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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

2008 Annual Radioactive Effluent Report and Offsite Dose Calculation Manual

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 (ODCM), Northern States Power Company, a Minnesota Corporation (NSPM) submits the 2008 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, 2008 through December 31, 2008 in accordance with the requirements of the ODCM.

Enclosure 2 contains the Annual Radioactive Effluent Report, Supplemental Information, for the period January 1, 2008 through December 31, 2008 in accordance with the requirements of TS 5.6.3 and the ODCM.

Enclosure 3 contains the Effluent and Waste Disposal Annual Report, Solid Waste and Irradiated Fuel Shipments, for the period January 1, 2008 through December 31, 2008 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 22, dated 10/23/08. 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 8 of the ODCM).

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Enclosure 5 contains the Process Control Program (PCP) for Solidification/Dewatering of Radioactive Waste from Liquid Systems (D59), Revision 9, dated 4/15/08. In accordance with the requirements of the ODCM, the description of changes to the PCP is included in the Annual Radioactive Effluent report (refer to page 6 of Enclosure 1).

Summary of Commitments

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

Michael D. Wadley
Site Vice President, Prairie Island Nuclear Generating Plant Units 1 and 2
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, 2008 – December 31, 2008

8 pages follow

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

January through December 2008

An Assessment of the radiation dose due to releases from Prairie Island Nuclear Generating Plant during 2008 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 2008.

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 two (2) abnormal releases for 2008. Abnormal releases are summarized here:

1. Leak from Waste Gas System Catalytic Recombiner

On 11/25/08 a leak was discovered on piping downstream of CV-31919, Oxygen Supply Control Flow Valve for 121 Catalytic Recombiner, where the oxygen flows into the waste gas stream. The leak was from a crack in the piping. 121 Catalytic Recombiner was isolated the same day.

Engineering performed a data review and determined that the leak could have been present as early as 8/26/08 and that a maximum of 2,742 cubic feet (7.77E+07 cc) was potentially released. The release pathway was determined to be the Unit One Auxiliary Building Ventilation via the filter room.

Cause: Equipment failure.

Corrective Action: Repairs were implemented and the 121 Catalytic Recombiner was returned to service.

A release file was created to account for activity released as an Abnormal Release.

Release file inputs were as follows:

Total activity was calculated based on concentrations in 128 Waste Gas Decay Tank, released 10/31/08. Engineering provided released volume.

Kr-85	1.34E+05 uCi
Xe-133	9.09E+01 uCi
H-3	1.93E+02 uCi

A Unit One Auxiliary Building Release File was created (RAC0257) for effluent week 45 (11/3/08 to 11/9/08), conservatively applying activity released to one effluent week.

Dose consequences were as follows:

Nuclide	Activity (uCi)	Gamma Dose (mrad)	Beta Dose (mrad)
Kr-85	1.34E+05	2.47E-06	2.80E-04
Xe-133	9.09E+01	3.43E-08	1.02E-07
TOTAL		2.50E-06	2.80E-04

H3	1.93E+02 uCi	3.46E-07 mrem

Event was captured in the site's Corrective Action Program: AR01160402.

Result: The dose from the activity released represented a small percentage of the total dose and a very small percentage of limits. The dose did not impose upon the health and safety of the public.

The event was discussed with the NRC Region 3 Radiation Protection (RP) Inspector, at the time of the event.

2. UNIT 2 STEAM GENERATOR B POWER OPERATED RELIEF VALVE, CV-31107 LEAKAGE

Equipment failure. On 7/5/08 an alarm was received on the SG B PORV LEAK TEMP. A review of the Emergency Response Computer System (ERCS) trend plots indicated that, on a recurring basis, a change in relief valve position would occur, accompanied by a corresponding increase in down stream temperature.

Some small degree of leakage past the SG B PORV is anticipated. The leakage condenses and drains to the Turbine Building Sump (TBS) via a line designated for this purpose. The TBS is monitored and a release file is routinely prepared to account for volume and activity released.

It was determined that the drain line was plugging. Periodically as the undrained water accumulated, it would flash disrupting the PORV and releasing some small amount of steam.

This release is determined to be an abnormal release due to the line plugging.

Cause: Equipment failure

Corrective Actions: Operations performed periodic manual draining of the drain line to the Turbine Building Sump until repairs could be performed, to preclude further release via this pathway. The Turbine Building Sump is a monitored pathway.

Abnormal release file RAB0061 was created to document the release. The release volume was based on an engineering evaluation. Volume released was mimicked by creating RAB0061 as a release of 2 minutes, based on the relief being full open.

Activity concentrations were based on weekly sampling of the Steam Generators for Gamma Isotopic and tritium.

The dose consequences:

H3	5.15E+03 uCi	4.52E-05 mrem

Result: The dose from the activity released represented a small percentage of the total dose and was a very small percentage of limits. The dose did not impose upon the health and safety of the public.

The event was discussed with the NRC Region 3 Radiation Protection (RP) Inspector, at the time of the event.

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 2008.

Analysis requirements, as specified in ODCM Table 2.1 and 3.1 were exceeded in 2008, as noted:

Composite samples for Quarter 1 were shipped to vendor for the performance of Sr-89, Sr-90 and Fe-59 analysis. These composites are in the form of liquid aliquots and particulate filters.

The vendor reported to Prairie Island Nuclear Generating Plant that the shipping container was significantly damaged in shipping and sample integrity was compromised. However, no radiological concern existed. Shipment was "exempt" by DOT criteria and no leakage outside the container was noted.

The vendor determined that only the Unit One Shield Building Ventilation Pathway particulate filters were compromised. Filters are shipped in planchets. Some of the planchets were crushed and filters were loose, while other filters and planchets remained intact. Of the 22 filters collected for composite, 5 were deemed intact.

Radiation Protection air sample records, ventilation effluent release samples and primary chemistry was assessed for the past year. It was determined that no reasonable expectation of atypical values was warranted. No significant/atypical conditions could be identified that would create an expectation that these filters would be greater than typical.

Corrective Actions:

1. The event was captured in the site's corrective action program to document the event and corrective actions taken (AR 01138552).
2. The event was determined to be a missed sample per H4, Offsite Dose Calculations Manual (ODCM), Table 3.1, Radioactive Gaseous Waste Sampling and Analysis Program.
3. The highest postulated value was used for the missing analysis based on:
    a. The five intact filters were analyzed by the vendor.
    b. The highest Sr-89 and Sr-90 for all ventilation pathways for a one year period was determined.
4. A robust repeat use shipping container was purchased for future composite shipping.

MONITORING INSTRUMENTATION

There were two (2) 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. Unit Two Turbine Building Sump Compositor

   The 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 the TBS Compositor is out of service and not restored within 30 days, an explanation must be included in the next Annual Radioactive Effluent Release Report, as to why this inoperability was not corrected in a timely manner.

   The Unit Two Turbine Building Sump Compositor was declared out of service on December 27, 2007 at 06:30, due to a perceived failed timer. Delays in ordering and receiving parts exceeded 30 days. Once parts were obtained and work begun, it was discovered that it was a switch, not the timer in failure, causing additional delays.

   The compositor was returned to service on February 11, 2008 at 12:00, for a total of 46 days 5 hours and 30 minutes out of service.

   Compensatory sampling was performed during the out of service period, per ODCM Table 2.2.

2. 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.

   R-35 was declared out of service on October 13, 2008 at 23:15, due to Bistable causing a control board high radiation alarm when no high radiation condition existed. The receipt of parts was delayed.

   The monitor was returned to service December 12, 2008 at 11:51 for a total of 59 days 12 hours and 36 minutes out of service.

   Radwaste Building Ventilation was not in service during the out of service period and no compensatory sampling was required.

Doses to Individuals Due to Effluent Releases from the Independent Spent Fuel Storage Facility (ISFSI)

Zero (0) fuel casks were loaded and placed in the storage facility during the 2008 calendar year. The total number of casks in the ISFSI is twenty-four (24). There has been no release of radioactive effluents from the ISFSI.

CURRENT ODCM REVISION

The Offsite Dose Calculation Manual **was** revised in 2008. The current revision is 22. The revision date is October 23, 2008. A copy is submitted with this year's report as Enclosure 4.

PROCESS CONTROL PROGRAM

The Process Control Program was revised in 2008. Current manual revision is 9. The revision date is April 15, 2008. A copy is submitted with this year's report as Enclosure 5.

Revisions to Process Control Program:

The following two abandoned processes were deleted from the procedure:

- Solidification of Liquid Waste Concentrates
- In-Container Solidification of Bead Resin

The attachments that these abandoned processes referenced were also deleted:

- Figure 1 Solid Radwaste Flow Diagram
- Attachment A Sample Verification Form
- Attachment B Sample Verification Form

Table 1

OFF-SITE RADIATION DOSE ASSESSMENT - PRAIRIE ISLAND

PERIOD: JANUARY through DECEMBER 2008

		10 CFR Part 50 Appendix I Guidelines for a 2-unit site per year
Gaseous Releases		
Maximum Site Boundary Gamma Air Dose (mrad)	3.18E-05	20
Maximum Site Boundary Beta Air Dose (mrad)	3.53E-03	40
Maximum Off-site Dose to any organ (mrem)*	4.37E-02	30
Offshore Location		
Gamma Dose (mrad)	1.69E-06	
Total Body (mrem)*	1.47E-03	
Organ (mrad)*	1.47E-03	30
Liquid Releases		
Maximum Off-site Dose Total Body (mrem)	1.64E-03	6
Maximum Off-site Dose Organ - GI TRACT (mrem)	7.37E-03	20
Limiting Organ Dose Organ - GI TRACT (mrem)	7.37E-03	6

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

Table 2

OFF-SITE RADIATION DOSE ASSESSMENT – PRAIRIE ISLAND
SUPPLEMENTAL INFORMATION

PERIOD: JANUARY through DECEMBER 2007

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

ENCLOSURE 2

ANNUAL RADIOACTIVE EFFLUENT REPORT
SUPPLEMENTAL INFORMATION

January 01, 2008 – December 31, 2008

9 pages follow

ANNUAL RADIOACTIVE EFFLUENT REPORT

01-JAN-08 THROUGH 31-DEC-08

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	≤ 500 mrem/year total body
	≤3000 mrem/year skin
I-131, I-133, H-3, LLP	≤1500 mrem/year to any organ

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

noble gases	≤10 mrad/quarter gamma
	≤20 mrad/quarter beta
	≤20 mrad/year gamma
	≤40 mrad/year beta
I-131, I-133, H-3, LLP	≤15 mrem/quarter to any organ
	≤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: 22

   Revision date : 10-23-08

1.0 BATCH RELEASES (LIQUID)

	QTR: 01	QTR: 02	QTR: 03	QTR: 04
1.1 NUMBER OF BATCH RELEASES	8.00E+01	2.20E+01	3.70E+01	3.90E+01
1.2 TOTAL TIME PERIOD (HRS)	1.55E+02	3.83E+01	6.67E+01	7.27E+01
1.3 MAXIMUM TIME PERIOD (HRS)	3.22E+00	2.05E+00	2.28E+00	4.07E+00
1.4 AVERAGE TIME PERIOD (HRS)	1.93E+00	1.74E+00	1.80E+00	1.86E+00
1.5 MINIMUM TIME PERIOD (HRS)	1.50E+00	1.57E+00	1.05E+00	9.17E-01
1.6 AVERAGE MISSISSIPPI RIVER FLOW (CFS)	8.52E+03	4.07E+04	1.01E+04	1.02E+04

2.0 BATCH RELEASES (AIRBORNE)

	QTR: 01	QTR: 02	QTR: 03	QTR: 04
2.1 NUMBER OF BATCH RELEASES	3.50E+01	0.00E+00	4.00E+00	2.20E+01
2.2 TOTAL TIME PERIOD (HRS)	5.69E+02	0.00E+00	1.71E+00	3.43E+02
2.3 MAXIMUM TIME PERIOD (HRS)	3.02E+01	0.00E+00	1.47E+00	2.60E+01
2.4 AVERAGE TIME PERIOD (HRS)	1.62E+01	0.00E+00	4.26E-01	1.56E+01
2.5 MINIMUM TIME PERIOD (HRS)	1.17E-03	0.00E+00	3.33E-02	6.97E-02

3.0 ABNORMAL RELEASES (LIQUID)

	QTR: 01	QTR: 02	QTR: 03	QTR: 04
3.1 NUMBER OF BATCH RELEASES	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.2 TOTAL ACTIVITY RELEASED (CI)	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3.3 TOTAL TRITIUM RELEASED (CI)	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4.0 ABNORMAL RELEASES (AIRBORNE)

	QTR: 01	QTR: 02	QTR: 03	QTR: 04
4.1 NUMBER OF BATCH RELEASES	0.00E+00	0.00E+00	1.00E+00	1.00E+00
4.2 TOTAL ACTIVITY RELEASED (CI)	0.00E+00	0.00E+00	5.15E-03	1.34E-01

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	0.00E+00	0.00E+00	5.33E-01
5.2 AVERAGE RELEASE RATE (UCI/SEC)	0.00E+00	0.00E+00	0.00E+00	6.78E-02
5.3 GAMMA DOSE (MRAD)	0.00E+00	0.00E+00	0.00E+00	3.18E-05
5.4 BETA DOSE (MRAD)	0.00E+00	0.00E+00	0.00E+00	3.53E-03
5.5 PERCENT OF GAMMA TECH SPEC (%)	0.00E+00	0.00E+00	0.00E+00	3.18E-04
5.6 PERCENT OF BETA TECH SPEC (%)	0.00E+00	0.00E+00	0.00E+00	1.76E-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)	3.27E-07	0.00E+00	0.00E+00	5.31E-08
7.2 AVERAGE RELEASE RATE (UCI/SEC)	4.16E-08	0.00E+00	0.00E+00	6.76E-09
8.0 **TRITIUM**				
8.1 TOTAL RELEASE (CI)	4.04E+00	1.99E+00	1.98E+00	2.39E+00
8.2 AVERAGE RELEASE RATE (UCI/SEC)	5.14E-01	2.54E-01	2.51E-01	3.04E-01
9.0 TOTAL IODINE, PARTICULATE AND TRITIUM (UCI/SEC)	5.14E-01	2.54E-01	2.51E-01	3.04E-01
10.0 DOSE FROM IODINE, LLP, AND TRITIUM (MREM)	2.50E-02	3.57E-03	5.83E-03	9.22E-03
11.0 PERCENT OF TECH SPEC (%)	1.67E-01	2.38E-02	3.88E-02	6.15E-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 (CI)

13.0 **FISSION AND ACTIVATION GASES**

		CONTINUOUS MODE				BATCH MODE			
NUCLIDE	UNITS	QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
KR-85	CI				1.34E-01				3.98E-01
XE-133	CI				9.09E-05				4.36E-04
TOTALS	CI	0.00E+00	0.00E+00	0.00E+00	1.34E-01	0.00E+00	0.00E+00	0.00E+00	3.98E-01

14.0 **IODINES**

		CONTINUOUS MODE				BATCH MODE			
NUCLIDE	UNITS	QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
TOTALS	CI	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 1C
GASEOUS EFFLUENTS - GROUND LEVEL RELEASES (CONTINUED)

15.0 **PARTICULATES**

		CONTINUOUS MODE				BATCH MODE			
NUCLIDE	UNITS	QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
CO-58	CI	3.02E-07							
CS-137	CI								5.31E-08
NB-95	CI	2.49E-08							
TOTALS	CI	3.27E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.31E-08

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)	4.76E+07	2.33E+07	2.78E+07	3.17E+07
17.0 VOLUME OF DILUTION WATER (LITERS)	1.35E+11	1.04E+11	2.58E+11	1.86E+11
18.0 **FISSION AND ACTIVATION PRODUCTS**				
18.1 TOTAL RELEASES W/O H-3, RADGAS, ALPHA (CI)	1.72E-01	6.45E-02	1.20E-01	4.05E-01
18.2 AVERAGE DILUTION CONCENTRATION (UCI/ML)	1.27E-09	6.19E-10	4.67E-10	2.17E-09
19.0 **TRITIUM**				
19.1 TOTAL RELEASE (CI)	1.41E+02	9.03E+01	1.61E+02	4.61E+01
19.2 AVERAGE DILUTION CONCENTRATION (UCI/ML)	1.05E-06	8.66E-07	6.23E-07	2.47E-07
20.0 **DISSOLVED AND ENTRAINED GASES**				
20.1 TOTAL RELEASE (CI)	1.88E-05	0.00E+00	1.77E-04	1.98E-04
20.2 AVERAGE DILUTION CONCENTRATION (UCI/ML)	1.40E-13	0.00E+00	6.87E-13	1.06E-12
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)	1.05E-06	8.67E-07	6.24E-07	2.49E-07
23.0 TOTAL BODY DOSE (MREM)	5.42E-04	2.75E-04	5.17E-04	3.05E-04
24.0 **CRITICAL ORGAN**				
24.1 DOSE (MREM)	2.63E-03	2.75E-04	1.76E-03	2.37E-03
24.2 ORGAN	GI TRACT	TOT BODY	GI TRACT	GI TRACT
25.0 PERCENT OF TECHNICAL SPECIFICATIONS LIMIT (%)	1.81E-02	9.16E-03	1.72E-02	1.02E-02
26.0 PERCENT OF CRITICAL ORGAN TECH SPEC LIMIT (%)	2.63E-02	9.16E-03	1.76E-02	2.37E-02

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

27.0 **INDIVIDUAL LIQUID EFFLUENT**

		CONTINUOUS MODE				BATCH MODE			
NUCLIDE	UNITS	QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
AG-110M	CI					5.53E-03	1.09E-03	2.45E-03	8.17E-03
AS-76	CI						2.86E-06		
BE-7	CI					8.80E-05			
CO-57	CI					9.44E-05	3.74E-05	3.87E-04	6.76E-05
CO-58	CI					3.06E-02	9.50E-03	5.24E-02	3.65E-02
CO-60	CI					3.98E-03	8.70E-04	2.63E-03	3.09E-03
CR-51	CI					2.19E-02	9.82E-04	1.16E-03	2.06E-01
CS-134	CI								2.46E-06
CS-137	CI				6.05E-06	1.43E-06			
FE-55	CI					6.30E-02	4.36E-02	1.94E-02	2.76E-02
FE-59	CI					5.72E-03	5.32E-04	1.33E-04	3.07E-03
I-131	CI							3.08E-05	
I-132	CI					3.12E-06			
I-133	CI							8.02E-06	
LA-140	CI					9.66E-05			
MN-54	CI					3.37E-04	9.12E-05	4.36E-05	2.89E-04
NA-24	CI								4.71E-05
NB-95	CI					1.45E-03	2.15E-04	5.22E-06	2.09E-03
NB-97	CI					9.58E-06	2.20E-06	3.94E-06	
RH-105	CI								7.60E-06
RU-105	CI					8.37E-05			
SB-122	CI							5.07E-05	6.04E-05
SB-124	CI					7.04E-04	1.16E-04	4.60E-04	3.30E-02
SB-125	CI					3.16E-02	7.31E-03	3.88E-02	8.22E-02
SB-126	CI					4.00E-06		1.87E-06	5.29E-04

(CONTINUED)

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

27.0 **INDIVIDUAL LIQUID EFFLUENT**

		CONTINUOUS MODE				BATCH MODE			
NUCLIDE	UNITS	QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
SE-75	CI								5.55E-04
SN-113	CI					4.79E-04	4.62E-05	3.59E-05	2.42E-04
SR-92	CI					6.32E-05	1.25E-05	3.11E-05	1.24E-04
TE-123M	CI					1.36E-04			5.43E-04
TE-125M	CI					5.18E-03		2.26E-03	
TE-132	CI					2.27E-06		1.67E-06	5.89E-06
W-187	CI					8.54E-05			8.24E-06
ZN-65	CI					8.86E-06		4.02E-05	4.87E-05
ZR-95	CI					8.47E-04	1.32E-04	2.52E-05	1.23E-03
ZR-97	CI					2.67E-06			
TOTALS	CI	0.00E+00	0.00E+00	0.00E+00	6.05E-06	1.72E-01	6.45E-02	1.20E-01	4.05E-01

28.0 **DISSOLVED AND ENTRAINED GASES**

		CONTINUOUS MODE				BATCH MODE			
NUCLIDE	UNITS	QTR: 01	QTR: 02	QTR: 03	QTR: 04	QTR: 01	QTR: 02	QTR: 03	QTR: 04
XE-131M	CI							1.77E-04	
XE-133	CI					1.88E-05			
XE-135	CI								4.93E-06
XE-137	CI								1.93E-04
TOTALS	CI	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.88E-05	0.00E+00	1.77E-04	1.98E-04

ENCLOSURE 3

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

January 01, 2008 – December 31, 2008

7 pages follow

Ref. RPIP 1314

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
NORTHERN STATES POWER

Period: 1/01/08-12/31/08
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	m^3	1.02E+01		179.4
	ft^3	3.59E+02		
	Ci	1.58E+00	2.50E+01	
B. Dry-Compacted	m^3			
	ft^3			
	Ci			
C. Non-Compacted	m^3	2.54E+02		1280
	ft^3	8.96E+03		
	Ci	5.76E-01	2.50E+01	
D. Filter Media	m^3	1.02E+01		179.4
	ft^3	3.59E+02		
	Ci	3.23E+00	2.50E+01	
S. Other (furnish description) Combined package, charcoal and DAW	m^3	3.62E+01		1280
	ft^3	1.28E+03		
	Ci	5.36E-02	2.50E+01	

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.**

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
NORTHERN STATES POWER

Period: 1/01/08-12/31/08
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]

2. Principal Radionuclide Composition by Type of Waste:
(Bold letter designation from Page 1)

TYPE		Nuclide	Percent % Abundance (0.00E0)
A		* C-14	6.82E+00
		* Fe-55	4.38E+01
		Co-58	1.50E+00
		Co-60	1.60E+01
	Percent Cutoff 1%	* Ni-63	2.58E+01
		Sb-125	2.05E+00
		Cs-137	1.78E+00
C		Cr-51	1.50E+00
		* Fe-55	5.71E+01
		Co-58	1.22E+01
		Co-60	7.33E+00
		* Ni-63	1.10E+01
		Zr-95	2.76E+00
		Nb-95	4.60E+00

* = Inferred - Not Measured on Site

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
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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]

2. Principal Radionuclide Composition by Type of Waste (Continuation):
(Bold letter designation from Page 1)

TYPE		Nuclide	Percent % Abundance (0.00E0)
S		* H-3	5.83E+01
		* C-14	1.68E+01
		* Fe-55	1.32E+01
		Co-58	3.99E+00
		Co-60	1.63E+00
	Percent Cutoff 1%	* Ni-63	2.33E+00
		Nb-95	1.44E+00
D		* C-14	6.82E+00
		* Fe-55	4.38E+01
		Co-58	1.50E+00
		Co-60	1.60E+01
		* Ni-63	2.58E+01
		Sb-125	2.05E+00
		Cs-137	1.78E+00

* = Inferred - Not Measured on Site

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
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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:

Number of Shipments	Mode	Destination
1	Hittman Transport Services	Barnwell Disposal Facility
3	Hittman Transport services	Studsvik Processing Facility, LLC
4	StudsvikLogistics, LLC	StudsvikRACE, LLC

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
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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]

4. Shipping Container and Solidification Method:

	No.	Disposal Volume (Ft^3/m^3)	Activity (Ci)	Type of Waste	Container Code	Solidif. Code
	08-014	2560/72.5	0.133	C,S	L	N/A
	08-028	2560/72.5	0.243	C	L	N/A
	08-032	179.4/5.08	0.748	A	L	N/A
	08-036	2560/72.5	0.149	C	L	N/A
	08-038	179.4/5.08	1.770	D	L	N/A
	08-039	179.4/5.08	1.460	D	L	N/A
	08-040	179.4/5.08	0.836	A	L	N/A
	08-045	2560/72.5	0.105	C	L	N/A
TOTALS	8	11000/310	5.44			

CONTAINER CODES: (Shipment type)
- L = LSA
- A = Type A
- B = Type B
- Q = Highway Route Controlled Quantity

SOLIDIFICATION CODES:
- C = Cement

TYPES OF WASTES:
- A = Resins
- B = Dry Compacted
- C = Non-Compacted
- D = Filter Media
- S = Other

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
NORTHERN STATES POWER

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

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

Number of Shipments	Mode	Destination
0		

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
NORTHERN STATES POWER

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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: 9 Effective Date: 4/15/2008

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.**

Changes/Justification:

Deleted abandoned processes from procedure. Minor editorial changes.

Reviewed By: _____ Date: 3/16/09