

EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT

Jan. 1984 THROUGH Jun. 1984

SUPPLEMENTAL INFORMATION

Facility - Prairie Island Nuclear Generating Plant

Licensee - Northern States Power Company

License Nos. - DPR-42 & DPR-60

1. Regulatory Limits

a. Liquid Effluents:

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

for the Quarter	3.0 mrem Total Body
	10.0 mrem Any Organ

for the Year	6.0 mrem Total Body
	20.0 mrem Any Organ

b. Gaseous Effluents:

1. 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, H-3, LLP	$\leq$ 1500 mrem/Year Any Organ
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2. The dose due to radioactive gaseous effluents shall be limited to:

Noble Gases	$\leq$ 10 mrad/Qtr Gamma
	$\leq$ 20 mrad/Qtr Beta
	$\leq$ 20 mrad/Year Gamma
	$\leq$ 40 mrad/Year Beta

I-131, H-3, LLP	$\leq$ 15 mrem/Qtr
	$\leq$ 30 mrem/Year

2. Maximum Permissible Concentrations

- a. Fission and activation gases in gaseous releases:  
     10 CFR 20, Appendix B, Table 2, Column 1
- b. Iodine and particulates with half-lives greater than 8 days in gaseous releases:  
     10 CFR 20, Appendix B, Table 2, Column 1
- c. Liquid Effluents for radionuclides other than dissolved or entrained gases:  
     10 CFR 20, Appendix B, Table 2, Column 2
- d. Liquid Effluent dissolved and entrained gases:  
     2.0E-04  $\mu$ ci/ml Total Activity

3.0 Average Energy

Not applicable to Prairie Island Regulatory Limits.

4.0 Measurements and Approximations of Total Radioactivity

a.	Fission and activation gases in gaseous releases:	Total Nuclide	Geli Geli
b.	Iodines in gaseous releases	Total Nuclide	Geli Geli
c.	Particulates in gaseous releases:	Total Nuclide	Geli Geli
d.	Liquid Effluents:	Total Nuclide	Geli Geli

BATCH RELEASES

a.	Liquid	QTR 1	QTR 2
	Number of Batch Releases	3.40E+01	2.80E+01
	Total Time Period for a Batch Release (hr)	5.05E+01	4.02E+01
	Maximum Time for a Batch Release (hr)	2.30E00	2.42E00
	Average Time for a Batch Release (hr)	1.48E00	1.44E00
	Minimum Time for a Batch Release (hr)	1.08E00	1.00E00
	Ave Mississippi flow during Quarter (CFS)	1.97E+04	5.37E+04

	QTR 1	QTR 2
b. Gaseous		
Number of Batch Releases	3.00E00	0.00E00
Total Time Period for a Batch Release (hr)	4.99E+01	0.00E00
Maximum Time for a Batch Release (hr)	2.56E+01	0.00E00
Average Time for a Batch Release (hr)	1.66E+01	0.00E00
Minimum Time for a Batch Release (hr)	2.44E-02	0.00E00

ABNORMAL RELEASES

a. Liquid	QTR 1	QTR 2
Number of Batch Releases	0.00E00	0.00E00
Total Activity Release (Ci)	0.00E00	0.00E00
Total Tritium Release (Ci)	0.00E00	0.00E00
b. Gaseous	QTR 1	QTR 2
Number of Batch Releases	0.00E00	0.00E00
Total Activity Release (Ci)	0.00E00	0.00E00

TABLE 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT  
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

UNIT	QTR 1	QTR 2	EST TOTAL ERROR %
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A. Fission and Activation Gases

Total Release	Ci	9.30E-01	0.00E00	2.50E+01
Average Release Rate	μCi/sec	1.18E-01	0.00E00	
Gamma Dose	mrad	1.34E-04	0.00E00	
Beta Dose	mrad	4.32E-04	0.00E00	
% of Gamma T.S. Limit	%	1.34E-03	0.00E00	
% of Beta T.S. Limit	%	2.16E-03	0.00E00	

B. Iodines

Total I131	Ci	4.26E-05	0.00E00	2.50E+01
Average Release Rate	μCi/sec	5.42E-06	0.00E00	

C. Particulates

Total Release	Ci	2.07E-06	3.71E-07	2.50E+01
Average Release Rate	μCi/sec	2.63E-07	4.72E-08	

D. Tritium

Total Release	Ci	3.22E+01	2.23E+01	2.50E+01
Average Release Rate	μCi/sec	4.10E00	2.84E00	

Total B & C & D	μCi/sec	4.10E00	2.84E00	2.50E+01
Dose	mrem	6.22E-02	4.01E-02	
% of T.S. Limit	%	4.15E-01	2.67E-01	

E. Gross Alpha

Total Release	Ci	0.00E00	0.00E00	2.50E+01
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TABLE 1C

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT  
GASEOUS EFFLUENTS  
GROUND LEVEL RELEASES

CONTINUOUS MODE

BATCH MODE

NUCLIDE	UNIT	QTR 1	QTR 2	QTR 1	QTR 2
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1. Fission and Activation Gases

Kr85	Ci	9.26E-01			
Kr85m	Ci				
Kr87	Ci				
Kr88	Ci				
Xe133	Ci	3.16E-04			
Xe135	Ci	4.04E-05			
Xe135m	Ci				
Xe138	Ci				
Xe131m	Ci				
Ar41	Ci			3.73E-03	
Xe133m	Ci				
Total	Ci	9.26E-01	0.00E00	3.73E-03	0.00E00

2. Iodines

I131	Ci	4.26E-05			
I133	Ci	1.05E-04			
I135	Ci				
Total	Ci	1.48E-04	0.00E00	0.00E00	0.00E00

CONTINUOUS MODE

BATCH MODE

NUCLIDE	UNIT	QTR 1	QTR 2	QTR 1	QTR 2
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3. Particulates

Sr89	Ci				
Sr90	Ci				
Cs134	Ci				
Cs137	Ci	2.03E-06	3.71E-07		
Ba-La140	Ci				
Co58	Ci				
Co60	Ci				
Total	Ci	2.03E-06	3.71E-07	0.00E00	0.00E00



TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT  
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

UNIT	QTR 1	QTR 2	TOTAL ERROR %
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A. Fission and Activation Products

Total Release W/O H-3, Rad Gas, Alpha	Ci	1.78E-03	1.10E-03	2.50E+01
Average Diluted Concentration	µCi/ml	1.35E-10	1.41E-10	

B. Tritium

Total Release	Ci	6.21E+01	1.93E+02	2.50E+01
Average Diluted Concentration	µCi/ml	4.71E-06	2.70E-05	

Total A & B	µCi/ml	4.71E-06	2.70E-05	
Total Body Dose	mrem	2.52E-04	5.16E-04	
Critical Organ Dose	mrem	3.21E-03	5.45E-04	
	Organ	GI	LIVER	
% Total Body T.S. Limit	%	8.40E-03	1.72E-02	
% of Critical Organ T.S. Limit	%	3.21E-02	5.45E-03	

C. Dissolved and Entrained Gases

Total Release	Ci	0.00E00	5.20E-03	2.50E+01
Average Diluted Concentration	µCi/ml	0.00E00	7.27E-10	

D. Gross Alpha

Total Release	Ci	0.00E00	1.34E-02	2.50E+01
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E. Volume of Waste (Prior to Dilution)	Liters	3.66E+07	2.02E+07	2.50E+01
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F. Volume of Dilution Water	Liters	1.32E+13	7.15E+12	2.50E+01
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TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL RPEORT  
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

CONTINUOUS MODE

BATCH MODE

NUCLIDE	UNIT	QTR_1	QTR_2	QTR_1	QTR_2
Sr89	Ci				
Sr90	Ci				
Cs134	Ci			5.18E-06	8.02E-06
Cs137	Ci			2.63E-05	1.17E-05
I131	Ci				
Co58	Ci	3.15E-04		3.21E-04	4.85E-04
Co60	Ci			8.41E-05	6.83E-05
Fe59	Ci				
Zn65	Ci				
Mn54	Ci				1.09E-05
Cr51	Ci				
Zr-Nb95	Ci	2.05E-04			
Mo99	Ci				
Ba-La140	Ci				
Subtotal	Ci	5.20E-04	0.00E00	4.37E-04	5.84E-04
Attachment 1	Ci	0.00E00	3.63E-05	8.28E-04	3.90E-04
Total	Ci	5.20E-04	3.63E-05	1.26E-03	9.74E-04

CONTINUOUS MODE

BATCH MODE

NUCLIDE	UNIT	QTR_1	QTR_2	QTR_1	QTR_2
Xe133	Ci				2.57E-03
Xe133m	Ci				
Xe131m	Ci				
Xe135	Ci				3.35E-05
Kr85m	Ci				
Kr85	Ci				2.42E-03
Kr88	Ci				
Total	Ci	0.00E00	0.00E00	0.00E00	5.20E-03

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT

SOLID RADIOACTIVE WASTE SEMI-ANNUAL REPORT

Jan. 84 THROUGH Jun. 84

	<u>Volume</u> <u>(FT<sup>3</sup>)</u>	<u>Curie Quantity</u>	<u>Radionuclides</u>	<u>Percent</u> <u>Abundance</u>	<u>Container</u> <u>Type</u>	<u>Quantity</u>
CEMENTED WASTE	0.0					NONE
COMPACTED TRASH	0.0					NONE
DEWATERED RESIN	0.0					NONE
NON-COMPACTED TRASH	0.0					NONE

Total Volume 0.00E00 FT<sup>3</sup>

Total Curie Content 0.00E00 Curies



## ATTACHMENT 1

## LIQUID EFFLUENTS - ADDITIONAL NUCLIDES

<u>NUCLIDE</u>	<u>UNIT</u>	<u>CONTINUOUS MODE</u>		<u>BATCH MODE</u>	
		<u>QTR 1</u>	<u>QTR 2</u>	<u>QTR 1</u>	<u>QTR 2</u>
Sb 124	ci			5.26E-04	1.77E-04
Sb 125	ci			2.38E-04	2.13E-04
Sc 47	ci			1.52E-05	
Ag 110m	ci			4.83E-05	
Na 24	ci		3.63E-05		
TOTAL	ci	0.00E00	3.63E-05	8.28E-04	3.90E-04