



Commonwealth Edison
Byron Nuclear Station
4450 North German Church Road
Byron, Illinois 61010

August 15, 1994

LTR: BYRON 94-0300

FILE: 2.12.1522 (1.10.0101)

Mr. J. B. Martin, Administrator
Nuclear Regulatory Commission Region III
801 Warrenville Road
Lisle, Illinois 60532-4351

SUBJECT: Semi-Annual Radiological Effluent Release Report
Byron Station Units 1 and 2
Facility Operating License Nos. NPF 37 and 66
NRC Docket Nos. 50-454 and 50-455

Dear Mr. Martin:

Enclosed is the Semi-Annual Radiological Effluent Release Report for January through June, 1994, for Byron Nuclear Power Station. This report is required by Technical Specification 6.9.1.7.

Two copies of the report are provided for your use. Two copies will be forwarded to the Document Control Desk and one copy to the Senior Resident Inspector.

Sincerely,

G.K. Schwartz
Station Manager
Byron Nuclear Power Station

GKS/DD/rp

Enclosure

cc: Distribution List Attached

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SEMI-ANNUAL RADIOLOGICAL EFFLUENT RELEASE REPORT

DISTRIBUTION LIST

Director of Nuclear Reactor Regulation - U.S. Nuclear
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Chemistry Services - Chemistry Services Director

Byron Station Central Files, File Number 2.12.1522

Health Physics Services Supervisor - Byron Nuclear Power Station

Radiological Effluent Monitoring Program Coordinator

NRC Senior Resident Inspector - Byron Nuclear Power Station

B.P.I. Associates General Counsel

Health Physics Services Supervisor - Braidwood Nuclear Power Station

BYRON NUCLEAR POWER STATION
EFFLUENT AND WASTE DISPOSAL REPORT
JANUARY through JUNE 1994
Supplemental Information

1. Regulatory Limits

a. Fission and activation gases:

10CFR20 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:

10CFR 20 Organ = 1500 mrem/year

10CFR 50 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: 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 daily for the plant vent stacks.

BYRON NUCLEAR POWER STATION
EFFLUENT AND WASTE DISPOSAL REPORT
JANUARY through JUNE 1994
Supplemental Information
(continued)

- c. Liquids 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 = 99
- 2. Total time period for batch releases = 8,648 minutes
- 3. Maximum time period for a batch release = 233 minutes
- 4. Average time period for a batch release = 87.4 minutes
- 5. Minimum time period for a batch release = 8 minutes
- 6. Average stream flow during periods of release of effluent into a flowing stream = 8,448 cfs, based on information from the National Weather Service or Army Corps of Engineers for the Rock River.

b. Gaseous:

- 1. Number of batch releases = 174
- 2. Total time period for batch releases = 14,361 minutes
- 3. Maximum time period for a batch release = 386 minutes
- 4. Average time period for batch releases = 82.5 minutes
- 5. Minimum time period for a batch release = 2 minutes

6. Abnormal Releases:

a. Liquid - none

b. Gaseous - none

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

January, 1994 THROUGH June, 1994

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

A. FISSION AND ACTIVATION GAS RELEASES

1. Total Release Activity
2. Maximum Release Rate for Quarter
3. % of 10CFR20 Limits*

UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR
-------	---------	---------	---------	---------

Ci	2.72E-1	3.51E-1		
uCi/sec	2.85E+0	1.97E+0		

- a. Whole Body (500 mrem/yr)
- b. Skin (3000 mrem/yr)

%	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		

B. IODINE RELEASES**

1. Total I-131/I-133 Activity

Ci	<LLD	<LLD		
----	------	------	--	--

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

1. Gross Activity
2. Gross Alpha Activity for Quarter

Ci	<LLD	<LLD		
Ci	<LLD	<LLD		

D. TRITIUM RELEASES**

1. Total Release Activity

Ci	1.37E-1	7.20E-1		
----	---------	---------	--	--

* % of 10CFR20 limits is based on the maximum release rate for the period considered.

** Iodine, particulate, and tritium % of 10CFR20/10CFR50 limits are expressed as a total limit. See step E.

BYRON NUCLEAR POWER STATION
UNIT 1 DOCKET NUMBER STN-50-454
RADIOACTIVE EFFLUENT RELEASE REPORTJanuary, 1994 THROUGH June, 1994GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES (CONT)

UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR
-------	---------	---------	---------	---------

E. SUM OF IODINE, PARTICULATE (>8 day half-life), AND TRITIUM RELEASES

1. Total Activity

Ci	1.37E-1	7.20E-1		
----	---------	---------	--	--

2. % of 10CFR20 Limit

a. Any Organ (1500 mrem/yr)

%	0.00	0.00		
---	------	------	--	--

3. % of 10CFR50 Limit

a. Quarterly Any Organ (7.5 mrem)

%	0.00	0.00		
---	------	------	--	--

b. Annual Any Organ (15.0 mrem)

%	0.00	0.00		
---	------	------	--	--

GASEOUS EFFLUENTS - VENT STACK RELEASES - BATCH MODE

F. FISSION AND ACTIVATION GAS RELEASES

Xe-133
Ar-41
Kr-85
Kr-88
Xe-135

Ci	1.46E-1	5.86E-2		
Ci	1.80E-2	3.85E-2		
Ci	8.57E-3	5.93E-3		
Ci	3.64E-3	<LLD		
Ci	9.15E-4	<LLD		
Ci	-			
Ci				
Ci				
Ci				
Ci				
Ci				
Ci				
Ci				

BYRON NUCLEAR POWER STATION
UNIT 1 DOCKET NUMBER STN-50-454
RADIOACTIVE EFFLUENT RELEASE REPORTJanuary, 1994 THROUGH June, 1994GASEOUS EFFLUENTS - VENT STACK RELEASES - BATCH MODE (CONT)

UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR
-------	---------	---------	---------	---------

G. IODINE RELEASES

I-131
I-133
I-135

Ci	*	*		
Ci	*	*		
Ci	*	*		

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

Sr-89
Sr-90

Ci	*	*		
Ci	*	*		
Ci				
Ci				
Ci				

* - Value reported as CONTINUOUS RELEASE MODE.

GASEOUS EFFLUENTS - VENT STACK RELEASES - CONTINUOUS MODE

I. FISSION AND ACTIVATION GAS RELEASES

Xe-133

Ci	9.45E-2	2.48E-1		
Ci				
Ci				
Ci				
Ci				
Ci				
Ci				
Ci				

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

January, 1994 THROUGH June, 1994

GASEOUS EFFLUENTS - VENT STACK RELEASES - CONTINUOUS MODE (CONT)

UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR
-------	---------	---------	---------	---------

J. IODINE RELEASES

I-131
I-133
I-135

Ci	<LLD	<LLD		
Ci	<LLD	<LLD		
Ci	<LLD	<LLD		

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

Sr-89
Sr-90

Ci	<LLD	*		
Ci	<LLD	*		
Ci				
Ci				
Ci				

* Analysis done by offsite vendor: Results not available.

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

L. FISSION AND ACTIVATION GAS RELEASES

1. Total Activity Released

Ci	9.23E-3	5.10E-2		
uCi/ml	3.61E-9	1.92E-8		

2. Average Concentration Released
for Quarter

3. % of 10CFR50 Limits

5

- a. Quarterly Whole Body
(1.5 mrem)
- b. Quarterly Any Organ
(5.0 mrem)
- c. Annual Whole Body
(3.0 mrem)
- d. Annual Any Organ
(10.0 mrem)

%	0.03	0.05		
%	0.01	0.02		
%	0.01	0.03		
%	0.01	0.01		

BYRON NUCLEAR POWER STATION
UNIT 1 DOCKET NUMBER STN-50-454
RADIOACTIVE EFFLUENT RELEASE REPORTJanuary, 1994 THROUGH June, 1994LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES (CONT)

M. TRITIUM

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

UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR
Ci	1.95E+2	3.22E+2		
uCi/ml	7.64E-5	1.21E-4		
%	7.64	12.12		

N. DISSOLVED NOBLE GASES

1. Total Activity Released
2. Average Concentration Released for Quarter
3. % of Limit (2.00E-4 uCi/ml)

Ci	7.38E-4	4.49E-3		
uCi/ml	2.89E-10	1.69E-9		
%	1.44E-4	8.47E-4		

O. GROSS ALPHA

1. Total Activity Released
2. Average Concentration Released for Quarter

Ci	<LLD	<LLD		
uCi/ml	0.00	0.00		

P. VOLUME OF WASTE RELEASED PER UNIT

liters	2.10E+6	2.68E+6		
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Q. VOLUME OF DILUTION WATER PER UNIT

liters	2.56E+9	2.65E+9		
--------	---------	---------	--	--

LIQUID EFFLUENTS - CONTINUOUS MODE

R. LIQUID EFFLUENTS

Fe-55
Sr-89
Sr-90

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

* Value reported as LIQUID EFFLUENTS - BATCH MODE.

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BYRON NUCLEAR POWER STATION
UNIT 1 DOCKET NUMBER STN-50-454
RADIOACTIVE EFFLUENT RELEASE REPORTJanuary, 1994 THROUGH June, 1994LIQUID EFFLUENTS - BATCH MODE

UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR
-------	---------	---------	---------	---------

S. LIQUID EFFLUENTS

H-3
Mn-54
Co-57
Co-58
Fe-59
Co-60
Zn-65
Kr-88
Nb-95
Zr-95
Ag-110m
Sn-113
Sb-122
Sb-124
Sb-125
Te-125m
I-131
Xe-133
Xe-133m
Xe-135
Cs-134

Ci	1.95E+2	3.22E+2		
Ci				
Ci	1.61E-4	1.70E-3		
Ci	1.24E-5	1.56E-4		
Ci	1.12E-3	3.13E-3		
Ci	1.27E-5	<LLD		
Ci	4.82E-3	3.07E-2		
Ci	8.88E-6	2.74E-4		
Ci	3.90E-5	<LLD		
Ci	1.95E-5	1.66E-4		
Ci	5.33E-6	<LLD		
Ci	2.28E-5	8.31E-4		
Ci	<LLD	4.29E-5		
Ci	<LLD	2.55E-4		
Ci	<LLD	5.61E-4		
Ci	2.74E-3	6.30E-3		
Ci	<LLD	6.29E-3		
Ci	2.96E-6	<LLD		
Ci	6.96E-4	4.39E-3		
Ci	<LLD	3.70E-5		
Ci	3.72E-6	5.89E-5		
Ci	9.23E-5	1.07E-4		

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S. LIQUID EFFLUENTS (CONT.)

UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR
-------	---------	---------	---------	---------

[illegible]

* Analysis performed by Off-site vendor. Results not available.

T. 10CFR20 PUBLIC TEDE COMPLIANCE

8	0.00	0.00		
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BYRON NUCLEAR POWER STATION
UNIT 2 DOCKET NUMBER STN-50-455
RADIOACTIVE EFFLUENT RELEASE REPORT

January 1994 THROUGH June 1994

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

A. FISSION AND ACTIVATION GAS RELEASES

1. Total Release Activity
2. Maximum Release Rate for Quarter

UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR
-------	---------	---------	---------	---------

Ci	1.59E-1	3.44E-1		
uCi/sec	1.91E+0	1.38E+0		

3. % of 10CFR20 Limits*

- a. Whole Body (500 mrem/yr)
- b. Skin (3000 mrem/yr)

%	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		

B. IODINE RELEASES**

1. Total I-131/I-133 Activity

Ci	<LLD	<LLD		
----	------	------	--	--

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

1. Gross Activity
2. Gross Alpha Activity for Quarter

Ci	<LLD	<LLD		
Ci	<LLD	<LLD		

D. TRITIUM RELEASES**

1. Total Release Activity

Ci	2.75E-1	4.75E-1		
----	---------	---------	--	--

* % of 10CFR20 limits is based on the maximum release rate for the period considered.

** Iodine, particulate, and tritium % of 10CFR20/10CFR50 limits are expressed as a total limit. See step E.

BYRON NUCLEAR POWER STATION
UNIT 2 DOCKET NUMBER STN-50- 455
RADIOACTIVE EFFLUENT RELEASE REPORTJanuary, 1994 THROUGH June, 1994GASEOUS EFFLUENTS - VENT STACK RELEASES - BATCH MODE (CONT)

UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR
-------	---------	---------	---------	---------

G. IODINE RELEASES

I-131
I-133
I-135

Ci	*	*		
Ci	*	*		
Ci	*	*		

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

Sr-89
Sr-90

Ci	*	*		
Ci	*	*		
Ci				
Ci				
Ci				

* Value reported as CONTINUOUS RELEASE MODE.

GASEOUS EFFLUENTS - VENT STACK RELEASES - CONTINUOUS MODE

I. FISSION AND ACTIVATION GAS RELEASES

Xe-133

Ci	9.45E-2	2.48E-1		
Ci				
Ci				
Ci	-			
Ci				
Ci				
Ci				
Ci				

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

January, 1994 THROUGH June, 1994

GASEOUS EFFLUENTS - VENT STACK RELEASES - CONTINUOUS MODE (CONT)

UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR
-------	---------	---------	---------	---------

J. IODINE RELEASES

I-131
I-133
I-135

Ci	<LLD	<LLD		
Ci	<LLD	<LLD		
Ci	<LLD	<LLD		

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

Sr-89
Sr-90

Ci	<LLD	*		
Ci	<LLD	*		
Ci				
Ci				
Ci				

* Analysis done by Offsite vendor. Results not available.

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

L. FISSION AND ACTIVATION GAS RELEASES

1. Total Activity Released
2. Average Concentration Released for Quarter
3. % of 10CFR50 Limits

Ci	9.23E-3	5.10E-2		
uCi/ml	3.61E-9	1.92E-8		

5

- a. Quarterly Whole Body (1.5 mrem)
- b. Quarterly Any Organ (5.0 mrem)
- c. Annual Whole Body (3.0 mrem)
- d. Annual Any Organ (10.0 mrem)

%	0.03	0.05		
%	0.01	0.02		
%	0.01	0.03		
%	0.01	0.01		

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

January, 1994 THROUGH June, 1994

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES (CONT)

M. TRITIUM

1. Total Activity Released

2. Average Concentration Released
for Quarter

3. % of Limit (1.00E-3 uCi/ml)

UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR
Ci	1.95E+2	3.22E+2		
uCi/ml	7.64E-5	1.21E-4		
%	7.64	12.12		

N. DISSOLVED NOBLE GASES

1. Total Activity Released

2. Average Concentration Released
for Quarter

3. % of Limit (2.00E-4 uCi/ml)

Ci	7.38E-4	4.49E-3		
uCi/ml	2.89E-10	1.69E-9		
%	1.44E-4	8.47E-4		

O. GROSS ALPHA

1. Total Activity Released

2. Average Concentration Released
for Quarter

Ci	<LLD	<LLD		
uCi/ml	0.00	0.00		

P. VOLUME OF WASTE RELEASED PER UNIT

liters	2.10E+6	2.68E+6		
--------	---------	---------	--	--

Q. VOLUME OF DILUTION WATER PER UNIT

liters	2.56E+9	2.65E+9		
--------	---------	---------	--	--

LIQUID EFFLUENTS - CONTINUOUS MODE

R. LIQUID EFFLUENTS

Fe-55
Sr-89
Sr-90

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

* Value reported as LIQUID EFFLUENTS - BATCH MODE.

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BYRON NUCLEAR POWER STATION
UNIT 2 DOCKET NUMBER STN-50-455
RADIOACTIVE EFFLUENT RELEASE REPORT
January, 1994 THROUGH June, 1994

LIQUID EFFLUENTS - BATCH MODE

UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR
-------	---------	---------	---------	---------

S. LIQUID EFFLUENTS

H-3
Mn-54
Co-57
Co-58
Fe-59
Co-60
Zn-65
Kr-88
Nb-95
Zr-95
Ag-110m
Sn-113
Sb-122
Sb-124
Sb-125
Te-125m
I-131
Xe-133
Xe-133m
Xe-135
Cs-134
Cs-137

Ci	1.95E+2	3.22E+2		
Ci	1.61E-4	1.70E-3		
Ci	1.24E-5	1.56E-4		
Ci	1.12E-3	3.13E-3		
Ci	1.27E-5	<LLD		
Ci	4.82E-3	3.07E-2		
Ci	8.88E-6	2.74E-4		
Ci	3.90E-5	<LLD		
Ci	1.95E-5	1.66E-4		
Ci	5.33E-6	<LLD		
Ci	2.28E-5	8.31E-4		
Ci	<LLD	4.29E-5		
Ci	<LLD	2.55E-4		
Ci	<LLD	5.61E-4		
Ci	2.74E-3	6.30E-3		
Ci	<LLD	6.29E-3		
Ci	2.96E-6	<LLD		
Ci	6.96E-4	4.39E-3		
Ci	<LLD	3.70E-5		
Ci	3.72E-6	5.89E-5		
Ci	9.23E-5	1.07E-4		
Ci	2.19E-4	3.49E-4		

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UNITS	1ST QTR	2ND QTR	3RD QTR	4TH QTR
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[illegible][illegible]

1. 1/2 OF 10CFR TEDE LIMIT
(100 mrem/yr)

8	0.00	0.00		
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BYRON NUCLEAR POWER STATION
UNIT 1/2 DOCKET NUMBER STN-50-454/455
RADIOACTIVE EFFLUENT RELEASE REPORT

January, 1994 THROUGH June, 1994

SOLID RADIOACTIVE WASTE 1st QUARTER 1994 YEAR

DATE	DISPOSITION OF MATERIAL (DESCRIPTION, CLASS, TYPE, AND SOLIDIFYING AGENT)	MODE OF TRANSPORT	DESTINATION	VOLUME PER SHIPMENT CUBIC FT	CURIES PER SHIPMENT
02-11-94	Dewatered bead resin, Class A Unstable, Liner, None	Exclusive Use	Barnwell, S.C.	199.4	3.21
02-18-94	Filters, Class A Stable, HIC, None	Exclusive Use	Barnwell, S.C.	132.4	14.6
QUARTERLY TOTALS - NUMBER OF SHIPMENTS: 2				331.8	17.81
				CUBIC FT	CURIES

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(Final)

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BYRON NUCLEAR POWER STATION
UNIT 1/2 DOCKET NUMBER STN-50-454/455
RADIOACTIVE EFFLUENT RELEASE REPORT

January, 1994 THROUGH June, 1994

SOLID RADIOACTIVE WASTE 2nd QUARTER 1994 YEAR

DATE	DISPOSITION OF MATERIAL (DESCRIPTION, CLASS, TYPE, AND SOLIDIFYING AGENT)	MODE OF TRANSPORT	DESTINATION	VOLUME PER SHIPMENT CUBIC FT	CURIES PER SHIPMENT
04-05-94	Dewatered Bead Resin, Class B Stable, HIC, None	Exclusive Use	Barnwell, S.C.	132.4	68
04-18-94	DAW, Class A Unstable, Drums, None	Exclusive Use	Barnwell, S.C.	105	3.08
05-03-94	Dewatered Bead Resin, Class A Unstable, Cask, None	Exclusive Use	Barnwell, S.C.	199.4	3.59
05-10-94	Filters, Class B Stable, HIC, None	Exclusive Use	Barnwell, S.C.	132.4	69
05-17-94	Dewatered Bead Resin, Class A Unstable, Cask, None	Exclusive Use	Barnwell, S.C.	199.4	9
05-24-94	Dewatered Bead Resin, Class A Unstable, Cask, None	Exclusive Use	Barnwell, S.C.	199.4	12
06-07-94	DAW, Class A Unstable, Drums, None	Exclusive Use	Barnwell, S.C.	399.6	0.479
06-10-94	Dewatered Bead Resin, Class A Unstable, Cask, None	Exclusive Use	Barnwell, S.C.	199.4	0.26
(Continued on Page 19 of 23)					
QUARTERLY TOTALS - NUMBER OF SHIPMENTS: 10				1939.3	167.72
				CUBIC FT	CURIES

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BYRON NUCLEAR POWER STATION
UNIT 1/2 DOCKET NUMBER STN-50-454/455
RADIOACTIVE EFFLUENT RELEASE REPORTJanuary, 1994 THROUGH June, 1994SOLID RADIOACTIVE WASTE 2nd QUARTER 1994 YEAR

DATE	DISPOSITION OF MATERIAL (DESCRIPTION, CLASS, TYPE, AND SOLIDIFYING AGENT)	MODE OF TRANSPORT	DESTINATION	VOLUME PER SHIPMENT CUBIC FT	CURIES PER SHIPMENT
06-17-94	Dewatered Bead Resin, Class A Unstable, Cask, None	Exclusive Use	Barnwell, S.C.	170.2	0.535
06-27-94	Dewatered Bead Resin & Filters, Class A Stable, HIC, None	Exclusive Use	Barnwell, S.C.	202.1	1.78
				(Totals on Page) 18 of 23	
QUARTERLY TOTALS - NUMBER OF SHIPMENTS: <u>(See Page 18 of 23)</u>				CUBIC FT	CURIES

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(Final)

APPROVED
APR 18 1994

BYRON NUCLEAR POWER STATION
EFFLUENT AND WASTE DISPOSAL REPORT
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ADDENDUM

A. The following data is the estimated composition of Byron's solid waste.

1. Dry Active Waste (DAW)		2. Primary Resin		3. Radwaste Resin	
Cr-51	5.36%	Cr-51	<0.01%	Cr-51	<0.01%
Mn-54	1.89%	Mn-54	5.31%	Mn-54	1.16%
Co-57	<0.01%	Co-57	0.44%	Co-57	0.13%
Co-58	22.40%	Co-58	7.28%	Co-58	2.45%
Fe-59	<0.01%	Fe-59	<0.01%	Fe-59	<0.01%
Co-60	18.12%	Co-60	17.32%	Co-60	23.08%
Zn-65	<0.01%	Zn-65	0.36%	Zn-65	<0.01%
Sr-92	<0.01%	Sr-92	<0.01%	Sr-92	<0.01%
Nb-95	2.11%	Nb-95	<0.01%	Nb-95	<0.01%
Zr-95	1.19%	Zr-95	<0.01%	Zr-95	<0.01%
Sb-124	<0.01%	Ag-110m	<0.01%	Ag-110m	<0.01%
Sb-125	<0.01%	Sb-124	<0.01%	Sn-113	<0.01%
Sn-113	<0.01%	Sb-125	1.60%	Sb-124	<0.01%
Cs-134	0.70%	Cs-134	10.41%	Sb-125	0.81%
Cs-137	2.21%	Cs-137	16.00%	Cs-134	6.24%
H-3	3.80%	H-3	<0.01%	Cs-137	12.32%
C-14	1.09%	C-14	1.04%	H-3	<0.01%
Fe-55	32.58%	Fe-55	31.12%	C-14	1.38%
Ni-63	8.51%	Ni-63	8.13%	Fe-55	41.51%
Sr-90	0.04%	Sr-90	0.04%	Ni-63	10.86%
Tc-99	<0.01%	Tc-99	<0.01%	Sr-90	0.05%
I-129	<0.01%	I-129	<0.01%	Tc-99	<0.01%
Pu-239	<0.01%	Pu-239	<0.01%	I-129	<0.01%
Pu-238	<0.01%	Pu-238	<0.01%	Pu-239	<0.01%
Pu-241	<0.01%	Pu-241	<0.01%	Pu-238	<0.01%
Am-241	<0.01%	Am-241	<0.01%	Pu-241	0.02%
Cm-242	<0.01%	Cm-242	<0.01%	Am-241	<0.01%
Cm-244	<0.01%	Cm-244	<0.01%	Cm-242	<0.01%
		Sb-122	.95%	Cm-244	<0.01%

B. There were no major changes or modifications to the PCP or to any liquid gaseous or solid radwaste treatment systems for this period. Byron Station continues to utilize the services of Pacific Nuclear for dewatering and solidification services.

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	= 10%
Counting Statistics error	= 5%
Vent Stack Flowrates error	= 1.5%
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Total error	= 11 - 12%

2. Liquid Effluents

Sampling error	= 1%
Calibration error	= 10%
Sample volume error	= 1%
Discharged volume error	= 2%
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Total error	= 10%

3. Waste Resin

Sampling error	= 5%
Counting Statistics error	= 7%
Weight error	= 1%
Volume error	= 5%
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Total error	= 10%

4. DAP

Counting Statistics error	= 7%
Calibration error	= 10%
Weight error	= 2%
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Total error	= 12.4%

- D. Meteorological and environmental impact information is reported in the Station Annual Radiological Environmental Operating Report as required by Technical Specifications 6.9.1.6.
- E. No limits were exceeded in liquid hold up tanks as stated in Technical Specifications 3.11.1.4 or in waste gas decay tanks as stated in Technical Specifications 3.11.2.6.
- F. There were no irradiated fuel shipments during this period.
- G. There were no elevated releases. All releases are considered ground level releases.
- H. There were no revisions to the Offsite Dose Calculation Manual for this period.

ATTACHMENT A

BYRON NUCLEAR POWER STATION

EFFLUENT AND WASTE DISPOSAL REPORT FOR JANUARY THROUGH JUNE, 1994

UNIT 1 AND 2 (DOCKET NUMBERS 50-454 AND 50-455)

LLD VALUES FOR GASEOUS RELEASES

<u>Isotopes</u>	<u>LLD(Ci/ml)</u>
H-3	3.75E-17
Ar-41	2.35E-13
Mn-54	4.64E-19
Fe-59	9.37E-19
Co-58	4.84E-19
Co-60	6.05E-19
Kr-85	5.12E-11
Kr-88	5.51E-13
Sr-89	2.17E-22
Sr-90	6.60E-23
I-131	3.15E-18
I-133	5.61E-19
I-135	2.27E-18
Xe-133	4.19E-13
Xe-135	1.63E-13
Cs-134	4.61E-19
Cs-136	4.53E-19
Cs-137	5.10E-19

ATTACHMENT A (cont.)

BYRON NUCLEAR POWER STATION

EFFLUENT AND WASTE DISPOSAL REPORT FOR JANUARY THROUGH JUNE, 1994

UNIT 1 AND 2 (DOCKET NUMBERS 50-454 AND 50-455)

LLD VALUES FOR LIQUID RELEASES

<u>Isotopes</u>	<u>LLD(Ci/ml)</u>
H-3	3.73E-12
Mn-54	3.01E-14
Fe-55	1.79E-14
Fe-59	5.99E-14
Co-57	2.13E-14
Co-58	3.15E-14
Co-60	3.89E-14
Zn-65	6.66E-14
Kr-88	7.79E-14
Sr-89	1.58E-15
Sr-90	1.32E-15
Sr-92	3.28E-14
Nb-95	3.06E-14
Zr-95	5.41E-14
Ag-110m	4.41E-14
Sn-113	3.54E-14
Sb-122	4.99E-14
Sb-124	7.91E-14
Sb-125	7.72E-14
Te-125m	6.32E-12
Xe-133	5.19E-14
Xe-133m	2.00E-13
Xe-135	2.28E-14
Cs-134	3.03E-14
Cs-137	3.32E-14
I-131	1.71E-13