NINE MILE POINT NUCLEAR STATION - UNIT 2

RADIOACTIVE EFFLUENT RELEASE REPORT

January – December 2006

Constellation Energy
Nine Mile Point Nuclear Station

NINE MILE POINT NUCLEAR STATION - UNIT 2

RADIOACTIVE EFFLUENT RELEASE REPORT

JANUARY – DECEMBER 2006

SUPPLEMENTAL INFORMATION

Facility: Nine Mile Point Unit #2   Licensee: Nine Mile Point Nuclear Station, LLC

1. TECHNICAL SPECIFICATION/ODCM LIMITS

A) FISSION AND ACTIVATION GASES

1. The dose rate limit of noble gases released in gaseous effluents from the site to areas at or beyond the site boundary shall be less than or equal to 500 mrem/year to the whole body and less than or equal to 3000 mrem/year to the skin.

2. The air dose from noble gases released in gaseous effluents from Nine Mile Point Unit 2 to areas at or beyond the site boundary shall be limited during any calendar quarter to less than or equal to 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation, and during any calendar year to less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation.

B&C) TRITIUM, IODINES AND PARTICULATES, HALF LIVES > 8 DAYS

1. The dose rate limit of Iodine-131, Iodine-133, Tritium and all radionuclides in particulate form with half-lives greater than eight days, released in gaseous effluents from the site to areas at or beyond the site boundary shall be less than or equal to 1500 mrem/year to any organ.

2. The dose to a member of the public from Iodine-131, Iodine-133, Tritium and all radionuclides in particulate form with half-lives greater than eight days in gaseous effluents released from Nine Mile Point Unit 2 to areas at or beyond the site boundary shall be limited during any calendar quarter to less than or equal to 7.5 mrem to any organ and, during any calendar year to less than or equal to 15 mrem to any organ.

D) LIQUID EFFLUENTS

1. Improved Technical Specifications (ITS) limits the concentration of radioactive material released in the liquid effluents to unrestricted areas to ten times the concentrations specified in 10CFR20.1001-20.2402, Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2E-04 microcuries/ml total activity.

2. The dose or dose commitment to a member of the public from radioactive materials in liquid effluents released from Nine Mile Point Unit 2 to unrestricted areas shall be limited during any calendar quarter to less than or equal to 1.5 mrem to the whole body and to less than or equal to 5 mrem to any organ, and during any calendar year to less than or equal to 3 mrem to the whole body and to less than or equal to 10 mrem to any organ.

2. MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

Described below are the methods used to measure or approximate the total radioactivity and radionuclide composition in effluents.

A) FISSION AND ACTIVATION GASES

Noble gas effluent activity is determined by on-line gamma spectroscopic monitoring (intrinsic germanium crystal) of an isokinetic sample stream.

B) IODINES

Iodine effluent activity is determined by gamma spectroscopic analysis (at least weekly) of charcoal cartridges sampled from an isokinetic sample stream.

C) PARTICULATES

Activity released from the main stack and the combined Radwaste/Reactor Building vent is determined by gamma spectroscopic analysis (at least weekly) of particulate filters sampled from an isokinetic sample stream and composite analysis of the filters for non-gamma emitters.

D) TRITIUM

Tritium effluent activity is measured by liquid scintillation or gas proportional counting of monthly samples taken with an air sparging/water trap apparatus.

E) LIQUID EFFLUENTS

Isotopic contents of liquid effluents are determined by isotopic analysis of a representative sample of each batch and composite analysis of non-gamma emitters.

F) SOLID EFFLUENTS

Isotopic contents of waste shipments are determined by gamma spectroscopy analyses of a representative sample of each batch. Scaling factors established from primary composite sample analyses conducted off-site are applied, where appropriate, to find estimated concentration of non-gamma emitters. For low activity trash shipments, curie content is estimated by dose rate measurement and application of appropriate scaling factors.

Attachment 1

Summary Data

Unit 1 ______ **Unit 2** X **Reporting Period** **January - December 2006**

Liquid Effluents:

ODCM Required MEC = 10 x 10CFR20.1001 - 20.2402, Appendix B, Table 2, Column 2

Average MEC - µCi/ml (Qtr. 1) =	NO RELEASES	Average MEC - µCi/ml (Qtr. 3) =	9.86E-03
Average MEC - µCi/ml (Qtr. 2) =	9.68E-03	Average MEC - µCi/ml (Qtr. 4) =	NO RELEASES

Average Energy (Fission and Activation gases - MEV):

Qrtr. 1:	$\bar{E}_\gamma$	=	6.39E-01	$\bar{E}_\beta$	=	2.51E-01
Qrtr. 2:	$\bar{E}_\gamma$	=	N/A	$\bar{E}_\beta$	=	N/A
Qrtr. 3:	$\bar{E}_\gamma$	=	1.29E+00	$\bar{E}_\beta$	=	4.64E-01
Qrtr. 4:	$\bar{E}_\gamma$	=	1.59E-01	$\bar{E}_\beta$	=	2.53E-01

Liquid:

Number of Batch Releases	17
Total Time Period for Batch Releases (hrs)	5.31E+01
Maximum Time Period for a Batch Release (hrs)	3.27E+00
Average Time Period for a Batch Release (hrs)	3.13E+00
Minimum Time Period for a Batch Release	2.92E+00

	1st	2nd	3rd	4th
Total volume of water used to dilute the liquid during the release period (L)	N/A	1.10E+08	2.39E+08	N/A

	1st	2nd	3rd	4th
Total volume of water available to dilute the liquid effluent during the report period	1.21E+10	1.46E+10	1.61E+10	1.34E+10

Gaseous(Emergency Condenser Vent) "Not applicable for Unit 2"

Number of Batch Releases	N/A
Total Time Period for Batch Releases (hrs)	N/A
Maximum Time Period for a Batch Release (hrs)	N/A
Average Time Period for a Batch Release (hrs)	N/A
Minimum Time Period for a Batch Release	N/A

Gaseous (Primary Containment Purge)

Number of Batch Releases	12
Total Time Period for Batch Releases (hrs)	4.67E+02
Maximum Time Period for a Batch Release (hrs)	8.43E+01
Average Time Period for a Batch Release (hrs)	3.89E+01
Minimum Time Period for a Batch Release (hrs)	2.92E+00

Attachment 1

Summary Data

Unit 1 ________ **Unit 2** X **Reporting Period** **January - December 2006**

Abnormal Releases:

A. Liquids:

Number of Releases	0	
Total Activity Released	N/A	Ci

B. Gaseous:

Number of Releases	0	
Total Activity Released	N/A	Ci

Attachment 2

Unit 1 ______ **Unit 2** X **Reporting Period** January - December 2006

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES, ELEVATED AND GROUND LEVEL

		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Est. Total Error, %
A. Fission & Activation Gases						
1. Total Release	Ci	7.71E+01	0.00E+00	5.12E-03	7.99E-02	5.00E+01
2. Average Release Rate	µCi/sec	9.91E+00	0.00E+00	6.44E-04	1.01E-02	
B. Iodines						
1. Total Iodine - 131	Ci	2.63E-04	1.34E-05	8.18E-07	1.63E-06	3.00E+01
2. Average Release Rate for Period	µCi/sec	3.30E-05	1.72E-06	1.04E-07	2.07E-07	
C. Particulates						
1. Particulates with half-lives>8	Ci	3.73E-04	1.48E-03	1.03E-03	7.60E-05	3.00E+01
2. Average Release Rate for Period	µCi/sec	4.76E-05	1.90E-04	1.32E-04	9.67E-06	
3. Gross alpha radioactivity	Ci	1.18E-05	1.09E-05	4.24E-06	4.50E-07	2.50E+01
D. Tritium						
1. Total release	Ci	2.09E+01	5.92E+00	6.42E+00	1.60E+01	5.00E+01
2. Average Release Rate for Period	µCi/sec	2.62E+00	7.59E-01	8.17E-01	2.03E+00	
E. Percent of Tech. Spec. Limits Fission and Activation Gases						
Percent of Quarterly Gamma Air Dose Limit (5 mR)	%	1.13E-01	0.00E+00	1.63E-05	2.58E-05	
Percent of Quarterly Beta Air Dose Limit (10 mrad)	%	2.52E-03	0.00E+00	2.39E-07	2.25E-06	
Percent of Annual Gamma Air Dose Limit to Date (10 mR)	%	5.64E-02	5.64E-02	5.64E-02	5.64E-02	
Percent of Annual Beta Air Dose Limit to Date (20 mrad)	%	1.26E-03	1.26E-03	1.26E-03	1.26E-03	
Percent of Whole Body Dose Rate Limit (500 mrem/yr)	%	4.43E-03	0.00E+00	6.17E-07	9.92E-07	
Percent of Skin Dose Rate Limit (3000 mrem/yr)	%	8.66E-04	0.00E+00	1.22E-07	2.12E-07	
Tritium, Iodines, and Particulates (with half-lives greater than 8 days)						
Percent of Quarterly Dose Limit (7.5 mrem)	%	6.82E-02	7.21E-03	1.25E-02	7.68E-03	
Percent of Annual Dose Limit to Date (15 mrem)	%	3.44E-02	3.80E-02	4.03E-02	4.21E-02	
Percent of Organ Dose Limit (1500 mrem/yr	%	1.35E-03	1.46E-04	2.52E-04	1.54E-04	

Attachment 3

Unit 1 ______ **Unit 2** X **Reporting Period** January - December 2006

GASEOUS EFFLUENTS - ELEVATED RELEASE

Continuous Mode (2)

Nuclides Released		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Fission Gases (1)					
Argon-41	Ci	**	**	5.12E-03	**
Krypton-85	Ci	**	**	**	**
Krypton-85m	Ci	1.65E+01	**	**	7.99E-02
Krypton-87	Ci	6.67E-01	**	**	**
Krypton-88	Ci	2.19E+01	**	**	**
Xenon-127	Ci	**	**	**	**
Xenon-131m	Ci	**	**	**	**
Xenon-133	Ci	3.30E+01	**	**	**
Xenon-133m	Ci	1.57E-01	**	**	**
Xenon-135	Ci	2.92E+00	**	**	**
Xenon-135m	Ci	5.69E-01	**	**	**
Xenon-137	Ci	**	**	**	**
Xenon-138	Ci	7.72E-01	**	**	**
Iodines (1)					
Iodine-131	Ci	2.61E-04	**	8.18E-07	1.63E-06
Iodine-133	Ci	4.99E-04	**	**	**
Iodine-135	Ci	**	**	**	**
Particulates (1)					
Chromium-51	Ci	**	**	**	**
Manganese-54	Ci	4.80E-06	**	2.40E-05	**
Iron-55	Ci	2.39E-06	9.28E-05	1.40E-04	1.17E-05
Iron-59	Ci	**	**	**	**
Cobalt-58	Ci	**	**	**	**
Cobalt-60	Ci	2.85E-06	**	3.68E-05	2.94E-06
Neodymium-147	Ci	**	**	**	**
Zirconium-95	Ci	**	**	**	**
Zinc-65	Ci	**	**	**	**
Strontium-89	Ci	2.28E-06	**	1.32E-05	**
Stronium-90	Ci	**	**	2.24E-06	**
Niobium-95	Ci	**	**	**	**
Zirconium-95	Ci	**	**	**	**
Molybdenum-99	Ci	**	**	**	**
Cesium-134	Ci	**	**	**	**
Cesium-136	Ci	**	**	**	**
Cesium-137	Ci	**	**	**	**
Barium-140	Ci	**	**	**	**
Lanthanum-140	Ci	**	**	**	**
Cerium-141	Ci	**	**	**	**
Cerium-144	Ci	**	**	**	**
Tritium (1)	Ci	1.35E+01	2.48E+00	4.11E+00	1.08E+01

(1) Concentrations less than the lower limit of detection of the counting system used are indicated with a double asterisk. A lower limit of detection of 1.00E-04 μCi/ml for required noble gases, 1.00E-11 μCi/ml for required particulates and gross alpha, 1.00E-12 μCi/ml for required Iodines, 1.00E-11 μCi/ml for Sr-89/90 and 1.00E-06 μCi/ml for Tritium, as required by the ODCM, has been verified.

(2) Contributions from purges are included. There were no other batch releases during the reporting period.

Attachment 4

Unit 1	______	Unit 2	X	Reporting Period	January - December 2006

GASEOUS EFFLUENTS - GROUND LEVEL RELEASES

Nuclides Released		Continuous Mode (2) 1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Fission Gases (1)					
Argon-41	Ci	**	**	**	**
Krypton-85	Ci	**	**	**	**
Krypton-85m	Ci	**	**	**	**
Krypton-87	Ci	**	**	**	**
Krypton-88	Ci	**	**	**	**
Xenon-127	Ci	**	**	**	**
Xenon-131m	Ci	**	**	**	**
Xenon-133	Ci	5.78E-01	**	**	**
Xenon-133m	Ci	**	**	**	**
Xenon-135	Ci	**	**	**	**
Xenon-135m	Ci	**	**	**	**
Xenon-137	Ci	**	**	**	**
Xenon-138	Ci	**	**	**	**
Iodines (1)					
Iodine-131	Ci	2.26E-06	1.34E-05	**	**
Iodine-133	Ci	**	**	**	**
Iodine-135	Ci	**	**	**	**
Particulates (1)					
Chromium-51	Ci	**	**	**	**
Manganese-54	Ci	**	3.25E-05	3.71E-05	**
Iron-55	Ci	2.95E-04	1.26E-03	5.67E-04	6.14E-05
Iron-59	Ci	**	**	**	**
Cobalt-58	Ci	**	**	**	**
Cobalt-60	Ci	5.86E-05	8.30E-05	9.62E-05	**
Neodymium-147	Ci	**	**	**	**
Zirconium-95	Ci	**	**	**	**
Zinc-65	Ci	**	8.99E-06	6.97E-05	**
Stronium-89	Ci	**	**	4.07E-05	**
Stronium-90	Ci	**	**	7.42E-06	**
Niobium-95	Ci	**	**	**	**
Zirconium-95	Ci	**	**	**	**
Molybdenum-99	Ci	**	**	**	**
Cesium-134	Ci	6.97E-06	**	**	**
Cesium-136	Ci	**	**	**	**
Cesium-137	Ci	**	**	**	**
Barium-140	Ci	**	**	**	**
Lanthanum-140	Ci	**	**	**	**
Cerium-141	Ci	**	**	**	**
Cerium-144	Ci	**	**	**	**
Tritium	Ci	7.40E+00	3.43E+00	2.31E+00	5.20E+00

(1) Concentrations less than the lower limit of detection of the counting system used are indicated with a double asterisk. A lower limit of detection of 1.00E-04 µCi/ml for required noble gases, 1.00E-11 µCi/ml for required particulates and gross alpha, 1.00E-12 µCi/ml for required Iodines, 1.00E-11 µCi/ml for Sr-89/90 and 1.00E-06 µCi/ml for Tritium, as required by the ODCM, has been verified.
(2) There were no batch releases from this path during the reporting period.

Attachment 5

Unit 1 ________ **Unit 2** **X** **Reporting Period** **January - December 2006**

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES (1)

		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Est. Total Error, %
A. Fission & Activation Products						
1. Total Release (not including Tritium, gases, alpha)	Ci	No Releases	2.66E-04	1.91E-04	No Releases	5.00E+01
2. Average diluted concentration during reporting period	µCi/ml	No Releases	1.83E-11	1.18E-11	No Releases	
B. Tritium						
1.Total release	Ci	No Releases	2.55E+00	4.34E+00	No Releases	5.00E+01
2. Average diluted concentration during the reporting period	µCi/ml	No Releases	1.75E-07	2.69E-07	No Releases	
C. Dissolved and Entrained Gases						
1. Total release	Ci	No Releases	**	**	No Releases	5.00E+01
2. Average diluted concentration during the reporting period	µCi/ml	No Releases	**	**	No Releases	
D. Gross Alpha Radioactivity						
1. Total release	Ci	No Releases	**	**	No Releases	5.00E+01
E. Volumes						
1. Prior to Dilution	Liters	No Releases	5.23E+05	9.70E+05	No Releases	5.00E+01
2. Volume of dilution water used during release period	Liters	No Releases	1.10E+08	2.39E+08	No Releases	5.00E+01
3. Volume of dilution water available during reporting period	Liters	1.21E+10	1.46E+10	1.61E+10	1.34E+10	5.00E+01
F. Percent of Tech. Spec. Limits Fission and Activation Gases						
Percent of Quarterly Whole Body Dose Limit (1.5 mrem)	%	No Releases	2.28E-03	2.90E-03	No Releases	
Percent of Annual Whole Body Dose Limit to Date (3 mrem)	%	No Releases	1.14E-03	2.59E-03	No Releases	
Percent of Quarterly Organ Dose Limit (5 mrem)	%	No Releases	1.30E-03	1.23E-03	No Releases	
Percent of Annual Organ Dose Limit to Date (10 mrem)	%	No Releases	6.52E-04	1.26E-03	No Releases	
Percent of 10CFR20 Concentration Limit (2), (3)	%	No Releases	1.80E-03	2.73E-03	No Releases	
Percent of Dissolved or Entrained Noble Gas Limit (2.00E-04 µCi/ml)	%	No Releases	**	**	No Releases	

(1) Concentrations less than the lower limit of detection of the counting system used are indicated with a double asterisk. A lower limit of detection of 5.00E-07 µCi/ml for required gamma emitting nuclides, 1.00E-05 µCi/ml for required dissolved and entrained noble gases and tritium, 5.00E-08 µCi/ml for Sr-89/90, 1.00E-06 µCi/ml for I-131 and Fe-55, and 1.00E-07 µCi/ml for gross alpha radioactivity, as required by the Off-Site Dose Calculation Manual (ODCM), have been verified.

(2) The percent of 10CFR20 concentration limit is based on the average concentration during the quarter.

(3) Improved Technical Specifications limit the concentration of radioactive material released in the liquid effluents to unrestricted areas to ten times the concentrations specified in 10CFR20.1001 - 20.2402, Appendix B, Table 2, Column 2. Maximum Effluent Concentrations (MEC) numerically equal to ten times the 10CFR20.1001 - 20.2402 concentrations were adopted to evaluate liquid effluents.

Attachment 5

Unit 1	________	Unit 2	X	Reporting Period	January - December 2006

LIQUID EFFLUENTS RELEASED

Nuclides Released		Batch Mode (1),(2) 1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Nuclides Released					
Strontium-89	Ci	No Releases	**	**	No Releases
Strontium-90	Ci	No Releases	**	**	No Releases
Cesium-134	Ci	No Releases	**	**	No Releases
Cesium-137	Ci	No Releases	**	**	No Releases
Iodine-131	Ci	No Releases	**	**	No Releases
Cobalt-58	Ci	No Releases	**	**	No Releases
Cobalt-60	Ci	No Releases	2.48E-04	1.84E-04	No Releases
Iron-59	Ci	No Releases	**	**	No Releases
Zinc-65	Ci	No Releases	**	**	No Releases
Manganese-54	Ci	No Releases	6.30E-06	**	No Releases
Chromium-51	Ci	No Releases	**	**	No Releases
Zirconium-95	Ci	No Releases	**	**	No Releases
Niobium-95	Ci	No Releases	**	**	No Releases
Molybdenum-99	Ci	No Releases	**	**	No Releases
Technetium-99m	Ci	No Releases	**	**	No Releases
Barium-140	Ci	No Releases	**	**	No Releases
Lanthanum-140	Ci	No Releases	**	**	No Releases
Cerium-141	Ci	No Releases	**	**	No Releases
Tungsten-187	Ci	No Releases	**	**	No Releases
Arsenic-76	Ci	No Releases	**	**	No Releases
Iodine-133	Ci	No Releases	**	**	No Releases
Iron-55	Ci	No Releases	8.82E-05	2.91E-05	No Releases
Neptunium-239	Ci	No Releases	**	**	No Releases
Silver-110m	Ci	No Releases	**	**	No Releases
Gold-199	Ci	No Releases	**	**	No Releases
Cerium-144	Ci	No Releases	**	**	No Releases
Cesium-136	Ci	No Releases	**	**	No Releases
Copper-64	Ci	No Releases	1.26E-05	6.82E-06	No Releases
Dissolved or Entrained Gases	Ci	No Releases	**	**	No Releases
Tritium	Ci	No Releases	2.55E+00	4.34E+00	No Releases

(1) No continuous mode release occurred during the report period as indicated by effluent sampling.

(2) Concentrations less than the lower limit of detection of the counting system used are indicated with a double asterisk. A lower limit of detection of 5.00E-07 µCi/ml for required gamma emitting nuclides, 1.00E-05 µCi/ml for required dissolved and entrained noble gases and tritium, 5.00E-08 µCi/ml for Sr 80/90, 1.00E-06 µCi/ml for I-131 and Fe-55, and 1.00E-07 µCi/ml for gross alpha radioactivity, as identified in the ODCM, has been verified.

Attachment 6

Unit 1	______	Unit 2	X	Reporting Period	January - December 2006

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A1. TYPE	Volume (m^3) Class			Activity (1) (Ci) Class		
	A	B	C	A	B	C
a.1 Spent Resins (Dewatered)	6.94E+01	0.00E+00	0.00E+00	8.97E+01	0.00E+00	0.00E+00
a.2 Filter Sludge	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
a.3 Concentrated Waste	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Totals	6.94E+01	0.00E+00	0.00E+00	8.97E+01	0.00E+00	0.00E+00
b.1 Dry, compressible waste	2.61E+02	0.00E+00	0.00E+00	1.43E+00	0.00E+00	0.00E+00
b.2 Dry, non-compressible waste (contaminated equipment)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Totals	2.61E+02	0.00E+00	0.00E+00	1.43E+00	0.00E+00	0.00E+00
c. Irradiated Components, Control Rods	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
d. Other (to vendor for processing)						
d.1 Tank Sediment and Filters	4.10E+02	4.85E-01	0.00E+00	1.14E+02	5.23E+01	0.00E+00

(1) The estimated total error is 5.00E+01%

Attachment 6

Unit 1	____	Unit 2	X	Reporting Period	January - December 2006

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A1. TYPE	Container	Package	Solidification Agent
a.1 Spent Resin (Dewatered)	Poly Liner	General Design Type A	None
a.2 Filter Sludge	N/A	N/A	N/A
a.3 Concentrated Waste	N/A	N/A	N/A
b.1 Dry, Compressible waste	Metal Box	General Design	None
b.2 Dry, non-compressible waste (Contaminated Equipment)	N/A	N/A	N/A
c. Irradiated Components, Control Rods	N/A	N/A	N/A
d. Other (to vendor for processing)			
d.1 Tank Sediment and Filters	Poly Liner	Type A	None

Attachment 6

Unit 1	______	Unit 2	X	Reporting Period	January - December 2006

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A2. ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

a. Spent Resins, Filter Sludges, Concentrated Waste

Nuclide	Percent
Fe-55	4.90E+01
Co-60	3.12E+01
Mn-54	9.40E+00
Zn-65	8.60E+00
Other	1.80E+00

b. Dry, compressible waste, dry, non-compressible waste (contaminated equipment)

Nuclide	Percent
Fe-55	8.29E+01
Co-60	1.40E+01
Mn-54	2.40E+00
Other	7.00E-01

c. Irradiated Components, Control Rods: There were no shipments.

Nuclide	Percent
N/A	N/A

d. Other (To Vendor for Processing)

1. Tank Sediment and Filters

Nuclide	Percent
Fe-55	6.56E+01
Co-60	2.82E+01
Mn-54	3.70E+00
Zn-65	1.60E+00
Other	9.00E-01

Attachment 6

Unit 1	______	Unit 2	X	Reporting Period	January - December 2006

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A3. SOLID WASTE DISPOSITION

Number of Shipments	Mode of Transportation	Destination
7	Hittman Transport	Duratek Services, Inc
17	Hittman Transport	Studsvik Processing Facility, Inc
1	Race Logistics	Studsvik Race, LLC

B. IRRADIATED FUEL SHIPMENTS (Disposition): There were no shipments.

Number of Shipments	Mode of Transportation	Destination
0	N/A	N/A

D. SEWAGE WASTES SHIPPED TO A TREATMENT FACILITY FOR PROCESSING AND BURIAL

There were no shipments of sewage sludge from NMPNS to the treatment facility during the reporting period.

Attachment 7

Unit 1 ________	Unit 2 ___X___	Reporting Period	January – December 2006

SUMMARY OF CHANGES TO THE OFF-SITE DOSE CALCULATION MANUAL (ODCM)

The Unit 2 Off-Site Dose Calculation Manual (ODCM) was revised during the reporting period to base the gamma sensitive liquid radwaste radiation monitor setpoint on gamma emitting nuclide activity only and to allow on-site analysis of tritium, strontium, and iron. These changes do not affect the levels of radioactive effluent control required by 10 CFR 20.1302, 40 CFR 190, 10 CFR 50.36a, and 10 CFR 50 Appendix I, and do not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations. A copy of the ODCM, Revision 27 is attached and a summary of the changes presented to and approved by the Station Operations Review Committee on May 23, 2006 is provided below. The summary also includes the justification for the change.

Revision 27

Page #	New/Amended Section #	Description of Change	Reason for Change
II 3 and II 4	II 1.1.2.1	Removes the non-gamma emitting nuclide activity from the gamma sensitive liquid radwaste effluent radiation monitor setpoint. Liquid radwaste effluent flow rate limits will be based on gamma and non-gamma emitting nuclide activity.	This change allows liquid radwaste discharges to occur by eliminating spurious alarms when little or no radioactivity is present in the liquid radwaste discharge tanks. The non-gamma component in the calculation resulted in overly restrictive setpoints. By eliminating spurious alarms the reliability of the setpoint calculation is maintained.
II 3	II 1.1.2.1	This change allows tritium analyses to also be performed on-site.	Nine Mile Point has the capability to perform tritium analyses on-site. Therefore, this administrative change deletes the reference that only off-site analyses are allowed.

SUMMARY OF CHANGES TO THE OFF-SITE DOSE CALCULATION MANUAL (ODCM)

The Unit 2 Off-Site Dose Calculation Manual (ODCM) was revised during the reporting period to remove the phrase "LCO 3.0.4 does not apply" for Part I requirements that allow unlimited operation and to add the definition of "FUNCTIONALITY" and replace "OPERABILITY" with "FUNCTIONALITY." These changes do not affect the levels of radioactive effluent control required by 10 CFR 20.1302, 40 CFR 190, 10 CFR 50.36a, and 10 CFR 50 Appendix I, and do not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations. A copy of the ODCM, Revision 28 is attached and a summary of the changes presented to and approved by the Station Operations Review Committee on September 26, 2006 is provided below. The summary also includes the justification for the change.

Revision 28

Page #	New/Amended Section #	Description of Change	Reason for Change
I 3.2-10 I 3.3-1 I 3.3-7	D 3.2.4 D 3.3.1 D 3.3.2	Remove the phrase "LCO 3.0.4 does not apply" for Part I requirements that allow unlimited operation	This administrative change is made to use the same terminology in the ODCM that corresponds with the change made by Unit 2 Technical Specifications Amendment 109.
iv I 1.0-1 I 3.1-7 I 3.2-3 I 3.2-10 I 3.2-12 I 3.3-1, I 3.3-2, and I 3.3-3 I 3.3-7, I	Table of contents, 1.5 1.0 D 3.1.3 D 3.2.1, Table D 3.2.1-1 D 3.2.4 D 3.2.5 D 3.3.1 D 3.3.2	This change adds the definition of "FUNCTIONALITY" and replaces "OPERABILITY" with "FUNCTIONALITY."	This change corresponds to the guidance in Regulatory Issues Summary 2005-20. The purpose of this change is to clarify that the SSCs in the ODCM are not described in Technical Specifications but warrant programmatic controls to ensure that SSC availability and reliability is maintained..

Attachment 7

3.3-8, I 3.3-9,and I 3.3.-10,			
I B-3.1-3	B 3.1.3		
I B 3.2-5	B 3.2.4		
I B 3.2-6	B 3.2.5		
I B 3.3-1	B 3.3.1		
I B 3.3-2	B 3.3.2		
I 4.1-1a	D 4.1.3		
II 10	1.5		
II 13	2.1.2		
II 20	2.3		
II 23	2.8		

Attachment 8

Unit 1	______	Unit 2	X	Reporting Period	January - December 2006

SUMMARY OF CHANGES TO THE PROCESS CONTROL PROGRAM (PCP)
There were no changes to the NMP2 Process Control Program (PCP) during the report period.

Attachment 9

Unit 1		Unit 2	X	Reporting Period	January - December 2006

SUMMARY OF INOPERABLE MONITORS

Monitor	Dates of Inoperability	Cause and Corrective Actions
1) Main Stack Effluent Noble Gas Activity Monitor	December 31, 2005 @ 10:32 to September 14, 2006 @ 20:25	The Gaseous Effluent Monitoring System (GEMS) Main Stack Effluent Noble Gas Activity Monitor channel was declared inoperable due to the failure of a communication link between the GEMS computer and both the Stack and Vent monitors. The Vent monitor was restored on 1/19/06. The necessary computer communication/interface card repair to restore Stack GEMS was completed on 09/14/06. Repairs were not timely due to the obsolescence of failed components. GEMS is a one-of-a-kind off-line real time gamma spectroscopy system. Because of the system age and obsolescence replacement parts rely on used parts that are refurbished. The station has approved a project plan for replacement of the system, with an expected completion in 2007. Required grab sampling and analysis as directed by the Off-Site Dose Calculation Manual were maintained during the period of inoperability.
2) Main Stack Effluent Sample Flow Rate Monitor	March 29, 2006 @ 13:45 to September 14, 2006 @ 20:25	The Gaseous Effluent Monitoring System (GEMS) Main Stack Sample Flow Rate Monitor channel was declared inoperable due to the failure of a communication link between the GEMS computer and the Stack monitor. The necessary computer communication/interface card repair was completed on 9/14/06. Repairs were not timely due to the obsolescence of failed components. GEMS is a one-of-a-kind off-line real time gamma spectroscopy system. Because of the system age and obsolescence replacement parts rely on used parts that are refurbished. The station has approved a project plan for replacement of the system, with an expected completion in 2007. Required flow rate estimates as directed by the Off-Site Dose Calculation Manual were maintained during the period of inoperability.
3) Main Stack Effluent Noble Gas Activity Monitor	September 25, 2006 @ 11:30 to October 29, 2006 @ 14:10	The Gaseous Effluent Monitoring System (GEMS) Main Stack Effluent Noble Gas Activity Monitor channel was declared inoperable due to the failure of a communication link between the GEMS computer and both the Stack and Vent monitors. The necessary computer communication/interface card repair was completed on 10/29/06. Repairs were not timely due to the obsolescence of failed components. GEMS is a one-of-a-kind off-line real time gamma spectroscopy system. Because of the system age and obsolescence replacement parts rely on used parts that are refurbished. The station has approved a project plan for replacement of the system, with an expected completion in 2007. Required grab sampling and analysis as directed by the Off-Site Dose Calculation Manual were maintained during the period of inoperability.

Attachment 10

Unit 1 __________	Unit 2 X	Reporting Period	January – December 2006

DOSES TO MEMBERS OF THE PUBLIC DUE TO THEIR ACTIVITIES INSIDE THE SITE BOUNDARY

Introduction

An assessment of the radiation dose potentially received by a Member of the Public due to their activities inside the site boundary from Nine Mile Point Unit 2 (NMP2) liquid and gaseous effluents has been conducted for the period January through December 2006.

This assessment considers the maximum exposed individual and the various exposure pathways resulting from liquid and gaseous effluents to identify the maximum dose received by a Member of the Public during their activities within the site boundary.

Prior to September 11, 2001, the public had access to the Energy Information Center for purposes of observing the educational displays or for picnicking and associated activities. Fishing also occurred near the shoreline adjacent to the NMP. Fishing near the shoreline adjacent to the NMP Site was the onsite activity that resulted in the potential maximum dose received by a Member of the Public. Following September 11, 2001 public access to the Energy Information Center has been restricted and fishing by Members of the Public at locations on site is also prohibited. Although fishing was not conducted during 2006 the annual dose to a hypothetical fisherman was still evaluated to provide continuity of data for the location.

Dose Pathways

Dose pathways considered for this evaluation included direct radiation, inhalation and external ground (shoreline sediment or soil doses). Other pathways, such as ingestion pathways, are not considered because they are either not applicable, insignificant, or are considered as part of the evaluation of the total dose to a member of the public located off-site. In addition, only releases from the NMP2 stack and vent were evaluated for the inhalation pathway. Dose due to aquatic pathways such as liquid effluents is not applicable since swimming is prohibited at the Nine Mile Point Site.

Dose to a hypothetical fisherman is received through the following pathways while standing on the shoreline fishing:

- External ground pathway; this dose is received from plant related radionuclides detected in the shoreline sediment.
- Inhalation pathway; this dose is received through inhalation of gaseous effluents released from NMP2 Stack and Vent.
- Direct radiation pathway; dose resulting from the operation of NMP2, Nine Mile Point Unit 1 (NMP1) and the James A. Fitzpatrick (JAF) Facilities.

Methodologies for Determining Dose for Applicable Pathways

External Ground (Shoreline Sediment) pathway

Dose from the external ground (shoreline sediment) is based on the methodology in the Unit 2 Offsite Dose Calculation Manual (NMP2 ODCM) as adapted from Regulatory Guide 1.109. For this evaluation it is assumed that the hypothetical maximum exposed individual fished from the shoreline at all times.

- The total dose received by the whole body and skin of the maximum exposed individual during 2006 was calculated using the following input parameters: Usage Factor = 312 hours (fishing 8 hours per week, 39 weeks per year)
- Density in grams per square meter = 40,000
- Shore width factor = 0.3
- Whole body and skin dose factor for each radionuclide = Regulatory Guide 1.109, Table E-6.
- Fractional portion of the year = 1 (used average radionuclide concentration over total time period)
- Average Cs-137 concentration = 1.99E-01 pCi/g

The total whole body and skin doses received by a hypothetical maximum exposed fisherman from the external ground pathway is presented in Table 1, Exposure Pathway Dose.

Attachment 10

Unit 1 __________ **Unit 2** ____X____ **Reporting Period** **January – December 2006**

DOSES TO MEMBERS OF THE PUBLIC DUE TO THEIR ACTIVITIES INSIDE THE SITE BOUNDARY

Inhalation Pathway

The inhalation dose pathway is evaluated by utilizing the inhalation equation in the NMP2 ODCM, as adapted from Regulatory Guide 1.109. The total whole body dose and organ dose received by the hypothetical maximum exposed fisherman during 2006 is calculated using the following input parameters for gaseous effluents released from both the NMP2 Stack and Vent for the time period exposure is received:

NMP 2 Stack:

Variable	Fisherman *
X/Q (s/m^3)	9.60E-07
Inhalation dose factor	Table E-7 Regulatory Guide 1.109
Annual air intake m^3/year) (adult)	8000
Fractional portion of the year (hours)	0.0356
H-3 (pCi/sec)	7.42 E+05
Mn-54 (pCi/sec)	1.02 E+00
Fe-55 (pCi/sec)	1.04 E+01
Co-60 (pCi/sec)	1.69 E+00
Sr-89 (pCi/sec)	5.60 E-01
Sr-90 (pCi/sec)	9.53 E-02
I-131 (pCi/sec)	1.04E-01

NMP2 Vent:

Variable	Fisherman *
X/Q (s/m^3)	2.80E-06
Inhalation dose factor	Table E-7 Regulatory Guide 1.109
Annual air intake (m^3/year) (adult)	8000
Fractional portion of the year (hours)	0.0356
H-3 (pCi/sec)	4.65 E+05
Mn-54 (pCi/sec)	2.96 E+00
Fe-55 (pCi/sec)	8.03 E+01
Co-60 (pCi/sec)	7.61 E+00
Zn-65 (pCi/sec)	3.34 E+00
Sr-89 (pCi/sec)	1.73 E+00
Sr-90 (pCi/sec)	3.15 E-01
I-131 (pCi/sec)	5.69 E-01

- The maximum exposed fisherman is assumed to be present on site during the period of April through December at a rate of 8 hours per week for 39 weeks per year equivalent to 312 hours for the year (fractional portion of the year = 0.0356). Therefore, the Average Stack and Vent flow rates and radionuclide concentrations used to determine the dose are represented by second, third and fourth quarter gaseous effluent flow and concentration values.

The total whole body dose and maximum organ dose received by the hypothetical maximum exposed fisherman is presented in Table 1, Exposure Pathway Dose.

Attachment 10

Unit 1 __________ Unit 2 ____X____ Reporting Period January – December 2006

DOSES TO MEMBERS OF THE PUBLIC DUE TO THEIR ACTIVITIES INSIDE THE SITE BOUNDARY

Direct Radiation Pathway

The direct radiation pathway is evaluated in accordance with the methodology found in the NMP2 ODCM. This pathway considers four components: direct radiation from the generating facilities, direct radiation from any possible overhead plume, direct radiation from ground deposition and direct radiation from plume submersion. The direct radiation pathway is evaluated by the use of high sensitivity environmental Thermoluminescent Dosimeters (TLDs). Since fishing activities occur between April 1 – December 31, TLD data for the second, third, and fourth quarters of 2006 from TLDs placed in the general area where fishing once occurred were used to determine an average dose to the hypothetical maximum exposed fisherman from direct radiation. The following is a summary of the average dose rate and assumed time spent on site used to determine the total dose received:

Variable	Fisherman
Average Dose Rate (mRem/hr)	7.13 E-03
Exposure time (hours)	312

Total Doses received by the hypothetical maximum exposed fisherman from direct radiation is presented in Table 1, Exposure Pathway Dose.

Dose Received By A Hypothetical Maximum Exposed Member Of The Public Inside the Site Boundary During 2006

The following is a summary of the dose received by a hypothetical maximum exposed fisherman from Liquid and Gaseous effluents released from NMP2 during 2006:

Table 1 Exposure Pathway Annual Dose

Exposure Pathway	Dose Type	Fisherman (mRem)
External Ground	Whole Body	3.13 E-03
	Skin of Whole Body	3.66 E-03
Inhalation	Whole Body	9.09 E-05
	Maximum Organ	Lung: 9.75E-05
Direct Radiation	Whole Body	0.48

Attachment 10

Unit 1 ________ **Unit 2** __X__ **Reporting Period** **January – December 2006**

DOSES TO MEMBERS OF THE PUBLIC DUE TO THEIR ACTIVITIES INSIDE THE SITE BOUNDARY

Based on these values the total annual dose received by a hypothetical maximum exposed member of the public is as follows:

Table 2 Annual Dose Summary

Total Annual Dose for 2006	Fisherman (mRem)
Total Whole Body	4.88 E-01
Skin of Whole Body	3.66E-03
Maximum Organ	Lung: 9.75 E-05

Attachment 11

Unit 1 ________	**Unit 2** ___X___	**Reporting Period**	**January – December 2006**

DOSES TO MEMBERS OF THE PUBLIC DUE TO THEIR ACTIVITIES OUTSIDE THE SITE BOUNDARY

Introduction

An assessment of radiation doses potentially received by the likely most exposed member of the public located beyond the site boundary was conducted for the period January through December 2006 for comparison against the 40CFR190 annual dose limits.

The intent of 40 CFR 190 requires that the effluents of Nine Mile Point Unit 2 (NMP2), as well as other nearby uranium fuel cycle facilities, be considered. In this case, the effluents of NMP2, Nine Mile Point Unit 1 (NMP1) and the James A. FitzPatrick (JAF) facilities must be considered.

40CFR190 requires the annual radiation dose received by members of the public in the general environment, as a result of plant operations, be limited to:

- < 25 mRem wholebody
- < 25 mRem any organ (except thyroid)
- < 75 mRem thyroid

This evaluation compares doses resulting from Liquid and Gaseous effluents and direct radiation originating from the site as a result of the operation of the NMP2, NMP1 and JAF nuclear facilities.

Dose Pathways

Dose pathways considered for this evaluation included doses resulting from liquid effluents, gaseous effluents and direct radiation from all nuclear operating facilities located on the Nine Mile Point Site.

Dose to the most likely member of the public, outside the site boundary, is received through the following pathways:

- Fish consumption pathway; this dose is received from plant radionuclides that have concentrated in fish that is consumed by a member of the public.
- Shoreline Sediment; this dose is received as a result of an individual's exposure to plant radionuclides deposited in the shoreline sediment, which is used as a recreational area.
- Deposition, Inhalation and Ingestion pathways resulting from gaseous effluents; this dose is received through exposure to gaseous effluents released from NMP1, NMP2 and JAF operating facilities.
- Direct Radiation pathway; radiation dose resulting from the operation of NMP1, NMP2 and JAF facilities.

Methodologies for Determining Dose for Applicable Pathways

Fish Consumption

Dose received as a result of fish consumption is based on the methodology specified in the NMP2 Off-site Dose Calculation Manual (NMP2 ODCM) as adapted from Regulatory Guide 1.109. The dose for 2006 is calculated from actual analysis results of environmental fish samples taken near the site discharge points. For this evaluation it is assumed that the most likely exposed member of the public consumes fish taken near the site discharge points.

No radionuclides were detected in fish samples collected and analyzed during 2006; therefore no dose was received by the whole body and organs of the likely most exposed Member of the Public during 2006.

Shoreline Sediment

Dose received from shoreline sediment is based on the methodology in the NMP2 ODCM as adapted from Regulatory Guide 1.109. For this evaluation it is assumed that the most likely exposed member of the public spends 67 hours/year along the shoreline for recreational purposes.

Attachment 11

Unit 1 ________ **Unit 2** ___X___ **Reporting Period** **January – December 2006**

DOSES TO MEMBERS OF THE PUBLIC DUE TO THEIR ACTIVITIES OUTSIDE THE SITE BOUNDARY

Shoreline Sediment continued:

The total dose received by the whole body and skin of the maximum exposed individual during 2006 is calculated using the following input parameters:

- Usage Factor = 67 hours per year
- Density in grams per square meter = 40,000
- Shore width factor = 0.3
- Whole body and skin dose factor for each radionuclide = Regulatory Guide 1.109, Table E-6
- Fractional portion of the year = 1
- Average Cs-137 Concentration = 0.056 pCi/g

Dose Pathways Resulting From Gaseous Effluents

Dose received by the likely most exposed member of the public due to gaseous effluents is calculated in accordance with the methodology provided in the NMP2 ODCM, NMP1 Offsite Dose Calculation Manual, and the JAF Offsite Dose Calculation Manual. These calculations consider deposition, inhalation and ingestion pathways. The total sum of doses resulting from gaseous effluents from NMP1, NMP2 and JAF during 2006 provide a total dose to the whole body and maximum organ dose for this pathway.

Direct Radiation Pathway

Dose as a result of direct gamma radiation from the site, encompasses doses from direct "shine" from the generating facilities, direct radiation from any overhead gaseous plumes, plume submersion and from ground deposition. This total dose is measured by environmental TLDs. The critical location is based on the closest year-round residence from the generating facilities as well as the closest residence in the critical downwind sector in order to evaluate both direct radiation from the generating facilities and gaseous plumes as determined by the local meteorology. During 2006, the closest residence and the critical downwind residence are at the same location.

Dose Potentially Received by the Likely Most Exposed Member of the Public Outside the Site Boundary During 2006

Exposure Pathway	Dose Type	Dose (mRem)
Fish Consumption	Total Whole Body	No Dose
	Total Maximum Organ	No Dose
Shoreline Sediment	Total Whole Body	1.89E-04
	Total Skin of Whole Body	2.21E-04
Gaseous Effluents	Total Whole Body	1.17E-02
	Total Maximum Organ	Thyroid: 9.28E-02
Direct Radiation	Total Whole Body	2.0

Based on these values the maximum total annual dose potentially received by the most likely exposed member of the public during 2006 is as follows:

- Total Whole Body: 2.01 mRem
- Total Skin of Whole Body: 9.38E-03 mRem
- Maximum Organ: Thyroid: 9.28E-02 mRem

40CFR190 Evaluation

The maximum total doses presented in this attachment are the result of operations at the NMP1, NMP2 and the JAF facilities. The maximum organ dose (Thyroid: 0.093 mRem) and the maximum whole body dose (2.01 mRem) are below the 40 CFR 190 criteria of 25 mRem per calendar year to the maximum exposed organ or the whole body, and below 75 mRem per calendar year to the thyroid.

ATTACHMENT 12

Off-Site Dose Calculation Manual (ODCM)