Exelon Generation

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Subject: Peach Bottom Atomic Power Station Units 1, 2 and 3

Independent Spent Fuel Storage Installation (ISFSI)
Facility Operation License DPR-12, DPR-44 and DPR-56
NRC Docket 50-171, 50-277 and 50-278 and ISFSI Docket 72-29

Annual Radioactive Effluent Release Report 59
January 1, 2016 through December 31, 2016

Enclosed is the Annual Radioactive Effluent Release Report 59, January 1, 2016 through December 31, 2016 for Peach Bottom Atomic Power Station, Units 1, 2 and 3.

This report is being submitted in compliance with 10 CFR 50.36a(2) and the Technical Specifications of Operating Licenses DPR-44 and DPR-56 and to fulfill the requirements of Offsite Dose Calculation Manual Specifications (ODCMS) 3.10.2. Additionally, this report is submitted to satisfy the annual effluent reporting requirements for the ISFSI required by the ODCM.

No revision to the ODCM occurred during the 2016 reporting period. There are no commitments contained in this letter.

If you have any questions or require additional information, please do not hesitate to contact Dr. Amber Donley at 717-456-3056.

Sincerely,

Matthew Herr, Plant Manager
Peach Bottom Atomic Power Station

MJH/SMO/GRS/ASD/asd

Enclosure (1)

cc: USNRC Region I, Regional Administrator (Daniel H. Dorman)
USNRC Senior Resident Inspector, PBAPS (Justin Heinly)
USNRC Region I Inspector (Bruce Dionne)

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PEACH BOTTOM ATOMIC POWER STATION
Unit Numbers 2 and 3
Docket Numbers 50-277 and 50-278
Unit Number 1
Docket Number 50-171
PBAPS Independent Spent Fuel Storage Installation
Docket Number 72-29

RADIOACTIVE EFFLUENT RELEASE REPORT

NO. 59

JANUARY 1, 2016 THROUGH DECEMBER 31, 2016

Submitted to
The United States Nuclear Regulatory Commission
Pursuant to
Facility Operating Licenses DPR-44 and DPR-56

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Technical Concurrence (for accuracy of information):

Siobhan O'Dwyer /Siobhan M. O'Dwyer/ 4/19/17

Manager, Site Chemistry, Environmental and Radwaste — Date

INTRODUCTION

In accordance with the Reporting Requirements of Technical Specification 5.6.3 applicable during the reporting period, this report summarizes the Effluent Release Data for Peach Bottom Atomic Power Station (PBAPS) Units 2 and 3 for the period January 1, 2016 through December 31, 2016. The notations E+ and E- are used to denote positive and negative exponents to the base 10, respectively.

The release of radioactive materials during the reporting period was within the Offsite Dose Calculation Manual Specification (ODCMS) limits.

There were two (2) unplanned releases of liquid radioactive material. One release was from Residual Heat Removal (RHR) heat exchanger (beginning July of 2016) and the other is from groundwater tritium contamination ('tritium plume'). These releases were far below regulatory limits.

There were two (2) unplanned releases of gaseous radioactive material during the Unit 2 21st Refueling Outage. On October 28, 2016, a particulate filter from *High Efficiency Particulate Air* (HEPA) unit tent exhaust over the Unit 2 Condensate Storage Tank (CST) manway showed cobalt-60 (Co-60) contamination. The unit had been operating for 730 minutes. On November 3, 2016 a particulate filter at the Unit 2 moisture separator hole in the wall showed Co-60 and cesium-137 (Cs-137) contamination. Negative pressure could not be maintained in the turbine building while the wall was removed to support Unit 2 feedwater heater outage work activities. Details of these releases are included in this report. Both of these releases were far below regulatory limits.

The maximum calculated organ dose (bone) from iodines (I-131, I-133 and I-135), tritium (H-3), carbon-14 (C-14) and particulates to any individual due to all gaseous effluents was 5.96E-01 mrem, which was approximately 1.99E+00% of the annual limit. The maximum calculated air dose in the UNRESTRICTED Area due to noble gas effluents was 2.53E-01 mrad (gamma) and 1.73E-01 mrad (beta), which was 1.26E+00% and 4.32E-01%, respectively, of the annual limits.

In 2016, there were no direct gaseous or liquid releases or discharges from Unit 1 to the environment.

There were no gaseous or liquid radioactive releases from the Independent Spent Fuel Storage Installation, NRC Docket No. 72-29 (ISFSI).

No revision was made to RW-AA-100 "Process Control Program for Radioactive Waste" in 2016.

No revision was made to the ODCM and Appendix A of ODCM during the 2016 reporting period.

Exelon Nuclear common procedures, which provide consistent expectations and standards for Radioactive Effluents Controls Program (RECP), were used to generate this report. PBAPS site specific procedures used to assist with abnormal/unplanned releases were also used to generate this report. They are:

- CY-AA-170-000, Radioactive Effluent and Environmental Monitoring Program
- CY-AA-170-100, Radiological Environmental Monitoring Program
- CY-AA-170-200, Radioactive Effluent Controls Program
- CY-AA-170-300, Offsite Dose Calculation Manual Administration
- CY-AA-170-2000, Annual Radioactive Effluent Release Report
- CY-AA-170-2100, Estimated Errors of Effluent Measurement
- CY-AA-170-3100, Offsite Dose Calculation Manual Revisions
- CY-AA-170-2300, Determination of Carbon-14 in Gaseous Effluents
- CY-PB-170-202, RHR-HPSW Leak Rate Calculation
- CY-PB-170-2020, Radiological Abnormal Gaseous Release Assessment

ATTACHMENT 1: SUPPLEMENTAL INFORMATION

Regulatory Limits

Table 1. Noble Gas Dose Rate and Dose Limits

Maximum Value	Units	Limit Classification	Specification
500	Mrem/ yr	annual total body dose rate	ODCM Specification 3.8.C.1.a
3000	mrem/ yr	annual skin dose rate	ODCM Specification 3.8.C.1.a
10	mrad	gamma radiation air dose per quarter	ODCM Specification 3.8.C.2.a
20	mrad	beta radiation in air dose per quarter	ODCM Specification 3.8.C.2.b
20	mrad	gamma radiation in air dose per year	ODCM Specification 3.8.C.2.c
40	mrad	beta radiation in air dose per year	ODCM Specification 3.8.C.2.d

Table 2. Iodines, Tritium and Particulates (with half-lives > 8 days) Dose Rate and Dose Limits

Maximum Value	Units	Limit Classification	Specification
1500	mrem/ yr	annual dose rate limit to any organ	ODCM Specification 3.8.C.1.b
15	mrem	annual dose limit to any organ per quarter	ODCM Specification 3.8.C.3.a
30	mrem	dose limit to any organ per year	ODCM Specification 3.8.C.3.b

Table 3. Liquid Effluent Activity Concentration and Dose Rate Limits

Maximum Value	Units	Limit Classification	Specification
≤ 10 times 10 CFR 20, Appendix B, Table 2, Column 2	µCi/mL	Activity Concentration in all liquid releases	ODCM Specification 3.8.B.1.a
2E-04	µCi/mL	total activity concentration for all dissolved and entrained noble gases	ODCM Specification 3.8.B.1.b
3.0	mrem	total body dose limit per quarter	ODCM Specification 3.8.B.2.a
10	mrem	total body dose limit per year	ODCM Specification 3.8.B.2.a
6.0	mrem	dose limit per quarter to any organ	ODCM Specification 3.8.B.2.b
20	mrem	dose limit per year to any organ	ODCM Specification 3.8.B.2.b

Maximum Permissible Concentrations

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 ODCMS 3.8.C.1.a and 3.8.C.1.b.

The Effluent Concentrations Limits (ECL) specified in 10 CFR 20, Appendix B, Table 2, Column 2 multiplied by 10, for identified nuclides, are used to calculate permissible release rates and concentrations for liquid release per ODCMS 3.8.B.1.

The total activity concentration for all dissolved or entrained noble gases is limited to < 2E-04 µCi/mL (ODCMS 3.8.B.1.b).

Average Energy

The PBAPS ODCM limits the 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. Therefore, the average beta and gamma energies of the radionuclide mixture in releases of fission and activation gases as described in Regulatory Guide 1.21, Revision 1, "Measuring, Evaluation, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," are not applicable to PBAPS.

Measures and Approximations of Total Radioactivity

Fission and Activation Gases

The method used for gamma isotopic analysis is the Canberra Genie™ System with a gas Marinelli beaker. Grab samples are taken and analyzed weekly to determine the isotopic mixture of noble gas activity released for the week. Airborne effluent gaseous activity was continuously monitored and recorded in accordance with ODCMS Table 4.8.C.1. The data from the noble gas radiation monitor were analyzed to report noble gas effluent activities. When no activity was identified in the grab isotopic analysis, the entire release must be assumed to be the radionuclide with the most-limiting dose factors for the release pathway (i.e. krypton-88 (Kr-88) for all ground-level releases, Kr-88 for elevated gamma dose and Kr-87 for elevated beta dose; see ODCM IV.B and NUREG-0133[1]).

The activity released is listed as "unidentified" in the Attachment 2 Tables. If activity was found in the grab isotopic analysis, the isotopic mixture for the Noble Gas Monitor was determined from that isotopic mixture.

Iodines

The method used is the Canberra Genie™ System with a charcoal cartridge. Iodine activity was continuously sampled and analyzed in accordance with ODCMS Table 4.8.C.1.

Particulates

The method used is the Canberra Genie™ System with a particulate filter (47 mm diameter). Particulate activity was continuously sampled and analyzed in accordance with ODCM Table 4.8.C.1.

Composite particulate air samples were submitted to an offsite vendor laboratory for analyses of strontium-89 (Sr-89), Sr-90, nickel-63 (Ni-63) and gross alpha.

Carbon-14

The amount of C-14 released was estimated using the guidance from the Electric Power Research Institute (EPRI) Technical Report 1021106, "Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents". The C-14 was released primarily through the Main Offgas Stack (9.70E+01%) with a small amount (3.00E+00%) through the Reactor Building Exhaust Vents. The C-14 in liquid effluents is not a significant dose pathway, as determined from studies. The resulting annual dose to the maximum conservative receptor is 5.95E-01 mrem, with the limiting receptor as the child bone.

[1] http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0133/sr0133.pdf, accessed 9 April 2014.

Liquid Effluents

Gamma isotopic activity concentrations are determined on each batch of liquid effluent prior to release using the Canberra Genie™ System in accordance with ODCMS Table 4.8.B.1. The total activity of a released batch is determined by multiplying each nuclide's concentration by the total volume discharged.

Composite liquid radwaste samples are analyzed for tritium on-site and submitted to an offsite vendor laboratory for analyses of iron-55 (Fe-55), phosphorus-32 (P-32), Sr-89, Sr-90, Ni-63, and gross alpha.

Decommissioned Unit 1 Liquid Radioactive Waste Processing

There were no direct gaseous or liquid releases or discharges from Unit 1 to the environment during 2016. During the reporting period, a total of 238 gallons of water with low concentrations of tritium were collected from Unit 1 and stored at Unit 2 and 3, for future processing. No gamma emitting nuclides were above detectable limits. No water was released which originated from Unit 1 during 2016.

Estimate of Total Error Present

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

Batch Releases

Table 4. Quarterly Liquid Batch Release Statistics

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Number of Batch Releases	5	0	4	11
Total Time for Batch Releases (minutes)	3.30E+02	0	2.62E+02	6.99E+02
Maximum time period for batch release (minutes)	1.65E+02	0	9.20E+01	1.60E+02
Average time period for batch release (minutes)	6.60E+01	0	6.55E+01	6.35E+01
Minimum time period for batch release (minutes)	3.50E+01	0	3.90E+01	1.00E+01
Average Stream Flow (ft^3/s)[2,3]	7.05E+03	7.05E+03	7.05E+03	7.05E+03
Dilution volume (liters)	1.09E+09	0	1.19E+09	1.87E+09

Table 5. Quarterly Gaseous Batch Release Statistics

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Number of batch releases:	0	0	0	2
Total Time for batch releases (minutes)	0	0	0	1.30E+03
Maximum time period for batch release (minutes):	0	0	0	7.30E+02
Average time period for batch release (minutes)	0	0	0	6.50E+02
Minimum time period for batch release (minutes)	0	0	0	5.70E+02

[2] Average Stream Flow is not used for dose calculation.
[3] USGS National Water Information System, Site Name: "Susquehanna River at Marietta, PA", Site Number: 01576000. Data accessed 15 February 2017.

Average Stream Flow

The river flow is not used for dose calculations. The actual flow rate of Circulation Water (the water that is circulated within the plant for cooling) is determined for each liquid effluent release because this Circulation Water provides dilution and therefore reduces the projected dose.

Abnormal or Unplanned Releases

'Abnormal' releases are those releases that are not defined as 'normal' releases in the Licensee's ODCM. While attempts are made to ensure radioactivity is not released offsite without processing, monitoring of systems with a potential for release is continuously performed. Source terms used for dose calculations utilize direct sampling and the maximum concentrations of nuclides to ensure that the most conservative and bounding estimates are used. Methodologies calculate conservative dose utilizing conservative mathematical models to describe intake and exposure pathways. Therefore, reported doses for these abnormal releases are calculated conservatively.

Liquid Releases

Groundwater Tritium Plume

During 2016, during the sampling and analysis of the Radiological Ground Water Protection Program (RGPP), tritium was measured at several locations around the site. The ground water that has detectable tritium has been determined to flow into the Plant intake and eventually flow into the normal Discharge Canal. Details of this program can be found in the Peach Bottom Annual Radiological Environmental Operating Report (AREOR) as an appendix. No other nuclides were detected in monitoring wells.

Analysis of Release

It was assumed from the maximum flow rates measured[4] that ground water flowed to the discharge canal at a steady rate of 3.17E+02 gpm, carrying with it some of the tritium underneath the plant. The conservative maximum dose for the entire year from this continuous release is calculated to be 4.96E-05 mrem (whole-body) and 4.96E-05 mrem (any organ, except bone[5] which is 0.00E+00 mrem)[6]. This dose contribution projection is well below the limit specified in the ODCM.

Heat Exchanger Leakage

Starting in July of 2016, a small leak developed in the Unit 3 C Residual Heat Removal (RHR) Heat Exchanger, which is designed to circulate water to remove heat from the reactor unit when necessary. The dose model assumes that contaminated water leaks from the heat exchanger, regardless of operating pressure to ensure conservatism in calculated dose. As an additional precaution, installed radiation monitoring instrumentation can indicate an inadvertent release of radioactive material should the heat exchanger develop a large leak unexpectedly.

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[4] "Estimated Mass Flux Of Tritiated Groundwater To The Conowingo Reservoir And Rock Run Creek, Peach Bottom Atomic Power Station, Delta, Pennsylvania", November 2012, Conestoga-Rovers & Associates.

[5] Tritium dose factor for bone is 0.00E+00; therefore no hypothetical dose is calculated.

[6] These doses are identical because the dose factors are identical for the same nuclide and pathway.

Analysis of Release

It was assumed that the water released to the discharge canal, for the second half of 2016, contributed a conservative maximum 3.12E-05 mrem total body dose (receptor child), and a conservative maximum 1.18E-04 mrem for the conservative maximum organ, adult GI-LLI, dose. This dose contribution was well below the limits specified in the ODCM.

Samples were analyzed for all the parameters of radioactive effluent releases. Composite liquid TORUS water samples were counted for tritium and submitted to an offsite vendor laboratory for analyses of Fe-55, P-32, Sr-89, Sr-90, Ni-63 and gross alpha. The dose contributions and isotope quantities from the releases were added to this Radioactive Effluent Release Report for the applicable reporting periods.

Gaseous Releases

Unit 2 Moisture Separation Room Hole in the Wall

A hole was cut into the Turbine Building wall to permit the movement of seavans and feedwater heaters in and out of the plant during the 21st refueling outage on Unit 2 (P2R21). When the wall was removed, the plant ventilation was not controlled for negative pressure, also air flow indicator strips were not present at the opening (Issue Report (IR) #2736932). Positive air flow was noticed on November 2-3, 2016. The particulate air samples were pulled immediately and analyzed for radioactivity. The maximum concentration of Co-60 was found to be 2.98E-12 µCi/cc and Cs-137 at 6.84E-13 µCi/cc. Positive air flow of 7816 cubic feet per minute (CFM) was estimated for a period of 5.70E+02 minutes. The conservative dose rate 4.59E-04 mrem/year to Teen Lung and dose 6.34E-07 mrem to Infant Liver, calculated for this release is well below the limits in the ODCM. No other nuclides were identified.

Contaminated HEPA Unit

A contaminated HEPA unit was in service on the tent around the Unit 2 CST manway work during the 21st refueling outage on Unit 2 (P2R21). The first air particulate sample pulled from the HEPA exhaust identified Co-60. A second, confirmatory, sample was pulled a short while later and Co-60 was identified again. The HEPA was removed from service and an issue was written (IR #2733962). The unit was in service from October 27-28, 2016 for 7.30E+02 minutes and assumed to be operating at the max rated flow of 2.00E+03 CFM. The maximum concentration of Co-60 was found to be 4.10E-11 µCi/cc. The conservative dose rate (1.61E-04 mrem/year to Teen Lung) and conservative dose (1.97E-06 mrem to Infant Liver) calculated for this release is well-below the limits in the ODCM. No other nuclides were identified.

Changes to the ODCM

There were no revisions to either the ODCM or the ODCM Specifications (Appendix A) during 2016.

Minimum Detectable Concentrations

If a radionuclide was not detected, "<LLD" was reported as the activity. Samples were analyzed with techniques that achieved the required Lower Limits of Detection (LLD) as specified in ODCMS Table 4.8.B.1, "Radioactive Liquid Waste Sampling and Analysis" (for liquids) or ODCMS Table 4.8.C.1, "Radioactive Gaseous Waste Sampling and Analysis from Main Stack and Vent Stack" (for gases). In all cases, the LLD requirements were satisfied.

Violations

There were no effluent release violations for the 2016 reporting period.

Dose Assessment

Introduction

A dose assessment for PBAPS was conducted from measured radioactive effluent source terms and environmental data to verify that PBAPS continues to demonstrate compliance with the limits as well as the requirement of maintaining the doses "as low as is reasonably achievable" as stated in 10 CFR 50, Appendix I.[7]

The radioactive source term used for both liquids and gases are the current radioactive source terms given in this report, Attachment 2, "Effluent Summary".

Liquid Dose Assessment

Hydrologic Conditions and Receptor Locations of Interest

PBAPS is located on the Conowingo Pond formed in the Susquehanna River by the Conowingo Dam. For 2016, the annual average river flow[8] was measured as 2.82E+04 ft^3/s.

Of these three separate flow regimes that were used in the original Appendix I submittal, the most-limiting of them (<1.50E+04 ft^3/s) was used to calculate a dose assessment for this report because this would provide a bounding extreme for all PBAPS liquid effluents. Therefore, although the actual average stream flow for the year was more than double the limiting case, this report will provide an upper limit for the most-limiting dose.

The annual average dilution factor[9] at the Conowingo Intake is 5.40E+00 and the assumption for the reconcentration factor[10] is 1.16E+00. The PBAPS shorewidth factor[11] of 2.00E-01 was also used.

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[7] http://www.nrc.gov/reading-rm/doc-collections/cfr/part050/part050-appi.html, accessed 9 April 2014.

[8] USGS National Water Information Service; Monitoring Site 01576000,Susquehanna River at Marietta, PA; http://waterdata.usgs.gov/nwis. Accessed 15 Feb 2017.

[9] From original ODCM.

[10] From original ODCM.

[11] RG 1.109, Table A-2.

Table 6. Consumption and Usage Rate Assumptions

Pathway	Adult	Teenager	Child	Infant	Units
Eating Fish[12]	2.10E+01	1.60E+01	6.90E+00	0.00E+00	kg/ yr
Drinking Water[13]	7.30E+02	5.10E+02	5.10E+02	5.10E+02	L/ yr
Swimming[14]	2.80E+02	2.80E+02	0.00E+00	0.00E+00	h/ yr
Boating[14]	1.20E+02	1.20E+02	6.70E+01	0.00E+00	h/ yr
Shoreline Recreation[14]	3.25E+02	3.25E+02	1.40E+01	0.00E+00	h/ yr
Fishing from Conowingo Dam[14]	3.25E+02	3.25E+02	0.00E+00	0.00E+00	h/ yr

No invertebrate intake was examined because invertebrate ingestion pathways are not considered to be significant in the area close to PBAPS. The pathway factors for the various age groups, used to determine dose to the public from liquid effluents are shown in Table 6.

Liquid Effluent Dose Assessment Conclusion
For all permitted releases in 2016, the calculated total body dose was 5.47E-05 mrem and 9.24E-05 mrem for the limiting organ of adult liver.

Therefore, PBAPS liquid radioactive effluent controls continue to demonstrate compliance with 10 CFR 50, Appendix I objectives for the purposes of keeping doses to members of the public "as low as is reasonably achievable". These limiting or maximum calculated doses are a small fraction of the limits in Appendix I.

<u>Gaseous Dose Assessment</u>
The gaseous dose assessment calculates the conservative dose at the limiting receptor locations from the land-use census data, the 2016 meteorology and the 2016 source term to demonstrate compliance with 10 CFR 50, Appendix I.

Tables 7 and 8 utilized the CY-PB-170-210 spreadsheet to calculate the doses for elevated and ground releases with the 2016 MET data and gaseous total activity released, including C-14. Table 7 utilized MET data from the locations with the highest X/Q from the Main Offgas Stack and the corresponding Reactor Building Exhaust Vents MET factors. Table 8 utilized MET data from the locations with the highest D/Q sectors from the Reactor Building Exhaust Vents and the corresponding Main Offgas Stack MET factors. The X/Q values are very similar to those used in the ODCM, and therefore the differences in noble gas dose is minimal. The larger discrepancies between Iodine, Particulates, Tritium (I/P/T) organ doses can be explained by the differences in pathways. Tables 7 and 8 assume that there is a milk pathway at each of the listed locations. The ODCM defines the milk pathway at 1500m SW and the D/Qs are more comparable (2016 vent: 2.01E-9 $1/m^2$ vs. ODCM vent: 1.58E-09 $1/m^2$) and therefore the doses are comparable to those reported below Tables 7 and 8.

[12] RG 1.109, Table A-2.

[13] All locations except Chester Water Authority from RG 1.109, Section A-2. Chester Water Authority uses 10% of the RG 1.109 value because it is assumed to have 10% sourced from Conowingo Pond.

[14] From PBAPS Environmental Report, Supplement No. 3, Page 19. Boating data derived from a ratio of Adult:Child rates as listed in RG 1.109, Table A-2.

Table 7. Conservative Maximum Elevated Release Dose from 2016 Source Term and 2016 Meteorology

Distance (m)	Direction	2016 Highest MS X/Q (D/Q)	2016 Vent X/Q (D/Q)	Total Body Dose (mrem)	Skin Dose (mrem)	Gamma Air Dose (mrad)	Beta Air Dose (mrad)	I/P/T/C-14 Dose (mrem)	Limiting Receptor
4900	N	4.42E-08 (3.10E-10)	1.14E-07 (5.99E-10)	2.57E-02	3.34E-02	2.65E-02	1.83E-02	1.34E-01	Bone
3800	SW	4.31E-08 (2.52E-10)	1.19E-07 (5.01E-10)	2.68E-02	3.48E-02	2.77E-02	1.90E-02	1.09E-01	Bone

Table 8. Ground-Level Dose from 2016 Source Term and 2016 Meteorology

Distance (m)	Direction	2016 Highest Vent D/Q (X/Q)	2016 MS X/Q (D/Q)	Total Body Dose (mrem)	Skin Dose (mrem)	Gamma Air Dose (mrad)	Beta Air Dose (mrad)	I/P/T/C-14 Dose (mrem)	Limiting Receptor
1200	SSE	1.00E-08 (1.11E-06)	5.46E-09 (6.31E-10)	2.42E-01	3.14E-01	2.51E-01	1.69E-01	4.84E-01	Bone
900	NW	6.64E-09 (1.15E-06)	3.60E-09 (5.08E-10)	2.51E-01	3.25E-01	2.60E-01	1.75E-01	3.56E-01	Bone

Gaseous Radioactive Effluent Dose Assessment Conclusion

The conservative maximum dose was 5.96E-01 mrem with the maximum receptor as the child bone and this is due to the incorporation of carbon-14 in the calculation. Without C-14, the maximum dose is 3.47E-03 mrem to the infant thyroid. The noble gas limiting air doses were 2.53E-01 mrad (gamma) and 1.73E-01 mrad (beta). Noble gas plume conservative dose was 2.45E-01 mrem for the year (Total Body) and 3.19E-01 mrem (Skin Dose) for the year.

A dose assessment was performed for members of the public due to their activities inside the site boundary. The location where a person would receive the largest calculated total body dose inside the site boundary was at the Vehicle checkpoint, approximately 1,900 feet N of the PBAPS Unit 2 and Unit 3 roof vents. Assuming continuous occupancy, the calculated total body and skin doses were 1.82E-01 mrem and 2.35E-01 mrem, respectively. The noble gas limiting air doses were 1.88E-01 mrad (gamma) and 1.27E-01 mrad (beta).

All doses are projected to be much less than the limits, as expected. Again, these dose models incorporate several factors of conservatism including a source term that, by procedure, will use the most dose-limiting noble gas nuclide when no fission gas can be identified by grab sample but activity is detected from the effluent radiation monitor. Exelon Nuclear uses a detailed C-14 dose projection from the Electric Power Research Institute, Technical Report 1021106. Details for the assumptions used in this calculation may be found there.[15]

Therefore, PBAPS gaseous radioactive effluent controls continue to demonstrate compliance with 10 CFR 50, Appendix I objectives for the purposes of keeping doses to members of the public "as low as is reasonably achievable". These limiting or maximum calculated doses are a small fraction of the limits in Appendix I.

[15] PBAPS uses specific Boiling Water Reactor assumptions because the fraction of C-14 that is in the CO_2 form will vary based on general plant design. This is important because the major dose pathway is through photosynthesis and, therefore, only the oxide form is relevant.

ATTACHMENT 2: EFFLUENT SUMMARY

Gaseous Effluents - Summation of All Releases

Period: January 1, 2016 through December 31, 2016 **Unit: Peach Bottom**

A. Fission & Activation Gases	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est. Total Error %
1. Total Release	Ci	8.50E+01	1.21E+02	8.48E+01	2.63E+02	4.00E+01
2. Average release For the Period	uCi/ s	1.08E+01	1.54E+01	1.07E+01	3.31E+01	
3. Gamma Air Dose	mrad	3.72E-02	5.47E-02	3.30E-02	1.28E-01	
4. Beta Air Dose	mrad	2.56E-02	3.75E-02	2.29E-02	8.75E-02	
5. Percent of ODCM limit						
Gamma Air Dose	%	3.72E-01	5.47E-01	3.30E-01	1.28E+00	
Beta Air Dose	%	1.28E-01	1.88E-01	1.15E-01	4.37E-01	

B. Iodines

1. Total I-131	Ci	4.54E-05	8.69E-05	1.37E-04	1.80E-04	1.90E+01
2. Average release For the Period	uCi/ s	5.77E-06	1.10E-05	1.73E-05	2.26E-05	
3. Percent of ODCM limit	%	*	*	*	*	

* No ODCM defined Curie Limit, therefore a percentage of the limit cannot be calculated.

C. Particulate

1. Particulates with T1/2 > 8 days	Ci	9.64E-05	1.07E-04	1.09E-04	2.52E-04	2.80E+01
2. Average release For the Period	uCi/ s	1.23E-05	1.36E-05	1.37E-05	3.17E-05	
3. Percent of ODCM limit	%	*	*	*	*	

* No ODCM defined Curie Limit, therefore a percentage of the limit cannot be calculated.

D. Tritium

1. Total Release	Ci	4.61E+00	5.13E+00	1.29E+01	1.11E+01	1.30E+01
2. Average release For the Period	uCi/ s	5.86E-01	6.52E-01	1.63E+00	1.40E+00	
3. Percent of ODCM limit	%	*	*	*	*	

* No ODCM defined Curie Limit, therefore a percentage of the limit cannot be calculated.

E. Gross Alpha

1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	4.00E+02
2. Average release For the Period	uCi/ s	<LLD	<LLD	<LLD	<LLD	
3. Percent of ODCM limit	%	*	*	*	*	

* No ODCM defined Curie Limit, therefore a percentage of the limit cannot be calculated.

F. Carbon-14

1. Total Release	Ci	9.60E+00	9.60E+00	9.60E+00	9.60E+00
2. Average release For the Period	uCi/ s	1.22E+00	1.22E+00	1.21E+00	1.21E+00

G. Iodine-131, 133 and 135, Tritium, Carbon-14 & Particulate

1. Organ Dose*	mrem	1.49E-01	1.49E-01	1.49E-01	1.49E-01
2. Percent ODCM limit	%	9.93E-01	9.93E-01	9.93E-01	9.93E-01

*C-14 contributes most significantly; therefore the quarterly dose to the child bone is reported

Gaseous Effluents Release Point: Elevated (Main Offgas Stack)

Period: January 1, 2016 through December 31, 2016 **Unit: Peach Bottom**

Nuclides Released		Continuous Mode				Batch Mode			
1. Fission Gases	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Kr-85	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-85m	Ci	<LLD	5.98E-01	4.66E+00	2.66E+00	<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	1.39E+00	7.88E+00	5.15E+00	<LLD	<LLD	<LLD	<LLD
Xe-135	Ci	<LLD	<LLD	2.58E+00	5.51E+00	<LLD	<LLD	<LLD	<LLD
Xe-135m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-138	Ci	<LLD	2.22E+00	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ar-41	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Unidentified	Ci	1.65E+01	1.59E+01	9.19E+00	1.30E+01	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	1.65E+01	2.01E+01	2.43E+01	2.63E+01	<LLD	<LLD	<LLD	<LLD
2. Iodines									
I-131	Ci	3.59E-05	4.23E-05	4.97E-05	7.02E-05	<LLD	<LLD	<LLD	<LLD
I-133	Ci	8.59E-05	1.27E-04	1.44E-04	1.71E-04	<LLD	<LLD	<LLD	<LLD
I-135	Ci	<LLD	<LLD	<LLD	2.64E-05	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	1.22E-04	1.69E-04	1.93E-04	2.68E-04	<LLD	<LLD	<LLD	<LLD
3. Particulates									
Sr-89	Ci	3.99E-05	3.61E-05	3.64E-05	3.55E-05	<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	1.30E-07	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	1.00E-05	1.21E-05	1.73E-05	1.20E-05	<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	<LLD	4.67E-07	1.71E-07	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	<LLD	<LLD	1.05E-07	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	1.76E-06	8.99E-06	7.46E-06	1.12E-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
Zn-65	Ci	<LLD	<LLD	<LLD	1.79E-06	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	5.18E-05	5.72E-05	6.16E-05	6.08E-05	<LLD	<LLD	<LLD	<LLD
4. Tritium									
H-3	Ci	1.98E-01	2.58E-01	8.73E-01	4.86E-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	9.31E+00	9.31E+00	9.31E+00	9.31E+00	<LLD	<LLD	<LLD	<LLD

Peach Bottom Atomic Power Station
Unit 2 and 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLC

Gaseous Effluents Release Point: Ground-Level (Units 2 and 3 Reactor Building Exhaust Vents and Abnormal Releases)

Period: January 1, 2016 through December 31, 2016 **Unit: Peach Bottom**

Nuclides Released		Continuous Mode				Batch Mode			
1. Fission Gases	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
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-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
Unidentified	Ci	6.85E+01	1.01E+02	6.05E+01	2.37E+02	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	6.85E+01	1.01E+02	6.05E+01	2.37E+02	<LLD	<LLD	<LLD	<LLD
2. Iodines									
I-131	Ci	9.49E-06	4.45E-05	8.76E-05	1.10E-04	<LLD	<LLD	<LLD	<LLD
I-133	Ci	3.37E-05	2.33E-04	4.02E-04	1.90E-04	<LLD	<LLD	<LLD	<LLD
I-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	4.32E-05	2.78E-04	4.89E-04	3.00E-04	<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	4.22E-06	<LLD	4.10E-06	<LLD	<LLD	<LLD	8.63E-08
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	8.93E-05	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	<LLD	<LLD	<LLD	7.81E-06	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	<LLD	<LLD	7.74E-06	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	4.46E-05	3.90E-05	4.72E-05	8.02E-05	<LLD	<LLD	<LLD	2.07E-06
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
Zn-65	Ci	<LLD	6.46E-06	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	4.46E-05	4.97E-05	4.72E-05	1.89E-04	<LLD	<LLD	<LLD	2.15E-06
4. Tritium									
H-3	Ci	4.41E+00	4.87E+00	1.21E+01	1.07E+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	2.88E-01	2.88E-01	2.88E-01	2.88E-01	<LLD	<LLD	<LLD	<LLD

Liquid Effluents - Summation of All Releases

Period: January 1, 2016 to December 31, 2016 **Unit: Peach Bottom**

A. Fission & Activation Gases	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est. Total Error %
1. Total Release (not including tritium, gases & alpha)	Ci	0.00E+00	0.00E+00	1.54E-03	2.59E-03	1.60E+01
2. Average diluted concentration for the Period	µCi/ mL	0.00E+00	0.00E+00	2.28E-12	3.79E-12	
3. Percent of applicable limit						
Total Body Dose	%	5.40E-04	4.66E-04	8.40E-04	2.68E-03	
Organ Dose	%	1.62E-04	1.40E-04	5.99E-04	1.59E-03	

B. Tritium						Est. Total Error %
1. Total Release	Ci	1.64E+00	1.58E+00	1.41E+00	1.85E+00	6.40E+00
2. Average diluted concentration for the Period	µCi/ mL	2.62E-09	2.37E-09	2.09E-09	2.91E-09	
3. Percent of applicable limit*	%	2.62E-05	2.37E-05	2.09E-05	2.91E-05	

*10x 10CFR20 Limit of 1.00E-03 uCi/ mL; ODCMS 3.8.B.1.a

C. Dissolved & Entrained Gases						Est. Total Error %
1. Total Release	Ci	5.06E-06	<LLD	1.06E-06	3.34E-05	2.80E+01
2. Average diluted concentration for the Period	µCi/ mL	8.07E-15	<LLD	1.57E-15	5.27E-14	
3. Percent of ODCM limit*	%	*	*	*	*	

*No ECL values for Xe isotopes in 10 CFR 20 Appendix B Table 2, therefore a percentage of the limit cannot be calculated.

D. Gross Alpha Activity						Est. Total Error %
1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	2.30E+01

E. Volume of Waste Released (prior to dilution)	Liters	1.57E+08	1.57E+08	1.59E+08	1.60E+08

F. Volume of Dilution Water Used During Period	Liters	6.26E+11	6.68E+11	6.77E+11	6.34E+11

Liquid Effluents Release Points – Liquid Radwaste, RHR Leaks and Groundwater

Period: January 1, 2016 through December 31, 2016 **Unit: Peach Bottom**

Nuclides Released		Continuous Mode				Batch Mode			
	Unit	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	1.18E-07	<LLD
I-131	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	4.54E-05
Co-60	Ci	<LLD	<LLD	1.19E-03	1.83E-03	<LLD	<LLD	<LLD	1.36E-04
Fe-59	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Zn-65	Ci	<LLD	<LLD	5.89E-05	7.45E-05	<LLD	<LLD	<LLD	1.14E-04
Mn-54	Ci	<LLD	<LLD	2.97E-04	2.22E-04	<LLD	<LLD	<LLD	1.64E-04
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	1.03E-05
Fe-55	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Sb-124	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Sb-125	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ru-105	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
H-3	Ci	1.44E+00	1.58E+00	1.41E+00	1.09E+00	2.04E-01	<LLD	3.76E-04	7.56E-01
P-32	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	1.44E+00	1.58E+00	1.41E+00	1.10E+00	2.04E-01	<LLD	3.77E-04	7.56E-01
Xe-133	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	2.02E-05
Xe-135	Ci	<LLD	<LLD	<LLD	<LLD	5.06E-06	<LLD	1.06E-06	1.33E-05
Xe-138	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period (ex-tritium, gases and alpha)	Ci	0.00E+00	0.00E+00	1.54E-03	2.13E-03	0.00E+00	0.00E+00	1.18E-07	4.70E-04

ATTACHMENT 3: SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

Solid Waste Shipped

1.Type of Waste

	Units	2016	Est. error %
A: Spent Resin, Filters, Sludges, Evaporator Bottoms, etc	m^3	1.21E+02	
	Ci	2.36E+02	2.50E+01
B: Dry Compressible Waste, Contaminated Equipment, etc.	m^3	1.17E+03	
	Ci	3.97E+00	2.50E+01
C: Irradiated Components, Control Rods, etc.	m^3	5.85E-01	
	Ci	5.13E+00	2.50E+01
D: Other (Oil, SBLC)	m^3	3.48E+01	
	Ci	3.42E-04	2.50E+01

2.Estimate of Major Nuclide Composition (by type of waste)

a. Spent-Resin, Filters, Sludges, Evaporator Bottoms, etc.

Nuclide	Abundance % (no cutoff)	Activity (Ci)
H-3	9.00E-02	2.20E-01
C-14	3.80E-01	8.97E-01
Cl-36	0.00E+00	1.36E-06
Ar-39	0.00E+00	7.22E-07
Cr-51	1.13E+00	2.66E+00
Mn-53	0.00E+00	1.91E-08
Mn-54	2.34E+00	5.53E+00
Fe-55	1.66E+01	3.91E+01
Fe-59	2.10E-01	4.97E-01
Co-58	1.40E-01	3.28E-01
Co-60	5.94E+01	1.40E+02
Ni-59	1.00E-02	2.29E-02
Ni-63	2.23E+00	5.26E+00
Zn-65	5.13E+00	1.21E+01
Sr-89	0.00E+00	4.10E-05
Sr-90	4.00E-02	9.45E-02
Zr-95	0.00E+00	3.24E-05
Nb-94	0.00E+00	6.67E-07
Nb-95	0.00E+00	9.48E-07
Mo-93	0.00E+00	1.05E-06
Tc-99	8.00E-02	1.81E-01
Ag-110m	1.00E-01	2.28E-01
Sn-121m	0.00E+00	2.72E-08
Sb-124	1.00E-02	1.36E-02
Sb-125	0.00E+00	6.40E-03
I-129	1.00E-02	2.05E-02

Nuclide	Abundance % (no cutoff)	Activity (Ci)
Sb-124	1.00E-02	1.36E-02
Sb-125	0.00E+00	6.40E-03
I-129	1.00E-02	2.05E-02
I-131	0.00E+00	2.42E-21
Cs-134	3.00E-02	6.79E-02
Cs-137	1.19E+01	2.82E+01
Ba-140	0.00E+00	3.88E-14
La-140	0.00E+00	7.28E-92
Ce-141	0.00E+00	9.40E-07
Ce-144	1.90E-01	4.45E-01
Pm-149	0.00E+00	7.15E-106
Sm-151	0.00E+00	4.22E-07
Eu-152	0.00E+00	9.10E-05
Eu-154	0.00E+00	1.08E-05
Eu-155	0.00E+00	4.13E-03
Tb-158	0.00E+00	1.50E-08
Ho-166m	0.00E+00	2.59E-07
Hf-181	0.00E+00	3.95E-07
Pu-238	0.00E+00	1.37E-03
Pu-239	0.00E+00	2.02E-04
Pu-240	0.00E+00	2.74E-06
Pu-241	4.00E-02	8.65E-02
Pu-242	0.00E+00	2.24E-04
Am-241	0.00E+00	9.48E-04
Cm-242	0.00E+00	3.52E-05
Cm-243	0.00E+00	3.08E-04
Cm-244	0.00E+00	2.13E-03

b. Dry, Compressible Waste, Contaminated Equipment, etc.

Nuclide	Abundance % (no cutoff)	Activity (Ci)
H-3	1.60E-01	6.47E-03
C-14	5.00E-02	1.92E-03
Cr-51	1.69E+00	6.72E-02
Mn-54	3.70E+00	1.47E-01
Fe-55	2.33E+01	9.23E-01
Fe-59	8.80E-01	3.50E-02
Co-58	5.20E-01	2.04E-02
Co-60	5.77E+01	2.29E+00
Ni-63	9.80E-01	3.89E-02
Zn-65	6.17E+00	2.45E-01
Sr-90	2.00E-02	7.67E-04
Tc-99	1.60E-01	6.22E-03

Nuclide	Abundance % (no cutoff)	Activity (Ci)
Ag-110m	5.70E-01	2.25E-02
I-129	1.00E-02	4.41E-04
Cs-137	3.60E+00	1.43E-01
Ce-144	5.50E-01	2.20E-02
Pu-238	0.00E+00	8.07E-07
Pu-239	0.00E+00	1.15E-07
Pu-241	0.00E+00	9.17E-06
Am-241	0.00E+00	5.52E-07
Cm-242	0.00E+00	1.30E-07
Cm-244	0.00E+00	1.94E-06

c. Irradiated Components, Control Rods, etc.

Nuclide	Abundance % (no cutoff)	Activity (Ci)
H-3	0.00E+00	1.51E-05
C-14	1.00E-04	4.68E-04
Cr-51	0.00E+00	2.29E-04
Mn-54	1.08E-02	5.52E-02
Fe-55	3.75E-01	1.92E+00
Fe-59	0.00E+00	7.95E-05
Co-58	5.00E-04	2.66E-03
Co-60	5.55E-01	2.85E+00

Nuclide	Abundance % (no cutoff)	Activity (Ci)
Ni-59	1.20E-03	5.98E-03
Ni-63	5.74E-02	2.94E-01
Zn-65	3.00E-04	1.32E-03
Zr-95	0.00E+00	3.11E-15
Nb-94	0.00E+00	4.67E-06
Tc-99	0.00E+00	2.99E-05
I-129	0.00E+00	2.36E-06
Cs-137	0.00E+00	1.85E-05
Ce-144	0.00E+00	2.19E-05

d. Other: Oil

Nuclide	Abundance % (no cutoff)	Activity (Ci)
H-3	3.92E+01	1.34E-04
C-14	7.59E+00	2.60E-05
Co-60	4.20E-01	1.43E-06
Ni-63	6.35E+00	2.17E-05
Tc-99	1.87E+01	6.40E-05
Sn-113	9.00E-02	2.91E-07
I-129	2.66E+01	9.09E-05
Cs-137	1.90E-01	6.52E-07
Ce-144	9.20E-01	3.13E-06

3.Solid Waste Disposition

Number of shipments	Mode of Transportation	Destination
30	Hittman Transport Services	Energy Solution Services (CVRF) Bear
10	Hittman Transport Services	Energy Solution Services (GRF) Gallaher
26	Hittman Transport Services	Energy Solutions LLC Clive Disposal Site-
2	Visionary Solutions, LLC	Energy Solutions LLC Clive Disposal Site-

Irradiated Fuel Shipments

No shipment of irradiated fuel was made during the reporting period of 2016.

Changes to Process Control Program (PCP)

There was no revision to RW-AA-100 during the 2016 reporting period.

ATTACHMENT 4: RADIOLOGICAL IMPACT ON MAN

Radiological Impact on Man

Effluent	Applicable Organ	Estimated Dose	Age Group	Location		% of Applicable Limit	Limit	Unit
				Distance (meters)	Direction (toward)			
Noble Gas	Gamma - Air Dose	2.53E-01	All	1.10E+03	SSE	1.26E+00	2.00E+01	mrad
Noble Gas	Beta - Air Dose	1.73E-01	All	1.10E+03	SSE	4.32E-01	4.00E+01	mrad
Noble Gas	Total Body (gamma)	2.45E-01	All	1.10E+03	SSE	2.45E+00	1.00E+01	mrem
Noble Gas	Skin (Beta)	3.19E-01	All	1.10E+03	SSE	1.06E+00	3.00E+01	mrem
Gaseous Iodine, Particulate, Carbon-14 & Tritium	Bone	5.95E-01	Child	1.10E+03	SSE	1.98E+00	3.00E+01	mrem
Gaseous Iodine, Particulate & Tritium	Thyroid	3.47E-03	Infant	1.10E+03	SSE	1.16E-02	3.00E+01	mrem
Liquid	Total Body (gamma)	1.36E-04	Child	Site Boundary		2.26E-03	6.00E+00	mrem
Liquid	GI-LLI	2.43E-04	Child			1.21E-03	2.00E+01	mrem
Direct Radiation	Total Body	0.00E+00	All	1.15E+03	SSE	0.00E+00	2.20E+01	mrem

40 CFR 190 Doses

Effluent	Applicable Organ	Estimated Dose	Age Group	Location		% of Applicable Limit	Limit	Unit
				Distance (meters)	Direction (toward)			
Total Dose	Total Body	2.45E-01	All	1.15E+03	SSE	9.79E-01	2.50E+01	mrem
Total Dose	Thyroid	3.47E-03	All	1.15E+03	SSE	4.63E-03	7.50E+01	mrem
Total Dose	Bone	5.95E-01	All	1.15E+03	SSE	2.38E+00	2.50E+01	mrem
Total Dose	Total Body	2.45E-01	All	1.15E+03	SSE	8.16E+00	3.00E+00	mrem
Total Dose	Bone	5.95E-01	All	1.15E+03	SSE	1.98E+01	3.00E+00	mrem
Total Dose	Thyroid	2.56E-01	All	1.15E+03	SSE	4.66E-01	5.50E+01	mrem

ATTACHMENT 5: METEOROLOGICAL DATA

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Extremely Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	2	0	0	0	0	2
NNE	0	12	0	0	0	0	12
NE	7	7	0	0	0	0	14
ENE	10	5	0	0	0	0	15
E	8	4	0	0	0	0	12
ESE	0	4	4	0	0	0	8
SE	0	1	2	0	0	0	3
SSE	0	0	3	2	0	0	5
S	0	0	9	0	0	0	9
SSW	0	0	9	1	0	0	10
SW	0	0	4	0	0	0	4
WSW	0	0	6	1	0	0	7
W	0	0	2	0	3	0	5
WNW	0	1	0	5	0	0	6
NW	0	1	1	9	0	0	11
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	25	37	40	18	3	0	123

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: 8

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Moderately Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	4	1	0	0	0	5
NNE	1	5	0	0	0	0	6
NE	5	3	0	0	0	0	8
ENE	8	1	0	0	0	0	9
E	5	3	0	0	0	0	8
ESE	0	3	0	0	0	0	3
SE	0	3	3	0	0	0	6
SSE	0	1	5	0	0	0	6
S	0	1	9	1	0	0	11
SSW	0	1	3	0	0	0	4
SW	0	1	9	0	0	0	10
WSW	0	0	4	2	0	0	6
W	0	3	17	4	1	0	25
WNW	0	0	7	14	0	0	21
NW	0	3	6	20	1	0	30
NNW	0	5	15	8	0	0	28
Variable	0	0	0	0	0	0	0
Total	19	37	79	49	2	0	186

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: 8

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Slightly Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	7	2	0	0	0	9
NNE	0	3	0	0	0	0	3
NE	2	3	0	0	0	0	5
ENE	1	2	0	0	0	0	3
E	4	2	0	0	0	0	6
ESE	0	1	1	0	0	0	2
SE	1	4	1	0	0	0	6
SSE	0	3	4	0	0	0	7
S	0	2	2	0	0	0	4
SSW	0	0	1	0	0	0	1
SW	0	0	2	1	0	0	3
WSW	0	0	1	2	0	0	3
W	0	1	8	8	0	0	17
WNW	0	2	7	11	0	0	20
NW	1	5	9	4	0	0	19
NNW	0	3	12	0	0	0	15
Variable	0	0	0	0	0	0	0
Total	9	38	50	26	0	0	123

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: 8

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Neutral - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	10	25	6	8	0	0	49
NNE	12	14	6	2	0	0	34
NE	34	27	1	0	0	0	62
ENE	20	5	0	0	0	0	25
E	18	21	0	0	0	0	39
ESE	9	17	3	0	0	0	29
SE	6	17	11	1	0	0	35
SSE	6	24	24	3	0	0	57
S	8	17	29	12	0	0	66
SSW	4	9	5	2	0	0	20
SW	3	3	11	1	0	0	18
WSW	4	7	11	8	0	0	30
W	6	37	56	20	1	0	120
WNW	6	30	72	30	0	0	138
NW	10	39	69	10	0	0	128
NNW	5	34	43	18	0	0	100
Variable	0	0	0	0	0	0	0
Total	161	326	347	115	1	0	950

Hours of calm in this stability class: 4
Hours of missing wind measurements in this stability class: 31
Hours of missing stability measurements in all stability classes: 8

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Slightly Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	13	6	0	0	0	0	19
NNE	7	0	0	0	0	0	7
NE	9	1	0	0	0	0	10
ENE	17	4	0	0	0	0	21
E	25	7	0	0	0	0	32
ESE	10	9	1	0	0	0	20
SE	19	9	5	1	0	0	34
SSE	10	17	3	0	0	0	30
S	17	12	3	0	0	0	32
SSW	13	12	2	0	0	0	27
SW	13	22	6	0	0	0	41
WSW	9	37	6	0	0	0	52
W	17	32	6	0	0	0	55
WNW	13	15	0	0	0	0	28
NW	13	17	1	0	0	0	31
NNW	11	13	5	0	0	0	29
Variable	0	0	0	0	0	0	0
Total	216	213	38	1	0	0	468

Hours of calm in this stability class: 11
Hours of missing wind measurements in this stability class: 3
Hours of missing stability measurements in all stability classes: 8

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Moderately Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	6	0	0	0	0	0	6
NNE	2	0	0	0	0	0	2
NE	3	0	0	0	0	0	3
ENE	4	0	0	0	0	0	4
E	12	0	0	0	0	0	12
ESE	12	4	0	0	0	0	16
SE	10	3	1	0	0	0	14
SSE	2	1	0	0	0	0	3
S	6	0	0	0	0	0	6
SSW	9	1	0	0	0	0	10
SW	6	6	0	0	0	0	12
WSW	16	15	3	0	0	0	34
W	11	3	0	0	0	0	14
WNW	4	1	0	0	0	0	5
NW	6	3	0	0	0	0	9
NNW	5	1	0	0	0	0	6
Variable	0	0	0	0	0	0	0
Total	114	38	4	0	0	0	156

Hours of calm in this stability class: 9
Hours of missing wind measurements in this stability class: 1
Hours of missing stability measurements in all stability classes: 8

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Extremely Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	4	0	0	0	0	0	4
NNE	1	0	0	0	0	0	1
NE	3	0	0	0	0	0	3
ENE	11	0	0	0	0	0	11
E	15	0	0	0	0	0	15
ESE	9	2	0	0	0	0	11
SE	2	0	0	0	0	0	2
SSE	4	0	0	0	0	0	4
S	2	0	0	0	0	0	2
SSW	5	0	0	0	0	0	5
SW	8	2	0	0	0	0	10
WSW	10	3	0	0	0	0	13
W	7	1	0	0	0	0	8
WNW	4	1	0	0	0	0	5
NW	6	0	0	0	0	0	6
NNW	3	0	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	94	9	0	0	0	0	103

Hours of calm in this stability class: 8
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 8

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Extremely Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	1	1	0	0	0	2
NE	0	1	2	0	0	0	3
ENE	0	1	2	0	0	0	3
E	0	0	0	0	0	0	0
ESE	0	0	0	1	0	0	1
SE	0	0	2	1	0	0	3
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	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	3	7	2	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: 10

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Moderately Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

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

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: 10

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Slightly Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	1	0	0	0	0	1
NNE	0	0	0	1	0	0	1
NE	1	1	0	0	0	0	2
ENE	0	3	1	0	0	0	4
E	0	3	0	0	0	0	3
ESE	0	1	2	0	0	0	3
SE	0	0	1	3	0	0	4
SSE	0	0	0	1	0	0	1
S	0	0	1	3	1	0	5
SSW	0	0	1	9	0	0	10
SW	0	0	3	2	0	0	5
WSW	0	0	0	5	0	0	5
W	0	0	0	2	1	5	8
WNW	0	0	0	0	9	6	15
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	1	9	9	26	11	11	67

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: 10

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Neutral - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	21	25	8	0	8	62
NNE	5	16	20	8	3	6	58
NE	5	13	23	7	1	0	49
ENE	4	19	19	5	0	0	47
E	3	26	15	6	0	0	50
ESE	3	10	35	5	1	0	54
SE	3	9	29	7	7	1	56
SSE	2	5	21	16	7	1	52
S	3	6	17	32	22	4	84
SSW	1	4	4	9	2	0	20
SW	0	4	7	20	4	0	35
WSW	0	6	4	13	14	5	42
W	0	9	19	58	69	23	178
WNW	1	8	21	71	77	29	207
NW	0	15	29	88	27	6	165
NNW	2	10	24	26	8	9	79
Variable	0	0	0	0	0	0	0
Total	32	181	312	379	242	92	1238

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 8
Hours of missing stability measurements in all stability classes: 10

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Slightly Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	8	19	14	0	0	42
NNE	2	9	3	1	0	0	15
NE	0	6	6	0	0	0	12
ENE	2	12	5	0	0	0	19
E	4	10	7	7	1	0	29
ESE	0	5	7	5	1	0	18
SE	1	13	11	7	3	3	38
SSE	2	6	11	9	2	0	30
S	1	14	35	23	5	1	79
SSW	0	13	10	12	1	1	37
SW	3	12	19	11	10	0	55
WSW	2	6	8	17	1	0	34
W	1	10	14	22	6	1	54
WNW	0	4	24	26	2	0	56
NW	1	10	22	16	2	0	51
NNW	1	6	7	4	0	0	18
Variable	0	0	0	0	0	0	0
Total	21	144	208	174	34	6	587

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 6
Hours of missing stability measurements in all stability classes: 10

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Moderately Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	2	0	0	0	0	3
NNE	2	1	0	0	0	0	3
NE	1	2	1	0	0	0	4
ENE	2	1	0	0	0	0	3
E	1	1	1	0	0	0	3
ESE	0	0	0	0	1	0	1
SE	1	1	5	1	0	1	9
SSE	2	1	6	0	0	0	9
S	0	6	13	3	0	0	22
SSW	3	4	9	5	0	0	21
SW	3	9	12	7	0	0	31
WSW	6	3	5	5	0	1	20
W	1	5	3	5	0	0	14
WNW	0	3	3	1	0	0	7
NW	2	9	3	1	0	0	15
NNW	2	0	1	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	27	48	62	28	1	2	168

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: 10

Peach Bottom Atomic Power Station

Period of Record: January - March 2016
Stability Class - Extremely Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	0	0	0	0	0	1
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	1	0	0	0	0	1
SE	3	2	0	0	0	0	5
SSE	0	1	2	0	0	0	3
S	2	2	1	0	0	0	5
SSW	0	0	8	1	0	0	9
SW	1	8	7	2	0	0	18
WSW	2	5	1	2	0	0	10
W	0	4	3	0	0	0	7
WNW	0	3	4	0	0	0	7
NW	0	2	2	0	0	0	4
NNW	0	2	2	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	9	30	30	5	0	0	74

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: 10

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Extremely Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	19	1	0	0	0	20
NNE	6	25	0	0	0	0	31
NE	16	10	0	0	0	0	26
ENE	27	13	0	0	0	0	40
E	29	6	0	0	0	0	35
ESE	4	13	0	0	0	0	17
SE	2	11	2	0	0	0	15
SSE	0	4	7	1	1	0	13
S	0	4	20	3	0	0	27
SSW	0	0	2	2	0	0	4
SW	0	0	3	1	0	0	4
WSW	0	0	1	3	0	0	4
W	0	5	4	1	0	0	10
WNW	0	2	8	8	0	0	18
NW	0	2	8	5	1	0	16
NNW	0	15	20	5	0	0	40
Variable	0	0	0	0	0	0	0
Total	84	129	76	29	2	0	320

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: 10

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Moderately Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	7	5	1	1	0	0	14
NNE	10	3	0	0	0	0	13
NE	14	0	0	0	0	0	14
ENE	13	2	0	0	0	0	15
E	7	1	0	0	0	0	8
ESE	0	2	0	0	0	0	2
SE	1	8	0	0	0	0	9
SSE	1	9	7	0	0	0	17
S	1	6	12	0	0	0	19
SSW	0	6	2	0	0	0	8
SW	0	2	7	3	0	0	12
WSW	0	5	8	2	0	0	15
W	0	4	11	6	0	0	21
WNW	1	2	6	2	0	0	11
NW	0	7	11	4	2	0	24
NNW	0	11	14	7	0	0	32
Variable	0	0	0	0	0	0	0
Total	55	73	79	25	2	0	234

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: 10

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Slightly Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	4	6	0	0	0	0	10
NNE	7	2	0	0	0	0	9
NE	9	0	0	0	0	0	9
ENE	5	0	0	0	0	0	5
E	5	1	0	0	0	0	6
ESE	4	0	0	0	0	0	4
SE	1	4	0	0	0	0	5
SSE	3	7	0	1	0	0	11
S	1	5	6	0	0	0	12
SSW	1	1	1	0	0	0	3
SW	0	3	3	1	0	0	7
WSW	0	4	4	2	0	0	10
W	0	2	6	2	0	0	10
WNW	1	1	4	0	0	0	6
NW	0	3	0	2	1	0	6
NNW	2	3	7	3	0	0	15
Variable	0	0	0	0	0	0	0
Total	43	42	31	11	1	0	128

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: 10

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Neutral - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	21	20	10	1	0	0	52
NNE	46	17	1	0	0	0	64
NE	31	1	0	0	0	0	32
ENE	19	0	0	0	0	0	19
E	25	3	0	0	0	0	28
ESE	9	8	0	0	0	0	17
SE	17	42	5	0	0	0	64
SSE	21	62	27	1	0	0	111
S	19	33	20	4	0	0	76
SSW	6	16	3	0	0	0	25
SW	3	11	8	0	0	0	22
WSW	7	17	10	2	0	0	36
W	6	7	16	4	2	0	35
WNW	4	9	13	2	2	0	30
NW	13	21	21	5	1	0	61
NNW	10	26	37	16	0	0	89
Variable	0	0	0	0	0	0	0
Total	257	293	171	35	5	0	761

Hours of calm in this stability class: 1
Hours of missing wind measurements in this stability class: 1
Hours of missing stability measurements in all stability classes: 10

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Slightly Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	14	2	0	0	0	0	16
NNE	16	5	0	0	0	0	21
NE	11	0	0	0	0	0	11
ENE	14	0	0	0	0	0	14
E	13	2	0	0	0	0	15
ESE	25	1	0	0	0	0	26
SE	19	10	0	0	0	0	29
SSE	27	13	2	0	0	0	42
S	19	19	1	0	0	0	39
SSW	22	16	0	0	0	0	38
SW	18	18	3	0	0	0	39
WSW	16	39	14	0	0	0	69
W	28	27	2	0	0	0	57
WNW	26	23	0	0	0	0	49
NW	22	21	1	0	0	0	44
NNW	7	15	3	0	0	0	25
Variable	0	0	0	0	0	0	0
Total	297	211	26	0	0	0	534

Hours of calm in this stability class: 10
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 10

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Moderately Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	0	0	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	1	0	0	0	0	0	1
E	4	0	0	0	0	0	4
ESE	6	0	0	0	0	0	6
SE	2	0	0	0	0	0	2
SSE	3	0	0	0	0	0	3
S	3	0	0	0	0	0	3
SSW	4	2	0	0	0	0	6
SW	13	3	0	0	0	0	16
WSW	10	24	1	0	0	0	35
W	21	13	1	0	0	0	35
WNW	9	3	0	0	0	0	12
NW	2	0	0	0	0	0	2
NNW	0	1	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	79	46	2	0	0	0	127

Hours of calm in this stability class: 10
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 10

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Extremely Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	0	0	0	0	0	1
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	1	0	0	0	0	0	1
SSE	0	0	0	0	0	0	0
S	1	0	0	0	0	0	1
SSW	3	0	0	0	0	0	3
SW	6	1	0	0	0	0	7
WSW	14	2	0	0	0	0	16
W	8	1	0	0	0	0	9
WNW	4	0	0	0	0	0	4
NW	2	0	0	0	0	0	2
NNW	1	0	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	41	4	0	0	0	0	45

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: 10

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Extremely Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	3	3	0	0	0	6
NE	0	2	1	1	0	0	4
ENE	1	5	1	0	0	0	7
E	0	11	0	0	0	0	11
ESE	1	3	4	0	0	0	8
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	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	2	24	10	1	0	0	37

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: 8

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Moderately Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	1	2	0	0	0	3
NNE	0	1	1	0	0	0	2
NE	1	4	0	0	0	0	5
ENE	1	4	0	0	0	0	5
E	0	6	0	0	0	0	6
ESE	0	1	4	1	0	0	6
SE	0	0	1	0	0	0	1
SSE	0	0	0	1	0	1	2
S	0	0	0	0	3	0	3
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	1	0	0	1
WNW	0	0	0	0	2	0	2
NW	0	0	0	0	0	0	0
NNW	0	2	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	2	19	8	3	5	1	38

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: 8

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Slightly Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	8	2	1	0	0	11
NNE	0	9	0	0	0	0	9
NE	0	2	1	0	0	0	3
ENE	0	9	0	0	0	0	9
E	3	7	0	0	0	0	10
ESE	0	2	1	0	0	0	3
SE	0	2	7	2	0	0	11
SSE	0	1	2	1	0	1	5
S	0	0	9	5	0	0	14
SSW	0	0	2	2	1	0	5
SW	0	0	0	2	1	0	3
WSW	0	0	1	1	1	1	4
W	0	0	2	2	4	0	8
WNW	0	0	0	1	13	2	16
NW	0	0	4	8	1	0	13
NNW	0	5	7	6	2	0	20
Variable	0	0	0	0	0	0	0
Total	3	45	38	31	23	4	144

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: 8

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Neutral - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	4	13	26	15	7	0	65
NNE	10	16	20	5	0	0	51
NE	8	36	19	6	0	0	69
ENE	8	42	23	0	0	0	73
E	9	23	38	1	0	0	71
ESE	8	22	28	9	0	0	67
SE	7	25	37	11	0	0	80
SSE	1	29	47	31	5	0	113
S	6	26	45	39	13	0	129
SSW	6	7	20	7	0	0	40
SW	2	7	14	17	2	0	42
WSW	2	6	16	23	9	7	63
W	3	7	9	25	15	9	68
WNW	1	6	9	19	13	10	58
NW	4	14	31	34	20	4	107
NNW	1	13	26	33	30	0	103
Variable	0	0	0	0	0	0	0
Total	80	292	408	275	114	30	1199

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: 8

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Slightly Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	4	13	11	2	1	0	31
NNE	6	7	7	0	0	0	20
NE	2	3	3	0	0	0	8
ENE	2	9	4	0	0	0	15
E	2	8	3	1	0	0	14
ESE	3	14	11	1	0	0	29
SE	2	10	17	2	0	0	31
SSE	4	15	16	5	0	0	40
S	8	14	36	16	2	0	76
SSW	4	7	19	10	0	0	40
SW	3	9	16	21	3	0	52
WSW	1	12	11	21	17	0	62
W	1	11	8	20	4	0	44
WNW	1	6	16	27	6	0	56
NW	2	6	11	14	0	0	33
NNW	2	14	17	8	1	0	42
Variable	0	0	0	0	0	0	0
Total	47	158	206	148	34	0	593

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: 8

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Moderately Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	1	2	0	0	0	4
NNE	0	1	0	0	0	0	1
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	2	1	1	0	0	4
SSE	3	4	0	0	0	0	7
S	0	4	4	0	0	0	8
SSW	2	2	1	0	0	0	5
SW	2	12	5	1	1	0	21
WSW	0	3	0	9	3	0	15
W	1	2	4	13	3	0	23
WNW	1	7	2	6	0	0	16
NW	2	2	4	3	0	0	11
NNW	0	5	2	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	12	45	25	33	7	0	122

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: 8

Peach Bottom Atomic Power Station

Period of Record: April - June 2016
Stability Class - Extremely Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	5	0	0	0	0	5
NNE	0	1	2	0	0	0	3
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	1	0	0	0	0	1
SSW	2	3	1	0	0	0	6
SW	2	3	3	3	0	0	11
WSW	0	0	1	0	0	0	1
W	0	0	0	0	0	0	0
WNW	0	1	0	1	0	0	2
NW	0	2	2	1	0	0	5
NNW	0	1	5	0	0	0	6
Variable	0	0	0	0	0	0	0
Total	4	17	14	5	0	0	40

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: 8

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Extremely Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	4	20	0	0	0	0	24
NNE	11	15	0	0	0	0	26
NE	12	2	0	0	0	0	14
ENE	11	0	0	0	0	0	11
E	5	0	0	0	0	0	5
ESE	8	5	0	0	0	0	13
SE	2	6	3	0	0	0	11
SSE	0	19	6	0	0	0	25
S	0	8	8	0	0	0	16
SSW	0	3	1	0	0	0	4
SW	0	4	3	3	0	0	10
WSW	0	1	5	0	0	0	6
W	0	3	0	0	0	0	3
WNW	0	1	0	0	0	0	1
NW	0	0	0	0	0	0	0
NNW	3	7	3	0	0	0	13
Variable	0	0	0	0	0	0	0
Total	56	94	29	3	0	0	182

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 18
Hours of missing stability measurements in all stability classes: 1

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Moderately Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	6	16	0	0	0	0	22
NNE	5	5	0	0	0	0	10
NE	7	0	0	0	0	0	7
ENE	5	1	0	0	0	0	6
E	1	0	0	0	0	0	1
ESE	1	0	0	0	0	0	1
SE	6	5	2	0	0	0	13
SSE	0	23	3	0	0	0	26
S	0	16	7	0	0	0	23
SSW	1	7	5	0	0	0	13
SW	0	4	5	1	0	0	10
WSW	1	3	3	0	0	0	7
W	1	6	2	0	0	0	9
WNW	1	8	3	0	0	0	12
NW	1	14	2	0	0	0	17
NNW	3	32	19	0	0	0	54
Variable	0	0	0	0	0	0	0
Total	39	140	51	1	0	0	231

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 17
Hours of missing stability measurements in all stability classes: 1

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Slightly Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	6	0	0	0	0	7
NNE	6	3	1	0	0	0	10
NE	3	0	0	0	0	0	3
ENE	3	0	0	0	0	0	3
E	2	0	0	0	0	0	2
ESE	2	0	0	0	0	0	2
SE	0	2	0	0	0	0	2
SSE	1	8	1	0	0	0	10
S	0	6	3	0	0	0	9
SSW	0	3	0	0	0	0	3
SW	1	2	2	0	0	0	5
WSW	0	2	2	0	0	0	4
W	1	4	0	0	0	0	5
WNW	1	3	0	0	0	0	4
NW	1	10	2	0	0	0	13
NNW	1	22	5	0	0	0	28
Variable	0	0	0	0	0	0	0
Total	23	71	16	0	0	0	110

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 12
Hours of missing stability measurements in all stability classes: 1

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Neutral - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	27	31	2	0	0	0	60
NNE	19	23	1	0	0	0	43
NE	5	2	0	0	0	0	7
ENE	2	0	0	0	0	0	2
E	2	1	0	0	0	0	3
ESE	4	1	0	0	0	0	5
SE	7	13	2	0	0	0	22
SSE	15	43	7	0	0	0	65
S	17	25	2	0	0	0	44
SSW	11	12	2	0	0	0	25
SW	8	27	8	0	0	0	43
WSW	10	20	11	0	0	0	41
W	9	10	1	0	0	0	20
WNW	3	14	2	0	0	0	19
NW	5	33	7	0	0	0	45
NNW	14	26	5	0	0	0	45
Variable	0	0	0	0	0	0	0
Total	158	281	50	0	0	0	489

Hours of calm in this stability class: 1
Hours of missing wind measurements in this stability class: 79
Hours of missing stability measurements in all stability classes: 1

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Slightly Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	34	32	2	0	0	0	68
NNE	24	23	0	0	0	0	47
NE	6	7	0	0	0	0	13
ENE	3	0	0	0	0	0	3
E	7	2	0	0	0	0	9
ESE	3	0	0	0	0	0	3
SE	15	3	1	0	0	0	19
SSE	26	36	3	0	0	0	65
S	35	17	0	0	0	0	52
SSW	37	12	0	0	0	0	49
SW	35	31	0	1	0	0	67
WSW	28	39	1	0	0	0	68
W	34	26	1	0	0	0	61
WNW	22	28	0	0	0	0	50
NW	27	33	1	0	0	0	61
NNW	26	17	2	1	0	0	46
Variable	0	0	0	0	0	0	0
Total	362	306	11	2	0	0	681

Hours of calm in this stability class: 2
Hours of missing wind measurements in this stability class: 45
Hours of missing stability measurements in all stability classes: 1

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Moderately Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	0	0	0	0	0	1
NNE	2	0	0	0	0	0	2
NE	1	0	0	0	0	0	1
ENE	0	0	0	0	0	0	0
E	2	0	0	0	0	0	2
ESE	1	0	0	0	0	0	1
SE	1	0	0	0	0	0	1
SSE	4	0	0	0	0	0	4
S	1	1	0	0	0	0	2
SSW	14	7	0	0	0	0	21
SW	35	11	0	0	0	0	46
WSW	42	25	0	0	0	0	67
W	25	17	0	0	0	0	42
WNW	14	6	0	0	0	0	20
NW	5	8	0	0	0	0	13
NNW	2	2	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	150	77	0	0	0	0	227

Hours of calm in this stability class: 1
Hours of missing wind measurements in this stability class: 8
Hours of missing stability measurements in all stability classes: 1

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Extremely Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	1	0	0	0	0	1
ESE	2	0	0	0	0	0	2
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	24	22	0	0	0	0	46
WSW	18	17	0	0	0	0	35
W	11	6	0	0	0	0	17
WNW	2	0	0	0	0	0	2
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	57	47	0	0	0	0	104

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: 1

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Extremely Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	1	0	0	0	0	1
NE	0	3	2	0	1	0	6
ENE	0	4	3	1	0	0	8
E	0	6	4	0	0	0	10
ESE	0	1	2	0	0	0	3
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	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	15	11	1	1	0	28

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: 1

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Moderately Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

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

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: 1

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Slightly Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	8	0	0	0	0	8
NNE	0	3	1	2	0	0	6
NE	3	3	0	0	1	0	7
ENE	1	7	0	0	0	0	8
E	0	3	0	0	0	0	3
ESE	0	4	2	2	0	0	8
SE	0	2	2	0	0	0	4
SSE	0	1	10	0	0	0	11
S	0	1	12	1	0	0	14
SSW	0	1	5	0	0	0	6
SW	0	1	0	3	2	0	6
WSW	0	0	2	3	0	0	5
W	0	0	1	0	0	0	1
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	2	1	1	0	0	4
Variable	0	0	0	0	0	0	0
Total	4	36	36	12	3	0	91

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: 1

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Neutral - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	5	22	20	11	0	0	58
NNE	5	28	13	8	2	0	56
NE	10	17	6	12	3	0	48
ENE	9	18	9	13	2	0	51
E	8	17	3	1	1	3	33
ESE	7	23	4	2	0	0	36
SE	1	15	24	8	0	0	48
SSE	2	14	47	21	0	0	84
S	0	19	67	22	0	0	108
SSW	3	14	25	7	0	0	49
SW	1	24	29	14	1	0	69
WSW	2	8	14	16	0	0	40
W	4	15	23	1	0	0	43
WNW	2	19	14	8	1	0	44
NW	4	35	46	18	2	0	105
NNW	3	45	21	18	1	0	88
Variable	0	0	0	0	0	0	0
Total	66	333	365	180	13	3	960

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: 1

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Slightly Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	8	32	12	1	0	54
NNE	5	9	21	5	0	0	40
NE	10	20	22	8	2	0	62
ENE	3	11	5	7	3	0	29
E	10	18	7	8	4	0	47
ESE	4	27	7	0	0	0	38
SE	4	10	14	20	0	0	48
SSE	3	8	31	14	0	0	56
S	7	16	47	19	0	0	89
SSW	2	23	37	15	0	0	77
SW	0	20	25	19	1	0	65
WSW	3	9	20	16	4	1	53
W	2	7	17	12	0	1	39
WNW	0	7	13	16	1	0	37
NW	0	12	16	24	6	0	58
NNW	2	12	11	19	1	0	45
Variable	0	0	0	0	0	0	0
Total	56	217	325	214	23	2	837

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: 1

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Moderately Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	9	6	0	0	0	15
NNE	3	5	1	0	0	0	9
NE	0	2	0	0	0	0	2
ENE	1	0	0	0	0	0	1
E	0	6	0	0	0	0	6
ESE	2	5	0	0	0	0	7
SE	5	9	0	0	0	0	14
SSE	4	10	3	0	0	0	17
S	0	3	8	1	0	0	12
SSW	2	9	4	6	0	0	21
SW	1	5	5	4	1	0	16
WSW	2	3	10	5	1	0	21
W	2	2	11	4	0	0	19
WNW	1	3	10	5	1	0	20
NW	1	1	6	8	0	0	16
NNW	1	4	3	3	0	0	11
Variable	0	0	0	0	0	0	0
Total	25	76	67	36	3	0	207

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: 1

Peach Bottom Atomic Power Station

Period of Record: July - September 2016
Stability Class - Extremely Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	5	1	0	0	0	7
NNE	0	4	0	0	0	0	4
NE	0	1	0	0	0	0	1
ENE	0	0	0	0	0	0	0
E	3	0	0	0	0	0	3
ESE	0	0	0	0	0	0	0
SE	3	1	0	0	0	0	4
SSE	0	2	0	0	0	0	2
S	0	1	0	0	0	0	1
SSW	0	0	0	0	0	0	0
SW	0	2	0	0	0	0	2
WSW	1	4	1	0	0	0	6
W	0	2	0	0	0	0	2
WNW	0	3	0	0	0	0	3
NW	1	1	1	2	0	0	5
NNW	1	2	3	1	0	0	7
Variable	0	0	0	0	0	0	0
Total	10	28	6	3	0	0	47

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: 1

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Extremely Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	4	2	1	0	0	0	7
NNE	3	6	0	0	0	0	9
NE	5	0	0	0	0	0	5
ENE	9	0	0	0	0	0	9
E	8	0	0	0	0	0	8
ESE	1	0	0	0	0	0	1
SE	0	6	0	0	0	0	6
SSE	0	4	2	0	0	0	6
S	0	1	2	0	0	0	3
SSW	0	0	4	0	0	0	4
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	1	1	1	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	31	20	10	0	0	0	61

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 7
Hours of missing stability measurements in all stability classes: 4

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Moderately Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	2	10	2	2	0	0	16
NNE	2	7	0	0	0	0	9
NE	2	1	0	0	0	0	3
ENE	7	0	0	0	0	0	7
E	4	0	0	0	0	0	4
ESE	3	0	0	0	0	0	3
SE	0	2	1	0	0	0	3
SSE	1	1	3	0	0	0	5
S	0	0	2	2	0	0	4
SSW	0	5	1	0	0	0	6
SW	0	0	0	0	0	0	0
WSW	0	0	2	1	0	0	3
W	0	2	1	0	0	0	3
WNW	1	0	8	3	1	0	13
NW	1	3	9	2	0	0	15
NNW	2	7	15	6	0	0	30
Variable	0	0	0	0	0	0	0
Total	25	38	44	16	1	0	124

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 6
Hours of missing stability measurements in all stability classes: 4

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Slightly Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	2	6	1	2	0	0	11
NNE	2	1	0	0	0	0	3
NE	2	0	0	0	0	0	2
ENE	2	0	0	0	0	0	2
E	1	0	0	0	0	0	1
ESE	1	1	0	0	0	0	2
SE	1	2	0	0	0	0	3
SSE	0	4	1	0	0	0	5
S	0	3	1	0	0	0	4
SSW	1	1	1	0	0	0	3
SW	0	1	0	0	0	0	1
WSW	0	0	1	0	0	0	1
W	0	0	0	0	0	0	0
WNW	0	3	10	8	1	0	22
NW	0	5	11	5	1	0	22
NNW	0	8	21	5	0	0	34
Variable	0	0	0	0	0	0	0
Total	12	35	47	20	2	0	116

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: 4

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Neutral - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	16	15	20	6	0	0	57
NNE	31	5	0	0	0	0	36
NE	14	2	0	0	0	0	16
ENE	13	1	0	0	0	0	14
E	24	0	0	0	0	0	24
ESE	15	3	0	0	0	0	18
SE	1	28	3	0	0	0	32
SSE	4	48	15	0	0	0	67
S	4	31	11	1	0	0	47
SSW	4	13	4	1	0	0	22
SW	4	6	2	0	0	0	12
WSW	2	16	4	0	0	0	22
W	7	25	49	7	0	0	88
WNW	5	35	84	36	8	0	168
NW	1	33	47	15	1	0	97
NNW	8	49	71	21	0	0	149
Variable	0	0	0	0	0	0	0
Total	153	310	310	87	9	0	869

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 21
Hours of missing stability measurements in all stability classes: 4

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Slightly Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	10	10	2	0	0	0	22
NNE	23	3	0	0	0	0	26
NE	16	2	0	0	0	0	18
ENE	19	1	0	0	0	0	20
E	17	0	0	0	0	0	17
ESE	24	10	0	0	0	0	34
SE	12	8	1	0	0	0	21
SSE	20	12	2	0	0	0	34
S	23	12	1	1	0	0	37
SSW	6	10	0	0	0	0	16
SW	10	11	0	0	0	0	21
WSW	11	34	10	0	0	0	55
W	16	47	16	0	0	0	79
WNW	25	49	10	0	0	0	84
NW	19	42	9	0	0	0	70
NNW	18	21	3	0	0	0	42
Variable	0	0	0	0	0	0	0
Total	269	272	54	1	0	0	596

Hours of calm in this stability class: 13
Hours of missing wind measurements in this stability class: 31
Hours of missing stability measurements in all stability classes: 4

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Moderately Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	2	0	0	0	0	0	2
NNE	5	0	0	0	0	0	5
NE	5	0	0	0	0	0	5
ENE	5	0	0	0	0	0	5
E	9	0	0	0	0	0	9
ESE	9	0	0	0	0	0	9
SE	4	0	0	0	0	0	4
SSE	4	0	0	0	0	0	4
S	4	1	0	0	0	0	5
SSW	11	1	0	0	0	0	12
SW	11	1	0	0	0	0	12
WSW	20	16	0	0	0	0	36
W	31	12	0	0	0	0	43
WNW	16	8	0	0	0	0	24
NW	13	2	0	0	0	0	15
NNW	6	1	0	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	155	42	0	0	0	0	197

Hours of calm in this stability class: 4
Hours of missing wind measurements in this stability class: 27
Hours of missing stability measurements in all stability classes: 4

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Extremely Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	3	0	0	0	0	0	3
NNE	2	1	0	0	0	0	3
NE	1	0	0	0	0	0	1
ENE	6	0	0	0	0	0	6
E	2	0	0	0	0	0	2
ESE	3	0	0	0	0	0	3
SE	3	0	0	0	0	0	3
SSE	4	1	0	0	0	0	5
S	1	0	0	0	0	0	1
SSW	4	0	0	0	0	0	4
SW	9	0	0	0	0	0	9
WSW	20	16	0	0	0	0	36
W	17	4	0	0	0	0	21
WNW	9	1	0	0	0	0	10
NW	4	0	0	0	0	0	4
NNW	3	0	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	91	23	0	0	0	0	114

Hours of calm in this stability class: 14
Hours of missing wind measurements in this stability class: 3
Hours of missing stability measurements in all stability classes: 4

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Extremely Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	1	0	0	0	0	1
NE	0	1	1	0	0	0	2
ENE	0	1	0	0	0	0	1
E	0	3	0	0	0	0	3
ESE	0	0	2	1	0	0	3
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	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	6	3	1	0	0	10

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

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Moderately Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	1	0	0	0	1
ENE	0	1	0	0	0	0	1
E	0	2	1	0	0	0	3
ESE	0	2	1	0	0	0	3
SE	0	1	2	0	0	0	3
SSE	0	0	1	0	0	0	1
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	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	6	6	0	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

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Slightly Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

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

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

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Neutral - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	6	15	17	7	0	0	45
NNE	1	6	5	4	0	0	16
NE	4	16	7	3	0	0	30
ENE	4	13	20	0	0	0	37
E	8	13	15	0	0	0	36
ESE	1	10	22	3	0	0	36
SE	2	8	26	11	0	0	47
SSE	1	11	30	19	2	0	63
S	2	8	22	22	4	0	58
SSW	1	6	9	7	0	1	24
SW	0	5	7	5	0	0	17
WSW	0	5	16	17	12	0	50
W	2	4	24	66	66	31	193
WNW	1	6	24	56	30	26	143
NW	0	16	40	67	29	11	163
NNW	2	13	27	33	40	11	126
Variable	0	0	0	0	0	0	0
Total	35	155	311	320	183	80	1084

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 12
Hours of missing stability measurements in all stability classes: 4

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Slightly Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	4	7	9	3	0	0	23
NNE	3	7	5	2	0	0	17
NE	5	14	9	2	0	0	30
ENE	2	19	3	0	0	0	24
E	7	11	13	0	0	0	31
ESE	4	12	17	1	0	0	34
SE	1	13	14	12	0	0	40
SSE	2	13	22	3	0	0	40
S	2	10	29	3	0	2	46
SSW	1	6	24	10	0	0	41
SW	0	13	15	23	1	0	52
WSW	1	10	9	25	5	0	50
W	0	7	11	49	14	0	81
WNW	2	4	26	41	9	0	82
NW	3	8	29	39	8	0	87
NNW	5	8	30	17	0	0	60
Variable	0	0	0	0	0	0	0
Total	42	162	265	230	37	2	738

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: 4

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Moderately Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	12	6	0	0	0	18
NNE	2	1	0	0	0	0	3
NE	1	1	1	0	0	0	3
ENE	1	3	0	0	0	0	4
E	3	3	1	1	0	0	8
ESE	1	4	0	0	0	0	5
SE	1	1	5	4	0	0	11
SSE	0	2	0	0	0	0	2
S	1	5	6	2	1	0	15
SSW	0	7	5	1	0	0	13
SW	1	8	6	1	0	0	16
WSW	1	3	13	9	0	0	26
W	1	5	7	17	1	0	31
WNW	1	3	6	6	0	0	16
NW	2	5	14	6	0	0	27
NNW	2	6	6	0	0	0	14
Variable	0	0	0	0	0	0	0
Total	18	69	76	47	2	0	212

Hours of calm in this stability class: 1
Hours of missing wind measurements in this stability class: 1
Hours of missing stability measurements in all stability classes: 4

Peach Bottom Atomic Power Station

Period of Record: October - December2016
Stability Class - Extremely Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	0	0	0	0	0	1
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	1	0	0	0	0	0	1
ESE	1	1	1	0	0	0	3
SE	0	1	2	0	0	0	3
SSE	0	3	4	0	0	0	7
S	1	4	5	1	0	0	11
SSW	2	2	1	0	0	0	5
SW	1	1	3	5	0	0	10
WSW	1	2	13	3	0	0	19
W	2	5	6	7	0	0	20
WNW	1	3	0	1	0	0	5
NW	0	5	5	0	0	0	10
NNW	1	4	2	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	12	31	42	17	0	0	102

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

APPENDIX A: ERRATA DATA SECTION

2014 ARERR Abnormal Gaseous Release

In the 2014 ARERR the reported dose rate and dose for the abnormal gaseous ground release from the Unit 2 Equipment Hatch Opening was incorrect. The calculation was incorrectly performed in the original IR (#2401232) and thus copied incorrectly into the annual report. The error was overly conservative (reported dose rate of 1.40E-05 mrem/ year to the infant lung). The correct dose rate for infant lung is 1.47E-06 % of limit, thus the teen lung dose rate is most limiting at 2.84E-06 % of the limit. The conservative dose for the year is 3.53E-07 mrem to the infant liver. (IR 2675790)

2015 ARERR Gaseous Effluent Release Point: Ground-Level

In the 2015 ARERR the Ground Release Total Activity table in Attachment 2 contained an error. The activity reported for C-14 released from the Unit 2 and 3 Vent stacks was incorrect in the table in Attachment 2. The error was a transcription error, which lead to the Gaseous Effluent Summary table to also report an incorrect total C-14 activity released. The values are reported in a spreadsheet and a calculation is performed to determine the average release rate for the quarter and those values also need to be corrected. The reported dose and percentages of the dose limit (5.52E-01 mrem) are correct as the calculations were performed with the correct activities (IR 3999767). The tables should be reported as:

Peach Bottom Atomic Power Station
Unit 2 and 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLC

Gaseous Effluents - Summary of All Releases

Period: January 1, 2015 through December 31, 2015 **Unit: Peach Bottom**

A. Fission & Activation Gases	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Est. Total Error %
1. Total Release	Ci	1.56E+02	1.59E+02	1.03E+02	1.93E+02	3.51E+01
2. Average release For the Period	uCi/ s	2.01E+01	2.02E+01	1.30E+01	2.43E+01	
3. Gamma Air Dose	mrad	7.23E-02	7.09E-02	3.97E-02	8.82E-02	
4. Beta Air Dose	mrad	4.95E-02	4.86E-02	2.76E-02	6.04E-02	
5. Percent of ODCM limit						
Gamma Air Dose	%	7.23E-01	7.09E-01	3.97E-01	8.82E-01	
Beta Air Dose	%	2.48E-01	2.43E-01	1.38E-01	3.02E-01	

B. Iodines						
1. Total I-131	Ci	2.45E-04	3.81E-04	4.25E-04	8.49E-05	1.76E+01
2. Average release For the Period	uCi/ s	3.14E-05	4.85E-05	5.35E-05	1.07E-05	
3. Percent of ODCM limit	%	*	*	*	*	

C. Particulate						
1. Particulates with T1/2 > 8 days	Ci	1.67E-04	6.81E-04	1.86E-03	1.32E-04	1.94E+01
2. Average release For the Period	uCi/ s	2.14E-05	8.66E-05	2.34E-04	1.67E-05	
3. Percent of ODCM limit	%	*	*	*	*	

D. Tritium						
1. Total Release	Ci	9.55E+00	1.63E+01	2.17E+01	3.28E+00	1.11E+01
2. Average release For the Period	uCi/ s	1.23E+00	2.07E+00	2.73E+00	4.12E-01	
3. Percent of ODCM limit	%	*	*	*	*	

E. Gross Alpha						
1. Total Release	Ci	<LLD	<LLD	<LLD	<LLD	4.00E+02
2. Average release For the Period	uCi/ s	<LLD	<LLD	<LLD	<LLD	
3. Percent of ODCM limit	%	*	*	*	*	

F. Carbon-14					
1. Total Release	Ci	8.69E+00	9.26E+00	8.80E+00	8.72E+00
2. Average release For the Period	uCi/ s	1.12E+00	1.18E+00	1.11E+00	1.10E+00

G. Iodine-131, 133 and 135, Tritium, Carbon-14 & Particulate					
1. Organ Dose	mrem	1.35E-01	1.43E-01	1.36E-01	1.35E-01
2. Percent ODCM limit	%	8.97E-01	9.56E-01	9.07E-01	9.00E-01

Peach Bottom Atomic Power Station Licensee: Exelon Generation Company, LLC
Unit 2 and 3 PSEG Nuclear, LLC

Gaseous Effluents Release Point: Ground-Level (Units 2 and 3 Reactor Building Exhaust Vents and Abnormal Releases)

Period: January 1, 2015 through December 31, 2015 **Unit: Peach Bottom**

Nuclides Released		Continuous Mode				Batch Mode			
1. Fission Gases	Unit	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
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	4.52E+00	<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
Unidentified	Ci	1.33E+02	1.26E+02	7.28E+01	1.63E+02	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	1.33E+02	1.30E+02	7.28E+01	1.63E+02	<LLD	<LLD	<LLD	<LLD
2. Iodines									
I-131	Ci	2.03E-04	3.34E-04	3.55E-04	1.15E-05	<LLD	<LLD	<LLD	<LLD
I-133	Ci	1.05E-03	2.07E-03	2.19E-03	<LLD	<LLD	<LLD	<LLD	<LLD
I-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	1.25E-03	2.41E-03	2.54E-03	1.15E-05	<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	1.74E-05	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
La-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cr-51	Ci	<LLD	2.02E-05	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	<LLD	2.73E-05	2.08E-04	<LLD	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	2.38E-05	1.36E-04	<LLD	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	1.08E-04	5.14E-04	1.35E-03	3.70E-05	<LLD	<LLD	3.76E-06	<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
Zn-65	Ci	<LLD	2.80E-04	9.11E-04	<LLD	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	1.08E-04	6.03E-04	1.70E-03	3.70E-05	<LLD	<LLD	3.76E-06	<LLD
4. Tritium									
H-3	Ci	9.16E+00	1.55E+01	1.86E+01	2.99E+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	2.61E-01	2.78E-01	2.64E-01	2.62E-01	<LLD	<LLD	<LLD	<LLD

2008-2016 Dose to Member of the Public Onsite

ODCM 3.10.2 discusses the requirements for submission of the ARERR. Item 'f' under this section requires doses to members of the public located within the site boundary and all assumptions used in calculations to be included in the ARERR. Previously, this assessment was included in the 'Dose Assessment' Report (circa 2008 and earlier). When the ODCM was revised, the 'Dose Assessment' Reporting requirements was removed but ODCM 3.10.2.f was not. Therefore, an evaluation of gaseous dose to members of the public located within the site boundary was performed.

Assumptions

Previously, the Dose Assessment Report evaluated gaseous dose to members of the public due to activities inside the site boundary at vehicle checkpoint (I14A), 1300 feet N of the vent stacks. This onsite location was used for measuring inhalation, plume and ground shine doses to the National Guardsmen and State Police. Continuous Occupation was assumed. These assumptions were determined to be valid and thus this location was used for the assessment below. Likely due to remapping of the meteorological sectors, location I14A is located in the NNE sector, 1900 feet from the vent stacks.

Meteorological data (MET) spanning the years from 2008-2016 was generated and the total gaseous activity released from both 2015 and 2016 calendar years were used to calculate total body and skin dose. CY-PB-170-210 "Gaseous Dose and Dose Rate Calculation" was used to calculate dose.

Results

Air dose due to gamma and beta radiation and total body and skin dose was calculated for MET data from 2015, 2013, 2010, and 2008 using the total gaseous activity released from 2015. Similar doses were calculated for MET data from 2016 and the 10 year average using 2016 total gaseous activity released. C-14 was not used in the calculations as noble gasses contribute most significantly to these doses.

2015 ARERR Data (without C-14)	**Dose**	**2015 MET Data**	**2013 MET Data**	**2010 MET Data**	**2008 MET Data**	**Average**
	$Dose_\gamma$ (mrad)	1.75e-1	1.96e-1	1.27e-1	1.89e-1	1.72E-01
	$Dose_\beta$ (mrad)	1.18e-1	1.32e-1	8.59e-2	1.28e-1	1.16E-01
	D_{TB} (mrem)	1.69e-1	1.90e-1	1.23e-1	1.83e-1	1.66E-01
	D_{Skin} (mrem)	2.19e-1	2.46e-1	1.59e-1	2.37e-1	2.15E-01
2016 ARERR Data (without C-14)	**Dose**	**2016 MET Data**	**2007-2016 MET Data**	**Average**	**% Difference of Averages (relative to avg value)**	
	$Dose_\gamma$ (mrad)	1.88e-1	1.72e-1	1.80E-01	4.69%	
	$Dose_\beta$ (mrad)	1.27e-1	1.16e-1	1.22E-01	4.65%	
	D_{TB} (mrem)	1.82e-1	1.66e-1	1.74E-01	4.56%	
	D_{Skin} (mrem)	2.35e-1	2.15e-1	2.25E-01	4.43%	

The total body and skin dose reported in 2008 were 1.29E-01 mrem and 1.73E-01 mrem, respectively. The doses in the above table are similar in magnitude, and do not vary significantly from the reported 2008 values. The differences are expected due to variances in MET data from year to year, and fall within the calculation assumptions.

The impact of not calculating the dose to members of the public with activities within the site boundary is minimal. The doses are less than those reported in the 2016 ARERR, indicating that the ODCM defined location (1100 meters SSE of the roof vents) is a more conservative location for dose calculation. The assumption that National Guardsmen and State Police working onsite received the same dose as the member of the public off-site (as reported in the ARERRs from 2009-2015) is overly conservative and meets the purpose of ODCM 3.10.2.f.