

ENCLOSURE 2

**Annual Radioactive Effluent Report
Supplemental Information, Revision 0**

(9 pages follow)

ANNUAL RADIOACTIVE EFFLUENT REPORT

01-JAN-03 THROUGH 31-DEC-03

SUPPLEMENTAL INFORMATION

Facility: Prairie Island Nuclear Generating Plant

Licensee: Northern States Power Company

License Numbers: DPR-42 & DPR-60

A. Regulatory Limits

1. Liquid Effluents:

- a. The dose or dose commitment to an individual from radioactive materials in liquid effluents released from the site shall be limited to:

for the quarter 3.0 mrem to the total body
 10.0 mrem to any organ

for the year 6.0 mrem to the total body
 20.0 mrem to any organ

2. Gaseous Effluents:

- a. The dose rate due to radioactive materials released in gaseous effluents from the site shall be limited to:

noble gases \leq 500 mrem/year total body
 \leq 3000 mrem/year skin

I-131, I-133, H-3, LLP \leq 1500 mrem/year to any organ

- b. The dose due to radioactive gaseous effluents released from the site shall be limited to:

noble gases \leq 10 mrad/quarter gamma
 \leq 20 mrad/quarter beta
 \leq 20 mrad/year gamma
 \leq 40 mrad/year beta

I-131, I-133, H-3, LLP \leq 15 mrem/quarter to any organ
 \leq 30 mrem/year to any organ

B. Water Effluent Concentration

1. Fission and activation gases in gaseous releases:

10 CFR 20, Appendix B, Table 2, Column 1

2. Iodine and particulates with half lives greater than 8 days in gaseous releases:

10 CFR 20, Appendix B, Table 2, Column 1

3. Liquid effluents for radionuclides other than dissolved or entrained gases:

10 CFR 20, Appendix B, Table 2, Column 2

4. Liquid effluent dissolved and entrained gases:

2.0E-04 uCi/ml Total Activity

C. Average Energy

Not applicable to Prairie Island regulatory limits.

D. Measurements and approximations of total activity

1. Fission and activation gases in gaseous releases:	Total Nuclide	Gem Gem	±25%
2. Iodines in gaseous releases:	Total Nuclide	Gem Gem	±25%
3. Particulates in gaseous releases:	Total Nuclide	Gem Gem	±25%
4. Liquid effluents	Total Nuclide	Gem Gem	±25%

E. Manual Revisions

1. Offsite Dose Calculations Manual latest Revision number: 18
Revision date : 6/26/03

1.0 BATCH RELEASES (LIQUID)

1.1 NUMBER OF BATCH RELEASES
 1.2 TOTAL TIME PERIOD (HRS)
 1.3 MAXIMUM TIME PERIOD (HRS)
 1.4 AVERAGE TIME PERIOD (HRS)
 1.5 MINIMUM TIME PERIOD (HRS)
 1.6 AVERAGE MISSISSIPPI RIVER FLOW (CFS)

QTR: 01	QTR: 02	QTR: 03	QTR: 04
1.70E+01	2.10E+01	5.60E+01	4.90E+01
3.05E+01	4.13E+01	9.79E+01	9.00E+01
2.08E+00	3.80E+00	2.67E+00	3.42E+00
1.79E+00	1.97E+00	1.75E+00	1.84E+00
1.58E+00	1.03E+00	7.33E-01	9.67E-01
1.02E+04	3.19E+04	1.67E+04	7.74E+03

2.0 BATCH RELEASES (AIRBORNE)

2.1 NUMBER OF BATCH RELEASES
 2.2 TOTAL TIME PERIOD (HRS)
 2.3 MAXIMUM TIME PERIOD (HRS)
 2.4 AVERAGE TIME PERIOD (HRS)
 2.5 MINIMUM TIME PERIOD (HRS)

QTR: 01	QTR: 02	QTR: 03	QTR: 04
1.00E+00	1.00E+00	1.00E+00	1.50E+01
5.75E+00	4.53E+00	2.92E-01	2.23E+02
5.75E+00	4.53E+00	2.92E-01	2.40E+01
5.75E+00	4.53E+00	2.92E-01	1.49E+01
5.75E+00	4.53E+00	2.92E-01	2.25E+00

3.0 ABNORMAL RELEASES (LIQUID)

3.1 NUMBER OF BATCH RELEASES
 3.2 TOTAL ACTIVITY RELEASED (CI)
 3.3 TOTAL TRITIUM RELEASED (CI)

QTR: 01	QTR: 02	QTR: 03	QTR: 04
0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00

4.0 ABNORMAL RELEASES (AIRBORNE)

4.1 NUMBER OF BATCH RELEASES
 4.2 TOTAL ACTIVITY RELEASED (CI)

QTR: 01	QTR: 02	QTR: 03	QTR: 04
0.00E+00	0.00E+00	0.00E+00	0.00E+00
0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 1A

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	QTR: 01	QTR: 02	QTR: 03	QTR: 04
5.0 FISSION AND ACTIVATION GASES				
5.1 TOTAL RELEASE (CI)	3.75E-01	5.15E-01	2.02E-02	0.00E+00
5.2 AVERAGE RELEASE RATE (UCI/SEC)	4.77E-02	6.55E-02	2.57E-03	0.00E+00
5.3 GAMMA DOSE (MRAD)	2.70E-05	2.90E-05	6.07E-07	0.00E+00
5.4 BETA DOSE (MRAD)	3.06E-03	3.03E-03	4.17E-05	0.00E+00
5.5 PERCENT OF GAMMA TECH SPEC (%)	2.70E-04	2.90E-04	6.07E-06	0.00E+00
5.6 PERCENT OF BETA TECH SPEC (%)	1.53E-02	1.52E-02	2.08E-04	0.00E+00
6.0 IODINES				
6.1 TOTAL I-131 (CI)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
6.2 AVERAGE RELEASE RATE (UCI/SEC)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.0 PARTICULATES				
7.1 TOTAL RELEASE (CI)	0.00E+00	0.00E+00	0.00E+00	2.20E-08
7.2 AVERAGE RELEASE RATE (UCI/SEC)	0.00E+00	0.00E+00	0.00E+00	2.80E-09
8.0 TRITIUM				
8.1 TOTAL RELEASE (CI)	4.64E+00	7.56E+00	3.30E+00	1.74E+00
8.2 AVERAGE RELEASE RATE (UCI/SEC)	5.90E-01	9.61E-01	4.20E-01	2.21E-01
9.0 TOTAL IODINE, PARTICULATE AND TRITIUM (UCI/SEC)	5.90E-01	9.61E-01	4.20E-01	2.21E-01
10.0 DOSE FROM IODINE, LLP, AND TRITIUM (MREM)	8.30E-03	1.35E-02	5.90E-03	5.44E-03
11.0 PERCENT OF TECH SPEC (%)	5.54E-02	9.01E-02	3.94E-02	3.63E-02
12.0 GROSS ALPHA (CI)	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 1A

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	QTR: 01	QTR: 02	QTR: 03	QTR: 04
16.0 VOLUME OF WASTE PRIOR TO DILUTION (LITERS)	4.80E+07	2.66E+07	4.00E+07	3.65E+07
17.0 VOLUME OF DILUTION WATER (LITERS)	1.49E+11	1.01E+11	2.40E+11	2.03E+11
18.0 FISSION AND ACTIVATION PRODUCTS				
18.1 TOTAL RELEASES W/O H-3, RADGAS, ALPHA (CI)	1.30E-02	6.91E-03	1.69E-02	4.16E-02
18.2 AVERAGE DILUTION CONCENTRATION (UCI/ML)	8.76E-11	6.86E-11	7.05E-11	2.05E-10
19.0 TRITIUM				
19.1 TOTAL RELEASE (CI)	9.43E+01	2.14E+02	1.70E+02	1.03E+02
19.2 AVERAGE DILUTION CONCENTRATION (UCI/ML)	6.34E-07	2.12E-06	7.09E-07	5.05E-07
20.0 DISSOLVED AND ENTRAINED GASES				
20.1 TOTAL RELEASE (CI)	0.00E+00	2.35E-05	3.25E-04	8.31E-05
20.2 AVERAGE DILUTION CONCENTRATION (UCI/ML)	0.00E+00	2.33E-13	1.35E-12	4.09E-13
21.0 GROSS ALPHA (CI)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
22.0 TOTAL TRITIUM, FISSION & ACTIVATION PRODUCTS (UCI/ML)	6.34E-07	2.12E-06	7.09E-07	5.05E-07
23.0 TOTAL BODY DOSE (MREM)	4.30E-04	7.06E-04	4.81E-04	4.44E-04
24.0 CRITICAL ORGAN				
24.1 DOSE (MREM)	4.30E-04	7.06E-04	4.81E-04	1.67E-03
24.2 ORGAN	TOT BODY	TOT BODY	TOT BODY	GI TRACT
25.0 PERCENT OF TECHNICAL SPECIFICATIONS LIMIT (%)	1.43E-02	2.35E-02	1.60E-02	1.48E-02
26.0 PERCENT OF CRITICAL ORGAN TECH SPEC LIMIT (%)	1.43E-02	2.35E-02	1.60E-02	1.67E-02

TABLE 2A

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES (CI)

27.0 INDIVIDUAL LIQUID EFFLUENT

NUCLIDE	UNITS	CONTINUOUS MODE				BATCH MODE			
		QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
AG-108M	CI								1.25E-06
AG-110M	CI					1.52E-04	4.80E-04	5.06E-04	1.80E-03
BE-7	CI					7.90E-06			
CO-57	CI					9.83E-06		1.61E-06	3.77E-06
CO-58	CI					5.98E-03	8.42E-04	1.59E-03	7.09E-03
CO-60	CI					3.23E-04	4.03E-04	1.30E-03	9.22E-04
CR-51	CI					2.46E-04		7.70E-05	3.09E-03
CS-134	CI					1.55E-05	2.06E-05	4.67E-06	
CS-137	CI			2.04E-06	3.52E-05	3.03E-05	3.12E-05	1.55E-05	1.04E-06
FE-55	CI	7.45E-06	4.39E-07			1.12E-03	3.81E-03	6.30E-03	5.98E-03
FE-59	CI					3.98E-05	5.35E-06	1.36E-05	2.08E-03
LA-140	CI								2.42E-05
MN-54	CI					7.38E-06	4.34E-06	1.27E-05	3.14E-05
NA-24	CI							1.87E-06	
NB-95	CI					3.00E-05	3.89E-06		8.21E-05
NB-97	CI					2.90E-06	1.81E-06	6.45E-06	
PR-144	CI								3.95E-05
RU-103	CI								1.25E-06
SB-122	CI						8.05E-07	7.33E-05	1.01E-05
SB-124	CI					1.12E-05	1.68E-06	8.68E-04	1.51E-03
SB-125	CI					5.68E-04	8.34E-04	6.06E-03	8.28E-03
SB-126	CI							9.64E-06	3.99E-06
SN-113	CI					6.66E-06	5.78E-06		1.09E-04
SR-92	CI						8.60E-06	4.44E-07	3.69E-05
TE-123M	CI					2.69E-05	8.63E-07	4.22E-05	5.30E-04

(CONTINUED)

27.0 INDIVIDUAL LIQUID EFFLUENT

NUCLIDE	UNITS	CONTINUOUS MODE				BATCH MODE			
		QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
TE-125M	CI					4.44E-03	4.47E-04		9.81E-03
TE-132	CI							8.74E-07	2.56E-06
W-187	CI							4.27E-06	4.53E-05
ZN-65	CI					3.45E-06	1.23E-06	4.56E-06	5.38E-05
ZR-95	CI					1.81E-05	3.89E-06		5.51E-05
ZR-97	CI								1.23E-06
TOTALS	CI	7.45E-06	4.39E-07	2.04E-06	3.52E-05	1.30E-02	6.91E-03	1.69E-02	4.16E-02

28.0 DISSOLVED AND ENTRAINED GASES

NUCLIDE	UNITS	CONTINUOUS MODE				BATCH MODE			
		QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
XE-133	CI						2.35E-05	2.95E-04	7.75E-05
XE-135	CI							2.96E-05	5.60E-06
TOTALS	CI	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.35E-05	3.25E-04	8.31E-05

ENCLOSURE 3

**Effluent and Waste Disposal Annual Report
Solid Waste and Irradiated Fuel Shipments**

(7 pages follow)

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
 NORTHERN STATES POWER

Period: 01/01/03 to 12/31/03
 License No. DPR-42/60

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
 SOLID WASTE AND IRRADIATED FUEL SHIPMENTS**

**A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL
 (NOT IRRADIATED FUEL)**

1. Solid Waste Total Volumes and Total Curie Quantities:

TYPE OF WASTE	UNITS	PERIOD TOTALS (0.00 E00)	EST. TOTAL ERROR, % (0.00 E00)	CONTAINER DISPOSAL VOL (ft ³) (LIST)
A. Resins Bead Resin	m ³	<u>3.85E+00</u>	+/- 2.50E+01	<u>135.8</u>
	ft ³	<u>1.36E+02</u>		
	Ci	<u>8.15E+01</u>		
B. Dry-Compacted	m ³			
	ft ³			
	Ci			
C. Non-Compacted DAW, Wood, Metal	m ³	<u>1.60E+02</u>	+/- 2.50E+01	<u>94</u>
	ft ³	<u>5.64E+03</u>		
	Ci	<u>8.52E-01</u>		
D. Filter Media	m ³			
	ft ³			
	Ci			
S. Other (furnish description)	m ³			
	ft ³			
	Ci			

NOTE:	The solid waste information provided in this report is the volume and activity of the low-level waste leaving the Prairie Island site. No allowance is made for off-site volume reduction prior to disposal.
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PRAIRIE ISLAND NUCLEAR GENERATING PLANT
NORTHERN STATES POWER

Period: 01/01/03 to 12/31/03
License No. DPR-42/60

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS**

**A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL
(NOT IRRADIATED FUEL) [continued]**

3. Solid Waste Disposition:

<u>Number of Shipments</u>	<u>Mode</u>	<u>Destination</u>
1	T.A.G. Transport, Inc.	Barnwell Waste Management Facility
4	Hittman Transport Services	Duratek, Inc.

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
NORTHERN STATES POWER

Period: 01/01/03 to 12/31/03
License No. DPR-42/60

**EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS**

C. PROCESS CONTROL PROGRAM CHANGES

TITLE: Process Control for Solidification/Dewatering of Radioactive
Waste from Liquid Systems

Current Revision Number: 8 Effective Date: 8/25/1999

NOTE:	If the effective date of the PCP is within the period covered by this report, then a description and justification of the changes to the PCP is required (T.S.6.5.D) (IT.S.5.5.4). Attach the sidelined pages to this report.
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Changes/Justification: N/A