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TS 5.5.1.c
TS 5.6.3

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

Prairie Island Nuclear Generating Plant Units 1 and 2
Dockets 50-282, 50-306 and 72-10
License Nos. DPR-42, DPR-60 and SNM-2506

2009 Annual Radioactive Effluent Report and Offsite Dose Calculation Manual (ODCM)

Pursuant to the applicable Prairie Island Nuclear Generating Plant (PINGP) Technical Specifications (TS), Appendix A to Operating Licenses DPR-42 and DPR-60, and the requirements of the Offsite Dose Calculation Manual, Northern States Power Company, a Minnesota Corporation (NSPM), doing business as Xcel Energy, submits the 2009 Annual Radioactive Effluent Report which is comprised of the following reports:

Enclosure 1 contains the Off-Site Radiation Dose Assessment for the period January 1, 2009 through December 31, 2009 in accordance with the requirements of the ODCM.

Enclosure 2 contains the Annual Radioactive Effluent Report, Supplemental Information, for the period January 1, 2009 through December 31, 2009 in accordance with the requirements of TS 5.6.3 and the ODCM.

Enclosure 3 contains the Low Level Waste Disposal Annual Report, Solid Waste and Irradiated Components Shipments, for the period January 1, 2009 through December 31, 2009 in accordance with the requirements of TS 5.6.3 and the ODCM.

Enclosure 4 contains a complete copy of the entire ODCM (H4), Revision 23, dated 5/29/09. Enclosure 5 contains a complete copy of the entire ODCM (H4), Revision 24, dated 9/17/09. In accordance with the requirements of TS 5.5.1.c., the changes are identified by markings in the margin of the affected pages. The manual also contains a Record of Revisions which includes a summary of the revision changes (refer to page 11 of the ODCM).

A009
IE48
IE17

NRR
NMS

The Process Control Program (PCP) for Solidification/Dewatering of Radioactive Waste from Liquid Systems (D59) has not been revised since the 2008 Annual Effluent report was submitted, therefore it is not included with this report.

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments.



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Site Vice President, Prairie Island Nuclear Generating Plant
Northern States Power Company - Minnesota

Enclosures (5)

cc: Regional Administrator, USNRC, Region III
Project Manager, Prairie Island Nuclear Generating Plant, USNRC, NRR
NRC Resident Inspector – Prairie Island Nuclear Generating Plant
Department of Health, State of Minnesota
PI Dakota Community Environmental Coordinator

ENCLOSURE 1

OFF-SITE RADIATION DOSE ASSESSMENT

January 01, 2009 – December 31, 2009

9 pages follow

**PRAIRIE ISLAND NUCLEAR GENERATING PLANT
OFF-SITE RADIATION DOSE ASSESSMENT FOR**

January 1, 2009 - December 31, 2009

An Assessment of the radiation dose due to releases from Prairie Island Nuclear Generating Plant during 2009 was performed in accordance with the Offsite Dose Calculation Manual as required by Technical Specifications. Computed doses were well below the 40 CFR Part 190 Standards and 10 CFR Part 50 Appendix I Guidelines.

Off-site dose calculation formulas and meteorological data from the Off-site Dose Calculation Manual were used in making this assessment. Source terms were obtained from the Annual Radioactive Effluent and Waste Disposal Report prepared for NRC review for the year of 2009.

Off-site Doses from Gaseous Release

Computed doses due to gaseous releases are reported in Table 1. Critical receptor location and pathways for organ doses are reported in Table 2. Gaseous release doses are a small percentage of Appendix I Guidelines.

Off-site Doses from Liquid Release

Computed doses due to liquid releases are reported in Table 1. Critical receptor information is reported in Table 2. Liquid release doses, both whole body and organ, are a small percentage of Appendix I Guidelines.

Doses to Individuals Due to Activities Inside the Site Boundary

Occasionally sportsmen enter the Prairie Island site for recreational activities. These individuals are not expected to spend more than a few hours per year within the site boundary. Commercial and recreational river traffic exists through this area.

For purposes of estimating the dose due to recreational and river water transportation activities within the site boundary, it is assumed that the limiting dose within the site boundary would be received by an individual who spends a total of seven days per year on the river just off-shore from the plant buildings (ESE at 0.2 miles). The gamma dose from noble gas releases and the whole body and organ doses from the inhalation pathway due to Iodine 131, Iodine-133, tritium and long-lived particulates were calculated for this location and occupancy time. These doses are reported in Table 1.

Critical Receptor location and pathways for organ doses are reported in Table 2.

ABNORMAL RELEASES

There **were no** abnormal releases for 2009.

40CFR190 COMPLIANCE

The calculated dose from the release of radioactive materials in liquid or gaseous effluents **did not** exceed twice the limits of 10CFR50, Appendix I, therefore compliance with 40CFR190 **is not** required to be assessed, in this report.

SAMPLING, ANALYSIS AND LLD REQUIREMENTS

The minimum sampling frequency and lower limit of detection (LLD) requirements, as specified in ODCM Tables 2.1 and 3.1 **were not** exceeded in 2009.

The contingency requirements in ODCM Tables 2.2 and 3.2 were exceeded in 2009, as follows:

1R15, Condenser Air Ejector Monitor, was declared out-of-service on March 30, 2009 and remained out-of-service till August 20, 2009. In accordance with ODCM Table 3.2, "With the number of channels Operable less than required by the Minimum Channels Operable requirement, air ejector operation may continue provided that grab samples are taken at least once per 24 hours and these samples are analyzed for gross activity within 24 hours."

On May 7, 2009, the contingency sampling was performed at 10:00 am. On May 8, 2009, the day shift failed to perform the required contingency sampling.

The night shift noted the missed sample and performed contingency sampling on May 9, 2009, at 00:11.

No activity was identified in the sample preceding or following the missed sample.

Corrective Actions included individual and departmental counseling. Additionally, line items were added to the shift scheduler requiring signature verification for completion of contingency sampling.

The event and corrective actions were captured in Action Request 01181462.

MONITORING INSTRUMENTATION

There were six (6) occurrences when less than the minimum required radioactive liquid and/or gaseous effluent monitoring instrumentation channels were operable as required by ODCM Tables 2.2 and 3.2, as noted:

1. 1R12, UNIT ONE SHIELD BUILDING VENTILATION MONITOR

1R12, Unit One Shield Building Ventilation Monitor is defined as a process radiation monitor. Operability requirements are defined by ODCM Table 3.2, Radioactive Gaseous Effluent Monitoring Instrumentation. If 1R12 is out of service and not restored within 30 days, an explanation must be included in the next Annual Radioactive Release Report, as to why this inoperability was not corrected in a timely manner.

The monitor was removed from service on March 18, 2009 at 14:55, due to failure of SP-1027. The monitor failed to generate the adequate response to a routine bug check.

The monitor was returned to service on September 16, 2009 at 16:15, for a total of 182 days 1 hours and 20 minutes out of service.

No compensatory sampling was required during the out of service period, per ODCM Table 2.2.

The long extended duration out of service period was due to quality of detector tubes in stock. The instruments are old and the past vendor could no longer supply tubes. Qualification of a new vendor ensued, however to support plant activities the decision was made to remove the tube from 2R12 and restore 1R12.

This transferred the issue from 1R12 to 2R12, but supported Refueling Outage 1R26 activities.

The ultimate resolution will be the R-12 replacement project scheduled to be completed in 2010.

2. 2R12, UNIT TWO SHIELD BUILDING VENTILATION MONITOR

2R-12, Unit Two Shield Building Ventilation Monitor is defined as a process radiation monitor. Operability requirements are defined by ODCM Table 3.2, Radioactive Gaseous Effluent Monitoring Instrumentation. If 2R12 is out of service and not restored within 30 days, an explanation must be included in the next Annual Radioactive Release Report, as to why this inoperability was not corrected in a timely manner.

The monitor was removed from service on September 9, 2009 at 13:40, for detector swap, to support restoration of 1R12.

The monitor was returned to service on January 30, 2010, for a total of 143 days 7 hours and 20 minutes out of service time in 2009/2010. This out of service straddles a calendar year and is captured in the 2009 report, because the majority of the out of service time was in 2009 and the monitor did not exceed 30 days out of service in 2010. It will not be recaptured in the 2010 report. If it had exceeded 30 days in 2010 the out of service period would be recaptured in the 2010 report.

2R12 was removed from service to restore 1R12 and support Refueling Outage 1R26 activities, as described in 1R12 out of service report. Challenges with detector tubes, as described previously, precluded the prompt restoration.

The ultimate resolution will be the R-12 replacement project, scheduled to be completed in 2010.

3. 1R15, Condenser Air Ejector Monitor

1R-15, Condenser Air Ejector Monitor is defined as a process radiation monitor. Operability requirements are defined by ODCM Table 3.2, Radioactive Gaseous Effluent Monitoring Instrumentation. If 1R-15 is out of service and not restored within 30 days an explanation must be included in the next Annual Radioactive Release Report, as to why this inoperability was not corrected in a timely manner.

The monitor was removed from service on March 30, 2009 at 11:36, due to failure of SP-1027. A bug point response was less than the tolerances.

The pulse transformer and all 6 capacitors in the preamp were replaced and subsequent bugging was satisfactory. The monitor was returned to service on August 20, 2009 at 15:55 for a total of 143 days 4 hours and 19 minutes out of service.

Compensatory sampling was performed, per ODCM Table 3.2, with one exception, as noted in this report.

4. 1R19, UNIT ONE STEAM GENERATOR BLOWDOWN PROCESS RADIATION MONITOR

1R-19, Radwaste Building Ventilation Monitor is defined as a process radiation monitor. Operability requirements are defined by ODCM Table 2.2, Radioactive Liquid Effluent Monitoring Instrumentation. If 1R-19 is out of service and not restored within 30 days, an explanation must be included in the next Annual Radioactive Release Report, as to why this inoperability was not corrected in a timely manner.

The monitor was removed from service on October 26, 2009 at 14:55, due to failure of SP-1028B. The monitor failed a source check. Additionally, placing the selector switch to HV produced a zero reading on the meter.

The detector was replaced and the check source was cleaned to allow for full retraction.

The monitor was returned to service on January 18, 2010 for a total of 84 days 8 hours and 25 minutes out of service. This out of service period straddles a calendar year and is captured in the 2009 report, because the majority of the out of service time was in 2009 and the monitor did not exceed 30 days out of service in 2010. It will not be recaptured in the 2010 report. If it had exceeded 30 days in 2010 the out of service period would be recaptured in the 2010 report.

Compensatory sampling was performed, per ODCM Table 2.2.

5. UNIT TWO TURBINE BUILDING SUMP COMPOSITOR

Unit Two Turbine Building Sump Compositor is defined as a process radiation monitor. Operability requirements are defined by ODCM Table 2.2, Radioactive Liquid Effluent Monitoring Instrumentation. If Unit Two Turbine Building Sump Compositor is out of service and not restored within 30 days, an explanation must be included in the next Annual Radioactive Release Report, as to why this inoperability was not corrected in a timely manner.

The Compositor was removed from service on September 1, 2009 at 06:00 due to a failed timer on the collection scoop.

The compositor was returned to service on November 18, 2009 at 17:00 for a total of 78 days 11 hours and 0 minutes out of service.

Compensatory sampling was performed, per ODCM Table 2.2.

6. **R-35 RADWASTE BUILDING VENTILATION MONITOR**

R-35, Radwaste Building Ventilation Monitor is defined as a process radiation monitor. Operability requirements are defined by ODCM Table 3.2, Radioactive Gaseous Effluent Monitoring Instrumentation. If R-35 is out of service and not restored within 30 days, an explanation must be included in the next Annual Radioactive Release Report, as to why this inoperability was not corrected in a timely manner.

The R-35 monitor was operable, however the Radioactive Waste Building Ventilation was secured for an extended period of time. R-35 was sampling a dead header and not performing its intended function for a period of time exceeding 30 days. The Radioactive Waste Building Ventilation was secured for nearly the entire year.

Compensatory sampling is not required, however compensatory sampling was established to ensure quantification of any passive air exchange in and out of the building.

The number of occurrences of Process Radiation Monitors out of service was captured in Action Request (AR) 01204434. The issue is being tracked on the Top Ten Equipment List under AR 00866805. All Radiation Monitors are repairable and the excessive out-of-service time appears to be primarily due to maintenance resources and work prioritization. At screening, Process Radiation Monitors will now receive an elevated prioritization code above that which was previously assigned.

DOSES TO INDIVIDUALS DUE TO EFFLUENT RELEASES FROM THE INDEPENDENT SPENT FUEL STORAGE FACILITY (ISFSI)

One (1) fuel cask was loaded and placed in the storage facility during the 2009 calendar year. The total number of casks in the ISFSI is twenty-five (25). There has been no release of radioactive effluents from the ISFSI.

CURRENT ODCM REVISION

The Offsite Dose Calculation Manual **was** revised TWO (2) times in 2009. The current revision is 24. The revision date of revision 23 is May 29, 2009. The revision date of revision 24 is September 17, 2009. A copy of revision 23 and revision 24 is submitted with this year's report as Enclosures 4 and 5.

PROCESS CONTROL PROGRAM

The Process Control Program **was not** revised in 2008. Current manual revision is 9. The revision date is April 15, 2008.

INDUSTRY INITIATIVE ON GROUND WATER PROTECTION

There **were no** events requiring NRC reporting, for the Industry Initiative on Groundwater Protection.

Table 1 :

OFF-SITE RADIATION DOSE ASSESSMENT - PRAIRIE ISLAND

PERIOD: JANUARY through DECEMBER 200910 CFR Part 50 Appendix I
Guidelines for a 2-unit site per yearGaseous Releases

Maximum Site Boundry Gamma Air Dose (mrad)	8.22E-05	20
Maximum Site Boundry Beta Air Dose (mrad)	8.98E-03	40
Maximum Off-site Dose to any organ (mrem)*	2.63E-02	30
Offshore Location		
Gamma Dose (mrad)	4.21E-06	
Total Body (mrem)*	1.09E-03	
Organ (mrad)*	1.09E-03	30

Liquid Releases

Maximum Off-site Dose Total Body (mrem)	1.91E-03	6
Maximum Off-site Dose Organ - GI TRACT (mrem)	6.91E-03	20
Limiting Organ Dose Organ - GI TRACT (mrem)	6.91E-03	6

* Long-Lived Particulate, I-131, I-133 and Tritium

Table 2

**OFF-SITE RADIATION DOSE ASSESSMENT – PRAIRIE ISLAND
SUPPLEMENTAL INFORMATION**

January 1, 2009 - December 31, 2009

Gaseous Releases

Maximum Site Boundary
Dose Location
(From Building Vents)

Sector		WNW
Distance	(miles)	0.4

Offshore Location
Within Site Boundary

Sector		ESE
Distance	(miles)	0.2
Pathway		Inhalation

Maximum Off-site

Sector		SSE
Distance (miles)		0.6
Pathways		Plume, Ground, Inhalation, Vegetables
Age Group		Child

Liquid Releases

Maximum Off-site Dose
Location Downstream

Pathway		Fish
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ENCLOSURE 2

**ANNUAL RADIOACTIVE EFFLUENT REPORT
SUPPLEMENTAL INFORMATION**

January 01, 2009 – December 31, 2009

9 pages follow

ANNUAL RADIOACTIVE EFFLUENT REPORT

01-JAN-09 THROUGH 31-DEC-09

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	Gem	±25%
	Nuclide	Gem	
2. Iodines in gaseous releases:	Total	Gem	±25%
	Nuclide	Gem	
3. Particulates in gaseous releases:	Total	Gem	±25%
	Nuclide	Gem	
4. Liquid effluents	Total	Gem	±25%
	Nuclide	Gem	

E. Manual Revisions

1. Offsite Dose Calculations Manual latest Revision number: 24

Revision date : 9/17/09

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
2.20E+01	2.00E+01	3.90E+01	5.60E+01
4.04E+01	3.75E+01	7.63E+01	1.14E+02
2.28E+00	2.27E+00	3.17E+00	4.22E+00
1.84E+00	1.87E+00	1.96E+00	2.03E+00
1.50E+00	1.30E+00	1.50E+00	8.83E-01
1.36E+04	2.70E+04	8.26E+03	1.66E+04

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
0.00E+00	3.00E+00	9.00E+00	6.80E+01
0.00E+00	2.85E+00	9.19E+01	9.78E+02
0.00E+00	2.85E+00	2.40E+01	2.40E+01
0.00E+00	9.51E-01	1.02E+01	1.44E+01
0.00E+00	5.00E-04	1.92E+00	3.25E-02

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)	0.00E+00	1.37E-01	2.81E-01	6.84E-01
5.2 AVERAGE RELEASE RATE (UCI/SEC)	0.00E+00	1.74E-02	3.57E-02	8.70E-02
5.3 GAMMA DOSE (MRAD)	0.00E+00	9.89E-06	2.16E-05	5.07E-05
5.4 BETA DOSE (MRAD)	0.00E+00	1.12E-03	2.29E-03	5.57E-03
5.5 PERCENT OF GAMMA TECH SPEC (%)	0.00E+00	9.89E-05	2.16E-04	5.07E-04
5.6 PERCENT OF BETA TECH SPEC (%)	0.00E+00	5.59E-03	1.14E-02	2.79E-02
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	6.72E-06
7.2 AVERAGE RELEASE RATE (UCI/SEC)	0.00E+00	0.00E+00	0.00E+00	8.55E-07
8.0 TRITIUM				
8.1 TOTAL RELEASE (CI)	1.65E+00	3.49E+00	3.77E+00	1.48E+00
8.2 AVERAGE RELEASE RATE (UCI/SEC)	2.09E-01	4.44E-01	4.79E-01	1.88E-01
9.0 TOTAL IODINE, PARTICULATE AND TRITIUM (UCI/SEC)	2.09E-01	4.44E-01	4.79E-01	1.88E-01
10.0 DOSE FROM IODINE, LLP, AND TRITIUM (MREM)	2.95E-03	6.25E-03	1.45E-02	2.67E-03
11.0 PERCENT OF TECH SPEC (%)	1.96E-02	4.17E-02	9.64E-02	1.78E-02
12.0 GROSS ALPHA (CI)	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 1C

GASEOUS EFFLUENTS - GROUND LEVEL RELEASES (CONTINUED)

15.0 PARTICULATES

CONTINUOUS MODE

BATCH MODE

NUCLIDE	UNITS	CONTINUOUS MODE				BATCH MODE			
		QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
CO-58	CI				6.72E-06				
TOTALS	CI	0.00E+00	0.00E+00	0.00E+00	6.72E-06	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)	3.07E+07	3.43E+07	4.06E+07	6.35E+07
17.0 VOLUME OF DILUTION WATER (LITERS)	1.84E+11	1.02E+11	2.35E+11	1.62E+11
18.0 FISSION AND ACTIVATION PRODUCTS				
18.1 TOTAL RELEASES W/O H-3, RADGAS, ALPHA (CI)	4.62E-02	1.70E-02	3.40E-02	3.10E-01
18.2 AVERAGE DILUTION CONCENTRATION (UCI/ML)	2.51E-10	1.67E-10	1.45E-10	1.91E-09
19.0 TRITIUM				
19.1 TOTAL RELEASE (CI)	9.81E+01	2.35E+02	1.29E+02	5.62E+01
19.2 AVERAGE DILUTION CONCENTRATION (UCI/ML)	5.32E-07	2.30E-06	5.48E-07	3.47E-07
20.0 DISSOLVED AND ENTRAINED GASES				
20.1 TOTAL RELEASE (CI)	3.94E-03	9.95E-05	2.17E-03	7.16E-03
20.2 AVERAGE DILUTION CONCENTRATION (UCI/ML)	2.14E-11	9.72E-13	9.24E-12	4.42E-11
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)	5.33E-07	2.30E-06	5.48E-07	3.49E-07
23.0 TOTAL BODY DOSE (MREM)	2.52E-04	5.31E-04	3.32E-04	7.99E-04
24.0 CRITICAL ORGAN				
24.1 DOSE (MREM)	2.52E-04	5.31E-04	3.32E-04	5.15E-03
24.2 ORGAN	TOT BODY	TOT BODY	TOT BODY	GI TRACT
25.0 PERCENT OF TECHNICAL SPECIFICATIONS LIMIT (%)	8.40E-03	1.77E-02	1.11E-02	2.66E-02
26.0 PERCENT OF CRITICAL ORGAN TECH SPEC LIMIT (%)	8.40E-03	1.77E-02	1.11E-02	5.15E-02

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-110M	CI					5.58E-03	3.61E-03	6.09E-03	5.52E-03
CO-57	CI					5.82E-05	1.31E-05	8.66E-06	4.53E-04
CO-58	CI					6.06E-03	9.45E-04	4.60E-03	9.98E-02
CO-60	CI					1.54E-03	4.48E-04	3.12E-03	1.44E-02
CR-51	CI					1.55E-04		5.64E-04	4.97E-02
CS-134	CI								7.18E-06
CS-137	CI					1.11E-06		1.30E-06	4.02E-05
FE-55	CI					6.86E-03	4.54E-03	1.35E-02	8.48E-02
FE-59	CI					2.12E-04	7.61E-06	1.18E-04	4.39E-03
I-131	CI						5.30E-06	8.82E-06	
LA-140	CI						3.70E-06		4.75E-06
MN-54	CI					1.01E-04	1.89E-05	1.03E-04	1.67E-03
NB-95	CI					1.90E-04	7.92E-06	6.10E-05	9.77E-03
NB-97	CI					1.69E-04	4.67E-04	1.10E-03	5.18E-04
RB-89	CI						1.35E-06		
SB-122	CI							1.36E-05	
SB-124	CI					2.03E-03	2.26E-04	8.62E-05	1.35E-03
SB-125	CI					2.30E-02	6.75E-03	4.61E-03	2.97E-02
SB-126	CI							2.79E-06	7.66E-06
SC-46	CI								2.47E-05
SE-75	CI					1.77E-05			
SN-113	CI					8.15E-05			1.50E-03
SR-92	CI					2.63E-05		1.45E-06	7.84E-05
TE-123M	CI					1.85E-05			7.38E-05
ZN-65	CI								2.43E-04

(CONTINUED)

TABLE 2A
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES (CONTINUED)

27.0 INDIVIDUAL LIQUID EFFLUENT

CONTINUOUS MODE

NUCLIDE	UNITS	QTR: 01	QTR: 02	QTR: 03	QTR: 04
ZR-95	CI				
TOTALS	CI	0.00E+00	0.00E+00	0.00E+00	0.00E+00

BATCH MODE

QTR: 01	QTR: 02	QTR: 03	QTR: 04
1.43E-04		1.02E-05	6.04E-03
4.62E-02	1.70E-02	3.40E-02	3.10E-01

28.0 DISSOLVED AND ENTRAINED GASES

CONTINUOUS MODE

NUCLIDE	UNITS	QTR: 01	QTR: 02	QTR: 03	QTR: 04
KR-85	CI				
XE-133	CI				
XE-135	CI				
TOTALS	CI	0.00E+00	0.00E+00	0.00E+00	0.00E+00

BATCH MODE

QTR: 01	QTR: 02	QTR: 03	QTR: 04
3.92E-03		1.99E-03	7.16E-03
1.73E-05	9.26E-05	1.61E-04	
	6.85E-06	1.69E-05	
3.94E-03	9.95E-05	2.17E-03	7.16E-03

ENCLOSURE 3

**LOW LEVEL WASTE DISPOSAL ANNUAL REPORT
SOLID WASTE AND IRRADIATED COMPONENT SHIPMENTS**

January 01, 2009 – December 31, 2009

4 pages follow

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
 NORTHERN STATES POWER

Period: 01/01/09-12/31/09
 License No. DPR-42/60

**LOW LEVEL WASTE DISPOSAL ANNUAL REPORT
 SOLID WASTE AND IRRADIATED COMPONENT SHIPMENTS**

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

1. Solid Waste Total Volumes, Total Curie Quantities, and Major Nuclides:

Resins, Filters, and Evaporator Bottoms Waste Class	Volume		Curies Shipped
	ft ³	m ³	
A	3.59E+02	1.02E+01	2.02E+00
B			
C			
ALL	3.59E+02	1.02E+01	2.02E+00

Major Nuclides for the Above Table:

Ni-63, Co-60, Fe-55, Cs-137, H-3, Co-58, Ni-59, Sb-125, Cs-134.

Dry Active Waste Waste Class	Volume		Curies Shipped
	ft ³	m ³	
A	1.66E+04	4.71E+02	4.24E-01
B			
C			
ALL	1.66E+04	4.71E+02	4.24E-01

Major Nuclides for the Above Table:

Fe-55, Co-58, Co-60, Ni-63, Nb-95

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
NORTHERN STATES POWER

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**LOW LEVEL WASTE DISPOSAL ANNUAL REPORT
SOLID WASTE AND IRRADIATED COMPONENT SHIPMENTS**

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

Irradiated Components Waste Class	Volume		Curies Shipped
	ft ³	m ³	
A			
B			
C			
ALL	0.00E+00	0.00E+00	0.00E+00

Major Nuclides for the Above Table:

N/A

Other Waste Waste Class	Volume		Curies Shipped
	ft ³	m ³	
A	1.28E+03	3.62E+01	1.74E-02
B			
C			
ALL	1.28E+03	3.62E+01	1.74E-02

Major Nuclides for the Above Table:

Cr-51, Fe-55, Co-58, Co-60, Ni-63, Zr-95, Nb-95, Ag-110m.

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
NORTHERN STATES POWER

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**LOW LEVEL WASTE DISPOSAL ANNUAL REPORT
SOLID WASTE AND IRRADIATED COMPONENT SHIPMENTS**

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

Sum of All Low Level Waste Shipped from Site Waste Class	Volume		Curies Shipped
	ft ³	m ³	
A	1.83E+04	5.18E+02	2.46E+00
B			
C			
ALL	1.83E+04	5.18E+02	2.46E+00

Major Nuclides for the Above Table:

H-3, Fe-55, Co-58, Co-60, Ni-59, Ni-63, Sb-125, Cs-134, Cs-137.

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**LOW LEVEL WASTE DISPOSAL ANNUAL REPORT
SOLID WASTE AND IRRADIATED COMPONENT SHIPMENTS**

**B. PROCESS CONTROL PROGRAM CHANGES
(NOT IRRADIATED FUEL) [continued]**

2. Process Control for Solidification/Dewatering of Radioactive Waste from Liquid Systems

Current Revision Number: 9 Effective Date: 4/15/08

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 H4 (ODCM) 8.1 m. Attach the sidelined pages to this report.
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Changes/Justification:

N/A