Annual Radioactive Effluent Release Report

Revised 2008

Oyster Creek Nuclear Generating Station

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

January 1, 2008 through December 31, 2008

EXELON GENERATION COMPANY, LLC

OYSTER CREEK NUCLEAR GENERATING STATION

DOCKET NO. 50-219 (Oyster Creek Generating Station)

DOCKET NO. 72-15 (Independent Spent Fuel Storage Facility)

Submitted to
The United States Nuclear Regulatory Commission
Pursuant to
Renewed Facility Operating License DPR-16

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EXECUTIVE SUMMARY

Effluents are strictly monitored to ensure that radioactivity released to the environment is as low as reasonably achievable and does not exceed regulatory limits. Effluent control includes the operation of monitoring systems, in-plant and environmental sampling and analyses programs, quality assurance programs for effluent and environmental programs, and procedures covering all aspects of effluent and environmental monitoring.

Both radiological environmental and effluent monitoring indicate that the operation of Oyster Creek Nuclear Generating Station (OCNGS) does not result in significant radiation exposure of people or the environment surrounding OCNGS and is well below the applicable levels set by the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA).

There were no liquid radioactive effluent releases above ODCM LLDs during 2008. Therefore there was no dose due to radiological liquid releases. Utilizing gaseous effluent data, the maximum hypothetical dose to any individual in the southeast sector of the plant (sector of predominant wind direction) was calculated using a mathematical model, which is based on the methods defined by the U.S. Nuclear Regulatory Commission. These methods accurately determine the types and quantities of radioactive materials being released to the environment.

The maximum hypothetical calculated organ dose (thyroid) from iodines and particulates to any individual due to gaseous effluents was 3.58E-3 mRem (0.00358 mRem), which was approximately 0.024 percent of the annual limit. The maximum calculated gamma air dose in the UNRESTRICTED AREA due to noble gas effluents was 3.66E-3 mRem (0.00366 mRem), which was 0.0366 percent of the annual limit.

The total maximum hypothetical organ dose (thyroid) received by any individual from gaseous effluents from OCNGS for the reporting period due to all radiological effluents is 3.58E-3 mRem (0.00358 mRem). This value is more than 83,000 times lower than the dose the average individual in the Oyster Creek area received from background radiation, including that from radon during the same time period. The background radiation dose averages approximately 300 mRem per year in the Central New Jersey area, which includes approximately 200 mRem/year from naturally occurring radon gas and100 mRem from background radiation.

The Independent Spent Fuel Storage Installation (ISFSI) is a closed system and the only exposure would be due to direct radiation. This includes iodines, particulates and noble gases. Based on offsite TLD readings, dose due to direct radiation from the ISFSI was less than 1 mRem for 2008. Because it is a sealed unit, no radioactive material was released.

Additionally, comparison of environmental sampling results to iodine and particulate gaseous effluents released, showed no radioactivity attributable to the operation of OCNGS. Both elevated and ground-level release paths were considered in this review,

with total iodines released of 1.58 mCi and total particulates with half-lives greater than 8 days released of 0.339 mCi (1 mCi is one/one-thousandth of a Ci).

Joint Frequency Tables of meteorological data, per Pasquill Category, as well as for all stability classes, are included. All data was collected from the on-site Meteorological Facility. Data recoveries for the 380-foot data and the 33-foot data were 97.9 percent and 97.8 percent, respectively. The UFSAR commits to Regulatory Guide (RG) 1.23 for Meteorological Facility data recovery. RG 1.23 requires data recovery of at least 90% on an annual basis.

1. Introduction

In accordance with the reporting requirements of Technical Specification 3.6.E.1 applicable during the reporting period, this report summarizes the effluent release data for Oyster Creek Generating Station for the period January 1, 2008 through December 31, 2008. This submittal complies with the format described in Regulatory Guide 1.21, "Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water Cooled Nuclear Power Plants", Revision 1, June, 1974.

Meteorological data was reported in the format specified in Regulatory Guide 1.23, Revision 1, "Meteorological Monitoring Programs For Nuclear Power Plants".

All vendor results were received and included in the report calculations. Therefore the 2008 report is complete.

2. Supplemental Information

A. Regulatory Limits

	Limit	Units	Receptor	ODCM and 10 CFR 50, Appendix I Design Objective Limits
1. Noble Gases:				
a.	≤ 500	mrem/Yr	Total Body	ODCM Control 3.11.2.1
	≤ 3000	mrem/Yr	Skin	
b.	≤ 5	mRad	Air Gamma	Quarterly air dose limits
	≤ 10	mRad	Air Beta	ODCM Control 3.11.2.2
c.	≤ 10	mRad	Air Gamma	Yearly air dose limits
	≤ 20	mRad	Air Beta	ODCM Control 3.11.2.2
d.	≤ 5	mrem	Total Body (Gamma)	10 CFR 50, Appendix I,
	≤ 15	mrem	Skin (Beta)	Section II.B.2(b)
2. Iodines, Tritium, Particulates with Half Life > 8 days:				
a.	≤ 1500	mrem/Yr	Any Organ	ODCM Control 3.11.2.1
b.	≤ 7.5	mrem	Any Organ	Quarterly dose limits ODCM Control 3.11.2.3
c.	≤ 15	mrem	Any Organ	Yearly dose limits ODCM Control 3.11.2.3
3. Liquid Effluents				
a.	Concentration 10 CFR 20, Appendix B, Table 2 Column 2			ODCM Control 3.11.1.1
b.	≤ 1.5	mrem	Total Body	Quarterly dose limits
	≤ 5	mrem	Any Organ	ODCM Control 3.11.1.2
c.	≤ 3	mrem	Total Body	Yearly dose limits
	≤ 10	mrem	Any Organ	ODCM Control 3.11.1.2

B. Effluent Concentration Limits:

Gaseous dose rates rather than effluent concentrations are used to calculate permissible release rates for gaseous releases. The maximum permissible dose rates for gaseous releases are defined in ODCM Controls 3.11.2.1.

The Effluent Concentration Limit (ECL) specified in 10 CFR 20, Appendix B, Table 2, Column 2 for identified nuclides, were used to calculate permissible release rates and concentrations for liquid release per the Oyster Creek Offsite Dose Calculation Manual Control 3.11.1.1. The total activity concentration at the Route 9 bridge for all dissolved or entrained gases was limited to $\leq$ 2E-04 µCi/mL.

C. Average Energy ($\bar{E}$):

The Oyster Creek ODCM limits the instantaeneous dose equivalent rates due to the release of noble gases to less than or equal to 500 mrem/year to the total body and less than or equal to 3000 mrem/year to the skin. The average beta and gamma energies ($\bar{E}$) of the radionuclide mixture in releases of fission and activation gases as described in Regulatory Guide 1.21, "Measuring, Evaluation, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," may be used to calculate doses in lieu of more sophisticated software. The Oyster Creek radioactive effluent program employs the methodologies presented in U.S. NRC Regulatory Guide 1.109 "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants, October 1978. Therefore, average energies are not applicable to Oyster Creek.

D. Measurements and Approximations of Total Radioactivity:

1. Fission and Activation Gases

The method used for Gamma Isotopic Analysis is the Canberra Gamma Spectroscopy System with a gas Marinelli beaker. Airborne effluent gaseous activity was continuously monitored and recorded in accordance with ODCM Table 4.11.2.1.2-1. Additional grab samples were taken from the stack RAGEMS sample point and ground-level release sample points and analyzed at least monthly to determine the isotopic mixture of noble gas activity released for the month. The data from the noble gas radiation monitor were analyzed to report net noble gas effluent activity. If activity was found in the grab isotopic analysis, the isotopic mixture for the Noble Gas Monitor was determined from that isotopic mixture.

2. Particulates and Iodines

The method used for Gamma Isotopic Analysis is the Canberra Gamma Spectroscopy System with a particulate filter (47 mm) and/or charcoal cartridge, respectively. Particulate and iodine activity was continuously sampled and analyzed in accordance with ODCM Table 4.11.2.1.2-1. Charcoal and particulate samples are taken from the stack RAGEMS sample point and ground-level release sample points and analyzed at least weekly to determine the total activity released from the plant based on the highest vent flow rates recorded for the sampling period.

3. Liquid Effluents

During 2008, there were no radiological liquid releases. Since there were no liquid discharges in 2008, there was no dose attributable to liquid effluents.

4. Tritium in Gaseous Effluents:

Air from stack effluents was passed through a desiccant column and distilled to remove the tritiated water collected. An aliquot of the water from the distillate was analyzed using a liquid scintillation counter.

5. Composite Samples and Lower Limit of Detection (LLD)

Particulate air samples were composited monthly and analyzed for gross alpha, Sr-89 and Sr-90. These composites are submitted to an offsite vendor laboratory for analysis. The ODCM required lower limit of detection for liquid and airborne releases are as follows:

Liquid:	**LLD**
Principal Gamma Emitters (Mn-54, Fe-59, Co-58, Co-60, Zn-65, I-131, Ce-141, Cs-134, Cs-137)	5E-07 µCi/ml
Principal Gamma Emitters (Mo-99, Ce-144)	1E-05 µCi/ml
Dissolved and Entrained Gases	1E-05 µCi/ml
H-3	1E-05 µCi/ml
Gross Alpha	1E-07 µCi/ml
Sr-89, Sr-90	5E-08 µCi/ml
Fe-55	1E-06 µCi/ml
Airborne	**LLD**
Principal Gamma Emitters (Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, Xe-138)	1E-04 µCi/ml
H-3	1E-06 µCi/ml
I-131	1E-12 µCi/ml
I-133	1E-10 µCi/ml
Principal Gamma Emitters (Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141, Ce-144)	1E-11 µCi/ml
Gross Alpha	1E-11 µCi/ml
Sr-89, Sr-90	1E-11 µCi/ml

6. Estimated Total Error Present

Procedure CY-AA-170-2100, Estimated Errors of Effluent Measurements, provides the methodology to obtain an overall estimate of the error associated with radioactive effluents.

E. Abnormal Releases:

There were no abnormal releases during 2008.

F. Revisions to the ODCM

There were no revisions to the ODCM during 2008.

G. Radiation Effluent Monitors Out of Service More Than 30 Days

Per ODCM Control 3.11, "Radioactive Liquid Effluent Monitoring Instrumentation" and Table 3.3.3.11-1 Radioactive Gaseous Effluent Monitoring Instrumentation", instrumentation requires:

With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 3.3.3.11-1. Restore the inoperable instrumentation to OPERABLE status within the time specified in the ACTION or explain in the next Annual Radioactive Effluent Release Report why this inoperability was not corrected within the time specified.

The following is a discussion of instrumentation out of service for greater than 30 days:

The Service Water radiation monitor was out of service from 09/25/2008 to 12/31/2008 due to inoperable instrumentation. An investigation revealed that the monitor could not be repaired and that new components had to be manufactured.

H. Changes to the Process Control Plan

Revisions 6 and 7 of the Process Control Plan (PCP) (RW-AA-100) were approved June 2008 and December 2008 respectively. Complete copies of the procedures, along with a summary of changes are included in this mailing.

I. Releases from the Independent Spent Fuel Storage Facility

The Independent Spent Fuel Storage Installation (ISFSI) is a closed system and the only exposure would be due to direct radiation. This includes iodines, particulates, and noble gases. Based on offsite TLD readings, dose due to direct radiation from the ISFSI was less than 1mRem for 2008. Because it is a sealed unit, no radioactive material was released.

Appendix A
Effluent and Waste Disposal Summary

LIST OF TABLES

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TABLE A -1 GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES PERIOD 2008

A. FISSION AND ACTIVATION GASSES

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Est. Total Error %
1. Total Release	Ci	1.54E0	1.98E0	3.33E0	7.03E-1	25
2. Average Release Rate for Period	uCi/sec	1.96E-1	2.52E-1	4.19E-1	8.84E-2	
3. Dose - Gamma Air Dose	mrad	3.81E-5	3.13E-5	7.83E-5	3.57E-3	
- Beta Air Dose	mrad	1.94E-5	2.85E-5	4.95E-5	4.57E-3	
4. Percent of ODCM Limit - Gamma Air Dose	%	7.62E-4	6.26E-4	1.57E-3	7.14E-2	
- Beta Air Dose	%	1.94E-4	2.85E-4	4.95E-4	4.57E-2	

B. IODINES

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Est. Total Error %
1. Total – I-131	Ci	1.58E-4	2.03E-4	3.13E-5	3.30E-5	25
2. Average Release Rate for Period	uCi/sec	2.01E-5	2.58E-5	3.94E-6	4.15E-6	

C. PARTICULATES

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Est. Total Error %
1. Particulates with T 1/2 > 8 days	Ci	1.11E-4	1.04E-4	2.61E-5	9.80E-5	25
2. Average Release Rate for Period	uCi/sec	1.42E-5	1.32E-5	3.28E-6	1.23E-5	
3. Gross Alpha Radioactivity	Ci	<LLD	<LLD	<LLD	<LLD	

D. TRITIUM

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Est. Total Error %
1. Total Release	Ci	5.37E+00	5.91E+00	1.01E+01	6.24E+00	25
2. Average Release Rate for Period	UCi/sec	6.82E-01	7.52E-01	1.27E+00	7.85E-01	

E. Iodine 131 & 133, Tritium & Particulate

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4
1. Organ Dose	mrem	8.65E-4	1.33E-3	5.00E-4	1.17E-3
2. Percent of ODCM Limit	%	1.15E-2	1.77E-2	6.67E-3	1.56E-2

* ODCM Limit is for combined Iodine, tritium and particulate only, which is shown in Item E.

TABLE A - 2 GASEOUS EFFLUENTS FOR RELEASE POINT – ELEVATED PERIOD 2008

1. FISSION AND ACTIVATION GASSES

Nuclide Released	Continuous Mode				
	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4
KR-85	Ci	<LLD	<LLD	<LLD	<LLD
KR-85M	Ci	<LLD	<LLD	<LLD	<LLD
KR-87	Ci	<LLD	<LLD	<LLD	<LLD
KR-88	Ci	<LLD	<LLD	<LLD	<LLD
XE-131M	Ci	<LLD	<LLD	<LLD	<LLD
XE-133	Ci	<LLD	<LLD	<LLD	<LLD
XE-133M	Ci	<LLD	<LLD	<LLD	<LLD
XE-135	Ci	1.54E0	1.98E0	3.33E0	8.76E-2
XE-135M	Ci	<LLD	<LLD	<LLD	<LLD
XE-138	Ci	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	1.54E0	1.98E0	3.33E0	8.76E-2

2. IODINES

Nuclide Released	Continuous Mode				
	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4
I-131	Ci	1.58E-4	2.03E-4	3.13E-5	1.59E-5
I-133	Ci	5.34E-4	4.25E-4	1.75E-4	2.17E-5
Total for Period	Ci	6.92E-4	6.28E-4	2.06E-4	3.76E-5

3. PARTICULATES (T 1/2 > 8 DAYS)

Nuclide Released	Continuous Mode				
	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4
MN-54	Ci	1.51E-5	1.87E-5	<LLD	<LLD
FE-59	Ci	<LLD	<LLD	<LLD	<LLD
CO-58	Ci	<LLD	<LLD	<LLD	<LLD
CO-60	Ci	<LLD	<LLD	<LLD	7.17E-6
ZN-65	Ci	<LLD	<LLD	<LLD	<LLD
SR-89	Ci	9.64E-5	8.51E-5	2.61E-5	6.42E-5
SR-90	Ci	<LLD	<LLD	<LLD	<LLD
ZR-95	Ci	<LLD	<LLD	<LLD	<LLD
NB-95	Ci	<LLD	<LLD	<LLD	<LLD
MO-99	Ci	<LLD	<LLD	<LLD	<LLD
CS-134	Ci	<LLD	<LLD	<LLD	<LLD
CS-137	Ci	<LLD	<LLD	<LLD	<LLD
CE-141	Ci	<LLD	<LLD	<LLD	<LLD
CE-144	Ci	<LLD	<LLD	<LLD	<LLD
BA-140	Ci	<LLD	<LLD	<LLD	2.66E-5
Total for Period	Ci	1.11E-4	1.04E-4	2.61E-5	9.80E-5

TABLE A - 3 GASEOUS EFFLUENTS FOR RELEASE POINT – GROUND LEVEL PERIOD 2008

1. FISSION AND ACTIVATION GASSES

Nuclide Released	Continuous Mode				
	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4
AR-41	Ci	<LLD	<LLD	<LLD	<LLD
KR-85M	Ci	<LLD	<LLD	<LLD	<LLD
KR-87	Ci	<LLD	<LLD	<LLD	<LLD
KR-88	Ci	<LLD	<LLD	<LLD	<LLD
XE-133	Ci	<LLD	<LLD	<LLD	<LLD
XE-133M	Ci	<LLD	<LLD	<LLD	<LLD
XE-135	Ci	<LLD	<LLD	<LLD	6.15E-1
XE-135M	Ci	<LLD	<LLD	<LLD	<LLD
XE-138	Ci	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	<LLD	<LLD	<LLD	6.15E-1

2. IODINES

Nuclide Released	Continuous Mode				
	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4
I-131	Ci	<LLD	<LLD	<LLD	1.71E-5
I-133	Ci	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	<LLD	<LLD	<LLD	1.71E-5

3. PARTICULATES (T 1/2 > 8 DAYS)

Nuclide Released	Continuous Mode				
	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4
MN-54	Ci	< LLD	< LLD	< LLD	< LLD
FE-59	Ci	< LLD	< LLD	< LLD	< LLD
CO-58	Ci	< LLD	< LLD	< LLD	< LLD
CO-60	Ci	< LLD	< LLD	< LLD	< LLD
ZN-65	Ci	< LLD	< LLD	< LLD	< LLD
SR-89	Ci	< LLD	< LLD	< LLD	< LLD
SR-90	Ci	< LLD	< LLD	< LLD	< LLD
ZR-95	Ci	< LLD	< LLD	< LLD	< LLD
NB-95	Ci	< LLD	< LLD	< LLD	< LLD
MO-99	Ci	< LLD	< LLD	< LLD	< LLD
CS-134	Ci	< LLD	< LLD	< LLD	< LLD
CS-137	Ci	< LLD	< LLD	< LLD	< LLD
CE-141	Ci	< LLD	< LLD	< LLD	< LLD
CE-144	Ci	< LLD	< LLD	< LLD	< LLD
Total for Period	Ci	< LLD	< LLD	< LLD	< LLD

TABLE A - 4 LIQUID EFFLUENTS – SUMMATION OF ALL RELEASES PERIOD 2008

A. FISSION AND ACTIVATION PRODUCTS

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Est. Total Error %
1. Total release (not including tritium, gasses & alpha)	Ci	N/A	N/A	N/A	N/A	N/A
2. Average diluted concentration during batch discharge for the period	uCi/ml	N/A	N/A	N/A	N/A	
3. Dose - Whole Body	mrem	N/A	N/A	N/A	N/A	
- Organ	mrem	N/A	N/A	N/A	N/A	
4. % of ODCM Limit - Whole Body Dose*	%	N/A	N/A	N/A	N/A	
- Organ Dose*	%	N/A	N/A	N/A	N/A	

B. TRITIUM

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Est. Total Error %
1. Total Release	Ci	N/A	N/A	N/A	N/A	N/A
2. Average diluted concentration during batch discharge for the period	uCi/ml	N/A	N/A	N/A	N/A	
3. % of ODCM Limit - ECL	%	N/A	N/A	N/A	N/A	

C. DISSOLVED AND ENTRAINED GASSES

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Est. Total Error %
1. Total release	Ci	N/A	N/A	N/A	N/A	N/A
2. Average diluted concentration during batch discharge for the period	uCi/ml	N/A	N/A	N/A	N/A	
3. %of ODCM Limit - ECL	%	N/A	N/A	N/A	N/A	

D. GROSS ALPHA RADIOACTIVITY

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Est. Total Error %
1. Total release	Ci	N/A	N/A	N/A	N/A	N/A
2. Average diluted concentration during batch discharge for the period	uCi/ml	N/A	N/A	N/A	N/A	

	Units	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Est. Total Error %
E. Volume of waste released (prior to dilution)	Liters	N/A	N/A	N/A	N/A	N/A
F. Volume of dilution water used during period	Liters	N/A	N/A	N/A	N/A	N/A

* Percent of limit includes tritium.

Appendix B
Solid Waste and Irradiated Fuel Shipments

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Solid waste shipped offsite for burial or disposal (not irradiated fuel) 1/1/08 – 12/31/08

1. Type of waste

Type of waste	Unit	12 Month Period	Estimated Error %
a. Spent resin, filters sludges, evaporator bottoms, etc	m^3	2.14E1	25%
	Ci	4.54E1	
b. Dry compressible waste, contaminated equipment, etc.	m^3	4.43E2	25%
	Ci	1.94E-1	
c. Irradiated components, control rods, etc.	m^3	1.52E-1	25%
	Ci	2.07E4	
d. Other (Describe)	m^3	1.18E1	25%
Oil Filter Media	Ci	5.65E1	

2. Estimate of Major Nuclide Composition (By Waste Type)

Category A – Spent Resin, Filters, Sludges, Evaporator Bottoms, etc.

Isotope	Waste Class A Curies *	Percent Abundance	Waste Class B Curies *	Percent Abundance	Waste Class C Curies*	Percent Abundance
Co-60	1.46E+00	34.8	1.29E+01	31.4	1.00E+04	48.3
Cs-137	1.26E+00	30.1	1.93E+01	47.0	1.89E-02	9.13E-05
Fe-55	1.03E+00	24.6	5.99E+00	14.6	9.48E+03	45.8
Mn-54	2.15E-01	5.128	1.07E+00	2.60	2.62E+02	1.27
Zn-65	1.01E-01	2.409	2.42E-01	0.589	<LLD	N/A
C-14	6.73E-02	1.605	7.88E-01	1.92	1.46E+00	7.06E-03
Ni-63	2.88E-02	0.687	3.89E-01	0.946	9.43E+02	4.58
Cs-134	1.21E-02	0.289	2.70E-01	0.657	<LLD	N/A
H-3	4.14E-03	0.099	7.27E-02	0.177	7.00E-01	3.38E-03
Sr-90	3.84E-03	0.092	5.91E-02	0.144	5.91E-05	2.86E-7
Ag-110m	3.51E-03	0.084	<LLD	N/A	<LLD	N/A
Ce-144	3.48E-03	0.083	1.62E-02	0.040	1.58E-04	7.64E-07
Pu-241	2.39E-03	0.057	<LLD	N/A	<LLD	N/A
Co-57	5.25E-04	0.013	<LLD	N/A	<LLD	N/A
Totals	4.19	100.0	4.11E+01	100.1	2.07E+04	100.0

* Activity is estimated

Category B – Dry Compressible Waste, Contaminated Equipment, etc.

Isotope	Waste Class A Curies *	Percent Abundance
Fe-55	9.03E-02	46.53
Co-60	4.34E-02	22.36
Mn-54	2.62E-02	13.50
Cs-137	1.89E-02	9.74
Zn-65	1.25E-02	6.44
Ni-63	8.05E-04	0.41
Co-58	6.22E-04	0.32
Ag-110m	6.04E-04	0.31
Cs-134	2.08E-04	0.11
Ce-144	1.58E-04	0.08
Other	3.83E-04	0.20
Totals	1.94E-01	100.0

* Activity is estimated

Category C – Irradiated components, control rods, etc.

Isotope	Waste Class C Curies *	Percent Abundance
Co-60	1.00E+04	4.83E+01
Fe-55	9.48E+03	4.58E+01
Ni-63	9.43E+02	4.56E+00
Mn-54	2.62E+02	1.27E+00
Ni-59	4.86E+00	2.35E-02
C-14	1.46E+00	7.06E-03
Co-58	1.46E+00	7.06E-03
H-3	7.00E-01	3.38E-03
Nb-94	2.04E-02	9.86E-05
Cs-137	1.89E-02	9.13E-05
Tc-99	1.06E-02	5.12E-05
Ce-144	1.58E-04	7.64E-07
Sr-90	5.91E-05	2.86E-07
Pu-241	3.52E-05	1.70E-07
Am-241	1.04E-06	5.03E-09
Pu-238	9.39E-07	4.54E-09
Cm-243	7.55E-07	3.65E-09
Cm-242	5.71E-07	2.76E-09
Pu-239	3.12E-07	1.51E-09
Totals	2.07E+04	100.0

* Activity is estimated

3. Solid Waste (Disposition)

Number of Shipments	Mode of Transportation	Destination
8	Hitman Transport Co.	Barnwell Waste Management
7	Hitman Transport Co.	Duratek
3	Hitman Transport Co.	Duratek Radwaste Processing, Inc.

B. Irradiated Fuel Shipments (disposition). There were no irradiated fuel shipments.

Appendix C
Radiological Impact to Man

Per ODCM Administrative Control 6.2, an assessment of radiation doses to the likely most exposed MEMBER OF THE PUBLIC from reactor releases and other nearby uranium fuel cycle sources (including doses from primary effluent pathways and direct radiation) for the previous calendar year must be made to show conformance with 40 CFR Part 190, Environmental Radiation Protection Standards for Nuclear Power Operation. For purposes of this calculation the following assumptions were made:

Gaseous

- Nearest resident was SE sector at 925 meters
- Actual meteorology and actual gaseous effluent releases were used.
- All significant pathways were assumed to be present
- Occupancy factor was considered 100%.

Liquid

There was no dose due to liquid releases.

A summary of gaseous and liquid radiation doses to most likely exposed MEMBER OF THE PUBLIC was as follows:

Effluent	Applicable Organ	Estimated Dose	Age Group	Location		% of Applicable Limit	Limit	Unit
				Distance (meters)	Direction (toward)			
Noble Gas	Gamma - Air Dose	3.66E-03	All	405	E	3.66E-02	10	mrad
Noble Gas	Beta – Air Dose	4.63E-03	All	405	E	2.32E-02	20	mrad
Noble Gas	Total Body (Gamma)	4.22E-04	All	925	SE	8.44E-03	5	mrem
Noble Gas	Skin (Beta)	1.06E-03	All	925	SE	7.07E-3	15	mrem
Iodine, Particulate & Tritium	Thyroid	3.58E-03	Child	925	SE	2.39E-02	15	mrem
Liquid	Total body	0	N/A	N/A		0	3	mrem
Liquid	Organ	0	N/A	N/A		0	10	mrem
Direct Radiation	Total Body	< 1	All	925	SE	< 4	25	mrem

Doses calculated were well below all ODCM and 40 CFR Part 190 limits of 75 mrem to the thyroid and 25 mrem to the total body and any other organ. The 40 CFR Part 190 limits for Kr-85, I-129, Pu-239 and other alpha-emitting transuranic radionuclides with half-lives greater than one year were not exceeded.

The ODCM does not require population doses to be calculated.

There are no radiological environmental sample parameters or locations where it is not possible or practical to obtain samples.

New Jersey State Police were not present full time at the plant entrance.

Appendix D
Meteorological Data
Provided in original Submittal