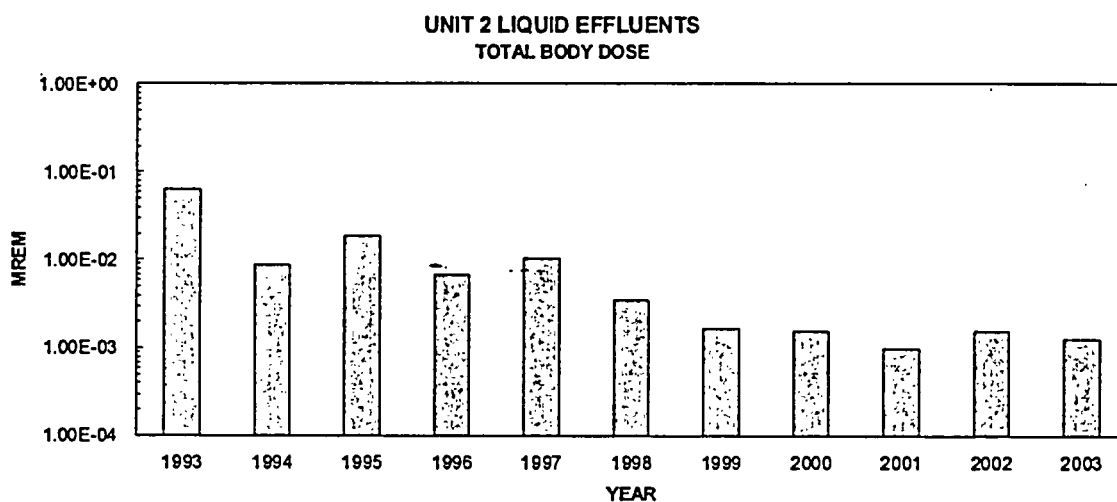
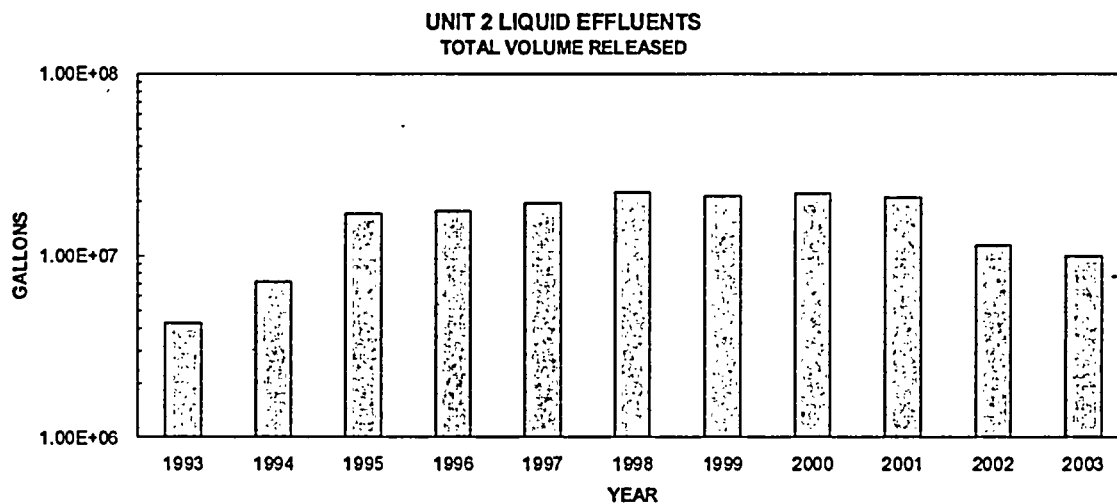


**UNIT 2 LIQUID EFFLUENTS
TRITIUM**

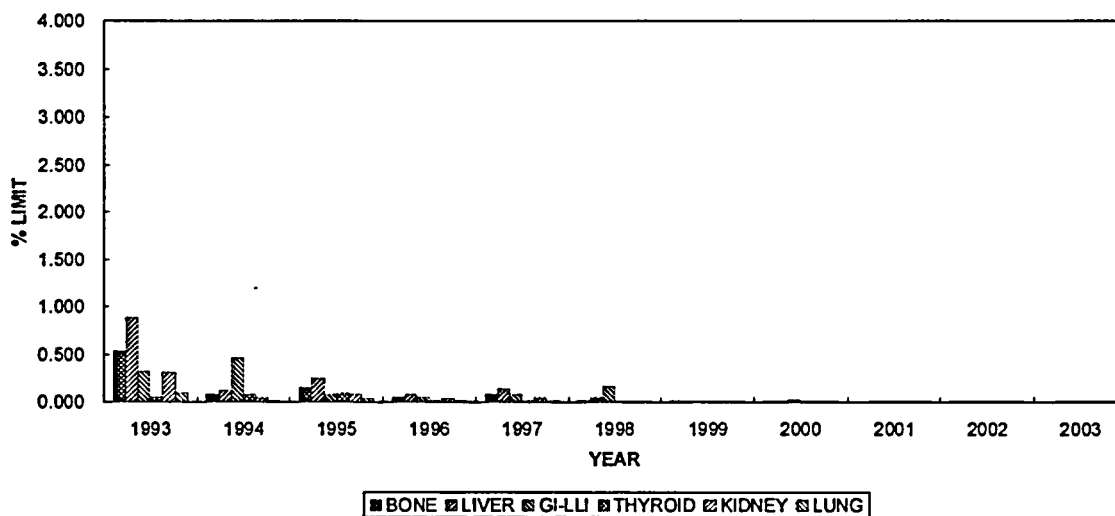


**UNIT 2 LIQUID EFFLUENTS
DISSOLVED AND ENTRAINED GASES**

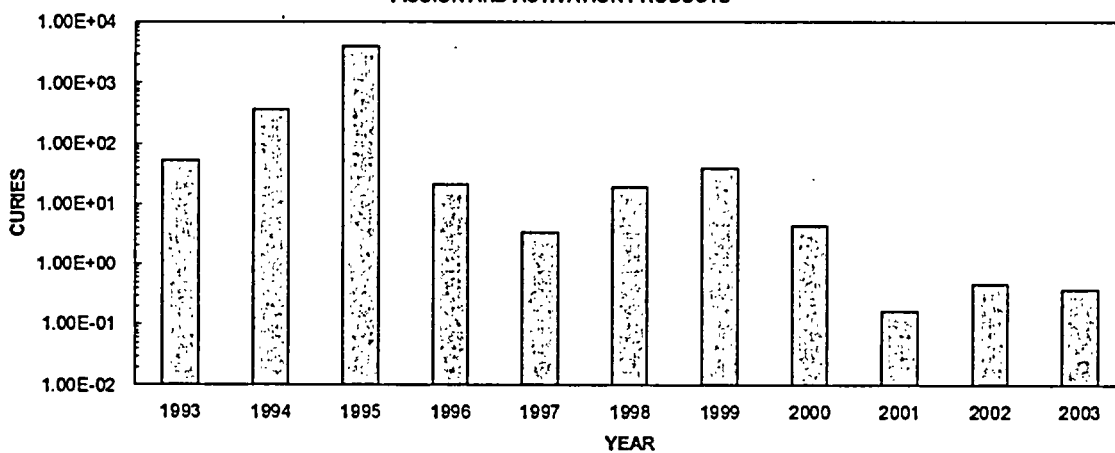




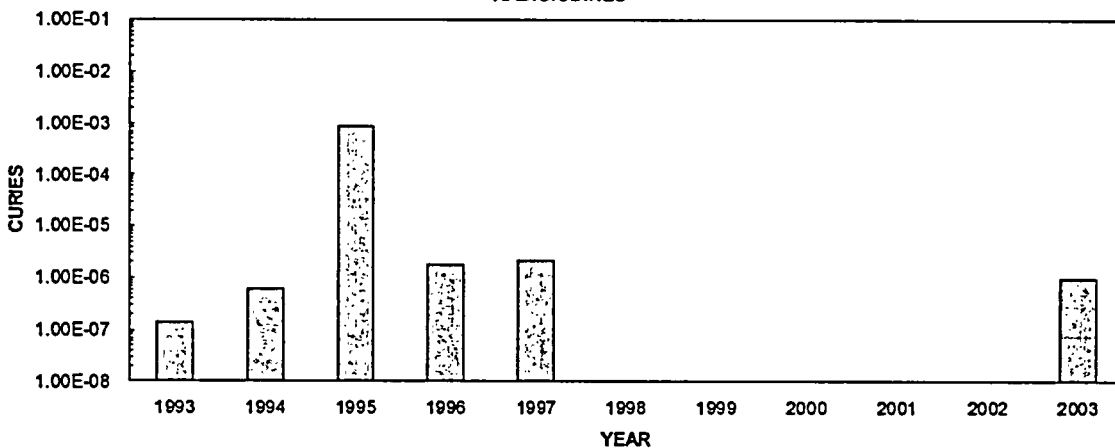
UNIT 2 LIQUID EFFLUENTS COLLECTIVE DOSES



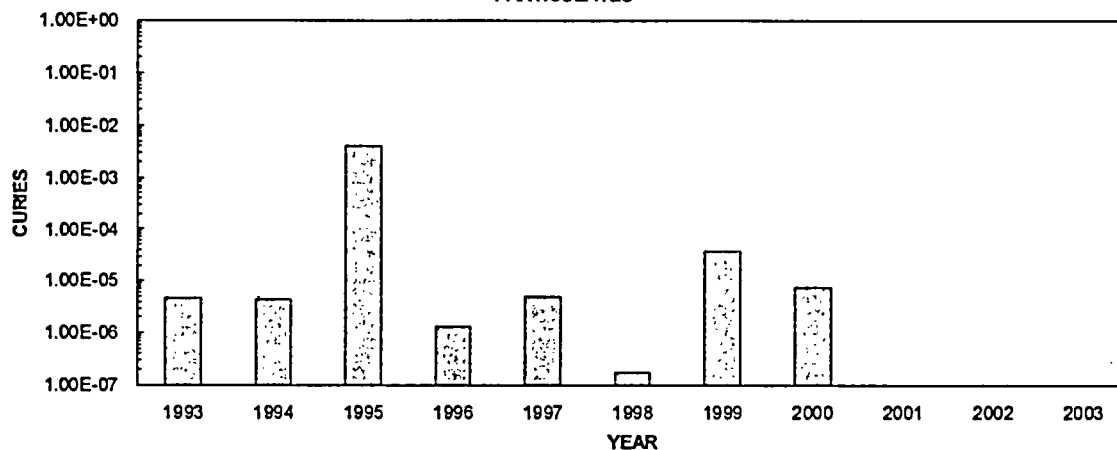
UNIT 2 GASEOUS EFFLUENTS FISSION AND ACTIVATION PRODUCTS



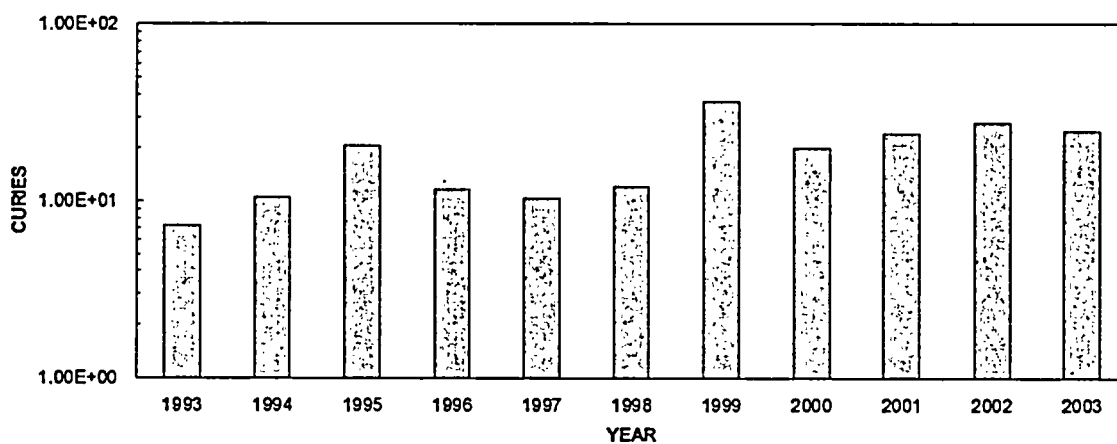
UNIT 2 GASEOUS EFFLUENTS RADIOIODINES



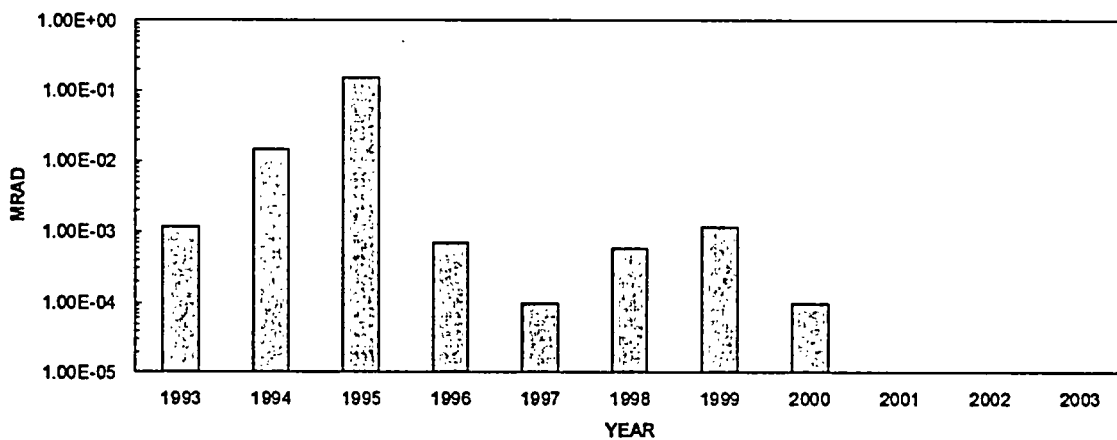
UNIT 2 GASEOUS EFFLUENTS PARTICULATES



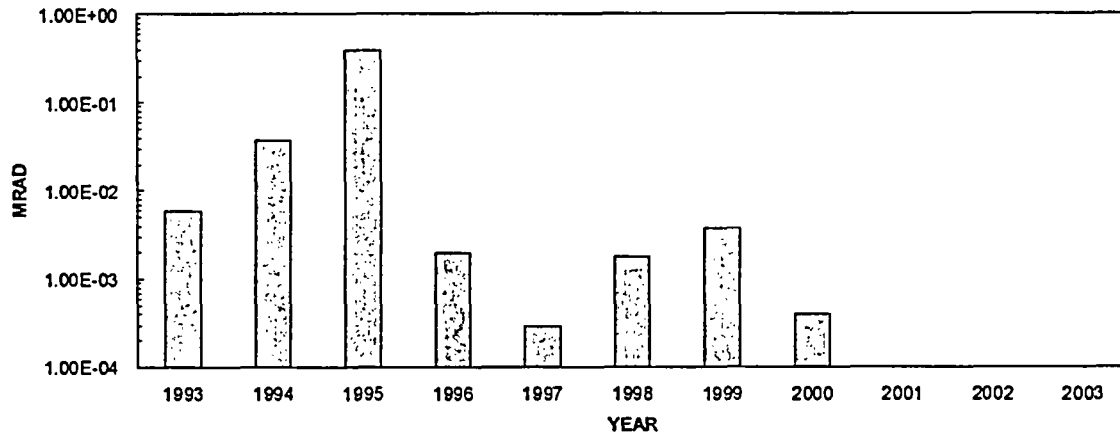
UNIT 2 GASEOUS EFFLUENTS TRITIUM



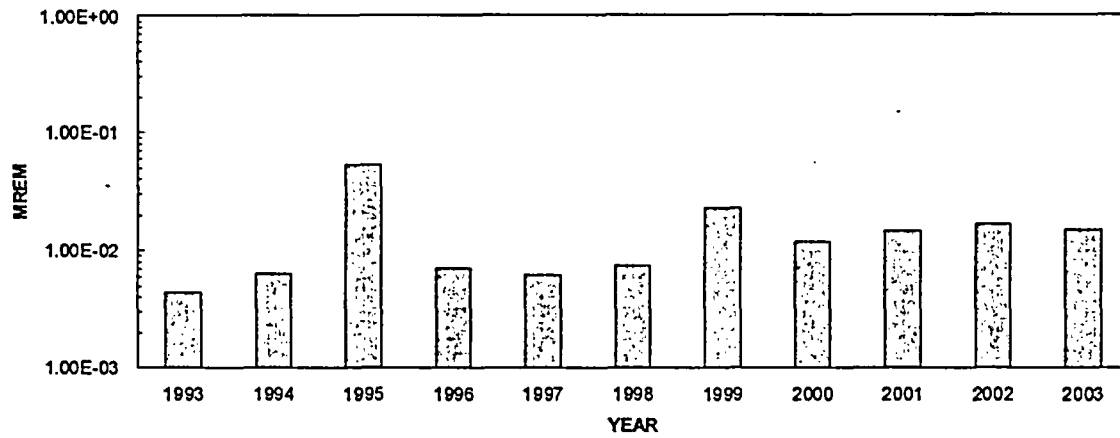
UNIT 2 GASEOUS EFFLUENTS GAMMA DOSE



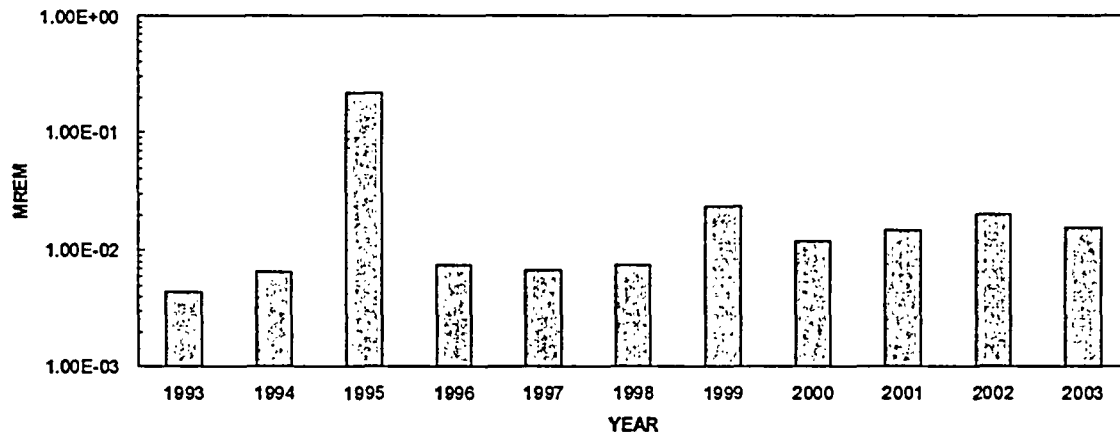
**UNIT 2 GASEOUS EFFLUENTS
BETA DOSE**



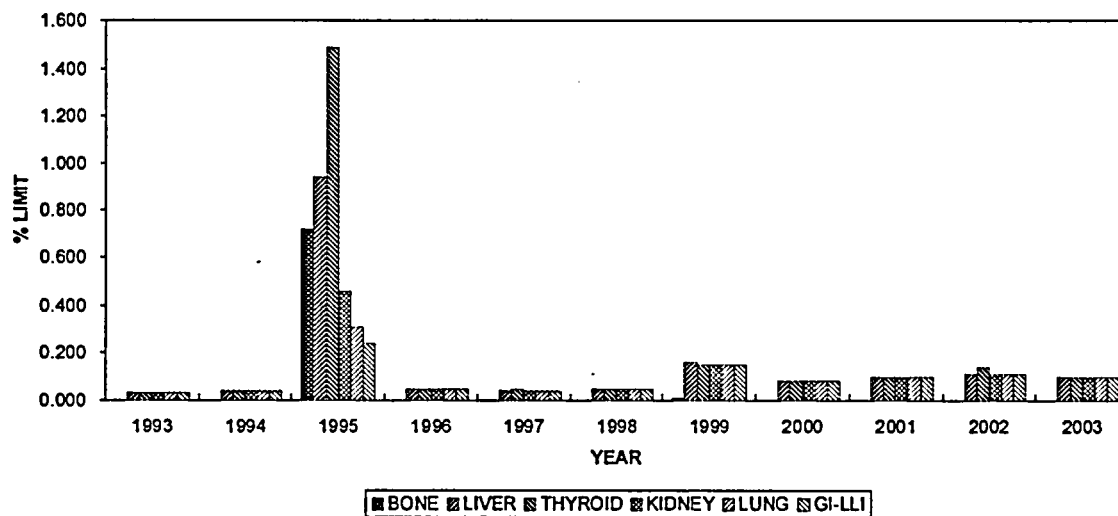
**UNIT 2 GASEOUS EFFLUENTS
TOTAL BODY DOSE**



**UNIT 2 GASEOUS EFFLUENTS
CRITICAL ORGAN DOSE**



UNIT 2 GASEOUS EFFLUENTS COLLECTIVE DOSES



8. SOLID WASTE SUMMARY

As required by Regulatory Guide 1.21, Rev. 1, a summary of data for solid wastes shipped offsite is provided in the annual Radioactive Effluent Release Report.

This summary covers shipments from January 1 through December 31, 2003. The summary for solid waste shipments is as follows:

REGULATORY GUIDE 1.21 REPORT
EFFLUENT AND WASTE DISPOSAL ANNUAL SUMMARY REPORT
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
JANUARY 1, 2003 THROUGH JUNE 30, 2003

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	2.50E+02 2.72E+03	±2.5E+01
b. Dry compressible waste, contaminated equip, etc.	m ³ Ci	3.62E+01 1.18E-02	±2.5E+01
c. Irradiated components, control rods, etc.	m ³ Ci	6.74E-01 1.04E+00	±2.5E+01
d. Other (describe): Oil	m ³ Ci	1.14E+01 2.82E-01	±2.5E+01

2. Estimate of Major Nuclide Composition (by Type of Waste)

a. Spent resins, filter sludges, evaporator bottoms, etc.

	%	Curies
C-14	3.06	8.33E+01
FE-55	11.22	3.06E+02
CO-58	4.70	1.28E+02
CO-60	6.31	1.72E+02
NI-59	7.60	2.07E+02
NI-63	48.90	1.33E+03
CS-134	1.02	2.77E+01
CS-137	14.63	3.99E+02

b. Dry compressible waste, contaminated equipment, etc.

	%	Curies
CR-51	18.82	2.23E-03
MN-54	1.94	2.29E-04
FE-55	18.54	2.19E-03
CO-58	26.90	3.18E-03
CO-60	3.07	3.64E-04
NI-59	17.90	2.12E-03
NI-63	3.98	4.71E-04
ZR-95	3.05	3.61E-04
NB-95	4.31	5.10E-04

c. Irradiated components, control rods, etc.

	%	Curies
MN-54	3.06	3.18E-02
FE-55	50.15	5.21E-01
CO-60	41.42	4.30E-01
NI-63	1.39	1.44E-02
PM-147	2.35	2.44E-02

d. Other (Oil)

	%	Curies
NI-59	97.01	2.74E-01
NI-63	1.61	4.54E-03

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
15	Cask	Barnwell, SC
32	Cask	Erwin, TN
1	Flatbed/Sea Van	Oak Ridge, TN
7	Flatbed/Sea Van	Memphis, TN

B. Irradiated Fuel Shipments (Disposition)

Number of Shipments

Mode of Transportation

Destination

None

REGULATORY GUIDE 1.21 REPORT
 EFFLUENT AND WASTE DISPOSAL ANNUAL SUMMARY REPORT
 SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
 JULY 1, 2003 THROUGH DECEMBER 31, 2003

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	5.08E+01 3.02E+05	±2.5E+01
b. Dry compressible waste, contaminated equip, etc.	m ³ Ci	1.81E+02 1.81E+00	±2.5E+01
c. Irradiated components, control rods, etc.	m ³ Ci	0.00E+00 0.00E+00	±2.5E+01
d. Other (describe):	m ³ Ci	0.00E+00 0.00E+00	±2.5E+01

2. Estimate of Major Nuclide Composition (by Type of Waste)

a. Spent resins, filter sludges, evaporator bottoms, etc.

	%	Curies
CO-60	55.62	1.68E-05
CD-109	9.57	2.89E-06
CS-134	1.24	3.74E-07
CS-137	33.58	1.01E-05

b. Dry compressible waste, contaminated equipment, etc.

	%	Curies
CR-51	18.89	1.62E-01
MN-54	1.94	1.66E-02
FE-55	18.51	1.58E-01
CO-58	26.90	2.30E-01
CO-60	3.07	2.63E-02
NI-59	17.86	1.53E-01
NI-63	3.97	3.40E-02
ZR-95	3.05	2.61E-02
NB-95	4.32	3.70E-02

c. Irradiated components, control rods, etc.

	%	Curies
None		

d. Other

	%	Curies
None		

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
4	Flatbed/Sea Van	Memphis, TN
4	Flatbed/Sea Van	Oak Ridge, TN

B. Irradiated Fuel Shipments (Disposition)

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

9. UNPLANNED RELEASES.

An unplanned release is defined as any release of radioactive material to the environment that does not meet the following criteria:

- A. Sample analysis prior to release, and
- B. Release calculations performed prior to release.

During 2003, there were no unplanned releases to an unrestricted area.

10. RADIATION INSTRUMENTATION

As required by ODCM Appendices 1 and 2, any radioactive effluent instrumentation inoperable for more than 30 days shall be reported in the annual Radioactive Effluent Release Report.

On June 26, 2003, while performing the monthly Noble Gas Source Check surveillance on the Unit 1 Containment Purge SPING (SPING #1), the high range noble gas detector (channel 9) failed high prior to the introduction of the check source. A 30 day time clock was entered per the ODCM and a Condition Report (CR-ANO-1-2003-00686) and a Work Request (#4699) were issued to document and repair the condition. It was determined that the interface box between the SPING computer and the channel 9 detector had failed and needed to be replaced. A new interface box had to be ordered from an offsite vendor. On July 26 at 16:29 hrs the 30 day time clock expired. Condition Report CR-ANO-1-2003-00801 was issued to document the exceeded time clock. The new interface box was received onsite on August 21 and the SPING successfully repaired and the time clock exited on August 26, 2003. It is important to note that the Unit 1 Containment Vent was secured during the time SPING 1 was out of service and no gaseous releases occurred via the Containment Vent during this period.

11. CHANGES TO THE PROCESS CONTROL PROGRAM

As required by ODCM Appendices 1 and 2, a description of changes made to the Process Control Program (PCP) shall be included in the annual Radioactive Effluent Release Report for the period in which the change was made effective.

Revision 1 of the Process Control Program (RW-105) was implemented on January 2, 2003. The changes implemented under this revision were as follows:

- 1. The procedure classification was changed from "Non-Quality" to "Quality".
- 2. Section 5.4, "Administrative Controls", was revised to include the requirement that vendors performing radwaste services under 10CFR61 and 10CFR71 (Step 5.4.5) must be on the Entergy Qualified Suppliers List.
- 3. Section 8.0, "Requirements and Commitment Cross Reference", was updated to list correct section numbers.

There were no other changes made to the Process Control Program during 2003.

12. CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL

In accordance with Unit 1 and Unit 2 TS, changes to the ODCM shall be included in the annual Radioactive Effluent Release Report for the period in which the change(s) was made effective.

There were no changes to the ODCM in 2003.

13. LLD LEVELS

In accordance with ODCM Appendices 1 and 2, lower limits of detection (LLDs) higher than required shall be documented in the annual Radioactive Effluent Release Report.

During 2003, there were no LLDs higher than required.

14. RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

In accordance with ODCM Appendices 1 and 2 Limitations L2.6.1.A and L2.6.2.A, unavailability of milk or fresh, leafy vegetable samples, or an increase in an environmental sample location's calculated dose commitment must be identified in the annual Radioactive Effluent Release Report.

A. Changes in Sample Locations

During 2003, there were no changes to milk or fresh leafy vegetable sample locations or instances where milk or fresh leafy vegetable samples were unavailable.

B. Increase in Calculated Dose Commitment

There were no environmental sampling locations identified during 2003 that would yield a calculated dose commitment greater than the values currently being calculated.

15. SUMMARY OF HOURLY METEOROLOGICAL DATA

In accordance with ODCM Appendices 1 and 2 Limitations L3.2.1.D.1, in lieu of including a summary of the meteorological data in this report, the 2003 data is retained at ANO. This data is available for NRC review.

16. DESCRIPTION OF MAJOR CHANGES TO RADIOACTIVE WASTE SYSTEMS

There were no major changes made to the Unit 1 liquid and gaseous or Unit 2 liquid and gaseous radwaste systems during 2003.

**17. INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)
EFFLUENT RELEASES**

No effluent releases occurred from the ISFSI during 2003.