NINE MILE POINT NUCLEAR STATION - UNIT 1

SEMI-ANNUAL RADIOACTIVE EFFLUENT

RELEASE REPORT

JANUARY - JUNE 1993

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION - UNIT 1

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

JANUARY - JUNE 1993

SUPPLEMENTAL INFORMATION

Facility: Nine Mile Point Unit #1 **Licensee:** Niagara Mohawk Power Corporation

1. TECHNICAL SPECIFICATION LIMITS

A) FISSION AND ACTIVATION GASES

1. The dose rate limit of noble gases from the site to areas at and beyond the site boundary shall be less than or equal to 500 mrems/year to the total body and less than or equal to 3000 mrems/year to the skin.

2. The air dose due to noble gases released in gaseous effluents from the Nine Mile Point 1 Station to areas at and beyond the site boundary shall be limited during any calendar quarter to less than or equal to 5 milliroentgen for gamma radiation and less than or equal to 10 mrads for beta radiation, and during any calendar year to less than or equal to 10 milliroentgen for gamma radiation and less than or equal to 20 mrads 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 to the environs as part of the gaseous wastes from the site, shall be less than or equal to 1500 mrems/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 as part of gaseous effluents released from the Nine Mile Point 1 Station to areas at and beyond the site boundary shall be limited during any calendar quarter to less than or equal to 7.5 mrems to any organ and, during any calendar year to less than or equal to 15 mrems 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 gas, 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 1 to unrestricted areas shall be limited during any calendar quarter to less than or equal to 1.5 mrems to the total body and to less than or equal to 5 mrems to any organ, and during any calendar year to less than or equal to 3 mrems to the total body and to less than or equal to 10 mrems 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) or gross activity monitoring (calibrated against gamma isotopic analysis of a 4.0L Marinelli grab sample) of an isokinetic stack sample stream.

B) IODINES

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

C) PARTICULATES

Activity released from main stack is determined by gamma spectroscopic analysis (at least weekly) of particulate filters sampled from an isokinetic sample stream.

For emergency condenser vent batch releases, effluent curie quantities are estimated by subtracting activity remaining in the shell side of the emergency condenser after batch release from activity delivered to the shell from Make-Up sources. Actual isotopic concentrations are found via gamma spectroscopy. Batch release activities of Sr-89, Sr-90 and Fe-55 are estimated by applying scaling factors to activity concentrations of gamma emitters. The activity of tritium released during normal operation or during batch releases is conservatively estimated by multiplying recent condensate storage tank H-3 activity by assumed steaming rates out the vents.

D) TRITIUM

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

E) LIQUID EFFLUENTS

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, gross alpha and water content 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 X Unit 2 ___ Reporting Period January - June 1993

Liquid Effluents:

10CFR20, Appendix B, Table II, Column 2

Average MPC (Qtr. 1) = N/A
Average MPC (Qtr. 2) = N/A

Average Energy (Fission and Activation gases - Mev):

Qtr. 1 : $\bar{E}_\gamma$ = 8.91E-02 $\bar{E}_\beta$ = 1.59E-01
Qtr. 2 : $\bar{E}_\gamma$ = 4.54E-02 $\bar{E}_\beta$ = 1.35E-01

Liquid: There were no liquid releases during the reporting period.

Number of batch releases	0
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 (hrs.)	N/A
Total volume of water used to dilute the liquid effluent during release period (L)	N/A
Total volume of water available to dilute the liquid effluent during reporting period (L)	1.50E+11

UNIT 1 (ONLY)

Gaseous (Emergency Condenser Vent): There were no releases from the operation of the emergency condenser vent.

Number of batch releases	0
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 (hrs.)	N/A

Gaseous (Primary Containment Purge):

Number of batch releases	1
Total time period for batch releases (hrs.)	8
Maximum time period for a batch release (hrs.)	8
Average time period for a batch release (hrs.)	8
Minimum time period for a batch release (hrs.)	8

ATTACHMENT 1
Summary Data

Unit 1 X Unit 2 ___	Reporting Period January - June 1993
Abnormal Releases: There were no abnormal releases during the reporting period.	
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 X Unit 2 ___ Reporting Period January - June 1993

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES ELEVATED AND GROUND LEVEL

			1st QUARTER	2nd QUARTER	EST. TOTAL ERROR, %
A.	Fission & Activation Gases				
	1. Total release	Ci	2.22E+02	4.22E+00	5.00E+01
	2. Average release rate	µCi/sec.	2.84E+01	5.37E-01	
B.	Iodines				
	1. Total iodine-131	Ci	4.21E-03	5.68E-05	3.00E+01
	2. Average release rate for period	µCi/sec.	5.36E-04	7.74E-06	
C.	Particulates[1]				
	1. Particulates with half-lives >8 days	Ci	9.47E-04	6.58E-04	3.00E+01
	2. Average release rate for period	µCi/sec.	1.20E-04	8.97E-05	
	4. Gross alpha radioactivity	Ci	8.69E-05	4.82E-05	2.50E+01
D.	Tritium				
	1. Total release	Ci	4.54E+00	1.50E+01	5.00E+01
	2. Average release rate for period	µCi/sec.	5.78E-01	2.05E+00	
E.	Percent of Tech. Spec. Limits				
	Fission and Activation Gases				
	Percent of Quarterly Gamma Air Dose Limit (5 mrem)	%	1.13E-01	3.02E-03	
	Percent of Quarterly Beta Air Dose Limit (10 mrem)	%	2.09E-01	3.37E-03	
	Percent of Annual Gamma Air Dose Limit to Date (10 mrem)	%	5.67E-02	5.82E-02	
	Percent of Annual Beta Air Dose Limit to Date (20 mrem)	%	1.04E-01	1.06E-01	
	Percent of Whole Body Dose Rate Limit (500 mrem/yr)	%	4.23E-03	7.11E-05	
	Percent of Skin Dose Rate Limit (3000 mrem/yr)	%	1.98E-03	2.89E-05	
	Tritium, Iodines, and Particulates[1] (with half-lives greater than 8 days)				
	Percent of Quarterly Dose Limit (7.5 mrem)	%	1.85E+00	3.31E-01	
	Percent of Annual Dose Limit (15 mrem)	%	9.31E-01	5.47E-01	
	Percent of Organ Dose Rate Limit (1500 mrem/yr)	%	3.72E-02	7.13E-03	

[1] Tritium, Iron-55, and Strontium results were not received from the off-site vendor at the time of this report. These numbers include estimates and actual numbers will be provided in the next Semi-Annual Report.

ATTACHMENT 3

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

GASEOUS EFFLUENTS - ELEVATED RELEASE

	Nuclides Released		CONTINUOUS MODE[3] 1st QUARTER	2nd QUARTER
1.	Fission Gases[1]			
	Argon-41	Ci	**	**
	Krypton-85	Ci	2.55E-04	**
	Krypton-85m	Ci	3.90E+00	**
	Krypton-87	Ci	9.96E-01	**
	Krypton-88	Ci	2.71E+00	**
	Xenon-127	Ci	**	**
	Xenon-133	Ci	1.97E+02	4.22E+00
	Xenon-133m	Ci	3.46E-01	**
	Xenon-135	Ci	1.62E+01	**
	Xenon-135m	Ci	1.49E-01	**
	Xenon-137	Ci	**	**
	Xenon-138	Ci	**	**
2.	Iodines[1]			
	Iodine-131	Ci	4.21E-03	5.68E-05
	Iodine-133	Ci	3.91E-03	5.68E-05
	Iodine-135	Ci	3.18E-02	1.02E-05
3.	Particulates[1,2]			
	Strontium-89	Ci	4.73E-05	2.75E-04
	Strontium-90	Ci	**	3.06E-05
	Cesium-134	Ci	**	**
	Cesium-137	Ci	**	**
	Cobalt-60	Ci	8.00E-04	2.09E-04
	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	9.96E-05	1.44E-04
	Molybdenum-99	Ci	**	**
4.	Tritium	Ci	1.43E+00	9.76E+00

[1] Concentrations less than the lower limit of detection of 1.00E-04 μCi/ml for Noble Gases, 1.00E-11 μCi/ml for particulates, 1.00E-12 μCi/ml for Iodines, and 1.00E-06 μCi/ml for Tritium as required by Technical Specifications are indicated with a double asterisk.

[2] Tritium, Iron-55, and Strontium results 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 batch mode release occurred during the reporting period.

ATTACHMENT 4

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

GASEOUS EFFLUENTS - GROUND LEVEL RELEASES

There were no releases via the emergency condenser vent operation. Only leakage from the vents results in an assumed H-3 release based on the concentration in the condensate storage tanks.

	Nuclides Released		CONTINUOUS MODE 1st QUARTER	CONTINUOUS MODE 2nd QUARTER	BATCH MODE No Releases 1st QUARTER	BATCH MODE No Releases 2nd QUARTER
1.	Fission Gases[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.	Iodines[1]					
	Iodine-131	Ci	**	**		
	Iodine-133	Ci	**	**		
	Iodine-135	Ci	**	**		
3.	Particulates[1]					
	Strontium-89	Ci	**	**		
	Strontium-90	Ci	**	**		
	Cesium-134	Ci	**	**		
	Cesium-137	Ci	**	**		
	Cobalt-60	Ci	**	**		
	Cobalt-59	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	**	**		
	Molybedenum-99	Ci	**	**		
4.	Tritium	Ci	3.11E+00	5.26E+00		

[1] Concentrations less than the lower limit of detection of 1.00E-04 μCi/ml for Noble Gases, 1.00E-11 μCi/ml for particulates, 1.00E-12 μCi/ml for Iodines, and 1.00E-06 μCi/ml for Tritium as required by Technical Specifications are indicated with a double asterisk.

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

There were no liquid releases during the reporting period.

			1st QUARTER	2nd QUARTER	EST. TOTAL ERROR, %
A.	Fission & Activation Products				
	1. Total release (not including tritium, gases, alpha)	Ci	No Releases	No Releases	5.00E+01
	2. Average diluted concentration during reporting period	µCi/ml	No Releases	No Releases	
B.	Tritium				
	1. Total release	Ci	No Releases	No Releases	5.00E+01
	2. Average diluted concentration during reporting period	µCi/ml	No Releases	No Releases	
C.	Dissolved and Entrained Gases				
	1. Total release	Ci	No Releases	No Releases	5.00E+01
	2. Average diluted concentration during 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	No Releases	5.00E+01
	2. Volume of dilution water used during release period	Liters	No Releases	No Releases	5.00E+01
	3. Volume of dilution water available during reporting period	Liters	3.35E+10	1.16E+11	5.00E+01
F.	Percent of Technical Specification Limits				
	Percent of Quarterly Whole Body Dose Limit (1.5 mrem)	%	No Releases	No Releases	
	Percent of Quarterly Organ Dose Limit (5 mrem)	%	No Releases	No Releases	
	Percent of Annual Whole Body Dose Limit to Date (3 mrem)	%	No Releases	No Releases	
	Percent of Annual Organ Dose Limit to Date (10 mrem)	%	No Releases	No Releases	
	Percent of 10CFR20 Concentration Limit	%	No Releases	No Releases	
	Percent of Dissolved or Entrained Noble Gas Limit (1.00E-5 µCi/ml)	%	No Releases	No Releases	

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

LIQUID EFFLUENTS RELEASED

Nuclides Released		BATCH MODE 1st QUARTER	2nd QUARTER
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	No Releases
Iron-59	Ci	No Releases	No Releases
Zinc-65	Ci	No Releases	No Releases
Manganese-54	Ci	No Releases	No Releases
Chromium-51	Ci	No Releases	No Releases
Zirconium-Niobium-95	Ci	No Releases	No Releases
Molybdenum-99	Ci	No Releases	No Releases
Technetium-99m	Ci	No Releases	No Releases
Barium-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	No Releases
Neptunium-239	Ci	No Releases	No Releases
Praseodymium-144	Ci	No Releases	No Releases
Iodine-135	Ci	No Releases	No Releases
Dissolved or Entrained Gases	Ci	No Releases	No Releases
Tritium	Ci	No Releases	No Releases

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A.1 TYPE	Volume (m^3) Class			Activity[1] (Ci) Class		
	A	B	C	A	B	C
1. Spent Resin						
	4.79E+01	0	0	3.50E+02	0	0
Filter Sludge	1.65E+01	0	0	2.10E+02	0	0
Concentrated Waste Evaporator Bottoms	0	1.10E+01	0	0	3.06E+01	0
Total	6.44E+01	1.10E+01	0	5.60E+02	3.06E+01	0
2. Dry Compressible Waste, Dry Non-Compressible Waste (Contaminated Equipment)						
	1.14E+01	0	0	3.81E+00	0	0
3. Irradiated Components	There were no irradiated components shipped for burial during the reporting period.					

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

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A.1 TYPE	Container	Package	Solidification Agent
1. Spent Resin	HIC	Type A	None
Filter Sludge	HIC	Type A	Cement
Concentrated Waste	HIC	Type B	Cement
2. Dry Compressible Waste, Dry Non-Compressible Waste (Contaminated Equipment)	Steel Box	Type A	None
3. Irradiated Components	N/A	N/A	N/A

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A.2 ESTIMATE OF MAJOR NUCLIDE COMPOSITION (BY TYPE OF WASTE)

a. Spent Resins, Filter Sludges, Concentrated Waste:

	Nuclide	Percent
(1)	Co-60	6.40E+01
(2)	Mn-54	1.21E+01
(3)	Fe-55	1.17E+01
(4)	Cs-137	8.50E+00
(5)	Co-58	1.10E+00
(6)	Other	2.50E+00

b. Dry Compressible Waste, Dry Non-Compressible Waste (Contaminated Equipment):

	Nuclide	Percent
(1)	Co-60	5.90E+01
(2)	Cs-137	2.14E+01
(3)	Mn-54	9.90E+00
(4)	Co-58	5.30E+00
(5)	Fe-59	1.90E+00
(6)	Fe-55	1.00E+00
(7)	Other	1.50E+00

c. Irradiated Components: There were no shipments.

d. Other: There were no shipments.

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A.3. SOLID WASTE DISPOSITION

Number of Shipments	Mode of Transportation	Destination
17	Truck	Barnwell, SC

B. IRRADIATED FUEL SHIPMENTS (DISPOSITION)

There were no shipments.

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

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

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

Below is a summary of Dry Active Waste that was shipped off-site for processing and burial by vendor facilities (i.e., ALARON, QUADREX, and/or SCIENTIFIC ECOLOGY GROUP) during January - June 1993. These totals were reported separately from "10CFR61 Solid Waste Shipped for Burial" (i.e., Section A of Table 3A) 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 information provided in this section, therefore, is in addition to that required by the Technical Specifications. The following data represents the actual shipments made from the off-site vendors of our non-compacted commingled trash that was processed prior to burial.

C.1. TYPE OF WASTE - noncompacted commingled trash and contaminated fuel pool equipment shipped to Oakridge, TN for processing prior to burial at Barnwell, SC

Burial Volume (m^3)	Activity (Ci)	Est. Total Error, %
2.11E+01	5.35E-01	5.00E+01

C.2. ESTIMATE OF MAJOR NUCLIDE COMPOSITION

	Nuclide	Percent
(1)	Co-60	5.94E+01
(2)	Cs-137	2.21E+01
(3)	Mn-54	9.71E+00
(4)	Co-58	5.20E+00
(5)	Fe-59	1.91E+00
(6)	Other	1.68E+00

C.3. SOLID WASTE DISPOSITION[1]

Number of Shipments	Mode of Transportation	Destination
5	Truck	Barnwell, SC
6	Truck	Richland, WA

[1] The number of shipments reported here represents the total number that was shipped from the offsite vendor for burial. This does not represent the number of shipments Niagara Mohawk sent to be processed.

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

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

Below is a summary of the sewage sludge which was removed from the site sanitary treatment facility and transferred to a municipal sewage treatment facility, for subsequent drying and disposal to a landfill. This is a site release, and therefore includes the results from Unit 1 activities, also.

D.1. TYPE OF WASTE - sewage sludge

Burial Volume (L)	Activity (Ci)
3.03E+04	2.4E-07

D.2. ESTIMATE OF MAJOR NUCLIDE COMPOSITION

Nuclide	Percent
Co-60	1.00E+02

D.3. SOLID WASTE DISPOSITION

Number of Shipments	Mode of Transportation	Destination
*	--	Landfill

Note: There were two shipments of sewage sludge with quantified Co-60 that were sent by vendor vacuum tank truck from NMP to the treatment facility. The number of shipments sent from NMP does not reflect the number of shipments to the ultimate destination (i.e., landfill). Sludge is mixed with municipal sludge, dried, and subsequently transferred to a state approved landfill by municipal personnel.

ATTACHMENT 7

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

SUMMARY OF CHANGES TO THE OFF-SITE DOSE CALCULATION MANUAL

There were two revisions to the Unit 1 ODCM during the reporting period. These Revisions 11 and 12 are attached along with a summary of changes presented to and approved by the Site Operations Review Committee. The summary, also, includes a justification for each change.

ATTACHMENT 8

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

SUMMARY OF CHANGES TO THE PROCESS CONTROL PROGRAM

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

ATTACHMENT 9

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

SUMMARY OF INOPERABLE MONITORS

Monitor	Dates of Inoperability	Cause and Corrective Actions
There were no inoperable monitors for a period greater than 30 days during the reporting period.		

UPDATE TO THE PREVIOUS REPORTS

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (1992)
NINE MILE POINT NUCLEAR STATION #1
RADIATION DOSES TO THE LIKELY MOST EXPOSED MEMBER OF THE PUBLIC OUTSIDE THE SITE BOUNDARY

JANUARY - DECEMBER 1992

Radiation doses to the likely most exposed member of the public outside of the site boundary are evaluated relative to 40CFR190 requirements. The dose limits of 40CFR190 are 25 mRem (whole body or organ) per calendar year and 75 mRem (thyroid) per calendar year. The intent of 40CFR190 also requires that the effluents of NMP2 as well as other nearby uranium fuel cycle facilities be considered. In this case, the effluents of NMP1, NMP2 and the James A. FitzPatrick (JAF) facilities must be considered.

Doses to the likely most exposed member of the public as a result of effluents from the site can be evaluated by using calculated dose modeling based on the accepted methodologies of the facilities' Offsite Dose Calculation Manuals or may, in some cases, be calculated from the analysis results of actual environmental samples. Acceptable methods for calculating doses from environmental samples are also found in the facilities' Offsite Dose Calculation Manuals. These methods are based on Regulatory Guide 1.109 methodology.

Dose calculations from actual environmental samples are, at times, difficult to perform for some pathways. Some pathway doses should be estimated using calculational dose modeling. These pathways include noble gas air dose, inhalation dose, etc. Other pathway doses may be calculated directly from environmental sample concentrations using Regulatory Guide 1.109 methodology.

Since the effluents from the generating facilities are low, the resultant gaseous and liquid effluent doses are anticipated to be low. In view of this, doses can be based on calculated data. Doses are not based on actual environmental data for 1992 with the exception of doses from direct radiation, fish consumption and shoreline sediment. In addition, in order to be conservative and for the sake of simplicity, it is assumed in the dose calculations that the likely most exposed member of the public is positioned in the maximum receptor location for each pathway at the same time. This approach is utilized because the doses are very low and the computations are greatly simplified.

The following pathways are considered:

1. The inhalation dose is calculated at the critical residence because of the high occupancy factor. In order to be conservative, the maximum whole body and organ dose assumes no correction for residing inside a residence.

2. The milk ingestion dose is calculated utilizing the maximum milk cow location. As noted previously, in order to be conservative and for the sake of simplicity, the likely most exposed member of the public is assumed to be at all critical receptors at one time. In this case, the member of the public at the critical residence is assumed to consume milk from the critical milk location.

SEMI-ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (1992)
NINE MILE POINT NUCLEAR STATION #1
RADIATION DOSES TO THE LIKELY MOST EXPOSED MEMBER OF THE PUBLIC
OUTSIDE THE SITE BOUNDARY

JANUARY - DECEMBER 1992

3. The maximum dose from the milk ingestion pathway as a result of consuming goat's milk is based on the same criteria established for item 2 above (ingestion of cow's milk).

4. The maximum dose associated from consuming meat is based on the critical meat animal. The likely most exposed member at the critical residence is assumed to consume meat from the critical meat animal location.

5. The maximum site dose associated with the consumption of vegetables is calculated from the critical vegetable garden location. As noted previously, the likely most exposed member of the public is assumed to be located at the critical residence and is assumed to consume vegetables from the critical garden location.

6. The dose as a result of direct gamma radiation from the site encompasses doses from direct "shine" from the generating facilities, direct radiation from any over head gaseous plumes, plume submersion and from ground deposition. This total dose is measured by environmental TLD. 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 1992, the closest residence and the critical downwind residence are at the same location.

   The measured average dose for 1992 at the critical residence was 53.0 mRem. The average control dose (average of five locations) was 50.3 mRem. The average dose at the critical residence is slightly greater than the average control location dose. The net increase in dose is due to the differences between doses from naturally occurring radionuclides in the soil and rock at the different locations and due to the standard deviation in TLD measurements. This difference in dose rate can be demonstrated by observing the 1992 average dose for an environmental TLD located near the critical residence TLD, but approximately 700 feet closer to the generating facilities. The annual average dose for this TLD location was 49.6 mRem. The dose for this location is lower than the critical residence location even though they are close to one another and even though the TLD location with the lowest dose is closer to the generating facilities.

7. The dose, as a result of fish consumption, is considered as part of the aquatic pathway. The dose for 1992 is calculated from actual results of the analysis of environmental fish samples. For the sake of being conservative, the average plant related radionuclide concentrations were utilized from fish samples taken near the site discharge points. The average concentration was adjusted to account for any background concentrations using average control sample data. Only Cs-137 was detected during 1992 at a net concentration of 1.3E-3 pCi/g-wet. The calculated maximum adult organ dose was 3.0E-3 mRem to the liver. The maximum whole body dose is 1.9E-03 mRem to an adult.

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OUTSIDE THE SITE BOUNDARY

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8. The shoreline sediment pathway is considered relative to recreational activities. The dose due to recreational activities from shoreline sediment is based on the methodology in the Offsite Dose Calculation Manual as adapted from Regulatory Guide 1.109. The Offsite Dose Calculation Manual gives the total dose to the whole body and skin from the sum of plant related radionuclides detected in shoreline sediment samples. The plant related radionuclide concentration is adjusted for background sample results, as applicable. The total whole body and skin dose from shoreline recreational activities is 1.04E-03 mRem whole body and 1.21E-03 mRem skin dose for the period.

9. In summary, the maximum dose to the most likely exposed member of the public is 5.38E-02 mRem to the thyroid (maximum organ dose) and 8.41E-03 mRem to the whole body. It should be noted that the maximum organ dose and maximum whole body doses are based on the sum of the maximum doses observed for all three facilities regardless of age group. This results in some conservatism. The maximum organ and whole body doses were a result of gaseous effluents. Doses as a result of liquid effluents were secondary. The total whole body, maximum organ and skin dose from shoreline recreational activities and fish consumption are 2.94E-03 mRem whole body, 3.00E-03 mRem to the liver, and 1.21E-03 mRem skin dose for the period. The direct radiation dose to the critical residence from the generating facilities was insignificant or zero. These maximum total doses are a result of operations at the Nine Mile Point Unit 1, Nine Mile Point Unit 2 and the James A. Fitzpatrick facilities. The maximum organ dose and whole body dose are below the 40CFR190 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.

Unit 1 X Unit 2 ___ Reporting Period January - June 1993

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

	GASEOUS (Quarter) 4th	LIQUID (Quarter) 4th
Nuclide	Activity (Ci)	Activity (Ci)
Sr-89	1.11E-04	No Releases
Sr-90	1.40E-06	No Releases
H-3	8.34E+00	No Releases
Fe-55	4.42E-05	No Releases

Particulates			GASEOUS	LIQUID
1.	Particulates with half-lives >8 days	Ci	6.71E-04	N/A
2.	Average release rate for period	µCi/sec	8.53E-05	N/A
Tritium				
1.	Total release	Ci	8.34E+00	N/A
2.	Average release rate for period	µCi/sec	1.06E+00	N/A

Tritium, Iodines, and Particulates (with half-lives greater than 8 days)			GASEOUS	LIQUID
1.	Percent of Quarterly Dose Limit[1]	%	4.12E-01 (Quarterly)	N/A (Quarterly)
2.	Percent of Annual Dose Limit to Date[1]	%	5.74E-01 (Annual)	N/A (Annual)
3.	Percent of Organ - Dose Rate Limit (Gaseous)(Quarterly) - Dose Limit (Liquid) (Annual & Quarterly)	%	8.29E-03 (Quarterly) N/A (Annual)	N/A (Quarterly) N/A (Annual)
4.	Percent of 10CFR20 Concentration Limit (Liquid)	%	N/A	N/A
5.	Percent of Dissolved or Entrained Noble Gas (Liquid)	%	N/A	N/A

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