



Oyster Creek Generation
Route 9 South
PO Box 388
Forked River, NJ 08731

www.exeloncorp.com

10 CFR 50.36a(a)(2)
10 CFR 72.44 (d)(3)
Technical Specification 6.9.1.d

RA-~~14~~041

May 1, 2014

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555 - 0001

Oyster Creek Nuclear Generating Station
Renewed Facility Operating License No. DPR-16
NRC Docket No. 50-219

Independent Spent Fuel Storage Facility
NRC Docket No. 72-15

Subject: Annual Radioactive Effluent Release Report for 2013

Enclosed with this cover letter is the Annual Radioactive Effluent Release Report for the period January 1 to December 31, 2013. This report includes the Oyster Creek Nuclear Generating Station Independent Spent Fuel Storage Facility.

If any further information or assistance is needed, please contact John Renda, Chemistry Manager, at 609-971-2572.

Sincerely,

A handwritten signature in cursive script that reads "Gary L. Stathes".

Gary L. Stathes
Vice President – Oyster Creek Nuclear Generating Station

Enclosure: 2013 Annual Radioactive Effluent Release Report

cc: Administrator, USNRC Region I (w/o attachment)
USNRC Senior Project Manager, Oyster Creek (w/o attachment)
USNRC Senior Resident Inspector, Oyster Creek (w/o attachment)
Craig Stewart, American Nuclear Insurers



Annual Radioactive Effluent Release Report

2013

Oyster Creek Generating Station

Oyster Creek 2013 Annual Radioactive Effluent Release Report

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

January 1, 2013 through December 31, 2013

EXELON GENERATION COMPANY, LLC

OYSTER CREEK 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**

Oyster Creek 2013 Annual Radioactive Effluent Release Report

TABLE OF CONTENTS

SECTION	PAGE
EXECUTIVE SUMMARY	1
1. Introduction	3
2. Supplemental Information	4
A Regulatory Limits	4
B Effluent Concentration Limits	5
C Average Energy	5
D Measurements and Approximations of Total Radioactivity	5
E Batch Releases	9
F Abnormal Releases	9
G Revisions to the ODCM	9
H Radiation Effluent Monitors Out of Service More Than 30 Days	10
I Releases from the Independent Spent Fuel Storage Facility	10
J Program Deviations	10
Appendix A – Effluent and Waste Disposal Summary	11
Appendix B – Solid Waste and Irradiated Fuel Shipments	18
Appendix C – Radiological Impact to Man	23
Appendix D – Meteorological Data	26
Appendix E – ODCM Revisions	100
Appendix F – ERRATA	101

Oyster Creek 2013 Annual Radioactive Effluent Release Report

(Page Intentionally Left Blank)

Oyster Creek 2013 Annual Radioactive Effluent Release Report

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 the 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 Generating Station (OCGS) does not result in significant radiation exposure to the people or the environment surrounding OCGS and is well below the applicable levels set by the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA).

There were liquid radioactive effluent releases during 2013 of concentrations of tritium too low to detect at an LLD of 200 picocuries per liter (pCi/L) at the New Jersey Pollution Discharge Elimination System (NJPDES) permitted main condenser outfall. The releases were part of nearly continuous pumping of groundwater at approximately 70 gpm containing low levels of tritium and no detectable gamma. Exelon and the State of New Jersey Department of Environmental Protection (NJDEP) agreed to this remediation action instead of natural attenuation to address concentrations of tritium in groundwater. Well 73 and supporting equipment and piping were installed to pump groundwater to the intake structure at the inlet of the main circulating water pumps. Provisions were established for both batch and continuous releases of groundwater. Continuous releases occurred approximately 361 days in 2013. The Continuous releases occurred from January 1, 2013 through December 27, 2013 with a total of 3.50E+07 gallons of groundwater pumped resulting in 2.82E-01 Ci of tritium released to the discharge canal. The dose to the most limiting member of the public due to the release of groundwater was 1.37E-06 mrem.

There were no liquid abnormal releases during 2013.

There was one gaseous abnormal release during 2013. During the annual inspection of the Old Radwaste Building exhaust fan connections to the main stack it was discovered that there were three slits in the top boot connection of exhaust fan EF-1-16 and a bolt missing in the connection of exhaust fan EF-1-17.

The maximum calculated organ dose (Bone) from iodines, tritium, carbon-14 (C-14), and particulates to any individual due to gaseous effluents was 4.93E-01 mrem, which was approximately 3.29E+00 percent of the annual limit of 15 mrem. The majority of organ dose from gaseous effluents was due to C-14. The maximum calculated gamma air dose in the UNRESTRICTED AREA due to noble gas effluents was 3.60E-03 mrad, which was 3.60E-02 percent of the annual 10 CFR 50 Appendix I, As Low As Reasonably Achievable (ALARA) limit of 10 mrad.

For comparison, the background radiation dose averages approximately 300 mrem per year in the Central New Jersey area, which includes approximately 200 mrem from naturally occurring radon gas and 100 mrem from background radiation.

The Independent Spent Fuel Storage Installation (ISFSI) is a closed system and the only exposure is due to direct radiation. Based on offsite TLD readings, dose due to direct radiation from the

Oyster Creek 2013 Annual Radioactive Effluent Release Report

ISFSI was less than 1 mrem for 2013. Because it is a sealed unit, no radioactive material was released.

Comparison of environmental sampling results to iodine and particulate gaseous effluents released, showed no radioactivity attributable to the operation of OCGS. Both elevated and ground-level release paths were considered in this review, with total iodines released of $3.12\text{E}-03$ Ci and total particulates with half-lives greater than 8 days less C-14 released of $3.82\text{E}-02$ Ci.

Joint Frequency Tables of meteorological data, per Stability Classification 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 99.4 percent and 99.4 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.

Oyster Creek 2013 Annual Radioactive Effluent Release Report

1 Introduction

In accordance with the reporting requirements of Technical Specification 6.9.1.d applicable during the reporting period, this report summarizes the effluent release data for OCGS for the period January 1, 2013 through December 31, 2013. 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 2013 report is complete.

Oyster Creek 2013 Annual Radioactive Effluent Release Report

2 Supplemental Information

Oyster Creek Generating Station

Exelon Generation Company, LLC

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 ODCM Control 3.11.2.2
≤ 10	mrad	Air Beta	
c. ≤ 10	mrad	Air Gamma	Yearly air dose limits ODCM Control 3.11.2.2
≤ 20	mrad	Air Beta	
d. < 5	mrem	Total Body (Gamma)	10 CFR 50, Appendix I, Section II.B.2(b)
< 15	mrem	Skin (Beta)	
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 ODCM Control 3.11.1.2
≤ 5	mrem	Any Organ	
c. ≤ 3	mrem	Total Body	Yearly dose limits ODCM Control 3.11.1.2
≤ 10	mrem	Any Organ	

Oyster Creek 2013 Annual Radioactive Effluent Release Report

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 ODCM Controls 3.11.1.1. The total activity concentration at the Route 9 bridge for all dissolved or entrained gases was limited to $< 2E-04 \mu\text{Ci/ml}$.

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

The Oyster Creek ODCM limits the instantaneous 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, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plant", 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. Therefore, average energy (\bar{E}) as described in Regulatory Guide 1.21 is 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 the Off Site Dose Calculation Manual (ODCM) Table 4.11.2.1.2-1. Additional grab samples were taken from the stack Radioactive and Gaseous Effluent Monitoring System (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. If activity was found in the grab isotopic analysis, the results are entered into Simplified Environmental Effluent Dosimetry System (SEEDS) to calculate dose and dose rates. If no activity is detected in the stack grab samples, post treatment or Off Gas Isotopic Analysis data may be used.

2. Iodines

The method used for Gamma Isotopic Analysis is the Canberra Gamma Spectroscopy System with a charcoal cartridge. Iodine activity was continuously sampled and analyzed in accordance with ODCM Table 4.11.2.1.2-1. Charcoal samples are taken from the stack RAGEMS sample point and

Oyster Creek 2013 Annual Radioactive Effluent Release Report

ground-level release sample points and analyzed at least weekly to determine the total activity released from the plant based on the average vent flow rates recorded for the sampling period.

3. Particulates (half-lives > 8 days)

The method used for Gamma Isotopic Analysis is the Canberra Gamma Spectroscopy System with a particulate filter (47 mm). Particulate activity was continuously sampled and analyzed in accordance with ODCM Table 4.11.2.1.2-1. 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 average vent flow rates recorded for the sampling period.

4. Tritium

A. Gaseous Effluents

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

B. Liquid Effluents

Water from liquid effluents was analyzed for tritium using a liquid scintillation counter.

5. Gross Alpha

Gross alpha was measured by an off-site vendor for both the gas and liquid effluent composite samples.

6. Hard-To-Detects

Hard-To-Detects was measured by an off-site vendor for one set of gas monthly composites. The analysis included Fe-55, I-129, Ni-59, Ni-63, Tc-99, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240 and Pu241. Fe-55 and Ni-63 have been added to the routine monthly composite analysis schedule based on previous sample results for Hard-To-Detects.

Oyster Creek 2013 Annual Radioactive Effluent Release Report

7. Carbon-14 (C-14)

The amount of C-14 (Ci) released was estimated using the guidance from EPRI Technical Report 1021106, Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents. The C-14 was released primarily through the stack (97%) with a small amount (3%) released through plant vents. The activity in liquid effluents was determined to not be significant.

The offsite dose from C-14 was calculated using SEEDS, which uses approved ODCM methodologies. The resulting annual dose to a child from gaseous releases of C-14 is about 4.67E-01 mrem to the bone.

8. Liquid Effluents

Groundwater containing tritium was released during 2013. For continuous releases, tritium and principal gamma emitters were determined for a composite sample daily. The concentration of tritium is limited to ensure concentrations were less than 200 pCi/l in the discharge canal. The gamma emitters were limited to less than detectable concentrations. Gross alpha and Hard-to-detect analyses (Fe-55, Ni-63, Sr-89 and Sr-90) were determined for monthly composite samples for each type of release (batch or continuous).

The leaks into the groundwater were reported in the 2009 Annual Radioactive Effluent Release Report as abnormal releases. Estimates of the curies of the tritium releases were reported. Doses due to the release of the groundwater to the discharge canal were included in the report. To ensure that amount of activity discharge is accurate and limiting, the activity and doses as a result of discharges during 2013 from the groundwater remediation project are included in this report.

9. 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.

Oyster Creek 2013 Annual Radioactive Effluent Release Report

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

Particulate air samples were composited monthly and analyzed for gross alpha, Sr-89, Sr-90, Fe-55 and Ni-63. Groundwater batch and continuous releases were composited at least monthly and analyzed for gross alpha, Sr-89, Sr-90, Fe-55 and Ni-63. These composites are submitted to an offsite vendor laboratory for analysis. The ODCM required LLD for liquid and airborne releases are as follows:

Liquid:	LLD
Principal Gamma Emitters (Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, I-131, Ce-141, Cs-134, Cs-137)	5E-07 µCi/ml
Principal Gamma Emitters (Ce-144)	5E-06 µCi/ml
Dissolved and Entrained Gases	1E-05 µCi/ml
H-3	1E-05 µCi/ml
Gross Alpha	1E-07 µCi/ml
Sr-89 and Sr-90	5E-08 µCi/ml
Fe-55 and Ni-63	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, Cs-134, Cs-137, Ce-141)	1E-11 µCi/ml
Principal Gamma Emitters (Mo-99, Ce-144)	1E-10 µCi/ml
Gross Alpha	1E-11 µCi/ml
Sr-89, Sr-90	1E-11 µCi/ml

Oyster Creek 2013 Annual Radioactive Effluent Release Report

E. Batch Releases:

1. Liquid

There were no batch releases of liquid effluents during 2013.

2. Gaseous

There were no batch releases of gaseous effluents during 2013.

F. Abnormal Releases:

There were no abnormal liquid releases during 2013.

There was one abnormal gaseous release during 2013. During the performance of Work Order R2205683, which is to perform an annual inspection of the stack pad exhaust fans, three slits were discovered in the top boot of exhaust fan EF-1-16 and a bolt was missing from exhaust fan EF-1-17. These are the two exhaust fans for the Old Radwaste Building to the Main Stack. One of these two exhaust fans is in operation at all times to maintain a negative pressure in the Old Radwaste Building. At no times do both of these fans run simultaneously as each fan is designed to provide 100% of the required flow. Engineering performed a calculation to determine a release rate that encompasses the maximum release rate regardless of which exhaust fan is in service. The activity to inspect the exhaust fans is an annual activity.

The following assumptions were made when calculating Curies released and dose:

- Both exhaust fans have been leaking since the date of the last inspection until the time of the last repair, 7/29/12 through 7/25/13.
- All of the activity due to particulates reported from the Main Stack was coming from the Old Radwaste Building and therefore being released as a groundlevel release from the exhaust fan leaks at the flow rate calculated by Engineering.

	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Total Release	Ci	4.94E-05	5.00E-05	1.37E-05	0.00E+00

G. Revisions to the ODCM:

There were no revisions to the ODCM during 2013.

Oyster Creek 2013 Annual Radioactive Effluent Release Report

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

Per ODCM Control 3.3.3.10, "Radioactive Liquid Effluent Monitoring Instrumentation" and 3.3.3.11, Radioactive Gaseous Effluent Monitoring Instrumentation requires:

With less than the minimum number of radioactive liquid/gaseous effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 3.3.3.10-1/3.3.3.11-1. Make every reasonable effort to return the instrument to OPERABLE status within 30 days and, if unsuccessful, explain in the next Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

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

1. The Offgas Building Exhaust Gaseous Effluent Radioactive Noble Gas Monitor was out of service from 5/20/2013 through 8/9/2013. The monitor was taken out of service 5/20/2013 for failing the monitor functional test. The original issue for the monitor failing the functional test was a faulty pushbutton on the alarm panel causing the alarm not to function. Parts were ordered and replaced on 6/18/2013 but the alarm still did not function as expected. After multiple troubleshooting attempts it was determined that the annunciator window card wiring was the issue. After changing the wiring in the alarm panel, all alarms responded as expected. The functional test was reperformed 8/9/2013 satisfactorily and the monitor was returned to service. This issue was entered into our Corrective Action Program (CAP) and corrective actions taken have been documented per process. All ODCM required compensatory measures were met.

I. Releases from the Independent Spent Fuel Storage Facility:

The 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 2013. Because it is a sealed unit, no radioactive material was released.

J. Program Deviations:

1. The groundwater remediation composite sampler was found with no composite collected on December 27, 2013. The composite sampler is required by ODCM Table 4.11.1.1.1-1, Radioactive Liquid Waste Sampling and Analysis Program. A manual sample was obtained per SP 10-003. Operations department was notified that composite sampler was not working and Operations secured discharging from W-73 and Chemistry secured the composite sampler. This issue was entered into our Corrective Action Program (CAP) and corrective actions taken have been documented per process.

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Appendix A Effluent and Waste Disposal Summary

Oyster Creek 2013 Annual Radioactive Effluent Release Report

LIST OF TABLES

	PAGE
Table A - 1 Gaseous Effluents – Summary of All Releases	13
Table A - 2 Gaseous Effluents Release Point: Elevated Release	14
Table A - 3 Gaseous Effluents Release Point: Ground Level Releases	15
Table A - 4 Liquid Effluents – Summary of All Releases	16
Table A - 5 Liquid Release Point: Groundwater Remediation	17

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table A-1: Gaseous Effluents - Summary Of All Releases

Period: January 1, 2013 through December 31, 2013

Unit: Oyster Creek

A. Fission & Activation Gases	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est. Total Error %
1. Total Release	Ci	2.06E+01	1.40E+01	7.04E+00	8.02E+00	25.00%
2. Average Release Rate for Period	µCi/sec	2.62E+00	1.79E+00	8.85E-01	1.01E+00	
3. Gamma Air Dose	mrad	2.60E-03	1.13E-03	3.99E-04	8.36E-04	
4. Beta Air Dose	mrad	1.87E-04	6.44E-04	2.77E-04	2.79E-04	
5. Percent of ODCM Limit						
- Gamma Air Dose	%	5.20E-02	2.26E-02	7.98E-03	1.67E-02	
- Beta Air Dose	%	1.87E-03	6.44E-03	2.77E-03	2.79E-03	
B. Iodines						
1. Total – I-131	Ci	3.78E-04	1.27E-04	2.57E-04	5.94E-04	25.00%
2. Average Release Rate for Period	µCi/sec	4.81E-05	1.62E-05	3.23E-05	7.47E-05	
3. Percent of ODCM limit	%	*	*	*	*	
C. Particulate						
1. Particulates with T 1/2 > 8 days	Ci	1.32E-02	7.61E-03	8.44E-03	8.97E-03	25.00%
2. Average Release Rate for Period	µCi/sec	1.69E-03	9.67E-04	1.06E-03	1.13E-03	
3. Percent of ODCM limit	%	*	*	*	*	
D. Tritium						
1. Total Release	Ci	8.78E+00	6.40E+00	3.89E+00	5.82E+00	25.00%
2. Average Release Rate for Period	µCi/sec	1.12E+00	8.14E-01	4.90E-01	7.32E-01	
3. Percent of ODCM limit	%	*	*	*	*	
E. Gross Alpha						
1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	25.00%
2. Average Release Rate for Period	µCi/sec	<LLD	<LLD	<LLD	<LLD	
3. Percent of ODCM limit	%	*	*	*	*	
F. Carbon-14						
1. Total Release	Ci	2.46E+00	2.49E+00	2.53E+00	2.53E+00	
2. Average Release Rate for Period	µCi/sec	3.13E-01	3.17E-01	3.18E-01	3.18E-01	
3. Percent of ODCM limit	%	*	*	*	*	
G. Iodine 131 & 133, Tritium & Particulate						
1. Organ Dose	mrem	5.00E-02	1.40E-01	1.64E-01	1.49E-01	
2. Percent of ODCM Limit	%	6.67E-01	1.87E+00	2.19E+00	1.99E+00	

* ODCM Limit is for combined Iodine, tritium, Carbon-14 and particulate only, which is shown in Item G.

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table A-2: Gaseous Effluents Release Point: Elevated Release

Period: January 1, 2013 through December 31, 2013

Unit: Oyster Creek

Nuclides Released	Unit	Continuous Mode				Batch Mode			
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1. Fission gases									
Kr- 85	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr- 85m	Ci	1.74E-01	4.12E-01	<LLD	9.02E-02	<LLD	<LLD	<LLD	<LLD
Kr-87	Ci	2.33E-01	2.13E+00	9.60E-01	2.44E+00	<LLD	<LLD	<LLD	<LLD
Kr-88	Ci	8.48E+00	4.43E+00	6.66E-01	5.43E-01	<LLD	<LLD	<LLD	<LLD
Xe-133	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-135	Ci	1.17E+01	7.07E+00	5.41E+00	3.57E+00	<LLD	<LLD	<LLD	<LLD
Xe-135m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-137	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-138	Ci	<LLD	<LLD	<LLD	1.38E+00	<LLD	<LLD	<LLD	<LLD
Ar-41	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	2.06E+01	1.40E+01	7.04E+00	8.02E+00	<LLD	<LLD	<LLD	<LLD
2. Iodines									
I-131	Ci	3.78E-04	1.27E-04	2.57E-04	5.93E-04	<LLD	<LLD	<LLD	<LLD
I-133	Ci	4.02E-04	1.84E-04	4.03E-04	7.74E-04	<LLD	<LLD	<LLD	<LLD
I-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	7.80E-04	3.11E-04	6.60E-04	1.37E-03	<LLD	<LLD	<LLD	<LLD
3. Particulates									
Sr-89	Ci	2.26E-03	4.15E-04	1.95E-04	5.99E-04	<LLD	<LLD	<LLD	<LLD
Sr-90	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-134	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-137	Ci	2.82E-04	3.93E-05	1.52E-04	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	3.61E-03	3.72E-04	4.66E-04	6.93E-04	<LLD	<LLD	<LLD	<LLD
La-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cr-51	Ci	<LLD	<LLD	8.81E-05	5.42E-04	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	9.47E-04	6.49E-04	5.84E-04	1.01E-03	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	2.11E-03	2.28E-03	2.44E-03	2.03E-03	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	2.55E-03	2.95E-03	3.45E-03	2.81E-03	<LLD	<LLD	<LLD	<LLD
Ni-63	Ci	3.50E-04	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Mo-99	Ci	1.48E-04	1.67E-04	1.84E-04	1.57E-04	<LLD	<LLD	<LLD	<LLD
Ag-110m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-141	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-144	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Fe-55	Ci	3.67E-04	<LLD	<LLD	3.22E-04	<LLD	<LLD	<LLD	<LLD
Fe-59	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Zn-65	Ci	5.42E-04	6.52E-04	8.51E-04	7.01E-04	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	1.32E-02	7.52E-03	8.41E-03	8.86E-03	<LLD	<LLD	<LLD	<LLD
4. Tritium									
H-3	Ci	8.49E+00	6.28E+00	3.60E+00	5.61E+00	<LLD	<LLD	<LLD	<LLD
5. Gross Alpha									
Gross Alpha	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
6. Carbon-14									
C-14	Ci	2.39E+00	2.42E+00	2.45E+00	2.45E+00	<LLD	<LLD	<LLD	<LLD

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table A-3: Gaseous Effluent Release Point: Ground Level Releases

Period: January 1, 2013 through December 31, 2013

Unit: Oyster Creek

Nuclides Released	Unit	Continuous Mode				Batch Mode			
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1. Fission gases									
Kr- 85	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr- 85m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-87	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-88	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-133	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-133m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-135m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-138	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ar-41	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
2. Iodines									
I-131	Ci	9.94E-08	<LLD	3.73E-08	8.18E-07	<LLD	<LLD	<LLD	<LLD
I-133	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
I-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	9.94E-08	<LLD	3.73E-08	8.18E-07	<LLD	<LLD	<LLD	<LLD
3. Particulates									
Sr-89	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Sr-90	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-134	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-137	Ci	2.57E-07	2.59E-07	7.13E-08	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	2.62E-05	2.65E-05	7.28E-06	<LLD	<LLD	<LLD	<LLD	<LLD
La-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cr-51	Ci	5.30E-06	5.35E-06	1.47E-06	<LLD	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	4.78E-06	5.64E-06	1.22E-06	1.80E-05	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	3.86E-06	1.33E-05	4.02E-06	3.51E-07	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	1.17E-05	2.86E-05	1.69E-05	8.87E-05	<LLD	<LLD	<LLD	<LLD
Ni-63	Ci	2.74E-05	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Mo-99	Ci	7.96E-07	8.05E-07	2.21E-07	<LLD	<LLD	<LLD	<LLD	<LLD
Ag-110m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-141	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-144	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Fe-55	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Fe-59	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Zn-65	Ci	2.09E-06	2.11E-06	5.81E-07	<LLD	<LLD	<LLD	<LLD	<LLD
Am-241	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	8.24E-05	8.26E-05	3.18E-05	1.07E-04	<LLD	<LLD	<LLD	<LLD
4. Tritium									
H-3	Ci	2.88E-01	1.22E-01	2.93E-01	2.05E-01	<LLD	<LLD	<LLD	<LLD
5. Gross Alpha									
Gross Alpha	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
6. Carbon-14									
C-14	Ci	7.40E-02	7.49E-02	7.57E-02	7.57E-02	<LLD	<LLD	<LLD	<LLD

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table A-4: Liquid Effluents - Summary Of All Releases

Period: January 1, 2013 through December 31, 2013

Unit: Oyster Creek

A. Fission & Activation Products	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est. Total Error %
1. Total Release not including tritium, gases, alpha	Ci	<LLD	<LLD	<LLD	<LLD	25.00%
2. Average Diluted concentration during period	µCi/ml	<LLD	<LLD	<LLD	<LLD	
3. Total Body Dose	mrem	4.05E-07	3.30E-07	3.28E-07	3.08E-07	
4. Organ Dose	mrem	4.05E-07	3.30E-07	3.28E-07	3.08E-07	
3. Percent of ODCM Limit						
-Total Body Dose	%	2.70E-05	2.20E-05	2.19E-05	2.05E-05	
-Organ Dose	%	8.10E-06	6.60E-06	6.57E-06	6.16E-06	
B. Tritium						
	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est. Total Error %
1. Total Release	Ci	8.42E-02	7.04E-02	6.88E-02	5.84E-02	25.00%
2. Average diluted concentration during period	µCi/ml	1.80E-10	1.45E-10	1.42E-10	1.30E-10	
3. Percent of 10CFR20 limit	%	1.80E-05	1.45E-05	1.42E-05	1.30E-05	
C. Dissolved and Entrained Gases						
	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est. Total Error %
1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	25.00%
2. Average diluted concentration	µCi/ml	<LLD	<LLD	<LLD	<LLD	
3. Percent of ODCM limit	%	<LLD	<LLD	<LLD	<LLD	
D. Gross Alpha Activity						
	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est. Total Error %
1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	25.00%
E. Volume of Waste Released prior to dilution						
	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	
	Liters	3.48E+07	3.44E+07	3.42E+07	2.89E+07	
F. Volume of Dilution Water Used During Period						
	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	
	Liters	4.69E+11	4.85E+11	4.85E+11	4.48E+11	

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table A-5: Liquid Release Point: Groundwater Remediation

Period: January 1, 2013 through December 31, 2013

Unit: Oyster Creek

Nuclides Released	Unit	Continuous Mode				Batch Mode			
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Sr-89	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Sr-90	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-134	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-137	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
I-131	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ni-63	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Fe-59	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Zn-65	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cr-51	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Zr-95	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Nb-95	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Mo-99	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Tc-99m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
La-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-141	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ag-110m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Fe-55	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-144	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period		<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Dissolved Entrained Gases									
Xe-133	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Tritium									
H-3	Ci	8.42E-02	7.04E-02	6.88E-02	5.84E-02	<LLD	<LLD	<LLD	<LLD
Gross Alpha									
Gross Alpha	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD

Appendix B
Solid Waste and Irradiated Fuel Shipments

Oyster Creek 2013 Annual Radioactive Effluent Release Report

A. Solid waste shipped offsite for burial or disposal (not irradiated fuel)

1. Type of waste

Types of Waste	Total Quantity (m ³)	Total Activity (Ci)	Period	Est. Total Error%
a. Spent resins, filter sludges, evaporator bottom, etc	6.20E+01	2.15E+02	2013	2.50E+01
b. Dry compressible waste, contaminated equip, etc	2.37E+02	6.48E-02	2013	2.50E+01
c. Irradiated components, control rods, etc	0.00E+00	0.00E+00	2013	2.50E+01
d. Other	1.32E+02	4.30E-02	2013	2.50E+01

Oyster Creek 2013 Annual Radioactive Effluent Release Report

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

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

Isotope	Waste Class A		Waste Class B	
	Curies	Percent	Curies	Percent
H-3	4.10E-02	9.35E-02	3.14E-03	1.84E-03
C-14	1.01E-01	2.30E-01	2.71E-02	1.59E-02
Cr-51				
P-32	2.02E-06	4.61E-06	1.30E-10	7.62E-11
Mn-54	3.85E+00	8.78E+00	3.01E+00	1.76E+00
Fe-55	2.22E+01	5.06E+01	1.07E+02	6.27E+01
Fe-59				
Co-57	2.96E-03	6.75E-03		
Co-58	1.83E-01	4.17E-01	5.74E-03	3.36E-03
Co-60	1.42E+01	3.24E+01	3.89E+01	2.28E+01
Ni-59			2.83E-03	1.66E-03
Ni-63	2.78E-01	6.34E-01	1.92E+00	1.13E+00
Zn-65	8.55E-01	1.95E+00	1.27E+00	7.44E-01
Sr-89	2.87E-04	6.54E-04	1.42E-05	8.32E-06
Sr-90	8.44E-03	1.92E-02	8.95E-02	5.25E-02
Nb-95				
Tc-99			8.01E-03	4.69E-03
Ag-110m				
Sb-125	1.30E-02	2.96E-02		
Cs-134	4.13E-04	9.42E-04	1.66E-02	9.73E-03
Cs-137	2.05E+00	4.67E+00	1.81E+01	1.06E+01
Ce-144	4.96E-02	1.13E-01	7.83E-02	4.59E-02
Pu-238	2.65E-04	6.04E-04	2.08E-03	1.22E-03
Pu-239	6.84E-05	1.56E-04	6.31E-04	3.70E-04
Pu-240			1.96E-04	1.15E-04
Pu-241	1.92E-02	4.38E-02	1.80E-01	1.05E-01
Am-241	2.11E-04	4.81E-04	3.27E-03	1.92E-03
Cm-242	4.93E-05	1.12E-04	9.70E-05	5.69E-05
Cm-243	1.54E-04	3.51E-04	1.56E-03	9.14E-04
Cm-244	1.53E-04	3.49E-04	1.53E-03	8.97E-04
Totals	4.39E+01	1.00E+02	1.71E+02	1.00E+02

Note: Grey fields are where results were not reported in the NRC Regulatory Guide 1.21 Report

Oyster Creek 2013 Annual Radioactive Effluent Release Report

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

Isotope	Waste Class A	
	Curies	Percent
H-3	7.86E-05	1.21E-01
C-14	5.83E-05	9.00E-02
Mn-54	7.73E-03	1.19E+01
Fe-55	4.17E-02	6.44E+01
Co-60	1.31E-02	2.02E+01
Ni-63	8.27E-04	1.28E+00
Zn-65	5.07E-04	7.83E-01
Tc-99	3.31E-05	5.11E-02
Sb-125	1.97E-04	3.04E-01
Cs-137	3.68E-04	5.68E-01
Ce-144	1.43E-04	2.21E-01
Pu-238	8.58E-07	1.32E-03
Pu-239	2.25E-07	3.47E-04
Pu-241	2.01E-05	3.10E-02
Am-241	9.49E-07	1.47E-03
Cm-242	3.62E-07	5.59E-04
Cm-243	7.28E-07	1.12E-03
Cm-244	7.27E-07	1.12E-03
Totals	6.48E-02	1.00E+02

Category C – Irradiated components, control rods, etc.

No Irradiated components, control rods, etc. shipped

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Category D - Other - Scrap Metal

Isotope	Waste Class A	
	Curies	Percent
H-3	5.25E-05	1.22E-01
C-14	3.89E-05	9.04E-02
Mn-54	5.09E-03	1.18E+01
Fe-55	2.77E-02	6.44E+01
Co-60	8.75E-03	2.03E+01
Ni-63	5.52E-04	1.28E+00
Zn-65	3.33E-04	7.74E-01
Tc-99	2.21E-05	5.14E-02
Sb-125	1.31E-04	3.04E-01
Cs-137	2.46E-04	5.72E-01
Ce-144	9.42E-05	2.19E-01
Pu-238	5.73E-07	1.33E-03
Pu-239	1.50E-07	3.49E-04
Pu-241	1.34E-05	3.11E-02
Am-241	6.34E-07	1.47E-03
Cm-242	2.36E-07	5.49E-04
Cm-243	4.86E-07	1.13E-03
Cm-244	4.85E-07	1.13E-03
Totals	4.30E-02	1.00E+02

Note: Grey fields are where results were not reported in the NRC Regulatory Guide 1.21 Report

2. Solid Waste (Disposition)

Number of Shipments	Mode of Transportation	Destination
10	Hittman Transport Co.	Barnwell Disposal Facility
9	Hittman Transport Co.	Duratek - Bear Creek
2	Hittman Transport Co.	Duratek Radwaste Processing, Inc.

B. Irradiated Fuel Shipments (disposition).

There were no irradiated fuel shipments

C. Changes to the Process Control Program

There were no changes to the Process Control Program in 2013

Appendix C
Radiological Impact to Man

Oyster Creek 2013 Annual Radioactive Effluent Release Report

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 member of the public was W sector at 483 meters
- Actual 2013 meteorology and measured gaseous effluent releases were used
- All significant pathways were assumed to be present
- Occupancy factor was considered 22.8% (40 hours/week for 50 weeks).

Liquid

- Doses calculated in the discharge canal at the Route 9 bridge
- Fish, shellfish and shoreline pathways doses calculated

40 CFR Part 190 Compliance

- Dosimetry measurements (minus average of control stations) measured direct radiation for the nearest member of the public. The nearest member of the public for direct radiation is considered an individual that works in the warehouse west of the site. As a worker, the individual is assumed to work 2,000 hours per year at this location.
- Nearest resident was at SE sector at 937 meters.
- The highest calculated dose for gamma air dose and liquid total body were summed for total body dose.
- The highest calculated dose for gamma air dose, child bone and liquid organ were summed for organ dose.
- The 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 total body doses to the population and average doses to individuals in the population from gaseous effluents to a distance of 50 miles from the site to be calculated.

Oyster Creek 2013 Annual Radioactive Effluent Release Report

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	3.60E-03	All	500	ESE	3.60E-02	10	mrad
Noble Gas	Beta – Air Dose	8.44E-04	All	500	ESE	4.22E-03	20	mrad
Noble Gas	Total Body (Gamma)	1.42E-03	All	937	SE	2.84E-02	5	mrem
Noble Gas	Skin (Beta)	1.77E-03	All	972	ESE	1.18E-02	15	mrem
Iodine, Particulate, Carbon-14 & Tritium	Bone	4.93E-01	Child	937	SE	3.29E+00	15	mrem
Liquid	Total body	1.37E-06	All	South Route 9 Bridge		4.57E-05	3	mrem
Liquid	Organ	1.37E-06	All			1.37E-05	10	mrem
Direct Radiation	Total Body	5.39E+00	All	483	W	2.16E+01	25	mrem
Direct Radiation	Total Body	<LLD	All	937	SE	<LLD	25	mrem
40 CFR Part 190 Compliance								
Warehouse Worker								
Total Dose	Total Body	5.39E+00	All	483	W	2.16E+01	25	mrem
Total Dose	Bone	5.50E+00	All	483	W	2.20E+01	25	mrem
Total Dose	Thyroid	5.39E+00	All	483	W	7.19E+00	75	mrem
Nearest Resident								
Total Dose	Total Body	3.60E-03	All	937	SE	1.44E-02	25	mrem
Total Dose	Bone	4.97E-01	All	937	SE	1.99E+00	25	mrem
Total Dose	Thyroid	3.60E-03	All	937	SE	4.80E-03	75	mrem

Appendix D
Meteorological Data

Oyster Creek 2013 Annual Radioactive Effluent Release Report

LIST OF METEOROLOGICAL DATA TABLES

		PAGE
Table D – 1	Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013	28
Table D – 2	Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013	35
Table D – 3	Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013	42
Table D – 4	Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013	49
Table D – 5	Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013	56
Table D – 6	Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013	63
Table D – 7	Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013	70
Table D – 8	Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013	77
Table D – 9	Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013	84
Table D – 10	Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013	92

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 1 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha

Period of Record: January - March 2013
 Stability Class - Extremely Unstable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	2	0	0	0	4
NNE	0	1	0	0	0	0	1
NE	0	3	0	0	0	0	3
ENE	0	1	4	0	0	0	5
E	0	2	2	0	0	0	4
ESE	0	2	2	0	0	0	4
SE	0	1	3	0	0	0	4
SSE	0	0	2	0	0	0	2
S	0	0	1	0	0	0	1
SSW	0	1	2	4	0	0	7
SW	0	3	6	1	0	0	10
WSW	0	0	8	2	0	0	10
W	0	6	8	7	0	0	21
WNW	0	1	44	23	0	0	68
NW	0	2	34	5	0	0	41
NNW	0	0	10	0	0	0	10
Variable	0	0	0	0	0	0	0
Total	0	25	128	42	0	0	195

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 1 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha

Period of Record: January - March 2013
 Stability Class - Moderately Unstable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	1	0	0	0	0	1
ENE	0	3	4	0	0	0	7
E	0	5	1	0	0	0	6
ESE	0	1	0	0	0	0	1
SE	0	0	1	0	0	0	1
SSE	0	0	3	3	0	0	6
S	0	1	1	0	0	0	2
SSW	0	1	0	1	0	0	2
SW	0	1	2	0	0	0	3
WSW	0	1	2	0	0	0	3
W	0	1	7	3	0	0	11
WNW	0	3	16	7	0	0	26
NW	0	0	15	6	0	0	21
NNW	0	2	4	2	0	0	8
Variable	0	0	0	0	0	0	0
Total	0	20	56	22	0	0	98

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 1 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha							
Period of Record: January - March 2013							
Stability Class - Slightly Unstable - 150Ft-33Ft Delta-T (F)							
Winds Measured at 33 Feet							
Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	1	0	0	0	0	1
ENE	0	3	3	0	0	0	6
E	0	1	0	0	0	0	1
ESE	0	1	0	0	0	0	1
SE	0	1	0	0	0	0	1
SSE	0	2	0	0	0	0	2
S	0	0	0	0	0	0	0
SSW	0	1	0	0	0	0	1
SW	0	0	1	0	0	0	1
WSW	0	0	4	0	0	0	4
W	0	2	5	2	0	0	9
WNW	0	5	8	2	0	0	15
NW	0	1	6	0	0	0	7
NNW	0	0	3	1	0	0	4
Variable	0	0	0	0	0	0	0
Total	0	18	30	5	0	0	53

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 1 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha

Period of Record: January - March 2013
Stability Class - Neutral - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	11	1	0	0	0	15
NNE	1	9	0	0	0	0	10
NE	2	12	1	5	0	0	20
ENE	1	7	10	7	0	0	25
E	1	3	1	0	0	0	5
ESE	1	8	0	0	0	0	9
SE	1	5	1	0	0	0	7
SSE	0	7	2	0	0	0	9
S	2	5	6	0	1	0	14
SSW	1	7	10	4	5	0	27
SW	1	5	4	2	0	0	12
WSW	2	5	1	0	0	0	8
W	3	5	19	4	0	0	31
WNW	1	24	28	15	0	0	68
NW	2	25	23	8	0	0	58
NNW	1	18	9	0	0	0	28
Variable	0	0	0	0	0	0	0
Total	23	156	116	45	6	0	346

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 1 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha							
Period of Record: January - March 2013							
Stability Class - Slightly Stable - 150Ft-33Ft Delta-T (F)							
Winds Measured at 33 Feet							
Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	5	25	8	4	0	0	42
NNE	10	14	12	7	1	0	44
NE	5	22	19	7	0	0	53
ENE	5	13	8	9	0	0	35
E	5	9	2	2	0	0	18
ESE	3	6	2	0	0	0	11
SE	4	13	1	1	0	0	19
SSE	5	14	8	10	0	0	37
S	7	14	9	3	2	0	35
SSW	8	19	25	3	1	0	56
SW	5	24	9	2	0	0	40
WSW	11	44	6	0	0	0	61
W	12	74	21	2	0	0	109
WNW	21	135	63	12	0	0	231
NW	19	83	37	1	0	0	140
NNW	4	44	37	1	0	0	86
Variable	0	0	0	0	0	0	0
Total	129	553	267	64	4	0	1017

Hours of calm in this stability class: 3
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 1 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha

Period of Record: January - March 2013
Stability Class - Moderately Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	2	0	0	0	0	3
NNE	1	0	0	0	0	0	1
NE	1	0	0	0	0	0	1
ENE	1	0	0	0	0	0	1
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	2	0	0	0	0	0	2
S	3	4	0	0	0	0	7
SSW	9	3	0	0	0	0	12
SW	9	15	0	0	0	0	24
WSW	15	24	0	0	0	0	39
W	13	39	0	1	0	0	53
WNW	5	43	1	0	0	0	49
NW	10	5	0	0	0	0	15
NNW	2	3	0	0	0	0	5
Variable	1	0	0	0	0	0	1
Total	73	138	1	1	0	0	213

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 1 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha

Period of Record: January - March 2013
Stability Class - Extremely Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	0	0	0	1
NNE	1	1	0	0	0	0	2
NE	1	0	0	0	0	0	1
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	3	0	0	0	0	0	3
SSE	1	0	0	0	0	0	1
S	8	0	0	0	0	0	8
SSW	6	0	0	0	0	0	6
SW	16	5	0	0	0	0	21
WSW	41	10	0	0	0	0	51
W	50	16	0	0	0	0	66
WNW	28	8	0	0	0	0	36
NW	18	2	0	0	0	0	20
NNW	8	2	0	0	0	0	10
Variable	0	0	0	0	0	0	0
Total	181	45	0	0	0	0	226

Hours of calm in this stability class: 2
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 2 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha

Period of Record: January - March 2013
 Stability Class - Extremely Unstable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	3	0	3
WNW	0	0	0	0	1	0	1
NW	0	0	0	0	4	1	5
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	0	0	8	1	9

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 2 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha

Period of Record: January - March 2013
 Stability Class - Moderately Unstable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	2	0	0	3
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	1	0	0	0	1
E	0	0	1	0	0	0	1
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	2	0	0	2
W	0	0	0	0	2	0	2
WNW	0	0	2	5	3	5	15
NW	0	0	3	6	5	7	21
NNW	0	0	0	3	1	0	4
Variable	0	0	0	0	0	0	0
Total	0	0	8	18	11	12	49

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 2 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha

Period of Record: January - March 2013
 Stability Class - Slightly Unstable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	1	3	0	0	6
NNE	0	1	0	0	0	0	1
NE	0	1	1	0	0	0	2
ENE	0	0	2	1	0	0	3
E	0	0	2	0	0	0	2
ESE	0	0	2	0	0	0	2
SE	0	0	0	0	0	0	0
SSE	0	0	0	1	0	0	1
S	0	0	0	2	0	0	2
SSW	0	0	0	0	1	1	2
SW	0	0	1	1	0	0	2
WSW	0	0	2	2	1	1	6
W	0	0	0	0	1	4	5
WNW	0	0	2	4	10	5	21
NW	0	0	2	18	8	8	36
NNW	0	0	0	6	3	1	10
Variable	0	0	0	0	0	0	0
Total	0	4	15	38	24	20	101

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 2 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha

Period of Record: January - March 2013
Stability Class - Neutral - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	5	18	14	3	0	41
NNE	2	10	17	4	2	2	37
NE	0	6	10	7	5	7	35
ENE	0	3	12	12	4	16	47
E	1	6	5	7	5	5	29
ESE	0	3	7	0	0	0	10
SE	0	4	6	1	0	0	11
SSE	0	4	5	1	4	0	14
S	0	4	13	1	1	1	20
SSW	1	8	6	7	7	13	42
SW	0	3	8	12	10	1	34
WSW	1	3	2	14	7	1	28
W	1	2	10	12	16	5	46
WNW	0	2	18	36	28	24	108
NW	1	3	19	83	34	35	175
NNW	0	3	19	29	37	5	93
Variable	0	0	0	0	0	0	0
Total	8	69	175	240	163	115	770

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 2 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha

Period of Record: January - March 2013
 Stability Class - Slightly Stable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	0	10	19	12	2	45
NNE	2	5	6	9	2	8	32
NE	0	5	5	7	2	8	27
ENE	0	0	1	5	3	14	23
E	1	0	3	11	5	3	23
ESE	1	2	5	12	1	0	21
SE	0	1	5	5	2	1	14
SSE	1	3	2	8	4	2	20
S	3	1	5	6	7	15	37
SSW	2	1	5	14	20	6	48
SW	0	1	13	13	22	9	58
WSW	0	4	8	15	9	0	36
W	0	2	3	31	32	8	76
WNW	0	3	12	54	94	3	166
NW	1	4	11	71	76	11	174
NNW	0	1	16	26	23	1	67
Variable	0	0	0	0	0	0	0
Total	13	33	110	306	314	91	867

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 2 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha

Period of Record: January - March 2013
Stability Class - Moderately Stable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	1	7	1	0	11
NNE	0	2	1	3	0	0	6
NE	1	3	1	1	0	0	6
ENE	0	1	0	1	1	0	3
E	0	0	0	0	0	0	0
ESE	0	0	3	0	0	0	3
SE	0	0	0	1	0	0	1
SSE	0	0	2	1	0	0	3
S	1	0	0	0	2	0	3
SSW	1	1	0	2	3	0	7
SW	0	0	3	10	8	5	26
WSW	0	1	5	4	2	0	12
W	0	1	8	13	8	0	30
WNW	0	1	3	18	16	3	41
NW	0	0	5	16	31	12	64
NNW	0	0	2	13	7	0	22
Variable	0	0	0	0	0	0	0
Total	3	12	34	90	79	20	238

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 2 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – March, 2013

Oyster Creek Alpha

Period of Record: January - March 2013
Stability Class - Extremely Stable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	4	6	2	0	0	12
NNE	0	3	4	2	0	0	9
NE	0	0	3	1	0	0	4
ENE	0	1	3	3	0	0	7
E	0	0	4	1	0	0	5
ESE	0	0	3	0	0	0	3
SE	0	0	2	0	0	0	2
SSE	0	0	3	1	0	0	4
S	0	0	0	1	0	0	1
SSW	0	0	0	1	0	0	1
SW	0	3	2	3	6	1	15
WSW	1	0	5	5	0	0	11
W	0	4	6	4	2	0	16
WNW	1	1	3	0	1	0	6
NW	0	2	1	5	5	0	13
NNW	0	0	3	4	3	0	10
Variable	0	0	0	0	0	0	0
Total	2	18	48	33	17	1	119

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 3 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
Stability Class - Extremely Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	3	0	0	0	6
NNE	0	0	3	0	0	0	3
NE	0	4	15	0	0	0	19
ENE	0	10	53	3	0	0	66
E	0	6	20	0	0	0	26
ESE	0	9	27	0	0	0	36
SE	0	18	37	0	0	0	55
SSE	0	5	36	2	0	0	43
S	1	9	65	36	0	0	111
SSW	1	8	12	7	0	0	28
SW	0	15	19	0	0	0	34
WSW	0	24	23	2	0	0	49
W	1	15	18	4	0	0	38
WNW	0	7	43	13	0	0	63
NW	0	12	14	1	0	0	27
NNW	1	7	7	0	0	0	15
Variable	0	0	0	0	0	0	0
Total	4	152	395	68	0	0	619

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 3 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
 Stability Class - Moderately Unstable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	3	0	0	0	3
NNE	0	2	0	0	0	0	2
NE	0	2	2	0	0	0	4
ENE	0	3	7	3	0	0	13
E	0	2	2	2	0	0	6
ESE	0	2	1	0	0	0	3
SE	0	5	0	0	0	0	5
SSE	1	2	4	0	0	0	7
S	0	1	5	1	0	0	7
SSW	0	2	5	2	0	0	9
SW	0	1	1	0	0	0	2
WSW	1	8	3	0	0	0	12
W	0	4	1	0	0	0	5
WNW	1	4	7	0	0	0	12
NW	1	3	6	0	0	0	10
NNW	0	2	1	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	4	43	48	8	0	0	103

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 3 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
 Stability Class - Slightly Unstable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	0	0	0	1
NNE	0	1	1	0	0	0	2
NE	0	2	2	0	0	0	4
ENE	0	0	2	2	0	0	4
E	0	4	0	0	0	0	4
ESE	0	2	0	0	0	0	2
SE	0	0	0	0	0	0	0
SSE	0	2	3	0	0	0	5
S	1	1	4	1	0	0	7
SSW	0	2	0	1	0	0	3
SW	0	2	0	0	0	0	2
WSW	0	5	0	0	0	0	5
W	1	1	1	0	0	0	3
WNW	0	2	0	0	0	0	2
NW	0	1	3	3	0	0	7
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	2	26	16	7	0	0	51

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 3 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
Stability Class - Neutral - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	6	2	0	0	0	9
NNE	0	6	8	0	0	0	14
NE	1	16	11	0	0	0	28
ENE	1	7	8	8	0	0	24
E	0	15	5	1	0	0	21
ESE	2	14	14	0	0	0	30
SE	0	20	17	0	0	0	37
SSE	1	15	13	0	0	0	29
S	2	16	34	5	0	0	57
SSW	2	22	22	3	0	0	49
SW	1	5	3	0	0	0	9
WSW	2	14	9	0	0	0	25
W	1	7	2	0	0	0	10
WNW	0	5	20	0	0	0	25
NW	0	6	14	0	0	0	20
NNW	1	2	3	0	0	0	6
Variable	0	0	0	0	0	0	0
Total	15	176	185	17	0	0	393

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 3 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
Stability Class - Slightly Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	4	3	0	0	0	11
NNE	2	8	0	0	0	0	10
NE	6	17	6	0	0	0	29
ENE	4	15	17	0	0	0	36
E	2	20	7	0	0	0	29
ESE	1	18	2	0	0	0	21
SE	3	12	5	0	0	0	20
SSE	2	14	8	2	0	0	26
S	8	29	20	0	0	0	57
SSW	13	57	29	2	0	0	101
SW	7	63	9	0	0	0	79
WSW	16	48	4	0	0	0	68
W	10	18	4	0	0	0	32
WNW	8	26	10	0	0	0	44
NW	3	15	5	0	0	0	23
NNW	4	24	3	0	0	0	31
Variable	0	0	0	0	0	0	0
Total	93	388	132	4	0	0	617

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 3 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
 Stability Class - Moderately Stable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	1	0	0	0	0	2
NNE	3	0	0	0	0	0	3
NE	2	1	0	0	0	0	3
ENE	2	1	0	0	0	0	3
E	1	0	0	0	0	0	1
ESE	2	0	0	0	0	0	2
SE	2	1	0	0	0	0	3
SSE	7	2	0	0	0	0	9
S	15	2	0	0	0	0	17
SSW	6	2	0	0	0	0	8
SW	6	7	0	0	0	0	13
WSW	13	15	0	0	0	0	28
W	11	14	0	0	0	0	25
WNW	6	8	0	0	0	0	14
NW	5	8	0	0	0	0	13
NNW	3	5	0	0	0	0	8
Variable	0	0	0	0	0	0	0
Total	85	67	0	0	0	0	152

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 3 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
 Stability Class - Extremely Stable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	0	0	0	0	0	4
NNE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	2	1	0	0	0	0	3
E	0	0	0	0	0	0	0
ESE	1	0	0	0	0	0	1
SE	0	0	0	0	0	0	0
SSE	2	0	0	0	0	0	2
S	7	0	0	0	0	0	7
SSW	9	2	0	0	0	0	11
SW	11	3	0	0	0	0	14
WSW	39	15	0	0	0	0	54
W	64	8	0	0	0	0	72
WNW	26	6	1	0	0	0	33
NW	19	5	0	0	0	0	24
NNW	7	6	0	0	0	0	13
Variable	0	0	0	0	0	0	0
Total	191	47	1	0	0	0	239

Hours of calm in this stability class: 3
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 4 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
 Stability Class - Extremely Unstable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	1	0	0	1
ENE	0	0	0	3	1	0	4
E	0	0	2	0	0	0	2
ESE	0	0	0	0	0	0	0
SE	0	0	0	1	0	0	1
SSE	0	0	0	2	0	0	2
S	0	0	1	5	1	0	7
SSW	0	0	0	5	7	1	13
SW	0	0	2	5	0	0	7
WSW	0	0	1	2	1	0	4
W	0	0	5	1	0	0	6
WNW	0	0	1	0	15	1	17
NW	0	0	0	3	2	1	6
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	0	12	28	27	3	70

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 4 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
 Stability Class - Moderately Unstable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	1	3	0	0	4
ENE	0	0	4	9	4	1	18
E	0	0	4	4	1	0	9
ESE	0	0	1	1	0	0	2
SE	0	0	4	1	0	0	5
SSE	0	1	5	5	1	0	12
S	0	0	2	9	1	0	12
SSW	0	0	6	9	9	3	27
SW	0	0	4	5	0	0	9
WSW	0	0	6	11	2	0	19
W	0	0	8	5	2	0	15
WNW	0	0	2	4	11	2	19
NW	0	0	4	6	0	0	10
NNW	0	0	1	2	0	0	3
Variable	0	0	0	0	0	0	0
Total	0	1	52	74	31	6	164

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 4 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
 Stability Class - Slightly Unstable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	2	0	0	2
NNE	0	0	0	0	0	0	0
NE	0	1	3	5	0	1	10
ENE	0	0	1	6	3	0	10
E	0	0	2	5	2	0	9
ESE	0	1	1	2	0	0	4
SE	0	2	5	2	0	0	9
SSE	0	0	9	4	0	0	13
S	0	0	6	13	1	0	20
SSW	0	1	3	12	8	2	26
SW	0	1	4	2	0	0	7
WSW	0	1	8	2	2	0	13
W	0	2	7	8	1	0	18
WNW	0	0	1	11	6	1	19
NW	0	0	6	6	1	0	13
NNW	0	0	4	3	1	0	8
Variable	0	0	0	0	0	0	0
Total	0	9	60	83	25	4	181

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 4 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
Stability Class - Neutral - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	5	10	1	0	16
NNE	0	2	10	6	0	0	18
NE	0	0	16	15	5	0	36
ENE	0	1	21	32	14	16	84
E	0	2	24	15	8	0	49
ESE	1	5	32	28	1	0	67
SE	0	6	31	24	11	0	72
SSE	0	3	21	13	7	0	44
S	0	5	18	37	5	1	66
SSW	0	7	14	48	33	11	113
SW	0	9	10	12	2	0	33
WSW	1	8	11	12	3	0	35
W	0	7	17	11	4	0	39
WNW	1	4	11	9	12	1	38
NW	0	2	10	11	25	16	64
NNW	0	3	5	13	2	0	23
Variable	0	0	0	0	0	0	0
Total	3	64	256	296	133	45	797

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 2
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 4 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
 Stability Class - Slightly Stable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	4	8	3	0	15
NNE	0	4	8	5	0	0	17
NE	0	3	5	3	0	0	11
ENE	0	2	7	11	5	5	30
E	0	1	3	10	6	0	20
ESE	0	1	4	4	3	1	13
SE	0	1	9	6	0	0	16
SSE	0	5	10	16	5	2	38
S	0	3	10	17	6	0	36
SSW	0	1	14	37	38	2	92
SW	0	2	12	42	52	4	112
WSW	1	5	10	16	24	4	60
W	1	3	8	20	14	0	46
WNW	0	4	4	14	16	0	38
NW	0	1	2	10	18	1	32
NNW	0	1	7	9	17	0	34
Variable	0	0	0	0	0	0	0
Total	2	37	117	228	207	19	610

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 4 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
 Stability Class - Moderately Stable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	1	2	0	4
NNE	0	0	2	3	0	0	5
NE	0	0	4	1	0	0	5
ENE	0	0	0	5	1	0	6
E	0	0	1	0	0	0	1
ESE	0	0	0	0	0	0	0
SE	0	0	2	0	0	0	2
SSE	0	1	1	2	0	0	4
S	0	5	3	13	0	0	21
SSW	0	1	4	6	0	0	11
SW	0	0	3	7	6	0	16
WSW	0	2	6	5	14	5	32
W	0	0	1	9	5	3	18
WNW	1	1	2	8	13	4	29
NW	0	0	3	11	8	0	22
NNW	0	0	1	6	12	1	20
Variable	0	0	0	0	0	0	0
Total	1	11	33	77	61	13	196

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 4 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, April – June, 2013

Oyster Creek Alpha

Period of Record: April - June 2013
Stability Class - Extremely Stable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	4	3	0	7
NNE	0	0	0	3	2	0	5
NE	0	0	5	2	0	0	7
ENE	0	0	1	3	0	0	4
E	0	0	1	1	0	0	2
ESE	0	1	1	0	0	0	2
SE	0	0	1	0	0	0	1
SSE	0	0	5	1	0	0	6
S	0	2	4	2	0	0	8
SSW	0	5	4	11	0	0	20
SW	1	2	4	4	1	0	12
WSW	0	2	4	12	7	0	25
W	0	2	3	14	4	0	23
WNW	0	0	1	3	4	0	8
NW	1	0	3	8	4	1	17
NNW	0	0	2	1	5	2	10
Variable	0	0	0	0	0	0	0
Total	2	14	39	69	30	3	157

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 5 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
 Stability Class - Extremely Unstable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	7	0	0	0	0	8
NNE	1	8	4	0	0	0	13
NE	1	8	21	0	0	0	30
ENE	1	14	20	0	0	0	35
E	1	12	3	0	0	0	16
ESE	2	18	11	0	0	0	31
SE	0	12	38	0	0	0	50
SSE	0	7	33	1	0	0	41
S	0	5	57	8	0	0	70
SSW	1	18	17	0	0	0	36
SW	0	31	32	0	0	0	63
WSW	2	31	28	0	0	0	61
W	0	35	8	0	0	0	43
WNW	0	34	15	0	0	0	49
NW	0	36	29	0	0	0	65
NNW	0	23	4	0	0	0	27
Variable	0	0	0	0	0	0	0
Total	10	299	320	9	0	0	638

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 5
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 5 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
 Stability Class - Moderately Unstable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	0	0	0	1
NNE	0	2	0	0	0	0	2
NE	0	3	2	0	0	0	5
ENE	1	3	0	0	0	0	4
E	1	1	0	0	0	0	2
ESE	0	1	0	0	0	0	1
SE	0	1	3	0	0	0	4
SSE	0	4	5	0	0	0	9
S	0	1	1	0	0	0	2
SSW	2	1	3	0	0	0	6
SW	0	3	2	0	0	0	5
WSW	1	5	0	0	0	0	6
W	0	8	0	0	0	0	8
WNW	2	5	0	0	0	0	7
NW	1	7	4	0	0	0	12
NNW	0	6	1	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	8	52	21	0	0	0	81

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 5 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
 Stability Class - Slightly Unstable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	1	0	0	0	0	1
NE	0	1	2	0	0	0	3
ENE	0	1	0	0	0	0	1
E	0	1	0	0	0	0	1
ESE	0	3	0	0	0	0	3
SE	0	2	0	0	0	0	2
SSE	0	2	1	0	0	0	3
S	0	3	3	1	0	0	7
SSW	0	2	4	0	0	0	6
SW	0	3	0	0	0	0	3
WSW	1	4	1	0	0	0	6
W	1	3	1	0	0	0	5
WNW	2	3	1	0	0	0	6
NW	0	0	3	0	0	0	3
NNW	0	2	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	4	31	16	1	0	0	52

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 5 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
 Stability Class - Neutral - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	11	0	0	0	0	13
NNE	2	10	4	0	0	0	16
NE	1	6	12	0	0	0	19
ENE	0	8	4	0	0	0	12
E	2	4	0	0	0	0	6
ESE	0	2	0	0	0	0	2
SE	0	7	1	0	0	0	8
SSE	1	10	3	0	0	0	14
S	0	38	38	0	0	0	76
SSW	2	17	14	0	0	0	33
SW	3	20	0	0	0	0	23
WSW	3	16	2	0	0	0	21
W	3	9	0	0	0	0	12
WNW	2	7	0	0	0	0	9
NW	4	13	3	0	0	0	20
NNW	1	11	0	0	0	0	12
Variable	0	0	0	0	0	0	0
Total	26	189	81	0	0	0	296

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 5 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
Stability Class - Slightly Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	7	10	1	0	0	0	18
NNE	6	3	1	0	0	0	10
NE	5	14	3	0	0	0	22
ENE	7	6	0	0	0	0	13
E	2	6	0	0	0	0	8
ESE	3	4	0	0	0	0	7
SE	6	4	0	0	0	0	10
SSE	7	10	1	0	0	0	18
S	18	35	13	0	0	0	66
SSW	13	83	7	0	0	0	103
SW	13	93	2	0	0	0	108
WSW	20	73	0	0	0	0	93
W	13	8	0	0	0	0	21
WNW	10	13	0	0	0	0	23
NW	9	22	2	0	0	0	33
NNW	2	13	0	0	0	0	15
Variable	0	0	0	0	0	0	0
Total	141	397	30	0	0	0	568

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 2
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 5 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
 Stability Class - Moderately Stable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	1	0	0	0	0	4
NNE	5	2	0	0	0	0	7
NE	2	1	0	0	0	0	3
ENE	0	0	0	0	0	0	0
E	1	0	0	0	0	0	1
ESE	0	0	0	0	0	0	0
SE	2	0	0	0	0	0	2
SSE	4	0	0	0	0	0	4
S	11	3	1	0	0	0	15
SSW	8	3	0	0	0	0	11
SW	14	12	0	0	0	0	26
WSW	13	18	0	0	0	0	31
W	13	2	0	0	0	0	15
WNW	7	7	0	0	0	0	14
NW	6	16	0	0	0	0	22
NNW	9	6	0	0	0	0	15
Variable	0	0	0	0	0	0	0
Total	98	71	1	0	0	0	170

Hours of calm in this stability class: 3
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 5 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
 Stability Class - Extremely Stable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	6	1	0	0	0	0	7
NNE	3	1	0	0	0	0	4
NE	0	0	0	0	0	0	0
ENE	0	2	0	0	0	0	2
E	1	0	0	0	0	0	1
ESE	0	0	0	0	0	0	0
SE	1	0	0	0	0	0	1
SSE	2	0	0	0	0	0	2
S	4	0	0	0	0	0	4
SSW	7	0	0	0	0	0	7
SW	11	0	0	0	0	0	11
WSW	61	8	0	0	0	0	69
W	103	5	0	0	0	0	108
WNW	62	9	0	0	0	0	71
NW	49	13	0	0	0	0	62
NNW	12	7	0	0	0	0	19
Variable	0	0	0	0	0	0	0
Total	322	46	0	0	0	0	368

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 6 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
Stability Class - Extremely Unstable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	1	1	0	0	2
NE	0	0	1	8	0	0	9
ENE	0	0	0	6	0	0	6
E	0	0	4	0	0	0	4
ESE	0	0	3	0	0	0	3
SE	0	0	6	1	0	0	7
SSE	0	0	0	2	0	0	2
S	0	0	0	6	0	0	6
SSW	0	0	0	4	0	0	4
SW	0	0	6	4	1	0	11
WSW	0	0	3	22	1	0	26
W	0	0	6	1	0	0	7
WNW	0	2	7	2	0	0	11
NW	0	0	6	7	0	0	13
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	2	43	64	2	0	111

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 6 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
 Stability Class - Moderately Unstable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	3	0	0	0	3
NNE	0	0	3	1	0	0	4
NE	0	0	2	6	0	0	8
ENE	0	0	4	7	0	0	11
E	0	2	2	1	0	0	5
ESE	0	3	5	0	0	0	8
SE	0	1	17	1	0	0	19
SSE	0	1	6	7	0	0	14
S	0	0	2	9	4	0	15
SSW	0	1	7	8	2	0	18
SW	0	1	8	6	0	0	15
WSW	0	4	6	9	1	0	20
W	0	2	8	3	0	0	13
WNW	0	3	13	4	0	0	20
NW	0	3	11	13	3	0	30
NNW	0	1	6	2	0	0	9
Variable	0	0	0	0	0	0	0
Total	0	22	103	77	10	0	212

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 6 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
Stability Class - Slightly Unstable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	1	2	0	0	0	4
NNE	0	1	4	0	0	0	5
NE	0	2	1	5	0	0	8
ENE	0	2	3	2	0	0	7
E	0	0	4	1	0	0	5
ESE	0	1	3	0	0	0	4
SE	0	2	9	1	0	0	12
SSE	0	0	8	3	1	0	12
S	0	0	5	5	0	0	10
SSW	0	0	3	14	5	0	22
SW	0	1	3	4	0	0	8
WSW	0	2	6	13	0	0	21
W	0	2	4	4	1	0	11
WNW	0	4	5	3	0	0	12
NW	0	2	11	8	2	0	23
NNW	0	3	3	4	0	0	10
Variable	0	0	0	0	0	0	0
Total	1	23	74	67	9	0	174

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 6 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
 Stability Class - Neutral - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	2	10	4	0	0	17
NNE	0	3	7	11	0	0	21
NE	0	4	9	20	7	0	40
ENE	0	7	8	13	3	3	34
E	0	8	6	1	0	0	15
ESE	0	8	1	0	0	0	9
SE	1	7	7	2	1	0	18
SSE	0	3	14	13	1	0	31
S	1	2	34	17	10	0	64
SSW	0	4	15	68	13	0	100
SW	1	6	10	24	0	0	41
WSW	0	5	13	19	2	0	39
W	1	8	20	10	0	0	39
WNW	0	5	11	8	0	0	24
NW	0	8	14	17	3	0	42
NNW	0	2	18	10	1	0	31
Variable	0	0	0	0	0	0	0
Total	5	82	197	237	41	3	565

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 5
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 6 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
Stability Class - Slightly Stable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	4	13	1	0	21
NNE	0	0	6	3	1	0	10
NE	0	1	8	12	2	0	23
ENE	1	6	9	6	0	0	22
E	0	5	9	0	0	0	14
ESE	0	1	0	1	0	0	2
SE	0	5	4	0	0	0	9
SSE	2	8	12	4	0	1	27
S	0	3	14	20	3	0	40
SSW	1	3	20	64	7	0	95
SW	0	2	19	87	28	0	136
WSW	0	7	5	28	34	0	74
W	0	0	4	25	10	0	39
WNW	0	2	10	5	1	0	18
NW	1	5	9	16	4	0	35
NNW	0	3	4	5	12	0	24
Variable	0	0	0	0	0	0	0
Total	5	54	137	289	103	1	589

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 6 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
 Stability Class - Moderately Stable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	3	5	8	1	17
NNE	0	1	5	5	0	0	11
NE	1	0	4	5	0	0	10
ENE	0	0	1	5	0	0	6
E	1	1	1	0	0	0	3
ESE	0	3	0	0	0	0	3
SE	1	5	0	0	0	0	6
SSE	0	2	5	0	0	0	7
S	0	2	2	7	0	0	11
SSW	0	3	4	5	2	0	14
SW	1	2	1	17	16	1	38
WSW	0	3	3	11	24	0	41
W	0	1	1	5	19	0	26
WNW	2	0	1	5	6	0	14
NW	0	1	1	7	11	0	20
NNW	0	0	1	11	20	2	34
Variable	0	0	0	0	0	0	0
Total	6	24	33	88	106	4	261

Hours of calm in this stability class: 1
 Hours of missing wind measurements in this stability class: 2
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 6 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, July – September, 2013

Oyster Creek Alpha

Period of Record: July - September 2013
 Stability Class - Extremely Stable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	2	6	4	0	13
NNE	0	0	6	12	0	0	18
NE	2	0	10	4	0	0	16
ENE	0	1	8	5	0	0	14
E	1	6	7	2	0	0	16
ESE	0	4	0	0	0	0	4
SE	1	3	0	0	0	0	4
SSE	0	2	0	0	0	0	2
S	0	2	1	1	0	0	4
SSW	1	6	11	5	0	0	23
SW	1	5	3	8	3	1	21
WSW	0	2	6	6	4	2	20
W	1	3	7	13	4	0	28
WNW	0	2	4	3	2	0	11
NW	1	2	4	7	9	0	23
NNW	0	6	10	9	17	4	46
Variable	0	0	0	0	0	0	0
Total	8	45	79	81	43	7	263

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 24

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 7 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
 Stability Class - Extremely Unstable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	0	0	0	0	3
NNE	1	1	3	0	0	0	5
NE	0	18	12	2	0	0	32
ENE	0	6	4	0	0	0	10
E	0	5	0	0	0	0	5
ESE	0	5	1	0	0	0	6
SE	0	7	0	0	0	0	7
SSE	0	3	4	0	0	0	7
S	0	0	6	3	0	0	9
SSW	0	0	3	0	0	0	3
SW	0	3	5	2	0	0	10
WSW	0	14	6	0	0	0	20
W	0	4	17	3	0	0	24
WNW	0	12	34	1	0	0	47
NW	0	3	12	9	0	0	24
NNW	0	3	5	1	0	0	9
Variable	0	0	0	0	0	0	0
Total	1	87	112	21	0	0	221

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 7 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
Stability Class - Moderately Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	0	0	0	0	3
NNE	0	2	1	0	0	0	3
NE	0	4	4	0	0	0	8
ENE	0	2	0	0	0	0	2
E	0	5	1	0	0	0	6
ESE	0	1	1	0	0	0	2
SE	0	3	1	0	0	0	4
SSE	0	3	1	0	0	0	4
S	0	2	3	1	0	0	6
SSW	0	0	1	2	0	0	3
SW	0	5	2	0	0	0	7
WSW	0	7	7	0	0	0	14
W	0	3	4	1	0	0	8
WNW	0	4	9	2	0	0	15
NW	0	1	1	3	0	0	5
NNW	0	6	5	0	0	0	11
Variable	0	0	0	0	0	0	0
Total	0	51	41	9	0	0	101

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 7 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
Stability Class - Slightly Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	2	1	0	0	0	3
NE	0	0	3	0	0	0	3
ENE	0	2	1	0	0	0	3
E	0	2	0	0	0	0	2
ESE	0	2	0	0	0	0	2
SE	0	2	0	0	0	0	2
SSE	0	0	0	0	0	0	0
S	0	0	1	0	0	0	1
SSW	0	0	2	0	0	0	2
SW	0	4	1	0	0	0	5
WSW	1	1	4	0	0	0	6
W	0	2	6	0	0	0	8
WNW	0	1	4	2	0	0	7
NW	1	1	4	0	0	0	6
NNW	0	1	2	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	2	20	29	2	0	0	53

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 7 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
 Stability Class - Neutral - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	6	14	1	0	0	0	21
NNE	3	8	2	0	0	0	13
NE	1	7	26	0	0	0	34
ENE	4	9	0	0	0	0	13
E	2	6	1	0	0	0	9
ESE	2	11	0	0	0	0	13
SE	3	11	0	0	0	0	14
SSE	5	4	4	0	0	0	13
S	3	9	9	3	1	0	25
SSW	5	5	14	3	0	0	27
SW	4	17	12	1	0	0	34
WSW	2	16	8	0	0	0	26
W	1	19	11	0	0	0	31
WNW	2	18	22	5	0	0	47
NW	1	10	14	1	0	0	26
NNW	4	24	13	1	0	0	42
Variable	0	0	0	0	0	0	0
Total	48	188	137	14	1	0	388

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 7 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
 Stability Class - Slightly Stable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	6	0	0	0	0	9
NNE	6	5	7	0	0	0	18
NE	8	10	60	2	0	0	80
ENE	3	6	10	0	0	0	19
E	4	6	10	0	0	0	20
ESE	1	3	3	1	0	0	8
SE	8	3	0	1	0	0	12
SSE	8	6	3	2	0	0	19
S	13	19	12	1	0	0	45
SSW	7	37	34	12	0	0	90
SW	4	72	9	1	0	0	86
WSW	9	55	2	1	0	0	67
W	7	52	5	1	0	0	65
WNW	10	44	28	3	0	0	85
NW	7	34	15	2	0	0	58
NNW	6	31	9	0	0	0	46
Variable	1	0	0	0	0	0	1
Total	105	389	207	27	0	0	728

Hours of calm in this stability class: 1
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 7 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
 Stability Class - Moderately Stable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	10	2	0	0	0	0	12
NNE	4	0	0	0	0	0	4
NE	2	1	2	0	0	0	5
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	1	0	0	0	0	0	1
SE	5	1	0	0	0	0	6
SSE	3	1	0	0	0	0	4
S	5	2	0	0	0	0	7
SSW	2	3	0	0	0	0	5
SW	12	10	0	0	0	0	22
WSW	14	31	0	0	0	0	45
W	17	31	0	0	0	0	48
WNW	17	13	1	0	0	0	31
NW	17	18	0	0	0	0	35
NNW	7	12	0	0	0	0	19
Variable	0	0	0	0	0	0	0
Total	116	125	3	0	0	0	244

Hours of calm in this stability class: 1
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 7 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
 Stability Class - Extremely Stable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	6	2	0	0	0	0	8
NNE	3	0	0	0	0	0	3
NE	0	1	0	0	0	0	1
ENE	1	0	0	0	0	0	1
E	1	0	0	0	0	0	1
ESE	1	0	0	0	0	0	1
SE	0	0	0	0	0	0	0
SSE	1	0	0	0	0	0	1
S	2	1	0	0	0	0	3
SSW	6	0	0	0	0	0	6
SW	21	8	0	0	0	0	29
WSW	98	28	0	0	0	0	126
W	88	34	0	0	0	0	122
WNW	53	6	0	0	0	0	59
NW	56	7	0	0	0	0	63
NNW	26	10	0	0	0	0	36
Variable	1	0	0	0	0	0	1
Total	364	97	0	0	0	0	461

Hours of calm in this stability class: 5
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 5

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 8 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
 Stability Class - Extremely Unstable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	1	0	0	0	1
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	2	1	1	0	0	4
W	0	0	0	2	0	0	2
WNW	0	0	1	3	0	0	4
NW	0	0	0	1	0	0	1
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	2	3	7	0	0	12

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 8 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
Stability Class - Moderately Unstable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	7	3	1	2	13
ENE	0	0	0	3	0	0	3
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	1	0	0	0	1
SSE	0	1	0	0	0	0	1
S	0	0	1	2	0	0	3
SSW	0	0	0	0	0	0	0
SW	0	0	1	0	1	1	3
WSW	0	0	3	0	0	0	3
W	0	0	1	1	0	0	2
WNW	0	0	2	9	0	0	11
NW	0	0	2	3	4	3	12
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	1	18	21	6	6	52

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 8 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
Stability Class - Slightly Unstable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	1	2	0	0	3
NE	0	0	10	2	1	3	16
ENE	0	0	0	2	0	0	2
E	0	0	0	0	0	0	0
ESE	0	1	0	1	0	0	2
SE	0	1	1	0	0	0	2
SSE	0	0	5	1	0	0	6
S	0	0	1	1	0	1	3
SSW	0	0	1	0	0	1	2
SW	0	1	0	2	1	0	4
WSW	0	1	6	2	0	0	9
W	0	1	4	1	7	2	15
WNW	0	1	3	11	10	1	26
NW	0	0	4	8	4	7	23
NNW	0	0	1	4	1	1	7
Variable	0	0	0	0	0	0	0
Total	0	6	37	37	24	16	120

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 8 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
 Stability Class - Neutral - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	5	14	14	0	0	33
NNE	1	2	11	6	0	0	20
NE	0	10	11	2	16	36	75
ENE	1	6	8	5	0	0	20
E	1	5	6	3	0	0	15
ESE	1	11	9	4	0	0	25
SE	0	8	6	0	0	0	14
SSE	0	6	4	1	0	0	11
S	0	6	10	6	3	4	29
SSW	1	6	6	15	17	12	57
SW	0	8	8	19	22	4	61
WSW	0	8	14	21	11	1	55
W	1	2	12	31	12	3	61
WNW	1	0	13	35	27	19	95
NW	0	4	5	26	24	15	74
NNW	1	4	10	22	21	3	61
Variable	0	0	0	0	0	0	0
Total	8	91	147	210	153	97	706

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 8 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
 Stability Class - Slightly Stable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	1	4	5	4	0	15
NNE	0	0	8	1	0	0	9
NE	1	4	10	9	11	41	76
ENE	0	3	9	6	9	6	33
E	0	0	5	3	9	7	24
ESE	0	5	5	3	1	4	18
SE	0	5	7	2	1	2	17
SSE	0	3	4	2	1	3	13
S	0	1	9	16	5	2	33
SSW	0	3	5	18	18	16	60
SW	0	2	5	38	54	3	102
WSW	0	0	3	14	21	3	41
W	0	2	5	25	26	0	58
WNW	0	0	4	24	43	1	72
NW	0	0	6	16	26	2	50
NNW	0	3	2	12	14	0	31
Variable	0	0	0	0	0	0	0
Total	2	32	91	194	243	90	652

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 8 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
Stability Class - Moderately Stable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	1	17	8	0	27
NNE	0	4	5	5	2	0	16
NE	0	1	9	5	0	0	15
ENE	0	1	2	7	0	0	10
E	0	0	8	2	0	0	10
ESE	0	0	7	1	0	0	8
SE	0	2	4	2	0	0	8
SSE	1	1	3	1	1	0	7
S	0	1	8	4	0	0	13
SSW	0	1	8	3	0	0	12
SW	1	2	2	8	6	2	21
WSW	0	1	1	4	8	4	18
W	0	2	5	10	18	6	41
WNW	1	2	5	16	32	11	67
NW	1	1	6	10	25	1	44
NNW	0	3	4	13	11	4	35
Variable	0	0	0	0	0	0	0
Total	4	23	78	108	111	28	352

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 8 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, October – December, 2013

Oyster Creek Alpha

Period of Record: October – December 2013
Stability Class - Extremely Stable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	2	3	4	0	0	10
NNE	0	0	2	6	0	0	8
NE	0	1	11	10	3	0	25
ENE	0	2	6	3	0	0	11
E	0	1	15	7	0	0	23
ESE	0	1	5	0	0	0	6
SE	1	1	9	0	0	0	11
SSE	1	2	8	0	0	0	11
S	0	4	1	0	0	0	5
SSW	1	0	1	3	2	1	8
SW	0	1	1	7	5	2	16
WSW	0	1	3	18	11	6	39
W	2	0	7	16	14	2	41
WNW	0	3	2	22	24	4	55
NW	2	5	3	10	9	0	29
NNW	0	6	2	3	0	0	11
Variable	1	0	0	0	0	0	1
Total	9	30	79	109	68	15	310

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 4

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 9 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
Stability Class - All Stabilities - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	1	21	35	39	76	24	4	5	3	0	0	208
NNE	0	17	30	26	56	30	23	6	5	2	0	195
NE	1	9	24	30	97	108	85	50	7	1	0	412
ENE	1	10	17	36	62	106	57	42	12	0	0	343
E	0	6	15	25	67	59	19	7	1	0	0	199
ESE	1	3	14	23	74	65	16	2	0	0	0	198
SE	0	13	24	29	72	101	36	1	1	0	0	277
SSE	1	17	32	29	57	80	61	33	9	0	0	319
S	2	40	61	41	116	148	133	84	36	2	3	666
SSW	0	24	76	68	188	145	86	31	33	6	1	658
SW	1	40	84	145	234	132	43	15	2	0	0	696
WSW	4	95	238	260	237	124	36	13	1	0	0	1008
W	2	145	244	170	227	114	52	26	23	0	0	1003
WNW	5	99	141	136	255	227	142	109	42	0	0	1156
NW	3	77	128	139	180	168	110	38	17	0	0	860
NNW	2	37	56	95	146	96	43	13	2	0	0	490
Tot	24	653	1219	1291	2144	1727	946	475	194	11	4	8688
Hours of Calm					18							
Hours of Variable Direction					3							
Hours of Valid Data					8709							
Hours of Missing Data					51							
Hours in Period					8760							

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 9 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
 Stability Class - Extremely Unstable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	0	1	0	14	6	0	0	0	0	0	21
NNE	0	0	1	2	8	4	7	0	0	0	0	22
NE	0	0	1	1	16	49	6	11	0	0	0	84
ENE	0	0	0	3	16	49	36	12	0	0	0	116
E	0	0	0	1	14	26	8	2	0	0	0	51
ESE	0	0	2	2	23	41	9	0	0	0	0	77
SE	0	0	0	1	21	68	26	0	0	0	0	116
SSE	0	0	0	1	8	31	38	13	2	0	0	93
S	0	0	1	0	8	36	57	64	25	0	0	191
SSW	0	0	0	2	21	24	13	4	10	0	0	74
SW	0	0	0	7	27	53	24	6	0	0	0	117
WSW	0	0	1	5	45	53	27	8	1	0	0	140
W	0	0	1	6	36	39	20	13	11	0	0	126
WNW	0	0	0	6	29	69	52	54	17	0	0	227
NW	0	0	0	5	31	58	44	9	10	0	0	157
NNW	0	0	1	6	22	23	6	3	0	0	0	61
Tot	0	0	9	48	339	629	373	199	76	0	0	1673
Hours of Calm												0
Hours of Variable Direction												0
Hours of Valid Data												1673
Hours of Missing Data												51
Hours in Period												8760

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 9 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
Stability Class - Moderately Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	0	0	0	3	4	0	0	0	0	0	7
NNE	0	0	0	2	4	0	1	0	0	0	0	7
NE	0	0	0	3	5	6	2	2	0	0	0	18
ENE	0	0	0	2	6	10	2	6	0	0	0	26
E	0	0	1	2	8	6	1	2	0	0	0	20
ESE	0	0	0	0	3	4	0	0	0	0	0	7
SE	0	0	0	0	7	7	0	0	0	0	0	14
SSE	0	0	1	0	7	8	4	6	0	0	0	26
S	0	0	0	0	4	7	2	2	2	0	0	17
SSW	0	0	2	1	2	2	7	1	5	0	0	20
SW	0	0	0	2	8	4	1	2	0	0	0	17
WSW	0	0	1	6	10	11	5	2	0	0	0	35
W	0	0	0	2	14	4	5	4	3	0	0	32
WNW	0	1	2	2	6	13	21	10	5	0	0	60
NW	0	1	1	0	9	15	9	10	3	0	0	48
NNW	0	0	0	4	8	9	5	2	1	0	0	29
Tot	0	2	8	26	104	110	65	49	19	0	0	383
Hours of Calm												0
Hours of Variable Direction												0
Hours of Valid Data												383
Hours of Missing Data												51
Hours in Period												8760

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 9 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
Stability Class - Slightly Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	0	0	0	1	0	0	0	0	0	0	1
NNE	0	0	0	2	2	1	0	1	0	0	0	6
NE	0	0	0	0	2	6	1	2	0	0	0	11
ENE	0	0	0	2	3	6	1	1	1	0	0	14
E	0	0	0	1	6	1	0	0	0	0	0	8
ESE	0	0	0	2	6	0	0	0	0	0	0	8
SE	0	0	0	0	4	1	0	0	0	0	0	5
SSE	0	0	0	0	3	6	1	0	0	0	0	10
S	0	0	1	0	3	3	5	1	2	0	0	15
SSW	0	0	0	0	4	5	2	0	1	0	0	12
SW	0	0	0	3	4	2	2	0	0	0	0	11
WSW	0	1	1	3	6	8	1	1	0	0	0	21
W	0	0	2	0	6	10	4	1	2	0	0	25
WNW	0	0	2	2	8	9	5	2	2	0	0	30
NW	0	0	0	1	3	10	6	2	1	0	0	23
NNW	0	0	0	1	2	2	3	1	0	0	0	9
Tot	0	1	6	17	63	70	31	12	9	0	0	209
Hours of Calm												0
Hours of Variable Direction												0
Hours of Valid Data												209
Hours of Missing Data												51
Hours in Period												8760

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 9 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
Stability Class – Neutral - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	1	10	10	30	6	1	0	0	0	0	58
NNE	0	0	5	5	22	17	4	0	0	0	0	53
NE	0	1	4	6	28	20	26	11	5	0	0	101
ENE	0	1	5	15	12	13	9	15	4	0	0	74
E	0	1	3	6	18	10	1	2	0	0	0	41
ESE	0	0	4	10	24	11	5	0	0	0	0	54
SE	0	0	4	9	27	17	9	0	0	0	0	66
SSE	0	0	7	9	18	18	9	4	0	0	0	65
S	0	0	6	6	39	55	48	11	4	2	1	172
SSW	0	0	9	7	34	40	25	7	9	4	1	136
SW	0	0	7	12	26	20	9	4	0	0	0	78
WSW	0	2	7	13	34	21	3	0	0	0	0	80
W	0	1	5	6	30	18	18	3	3	0	0	84
WNW	0	1	4	6	35	43	26	24	10	0	0	149
NW	0	0	4	14	34	33	23	13	3	0	0	124
NNW	0	1	6	15	31	22	10	2	1	0	0	88
Tot	0	9	90	149	442	364	226	96	39	6	2	1423
Hours of Calm												0
Hours of Variable Direction												0
Hours of Valid Data												1423
Hours of Missing Data												51
Hours in Period												8760

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 9 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
Stability Class – Slightly Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	6	10	21	24	8	3	5	3	0	0	80
NNE	0	9	13	11	18	8	11	5	5	2	0	82
NE	0	5	15	19	45	25	49	23	2	1	0	184
ENE	0	7	9	13	23	27	9	8	7	0	0	103
E	0	3	9	15	21	16	9	1	1	0	0	75
ESE	0	2	5	9	18	9	2	2	0	0	0	47
SE	0	7	13	17	13	8	1	1	1	0	0	61
SSE	0	7	14	15	21	17	9	10	7	0	0	100
S	1	11	30	27	57	45	21	6	3	0	2	203
SSW	0	6	33	47	122	74	39	19	8	2	0	350
SW	0	6	21	69	152	53	7	3	2	0	0	313
WSW	1	9	40	91	115	31	0	2	0	0	0	289
W	0	11	28	38	94	43	5	5	3	0	0	227
WNW	1	10	31	46	141	89	38	19	8	0	0	383
NW	0	9	25	53	83	52	28	4	0	0	0	254
NNW	0	5	11	28	72	38	19	5	0	0	0	178
Tot	3	113	307	519	1019	543	250	118	50	5	2	2929

Hours of Calm 4
Hours of Variable Direction 1
Hours of Valid Data 2934
Hours of Missing Data 51
Hours in Period 8760

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 9 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
Stability Class – Moderately Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	1	5	9	2	4	0	0	0	0	0	0	21
NNE	0	3	10	0	2	0	0	0	0	0	0	15
NE	1	2	4	0	1	2	1	1	0	0	0	12
ENE	0	1	2	0	0	1	0	0	0	0	0	4
E	0	1	1	0	0	0	0	0	0	0	0	2
ESE	0	0	3	0	0	0	0	0	0	0	0	3
SE	0	5	4	2	0	0	0	0	0	0	0	11
SSE	0	5	10	4	0	0	0	0	0	0	0	19
S	0	15	18	6	5	2	0	0	0	0	0	46
SSW	0	5	18	8	5	0	0	0	0	0	0	36
SW	0	6	32	34	13	0	0	0	0	0	0	85
WSW	0	12	38	69	24	0	0	0	0	0	0	143
W	0	18	30	57	35	0	0	0	1	0	0	141
WNW	0	7	23	41	34	3	0	0	0	0	0	108
NW	0	7	27	33	18	0	0	0	0	0	0	85
NNW	0	6	14	19	6	2	0	0	0	0	0	47
Tot	2	98	243	275	147	10	1	1	1	0	0	778
Hours of Calm					4							
Hours of Variable Direction					1							
Hours of Valid Data					783							
Hours of Missing Data					51							
Hours in Period					8760							

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 9 Wind Speed by Direction Measured at 33 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
 Stability Class – Extremely Stable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	9	5	6	0	0	0	0	0	0	0	20
NNE	0	5	1	4	0	0	0	0	0	0	0	10
NE	0	1	0	1	0	0	0	0	0	0	0	2
ENE	1	1	1	1	2	0	0	0	0	0	0	6
E	0	1	1	0	0	0	0	0	0	0	0	2
ESE	1	1	0	0	0	0	0	0	0	0	0	2
SE	0	1	3	0	0	0	0	0	0	0	0	4
SSE	1	5	0	0	0	0	0	0	0	0	0	6
S	1	14	5	2	0	0	0	0	0	0	0	22
SSW	0	13	14	3	0	0	0	0	0	0	0	30
SW	1	28	24	18	4	0	0	0	0	0	0	75
WSW	3	71	150	73	3	0	0	0	0	0	0	300
W	2	115	178	61	12	0	0	0	0	0	0	368
WNW	4	80	79	33	2	1	0	0	0	0	0	199
NW	3	60	71	33	2	0	0	0	0	0	0	169
NNW	2	25	24	22	5	0	0	0	0	0	0	78
Tot	19	430	556	257	30	1	0	0	0	0	0	1293
Hours of Calm					10							
Hours of Variable Direction					1							
Hours of Valid Data					1304							
Hours of Missing Data					51							
Hours in Period					8760							

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 10 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
Stability Class – All Stabilities - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	4	8	18	71	118	73	39	10	8	0	349
NNE	0	6	15	29	69	42	30	15	6	2	3	217
NE	0	8	9	22	67	73	65	44	87	53	6	434
ENE	0	2	5	16	59	60	70	78	67	47	11	415
E	0	6	6	11	49	62	45	40	27	11	0	257
ESE	0	1	5	12	56	67	51	29	7	2	0	230
SE	0	2	9	10	58	67	75	40	11	2	1	275
SSE	0	4	4	11	57	49	63	53	42	7	3	293
S	0	4	6	14	60	101	110	99	110	25	12	541
SSW	0	2	7	19	73	167	160	156	169	48	26	827
SW	0	5	6	17	74	145	233	179	87	17	1	764
WSW	0	0	7	21	67	112	255	203	87	15	0	767
W	0	3	11	13	47	135	246	224	108	21	16	824
WNW	0	2	8	15	54	112	215	285	232	103	36	1062
NW	1	5	11	11	54	110	215	218	202	61	27	915
NNW	0	2	9	14	47	97	119	131	99	20	0	538
Tot	1	56	126	253	962	1517	2025	1833	1351	442	142	8708
Hours of Calm					1							
Hours of Variable Direction					0							
Hours of Valid Data					8709							
Hours of Missing Data					51							
Hours in Period					8760							

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 10 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
 Stability Class – Extremely Unstable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	0	1	0	4	8	5	4	0	0	0	22
NNE	0	0	1	1	4	10	3	4	0	0	0	23
NE	0	0	0	1	3	13	31	15	5	8	0	76
ENE	0	0	0	1	4	14	28	36	27	5	0	115
E	0	0	0	1	4	15	17	13	7	0	0	57
ESE	0	0	0	1	10	26	26	8	1	0	0	72
SE	0	0	2	0	7	17	50	26	1	0	0	103
SSE	0	0	0	0	2	9	21	36	17	0	0	85
S	0	0	0	0	3	8	22	47	58	14	3	155
SSW	0	0	0	0	3	10	12	21	45	19	3	113
SW	0	0	0	1	10	23	21	18	13	6	0	92
WSW	0	0	2	2	8	18	37	45	34	8	0	154
W	0	0	1	0	8	28	36	17	27	11	5	133
WNW	0	0	0	0	10	20	29	36	53	47	13	208
NW	0	0	0	2	10	22	41	39	65	15	12	206
NNW	0	0	0	1	6	14	12	14	10	2	0	59
Tot	0	0	7	11	96	255	391	379	363	135	36	1673
Hours of Calm												0
Hours of Variable Direction												0
Hours of Valid Data												1673
Hours of Missing Data												51
Hours in Period												8760

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 10 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
Stability Class – Moderately Unstable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	0	0	0	2	2	5	1	0	0	0	10
NNE	0	0	0	1	2	2	0	0	0	0	0	5
NE	0	0	0	0	5	2	2	1	6	2	0	18
ENE	0	0	0	0	5	4	7	5	2	4	0	27
E	0	0	0	1	5	3	5	1	3	2	0	20
ESE	0	0	0	0	1	3	2	2	0	0	0	8
SE	0	0	0	0	3	5	2	2	0	0	0	12
SSE	0	0	0	1	1	4	6	2	9	0	0	23
S	0	0	0	0	0	6	5	2	1	2	0	16
SSW	0	0	0	1	1	1	2	4	8	3	2	22
SW	0	0	0	1	2	0	4	3	2	2	0	14
WSW	0	0	0	2	5	4	7	6	8	2	0	34
W	0	0	1	0	5	5	11	4	7	2	2	37
WNW	0	0	1	2	2	4	7	4	21	10	4	55
NW	0	0	1	0	1	5	3	10	16	10	5	51
NNW	0	0	0	0	4	5	2	7	9	4	0	31
Tot	0	0	3	9	44	55	70	54	92	43	13	383
Hours of Calm												0
Hours of Variable Direction												0
Hours of Valid Data												383
Hours of Missing Data												51
Hours in Period												8760

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 10 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
Stability Class – Slightly Unstable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	0	0	0	1	1	0	1	0	0	0	3
NNE	0	0	0	0	1	0	1	0	0	0	0	2
NE	0	0	0	1	1	2	2	2	2	2	0	12
ENE	0	0	0	0	1	4	3	5	0	2	0	15
E	0	0	0	1	1	3	1	0	1	0	0	7
ESE	0	0	0	0	6	2	1	0	0	0	0	9
SE	0	0	0	0	2	2	1	0	0	0	0	5
SSE	0	0	0	0	1	1	4	3	0	0	0	9
S	0	0	0	0	1	1	3	1	1	1	1	9
SSW	0	0	0	1	1	0	4	7	3	1	0	17
SW	0	0	0	0	2	3	3	0	2	0	0	10
WSW	0	0	1	1	3	2	2	4	2	1	0	16
W	0	0	1	0	2	3	5	4	10	1	1	27
WNW	0	0	0	2	2	1	7	9	6	2	2	31
NW	0	0	0	1	1	4	2	7	9	2	2	28
NNW	0	0	0	0	1	1	1	0	4	2	0	9
Tot	0	0	2	7	27	30	40	43	40	14	6	209
Hours of Calm												0
Hours of Variable Direction												0
Hours of Valid Data												209
Hours of Missing Data												51
Hours in Period												8760

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 10 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
Stability Class – Neutral - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	0	2	5	15	23	12	7	2	0	0	66
NNE	0	0	2	4	12	12	19	4	0	0	0	53
NE	0	1	0	0	6	17	11	10	24	13	4	86
ENE	0	0	2	5	17	8	10	11	13	17	4	87
E	0	2	0	0	11	11	7	5	4	3	0	43
ESE	0	0	0	4	15	14	6	12	4	0	0	55
SE	0	0	1	5	17	17	12	8	9	0	0	69
SSE	0	0	0	5	8	9	14	4	10	1	0	51
S	0	0	0	5	12	23	30	22	29	3	3	127
SSW	0	0	0	5	10	14	36	46	44	5	15	175
SW	0	0	2	3	8	16	20	15	17	3	0	84
WSW	0	0	1	2	15	10	12	15	11	2	0	68
W	0	0	1	4	7	20	26	14	24	3	3	102
WNW	0	0	0	2	7	13	28	23	28	21	9	131
NW	0	0	3	0	9	17	22	26	43	22	4	146
NNW	0	0	2	3	9	19	12	15	13	7	0	80
Tot	0	3	16	52	178	243	277	237	275	100	42	1423
Hours of Calm												0
Hours of Variable Direction												0
Hours of Valid Data												1423
Hours of Missing Data												51
Hours in Period												8760

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 10 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
 Stability Class – Slightly Stable - 380Ft-33Ft Delta-T (F)
 Winds Measured at 380 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	1	1	4	21	29	18	12	8	8	0	102
NNE	0	1	5	5	15	15	6	7	6	2	3	65
NE	0	2	1	6	16	26	16	14	49	27	2	159
ENE	0	2	0	3	13	21	19	18	25	19	7	127
E	0	2	2	3	13	21	13	20	12	6	0	92
ESE	0	1	4	2	10	19	15	7	2	2	0	62
SE	0	1	4	2	14	16	9	4	1	2	1	54
SSE	0	3	0	1	23	12	18	8	6	6	3	80
S	0	2	2	2	21	31	33	25	21	5	5	147
SSW	0	1	3	6	38	76	76	67	68	20	6	361
SW	0	1	1	2	24	59	125	105	47	6	1	371
WSW	0	0	1	6	17	42	98	55	28	2	0	249
W	0	2	0	4	10	40	65	68	27	4	4	224
WNW	0	0	1	5	14	42	70	103	97	23	8	363
NW	0	1	5	1	17	35	75	62	59	12	4	271
NNW	0	2	0	7	15	36	50	44	48	5	0	207
Tot	0	22	30	59	281	520	706	619	504	149	44	2934
Hours of Calm												0
Hours of Variable Direction												0
Hours of Valid Data												2934
Hours of Missing Data												51
Hours in Period												8760

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 10 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
Stability Class – Moderately Stable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	0	1	4	8	10	8	5	0	0	0	36
NNE	0	1	2	2	7	0	1	0	0	0	0	13
NE	0	3	3	2	7	4	2	1	1	1	0	24
ENE	0	0	0	0	6	3	0	2	0	0	0	11
E	0	0	1	1	2	3	0	0	0	0	0	7
ESE	0	0	0	0	5	1	0	0	0	0	0	6
SE	0	0	0	0	4	5	1	0	0	0	0	10
SSE	0	0	1	1	8	9	0	0	0	0	0	19
S	0	1	0	2	8	19	7	2	0	0	0	39
SSW	0	0	1	0	9	24	8	3	0	0	0	45
SW	0	0	2	4	12	15	36	19	3	0	0	91
WSW	0	0	1	0	7	15	42	35	2	0	0	102
W	0	0	2	0	3	14	44	52	6	0	1	122
WNW	0	0	1	1	5	17	37	47	12	0	0	120
NW	0	0	0	1	8	7	28	31	1	0	0	76
NNW	0	0	2	0	5	9	14	27	5	0	0	62
Tot	0	5	17	18	104	155	228	224	30	1	1	783
Hours of Calm												0
Hours of Variable Direction												0
Hours of Valid Data												783
Hours of Missing Data												51
Hours in Period												8760

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Table D – 10 Wind Speed by Direction Measured at 380 Feet for various Stability Classes for the Oyster Creek Generating Station, January – December, 2013

Oyster Creek Alpha

Period of Record: January - December 2013
Stability Class – Extremely Stable - 380Ft-33Ft Delta-T (F)
Winds Measured at 380 Feet

Wind Direction Sector	Wind Speed (in m/s)											Total
	<0.50	0.5-1	1.1-1.5	1.6-2	2.1-3	3.1-4	4.1-5	5.1-6	6.1-8	8.1-10	>10.00	
N	0	3	3	5	20	45	25	9	0	0	0	110
NNE	0	4	5	16	28	3	0	0	0	0	0	56
NE	0	2	5	12	29	9	1	1	0	0	0	59
ENE	0	0	3	7	13	6	3	1	0	0	0	33
E	0	2	3	4	13	6	2	1	0	0	0	31
ESE	0	0	1	5	9	2	1	0	0	0	0	18
SE	0	1	2	3	11	5	0	0	0	0	0	22
SSE	0	1	3	3	14	5	0	0	0	0	0	26
S	0	1	4	5	15	13	10	0	0	0	0	48
SSW	0	1	3	6	11	42	22	8	1	0	0	94
SW	0	4	1	6	16	29	24	19	3	0	0	102
WSW	0	0	1	8	12	21	57	43	2	0	0	144
W	0	1	5	5	12	25	59	65	7	0	0	179
WNW	0	2	5	3	14	15	37	63	15	0	0	154
NW	1	4	2	6	8	20	44	43	9	0	0	137
NNW	0	0	5	3	7	13	28	24	10	0	0	90
Tot	1	26	51	97	232	259	313	277	47	0	0	1303
Hours of Calm					1							
Hours of Variable Direction					0							
Hours of Valid Data					1304							
Hours of Missing Data					51							
Hours in Period					8760							

Appendix E
ODCM Revisions

None

Appendix F
ERRATA

Oyster Creek 2013 Annual Radioactive Effluent Release Report

Correction to 2012 ARERR

There were two issues discovered in 2013 that impacted the amount of Curies released reported in Table A-2 but did not impact any of the Curies released in summary of all releases in Table A-1 nor any of the doses reported Appendix C, Radiological Impact to Man. No limits were exceeded.

1. During performance of the annual Augmented Off Gas (AOG) sample line pressure test per Work Order R2200914 it was discovered that there were two leaks in the sample line that diluted the sample flow from what was used to perform the original release calculations. One leak was the seal where the detector goes into the chamber; the second leak was a small leak directly downstream of an inlet isolation valve. A review determined that these leaks first occurred 8/30/2012 and continued until repairs were completed 5/2/2013. These leaks only impact the particulate and iodine sampling from the normal sample point. All particulate and iodine samples taken during this time period were evaluated and updated based on the calculated sample flow rate provided by Engineering.
2. During the performance of Work Order R2205683, which is to perform an annual inspection of the stack pad exhaust fans, three slits were discovered in the top boot of exhaust fan EF-1-16 and a bolt was missing from exhaust fan EF-1-17. These are the two exhaust fans for the Old Radwaste Building to the Main Stack. One of these two exhaust fans is in operation at all times to maintain a negative pressure in the Old Radwaste Building. At no times do both of these fans run simultaneously as each fans is designed to provide 100% of the required flow. Engineering performed a calculation to determine a release rate that encompasses the maximum release rate regardless of which exhaust fan is in service. Since the activity to inspect the exhaust fans is an annual activity, it was conservatively assumed that both exhaust fans have been leaking since the date of the last inspection until the time the repairs were completed, 7/29/12 through 7/25/13. Also, a conservative approach to determining dose to the public was taken that assumed that all of the activity due to particulates reported from the Main Stack was coming from the Old Radwaste Building and therefore being released as a groundlevel release from the exhaust fan leaks at the flow rate calculated by Engineering.

Oyster Creek 2013 Annual Radioactive Effluent Release Report

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

January 1, 2012 through December 31, 2012

EXELON GENERATION COMPANY, LLC

OYSTER CREEK 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**

Oyster Creek 2013 Annual Radioactive Effluent Release Report

ORIGINAL PAGE

Table A-3: Gaseous Effluent Release Point: Ground Level Releases

Period: January 1, 2012 through December 31, 2012

Unit: Oyster Creek

Nuclides Released	Unit	Continuous Mode				Batch Mode			
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1. Fission gases									
Kr- 85	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr- 85m	Ci	<LLD	<LLD	1.87E-02	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-87	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-88	Ci	<LLD	<LLD	1.01E-02	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-133	Ci	<LLD	<LLD	9.26E-01	5.33E-02	<LLD	<LLD	<LLD	<LLD
Xe-133m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-135m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-138	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ar-41	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	<LLD	<LLD	9.55E-01	5.33E-02	<LLD	<LLD	<LLD	<LLD
2. Iodines									
I-131	Ci	1.24E-07	1.58E-07	2.84E-07	8.12E-06	<LLD	<LLD	<LLD	<LLD
I-133	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
I-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	1.24E-07	1.58E-07	2.84E-07	8.12E-06	<LLD	<LLD	<LLD	<LLD
3. Particulates									
Sr-89	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Sr-90	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-134	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-137	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
La-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cr-51	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	<LLD	5.04E-07	1.17E-06	3.63E-06	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	<LLD	1.65E-07	2.92E-07	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	1.06E-06	5.63E-06	6.81E-06	1.12E-05	<LLD	<LLD	<LLD	<LLD
Ni-63	Ci	<LLD	<LLD	2.75E-05	4.15E-05	<LLD	<LLD	<LLD	<LLD
Mo-99	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ag-110m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-141	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-144	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Fe-55	Ci	6.96E-03	6.97E-03	4.61E-03	<LLD	<LLD	<LLD	<LLD	<LLD
Fe-59	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Zn-65	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Am-241	Ci	<LLD	<LLD	<LLD	4.94E-06	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	6.96E-03	6.98E-03	4.65E-03	6.16E-05	<LLD	<LLD	<LLD	<LLD
4. Tritium									
H-3	Ci	1.87E-01	3.62E-01	6.00E-01	4.75E-01	<LLD	<LLD	<LLD	<LLD
5. Gross Alpha									
Gross Alpha	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
6. Carbon-14									
C-14	Ci	7.48E-02	7.41E-02	7.57E-02	7.57E-02	<LLD	<LLD	<LLD	<LLD

Oyster Creek 2013 Annual Radioactive Effluent Release Report

CORRECTED PAGE

Table A-3: Gaseous Effluent Release Point: Ground Level Releases

Period: January 1, 2012 through December 31, 2012

Unit: Oyster Creek

Nuclides Released	Unit	Continuous Mode				Batch Mode			
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1. Fission gases									
Kr- 85	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr- 85m	Ci	<LLD	<LLD	1.87E-02	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-87	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-88	Ci	<LLD	<LLD	1.01E-02	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-133	Ci	<LLD	<LLD	9.26E-01	5.33E-02	<LLD	<LLD	<LLD	<LLD
Xe-133m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-135m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-138	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ar-41	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	<LLD	<LLD	9.55E-01	5.33E-02	<LLD	<LLD	<LLD	<LLD
2. Iodines									
I-131	Ci	1.24E-07	1.58E-07	2.84E-07	8.12E-06	<LLD	<LLD	<LLD	<LLD
I-133	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
I-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	1.24E-07	1.58E-07	2.84E-07	8.12E-06	<LLD	<LLD	<LLD	<LLD
3. Particulates									
Sr-89	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Sr-90	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-134	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-137	Ci	<LLD	<LLD	1.80E-07	2.62E-07	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	<LLD	<LLD	1.83E-05	2.68E-05	<LLD	<LLD	<LLD	<LLD
La-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cr-51	Ci	<LLD	<LLD	3.71E-06	5.41E-06	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	<LLD	5.04E-07	4.24E-06	8.11E-06	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	<LLD	2.87E-06	4.24E-06	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	1.06E-06	5.63E-06	1.15E-05	1.80E-05	<LLD	<LLD	<LLD	<LLD
Ni-63	Ci	<LLD	<LLD	2.75E-05	4.15E-05	<LLD	<LLD	<LLD	<LLD
Mo-99	Ci	<LLD	<LLD	5.57E-07	8.14E-07	<LLD	<LLD	<LLD	<LLD
Ag-110m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-141	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-144	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Fe-55	Ci	6.96E-03	6.97E-03	4.61E-03	<LLD	<LLD	<LLD	<LLD	<LLD
Fe-59	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Zn-65	Ci	<LLD	<LLD	1.46E-06	2.14E-06	<LLD	<LLD	<LLD	<LLD
Am-241	Ci	<LLD	<LLD	<LLD	4.94E-06	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	6.96E-03	6.98E-03	4.68E-03	1.12E-04	<LLD	<LLD	<LLD	<LLD
4. Tritium									
H-3	Ci	1.87E-01	3.62E-01	6.00E-01	4.75E-01	<LLD	<LLD	<LLD	<LLD
5. Gross Alpha									
Gross Alpha	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
6. Carbon-14									
C-14	Ci	7.48E-02	7.41E-02	7.57E-02	7.57E-02	<LLD	<LLD	<LLD	<LLD