

Commonwealth Edison Company  
Byron Generating Station  
4450 North German Church Road  
Byron, IL 61010-9794  
Tel 815-234-5441



April 26, 2000

LTR: BYRON 00-0049  
FILE: 2.12.1522

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


Byron Station, Units 1 and 2  
Facility Operating License Nos. NPF-37 and NPF-66  
NRC Docket Nos. STN 50-454 and STN 50-455

SUBJECT: 1999 Annual Radioactive Effluent Release Report

Enclosed is the Annual Radioactive Effluent Release Report for Byron Station. This report is being submitted in accordance with 10CFR50.36a and includes a summary of radiological liquid and gaseous effluents and solid waste released from the site from January 1999 through December 1999.

If you have any questions regarding this information, please contact Mr. B. J. Adams, Regulatory Assurance Manager, at 815-234-5441, extension 2280.

Respectfully,

  
William Levis  
Site Vice President  
Byron Station

WL/SDR/as

Attachment

cc: Regional Administrator – NRC Region III  
NRC Senior Resident Inspector – Byron Station

*JEHB*

BYRON NUCLEAR POWER STATION  
UNIT 1/2 DOCKET NUMBER STN-50-454/455  
RADIOACTIVE EFFLUENT RELEASE REPORT  
January, 1999 THROUGH December, 1999  
Supplemental Information

1. Regulatory Limits

a. Fission and activation gases:

Tech Spec Whole Body = 500 mrem/year  
Skin = 3000 mrem/year

10CFR50 Gamma = 5 mrad/quarter; 10 mrad/year  
Beta = 10 mrad/quarter; 20 mrad/year

b. Iodine: (summed with particulate, see below)

c. Particulates with half-lives > 8 days:

Tech Spec Organ = 1500 mrem/year

10CFR50 Organ = 7.5 mrem/quarter; 15 mrem/year

d. Liquid Effluents:

10CFR50 Whole Body = 1.5 mrem/quarter; 3 mrem/year

Organ = 5 mrem/quarter; 10 mrem/year

e. Total Effective Dose Equivalent:

10CFR20 TEDE = 100 mrem/year

2. Maximum Permissible Concentration

a. Fission and Activation Gases: 10CFR20 Appendix B Table 2

b. Iodine: 10CFR20 Appendix B Table 2

c. Particulates: 10CFR20 Appendix B Table 2

d. Liquid Effluents: 10 X 10CFR20 Appendix B Table 2

3. Average Energy: This item is not applicable. Release rates are calculated using an isotopic mix rather than average energy.

4. Measurements and Approximations of Total Radioactivity

a. Fission and Activation Gases: Prior to release, the isotopic content is determined. Released activity is calculated using volume of release, which is determined by the change in tank or containment pressure. Additional methods of calculation utilize historical data and assign an isotopic mix which is representative of normal vent stack isotopics.

b. Particulate, Tritium and Iodine sampling media for the plant vent stacks are collected and isotopically analyzed weekly for the plant vent stacks.

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- c. Liquid effluents: Batch releases are isotopically analyzed prior to release. Total release activity is calculated using volume of release. Total tritium activity released is calculated from the highest of a monthly circulating water blowdown composite activity or a sum of the input composite activities.
  - d. Analysis results which are less than the lower limit of detection (<LLD) are reported in units of Ci/ml unless otherwise noted. All LLD values are listed in Attachment A.
5. Batch Releases:
- a. Liquid:
    - 1. Number of batch releases = 180
    - 2. Total time period for batch releases = 15,853 minutes
    - 3. Maximum time period for a batch release = 317 minutes
    - 4. Average time period for a batch release = 88 minutes
    - 5. Minimum time period for a batch release = 51 minutes
    - 6. Average stream flow during periods of release of effluent into a flowing stream = 251 m<sup>3</sup>/sec, based on information from the National Weather Service or Army Corps of Engineers for the Rock River.
  - b. Gaseous:
    - 1. Number of batch releases = 283
    - 2. Total time period for batch releases = 73,352 minutes
    - 3. Maximum time period for a batch release = 16,018 minutes
    - 4. Average time period for batch releases = 259 minutes
    - 5. Minimum time period for a batch release = 5 minutes
6. Abnormal Releases:
- a. Liquid - None
  - b. Gaseous – Unit 1 B Power Operated Atmospheric Release Valve Steam Leak Release Data is listed in Attachment B. Dose attributed to these releases is included in dose calculations.
  - c. Gaseous - Unit 1 Refuel Outage Number 9 ground level release data is listed in Attachment C. Dose attributed to these releases is included in dose calculations.
  - d. Gaseous – Unit 2 Refuel Outage Number 8 Ground Level Release Data is listed in Attachment D. Dose attributed to these releases is included in dose calculations.

BYRON NUCLEAR POWER STATION  
UNIT 1 DOCKET NUMBER STN-50-454  
RADIOACTIVE EFFLUENT RELEASE REPORT  
JANUARY, 1999 THROUGH DECEMBER, 1999

**GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES**

UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
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**A. FISSION AND ACTIVATION GAS RELEASES**

1. Total Release Activity:	Ci	1.65E-01	1.02E-01	6.59E-02	1.66E-01
2. Maximum Release Rate for Quarter:	uCi/sec	9.80E+00	7.33E+00	1.19E+00	1.85E+00
3. % of Imp. Tech. Spec. Limits:*					
a. Whole Body (500 mrem/yr):	%	0.00	0.00	0.00	0.00
b. Skin (3000 mrem/yr):	%	0.00	0.00	0.00	0.00
4. % of 10CFR50 Limits					
a. Gamma Quarterly (5 mrad):	%	0.00	0.00	0.00	0.00
b. Beta Quarterly (10 mrad):	%	0.00	0.00	0.00	0.00
c. Gamma Annual (10 mrad):	%	0.00	0.00	0.00	0.00
d. Beta Annual (20 mrad):	%	0.00	0.00	0.00	0.00

**B. IODINE RELEASES \*\***

1. Total I-131 Activity:	Ci	< LLD	< LLD	< LLD	2.14E-06
2. Average I-131 Release Rate:	uCi/sec	0.00E+00	0.00E+00	0.00E+00	2.69E-07

**C. PARTICULATE (>8 day half-life) RELEASES \*\***

1. Total Particulate Activity:	Ci	< LLD	< LLD	< LLD	2.84E-06
2. Average Particulate Release Rate:	uCi/sec	0.00E+00	0.00E+00	0.00E+00	3.58E-07
3. Gross Alpha Activity for Quarter:	Ci	< LLD	< LLD	< LLD	< LLD

**D. TRITIUM RELEASES \*\***

1. Total Tritium Activity:	Ci	8.69E-02	5.26E-02	8.36E-02	1.61E-01
2. Average Tritium Release Rate:	uCi/sec	1.12E-02	6.68E-03	1.05E-02	2.03E-02

\* % of Imp. Tech. Spec. limits is based on the maximum release rate for the period considered.

\*\* Iodine, particulate, and tritium are expressed as a total limit. See Step E.

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**GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES (CONT.)**

UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
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E. TOTAL OF IODINE, PARTICULATE (>8 day half-life), AND TRITIUM RELEASES

1. Total Activity:	Ci	8.69E-02	5.26E-02	8.36E-02	1.61E-01
2. % of Imp. Tech. Spec. Limits					
a. Any Organ (1500 mrem/yr):	%	0.00	0.00	0.00	0.00
3. % of 10CFR50 Limit					
a. Quarterly Any Organ (7.5 mrem):	%	0.00	0.00	0.00	0.00
b. Annual Any Organ (15 mrem):	%	0.00	0.00	0.00	0.00

**GASEOUS EFFLUENTS - VENT STACK RELEASES - BATCH MODE**

F. FISSION AND ACTIVATION GAS RELEASES

Ar-41:	Ci	< LLD	2.50E-03	< LLD	1.74E-03
Kr-85:	Ci	< LLD	< LLD	< LLD	< LLD
Kr-85m:	Ci	< LLD	< LLD	< LLD	< LLD
Kr-87:	Ci	< LLD	< LLD	< LLD	< LLD
Kr-88:	Ci	< LLD	2.04E-03	2.20E-03	< LLD
Xe-131m:	Ci	< LLD	< LLD	< LLD	< LLD
Xe-133:	Ci	6.65E-02	8.80E-02	4.13E-02	1.15E-01
Xe-133m:	Ci	1.27E-03	1.13E-03	1.91E-04	5.08E-04
Xe-135:	Ci	1.19E-03	2.70E-04	2.43E-03	3.13E-04
Xe-138:	Ci	2.66E-02	< LLD	< LLD	< LLD

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**GASEOUS EFFLUENTS - VENT STACK RELEASES - BATCH MODE (CONT.)**

UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
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G. IODINE RELEASES

I-131:	Ci	*	*	*	*
I-133:	Ci	*	*	*	*
I-135:	Ci	*	*	*	*

\* Value reported as CONTINUOUS RELEASE MODE.

H. PARTICULATE (>8 day half-life) RELEASES

Sr-89:	Ci	*	*	*	*
Sr-90:	Ci	*	*	*	*

\* Value reported as CONTINUOUS RELEASE MODE.

**GASEOUS EFFLUENTS - VENT STACK RELEASES - CONTINUOUS MODE**

I. FISSION AND ACTIVATION GAS RELEASES

Xe-133:	Ci	6.99E-02	7.75E-03	1.99E-02	4.79E-02
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**GASEOUS EFFLUENTS - VENT STACK RELEASES - CONTINUOUS MODE (CONT.)**

UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
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J. IODINE RELEASES

I-131:	Ci	< LLD	< LLD	< LLD	2.14E-06
I-133:	Ci	< LLD	< LLD	< LLD	< LLD
I-135:	Ci	< LLD	< LLD	< LLD	< LLD

K. PARTICULATE (>8 day half-life) RELEASES

Sr-89:	Ci	<LLD	<LLD	<LLD	<LLD
Sr-90:	Ci	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	< LLD	< LLD	< LLD	2.84E-06

**LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES**

L. FISSION AND ACTIVATION PRODUCT RELEASES

1. Total Activity Released:	Ci	5.69E-02	3.41E-01	1.71E-01	5.14E-02
2. Average Concentration Released For Quarter:	uCi/ml	2.04E-08	1.34E-07	5.72E-08	1.70E-08

3. % of 10CFR50 Limits

a. Quarterly Whole Body (1.5 mrem):	%	0.09	0.16	0.06	0.04
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b. Quarterly Any Organ (5.0 mrem):	%	0.03	0.06	0.13	0.02
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c. Annual Whole Body (3.0 mrem):	%	0.05	0.13	0.16	0.18
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d. Annual Any Organ (10.0 mrem):	%	0.02	0.05	0.10	0.11
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**LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES (CONT.)**

	UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
<b>M. TRITIUM</b>					
1. Total Activity Released:	Ci	3.42E+02	2.05E+02	2.94E+02	1.59E+02
2. Average Concentration Released For Quarter:	uCi/ml	1.22E-04	8.02E-05	9.83E-05	5.27E-05
3. % of ITS Limit (1.00E-2 uCi/ml):	%	1.22	0.80	0.98	0.53
<b>N. DISSOLVED NOBLE GASES</b>					
1. Total Activity Released:	Ci	6.08E-03	5.12E-02	7.01E-03	8.35E-03
2. Average Concentration Released For Quarter:	uCi/ml	2.18E-09	2.01E-08	2.35E-09	2.77E-09
3. % of Tech. Reqt. Manual Limit (2.00E-4 uCi/ml):	%	0.00	0.01	0.00	0.00
<b>O. GROSS ALPHA</b>					
1. Total Activity Released:	Ci	< LLD	< LLD	< LLD	< LLD
2. Average Concentration Released For Quarter:	uCi/ml	< LLD	< LLD	< LLD	< LLD
<b>P. VOLUME OF WASTE RELEASED PER UNIT:</b>					
	liters	1.28E+06	2.74E+06	1.70E+06	2.06E+06
<b>Q. VOLUME OF DILUTION WATER PER UNIT:</b>					
	liters	2.79E+09	2.55E+09	2.99E+09	3.01E+09

**LIQUID EFFLUENTS - CONTINUOUS MODE**

R. LIQUID EFFLUENTS

\* Value reported as LIQUID EFFLUENTS - BATCH MODE

Fe-55:	Ci	*	*	*	*
Sr-89:	Ci	*	*	*	*
Sr-90:	Ci	*	*	*	*



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**LIQUID EFFLUENTS - BATCH MODE**

UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
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S. LIQUID EFFLUENTS

Fe-55:	Ci	2.12E-03	3.40E-03	1.51E-02	7.70E-03
Sr-89:	Ci	<LLD	<LLD	<LLD	<LLD
Sr-90:	Ci	<LLD	<LLD	<LLD	<LLD
H-3:	Ci	3.42E+02	2.05E+02	2.94E+02	1.59E+02
Ar-41:	Ci	<LLD	6.26E-04	2.22E-04	<LLD
Cr-51:	Ci	6.85E-04	1.29E-02	1.68E-02	1.48E-03
Mn-54:	Ci	1.75E-04	8.99E-04	2.53E-03	1.91E-04
Fe-59:	Ci	<LLD	1.20E-03	3.25E-04	1.18E-04
Co-57:	Ci	2.51E-05	2.38E-04	3.30E-04	1.47E-05
Co-58:	Ci	1.34E-03	1.16E-01	4.45E-02	8.44E-03
Co-60:	Ci	2.82E-03	1.94E-02	4.41E-02	2.31E-03
Zn-65:	Ci	<LLD	1.17E-05	6.26E-04	4.84E-06
Kr-85:	Ci	4.97E-03	4.73E-02	5.84E-03	6.88E-03
Kr-85m:	Ci	<LLD	<LLD	<LLD	<LLD
Kr-87:	Ci	<LLD	<LLD	<LLD	<LLD
Kr-88:	Ci	<LLD	<LLD	3.12E-04	<LLD
Sr-92:	Ci	1.19E-05	1.08E-04	1.17E-04	1.28E-05
Nb-95:	Ci	3.48E-05	3.97E-04	2.73E-03	2.30E-04
Zr-95:	Ci	<LLD	2.40E-05	1.51E-03	1.58E-04
Zr-97:	Ci	<LLD	4.21E-06	<LLD	<LLD
Mo-99:	Ci	<LLD	<LLD	2.89E-06	<LLD
Tc-99m:	Ci	<LLD	<LLD	<LLD	<LLD
Tc-104:	Ci	<LLD	<LLD	<LLD	<LLD
Ag-110m:	Ci	1.16E-04	4.23E-04	2.98E-04	2.97E-05
Sn-113:	Ci	<LLD	<LLD	1.50E-04	4.61E-06
Te-121m:	Ci	<LLD	<LLD	<LLD	<LLD
Te-123m:	Ci	6.16E-05	8.45E-04	1.43E-04	4.79E-04
Te-125m:	Ci	3.22E-02	3.91E-02	6.32E-03	2.12E-02
Sb-122:	Ci	<LLD	7.35E-04	<LLD	<LLD
Sb-124:	Ci	1.01E-04	7.65E-03	7.97E-05	1.38E-03
Sb-125:	Ci	1.84E-02	1.17E-01	4.94E-02	1.09E-02
Sb-126:	Ci	<LLD	4.71E-05	4.15E-06	1.49E-05

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**LIQUID EFFLUENTS - BATCH MODE (CONT.)**

UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
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S. LIQUID EFFLUENTS (CONT.)

I-131:	Ci	< LLD	< LLD	< LLD	< LLD
I-132:	Ci	< LLD	< LLD	4.01E-06	2.67E-04
I-133:	Ci	< LLD	< LLD	< LLD	< LLD
I-135:	Ci	< LLD	< LLD	< LLD	< LLD
Xe-131m:	Ci	< LLD	5.00E-04	< LLD	< LLD
Xe-133:	Ci	1.12E-03	2.74E-03	6.36E-04	1.44E-03
Xe-133m:	Ci	< LLD	< LLD	< LLD	< LLD
Xe-135:	Ci	< LLD	< LLD	6.28E-06	3.38E-05
Xe-135m:	Ci	< LLD	< LLD	< LLD	< LLD
Xe-138:	Ci	< LLD	< LLD	< LLD	< LLD
Cs-134:	Ci	9.03E-04	2.24E-03	7.22E-05	5.11E-05
Cs-137:	Ci	2.09E-05	1.09E-05	5.18E-04	4.31E-04
Ba-140:	Ci	< LLD	< LLD	< LLD	< LLD
La-140:	Ci	< LLD	< LLD	< LLD	< LLD
Ce-141:	Ci	< LLD	< LLD	< LLD	< LLD
Ce-144:	Ci	< LLD	< LLD	< LLD	< LLD
Te-132	Ci	6.59E-06	5.86E-05	7.25E-06	1.03E-04
Na-24	Ci	< LLD	1.68E-04	< LLD	< LLD
Pr-144	Ci	< LLD	1.99E-02	< LLD	3.43E-03
Ba-133	Ci	< LLD	1.33E-03	< LLD	< LLD
Cs-136	Ci	< LLD	4.10E-06	5.37E-05	< LLD
Hf-181	Ci	< LLD	< LLD	1.17E-04	< LLD
Sr-85	Ci	< LLD	< LLD	< LLD	2.86E-05

T. 10CFR20 PUBLIC TEDE COMPLIANCE

1. % OF 10CFR20 TEDE LIMIT:  
(100 mrem/yr)

%	0.00	0.00	0.00	0.01
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BYRON NUCLEAR POWER STATION  
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**GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES**

UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
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**A. FISSION AND ACTIVATION GAS RELEASES**

1. Total Release Activity:	Ci	1.48E-01	1.06E-01	5.45E-02	2.49E-01
2. Maximum Release Rate for Quarter:	uCi/sec	9.80E+00	7.33E+00	1.19E+00	1.85E+00

3. % of Imp. Tech. Spec. Limits:\*

a. Whole Body (500 mrem/yr):

b. Skin (3000 mrem/yr):

%	0.00	0.00	0.00	0.00
%	0.00	0.00	0.00	0.00

4. % of 10CFR50 Limits

a. Gamma Quarterly (5 mrad):

b. Beta Quarterly (10 mrad):

c. Gamma Annual (10 mrad):

d. Beta Annual (20 mrad):

%	0.00	0.00	0.00	0.00
%	0.00	0.00	0.00	0.00
%	0.00	0.00	0.00	0.00
%	0.00	0.00	0.00	0.00

**B. IODINE RELEASES \*\***

1. Total I-131 Activity:	Ci	< LLD	< LLD	< LLD	1.53E-05
2. Average I-131 Release Rate:	uCi/sec	0.00E+00	0.00E+00	0.00E+00	1.93E-06

**C. PARTICULATE (>8 day half-life) RELEASES \*\***

1. Total Particulate Activity:	Ci	8.04E-07	3.96E-07	< LLD	9.78E-06
2. Average Particulate Release Rate:	uCi/sec	1.03E-07	5.04E-08	0.00E+00	1.23E-06
3. Gross Alpha Activity for Quarter:	Ci	< LLD	< LLD	< LLD	< LLD

**D. TRITIUM RELEASES \*\***

1. Total Tritium Activity:	Ci	3.62E-01	3.00E-01	1.90E-01	3.16E-01
2. Average Tritium Release Rate:	uCi/sec	4.65E-02	3.82E-02	2.39E-02	3.97E-02

\* % of Imp. Tech. Spec. limits is based on the maximum release rate for the period considered.

\*\* Iodine, particulate, and tritium are expressed as a total limit. See Step E.

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**GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES (CONT.)**

UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
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E. TOTAL OF IODINE, PARTICULATE (>8 day half-life), AND TRITIUM RELEASES

1. Total Activity:	Ci	3.62E-01	3.00E-01	1.90E-01	3.16E-01
2. % of Imp. Tech. Spec. Limits					
a. Any Organ (1500 mrem/yr):	%	0.00	0.00	0.00	0.00
3. % of 10CFR50 Limit					
a. Quarterly Any Organ (7.5 mrem):	%	0.00	0.00	0.00	0.00
a. Annual Any Organ (15 mrem):	%	0.00	0.00	0.00	0.01

**GASEOUS EFFLUENTS - VENT STACK RELEASES - BATCH MODE**

F. FISSION AND ACTIVATION GAS RELEASES

Ar-41:	Ci	< LLD	4.58E-05	7.53E-03	< LLD
Kr-85:	Ci	< LLD	< LLD	< LLD	< LLD
Kr-85m:	Ci	< LLD	< LLD	< LLD	< LLD
Kr-87:	Ci	< LLD	< LLD	< LLD	< LLD
Kr-88:	Ci	2.00E-03	< LLD	< LLD	1.80E-03
Xe-131m:	Ci	< LLD	< LLD	< LLD	< LLD
Xe-133:	Ci	7.33E-02	9.68E-02	3.01E-02	1.58E-01
Xe-133m:	Ci	1.27E-03	1.13E-03	1.91E-04	5.08E-04
Xe-135:	Ci	1.19E-03	2.70E-04	3.13E-03	3.13E-04
Xe-138:	Ci	< LLD	< LLD	< LLD	< LLD

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**GASEOUS EFFLUENTS - VENT STACK RELEASES - BATCH MODE (CONT.)**

UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
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G. IODINE RELEASES

I-131:	Ci	*	*	*	*
I-133:	Ci	*	*	*	*
I-135:	Ci	*	*	*	*

\* Value reported as CONTINUOUS RELEASE MODE.

H. PARTICULATE (>8 day half-life) RELEASES

Sr-89:	Ci	*	*	*	*
Sr-90:	Ci	*	*	*	*

\* Value reported as CONTINUOUS RELEASE MODE.

**GASEOUS EFFLUENTS - VENT STACK RELEASES - CONTINUOUS MODE**

I. FISSION AND ACTIVATION GAS RELEASES

Xe-133:	Ci	6.99E-02	7.75E-03	1.35E-02	8.85E-02
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BYRON NUCLEAR POWER STATION  
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RADIOACTIVE EFFLUENT RELEASE REPORT  
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**GASEOUS EFFLUENTS - VENT STACK RELEASES - CONTINUOUS MODE (CONT.)**

UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
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J. IODINE RELEASES

I-131:	Ci	< LLD	< LLD	< LLD	1.53E-05
I-133:	Ci	< LLD	< LLD	< LLD	< LLD
I-135:	Ci	< LLD	< LLD	< LLD	< LLD

K. PARTICULATE (>8 day half-life) RELEASES

Sr-89:	Ci	< LLD	<LLD	<LLD	<LLD
Sr-90:	Ci	< LLD	<LLD	<LLD	<LLD
Co-58	Ci	5.94E-07	< LLD	< LLD	4.79E-06
Cs-137	Ci	2.10E-07	< LLD	< LLD	< LLD
Te-123m	Ci	< LLD	3.96E-07	< LLD	< LLD
Cr-51	Ci	< LLD	< LLD	< LLD	4.42E-06
Co-57	Ci	< LLD	< LLD	< LLD	5.74E-07

**LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES**

L. FISSION AND ACTIVATION PRODUCT RELEASES

1. Total Activity Released:	Ci	5.69E-02	3.41E-01	1.71E-01	5.14E-02
2. Average Concentration Released For Quarter:	uCi/ml	2.04E-08	1.34E-07	5.72E-08	1.70E-08

3. % of 10CFR50 Limits

a. Quarterly Whole Body (1.5 mrem):	%	0.09	0.16	0.06	0.04
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b. Quarterly Any Organ (5.0 mrem):	%	0.03	0.06	0.13	0.02
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c. Annual Whole Body (3.0 mrem):	%	0.05	0.13	0.16	0.18
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d. Annual Any Organ (10.0 mrem):	%	0.02	0.05	0.10	0.11
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BYRON NUCLEAR POWER STATION  
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**LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES (CONT.)**

UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
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**M. TRITIUM**

- 1. Total Activity Released:
- 2. Average Concentration Released For Quarter:
- 3. % of ITS Limit (1.00E-2 uCi/ml):

Ci	3.42E+02	2.05E+02	2.94E+02	1.59E+02
uCi/ml	1.22E-04	8.02E-05	9.83E-05	5.27E-05

%	1.22	0.80	0.98	0.53
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**N. DISSOLVED NOBLE GASES**

- 1. Total Activity Released:
- 2. Average Concentration Released For Quarter:
- 3. % of Tech. Req't. Manual Limit (2.00E-4 uCi/ml):

Ci	6.08E-03	5.12E-02	7.01E-03	8.35E-03
uCi/ml	2.18E-09	2.01E-08	2.35E-09	2.77E-09

%	0.00	0.01	0.00	0.00
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**O. GROSS ALPHA**

- 1. Total Activity Released:
- 2. Average Concentration Released For Quarter:

Ci	< LLD	< LLD	< LLD	< LLD
uCi/ml	< LLD	< LLD	< LLD	< LLD

**P. VOLUME OF WASTE RELEASED PER UNIT:**

liters	1.28E+06	2.74E+06	1.70E+06	2.06E+06
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**Q. VOLUME OF DILUTION WATER PER UNIT:**

liters	2.79E+09	2.55E+09	2.99E+09	3.01E+09
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**LIQUID EFFLUENTS - CONTINUOUS MODE**

**R. LIQUID EFFLUENTS**

- Fe-55:
- Sr-89:
- Sr-90:

\* Value reported as LIQUID EFFLUENTS - BATCH MODE

Ci	*	*	*	*
Ci	*	*	*	*
Ci	*	*	*	*

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**LIQUID EFFLUENTS - BATCH MODE**

UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
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S. LIQUID EFFLUENTS

Fe-55:	Ci	2.12E-03	3.40E-03	1.51E-02	7.70E-03
Sr-89:	Ci	<LLD	<LLD	<LLD	<LLD
Sr-90:	Ci	<LLD	<LLD	<LLD	<LLD
H-3:	Ci	3.42E+02	2.05E+02	2.94E+02	1.59E+02
Ar-41:	Ci	< LLD	6.26E-04	2.22E-04	< LLD
Cr-51:	Ci	6.85E-04	1.29E-02	1.68E-02	1.48E-03
Mn-54:	Ci	1.75E-04	8.99E-04	2.53E-03	1.91E-04
Fe-59:	Ci	< LLD	1.20E-03	3.25E-04	1.18E-04
Co-57:	Ci	2.51E-05	2.38E-04	3.30E-04	1.47E-05
Co-58:	Ci	1.34E-03	1.16E-01	4.45E-02	8.44E-03
Co-60:	Ci	2.82E-03	1.94E-02	4.41E-02	2.31E-03
Zn-65:	Ci	< LLD	1.17E-05	6.26E-04	4.84E-06
Kr-85:	Ci	4.97E-03	4.73E-02	5.84E-03	6.88E-03
Kr-85m:	Ci	< LLD	< LLD	< LLD	< LLD
Kr-87:	Ci	< LLD	< LLD	< LLD	< LLD
Kr-88:	Ci	< LLD	< LLD	3.12E-04	< LLD
Sr-92:	Ci	1.19E-05	1.08E-04	1.17E-04	1.28E-05
Nb-95:	Ci	3.48E-05	3.97E-04	2.73E-03	2.30E-04
Zr-95:	Ci	< LLD	2.40E-05	1.51E-03	1.58E-04
Zr-97:	Ci	< LLD	4.21E-06	< LLD	< LLD
Mo-99:	Ci	< LLD	< LLD	2.89E-06	< LLD
Tc-99m:	Ci	< LLD	< LLD	< LLD	< LLD
Tc-104:	Ci	< LLD	< LLD	< LLD	< LLD
Ag-110m:	Ci	1.16E-04	4.23E-04	2.98E-04	2.97E-05
Sn-113:	Ci	< LLD	< LLD	1.50E-04	4.61E-06
Te-121m:	Ci	< LLD	< LLD	< LLD	< LLD
Te-123m:	Ci	6.16E-05	8.45E-04	1.43E-04	4.79E-04
Te-125m:	Ci	3.22E-02	3.91E-02	6.32E-03	2.12E-02
Sb-122:	Ci	< LLD	7.35E-04	< LLD	< LLD
Sb-124:	Ci	1.01E-04	7.65E-03	7.97E-05	1.38E-03
Sb-125:	Ci	1.84E-02	1.17E-01	4.94E-02	1.09E-02
Sb-126:	Ci	< LLD	4.71E-05	4.15E-06	1.49E-05



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**LIQUID EFFLUENTS - BATCH MODE (CONT.)**

UNITS	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
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S. LIQUID EFFLUENTS (CONT.)

I-131:	Ci	< LLD	< LLD	< LLD	< LLD
I-132:	Ci	< LLD	< LLD	4.01E-06	2.67E-04
I-133:	Ci	< LLD	< LLD	< LLD	< LLD
I-135:	Ci	< LLD	< LLD	< LLD	< LLD
Xe-131m:	Ci	< LLD	5.00E-04	< LLD	< LLD
Xe-133:	Ci	1.12E-03	2.74E-03	6.36E-04	1.44E-03
Xe-133m:	Ci	< LLD	< LLD	< LLD	< LLD
Xe-135:	Ci	< LLD	< LLD	6.28E-06	3.38E-05
Xe-135m:	Ci	< LLD	< LLD	< LLD	< LLD
Xe-138:	Ci	< LLD	< LLD	< LLD	< LLD
Cs-134:	Ci	9.03E-04	2.24E-03	7.22E-05	5.11E-05
Cs-137:	Ci	2.09E-05	1.09E-05	5.18E-04	4.31E-04
Ba-140:	Ci	< LLD	< LLD	< LLD	< LLD
La-140:	Ci	< LLD	< LLD	< LLD	< LLD
Ce-141:	Ci	< LLD	< LLD	< LLD	< LLD
Ce-144:	Ci	< LLD	< LLD	< LLD	< LLD
Te-132	Ci	6.59E-06	5.86E-05	7.25E-06	1.03E-04
Na-24	Ci	< LLD	1.68E-04	< LLD	< LLD
Pr-144	Ci	< LLD	1.99E-02	< LLD	3.43E-03
Ba-133	Ci	< LLD	1.33E-03	< LLD	< LLD
Cs-136	Ci	< LLD	4.10E-06	5.37E-05	< LLD
Hf-181	Ci	< LLD	< LLD	1.17E-04	< LLD
Sr-85	Ci	< LLD	< LLD	< LLD	2.86E-05

T. 10CFR20 PUBLIC TEDE COMPLIANCE

1. % OF 10CFR20 TEDE LIMIT:  
(100 mrem/yr)

%	0.00	0.00	0.00	0.01
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BYRON NUCLEAR POWER STATION  
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**SOLID RADIOACTIVE WASTE FOR BURIAL 1<sup>st</sup> QUARTER, 1999**

DATE	DISPOSITION OF MATERIAL (DESCRIPTION, CLASS, TYPE AND SOLIDIFYING AGENT)	MODE OF TRANSPORT	DESTINATION	VOLUME PER SHIPMENT	CURIES* PER SHIPMENT
01/07/1999	DRY ACTIVE WASTE, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, STRONG-TIGHT CONTAINER, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	3.63E+01	8.92E-03
01/18/1999	DEWATERED BEAD RESIN AND FILTERS, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, STRONG-TIGHT CONTAINER, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	3.63E+01	6.42E-04
01/25/1999	DRY ACTIVE WASTE, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, STRONG-TIGHT CONTAINER, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	7.25E+01	1.11E-05
01/27/1999	DEWATERED BEAD RESIN, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS B, HIC, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	5.83E+00	5.58E+01
02/24/1999	DRY ACTIVE WASTE, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, STRONG-TIGHT CONTAINER, NONE	EXCLUSIVE-USE	MEMPHIS, TN	7.25E+01	2.80E-02
Quarterly Totals				2.23E+02	5.58E+1
* Calculated using measured ratios		Number of Shipments: 5		CUBIC M	CURIES

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**SOLID RADIOACTIVE WASTE FOR BURIAL 2<sup>ND</sup> QUARTER, 1999**

DATE	DISPOSITION OF MATERIAL (DESCRIPTION, CLASS, TYPE AND SOLIDIFYING AGENT)	MODE OF TRANSPORT	DESTINATION	VOLUME PER SHIPMENT	CURIES* PER SHIPMENT
04/28/1999	DRY ACTIVE WASTE, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, STRONG-TIGHT CONTAINER, NONE	EXCLUSIVE-USE	RICHLAND, WA	7.25E+01	8.13E-01
05/11/1999	DEWATERED BEAD RESIN, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, HIC, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	4.84E+00	7.00E+00
05/13/1999	DRY ACTIVE WASTE, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, STRONG-TIGHT CONTAINER, NONE	EXCLUSIVE-USE	MEMPHIS, TN	7.25E+01	1.18E-02
05/20/1999	DRY ACTIVE WASTE, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, STRONG-TIGHT CONTAINER, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	3.63E+01	4.66E-03
06/02/1999	DEWATERED BEAD RESIN, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, STRONG-TIGHT CONTAINER, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	7.25E+01	1.51E-04
06/15/1999	OIL, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, STRONG-TIGHT CONTAINER, NONE	EXCLUSIVE-USE	RICHLAND, WA	3.63E+01	8.75E-03
Quarterly Totals				2.95E+02	7.84E+00
* Calculated using measured ratios				Number of Shipments: 6 CUBIC M	CURIES

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**SOLID RADIOACTIVE WASTE FOR BURIAL 3<sup>RD</sup> QUARTER, 1999**

DATE	DISPOSITION OF MATERIAL (DESCRIPTION, CLASS, TYPE AND SOLIDIFYING AGENT)	MODE OF TRANSPORT	DESTINATION	VOLUME PER SHIPMENT	CURIES* PER SHIPMENT
07/22/1999	RESIN AND DRY ACTIVE WASTE, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, STRONG-TIGHT CONTAINER, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	3.63E+01	7.41E-03
08/30/1999	DEWATERED BEAD RESIN, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, HIC, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	5.87E+00	1.25E+01
09/09/1999	DEWATERED BEAD RESIN, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, HIC, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	4.84E+00	1.52E+01
09/16/1999	DRY ACTIVE WASTE, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, STRONG-TIGHT CONTAINER, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	3.63E+01	1.06E-02
Quarterly Totals				8.33E+01	2.77E+01
* Calculated using measured ratios		Number of Shipments: 4		CUBIC M	CURIES

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**SOLID RADIOACTIVE WASTE FOR BURIAL 4<sup>TH</sup> QUARTER, 1999**

DATE	DISPOSITION OF MATERIAL (DESCRIPTION, CLASS, TYPE AND SOLIDIFYING AGENT)	MODE OF TRANSPORT	DESTINATION	VOLUME PER SHIPMENT	CURIES* PER SHIPMENT
11/10/1999	DEWATERED BEAD RESIN, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, HIC, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	5.87E+00	8.55E+00
11/12/1999	DRY ACTIVE WASTE, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, STRONG-TIGHT CONTAINER, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	3.63E+01	3.97E-03
11/30/1999	DEWATERED BEAD RESIN AND DRY ACTIVE WASTE, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS A, STRONG-TIGHT CONTAINER, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	3.63E+01	6.36E-05
12/01/1999	DEWATERED MECHANICAL FILTERS, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS C, HIC, NONE	EXCLUSIVE-USE	BARNWELL, SC	4.48E+00	2.98E+01
12/10/1999	DEWATERED MECHANICAL FILTERS, LOW SPECIFIC ACTIVITY, nos, 7, UN2912, CLASS B, HIC, NONE	EXCLUSIVE-USE	OAK RIDGE, TN	5.83E+00	8.28E+00
Quarterly Totals				8.87E+01	4.66E+01
* Calculated using measure ratios		Number of Shipments: 5		CUBIC M	CURIES

ADDENDUM

A. Solid Radioactive Waste Isotopic Composition

DAW		
Nuclide	uCi/ml	%
H3	3.90E+00	0.47%
C14	8.00E-01	0.10%
Cr51	2.54E+02	30.77%
Mn54	6.73E+00	0.82%
Fe55	8.42E+01	10.20%
Fe59	3.52E+01	4.26%
Co57	5.90E-01	0.07%
Co58	2.49E+02	30.16%
Co60	4.41E+01	5.34%
Ni63	5.42E+01	6.57%
Sr90	1.14E-03	0.00%
Zr95	3.43E+01	4.15%
Nb95	4.82E+01	5.84%
Mo99	7.88E-01	0.10%
Tc99	5.73E-04	0.00%
Sn113	1.02E+00	0.12%
Te123m	7.15E-01	0.09%
Sb124	9.64E-01	0.12%
Sb125	2.80E+00	0.34%
I129	6.61E-04	0.00%
Cs137	5.67E-01	0.07%
Ce144	2.79E+00	0.34%
Hf181	6.91E-01	0.08%
Pu238	4.45E-04	0.00%
Pu239	2.18E-04	0.00%
Pu241	2.20E-02	0.00%
Am241	2.46E-04	0.00%
Cm242	2.99E-04	0.00%
Cm243	6.67E-04	0.00%

Radwaste Resin		
Nuclide	uCi/ml	%
H3	1.70E+02	1.32%
C14	7.95E+00	0.06%
Mn54	6.51E+01	0.51%
Fe55	8.69E+02	6.74%
Co57	3.52E+01	0.27%
Co58	1.04E+04	80.68%
Co60	4.60E+02	3.57%
Ni63	5.07E+02	3.93%
Sr90	2.87E-01	0.00%
Tc99	5.98E-03	0.00%
Sb125	1.54E+01	0.12%
I129	6.90E-03	0.00%
Cs137	2.84E+01	0.22%
Ce144	3.32E+02	2.58%
Pu238	4.38E-03	0.00%
Pu239	2.17E-3	0.00%
Pu241	2.12E-01	0.00%
Am241	2.47E-03	0.00%
Cm242	2.94E-03	0.00%
Cm243	6.29E-03	0.00%

Primary Resin		
Nuclide	uCi/ml	%
H3	1.95E+03	3.50%
C14	8.16E+01	0.15%
Cr51	6.19E+01	0.11%
Mn54	1.47E+02	0.26%
Fe55	1.15E+04	20.63%
Co57	4.71E+02	0.84%
Co58	2.47E+04	44.31%
Co60	5.55E+03	9.96%
Ni63	7.93E+03	14.23%
Zn65	7.87E-01	0.00%
Sr90	4.67E+00	0.01%
Zr95	3.42E-01	0.00%
Nb95	4.18E-01	0.00%
Tc99	7.43E-02	0.00%
Ag110m	1.20E-01	0.00%
Sn113	9.86E-02	0.00%
Sb124	2.86E+01	0.05%
Sb125	2.82E+02	0.51%
I129	8.58E-02	0.00%
Cs134	1.96E+02	0.35%
Cs137	8.49E+02	1.52%
Ce144	1.99E+03	3.57%
Pu238	4.55E-02	0.00%
Pu239	2.26E-02	0.00%
Pu241	2.23E+00	0.00%
Am241	2.44E-02	0.00%
Cm242	2.79E-02	0.00%
Cm243	7.07E-02	0.00%

Mechanical Filters		
Nuclide	uCi/ml	%
H3	1.08E+02	0.35%
C14	1.57E+02	0.51%
Cr51	1.45E-04	0.00%
Mn54	1.09E+02	0.35%
Fe55	1.12E+04	36.23%
Co57	1.87E+01	0.06%
Co58	7.72E+00	0.02%
Fe59	3.08E-03	0.00%
Co60	7.13E+03	23.07%
Ni63	1.18E+04	38.17%
Zn65	1.45E+01	0.05%
Sr90	2.28E-01	0.00%
Zr95	2.21E-01	0.00%
Nb95	3.20E-03	0.00%
Tc99	1.21E-01	0.00%
Sn113	2.19E-01	0.00%
Te123m	1.81E-01	0.00%
Sb125	2.04E+02	0.66%
I129	1.40E-01	0.00%
Cs134	3.22E+01	0.10%
Cs137	1.18E+02	0.38%
Ce144	7.39E+00	0.02%
Pu238	8.58E-02	0.00%
Pu239	4.28E-02	0.00%
Pu241	3.89E+00	0.01%
Am241	4.77E-02	0.00%
Cm242	6.87E-03	0.00%
Cm243	1.26E-01	0.00%

- B. Changes to Radioactive Waste Process Control Program for 1999 were primarily administrative. The Process Control Procedures were standardized to a corporate format. Operationally, the Process Control Program remains unchanged.

In addition, a filtration system was installed to treat floor equipment drain water.

C. Error Analysis

The following is an estimate of the errors associated with effluent monitoring and analysis. The estimate is calculated using the square root of the sum of the squares methodology.

1. Gaseous Effluents

Sampling error = 1 to 3.5%  
Calibration error = 5%  
Counting statistics error = 5%  
Vent stack flowrates error = 1.5%

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Total error = 7 – 8%

2. Liquid Effluents

Sampling error = 1%  
Calibration error = 5%  
Sample volume error = 1%  
Discharged volume error = 2%  
Counting statistics error = 0.41%

---

Total error = 5.6%

3. Waste Resin

Sample prep = 5%  
Sampling error = 1%  
Counting statistic error = 1%  
Weight error = 0.5%  
Calibration error = 5%

---

Total error = 7.2%

4. DAW

Counting statistic error = 1%  
Calibration error = 5%  
Instrument calibration error = 10%

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Total error = 11%

- D. Meteorological and environmental impact information is reported in the Station Annual Radiological Environmental Operating Report as required by Technical Specification 5.6.2.

- E. No limits were exceeded in liquid hold up tanks as stated in Technical Specification 5.5.12 or in waste gas decay tanks as stated in Technical Specification 5.5.12.
- F. There were no irradiated fuel shipments during this period.
- G. There were no elevated releases. All releases are considered vent or ground level releases.
- H. In April, 1999, the 0RE-PR002, Waste Gas Decay Tank Effluent Monitor, exceeded its specified 14 day LCO. The cause of the failure was from water intrusion. The water was from the unfiltered ventilation line. This is the line that the monitor samples. By design, this monitor is at the lowest point on this line. Any moisture within the system will find its way into the monitor. It took 14 days to clear the moisture from within the line before it could be returned to service.
- I. In February of 1999, Chapter 12 of the Offsite Dose Calculation Manual, (ODCM) was revised. This revision was administrative. The format of the chapter was changed to comply with the Improved Technical Specifications (ITS) as documented in the Technical Requirements Manual Chapters 3.11 and 3.12. References were also updated to reflect ITS.

On June 24, 1999, Byron Station implemented the April 1999, Revision 2 of the ODCM. The ODCM has been revised to reflect the common methodology used at all Commonwealth Edison (ComEd) Nuclear Stations for determining the Total Effective Dose Equivalent (TEDE) to the public.

These common methodologies are reflected in Chapters 1 through 7 and Appendices A through C of this revision. Previously, these methodologies were stated in Chapters 1 through 9 and Appendices A through E. This revision edits the text for clarity by removing redundant information, site-specific criteria, and combining chapters, appendices and tables. Two criteria were added for the station to evaluate the effect of dose to the public. These are the dredging of rivers and storage of radioactive material on site.

A summary of changes along with a copy of the entire ODCM was submitted in accordance with Technical Specification 5.5.1 under separate cover.

Reference: Letter from R.M. Krich, Vice President of Regulatory Services, dated March 21, 2000.

Subject: Offsite Dose Calculation Manual changes for 1999

- J. Attached are Offsite Dose Calculations for January through December of 1999.



**Attachment A**

Lower Limit of Detection  
Gaseous Effluents

<u>Nuclides</u>	<u>LLD (Ci/ml)</u>
H3	3.76E-17
Ar41	2.83E-13
Cr51	3.63E-18
Co57	2.77E-19
Co58	8.64E-19
Co60	1.12E-18
Br82	9.50E-19
Kr85	7.11E-11
Kr85m	2.73E-13
Kr87	1.26E-12
Kr88	8.29E-13
Sr89	1.55E-20
Sr-90	2.70E-21
Nb95	6.27E-19
Sn113	6.59E-19
Sb125	1.04E-18
I131	8.93E-19
Xe131m	8.12E-12
I132	1.14E-18
Te123m	2.87E-19
I133	5.01E-19
Ba133	9.60E-19
Xe133	6.52E-13
Xe133m	1.75E-12
Cs134	6.58E-19
I135	1.49E-18
Xe135	2.50E-13
Xe135m	6.91E-12
Cs137	4.29E-19
Xe138	1.96E-11
Ba140	1.54E-18
La140	8.97E-19
Gross Alpha	4.57E-22

Lower Limit of Detection  
Aqueous Effluents

<u>Nuclides</u>	<u>LLD (Ci/ml)</u>
H3	1.75E-12
Na24	1.74E-14
Ar41	7.05E-14
Cr51	2.58E-14
Mn54	3.90E-14
Fe55	8.19E-13
Co57	2.52E-14
Co58	5.49E-14
Fe59	7.90E-14
Co60	4.29E-14
Zn65	6.64E-14
Kr85	8.66E-12
Kr85m	3.86E-14
Kr88	1.25E-13
Sr85	3.84E-14
Sr89	4.44E-14
Sr-90	1.38E-14
Sr92	9.00E-14
Nb95	3.94E-14
Zr95	4.38E-14
Zr97	3.29E-14
Mo99	2.50E-14
Tc99m	2.50E-14
Ag110m	2.79E-14
Sn113	3.51E-14
Sb122	5.11E-14
Te123m	2.25E-14
Sb124	4.15E-14
Sb125	8.41E-14
Te125m	7.94E-12
Sb126	3.28E-14
I131	3.17E-14
Xe131m	9.66E-13
I132	5.75E-14
Te132	2.57E-14
Ba133	5.12E-14
I133	3.89E-14
Xe133	8.48E-14
Xe133m	2.14E-13
Cs134	3.75E-14
Xe135	2.72E-14
Xe135m	1.62E-12
Cs136	3.33E-14
Cs137	4.98E-14
Ba140	1.58E-13
La140	7.58E-14
Ce141	4.14E-14
Pr144	5.22E-12
Hf181	3.55E-14
Gross Alpha	8.95E-14

## Attachment B

### BYRON NUCLEAR POWER STATION UNIT 1, (DOCKET NUMBER STN-50-454) RADIOACTIVE EFFLUENT RELEASE REPORT

#### 1B POWER OPERATED ATMOSPHERIC RELEASE VALVE STEAM LEAK

In January 1999, it was discovered that the B power operated atmospheric release valve (PORV) was whispering steam. After multiple attempts at repairs, the PORV would leak steam when in the unisolated position. The following is the analysis of this leak and attributed dose to an off-site recipient.

It was determined that the leak had a flow rate of 0.05 ft<sup>3</sup>/min. A radiological isotopic analysis from the steam jet air ejectors was used to determine the nuclide composition and associated concentrations.

With this information, it was determined that:

Isotope	Units	Activity
Ar-41	Ci	1.29E-2
Kr-85	Ci	2.41E-2
Kr-88	Ci	2.11E-5
Xe-133	Ci	5.27E-5
Xe-135	Ci	8.23E-4
Xe-135m	Ci	3.14E-4
Total	Ci	3.82E-2

was released throughout the four quarters for 1999.

Since the radionuclide composition of the steam was Noble Gas, all four off-site recipient models were calculated to have received the same dose. The table, below, shows the calculated dose for the four quarters to the highest theoretical individual.

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Gamma (mrad)	1.08E-6	8.58E-7	1.18E-6	1.18E-6
Beta (mrad)	3.00E-6	2.38E-6	3.26E-6	3.26E-6
Total Body (mrem)	8.13E-7	6.46E-7	8.85E-7	8.85E-7
Skin (mrem)	3.10E-6	2.46E-6	3.37E-6	3.37E-6

The percentage of the respective 10CFR50 Design Objectives is:

	Quarterly Objective	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Gamma	5.0 mrad	0.00	0.00	0.00	0.00
Beta	10.0 mrad	0.00	0.00	0.00	0.00
Total Body	2.5 mrem	0.00	0.00	0.00	0.00
Skin	7.5 mrem	0.00	0.00	0.00	0.00

**Attachment C**

**BYRON NUCLEAR POWER STATION  
UNIT 1, (DOCKET NUMBER STN-50-454)  
RADIOACTIVE EFFLUENT RELEASE REPORT**

**UNIT 1 REFUEL OUTAGE NUMBER 9 GROUND LEVEL RELEASE**

During B1R09, a temporary effluent pathway was created when the Main Steam Isolation Valves were being maintained. During this maintenance, the steam generator secondary side man-way was removed for sludge lancing activities. Together these two evolutions created an effluent pathway from inside containment to the environment. This pathway was being monitored for both particulate radionuclides and iodines. Approximately 32 nanocuries of activity were calculated to be released via this pathway.

<b>GROUND LEVEL RELEASE</b>	<b>UNITS</b>	<b>2<sup>ND</sup> QUARTER APRIL- JUNE</b>
Co-58	Ci	1.35E-8
Co-60	Ci	9.75E-9
Nb-95	Ci	8.42E-9
Total	Ci	3.17E-8

The above data was used to calculate the 10CFR50 maximum dose to the organs. The following table list the organ dose, in mrem, to the maximally exposed infant, child, teenager and adult member of the public.

<b>DOSE TO THE MAXIMALLY EXPOSED ORGAN BY AGE GROUP</b>	<b>mrem</b>	<b>% OF 10CFR50 LIMITS (7.5 mrem)</b>
Infant	1.12E-7	0.00
Child	1.16E-7	0.00
Teenager	1.19E-7	0.00
Adult	1.14E-7	0.00
Maximum	1.19E-7	0.00

## Attachment D

### BYRON NUCLEAR POWER STATION UNIT 2, (DOCKET NUMBER STN-50-455) RADIOACTIVE EFFLUENT RELEASE REPORT

#### UNIT 2 REFUELING OUTAGE NUMBER 8 GROUND LEVEL RELEASE

During the B2R08 there was an Integrated Leak Rate Test performed on Unit 2 containment. This test is performed periodically to ensure the containment structure's integrity. After the test is complete, the pressure from inside the containment is released through different pathways. Two of these pathways are inside the Auxiliary Building. The third pathway utilized the spargers exterior to the Containment Building.

During the pressure release, this effluent path was monitored for radioactive noble gas, particulate and iodines. Since this test was performed at the end of the refuel outage, no noble gas was present in the effluent release. The samples that were being drawn continuously did show some radioactive particulate and iodine activity.

With the isotopic analysis and pressure relief data, it was calculated that approximately 78 nanocuries of particulate and approximately 25 nanocuries of iodine were released.

GROUND LEVEL RELEASE PATHWAY	UNITS	4 <sup>TH</sup> QUARTER OCTOBER – DECEMBER
Co-58	Ci	7.82E-8
I-131	Ci	2.48E-8

This data was used to calculate 10CFR50 maximum dose to the organ. The following list the organ dose, in mrem, to the maximally exposed organ of an infant, child, teenager and adult member of the public.

MAXIMALLY EXPOSED ORGAN BY AGE GROUP	mrem	% OF 10CFR50 LIMITS (7.5 mrem)
Infant	6.20E-8	0.00
Child	6.66E-8	0.00
Teenager	6.13E-8	0.00
Adult	5.24E-8	0.00
Maximum	6.66E-8	0.00

BYRON STATION UNIT ONE

10 CFR 20 COMPLIANCE ASSESSMENT

PERIOD OF ASSESSMENT 01/01/99 TO 12/31/99

CALCULATED 04/12/00

1. 10 CFR 20.1301 (a)(1) Compliance

Total Effective Dose Equivalent, mrem/yr 5.27E-03

10 CFR 20.1301 (a)(1) limit mrem/yr 100.0

% of limit 0.01

Compliance Summary - 10CFR20

	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	% of Limit
TEDE	1.06E-03	1.96E-03	1.63E-03	6.19E-04	0.01

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
ODCM SOFTWARE VERSION 1.1 January 1995  
ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT ONE

10 CFR 20 COMPLIANCE ASSESSMENT

PERIOD OF ASSESSMENT 01/01/99 TO 12/31/99

CALCULATED 04/12/00

2. 10 CFR 20.1301 (d)/40 CFR 190 Compliance

		Dose (mrem)	Limit (mrem)	% of Limit
Whole Body (DDE)	Plume	6.11E-06		
	Skyshine	0.00E+00		
	Ground	2.37E-07		
	Total	6.34E-06	25.0	0.00
Organ Dose (CDE)	Thyroid	3.54E-03	75.0	0.00
	Gonads	5.00E-03	25.0	0.02
	Breast	3.59E-03	25.0	0.01
	Lung	3.52E-03	25.0	0.01
	Marrow	4.56E-03	25.0	0.02
	Bone	1.09E-02	25.0	0.04
	Remainder	6.92E-03	25.0	0.03
	CEDE	5.27E-03		
	TEDE	5.27E-03	100.0	0.01

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT TWO  
 10 CFR 20 COMPLIANCE ASSESSMENT  
 PERIOD OF ASSESSMENT 01/01/99 TO 12/31/99  
 CALCULATED 04/12/00

1. 10 CFR 20.1301 (a)(1) Compliance

Total Effective Dose Equivalent, mrem/yr      5.62E-03

10 CFR 20.1301 (a)(1) limit	mrem/yr	100.0
	% of limit	0.01

Compliance Summary - 10CFR20

	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	% of Limit
TEDE	1.13E-03	2.08E-03	1.72E-03	6.95E-04	0.01

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT TWO  
 10 CFR 20 COMPLIANCE ASSESSMENT  
 PERIOD OF ASSESSMENT 01/01/99 TO 12/31/99  
 CALCULATED 04/12/00

2. 10 CFR 20.1301 (d)/40 CFR 190 Compliance

		Dose (mrem)	Limit (mrem)	% of Limit
Whole Body (DDE)	Plume	2.23E-06		
	Skyshine	0.00E+00		
	Ground	1.21E-06		
	Total	3.44E-06	25.0	0.00
Organ Dose (CDE)	Thyroid	3.95E-03	75.0	0.01
	Gonads	5.35E-03	25.0	0.02
	Breast	3.94E-03	25.0	0.02
	Lung	3.87E-03	25.0	0.02
	Marrow	4.91E-03	25.0	0.02
	Bone	1.12E-02	25.0	0.04
	Remainder	7.27E-03	25.0	0.03
	CEDE	5.62E-03		
TEDE	5.62E-03	100.0	0.01	

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995



BYRON STATION UNIT ONE

ACTUAL 1999  
 MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 INFANT RECEPTOR

TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
GAMMA AIR (mrad)	2.97E-06 (SSE )	1.64E-06 (SSE )	1.70E-06 (SSE )	1.91E-06 (SSE )	8.22E-06 (SSE )
BETA AIR (mrad)	6.74E-06 (SSE )	4.05E-06 (SSE )	4.36E-06 (SSE )	5.81E-06 (SSE )	2.10E-05 (SSE )
TOT. BODY (mrem)	2.21E-06 (SSE )	1.22E-06 (SSE )	1.27E-06 (SSE )	1.41E-06 (SSE )	6.11E-06 (SSE )
SKIN (mrem)	6.62E-06 (SSE )	3.67E-06 (SSE )	4.18E-06 (SSE )	4.73E-06 (SSE )	1.92E-05 (SSE )
ORGAN (mrem)	3.81E-05 (NE )	2.31E-05 (NE )	3.69E-05 (NE )	9.61E-05 (NE )	1.94E-04 (NE )
	LIVER THYROID KIDNEY LUNG GI_LLI	LUNG	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID	THYROID

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10CFR 50 APP. I  
 INFANT RECEPTOR

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
GAMMA AIR (mrad)	5.0	0.00	0.00	0.00	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	0.00	0.00	0.00	20.0	0.00
TOT. BODY (mrem)	2.5	0.00	0.00	0.00	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
		LIVER THYROID KIDNEY LUNG GI_LLI	LUNG	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID		THYROID

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT ONE

ACTUAL 1999  
 MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 CHILD RECEPTOR

TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
GAMMA AIR (mrad)	2.97E-06 (SSE )	1.64E-06 (SSE )	1.70E-06 (SSE )	1.91E-06 (SSE )	8.22E-06 (SSE )
BETA AIR (mrad)	6.74E-06 (SSE )	4.05E-06 (SSE )	4.36E-06 (SSE )	5.81E-06 (SSE )	2.10E-05 (SSE )
TOT. BODY (mrem)	2.21E-06 (SSE )	1.22E-06 (SSE )	1.27E-06 (SSE )	1.41E-06 (SSE )	6.11E-06 (SSE )
SKIN (mrem)	6.62E-06 (SSE )	3.67E-06 (SSE )	4.18E-06 (SSE )	4.73E-06 (SSE )	1.92E-05 (SSE )
ORGAN (mrem)	2.68E-05 (NE )	4.31E-05 (SE )	1.45E-04 (SSE )	1.34E-04 (SE )	3.30E-04 (SE )
	LIVER THYROID KIDNEY LUNG GI_LLI	LUNG	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID	THYROID

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10CFR 50 APP. I  
 CHILD RECEPTOR

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
GAMMA AIR (mrad)	5.0	0.00	0.00	0.00	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	0.00	0.00	0.00	20.0	0.00
TOT. BODY (mrem)	2.5	0.00	0.00	0.00	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
		LIVER THYROID KIDNEY LUNG GI_LLI	LUNG	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID		THYROID

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT ONE

ACTUAL 1999  
 MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 TEENAGER RECEPTOR

TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
GAMMA AIR (mrad)	2.97E-06 (SSE )	1.64E-06 (SSE )	1.70E-06 (SSE )	1.91E-06 (SSE )	8.22E-06 (SSE )
BETA AIR (mrad)	6.74E-06 (SSE )	4.05E-06 (SSE )	4.36E-06 (SSE )	5.81E-06 (SSE )	2.10E-05 (SSE )
TOT. BODY (mrem)	2.21E-06 (SSE )	1.22E-06 (SSE )	1.27E-06 (SSE )	1.41E-06 (SSE )	6.11E-06 (SSE )
SKIN (mrem)	6.62E-06 (SSE )	3.67E-06 (SSE )	4.18E-06 (SSE )	4.73E-06 (SSE )	1.92E-05 (SSE )
ORGAN (mrem)	1.75E-05 (NE )	2.86E-05 (SE )	9.44E-05 (SSE )	8.86E-05 (SE )	2.19E-04 (SE )
	LIVER THYROID KIDNEY LUNG GI_LLI	LUNG	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID	THYROID

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10CFR 50 APP. I  
 TEENAGER RECEPTOR

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
GAMMA AIR (mrad)	5.0	0.00	0.00	0.00	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	0.00	0.00	0.00	20.0	0.00
TOT. BODY (mrem)	2.5	0.00	0.00	0.00	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
		LIVER THYROID KIDNEY LUNG GI_LLI	LUNG	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID		THYROID

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT ONE

ACTUAL 1999  
 MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 ADULT RECEPTOR

TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
GAMMA AIR (mrad)	2.97E-06 (SSE )	1.64E-06 (SSE )	1.70E-06 (SSE )	1.91E-06 (SSE )	8.22E-06 (SSE )
BETA AIR (mrad)	6.74E-06 (SSE )	4.05E-06 (SSE )	4.36E-06 (SSE )	5.81E-06 (SSE )	2.10E-05 (SSE )
TOT. BODY (mrem)	2.21E-06 (SSE )	1.22E-06 (SSE )	1.27E-06 (SSE )	1.41E-06 (SSE )	6.11E-06 (SSE )
SKIN (mrem)	6.62E-06 (SSE )	3.67E-06 (SSE )	4.18E-06 (SSE )	4.73E-06 (SSE )	1.92E-05 (SSE )
ORGAN (mrem)	2.43E-05 (S )	3.07E-05 (S )	8.41E-05 (SE )	9.66E-05 (S )	2.33E-04 (S )
	LIVER THYROID KIDNEY LUNG GI_LLI	LUNG	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID	THYROID

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10CFR 50 APP. I  
 ADULT RECEPTOR

----- % OF APP I. -----

QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
GAMMA AIR (mrad)	5.0	0.00	0.00	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	0.00	0.00	20.0	0.00
TOT. BODY (mrem)	2.5	0.00	0.00	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	0.00	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	0.00	0.00	15.0	0.00
	LIVER THYROID KIDNEY LUNG GI_LLI	LUNG	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID		THYROID

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT TWO

ACTUAL 1999  
 MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 INFANT RECEPTOR

TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
GAMMA AIR (mrad)	7.91E-07 (SSE )	4.01E-07 (SSE )	7.70E-07 (SSE )	1.13E-06 (SSE )	3.09E-06 (SSE )
BETA AIR (mrad)	2.29E-06 (SSE )	1.60E-06 (SSE )	1.11E-06 (SSE )	3.78E-06 (SSE )	8.79E-06 (SSE )
TOT. BODY (mrem)	5.69E-07 (SSE )	2.82E-07 (SSE )	5.71E-07 (SSE )	8.07E-07 (SSE )	2.23E-06 (SSE )
SKIN (mrem)	1.36E-06 (SSE )	7.93E-07 (SSE )	1.16E-06 (SSE )	2.03E-06 (SSE )	5.33E-06 (SSE )
ORGAN (mrem)	1.59E-04 (NE )	1.32E-04 (NE )	8.37E-05 (NE )	2.94E-04 (NE )	6.68E-04 (NE )
	LIVER	LIVER THYROID KIDNEY LUNG GI_LLI	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID	THYROID

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10CFR 50 APP. I  
 INFANT RECEPTOR

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
GAMMA AIR (mrad)	5.0	0.00	0.00	0.00	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	0.00	0.00	0.00	20.0	0.00
TOT. BODY (mrem)	2.5	0.00	0.00	0.00	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
	LIVER	LIVER THYROID KIDNEY LUNG GI_LLI	LIVER THYROID KIDNEY LUNG GI_LLI	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID		THYROID

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT TWO

ACTUAL 1999  
 MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 CHILD RECEPTOR

TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
GAMMA AIR (mrad)	7.91E-07 (SSE )	4.01E-07 (SSE )	7.70E-07 (SSE )	1.13E-06 (SSE )	3.09E-06 (SSE )
BETA AIR (mrad)	2.29E-06 (SSE )	1.60E-06 (SSE )	1.11E-06 (SSE )	3.78E-06 (SSE )	8.79E-06 (SSE )
TOT. BODY (mrem)	5.69E-07 (SSE )	2.82E-07 (SSE )	5.71E-07 (SSE )	8.07E-07 (SSE )	2.23E-06 (SSE )
SKIN (mrem)	1.36E-06 (SSE )	7.93E-07 (SSE )	1.16E-06 (SSE )	2.03E-06 (SSE )	5.33E-06 (SSE )
ORGAN (mrem)	1.12E-04 (NE )	2.49E-04 (SE )	3.29E-04 (SSE )	3.32E-04 (SE )	9.52E-04 (SE )
	LIVER	LIVER THYROID KIDNEY LUNG GI_LLI	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID	THYROID

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10CFR 50 APP. I  
 CHILD RECEPTOR

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
GAMMA AIR (mrad)	5.0	0.00	0.00	0.00	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	0.00	0.00	0.00	20.0	0.00
TOT. BODY (mrem)	2.5	0.00	0.00	0.00	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.01
		LIVER	LIVER THYROID KIDNEY LUNG GI_LLI	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID		THYROID

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT TWO

ACTUAL 1999  
 MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 TEENAGER RECEPTOR

TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
GAMMA AIR (mrad)	7.91E-07 (SSE )	4.01E-07 (SSE )	7.70E-07 (SSE )	1.13E-06 (SSE )	3.09E-06 (SSE )
BETA AIR (mrad)	2.29E-06 (SSE )	1.60E-06 (SSE )	1.11E-06 (SSE )	3.78E-06 (SSE )	8.79E-06 (SSE )
TOT. BODY (mrem)	5.69E-07 (SSE )	2.82E-07 (SSE )	5.71E-07 (SSE )	8.07E-07 (SSE )	2.23E-06 (SSE )
SKIN (mrem)	1.36E-06 (SSE )	7.93E-07 (SSE )	1.16E-06 (SSE )	2.03E-06 (SSE )	5.33E-06 (SSE )
ORGAN (mrem)	7.33E-05 (NE )	1.65E-04 (SE )	2.14E-04 (SSE )	2.18E-04 (SE )	6.32E-04 (SE )
	LIVER	LIVER THYROID KIDNEY LUNG GI_LLI	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID	THYROID

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10CFR 50 APP. I  
 TEENAGER RECEPTOR

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
GAMMA AIR (mrad)	5.0	0.00	0.00	0.00	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	0.00	0.00	0.00	20.0	0.00
TOT. BODY (mrem)	2.5	0.00	0.00	0.00	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
	LIVER	LIVER THYROID KIDNEY LUNG GI_LLI	LIVER THYROID KIDNEY LUNG GI_LLI	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID		THYROID

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT TWO

ACTUAL 1999  
 MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 ADULT RECEPTOR

TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
GAMMA AIR (mrad)	7.91E-07 (SSE )	4.01E-07 (SSE )	7.70E-07 (SSE )	1.13E-06 (SSE )	3.09E-06 (SSE )
BETA AIR (mrad)	2.29E-06 (SSE )	1.60E-06 (SSE )	1.11E-06 (SSE )	3.78E-06 (SSE )	8.79E-06 (SSE )
TOT. BODY (mrem)	5.69E-07 (SSE )	2.82E-07 (SSE )	5.71E-07 (SSE )	8.07E-07 (SSE )	2.23E-06 (SSE )
SKIN (mrem)	1.36E-06 (SSE )	7.93E-07 (SSE )	1.16E-06 (SSE )	2.03E-06 (SSE )	5.33E-06 (SSE )
ORGAN (mrem)	1.02E-04 (S )	1.76E-04 (S )	1.91E-04 (SE )	2.29E-04 (S )	6.91E-04 (S )
	LIVER	LIVER THYROID KIDNEY LUNG GI_LLI	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID	THYROID

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10CFR 50 APP. I  
 ADULT RECEPTOR

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
GAMMA AIR (mrad)	5.0	0.00	0.00	0.00	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	0.00	0.00	0.00	20.0	0.00
TOT. BODY (mrem)	2.5	0.00	0.00	0.00	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	0.00	0.00	0.00	15.0	0.00
		LIVER	LIVER THYROID KIDNEY LUNG GI_LLI	LIVER THYROID KIDNEY LUNG GI_LLI	THYROID		THYROID

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995



BYRON STATION UNIT ONE

ACTUAL 1999  
 MAXIMUM DOSES (mrem) RESULTING FROM AQUATIC EFFLUENTS  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 INFANT RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	5.90E-04	3.62E-04	5.14E-04	2.75E-04	1.74E-03
INTERNAL ORGAN	5.94E-04	3.66E-04	5.15E-04	2.77E-04	1.75E-03
	LIVER	LIVER	GI_LLI	LIVER	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10 CFR 50 APP. I

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ.	% OF APP. I
TOTAL BODY (mrem)	1.5	0.04	0.02	0.03	0.02	3.0	0.06
CRIT. ORGAN (mrem)	5.0	0.01	0.01	0.01	0.01	10.0	0.02
		LIVER	LIVER	GI_LLI	LIVER		LIVER

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT ONE

1999 ANNUAL REPORT  
 PROJECTED DOSE AT NEAREST COMMUNITY WATER SYSTEM \*  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 INFANT RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	5.90E-04	3.62E-04	5.14E-04	2.75E-04	1.74E-03
INTERNAL ORGAN	5.94E-04	3.66E-04	5.15E-04	2.77E-04	1.75E-03
	LIVER	LIVER	GI_LLI	LIVER	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 40 CFR 141

TYPE	ANNUAL LIMIT	% OF LIMIT
TOTAL BODY	4.0 mrem	0.044
INTERNAL ORGAN	4.0 mrem	0.044

LIVER

\* THIS CALCULATION OF DOSE IS BASED ON TECHNIQUES DESCRIBED IN THE COMMONWEALTH EDISON OFFSITE DOSE CALCULATION MANUAL. THESE TECHNIQUES DIFFER FROM THOSE DESCRIBED IN 40 CFR 141.

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT ONE

ACTUAL 1999  
 MAXIMUM DOSES (mrem) RESULTING FROM AQUATIC EFFLUENTS  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 CHILD RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	8.77E-04	9.43E-04	7.63E-04	3.93E-04	2.98E-03
INTERNAL ORGAN	1.58E-03	2.60E-03	2.09E-03	7.30E-04	6.08E-03
	LIVER	LIVER	GI_LLI	LIVER	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10 CFR 50 APP. I

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
TOTAL BODY (mrem)	1.5	0.06	0.06	0.05	0.03	3.0	0.10
CRIT. ORGAN (mrem)	5.0	0.03	0.05	0.04	0.01	10.0	0.06
		LIVER	LIVER	GI_LLI	LIVER		LIVER

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT ONE

1999 ANNUAL REPORT  
 PROJECTED DOSE AT NEAREST COMMUNITY WATER SYSTEM \*  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 CHILD RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	5.93E-04	3.64E-04	5.17E-04	2.76E-04	1.75E-03
INTERNAL ORGAN	5.96E-04	3.73E-04	5.24E-04	2.78E-04	1.77E-03
	LIVER	GI_LLI	GI_LLI	GI_LLI	GI_LLI

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 40 CFR 141

TYPE	ANNUAL LIMIT	% OF LIMIT
TOTAL BODY	4.0 mrem	0.044
INTERNAL ORGAN	4.0 mrem	0.044

GI\_LLI

\* THIS CALCULATION OF DOSE IS BASED ON TECHNIQUES DESCRIBED IN THE COMMONWEALTH EDISON OFFSITE DOSE CALCULATION MANUAL. THESE TECHNIQUES DIFFER FROM THOSE DESCRIBED IN 40 CFR 141.

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT ONE

ACTUAL 1999  
 MAXIMUM DOSES (mrem) RESULTING FROM AQUATIC EFFLUENTS  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 TEENAGER RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	8.86E-04	1.46E-03	6.34E-04	3.55E-04	3.34E-03
INTERNAL ORGAN	1.46E-03	2.80E-03	4.49E-03	8.07E-04	7.84E-03
	LIVER	LIVER	GI_LLI	GI_LLI	GI_LLI

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10 CFR 50 APP. I

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
TOTAL BODY (mrem)	1.5	0.06	0.10	0.04	0.02	3.0	0.11
CRIT. ORGAN (mrem)	5.0	0.03	0.06	0.09	0.02	10.0	0.08
		LIVER	LIVER	GI_LLI	GI_LLI		GI_LLI

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT ONE

1999 ANNUAL REPORT  
 PROJECTED DOSE AT NEAREST COMMUNITY WATER SYSTEM \*  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 TEENAGER RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	3.10E-04	1.90E-04	2.69E-04	1.44E-04	9.13E-04
INTERNAL ORGAN	3.13E-04	2.08E-04	2.86E-04	1.47E-04	9.54E-04
	GI_LLI	GI_LLI	GI_LLI	GI_LLI	GI_LLI

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 40 CFR 141

TYPE	ANNUAL LIMIT	% OF LIMIT
TOTAL BODY	4.0 mrem	0.023
INTERNAL ORGAN	4.0 mrem	0.024

GI\_LLI

\* THIS CALCULATION OF DOSE IS BASED ON TECHNIQUES DESCRIBED IN THE COMMONWEALTH EDISON OFFSITE DOSE CALCULATION MANUAL. THESE TECHNIQUES DIFFER FROM THOSE DESCRIBED IN 40 CFR 141.

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT ONE

ACTUAL 1999  
 MAXIMUM DOSES (mrem) RESULTING FROM AQUATIC EFFLUENTS  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 ADULT RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	1.40E-03	2.43E-03	9.22E-04	5.51E-04	5.30E-03
INTERNAL ORGAN	1.61E-03	2.89E-03	6.44E-03	1.11E-03	1.10E-02
	LIVER	LIVER	GI_LLI	GI_LLI	GI_LLI

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10 CFR 50 APP. I

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
TOTAL BODY (mrem)	1.5	0.09	0.16	0.06	0.04	3.0	0.18
CRIT. ORGAN(mrem)	5.0	0.03	0.06	0.13	0.02	10.0	0.11
		LIVER	LIVER	GI_LLI	GI_LLI		GI_LLI

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT ONE

1999 ANNUAL REPORT  
 PROJECTED DOSE AT NEAREST COMMUNITY WATER SYSTEM \*  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 ADULT RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	4.40E-04	2.69E-04	3.80E-04	2.04E-04	1.29E-03
INTERNAL ORGAN	4.44E-04	2.98E-04	4.08E-04	2.09E-04	1.36E-03
	GI_LLI	GI_LLI	GI_LLI	GI_LLI	GI_LLI

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 40 CFR 141

TYPE	ANNUAL LIMIT	% OF LIMIT
TOTAL BODY	4.0 mrem	0.032
INTERNAL ORGAN	4.0 mrem	0.034

GI\_LLI

\* THIS CALCULATION OF DOSE IS BASED ON TECHNIQUES DESCRIBED IN THE COMMONWEALTH EDISON OFFSITE DOSE CALCULATION MANUAL. THESE TECHNIQUES DIFFER FROM THOSE DESCRIBED IN 40 CFR 141.

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
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 ODCM DATABASE VERSION 1.1 January 1995



BYRON STATION UNIT TWO

ACTUAL 1999  
 MAXIMUM DOSES (mrem) RESULTING FROM AQUATIC EFFLUENTS  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 INFANT RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	5.90E-04	3.62E-04	5.14E-04	2.75E-04	1.74E-03
INTERNAL ORGAN	5.94E-04	3.66E-04	5.15E-04	2.77E-04	1.75E-03
	LIVER	LIVER	GI_LLI	LIVER	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10 CFR 50 APP. I

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
TOTAL BODY (mrem)	1.5	0.04	0.02	0.03	0.02	3.0	0.06
CRIT. ORGAN(mrem)	5.0	0.01	0.01	0.01	0.01	10.0	0.02
		LIVER	LIVER	GI_LLI	LIVER		LIVER

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT TWO

1999 ANNUAL REPORT  
 PROJECTED DOSE AT NEAREST COMMUNITY WATER SYSTEM \*  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 INFANT RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	5.90E-04	3.62E-04	5.14E-04	2.75E-04	1.74E-03
INTERNAL ORGAN	5.94E-04	3.66E-04	5.15E-04	2.77E-04	1.75E-03
	LIVER	LIVER	GI_LLI	LIVER	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 40 CFR 141

TYPE	ANNUAL LIMIT	% OF LIMIT
TOTAL BODY	4.0 mrem	0.044
INTERNAL ORGAN	4.0 mrem	0.044

LIVER

\* THIS CALCULATION OF DOSE IS BASED ON TECHNIQUES DESCRIBED IN THE COMMONWEALTH EDISON OFFSITE DOSE CALCULATION MANUAL. THESE TECHNIQUES DIFFER FROM THOSE DESCRIBED IN 40 CFR 141.

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
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BYRON STATION UNIT TWO

ACTUAL 1999  
 MAXIMUM DOSES (mrem) RESULTING FROM AQUATIC EFFLUENTS  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 CHILD RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	8.77E-04	9.43E-04	7.63E-04	3.93E-04	2.98E-03
INTERNAL ORGAN	1.58E-03	2.60E-03	2.09E-03	7.30E-04	6.08E-03
	LIVER	LIVER	GI_LLI	LIVER	LIVER

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10 CFR 50 APP. I

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
TOTAL BODY (mrem)	1.5	0.06	0.06	0.05	0.03	3.0	0.10
CRIT. ORGAN (mrem)	5.0	0.03	0.05	0.04	0.01	10.0	0.06
		LIVER	LIVER	GI_LLI	LIVER		LIVER ,

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT TWO

1999 ANNUAL REPORT  
 PROJECTED DOSE AT NEAREST COMMUNITY WATER SYSTEM \*  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 CHILD RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	5.93E-04	3.64E-04	5.17E-04	2.76E-04	1.75E-03
INTERNAL ORGAN	5.96E-04	3.73E-04	5.24E-04	2.78E-04	1.77E-03
	LIVER	GI_LLI	GI_LLI	GI_LLI	GI_LLI

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 40 CFR 141

TYPE	ANNUAL LIMIT	% OF LIMIT
TOTAL BODY	4.0 mrem	0.044
INTERNAL ORGAN	4.0 mrem	0.044

GI\_LLI

\* THIS CALCULATION OF DOSE IS BASED ON TECHNIQUES DESCRIBED IN THE COMMONWEALTH EDISON OFFSITE DOSE CALCULATION MANUAL. THESE TECHNIQUES DIFFER FROM THOSE DESCRIBED IN 40 CFR 141.

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT TWO

ACTUAL 1999  
 MAXIMUM DOSES (mrem) RESULTING FROM AQUATIC EFFLUENTS  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 TEENAGER RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY INTERNAL ORGAN	8.86E-04	1.46E-03	6.34E-04	3.55E-04	3.34E-03
	1.46E-03	2.80E-03	4.49E-03	8.07E-04	7.84E-03
	LIVER	LIVER	GI_LLI	GI_LLI	GI_LLI

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10 CFR 50 APP. I

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
TOTAL BODY (mrem)	1.5	0.06	0.10	0.04	0.02	3.0	0.11
CRIT. ORGAN (mrem)	5.0	0.03	0.06	0.09	0.02	10.0	0.08
		LIVER	LIVER	GI_LLI	GI_LLI		GI_LLI

RESULTS BASED UPON:  
 ODCM ANNEX REVISION 1.3 MARCH 1996  
 ODCM SOFTWARE VERSION 1.1 January 1995  
 ODCM DATABASE VERSION 1.1 January 1995

BYRON STATION UNIT TWO

1999 ANNUAL REPORT  
 PROJECTED DOSE AT NEAREST COMMUNITY WATER SYSTEM \*  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 TEENAGER RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	3.10E-04	1.90E-04	2.69E-04	1.44E-04	9.13E-04
INTERNAL ORGAN	3.13E-04	2.08E-04	2.86E-04	1.47E-04	9.54E-04
	GI_LLI	GI_LLI	GI_LLI	GI_LLI	GI_LLI

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 40 CFR 141

TYPE	ANNUAL LIMIT	% OF LIMIT
TOTAL BODY	4.0 mrem	0.023
INTERNAL ORGAN	4.0 mrem	0.024

GI\_LLI

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RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
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BYRON STATION UNIT TWO

ACTUAL 1999  
 MAXIMUM DOSES (mrem) RESULTING FROM AQUATIC EFFLUENTS  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 ADULT RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY	1.40E-03	2.43E-03	9.22E-04	5.51E-04	5.30E-03
INTERNAL ORGAN	1.61E-03	2.89E-03	6.44E-03	1.11E-03	1.10E-02
	LIVER	LIVER	GI_LLI	GI_LLI	GI_LLI

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 10 CFR 50 APP. I

----- % OF APP I. -----

	QTRLY OBJ	1ST QTR JAN-MAR	2ND QTR APR-JUN	3RD QTR JUL-SEP	4TH QTR OCT-DEC	YRLY OBJ	% OF APP. I
TOTAL BODY (mrem)	1.5	0.09	0.16	0.06	0.04	3.0	0.18
CRIT. ORGAN(mrem)	5.0	0.03	0.06	0.13	0.02	10.0	0.11
		LIVER	LIVER	GI_LLI	GI_LLI		GI_LLI

RESULTS BASED UPON: ODCM ANNEX REVISION 1.3 MARCH 1996  
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 PROJECTED DOSE AT NEAREST COMMUNITY WATER SYSTEM \*  
 PERIOD OF RELEASE - 01/01/99 TO 12/31/99 CALCULATED 04/12/00  
 ADULT RECEPTOR

DOSE TYPE	1ST QUARTER JAN-MAR	2ND QUARTER APR-JUN	3RD QUARTER JUL-SEP	4TH QUARTER OCT-DEC	ANNUAL
TOTAL BODY INTERNAL ORGAN	4.40E-04	2.69E-04	3.80E-04	2.04E-04	1.29E-03
	4.44E-04	2.98E-04	4.08E-04	2.09E-04	1.36E-03
	GI_LLI	GI_LLI	GI_LLI	GI_LLI	GI_LLI

THIS IS A REPORT FOR THE CALENDAR YEAR 1999

COMPLIANCE STATUS - 40 CFR 141

TYPE	ANNUAL LIMIT	% OF LIMIT
TOTAL BODY INTERNAL ORGAN	4.0 mrem	0.032
	4.0 mrem	0.034

GI\_LLI

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