

NINE MILE POINT NUCLEAR STATION - UNIT 2
SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

JANUARY - JUNE 1998

NIAGARA MOHAWK POWER CORPORATION

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NINE MILE POINT NUCLEAR STATION - UNIT 2
SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

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SUPPLEMENTAL INFORMATION

Facility: Nine Mile Point Unit #2

Licensee: Niagara Mohawk Power Corporation

1. TECHNICAL SPECIFICATION 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. The concentration of radioactive material released in liquid effluents to unrestricted areas shall be limited to the concentrations specified in 10 CFR Part 20, Appendix B, Table II, 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 microcurie/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 <input type="checkbox"/>	Unit 2 <input checked="" type="checkbox"/>	Reporting Period <u>January - June 1998</u>	
Liquid Effluents:			
10CFR20, Appendix B, Table II, Column 2			
Average MPC - $\mu\text{Ci/ml}$ (Qtr. 1) = <u>N/A</u>			
Average MPC - $\mu\text{Ci/ml}$ (Qtr. 2) = <u>1.95E-03</u>			
Average Energy (Fission and Activation gases - Mev):			
Qtr. <u>1</u>	:	E_{γ} = <u>1.63E+00</u>	E_{β} = <u>4.19E-01</u>
Qtr. <u>2</u>	:	E_{γ} = <u>3.12E-01</u>	E_{β} = <u>1.90E-01</u>
Liquid:			
Number of batch releases	:	<u>37</u>	
Total time period for batch releases (hrs)	:	<u>1.22E+02</u>	
Maximum time period for a batch release (hrs)	:	<u>3.57E+00</u>	
Average time period for a batch release (hrs)	:	<u>3.31E+00</u>	
Minimum time period for a batch release (hrs)	:	<u>3.27E+00</u>	
Total volume of water used to dilute the liquid effluent during release period (L)	:	<u>8.35E+08</u>	
Total volume of water available to dilute the liquid effluent during reporting period (L)	:	2 nd Quarter <u>1.51E+10</u>	
NOTE: Since there were no releases during the first quarter, only second quarter dilution flow is reported.			
Gaseous (Emergency Condenser Vent): Not Applicable for Unit 2			
Number of batch releases	:	<u>N/A</u>	
Total time period for batch releases (hrs)	:	<u>N/A</u>	
Maximum time period for a batch release (hrs)	:	<u>N/A</u>	
Average time period for a batch release (hrs)	:	<u>N/A</u>	
Minimum time period for a batch release (hrs)	:	<u>N/A</u>	
Gaseous (Primary Containment Purge):			
Number of batch releases	:	<u>11</u>	
Total time period for batch releases (hrs)	:	<u>3.45E+02</u>	
Maximum time period for a batch release (hrs)	:	<u>5.76E+01</u>	
Average time period for a batch release (hrs)	:	<u>3.14E+01</u>	
Minimum time period for a batch release (hrs)	:	<u>8.17E-01</u>	



ATTACHMENT 1
Summary Data

Unit 1 <input type="checkbox"/>	Unit 2 <input checked="" type="checkbox"/>	Reporting Period <u>January - June 1998</u>
Abnormal Releases: There were no abnormal releases during the reporting period.		
A. Liquids:		
Number of releases	<u>0</u>	
Total activity released	<u>N/A</u> CI	
B. Gaseous:		
Number of releases	<u>0</u>	
Total activity released	<u>N/A</u> CI	



ATTACHMENT 2

Unit 1 Unit 2

Reporting Period January - June 1998

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

		<u>1st</u> <u>QUARTER</u>	<u>2nd</u> <u>QUARTER</u>	<u>EST. TOTAL</u> <u>ERROR. %</u>
A.	<u>Fission & Activation gases</u>			
	1. Total release	5.85E-02	8.00E+00	5.00E+01
	2. Average release rate	7.52E-03	1.02E+00	
B.	<u>Iodines</u>			
	1. Total Iodine-131	1.20E-05	3.52E-05	3.00E+01
	2. Average release rate for period	1.53E-06	4.47E-06	
C.	<u>Particulates¹</u>			
	1. Particulates with half-lives >8 days	1.13E-03	1.26E-03	3.00E+01
	2. Average release rate for period	1.44E-04	1.60E-04	
	3. Gross alpha radioactivity	1.83E-05	3.62E-05	2.50E+01
D.	<u>Tritium¹</u>			
	1. Total release	4.04E+00	4.07E+00	5.00E+01
	2. Average release rate for period	5.14E-01	5.16E-01	
E.	<u>Percent of Tech. Spec. Limits</u>			
	<u>Fission and Activation Gases</u>			
	Percent of Quarterly Gamma Air Dose Limit (5 mrad)	2.28E-04	5.44E-03	
	Percent of Quarterly Beta Air Dose Limit (10 mrad)	2.59E-06	1.69E-04	
	Percent of Annual Gamma Air Dose Limit to Date (10 mrad)	1.14E-04	2.83E-03	
	Percent of Annual Beta Air Dose Limit to Date (20 mrad)	1.29E-06	8.60E-05	
	Percent of Whole Body Dose Rate Limit (500 mrem/yr)	8.91E-06	2.11E-04	
	Percent of Skin Dose Rate Limit (3000 mrem/yr)	1.74E-06	4.17E-05	
	<u>Tritium, Iodines, and Particulates¹</u> <u>(with half-lives greater than 8 days)</u>			
	Percent of Quarterly Dose Limit (7.5 mrem)	9.27E-03	1.39E-02	
	Percent of Annual Dose Limit (15 mrem)	4.67E-03	1.16E-02	
	Percent of Organ Dose Rate Limit (1500 mrem/yr)	1.86E-04	2.77E-04	

¹ Tritium, Iron-55 and Strontium 89 and 90 results for the second quarter were not received from the off-site vendor at the time of this report. These numbers include estimates. Actual numbers will be provided in the next Semi-Annual Report.



ATTACHMENT 3

Unit 1 Unit 2 X

Reporting Period January - June 1998

GASEOUS EFFLUENTS - ELEVATED RELEASE

		CONTINUOUS MODE ³	
Nuclides Released		1 st QUARTER	2 nd QUARTER
1. Fission Gases¹			
Argon-41	CI	<u>2.85E-02</u>	<u>1.12E-02</u>
Krypton-85	CI	**	**
Krypton-85m	CI	**	<u>6.00E-02</u>
Krypton-87	CI	**	**
Krypton-88	CI	<u>3.00E-02</u>	<u>9.88E-01</u>
Xenon-127	CI	**	**
Xenon-133	CI	**	<u>5.73E+00</u>
Xenon-133m	CI	**	<u>1.20E-01</u>
Xenon-135	CI	**	<u>1.02E+00</u>
Xenon-135m	CI	**	<u>6.91E-02</u>
Xenon-137	CI	**	**
Xenon-138	CI	**	**
2. Iodines¹			
Iodine-131	CI	<u>1.20E-05</u>	<u>3.33E-05</u>
Iodine-133	CI	<u>1.86E-04</u>	<u>5.41E-05</u>
Iodine-135	CI	**	**
3. Particulates^{1,2}			
Strontium-89	CI	<u>2.17E-06</u>	<u>1.25E-05</u>
Strontium-90	CI	**	<u>5.42E-07</u>
Cesium-134	CI	**	**
Cesium-137	CI	**	**
Cobalt-60	CI	**	**
Cobalt-58	CI	**	**
Manganese-54	CI	**	**
Barium-Lanthanum-140	CI	**	**
Antimony-125	CI	**	**
Niobium-95	CI	**	**
Cerium-141	CI	**	**
Cerium-144	CI	**	**
Iron-59	CI	**	**
Cesium-136	CI	**	**
Chromium-51	CI	**	**
Zinc-65	CI	**	**
Iron-55	CI	**	<u>3.04E-05</u>
Molybdenum-99	CI	**	<u>8.58E-06</u>
		**	**
4. Tritium²			
	CI	<u>3.43E+00</u>	<u>2.94E+00</u>

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, 1.00E-12 µCi/ml for required iodines, and 1.00E-06 µCi/ml for Tritium, as required by Technical Specifications, has been verified.

² Tritium, Iron-55 and Strontium 89 and 90 results for the second quarter were not received from the off-site vendor at the time of this report. These numbers include estimates. Actual numbers will be included in the next Semi-Annual Report.

³ Contributions from purges are included.



ATTACHMENT 4

Unit 1 Unit 2

Reporting Period January - June 1998

GASEOUS EFFLUENTS - GROUND LEVEL RELEASES

			CONTINUOUS MODE		BATCH MODE There were no batch releases during the reporting period.	
			1 st QUARTER	2 nd QUARTER	1 st QUARTER	2 nd QUARTER
1.	<u>Fission Gases</u> ¹					
	Argon-41	CI	**	**		
	Krypton-85	CI	**	**		
	Krypton-85m	CI	**	**		
	Krypton-87	CI	**	**		
	Krypton-88	CI	**	**		
	Xenon-133	CI	**	**		
	Xenon-133m	CI	**	**		
	Xenon-135	CI	**	**		
	Xenon-135m	CI	**	**		
	Xenon-137	CI	**	**		
	Xenon-138	CI	**	**		
	Xenon-127	CI	**	**		
2.	<u>Iodines</u> ¹					
	Iodine-131	CI	**	1.85E-06		
	Iodine-133	CI	**	**		
	Iodine-135	CI	**	**		
3.	<u>Particulates</u> ^{1,2}					
	Strontium-89	CI	**	1.02E-05		
	Strontium-90	CI	**	1.15E-06		
	Cesium-134	CI	**	**		
	Cesium-137	CI	**	**		
	Cobalt-60	CI	1.81E-04	1.48E-04		
	Cobalt-58	CI	**	**		
	Manganese-54	CI	3.34E-04	2.91E-05		
	Barium-Lanthanum-140	CI	**	**		
	Antimony-125	CI	**	**		
	Niobium-95	CI	**	**		
	Cerium-141	CI	**	**		
	Cerium-144	CI	**	**		
	Iron-59	CI	3.95E-05	2.43E-05		
	Cesium-136	CI	**	**		
	Chromium-51	CI	1.38E-04	**		
	Zinc-65	CI	2.00E-04	7.59E-04		
	Iron-55	CI	2.35E-04	1.64E-04		
	Molybdenum-99	CI	**	**		
	Silver-110m	CI	**	**		
4.	<u>Tritium</u> ²	CI	6.08E-01	1.13E+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, 1.00E-12 µCi/ml for required Iodines, and 1.00E-06 µCi/ml for Tritium, as required by Technical Specifications, has been verified.

² Tritium, Iron-55 and Strontium 89 and 90 results for the second quarter were not received from the off-site vendor at the time of this report. These numbers include estimates, and actual numbers will be included in the next Semi-Annual Report.



Unit 1 Unit 2 XReporting Period January - June 1998

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

		1 st QUARTER	2 nd QUARTER	EST. TOTAL ERROR, %
A.	<u>Fission & Activation Products</u> ¹			
	1. Total release (not including Tritium, gases, alpha)	CI <u>No Releases</u>	<u>8.58E-02</u>	5.00E+01
	2. Average diluted concentration during reporting period	$\mu\text{Ci/ml}$ <u>No Releases</u>	<u>5.68E-02</u>	
B.	<u>Tritium</u> ¹			
	1. Total release	CI <u>No Releases</u>	<u>7.92E+00</u>	5.00E+01
	2. Average diluted concentration during reporting period	$\mu\text{Ci/ml}$ <u>No Releases</u>	<u>5.29E-07</u>	
C.	<u>Dissolved and Entrained Gases</u>			
	1. Total release	CI <u>No Releases</u>	<u>1.35E-05</u>	5.00E+01
	2. Average diluted concentration during reporting period	$\mu\text{Ci/ml}$ <u>No Releases</u>	<u>8.94E-13</u>	
D.	<u>Gross Alpha Radioactivity</u>			
	1. Total release	CI <u>No Releases</u>	<u>2.77E-04</u>	5.00E+01
E.	<u>Volumes</u>			
	1. Prior to dilution	Liters <u>No Releases</u>	<u>3.33E+06</u>	1.00E+01
	2. Volume of dilution water used during release period	Liters <u>No Releases</u>	<u>8.35E+08</u>	5.00E+01
	3. Volume of dilution water available during reporting period	Liters <u>1.41E+10</u>	<u>1.51E+10</u>	5.00E+01
F.	<u>Percent of Technical Specification Limits</u>			
	Percent of Quarterly Whole Body Dose Limit (1.5 mrem)	% <u>No Releases</u>	<u>1.75E+00</u>	
	Percent of Quarterly Organ Dose Limit (5 mrem)	% <u>No Releases</u>	<u>1.11E+00</u>	
	Percent of Annual Whole Body Dose Limit to Date (3 mrem)	% <u>No Releases</u>	<u>8.71E-01</u>	
	Percent of Annual Organ Dose Limit to Date (10 mrem)	% <u>No Releases</u>	<u>5.53E-01</u>	
	Percent of 10CFR20 Concentration Limit ²	% <u>No Releases</u>	<u>2.74E-02</u>	
	Percent of Dissolved or Entrained Noble Gas Limit (2.00E-04 $\mu\text{Ci/ml}$)	% <u>No Releases</u>	<u>4.47E-07</u>	

¹ Iron-55, Strontium 89 and 90 and Tritium results for the second quarter were not received from the off-site vendor at the time of this report. These numbers include estimates, and actual numbers will be included in the next Semi-Annual Report.

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



Unit 1 Unit 2

Reporting Period January - June 1998

LIQUID EFFLUENTS RELEASED

Nuclides Released ^{1,2}		BATCH MODE ³	
		<u>1st</u> QUARTER	<u>2nd</u> QUARTER
Strontium-89	CI	<u>No Releases</u>	<u>8.33E-05</u>
Strontium-90	CI	<u>No Releases</u>	<u>1.87E-05</u>
Cesium-134	CI	<u>No Releases</u>	<u>**</u>
Cesium-137	CI	<u>No Releases</u>	<u>**</u>
Iodine-131	CI	<u>No Releases</u>	<u>**</u>
Cobalt-58	CI	<u>No Releases</u>	<u>9.43E-04</u>
Cobalt-60	CI	<u>No Releases</u>	<u>2.26E-02</u>
Iron-59	CI	<u>No Releases</u>	<u>5.14E-03</u>
Zinc-65	CI	<u>No Releases</u>	<u>2.42E-02</u>
Manganese-54	CI	<u>No Releases</u>	<u>2.60E-02</u>
Chromium-51	CI	<u>No Releases</u>	<u>4.83E-03</u>
Zirconium-Niobium-95	CI	<u>No Releases</u>	<u>8.70E-05</u>
Molybdenum-99	CI	<u>No Releases</u>	<u>**</u>
Technetium-99m	CI	<u>No Releases</u>	<u>**</u>
Barium-Lanthanum-140	CI	<u>No Releases</u>	<u>**</u>
Cerium-141	CI	<u>No Releases</u>	<u>**</u>
Tungsten-187	CI	<u>No Releases</u>	<u>**</u>
Arsenic-76	CI	<u>No Releases</u>	<u>**</u>
Iodine-133	CI	<u>No Releases</u>	<u>**</u>
Iron-55	CI	<u>No Releases</u>	<u>**</u>
Neptunium-239	CI	<u>No Releases</u>	<u>1.84E-03</u>
Praseodymium-144	CI	<u>No Releases</u>	<u>**</u>
Iodine-135	CI	<u>No Releases</u>	<u>**</u>
Silver-110m	CI	<u>No Releases</u>	<u>**</u>
Dissolved or Entrained Gases	CI	<u>No Releases</u>	<u>1.20E-04</u>
Tritium ²	CI	<u>No Releases</u>	<u>1.35E-05</u>
		<u>No Releases</u>	<u>7.99E+00</u>

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 Fe-55 and 1.00E-07 µCi/ml for gross alpha radioactivity, as required by Technical Specifications, has been verified.

² Iron-55, Strontium 89 and 90 and Tritium results for the second quarter were not received from the off-site vendor at the time of this report. These numbers include estimates, and actual numbers will be included in the next Semi-Annual Report.

³ No continuous mode releases occurred during the reporting period.



Unit 1 Unit 2

Reporting Period January - June 1998

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS:

A.1 TYPE	Volume (m ³)			Activity ¹ (Ci)		
	Class			Class		
	A	B	C	A	B	C
1. Spent Resin ²	0	0	0	0	0	0
Filter Sludge	6.81E+00	0	0	1.94E+02	0	0
Concentrated Waste Evaporator Bottoms	0	0	0	0	0	0
Total	6.81E+00	0	0	1.94E+02	0	0
2. Dry Compressible Waste	0	0	0	0	0	0
3. Irradiated Components	0	0	0	0	0	0
4. Other:	0	0	0	0	0	0

¹ The estimated total error is 5.00E+01%.

² There were eight Unit 2 steel encased high integrity containers of waste Class A bead resin placed in interim storage at Nine Mile Point during the reporting period. The total activity was 5.39E+01 curies and the waste volume was 3.72E+01m³.



Unit 1 <input type="checkbox"/> Unit 2 <input checked="" type="checkbox"/>		Reporting Period <u>January - June 1998</u>		
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS				
A.1 TYPE	<u>Container</u>	<u>Package</u>	<u>Solidification Agent</u>	
1. Spent Resin	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	
Filter Sludge	<u>Poly HIC</u>	<u>Type A</u>	<u>None</u>	
	<u>Poly HIC</u>	<u>Type A</u>	<u>None</u>	
Concentrated Waste	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	
2. Dry Compressible Waste	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	
3. Irradiated Components	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	
4. Other:	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	



Unit 1 <input type="checkbox"/>	Unit 2 <input checked="" type="checkbox"/>	Reporting Period <u>January - June 1998</u>
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS		
A.2 ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)		
a. Spent Resins, Filter Sludges, Concentrated Waste:		
<u>Nuclide</u> (1) Zn-65 (2) Co-60 (3) Fe-55 (4) Ni-63 (5) Mn-54 (6) Other		<u>Percent</u> 5.81E+01 3.34E+01 4.20E+00 1.50E+00 1.10E+00 1.70E+00
b. Dry Compressible Waste: There were no shipments.		
<u>Nuclide</u>		<u>Percent</u>
c. Irradiated Components: There were no shipments.		
<u>Nuclide</u>		<u>Percent</u>
d. Other: There were no shipments.		
<u>Nuclide</u>		<u>Percent</u>



Unit 1 Unit 2 Reporting Period January - June 1998

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A.3. SOLID WASTE DISPOSITION

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
2	Truck	Barnwell, SC

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

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
0	N/A	N/A



Unit 1 Unit 2 X

Reporting Period January - June 1998

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

C. SOLID WASTE SHIPPED OFF-SITE TO VENDORS FOR PROCESSING AND SUBSEQUENT BURIAL

Below is a summary of NMP-2 radwaste buried by vendor facilities during January - June 1998. These totals were reported separately from "10CFR61 Solid Waste Shipped for Burial" since (a) waste classification and burial was performed by the vendors, and (b) Technical Specification 6.9.1 requires reporting of "information for each class of solid waste (as defined by 10CFR61) shipped off-site during the reporting period." The following data represents the actual shipments made from the off-site vendors of our radwaste (e.g., non-compacted trash, dry non-compressible waste) that was processed and commingled prior to burial.

C.1. TYPE OF WASTE - noncompacted trash and/or dry non-compressible waste processed by vendor facilities prior to burial.	Burial Volume	Activity	Est. Total
	<u>(m³)</u>	<u>(Ci)</u>	<u>Error. %</u>
	<u>2.42E+00</u>	<u>1.93E+00</u>	<u>5.00E+01</u>

C.2. ESTIMATE OF MAJOR NUCLIDE COMPOSITION

<u>Nuclide</u>	<u>Percent</u>
(1) Mn-54	<u>2.46E+01</u>
(2) Fe-59	<u>2.19E+01</u>
(3) Zn-65	<u>1.76E+01</u>
(4) Co-60	<u>1.28E+01</u>
(5) Cr-51	<u>1.18E+01</u>
(6) Fe-55	<u>8.96E+00</u>
(7) Co-58	<u>1.62E+00</u>
(8) Other	<u>7.20E-01</u>

C.3. SOLID WASTE DISPOSITION¹

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
<u>4</u>	<u>Truck</u>	<u>Barnwell, SC</u>
<u>1</u>	<u>Truck</u>	<u>Clive, UT</u>

¹ Note: During the report period seven shipments of NMP-2 radwaste were sent to offsite processors. This material will be processed by the vendor and can be commingled with other licensees' waste for burial. However, the vendor performs an analysis for each shipment to determine the volume and activity buried under each utilities' license, and prepares a separate report for each licensee. This information is provided in the Semi-Annual Radioactive Effluent Release Report for the period in which the material is buried.



Unit 1 Unit 2 Reporting Period January - June 1998**SOLID WASTE AND IRRADIATED FUEL SHIPMENTS****D. SEWAGE WASTES SHIPPED TO A TREATMENT FACILITY FOR PROCESSING AND BURIAL**

There were no shipments of sewage sludge with detectable quantities of plant-related nuclides from NMP to the treatment facility during the reporting period.



ATTACHMENT 7

Unit 1 Unit 2 X

Reporting Period January - June 1998

SUMMARY OF CHANGES TO THE OFF-SITE DOSE CALCULATION MANUAL

The Unit 2 Off-Site Dose Calculation Manual (ODCM) was revised during the reporting period to incorporate changes to the offgas pretreatment radiation monitor description, alert alarm determination, detector response and to redefine the term background for the detector response. Additionally, this revision deletes specific reference to the group responsible for maintaining the ODCM and deletes a sentence generally describing the alert alarm setpoint basis. The ODCM changes will not reduce the accuracy or reliability of the dose calculations or setpoint determinations in accordance with Technical Specifications. A copy of the ODCM, revision 14 is attached and a summary of the changes presented to and approved by the Station Operations Review Committee in February and June 1998 is provided below. The summary also includes the justification for the changes.

Old Page #	New Page #	Section #	Change	Reason for Change
xii	xii	Introduction	The reference to the Nuclear Engineering Analysis Group is deleted from the third paragraph.	The responsibility for control and maintenance of the ODCM is defined by site procedures. This administrative change eliminates unnecessary level of detail in the ODCM. Deletion of this reference in the ODCM will avoid unnecessary revisions in the future.
II 11	II 11	2.1.2	The last sentence in this section, generally describing alert alarm setpoint methodology, is deleted.	This change is editorial. The setpoint methodologies are described for each radiation monitor in their individual sections.
II 13	II 13	2.1.2.3	<ul style="list-style-type: none"> • The offgas pretreatment radiation monitor detector description is corrected to identify that it contains a plastic scintillator disc and is a beta scintillation detector. The word "is" is changed to "was" in the fourth sentence of the second paragraph describing the establishment of the initial setpoint. • The offgas pretreatment radiation monitor alert setpoint methodology is changed to set the alert alarm at 1.5 times nominal full power background to ensure that the specific activity action required by Technical Specification 3.4.5, are implemented in a timely fashion. 	<ul style="list-style-type: none"> • The change reflects the as-built design and provides clarifications. These changes are editorial. • The alert setpoint methodology was changed to avoid spurious alarms and ensure that reactor water specific activity actions required by Technical Specification 3.4.5 are implemented in a timely fashion.
II 14	II 14	2.1.2.3	The term for the offgas pretreatment radiation monitor background is redefined to include non-fission gases and general area dose rates.	Changed to reflect actual environmental conditions.
II 33	II 33	Table 3-1	The offgas pretreatment detector efficiencies are changed.	Changed to incorporate information from the primary calibration report and applicable engineering calculation.



ATTACHMENT 8

Unit 1 Unit 2

Reporting Period January - June 1998

SUMMARY OF CHANGES TO THE PROCESS CONTROL PROGRAM

There were no changes to the Unit 2 Process Control Program during the reporting period.



ATTACHMENT 9

Unit 1 Unit 2

Reporting Period January - June 1998

SUMMARY OF INOPERABLE MONITORS

There were no inoperable monitors for a period greater than 30 days during the reporting period.



ATTACHMENT 10

Update of Actual Data for the Fourth Quarter 1997



Unit 1 Unit 2 XReporting Period July - December 1997

UPDATE OF RELEASE AND DOSE DATA FOR GASEOUS (ELEVATED AND GROUND LEVEL) AND LIQUID EFFLUENTS

Update of data using actual results from the off-site vendors for Strontium, Tritium, and Iron-55 for the fourth quarter 1997.

Nuclide ¹	GASEOUS 4 th QUARTER 1997		LIQUID 4 th QUARTER 1997	
	Activity (Ci)		Activity (Ci)	
Sr-89	<u>1.78E-05</u>		N/A	
Sr-90	**		N/A	
H-3	<u>5.06E+00</u>		N/A	
Fe-55	<u>1.39E-04</u>		N/A	
<u>Particulates</u>	1. Particulates with half-lives >8 days	CI	<u>2.47E-04</u>	N/A
	2. Average release rate (gaseous) or diluted concentration (liquid) for reporting period	$\mu\text{Ci/sec}$ (gaseous) $\mu\text{Ci/ml}$ (liquid)	<u>3.14E-05</u>	N/A
<u>Tritium</u>	1. Total release	CI	<u>5.06E+00</u>	N/A
	2. Average release rate for period (gaseous) or diluted concentration (liquids) for the reporting period	$\mu\text{Ci/sec}$ (gaseous) $\mu\text{Ci/ml}$ (liquid)	<u>6.46E-01</u>	N/A
<u>Tritium, Iodines, and Particulates (with half-lives greater than 8 days)¹</u>	1. Percent of Quarterly ² Dose Limit	%	<u>7.79E-03</u> (Quarterly)	N/A (Quarterly)
	2. Percent of Annual ² Dose Limit to Date	%	<u>1.96E-03</u> (Annual)	N/A (Annual)
	3. Percent of Organ - Dose Rate Limit (Gaseous) (Quarterly)	%	<u>1.57E-04</u> (Quarterly)	N/A (Quarterly)
	- Dose Limit (Liquid) (Annual & Quarterly)		N/A (Annual)	N/A (Annual)
	4. Percent of 10CFR20 ³ Concentration Limit (Liquid)	%	N/A	N/A
	5. Percent of Dissolved or Entrained Noble Gas (Liquid)	%	N/A	N/A

¹ Concentrations less than the lower limit of detection, as required by Technical Specifications are indicated with a double asterisk.

² The dose is to the whole body for liquid effluents and to the maximally exposed organ for gaseous effluents.

³ The percent of the 10CFR20 concentration limit is based on the average concentration during the quarter.



ATTACHMENT 11

Off-Site Dose Calculation Manual, Rev 14

