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, 2005

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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 6.6.3. 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, 2005.

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 mrems to any organ

   Yearly

   Less than or equal to 15 mrems 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 2E-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, 2005. The summary of liquid effluents for both Unit 1 and Unit 2 is as follows:

	Unit 1	Unit 2
Number of releases:	191	102
Total time for all releases (minutes):	510759	541161
Maximum time for a release (minutes):	11855	11850
Average time for a release (minutes):	2674	5306
Minimum time for a release (minutes):	15	25

The Unit 1 liquid releases consisted of:

191 Planned Releases

0 Unplanned Releases

The Unit 2 liquid releases consisted of:

102 Planned Releases

0 Unplanned Releases

ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL LIQUID EFFLUENTS)
January 1 through June 30, 2005

Unit 1

Type of Effluent	Units	Quarter 1	Quarter 2	Est. Total Error %
A. Fission and Activation Products				
1. Total Release (Not Including Tritium, Gases, Alpha)	Curies	8.443E-04	7.796E-03	25
2. Average Diluted Concentration During Period	µCi/ml	2.797E-12	2.246E-11	
3. Percent of Applicable Limit	%	9.325E-04	7.488E-03	
B. Tritium				
1. Total Release	Curies	3.075E+01	1.995E+02	25
2. Average Diluted Concentration During Period	µCi/ml	1.019E-07	5.749E-07	
3. Percent of Applicable Limit	%	3.396E-03	1.916E-02	
C. Dissolved and Entrained Gases				
1. Total Release	Curies	0.000E+00	7.327E-03	25
2. Average Diluted Concentration During Period	µCi/ml	0.000E+00	2.111E-11	
3. Percent of Applicable Limit	%	0.000E+00	1.056E-05	
D. Gross Alpha Radioactivity				
1. Total Release	Curies	0.000E+00	0.000E+00	25
E. Waste Vol Released (Pre-Dilution)	Liters	1.796E+07	1.818E+07	25
F. Volume of Dilution Water Used	Liters	3.018E+11	3.470E+11	25

ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL LIQUID EFFLUENTS)
July 1 through December 31, 2005

Unit 1

Type of Effluent	Units	Quarter 3	Quarter 4	Est. Total Error %
A. Fission and Activation Products				
1. Total Release (Not Including Tritium, Gases, Alpha)	Curies	4.608E-03	3.610E-02	25
2. Average Diluted Concentration During Period	µCi/ml	1.204E-11	1.626E-10	
3. Percent of Applicable Limit	%	4.013E-03	5.421E-02	
B. Tritium				
1. Total Release	Curies	3.699E+02	1.110E+02	25
2. Average Diluted Concentration During Period	µCi/ml	9.663E-07	4.999E-07	
3. Percent of Applicable Limit	%	3.221E-02	1.666E-02	
C. Dissolved and Entrained Gases				
1. Total Release	Curies	1.073E+00	7.827E-01	25
2. Average Diluted Concentration During Period	µCi/ml	2.803E-09	3.526E-09	
3. Percent of Applicable Limit	%	1.401E-03	1.763E-03	
D. Gross Alpha Radioactivity				
1. Total Release	Curies	0.000E+00	0.000E+00	25
E. Waste Vol Released (Pre-Dilution)	Liters	1.884E+07	8.202E+06	25
F. Volume of Dilution Water Used	Liters	3.827E+11	2.219E+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 2005

		CONTINUOUS RELEASES		BATCH RELEASES	
NUCLIDE	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
AG-110M	CURIES	0.00E+00	0.00E+00	1.05E-05	0.00E+00
MN-54	CURIES	0.00E+00	0.00E+00	0.00E+00	5.59E-07
ZR-95	CURIES	0.00E+00	0.00E+00	1.06E-05	6.02E-07
NB-97	CURIES	0.00E+00	0.00E+00	8.83E-06	9.00E-06
NB-95	CURIES	0.00E+00	0.00E+00	0.00E+00	1.37E-05
I-131	CURIES	0.00E+00	0.00E+00	0.00E+00	2.51E-05
CS-137	CURIES	0.00E+00	0.00E+00	7.55E-05	1.73E-04
CO-60	CURIES	0.00E+00	0.00E+00	1.12E-04	2.17E-04
CO-58	CURIES	0.00E+00	0.00E+00	7.34E-05	5.08E-04
SB-125	CURIES	0.00E+00	0.00E+00	5.13E-05	1.03E-03
NA-24	CURIES	4.65E-04	1.49E-03	0.00E+00	5.00E-05
FE-55	CURIES	3.74E-05	3.29E-03	0.00E+00	9.90E-04
XE-133	CURIES	0.00E+00	0.00E+00	0.00E+00	7.33E-03
H-3	CURIES	3.16E-01	2.64E-01	3.04E+01	2.00E+02
Total for Period	CURIES	3.17E-01	2.69E-01	3.04E+01	2.00E+02

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 2005

		CONTINUOUS RELEASES		BATCH RELEASES	
NUCLIDE	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
SN-113	CURIES	0.00E+00	0.00E+00	6.77E-06	0.00E+00
TE-131	CURIES	0.00E+00	0.00E+00	7.30E-05	0.00E+00
I-132	CURIES	0.00E+00	0.00E+00	0.00E+00	9.56E-06
FE-59	CURIES	0.00E+00	0.00E+00	0.00E+00	1.39E-05
NA-24	CURIES	0.00E+00	0.00E+00	6.48E-04	1.40E-05
I-133	CURIES	0.00E+00	0.00E+00	0.00E+00	1.43E-05
CS-134	CURIES	0.00E+00	0.00E+00	1.78E-06	1.83E-05
MN-54	CURIES	0.00E+00	0.00E+00	0.00E+00	5.23E-05
AG-110M	CURIES	0.00E+00	0.00E+00	0.00E+00	6.70E-05
AR-41	CURIES	0.00E+00	0.00E+00	0.00E+00	7.35E-05
I-131	CURIES	0.00E+00	0.00E+00	3.66E-04	7.71E-05
KR-85M	CURIES	0.00E+00	0.00E+00	8.88E-05	1.02E-04
SB-124	CURIES	0.00E+00	0.00E+00	0.00E+00	1.15E-04
CS-137	CURIES	0.00E+00	0.00E+00	4.86E-04	2.23E-04
ZR-95	CURIES	0.00E+00	0.00E+00	0.00E+00	2.62E-04
CR-51	CURIES	0.00E+00	0.00E+00	0.00E+00	3.25E-04
NB-95	CURIES	0.00E+00	0.00E+00	0.00E+00	5.00E-04
CO-60	CURIES	0.00E+00	0.00E+00	2.88E-04	1.10E-03
FE-55	CURIES	0.00E+00	0.00E+00	0.00E+00	2.46E-03
XE-135	CURIES	0.00E+00	0.00E+00	2.10E-03	3.96E-03
KR-85	CURIES	0.00E+00	0.00E+00	1.16E-02	6.71E-03
XE-133M	CURIES	0.00E+00	0.00E+00	9.50E-03	7.24E-03
SB-125	CURIES	0.00E+00	0.00E+00	1.35E-03	8.22E-03
XE-131M	CURIES	0.00E+00	0.00E+00	1.28E-02	9.24E-03
CO-58	CURIES	0.00E+00	0.00E+00	1.39E-03	2.26E-02
XE-133	CURIES	0.00E+00	0.00E+00	1.04E+00	7.55E-01
H-3	CURIES	1.06E-01	2.91E-02	3.70E+02	1.11E+02
Total for Period	CURIES	1.06E-01	2.91E-02	3.71E+02	1.12E+02

ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL LIQUID EFFLUENTS)
January 1 through June 30, 2005

Unit 2

Type of Effluent	Units	Quarter 1	Quarter 2	Est. Total Error %
A. Fission and Activation Products				
1. Total Release (Not Including Tritium, Gases, Alpha)	Curies	7.189E-02	9.465E-02	25
2. Average Diluted Concentration During Period	µCi/ml	2.382E-10	2.727E-10	
3. Percent of Applicable Limit	%	7.940E-02	9.091E-02	
B. Tritium				
1. Total Release	Curies	2.517E+02	3.233E+01	25
2. Average Diluted Concentration During Period	µCi/ml	8.338E-07	9.315E-08	
3. Percent of Applicable Limit	%	2.779E-02	3.105E-03	
C. Dissolved and Entrained Gases				
1. Total Release	Curies	2.406E-01	5.113E-04	25
2. Average Diluted Concentration During Period	µCi/ml	7.970E-10	1.473E-12	
3. Percent of Applicable Limit	%	3.985E-04	7.367E-07	
D. Gross Alpha Radioactivity				
1. Total Release	Curies	0.000E+00	5.869E-05	25
E. Waste Vol Released (Pre-Dilution)	Liters	1.489E+07	1.303E+07	25
F. Volume of Dilution Water Used	Liters	3.018E+11	3.470E+11	25

ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL LIQUID EFFLUENTS)
July 1 through December 31, 2005

Unit 2

Type of Effluent	Units	Quarter 3	Quarter 4	Est. Total Error %
A. Fission and Activation Products				
1. Total Release (Not Including Tritium, Gases, Alpha)	Curies	1.308E-02	3.013E-03	25
2. Average Diluted Concentration During Period	µCi/ml	3.417E-11	1.358E-11	
3. Percent of Applicable Limit	%	1.139E-02	4.525E-03	
B. Tritium				
1. Total Release	Curies	1.049E+02	7.217E+01	25
2. Average Diluted Concentration During Period	µCi/ml	2.740E-07	3.251E-07	
3. Percent of Applicable Limit	%	9.133E-03	1.084E-02	
C. Dissolved and Entrained Gases				
1. Total Release	Curies	1.378E-03	0.000E+00	25
2. Average Diluted Concentration During Period	µCi/ml	3.601E-12	0.000E+00	
3. Percent of Applicable Limit	%	1.800E-06	0.000E+00	
D. Gross Alpha Radioactivity				
1. Total Release	Curies	3.769E-04	0.000E+00	25
E. Waste Vol Released (Pre-Dilution)	Liters	1.195E+07	1.697E+07	25
F. Volume of Dilution Water Used	Liters	3.827E+11	2.219E+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 2005

		CONTINUOUS RELEASES		BATCH RELEASES	
NUCLIDE	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
LA-140	CURIES	0.00E+00	0.00E+00	2.81E-05	0.00E+00
CS-134	CURIES	0.00E+00	0.00E+00	4.48E-05	0.00E+00
TE-132	CURIES	0.00E+00	0.00E+00	1.14E-04	0.00E+00
XE-135	CURIES	0.00E+00	0.00E+00	1.36E-04	0.00E+00
I-132	CURIES	0.00E+00	0.00E+00	1.50E-04	0.00E+00
FE-59	CURIES	0.00E+00	0.00E+00	1.74E-04	0.00E+00
XE-133M	CURIES	0.00E+00	0.00E+00	1.53E-03	0.00E+00
XE-131M	CURIES	0.00E+00	0.00E+00	1.58E-03	0.00E+00
KR-85	CURIES	0.00E+00	0.00E+00	1.24E-02	0.00E+00
I-131	CURIES	0.00E+00	0.00E+00	8.74E-05	3.11E-05
SB-125	CURIES	0.00E+00	0.00E+00	2.95E-03	3.12E-05
G-ALPHA	CURIES	0.00E+00	5.87E-05	0.00E+00	0.00E+00
AG-110M	CURIES	0.00E+00	0.00E+00	6.63E-04	7.04E-05
MN-54	CURIES	0.00E+00	0.00E+00	1.87E-04	1.00E-04
CS-137	CURIES	0.00E+00	0.00E+00	5.60E-04	1.58E-04
CO-60	CURIES	0.00E+00	0.00E+00	3.36E-04	1.80E-04
ZR-95	CURIES	0.00E+00	0.00E+00	2.66E-04	3.42E-04
NB-95	CURIES	0.00E+00	0.00E+00	3.17E-04	4.30E-04
XE-133	CURIES	0.00E+00	0.00E+00	2.25E-01	5.11E-04
CR-51	CURIES	0.00E+00	0.00E+00	9.55E-04	1.54E-03
CO-58	CURIES	0.00E+00	0.00E+00	4.72E-03	2.44E-03
FE-55	CURIES	5.29E-02	8.26E-02	7.40E-03	6.70E-03
H-3	CURIES	7.07E-02	4.70E-02	2.52E+02	3.23E+01
Total for Period	CURIES	1.24E-01	1.30E-01	2.52E+02	3.23E+01

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 2005

		CONTINUOUS RELEASES		BATCH RELEASES	
NUCLIDE	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
G-ALPHA	CURIES	3.62E-04	0.00E+00	1.50E-05	0.00E+00
XE-133	CURIES	0.00E+00	0.00E+00	1.38E-03	0.00E+00
NB-97	CURIES	0.00E+00	0.00E+00	0.00E+00	1.24E-05
ZR-95	CURIES	0.00E+00	0.00E+00	1.10E-04	2.35E-05
CS-137	CURIES	0.00E+00	0.00E+00	6.99E-05	4.34E-05
MN-54	CURIES	0.00E+00	0.00E+00	1.11E-04	4.43E-05
NB-95	CURIES	0.00E+00	0.00E+00	3.12E-04	4.60E-05
AG-110M	CURIES	0.00E+00	0.00E+00	2.26E-04	1.12E-04
CO-60	CURIES	0.00E+00	0.00E+00	2.21E-04	1.28E-04
BE-7	CURIES	0.00E+00	0.00E+00	1.86E-04	1.87E-04
CO-58	CURIES	0.00E+00	0.00E+00	1.19E-03	2.52E-04
FE-55	CURIES	9.99E-03	0.00E+00	7.10E-04	6.84E-04
SB-125	CURIES	0.00E+00	0.00E+00	0.00E+00	1.48E-03
H-3	CURIES	7.75E-02	1.46E-01	1.05E+02	7.21E+01
Total for Period	CURIES	8.79E-02	1.46E-01	1.05E+02	7.21E+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, 2005. The summary of gaseous effluents for both Unit 1 and Unit 2 is as follows:

	Unit 1	Unit 2
Number of releases:	174	163
Total time for all releases (minutes):	1515051	1281871
Maximum time for a release (minutes):	44639	10574
Average time for a release (minutes):	8707	7864
Minimum time for a release (minutes):	4	4

The Unit 1 gaseous releases consisted of:

174 Planned vent & tank releases

0 Unplanned releases

The Unit 2 gaseous releases consisted of:

163 Planned vent & tank releases

0 Unplanned releases

ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL AIRBORNE EFFLUENTS)
January 1 through June 30, 2005

Unit 1

Type of Effluent	Units	Quarter 1	Quarter 2	Est. Total Error %
A. Fission and Activation Products				
1. Total Release	Curies	0.000E+00	4.430E+00	25
2. Average Release Rate for Period	μCi/Sec	0.000E+00	5.635E-01	
3. Percent of Applicable Limit	%	0.000E+00	7.889E-03	
B. Radioiodines				
1. Total Iodine-131	Curies	1.521E-06	5.272E-05	25
2. Average Release Rate for Period	μCi/Sec	1.956E-07	6.706E-06	
3. Percent of Applicable Limit	%	5.476E-07	1.878E-05	
C. Particulates				
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	8.072E-09	2.438E-07	
D. Tritium				
1. Total Release	Curies	1.017E+01	1.140E+01	25
2. Average Release Rate for Period	μCi/Sec	1.308E+00	1.450E+00	
3. Percent of Applicable Limit	%	1.831E-03	2.030E-03	

ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL AIRBORNE EFFLUENTS)
July 1 through December 31, 2005

Unit 1

Type of Effluent	Units	Quarter 3	Quarter 4	Est. Total Error %
A. Fission and Activation Products				
1. Total Release	Curies	2.359E+01	3.312E+01	25
2. Average Release Rate for Period	µCi/Sec	2.968E+00	4.166E+00	
3. Percent of Applicable Limit	%	4.155E-02	5.833E-02	
B. Radioiodines				
1. Total Iodine-131	Curies	6.181E-05	2.086E-04	25
2. Average Release Rate for Period	µCi/Sec	7.775E-06	2.625E-05	
3. Percent of Applicable Limit	%	2.177E-05	7.349E-05	
C. Particulates				
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	
D. Tritium				
1. Total Release	Curies	8.287E+00	1.706E+01	25
2. Average Release Rate for Period	µCi/Sec	1.042E+00	2.146E+00	
3. Percent of Applicable Limit	%	1.459E-03	3.004E-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 2005

		CONTINUOUS RELEASES		BATCH RELEASES	
NUCLIDE	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
Fission Gases					
XE-135	CURIES	0.00E+00	0.00E+00	0.00E+00	1.19E+00
XE-133	CURIES	0.00E+00	0.00E+00	0.00E+00	3.24E+00
Total for Period	CURIES	0.00E+00	0.00E+00	0.00E+00	4.43E+00
Iodines					
I-133	CURIES	0.00E+00	0.00E+00	0.00E+00	2.00E-05
I-131	CURIES	0.00E+00	0.00E+00	1.52E-06	5.27E-05
Total for Period	CURIES	0.00E+00	0.00E+00	1.52E-06	7.27E-05
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					
G-ALPHA	CURIES	0.00E+00	0.00E+00	8.07E-09	2.44E-07
H-3	CURIES	0.00E+00	0.00E+00	1.02E+01	1.14E+01
Total for Period	CURIES	0.00E+00	0.00E+00	1.02E+01	1.14E+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 2005

		CONTINUOUS RELEASES		BATCH RELEASES	
NUCLIDE	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
Fission Gases					
XE-131M	CURIES	0.00E+00	0.00E+00	0.00E+00	3.59E-03
XE-133M	CURIES	0.00E+00	0.00E+00	0.00E+00	4.14E-02
XE-135	CURIES	0.00E+00	0.00E+00	0.00E+00	6.23E-02
KR-85	CURIES	0.00E+00	0.00E+00	1.53E-02	3.62E-01
XE-133	CURIES	0.00E+00	0.00E+00	2.36E+01	3.26E+01
Total for Period	CURIES	0.00E+00	0.00E+00	2.36E+01	3.31E+01
Iodines					
I-133	CURIES	0.00E+00	0.00E+00	1.77E-05	1.81E-05
I-131	CURIES	0.00E+00	0.00E+00	6.18E-05	2.09E-04
Total for Period	CURIES	0.00E+00	0.00E+00	7.95E-05	2.27E-04
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	8.29E+00	1.71E+01
Total for Period	CURIES	0.00E+00	0.00E+00	8.29E+00	1.71E+01

ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL AIRBORNE EFFLUENTS)
January 1 through June 30, 2005

Unit 2

Type of Effluent	Units	Quarter 1	Quarter 2	Est. Total Error %
A. Fission and Activation Products				
1. Total Release	Curies	5.948E-02	0.000E+00	25
2. Average Release Rate for Period	μCi/Sec	7.649E-03	0.000E+00	
3. Percent of Applicable Limit	%	1.071E-04	0.000E+00	
B. Radioiodines				
1. Total Iodine-131	Curies	1.287E-05	2.185E-06	25
2. Average Release Rate for Period	μCi/Sec	1.655E-06	2.780E-07	
3. Percent of Applicable Limit	%	4.633E-06	7.783E-07	
C. Particulates				
1. Particulates (Half-Lives > 8 Days)	Curies	0.000E+00	5.474E-06	25
2. Average Release Rate for Period	μCi/Sec	0.000E+00	6.963E-07	
3. Percent of Applicable Limit	%	0.000E+00	1.950E-06	
4. Gross Alpha Radioactivity	Curies	0.000E+00	0.000E+00	
D. Tritium				
1. Total Release	Curies	5.322E+00	8.806E+00	25
2. Average Release Rate for Period	μCi/Sec	6.845E-01	1.120E+00	
3. Percent of Applicable Limit	%	9.583E-04	1.568E-03	

ANNUAL SUMMATION FOR ALL RELEASES BY QUARTER
(ALL AIRBORNE EFFLUENTS)
July 1 through December 31, 2005

Unit 2

Type of Effluent	Units	Quarter 3	Quarter 4	Est. Total Error %
A. Fission and Activation Products				
1. Total Release	Curies	8.840E-02	0.000E+00	25
2. Average Release Rate for Period	μCi/Sec	1.112E-02	0.000E+00	
3. Percent of Applicable Limit	%	1.557E-04	0.000E+00	
B. Radioiodines				
1. Total Iodine-131	Curies	0.000E+00	1.042E-05	25
2. Average Release Rate for Period	μCi/Sec	0.000E+00	1.311E-06	
3. Percent of Applicable Limit	%	0.000E+00	3.670E-06	
C. Particulates				
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	3.075E-07	
D. Tritium				
1. Total Release	Curies	1.134E+01	8.376E+00	25
2. Average Release Rate for Period	μCi/Sec	1.427E+00	1.054E+00	
3. Percent of Applicable Limit	%	1.998E-03	1.475E-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 2005

		CONTINUOUS RELEASES		BATCH RELEASES	
NUCLIDE	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
Fission Gases					
XE-133	CURIES	0.00E+00	0.00E+00	5.95E-02	0.00E+00
Total for Period	CURIES	0.00E+00	0.00E+00	5.95E-02	0.00E+00
Iodines					
I-131	CURIES	0.00E+00	0.00E+00	1.29E-05	2.19E-06
Total for Period	CURIES	0.00E+00	0.00E+00	1.29E-05	2.19E-06
Particulates					
CO-58	CURIES	0.00E+00	0.00E+00	0.00E+00	5.47E-06
Total for Period	CURIES	0.00E+00	0.00E+00	0.00E+00	5.47E-06
Other					
H-3	CURIES	0.00E+00	0.00E+00	5.32E+00	8.81E+00
Total for Period	CURIES	0.00E+00	0.00E+00	5.32E+00	8.81E+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 2005

		CONTINUOUS RELEASES		BATCH RELEASES	
NUCLIDE	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
Fission Gases					
KR-85	CURIES	0.00E+00	0.00E+00	8.84E-02	0.00E+00
Total for Period	CURIES	0.00E+00	0.00E+00	8.84E-02	0.00E+00
Iodines					
I-131	CURIES	0.00E+00	0.00E+00	0.00E+00	1.04E-05
Total for Period	CURIES	0.00E+00	0.00E+00	0.00E+00	1.04E-05
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					
G-ALPHA	CURIES	0.00E+00	0.00E+00	0.00E+00	3.07E-07
H-3	CURIES	0.00E+00	0.00E+00	1.13E+01	8.38E+00
Total for Period	CURIES	0.00E+00	0.00E+00	1.13E+01	8.38E+00

5. SUMMARY OF RADIATION DOSES

The following is a summary of the annual radiation doses due to radiological effluents during 2005 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

Organ	Qtr 1	%	Qtr 2	%	Qtr 3	%	Qtr 4	%	Year	%
TBody	0.0001	0.01	0.0004	0.03	0.0007	0.05	0.0004	0.03	0.0016	0.05
Bone	0.0000	0.00	0.0001	0.00	0.0002	0.00	0.0002	0.00	0.0006	0.01
Liver	0.0001	0.00	0.0004	0.01	0.0008	0.02	0.0005	0.01	0.0018	0.02
Thyroid	0.0001	0.00	0.0003	0.01	0.0006	0.01	0.0003	0.01	0.0013	0.01
Kidney	0.0001	0.00	0.0003	0.01	0.0006	0.01	0.0003	0.01	0.0013	0.01
Lung	0.0001	0.00	0.0003	0.01	0.0005	0.01	0.0003	0.01	0.0012	0.01
GI-LLI	0.0001	0.00	0.0003	0.01	0.0005	0.01	0.0008	0.02	0.0017	0.02

Gaseous Radwaste Effluents

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

Organ	Qtr 1	%	Qtr 2	%	Qtr 3	%	Qtr 4	%	Year	%
TBody	0.0063	0.08	0.0070	0.09	0.0051	0.07	0.0106	0.14	0.0290	0.19
Bone	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0001	0.00	0.0002	0.00
Liver	0.0063	0.08	0.0071	0.09	0.0051	0.07	0.0106	0.14	0.0291	0.19
Thyroid	0.0066	0.09	0.0184	0.25	0.0185	0.25	0.0555	0.74	0.0990	0.66
Kidney	0.0063	0.08	0.0071	0.09	0.0052	0.07	0.0107	0.14	0.0292	0.19
Lung	0.0063	0.08	0.0070	0.09	0.0051	0.07	0.0105	0.14	0.0289	0.19
GI-LLI	0.0063	0.08	0.0070	0.09	0.0051	0.07	0.0105	0.14	0.0289	0.19

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

Type	Qtr 1	%	Qtr 2	%	Qtr 3	%	Qtr 4	%	Year	%
Gamma	0.0000	0.00	0.0003	0.01	0.0007	0.01	0.0010	0.02	0.0021	0.02
Beta	0.0000	0.00	0.0006	0.01	0.0022	0.02	0.0031	0.03	0.0059	0.03

UNIT 2

Liquid Radwaste Effluents

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

Organ	Qtr 1	%	Qtr 2	%	Qtr 3	%	Qtr 4	%	Year	%
TBody	0.0008	0.05	0.0002	0.01	0.0002	0.01	0.0002	0.01	0.0013	0.04
Bone	0.0006	0.01	0.0005	0.01	0.0001	0.00	0.0000	0.00	0.0012	0.01
Liver	0.0011	0.02	0.0004	0.01	0.0002	0.00	0.0002	0.00	0.0020	0.02
Thyroid	0.0005	0.01	0.0001	0.00	0.0001	0.00	0.0002	0.00	0.0008	0.01
Kidney	0.0006	0.01	0.0001	0.00	0.0002	0.00	0.0002	0.00	0.0010	0.01
Lung	0.0006	0.01	0.0002	0.00	0.0002	0.00	0.0002	0.00	0.0011	0.01
GI-LLI	0.0007	0.01	0.0003	0.01	0.0002	0.00	0.0002	0.00	0.0014	0.01

Gaseous Radwaste Effluents

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

Organ	Qtr 1	%	Qtr 2	%	Qtr 3	%	Qtr 4	%	Year	%
Tbody	0.0033	0.04	0.0054	0.07	0.0070	0.09	0.0052	0.07	0.0208	0.14
Bone	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
Liver	0.0033	0.04	0.0054	0.07	0.0070	0.09	0.0052	0.07	0.0209	0.14
Thyroid	0.0060	0.08	0.0059	0.08	0.0070	0.09	0.0074	0.10	0.0263	0.18
Kidney	0.0033	0.04	0.0054	0.07	0.0070	0.09	0.0052	0.07	0.0209	0.14
Lung	0.0033	0.04	0.0054	0.07	0.0070	0.09	0.0052	0.07	0.0208	0.14
GI-LLI	0.0033	0.04	0.0054	0.07	0.0070	0.09	0.0052	0.07	0.0208	0.14

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

Type	Qtr 1	%	Qtr 2	%	Qtr 3	%	Qtr 4	%	Year	%
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

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

Gaseous Effluent	BONE	LIVER	TBODY	THYROID	KIDNEY	GI-LLI	LUNG	SKIN
Iodine/Tritium Particulate	4.00E-05	5.41E-03	5.41E-03	1.85E-02	5.46E-03	5.37E-03	5.37E-03	
Noble Gas			5.37E-04					1.27E-03
Liquid Effluent								
Fish	5.63E-04	1.83E-03	1.60E-03	1.27E-03	1.31E-03	1.15E-03	1.69E-03	
Sediment			3.89E-05					4.57E-05
Unit 1 Total	6.03E-04	7.24E-03	7.59E-03	1.98E-02	6.77E-03	6.52E-03	7.06E-03	1.32E-03

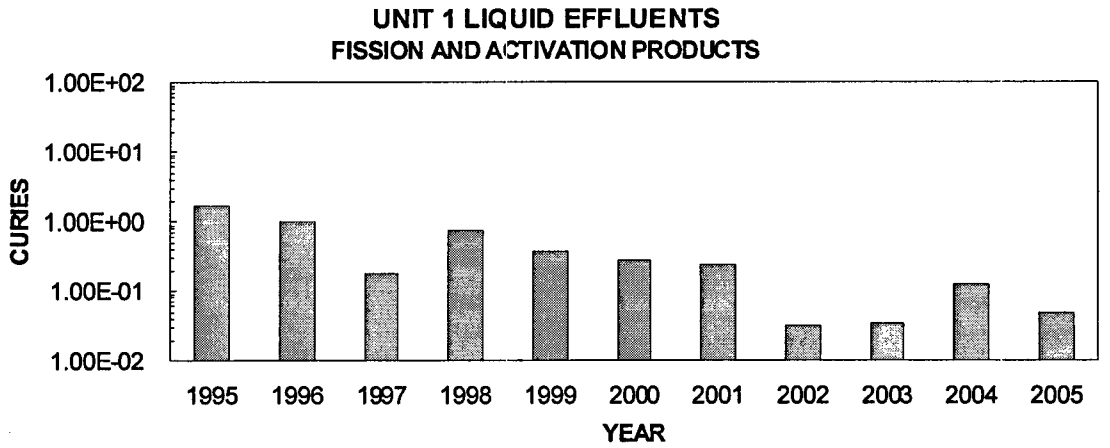
UNIT 2

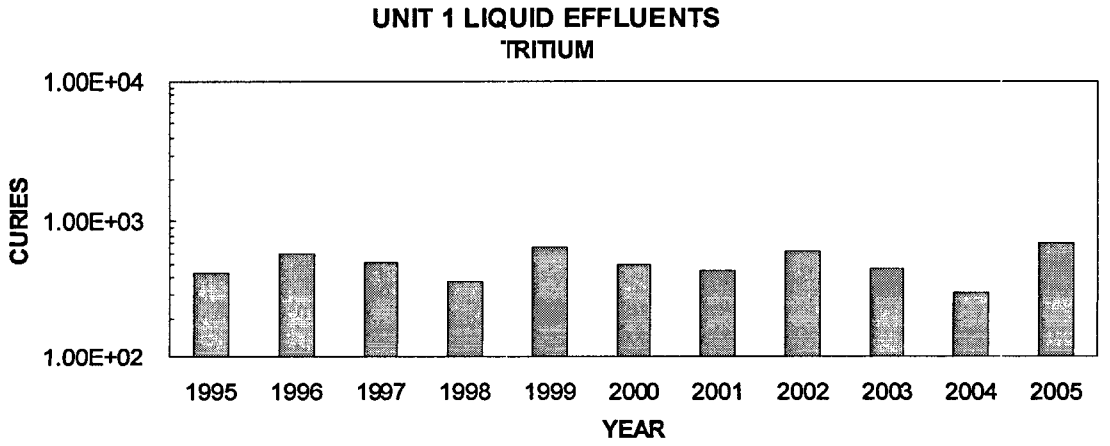
Gaseous Effluent								
Iodine/Tritium Particulate	3.08E-06	3.54E-03	3.54E-03	4.47E-03	3.55E-03	3.54E-03	3.54E-03	
Noble Gas			5.14E-07					4.38E-06
Liquid Effluent								
Fish	1.20E-03	1.95E-03	1.34E-03	8.21E-04	1.00E-03	1.12E-03	1.43E-03	
Sediment			2.43E-05					2.85E-05
Unit 2 Total	1.20E-03	5.49E-03	4.90E-03	5.29E-03	4.55E-03	4.66E-03	4.97E-03	3.29E-05

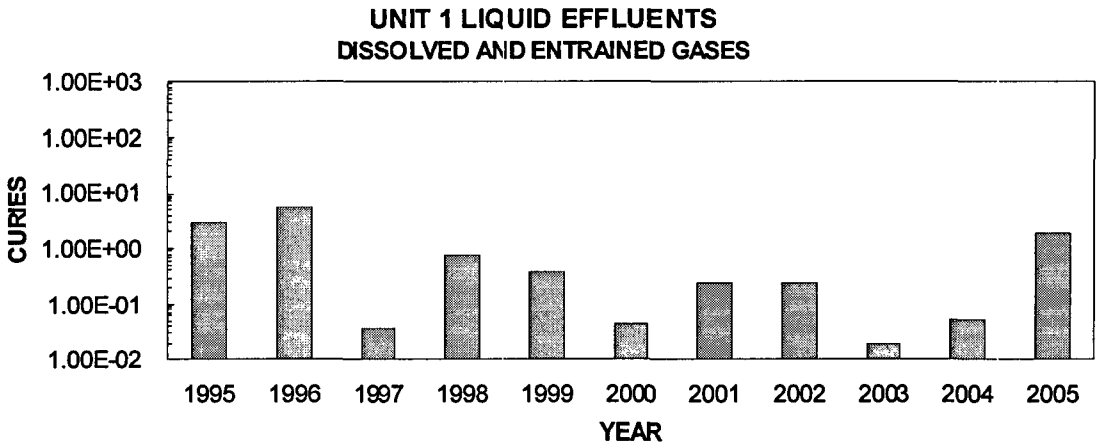
Site Total	1.80E-03	1.27E-02	1.25E-02	2.51E-02	1.13E-02	1.12E-02	1.20E-02	1.35E-03
Limit (40CFR190)	25	25	75	25	25	25	25	25
% Limit	7.20E-03	5.08E-02	1.67E-02	1.00E-01	4.52E-02	4.48E-02	4.80E-02	5.40E-03

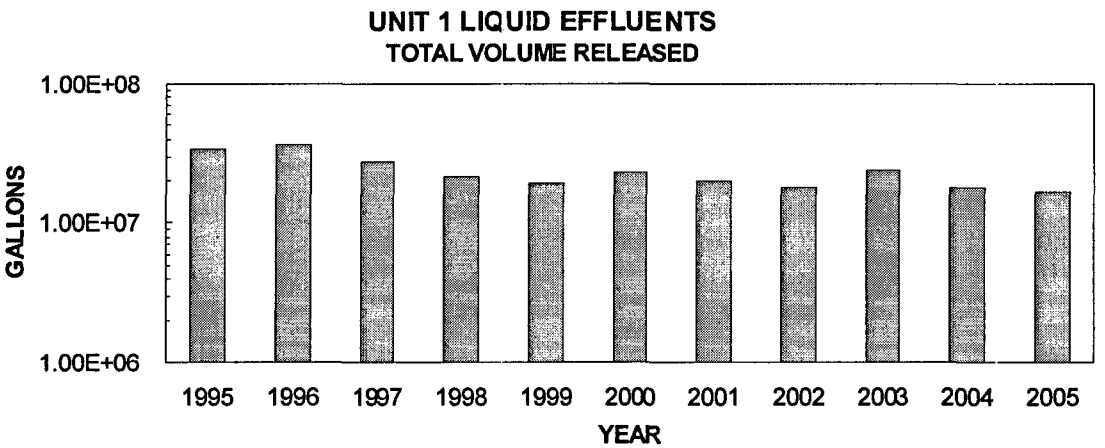
7. HISTORICAL EFFLUENT DATA

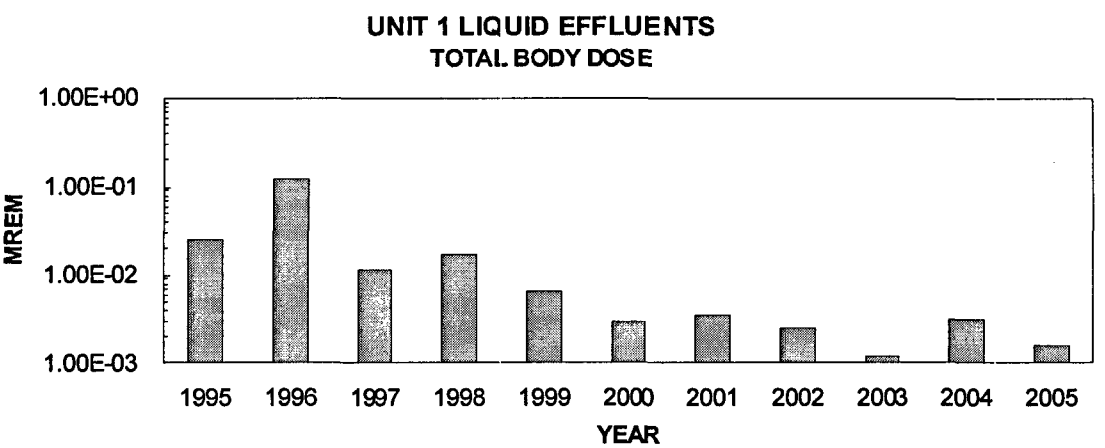
The following graphs show the historical release data for both units on a yearly basis. These graphs compare data from 1995 through 2005.

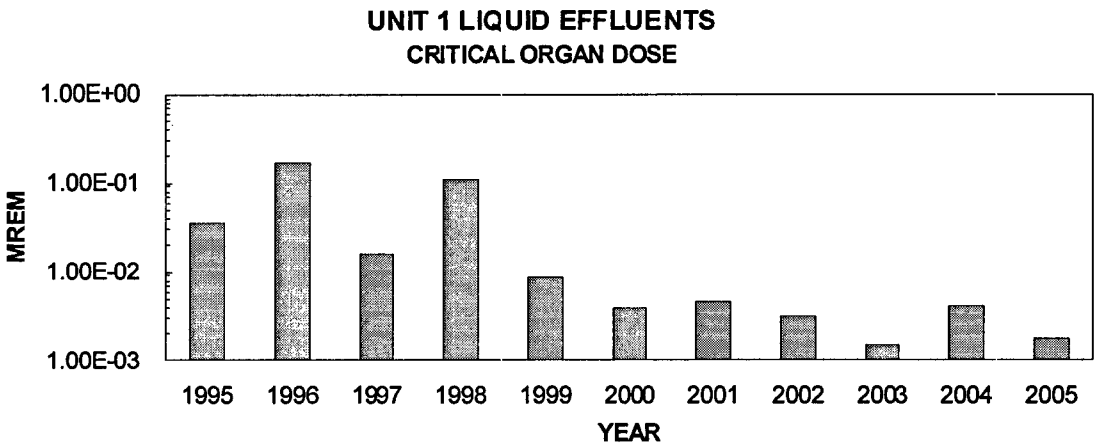


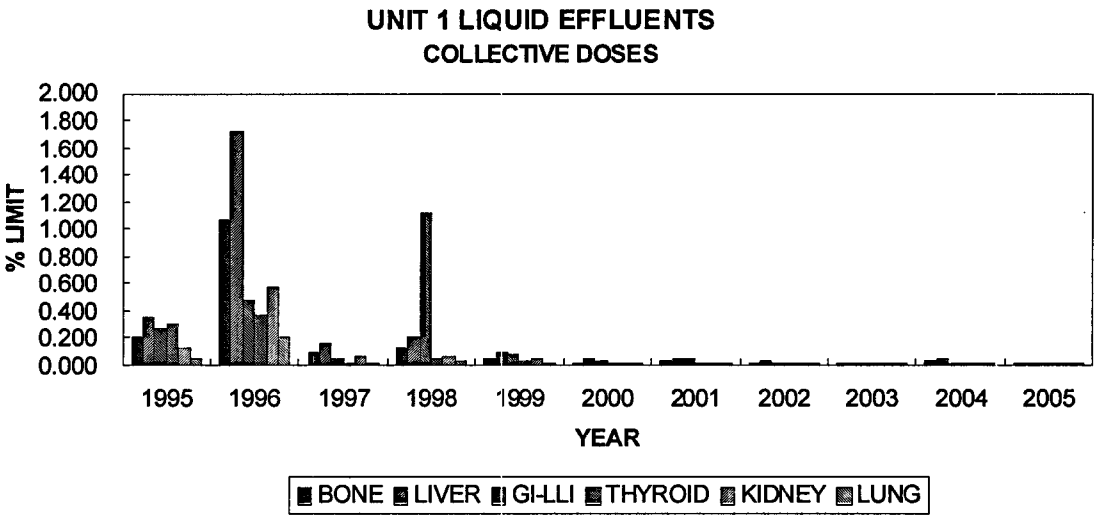


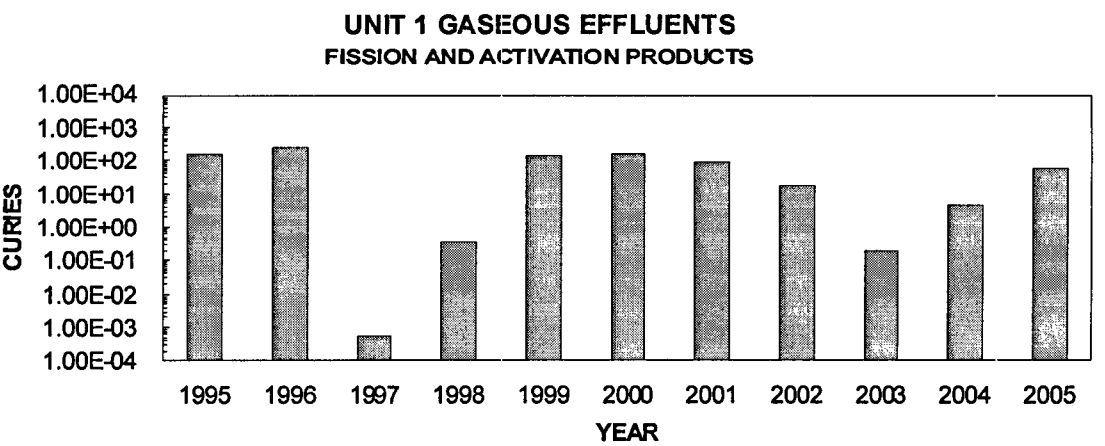

UNIT 1 LIQUID EFFLUENTS
DISSOLVED AND ENTRAINED GASES
CURIES
1.00E+03
1.00E+02
1.00E+01
1.00E+00
1.00E-01
1.00E-02
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

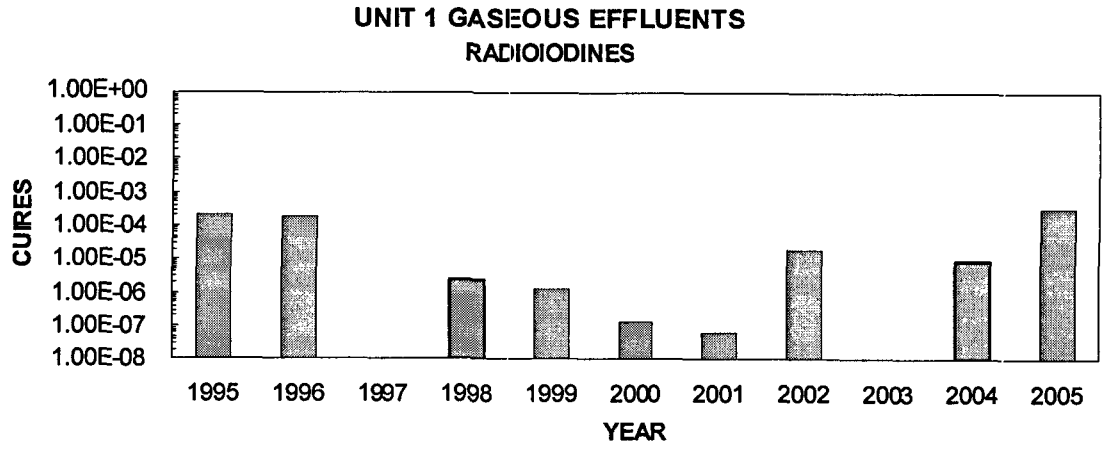

UNIT 1 LIQUID EFFLUENTS
TOTAL VOLUME RELEASED
GALLONS
1.00E+08
1.00E+07
1.00E+06
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

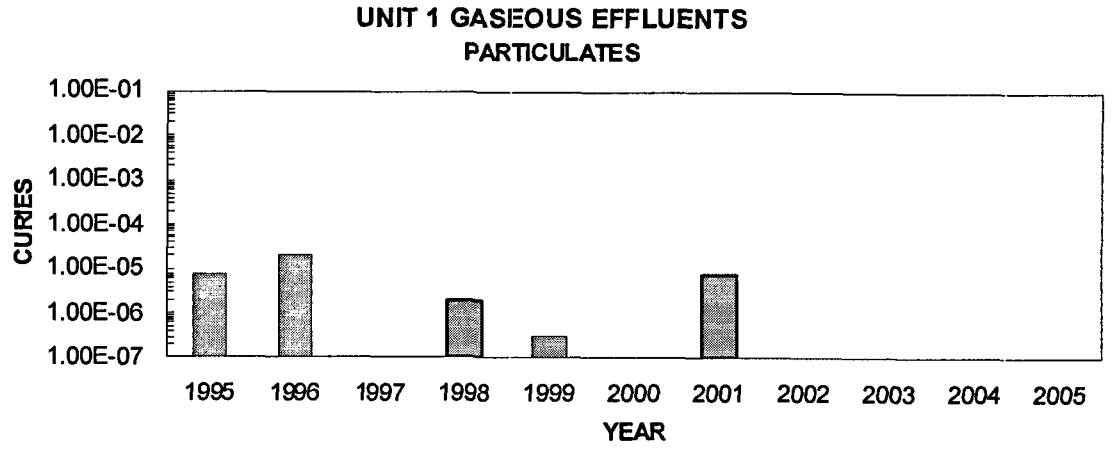

UNIT 1 LIQUID EFFLUENTS
TOTAL BODY DOSE
MREM
1.00E+00
1.00E-01
1.00E-02
1.00E-03
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

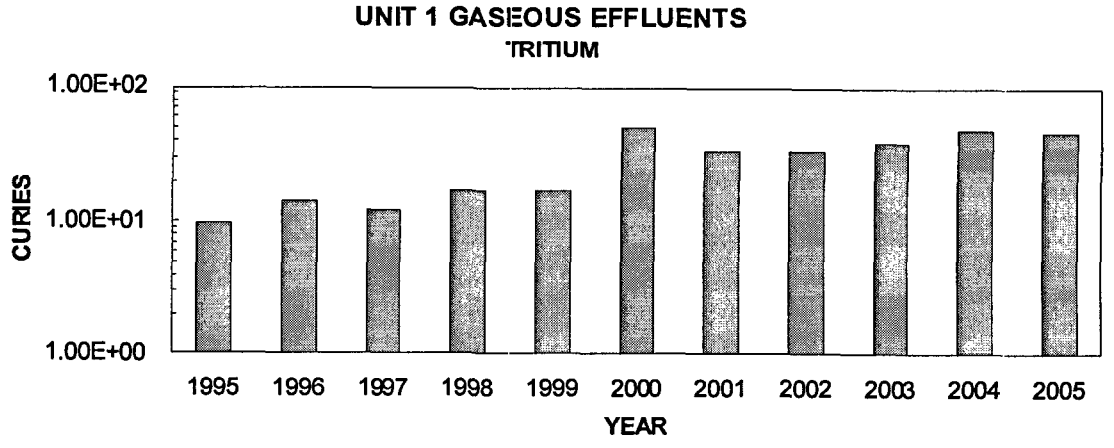

UNIT 1 LIQUID EFFLUENTS
CRITICAL ORGAN DOSE
1.00E+00
1.00E-01
1.00E-02
1.00E-03
MREM
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
YEAR

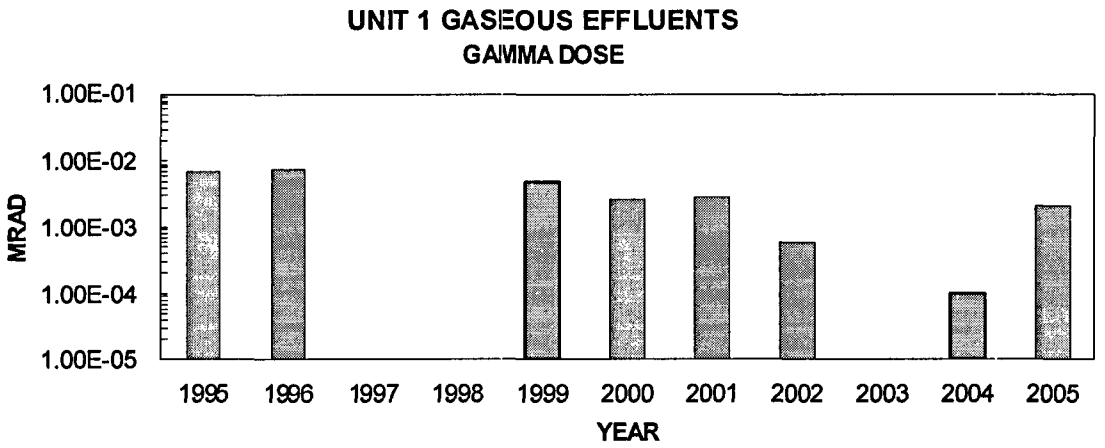

UNIT 1 LIQUID EFFLUENTS
COLLECTIVE DOSES
2.000
1.800
1.600
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
% LIMIT
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
YEAR
BONE
LIVER
GI-LLI
THYROID
KIDNEY
LUNG

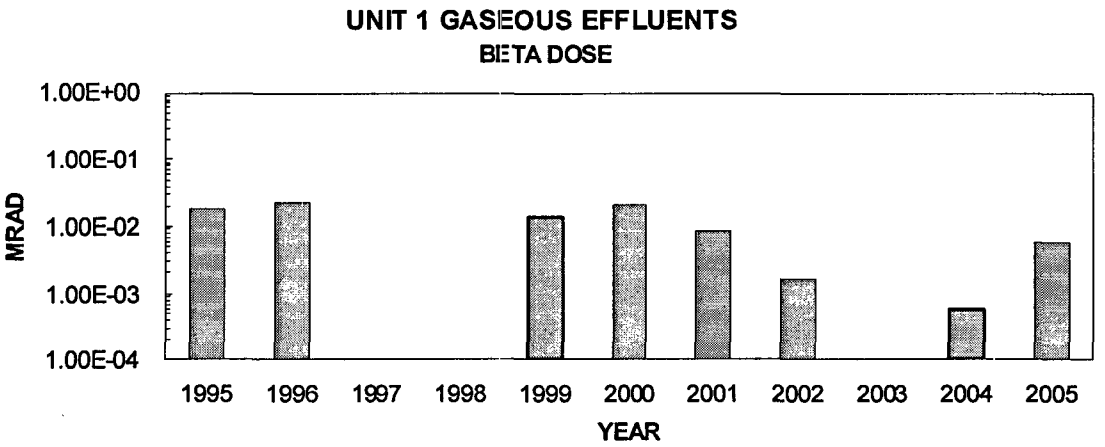

UNIT 1 GASEOUS EFFLUENTS
FISSION AND ACTIVATION PRODUCTS
1.00E+04
1.00E+03
1.00E+02
1.00E+01
1.00E+00
1.00E-01
1.00E-02
1.00E-03
1.00E-04
CURIES
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
YEAR

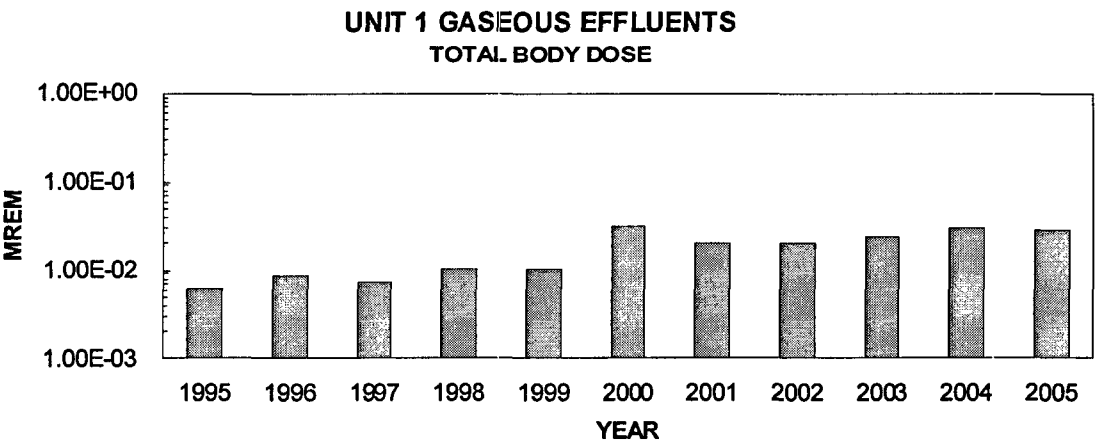

UNIT 1 GASEOUS EFFLUENTS
RADIOIODINES
CURIES
1.00E+00
1.00E-01
1.00E-02
1.00E-03
1.00E-04
1.00E-05
1.00E-06
1.00E-07
1.00E-08
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

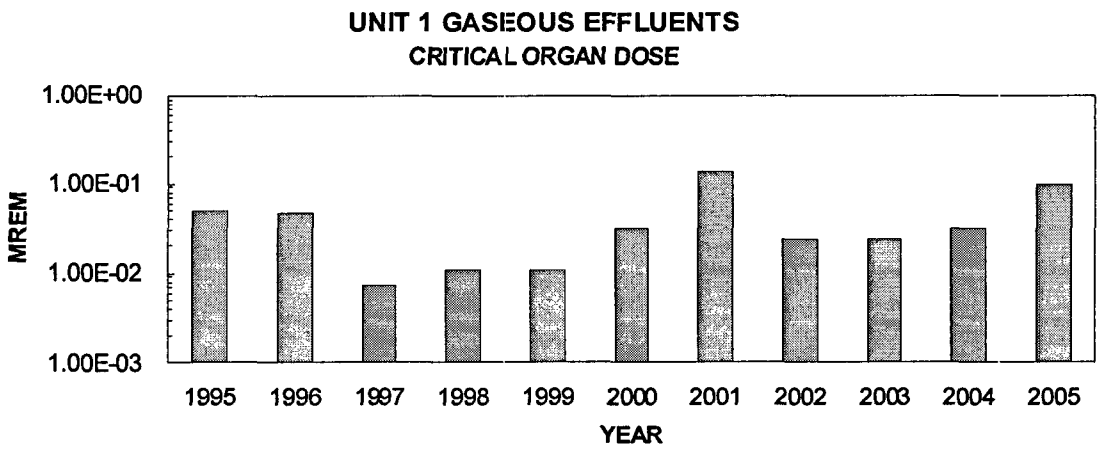

UNIT 1 GASEOUS EFFLUENTS
PARTICULATES
CURIES
1.00E-01
1.00E-02
1.00E-03
1.00E-04
1.00E-05
1.00E-06
1.00E-07
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

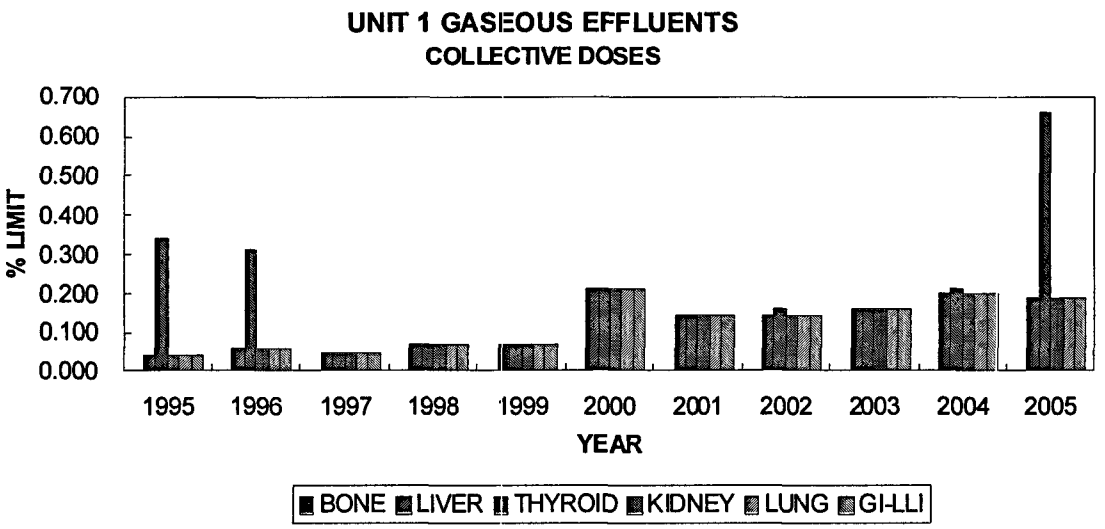

UNIT 1 GASEOUS EFFLUENTS
TRITIUM
CURIES
1.00E+02
1.00E+01
1.00E+00
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

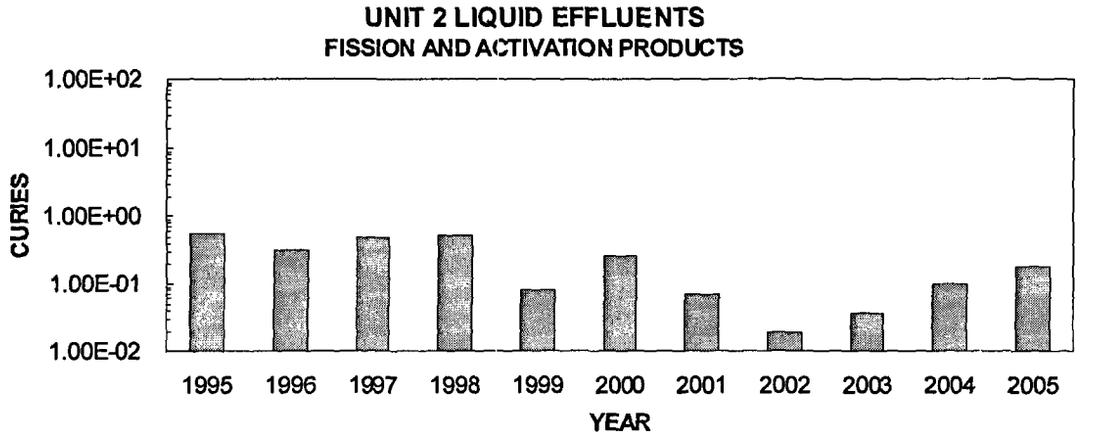

UNIT 1 GASEOUS EFFLUENTS
GAMMA DOSE
1.00E-01
1.00E-02
1.00E-03
1.00E-04
1.00E-05
MRAD
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

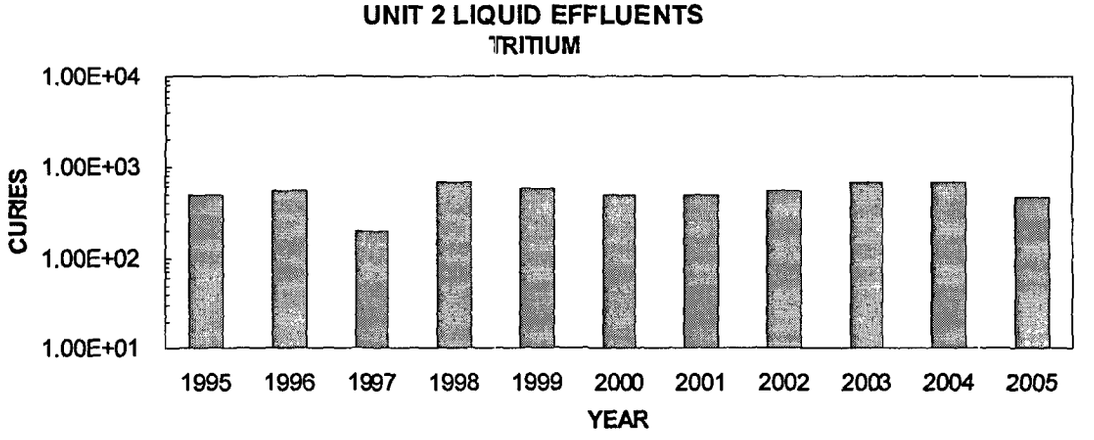

UNIT 1 GASEOUS EFFLUENTS
BETA DOSE
1.00E+00
1.00E-01
1.00E-02
1.00E-03
1.00E-04
MRAD
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

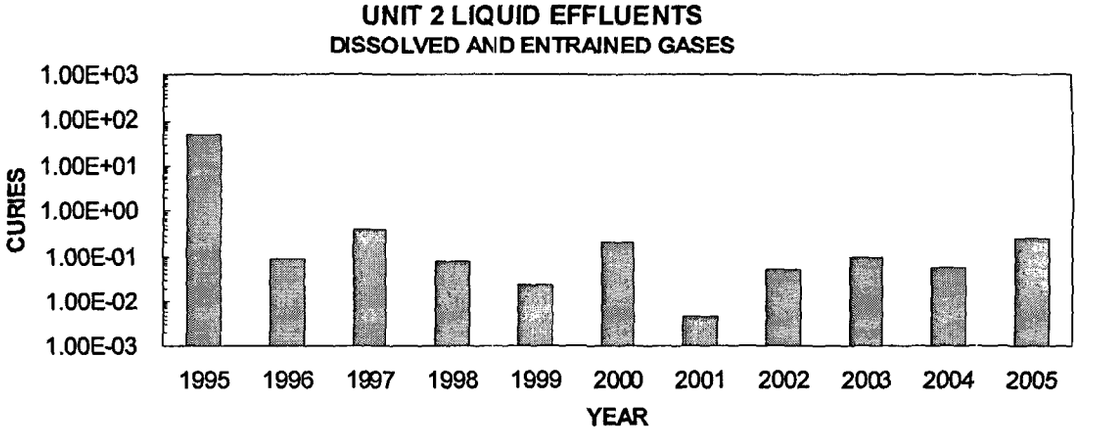

UNIT 1 GASEOUS EFFLUENTS
TOTAL BODY DOSE
1.00E+00
1.00E-01
1.00E-02
1.00E-03
MREM
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

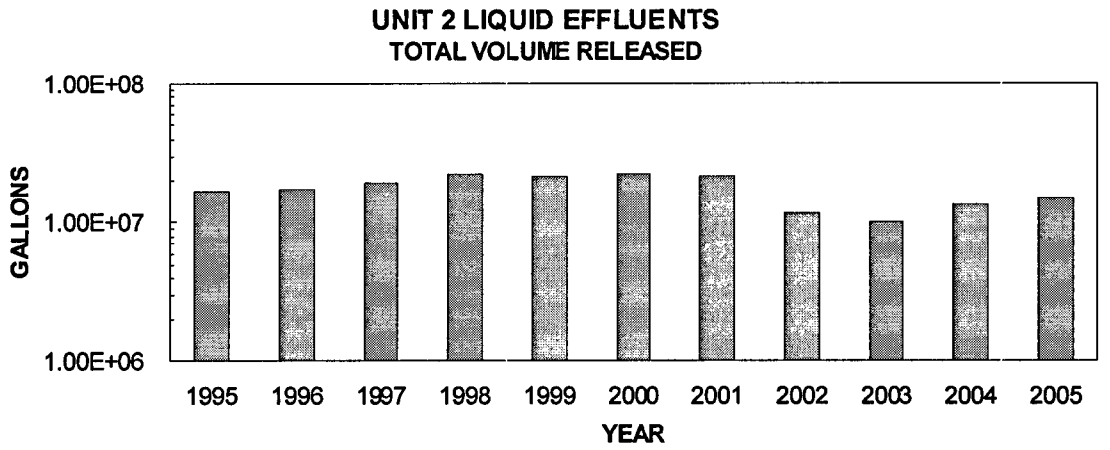

UNIT 1 GASEOUS EFFLUENTS
CRITICAL ORGAN DOSE
1.00E+00
1.00E-01
1.00E-02
1.00E-03
MREM
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
YEAR

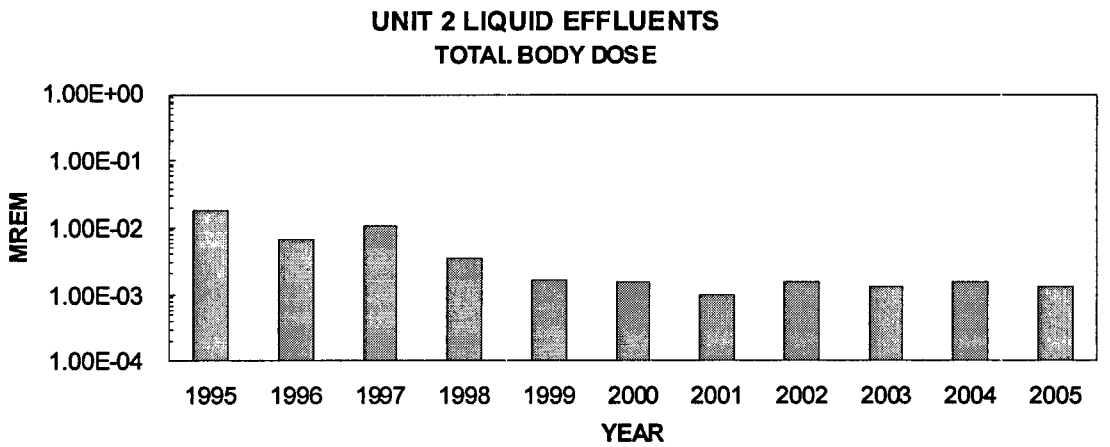

UNIT 1 GASEOUS EFFLUENTS
COLLECTIVE DOSES
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
% LIMIT
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
YEAR
BONE
LIVER
THYROID
KIDNEY
LUNG
GI-LLI

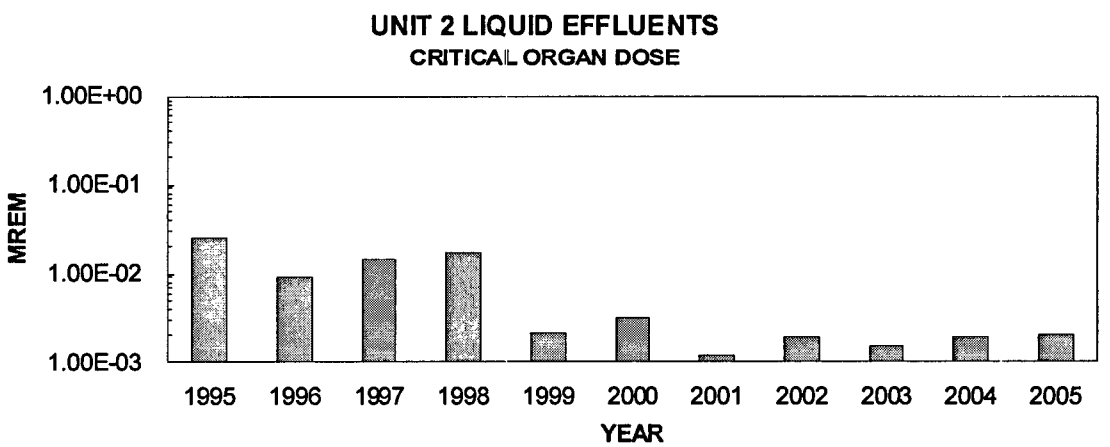

UNIT 2 LIQUID EFFLUENTS
FISSION AND ACTIVATION PRODUCTS
1.00E+02
1.00E+01
1.00E+00
1.00E-01
1.00E-02
CURIES
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

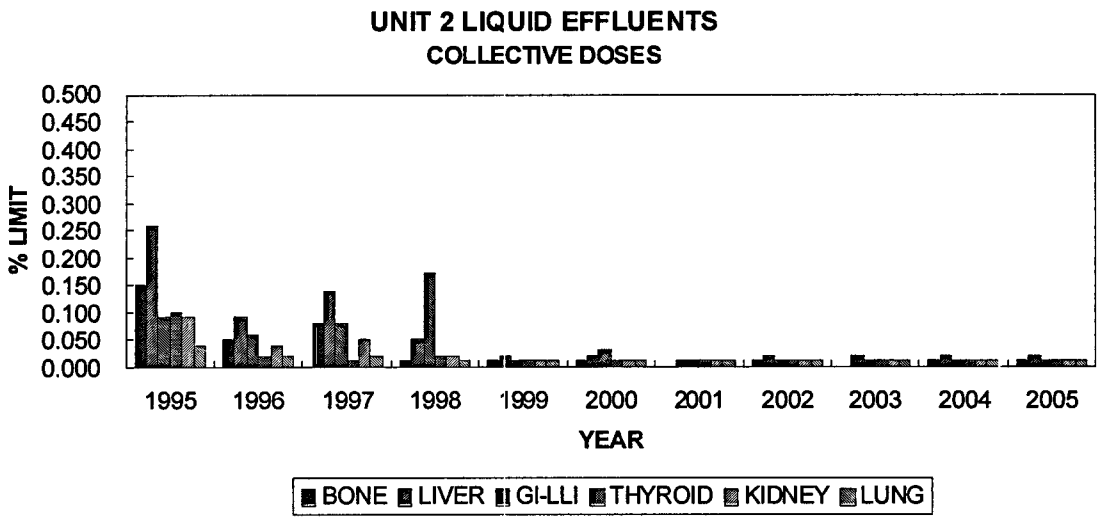

UNIT 2 LIQUID EFFLUENTS
TRITIUM
1.00E+04
1.00E+03
1.00E+02
1.00E+01
CURIES
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

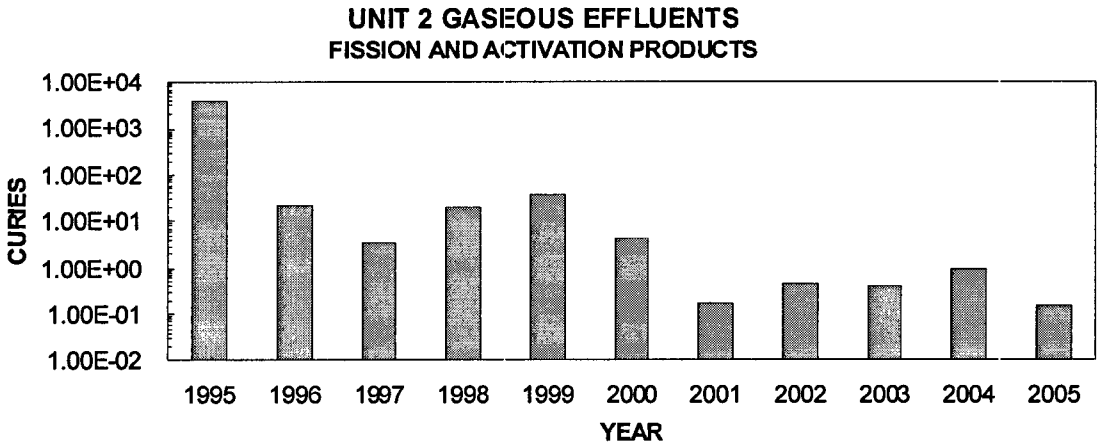

UNIT 2 LIQUID EFFLUENTS
DISSOLVED AND ENTRAINED GASES
1.00E+03
1.00E+02
1.00E+01
1.00E+00
1.00E-01
1.00E-02
1.00E-03
CURIES
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

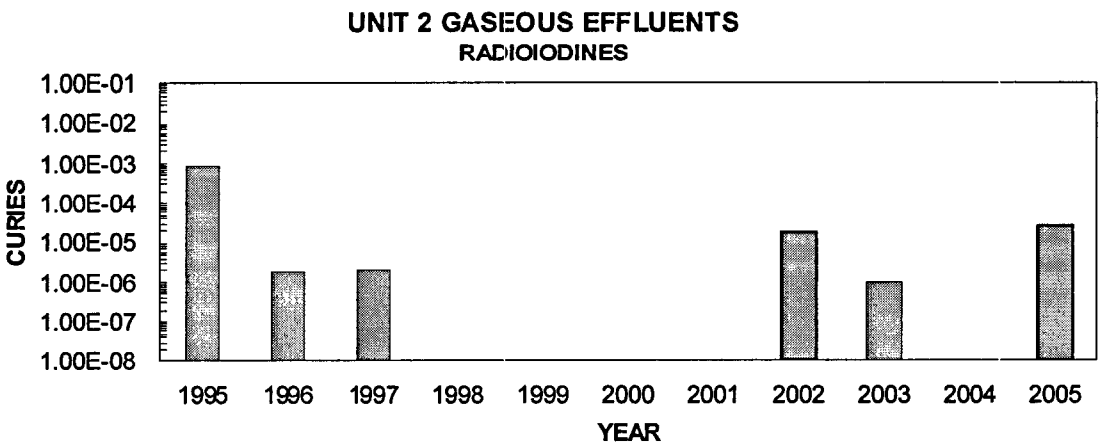

UNIT 2 LIQUID EFFLUENTS
TOTAL VOLUME RELEASED
1.00E+08
1.00E+07
1.00E+06
GALLONS
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
YEAR

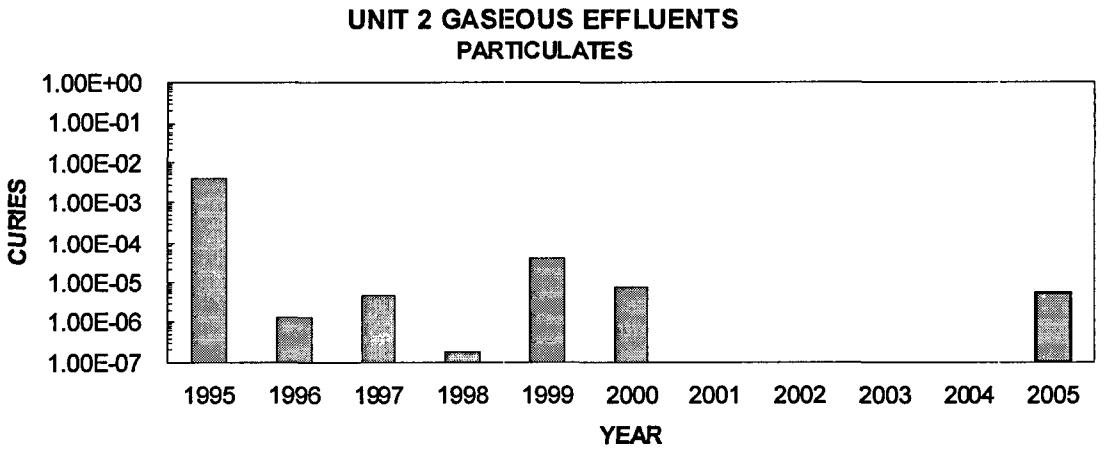

UNIT 2 LIQUID EFFLUENTS
TOTAL BODY DOSE
1.00E+00
1.00E-01
1.00E-02
1.00E-03
1.00E-04
MREM
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
YEAR

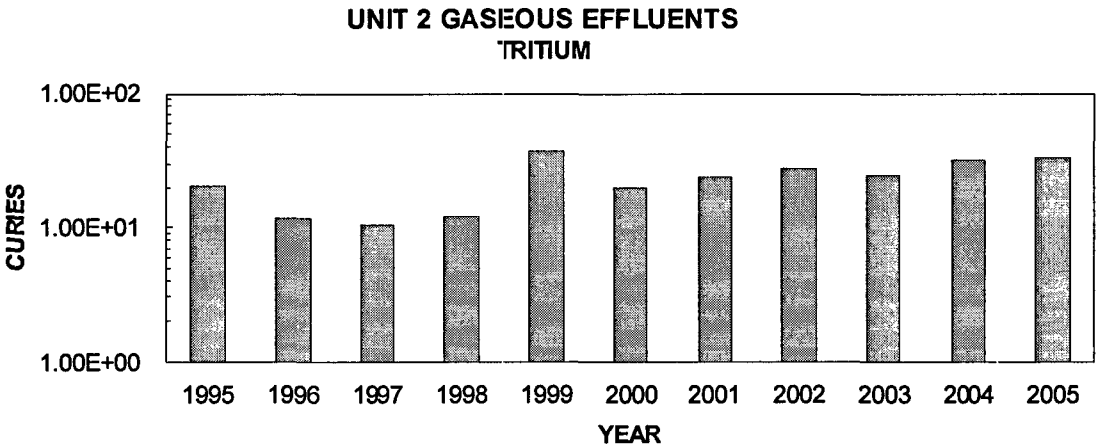

UNIT 2 LIQUID EFFLUENTS
CRITICAL ORGAN DOSE
1.00E+00
1.00E-01
1.00E-02
1.00E-03
MREM
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
YEAR

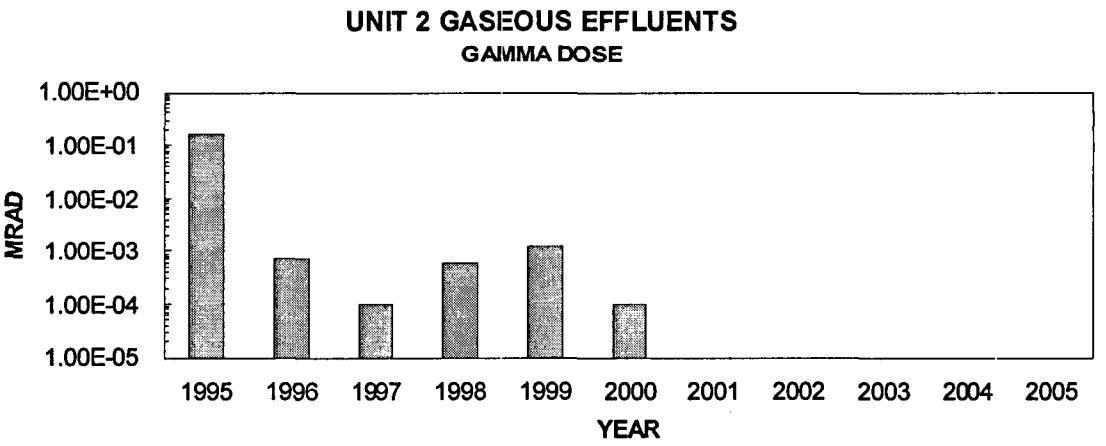

UNIT 2 LIQUID EFFLUENTS
COLLECTIVE DOSES
% LIMIT
0.500
0.450
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR
BONE LIVER GI-LLI THYROID KIDNEY LUNG

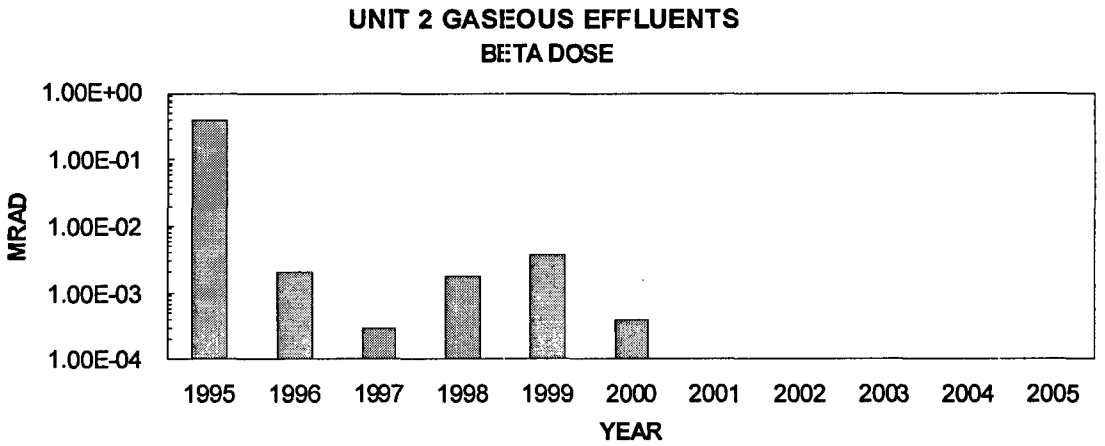

UNIT 2 GASEOUS EFFLUENTS
FISSION AND ACTIVATION PRODUCTS
CURIES
1.00E+04
1.00E+03
1.00E+02
1.00E+01
1.00E+00
1.00E-01
1.00E-02
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

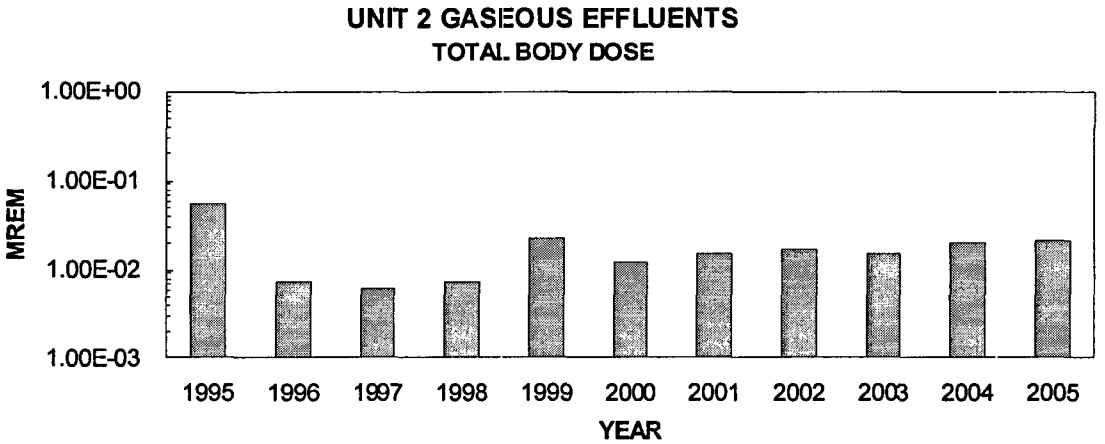

UNIT 2 GASEOUS EFFLUENTS
RADIOIODINES
CURIES
1.00E-01
1.00E-02
1.00E-03
1.00E-04
1.00E-05
1.00E-06
1.00E-07
1.00E-08
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

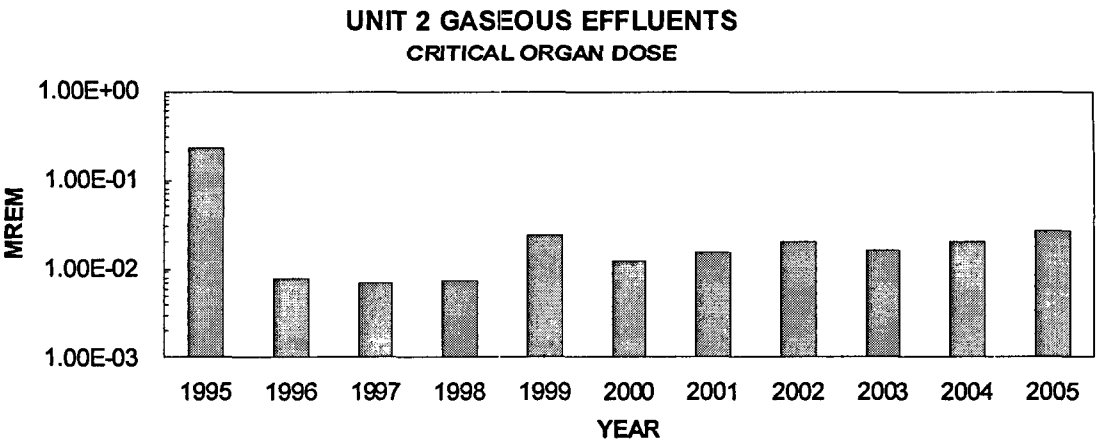

UNIT 2 GASEOUS EFFLUENTS
PARTICULATES
1.00E+00
1.00E-01
1.00E-02
1.00E-03
1.00E-04
1.00E-05
1.00E-06
1.00E-07
CURIES
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR

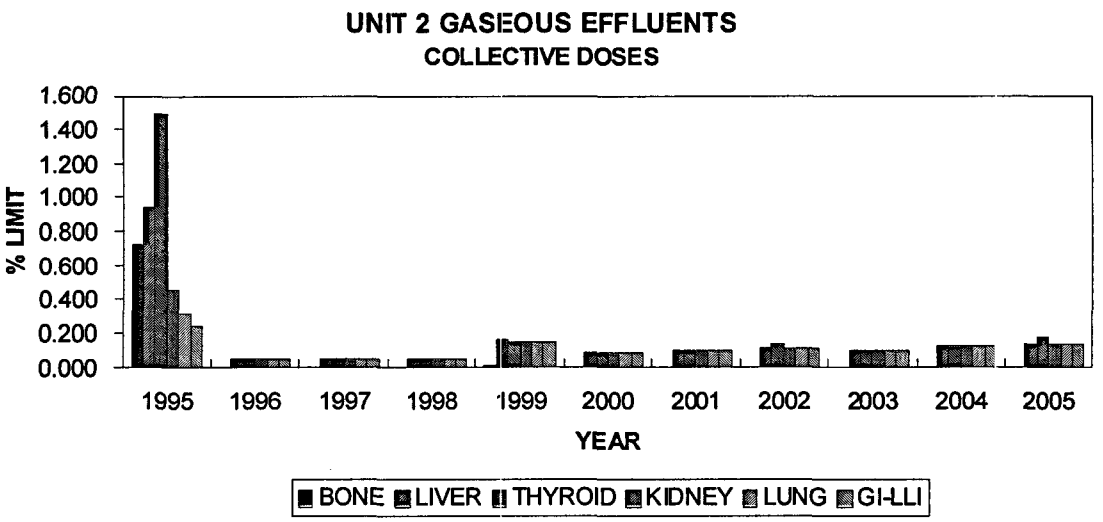

UNIT 2 GASEOUS EFFLUENTS
TRITIUM
1.00E+02
1.00E+01
1.00E+00
CURIES
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR


UNIT 2 GASEOUS EFFLUENTS
GAMMA DOSE
1.00E+00
1.00E-01
1.00E-02
1.00E-03
1.00E-04
1.00E-05
MRAD
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR


UNIT 2 GASEOUS EFFLUENTS
BETA DOSE
1.00E+00
1.00E-01
1.00E-02
1.00E-03
1.00E-04
MRAD
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR


UNIT 2 GASEOUS EFFLUENTS
TOTAL BODY DOSE
1.00E+00
1.00E-01
1.00E-02
1.00E-03
MREM
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR


UNIT 2 GASEOUS EFFLUENTS
CRITICAL ORGAN DOSE
1.00E+00
1.00E-01
1.00E-02
1.00E-03
MREM
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
YEAR


UNIT 2 GASEOUS EFFLUENTS
COLLECTIVE DOSES
% LIMIT
1.600
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
YEAR
BONE
LIVER
THYROID
KIDNEY
LUNG
GI-LLI

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, 2005. 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, 2005 THROUGH JUNE 30, 2005

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	6.02E+01	
	Ci	9.38E+01	±2.5E+01
b. Dry compressible waste, contaminated equip, etc.	m^3	5.82E+02	
	Ci	1.56E+00	±2.5E+01
c. Irradiated components, control rods, etc.	m^3	0.00E+00	
	Ci	0.00E+00	±2.5E+01
d. Other (describe):	m^3	0.00E+00	
	Ci	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
H-3	0.211	1.98E-01
Be-7	0.269	2.52E-01
K-40	0.000	3.24E-06
Mn-54	2.976	2.79E+00
Fe-55	8.339	7.82E+00
Fe-59	0.004	4.01E-03
Co-57	1.029	9.65E-01
Co-58	35.572	3.34E+01
Co-60	5.073	4.76E+00
Ni-63	38.896	3.65E+01
Zn-65	0.024	2.23E-02
Sr-90	0.046	4.34E-02
Sb-125	0.620	5.82E-01
Cs-134	2.546	2.39E+00
Cs-137	4.338	4.07E+00
Ce-144	0.053	4.95E-02
Pu-238	0.000	1.61E-04
Pu-239	0.000	6.78E-05
Pu-240	0.000	6.78E-05
Pu-241	0.003	2.48E-03
Am-241	0.000	2.85E-04
Cm-242	0.000	2.50E-05
Cm-243	0.000	2.77E-04
Cm-244	0.000	2.76E-04

b. Dry compressible waste, contaminated equipment, etc.

	%	Curies
Cr-51	0.000	2.11E-10
Mn-54	0.293	4.57E-03
Fe-55	22.483	3.51E-01
Fe-59	0.000	1.44E-08
Co-57	0.004	6.09E-05
Co-58	2.447	3.82E-02
Co-60	9.553	1.49E-01
Ni-59	3.896	6.08E-02
Ni-63	37.021	5.78E-01
Sr-90	0.005	7.13E-05
Zr-95	0.000	2.50E-06
Nb-95	0.157	2.45E-03
Ag-110m	0.008	1.31E-04
Sn-113	0.000	5.64E-06
Cs-134	1.950	3.04E-02
Cs-137	22.185	3.46E-01

c. Irradiated components, control rods, etc.

	%	Curies
None		

d. Other (describe):

	%	Curies
None		

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
5	Hittman Transport	Bear Creek Operations
1	Kindrick Trucking Co.	Duratek/Chem-Nuclear Systems LLC
1	Hittman Transport	Gallaher Road Operations
4	RACE Logistics, LLC	RACE, LLC
1	Hittman Transport	Studsvik Processing Facility
3	RSB Logistic Inc.	Studsvik Processing Facility

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, 2005 THROUGH DECEMBER 31, 2005

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	3.74E+00	
	Ci	1.61E+01	±2.5E+01
b. Dry compressible waste, contaminated equip, etc.	m^3	1.50E+03	
	Ci	1.46E+00	±2.5E+01
c. Irradiated components, control rods, etc.	m^3	0.00E+00	
	Ci	0.00E+00	±2.5E+01
d. Other (describe): Oil in SV.	m^3	7.25E+01	
	Ci	3.55E-01	±2.5E+01

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

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

	%	Curies
H-3	0.713	1.15E-01
Mn-54	0.328	5.29E-02
Fe-55	11.039	1.78E+00
Co-57	0.217	3.50E-02
Co-58	0.125	2.01E-02
Co-60	5.606	9.04E-01
Ni-63	43.429	7.00E+00
Sr-90	0.084	1.36E-02
Nb-95	0.000	5.31E-05
Sb-125	0.394	6.34E-02
Cs-134	7.994	1.29E+00
Cs-137	29.754	4.80E+00
Ce-144	0.305	4.92E-02
Pu-238	0.000	6.47E-05
Pu-239	0.000	2.46E-05
Pu-241	0.010	1.68E-03
Am-241	0.000	5.05E-05
Cm-242	0.000	1.92E-05
Cm-243	0.000	7.20E-05

b. Dry compressible waste, contaminated equipment, etc.

	%	Curies
Cr-51	1.759	2.57E-02
Mn-54	1.391	2.03E-02
Fe-55	27.121	3.97E-01
Co-57	0.290	4.24E-03
Co-58	34.297	5.01E-01
Co-60	6.571	9.61E-02
Ni-63	13.622	1.99E-01
Zr-95	2.335	3.41E-02
Nb-95	4.165	6.09E-02
Cs-134	1.109	1.62E-02
Cs-137	7.340	1.07E-01

c. Irradiated components, control rods, etc.

	%	Curies
None		

d. Other: Oil in SV.

	%	Curies
Co-60	3.690	1.31E-02
Cs-137	96.310	3.42E-01

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
25	Hittman Transport	Bear Creek Operations
2	Hittman Transport	Gallaher Road Operations
2	Hittman Transport	RACE, LLC
1	Hittman Transport	Studsvik Processing Facility

B. Irradiated Fuel Shipments (Disposition)

Number of Shipments	Mode of Transportation	Destination
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 2005, 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.

During 2005, there were two instances of radioactive effluent instrumentation inoperable for longer than 30 days. They were as follows:

SPING 1 (RX-9820 - Unit 1 Containment Purge Vent SPING) was declared inoperable on 10/18/05 at 0458 hrs as a result of RDACS receiving a High Fail alarm on Channel 9 (High Range Noble Gas Channel. Condition Report CR-ANO-1-2005-1815 and Work Request (WR) # 62588 were issued to document and repair the SPING. Maintenance was completed on SPING 1 on 10/31/05. However, during this same time, a temporary alteration (included in ER-ANO-2002-1078-018 "ANO-1 SG/RVCH Replacement - Interference Removal and Replacement") to the Containment Vent Duct began which also rendered SPING 1 inoperable. The SPING was declared inoperable due to the temporary relocation of the vent duct and sample tubing. The temporary relocation was needed to remove interferences associated with the SG/RVCH replacement project and to accommodate 1R19 containment building tendon work. These interferences were located in direct proximity to the OTSGs, the transport path associated with the removal and replacement of the OTSGs, and the external Reactor Building area where equipment worked to remove, reinstall and re-tension the tendons previously removed. The 30 day time clock expired on 11/17/05 at 0458 hrs. SPING 1 was returned to operable status on 12/1/05 at 0745 hrs following the completion of the SG/RVCH replacement and re-installation of the sample tubing.

SPING 4 (RX-9835 – Emergency Penetration Room Vent SPING) was declared inoperable on 11/29/05 at 1230 hrs due to the temporary alteration included in ER ANO-2002-1078-018 "ANO-1 SG/RVCH Replacement - Interference Removal and Replacement". The SPING was declared inoperable due to the temporary relocation of the vent duct and sample tubing. The temporary relocation actually initiated on 10/24/05 at 0252 hrs, however, the SPING was not declared inoperable since the ventilation was secured and the automatic actuate capability had been removed during that time. The 30 day time clock initiated when the automatic actuate function was restored to the ventilation (11/29/05 at 1230 hrs). The temporary relocation was needed to remove interferences associated with the SG/RVCH replacement project and to accommodate 1R19 containment building tendon work. These interferences were located in direct proximity to the OTSGs, the transport path associated with the removal and replacement of the OTSGs, and the external Reactor Building area where equipment

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 2005, 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.

During 2005, there were two instances of radioactive effluent instrumentation inoperable for longer than 30 days. They were as follows:

SPING 1 (RX-9820 - Unit 1 Containment Purge Vent Super Particulate Iodine Noble Gas monitor) was declared inoperable on 10/18/05 at 0458 hrs as a result of RDACS (Radiological Dose Assessment Computer System) receiving a High Fail alarm on Channel 9 (High Range Noble Gas Channel. Condition Report CR-ANO-1-2005-1815 and Work Request (WR) # 62588 were issued to document and repair the SPING. Maintenance was completed on SPING 1 on 10/31/05. However, during this same time, a temporary alteration (included in ER-ANO-2002-1078-018 "ANO-1 SG/RVCH Replacement - Interference Removal and Replacement") to the Reactor Building vent duct began which also rendered SPING 1 inoperable. The SPING was declared inoperable due to the temporary relocation of the vent duct and sample tubing. The temporary relocation was needed to remove interferences associated with the Steam Generator/Reactor Vessel Closure Head (SG/RVCH) replacement project and to accommodate 1R19 containment building tendon work. These interferences were located in direct proximity to the OTSGs, the transport path associated with the removal and replacement of the OTSGs, and the external Reactor Building area where equipment worked to remove, reinstall and re-tension the Reactor Building tendons. The 30 day time clock expired on 11/17/05 at 0458 hrs. SPING 1 was returned to operable status on 12/1/05 at 0745 hrs following the completion of the SG/RVCH replacement and re-installation of the vent duct and sample tubing.

SPING 4 (RX-9835 – Emergency Penetration Room Vent SPING) was declared inoperable on 11/29/05 at 1230 hrs due to the temporary alteration included in ER ANO-2002-1078-018 "ANO-1 SG/RVCH Replacement - Interference Removal and Replacement". The SPING was declared inoperable due to the temporary relocation of the vent duct and sample tubing. The temporary relocation actually initiated on 10/24/05 at 0252 hrs; however, the SPING was not declared inoperable at that time since the ventilation pathway was secured, thereby preventing the possibility of an unmonitored release, and the automatic actuate capability had been removed. The 30 day time clock was entered when the automatic actuate function was restored to the ventilation pathway (11/29/05 at 1230 hrs). The temporary relocation was needed to remove interferences associated with the SG/RVCH replacement project and to accommodate 1R19 containment building tendon work. These interferences were located in direct proximity to the OTSGs, the transport path associated with the removal and replacement of the OTSGs, and the external Reactor Building area where equipment worked

to remove, reinstall and re-tension the Reactor Building tendons. Re-installation of the vent duct and sample tubing and completion of I&C maintenance activities occurred on 12/17/05. While returning SPING 4 to operable status, it was discovered that Channel 10 (Vent Stack Flow) was indicating an erroneous flow (~3000 cfm) with the ventilation secured. Condition Report CR-ANO-1-2005-02942 and Work Request (WR) # 66685 were initiated to document and repair the condition. The 30 day time clock expired on 12/29/05 at 1230 hrs. SPING 4 repairs were successfully completed and the SPING was returned to operable status on 1/13/06 at 1320 hrs. From 11/29/05 to 1/13/06, the Emergency Penetration Room ventilation was only in service for a very short period of time (< 12 hours).

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 (ENS-RW-105) shall be included in the annual Radioactive Effluent Release Report for the period in which the change was made effective.

There were no changes made to the Process Control Program during 2005.

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 made to the ODCM during 2005.

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 2005, 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 2005, 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 2005 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 2005 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 2005.

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

No effluent releases occurred from the ISFSI during 2005.

Attachment 2
to 0CAN020605

Offsite Dose Calculation Manual