



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 62
January 1, 2019 through December 31, 2019

Enclosed is the Annual Radioactive Effluent Release Report 62, January 1, 2019 through December 31, 2019 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.

The ODCM was not revised during the 2019 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,

David A. Henry, Plant Manager
Peach Bottom Atomic Power Station

DAH/SMO/RJL/ASD/asd

Enclosure (1)

cc: USNRC Region I, Regional Administrator (Daniel H. Dorman)
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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. 62

JANUARY 1, 2019 THROUGH DECEMBER 31, 2019

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

Peach Bottom Atomic Power Station
Unit 2 and 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLC

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Technical Concurrence (for accuracy of information):

Siddhan O'Dwyer / Siddhan M. O'Dwyer 4-24-2020
Manager, Site Chemistry and Radwaste Date

INTRODUCTION

In accordance with the Reporting Requirements of Technical Specification 5.6.3 applicable during the reporting period, January 1, 2019 through December 31, 2019, this report summarizes the Effluent Release Data for Peach Bottom Atomic Power Station (PBAPS) Units 2 and 3. 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.

In addition to the normal effluent releases from Units 2 and 3, there were three types of abnormal releases of liquid low-level radioactive material. One from leaking Residual Heat Removal (RHR) heat exchangers, one from releasing contaminated water in the auxiliary boilers, and the last from groundwater tritium contamination ('tritium plume'). These releases were far below regulatory limits.

In addition to the normal effluent releases from Units 2 and 3, there were two abnormal releases of gaseous radioactive material during 2019. The first release was from steam being vented during operation of auxiliary boilers containing low levels of radioactivity. The other release was from positive pressure in the moisture separate occurring during the 22nd refueling outage of Unit 3 (P3R22), in which when air samples showed detectable isotopic activity.

For all gaseous releases from Units 2 and 3, 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 was 1.42E-01 mrem, which was approximately 4.73E-01% of the annual limit. The maximum calculated air dose in the unrestricted area due to noble gas effluents was 2.52E-01 mrad (gamma) and 1.71E-01 mrad (beta), which was 1.26E+00% and 4.28E-01%, respectively, of the annual limits.

In 2019, there were no direct gaseous or liquid releases or discharges from Unit 1 to the environment. Additionally, there were no gaseous or liquid radioactive releases from the Independent Spent Fuel Storage Installation, NRC Docket No. 72-29 (ISFSI).

No changes were made to RW-AA-100 "Process Control Program for Radioactive Waste" or to the ODCM or the Appendix A during the 2019 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
- CY-PB-170-210, Gaseous Dose and Dose Rate Calculation
- CY-PB-170-2000, Annual Radioactive Effluent Release Report
- CY-PB-170-2300, OpenEMS Effluent Management System Implementation
- Peach Bottom Atomic Power Station, Offsite Dose Calculation Manual and Specifications (Appendix A)

Peach Bottom Atomic Power Station
Unit 2 and 3

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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	mrads	gamma radiation in air dose per quarter	ODCM Specification 3.8.C.2.a
20	mrads	beta radiation in air dose per quarter	ODCM Specification 3.8.C.2.b
20	mrads	gamma radiation in air dose per year	ODCM Specification 3.8.C.2.c
40	mrads	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	mrem	total body dose limit per quarter	ODCM Specification 3.8.B.2.a
10	mrem	dose limit per quarter to any organ	ODCM Specification 3.8.B.2.a
6	mrem	total body dose limit per year	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.

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) 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.

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 (un-id(s) or un-id(v)), 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-0133¹). 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.

¹ NUREG 0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants: A Guidance Manual for Users of Standard Technical Specifications," October 1978.

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.

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.

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, which are listed in Attachment 2 of this report.

Decommissioned Unit 1 Liquid Radioactive Waste Processing

There were no direct gaseous or liquid releases or discharges from Unit 1 to the environment during 2019. However, during the reporting period, a total of 339.6 gallons of water with low concentrations of H-3 were collected from Unit 1 and stored at Unit 2 and 3, for processing in a future year. No gamma emitting nuclides were identified above detectable limits in the U1 water collected from the containment or containment sump. During the reporting period, there were two releases of Unit 1 water through the Unit 2 and Unit 3 liquid radwaste system. These releases included all U1 water drummed in 2018, (333 gallons) and water pumped from the U1 spent fuel pool from 2018 and 2019, which contained low levels of Cs-137 (326 gallons from 2018 and 600 gallons from 2019). The permitted liquid effluent doses for all the Unit 1 water released through the Unit 2 and Unit 3 liquid radwaste system was 5.08E-07 mrem to the adult total body and 8.00E-07 mrem to the teen liver, 1.69E-05% and 8.00E-06% of quarterly ODCM limit, respectively.

Batch Releases

Table 4. Quarterly Liquid Batch Release Statistics

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Number of Batch Releases	0	6	1	12*
Total Time for Batch Releases (minutes)	0	7.32E+02	1.170E+02	4.44E+03
Maximum time period for batch release (minutes)	0	1.95E+02	1.170E+02	1.45E+03
Average time period for batch release (minutes)	0	1.22E+02	1.170E+02	3.70E+02
Minimum time period for batch release (minutes)	0	7.00E+01	1.170E+02	3.00E+01
Average Stream Flow (ft ³ /s) ^{2,3}	2.20E+05	2.13E+05	4.96E+04	1.04E+05
Dilution volume (liters)	0	3.33E+09	5.32E+08	1.68E+10

*Includes nine abnormal releases from contaminated auxiliary boiler

Table 5. Quarterly Gaseous Batch Release Statistics

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Number of batch releases:	0	0	0	7*
Total Time for batch releases (minutes)	0	0	0	8.71E+03
Maximum time period for batch release (minutes)	0	0	0	3.02E+03
Average time period for batch release (minutes)	0	0	0	1.24E+03
Minimum time period for batch release (minutes)	0	0	0	6.05E+02

*Includes seven abnormal releases from contaminated auxiliary boiler and P3R22

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.

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 24 March 2020.

Abnormal or Unplanned Releases

'Abnormal' releases are those releases that are not defined as 'normal' releases in the Licensee's ODCM. Systems with a potential for an unplanned release are monitored to ensure if a release were to occur it would be identified and quantified appropriately. 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 2019, 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 that ground water flowed to the discharge canal at a steady rate of $3.44\text{E}+02$ gpm, carrying with it some of the tritium underneath the plant. The ground water flow rate was updated in April 2017, when the new report was provided⁴. The conservative maximum dose for the entire year from this continuous release is calculated to be $7.44\text{E}-05$ mrem (to the whole-body) and $7.44\text{E}-05$ mrem (to any organ, except bone⁵ which is $0.00\text{E}+00$ mrem)⁶. This dose contribution projection is well below the limit specified in the ODCM.

Heat Exchanger Leakage

In July of 2016, a small leak developed in the Unit 3 'C' Residual Heat Removal (RHR) Heat Exchanger and was fixed prior to starting P3R22 (October 16, 2019). On November 13, 2018 a small leak developed in the Unit 2 'B' RHR. The RHR system is designed to circulate water to remove heat from the reactor unit when necessary by using a heat exchanger with river water as the cooling medium. The dose model assumes that contaminated torus water leaks into the river water running through 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.

⁴ "Estimated Mass Flux Of Tritiated Groundwater To The Conowingo Reservoir And Rock Run Creek, Peach Bottom Atomic Power Station, Delta, Pennsylvania", August 2017, GHD formerly Conestoga-Rovers & Associates.

⁵ Tritium dose factor for bone is $0.00\text{E}+00$; 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 torus water released to the discharge canal, during 2019, contributed a conservative maximum dose of $1.74\text{E-}04$ mrem to the total body (receptor child), and a conservative maximum organ dose of $4.38\text{E-}04$ mrem to the adult gastrointestinal tract-lower large intestine (GI-LLI). This dose contribution is 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.

Contaminated Auxiliary Boiler

During 2019, trace amounts of H-3 activity was identified in the auxiliary boiler (IR# 04278841, 04289826, 04289830, 04289582, 04308811, 04312171). Also, small amounts of gamma activity (Co-60) was identified (IR# 04294084). During operations of the boiler activity was not always detectable, making identifying and fixing the source of contamination challenging. Therefore, sampling and monitoring of the boiler and deaerator water was performed prior to start up, during operations, and after lay-up to identify any potential for release. Liquid releases occurred during blow-downs and start-up, when liquid waste is routed to a storm drain, if activity is identified before or during boiler operation. The source of leakage was believed to be identified and fixed in January 2020 (IR #04312479).

Analysis of Release

There were nine abnormal liquid releases due to contamination found in the auxiliary boilers. Samples were counted to effluent LLDs for gamma and H-3 and any positive activity was used to quantify the release. The releases were documented in the effluent management software (OpenEMS) and the total organ dose was determined to be $7.14\text{E-}06$ mrem to the adult GI-LLI ($7.14\text{E-}05\%$ of quarterly limit) and $1.07\text{E-}06$ mrem to the child total body ($3.55\text{E-}05\%$ of quarterly limit).

Gaseous Releases

Contaminated Auxiliary Boiler

While the boiler was in operation and during startup, the roof vent is opened to maintain system pressure. The conservative assumption is that the steam released through the auxiliary boiler contained whatever activity was identified during liquid sampling and therefore, needed to be documented as a release. The highest H-3 or gamma activity concentration from either the steam/mud drums or the deaerator, identified during the release period, was used to quantify the release. There were six documented releases of the steam from the auxiliary boiler containing activity in 2019. Since there is no measurement of steam flow exiting the roof vent when it is open, the total boiler steam flow was used, which is overly conservative (since the majority of steam is used by the system and returned via condensate instead of released through the roof vent). The exhaust vent was not open during operation when house heat was in service. The total dose to infant thyroid from all six releases was $8.15\text{E-}04$ mrem, $3.89\text{E-}04\%$

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of quarterly limit, while the maximum dose rate seen during a release was $2.98\text{E-}02$ mrem/year to the teen lung ($1.99\text{E-}03\%$ of the 1500 mrem/year limit). The conservative nature of the release assumptions show that the dose impact is minimal to the public.

P3R22 Moisture Separator Hole-in-the-Wall

To improve the atmosphere in the moisture separator for workers during the P3R22 outage, a hole in the wall was opened on 116 foot elevation of the turbine building. A continuous air sampler was set up near the hole to monitor for any potential releases, should building ventilation change. Analysis of the air samples on 10-26-2019 identified both I-131 and I-133 on the charcoal cartridges, and building ventilation was not negative (IR #4291628). Therefore, an assumed release remained, until building ventilation was restored to negative pressure. The release occurred for $6.90\text{E}+02$ minutes, with an assumed air flow of $9.38\text{E}+03$ ft³/min. The maximum concentration of I-131 and I-133 was found to be $4.07\text{E-}11$ $\mu\text{Ci/cc}$ and $1.46\text{E-}12$ uCi/cc , respectively. The conservative dose rate ($1.41\text{E-}03$ mrem/year to Child Thyroid) and conservative dose ($5.83\text{E-}05$ mrem to Infant Thyroid) calculated for this release is well-below the limits in the ODCM.

Missed Sampling

The emergency service water (ESW) radiation monitor (RM) was declared unable to perform its ODCM function 3.8.B.3.d and required entry into Condition B, as detailed in IR #04271243. It was not understood at the time that there is always flow through ESW RM, even when the ESW pump is not in service, therefore when the RM was declared inoperable on 8/12/19 at 1330, compensatory sampling was not initiated (IR #04271627) as the ODCM only requires sampling while the system is service. The first compensatory sample was obtained on 8/13/19 at 0755, 18.4 hours after the RM was declared inoperable. The sample came back with no detectable activity. IR #04277420 was written to document corrective actions to revise the ARC-318 30C210 B-2, Emergency Service Water Hi Radiation, such that timely notification is made to ensure sampling is not missed again.

Radiation Monitors Out of Service for Greater than 30 days

ESW Rad Monitor was declared unable to perform its ODCM function 3.8.B.3.d and required entry into Condition B on November 20, 2019, as detailed in IR #04298786 with operability and sampling tracked under ODCM log entry 2-ODCM-19-0007. A work request (01452106) and work order (04982352) were created to track fixing the ESW. During initial troubleshooting it was identified that the cables had significant degradation due to corrosion (IR #04310951). The cables were replaced, but there were delays in obtaining the correct materials and getting the work completed. The work was not completed until January 14, 2020. Due to the RM not being restored to service within 30 days (due 12/20/2019), ODCM 3.8.B.3 Condition E was entered, and the details needed to be provided in this annual report (IR # 02387583-15). All required compensatory sampling was performed during this time period and all sample LLDs were met.

Changes to the ODCM

There were no changes made to the ODCM, nor the ODCM Specifications (Appendix A) during 2019.

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Violations

There were no effluent release violations for the 2019 reporting period.

Dose Assessment

Introduction

A dose assessment for PBAPS was conducted with the measured cumulative 2019 radioactive effluent source terms, provided in Attachment 2, "Effluent Summary," and the 2019 meteorological (MET) data. This dose assessment verifies 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

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 2019, the annual average river flow⁸ was measured as 5.87E+05 ft³/s.

Of the three separate flow regimes that were used in the original Appendix I submittal, the most-limiting of them (<1.50E+04 ft³/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 factor⁹ at the Conowingo Intake is 5.40E+00 and the assumption for the reconcentration factor⁹ is 1.16E+00. The PBAPS shorewidth factor¹⁰ of 2.00E-01 was also used.

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.

Table 6. Consumption and Usage Rate Assumptions

Pathway	Adult	Teenager	Child	Infant	Units
Eating Fish ¹⁰	2.10E+01	1.60E+01	6.90E+00	0.00E+00	kg/ yr
Drinking Water ¹¹	7.30E+02	5.10E+02	5.10E+02	5.10E+02	L/ yr
Swimming ¹²	2.80E+02	2.80E+02	0.00E+00	0.00E+00	h/ yr
Boating ¹²	1.20E+02	1.20E+02	6.70E+01	0.00E+00	h/ yr
Shoreline Recreation ¹²	3.25E+02	3.25E+02	1.40E+01	0.00E+00	h/ yr
Fishing from Conowingo Dam ¹²	3.25E+02	3.25E+02	0.00E+00	0.00E+00	h/ yr

⁷10 CFR 50 Appendix I, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low as is Reasonable Achievable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents".

⁸ USGS National Water Information Service; Monitoring Site 01576000, Susquehanna River at Marietta, PA; <http://waterdata.usgs.gov/nwis>. Accessed 24 Mar 2020.

⁹ From original ODCM.

¹⁰ RG 1.109, Table A-2.

¹¹ All locations 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.

¹² PBAPS Environmental Report, Supplement No. 3, Page 19. Boating data is a ratio of Adult:Child rates from RG 1.109, Table A-2.

Liquid Effluent Dose Assessment Conclusion

For all permitted releases in 2019, the calculated total body dose was 1.04E-05 mrem and 1.42E-05 mrem to the limiting organ of adult GI-LLI.

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.

Gaseous Dose Assessment

The gaseous dose assessment calculates the conservative dose at the limiting receptor location, as defined in the ODCM and at locations from the land-use census, using the 2019 meteorology to demonstrate compliance with 10 CFR 50, Appendix I. The assessment compares the current ODCM locations to the maximum locations from the land use census to ensure the current ODCM locations are still the most impactful dose locations.

Tables 7 and 8 report the dose calculated with the CY-PB-170-210 spreadsheet using the 2019 MET data and total gaseous activity released (summarized in Attachment 2), including C-14. Table 7 focuses on the two locations with the highest elevated dispersion factor (X/Q) from the Main Offgas Stack, while Table 8 highlights the two locations with the highest ground deposition factor (D/Q) from the Reactor Building Exhaust Vents. 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 (2019 vent: 2.21E-09 1/m² vs. ODCM vent: 1.58E-09 1/m²) and therefore, the dose calculated by ODCM methodology is more accurately representative of the dose to members of the public than the doses reported in Tables 7 and 8.

Table 7. Conservative Maximum Elevated Release Dose from 2019 Source Term and 2019 Meteorology

Distance (m)	Direction	2019 Highest MS X/Q (D/Q)	2019 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
4600	N	3.53E-08 (2.83E-10)	1.22E-07 (7.33E-10)	2.67E-02	3.47E-02	2.76E-02	1.88E-02	1.53E-01	Bone
3800	SW	3.94E-08 (2.39E-10)	1.08E-07 (5.28E-10)	2.36E-02	3.08E-02	2.44E-02	1.67E-02	1.67E-01	Bone

Table 8. Ground-Level Dose from 2019 Source Term and 2019 Meteorology

Distance (m)	Direction	2019 Highest Vent D/Q (X/Q)	2019 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	9.16E-09 (1.08E-06)	3.21E-09 (4.85E-10)	2.35E-01	3.05E-01	2.43E-01	1.64E-01	1.44E-01	Bone
900	NW	6.36E-09 (1.05E-06)	3.55E-09 (4.95E-10)	2.28E-01	2.96E-01	2.36E-01	1.60E-01	1.41E-01	Bone

Gaseous Radioactive Effluent Dose Assessment Conclusion

The conservative maximum dose was $1.42\text{E-}01$ mrem with the maximum receptor as the child bone which is due to the incorporation of carbon-14 in the calculation. Without C-14, the maximum dose is $8.79\text{E-}03$ mrem to the infant thyroid. The noble gas limiting air doses were $2.52\text{E-}01$ mrad (gamma) and $1.71\text{E-}01$ mrad (beta). Noble gas plume conservative dose was $2.43\text{E-}01$ mrem to the total body and $3.16\text{E-}01$ to the skin mrem for the year.

A dose assessment was performed for members of the public due to their activities inside the site boundary, per ODCMS 3.10.2.f. The location where a member of the public would spend a significant amount of time inside the site boundary is two new vehicle checkpoints, approximately 780 feet ENE (Emergency checkpoint) and 910 feet NNE (Warehouse checkpoint) of the PBAPS Unit 2 and Unit 3 reactor building exhaust vents. Assuming continuous occupancy, the calculated total body and skin doses were $1.48\text{E+}00$ mrem and $1.92\text{E+}00$ mrem for the Emergency checkpoint and $2.16\text{E-}01$ mrem and $2.79\text{E-}01$ mrem for the Warehouse checkpoint, respectively. The noble gas limiting air doses were $1.53\text{E+}00$ mrad (gamma) and $1.04\text{E+}00$ mrad (beta) for the Emergency checkpoint and $2.22\text{E-}01$ mrad (gamma) and $1.05\text{E-}01$ mrad (beta) for the Warehouse checkpoint. These doses are overly conservative, as typically vehicles and their drivers are not at the checkpoints 24/7. The maximum organ dose from the inhalation pathway, not including C-14, is $9.21\text{E-}03$ mrem for the Emergency checkpoint and $1.34\text{E-}03$ mrem for the Warehouse checkpoint, both to the infant thyroid.

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 CO₂ 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.

Peach Bottom Atomic Power Station
Unit 2 and 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLC

ATTACHMENT 2: EFFLUENT SUMMARY

Gaseous Effluents - Summation of All Releases

Period: January 1, 2019 through December 31, 2019

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	1.06E+02	1.40E+02	2.23E+02	4.00E+01
2. Average release For the Period	uCi/ s	2.01E+01	1.34E+01	1.76E+01	2.80E+01	
3. Gamma Air Dose	mrads	7.24E-02	4.26E-02	4.73E-02	8.93E-02	
4. Beta Air Dose	mrads	4.92E-02	2.90E-02	3.22E-02	6.09E-02	
5. Percent of ODCM limit						
Gamma Air Dose	%	7.24E-01	4.26E-01	4.73E-01	8.93E-01	
Beta Air Dose	%	2.46E-01	1.45E-01	1.61E-01	3.04E-01	

B. Iodines

1. Total I-131	Ci	7.76E-05	3.05E-04	2.10E-04	5.43E-04	1.90E+01
2. Average release For the Period	uCi/ s	9.98E-06	3.88E-05	2.64E-05	6.84E-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	4.44E-05	4.08E-05	7.99E-05	8.31E-04	2.80E+01
2. Average release For the Period	uCi/ s	5.71E-06	5.19E-06	1.01E-05	1.05E-04	
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	3.72E+00	1.99E+01	2.36E+01	2.70E+01	1.30E+01
2. Average release For the Period	uCi/ s	4.78E-01	2.54E+00	2.97E+00	3.40E+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	9.77E+00	9.77E+00	9.77E+00	9.77E+00	
2. Average release For the Period	uCi/ s	1.26E+00	1.26E+00	1.26E+00	1.26E+00	

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

1. Organ Dose*	mrem	3.56E-02	3.56E-02	3.56E-02	3.56E-02	
2. Percent ODCM limit	%	2.37E-01%	2.37E-01%	2.37E-01%	2.37E-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, 2019 through December 31, 2019

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
Unidentified	Ci	<LLD	<LLD	<LLD	5.53E+00	<LLD	<LLD	<LLD	<LLD
Ar-41	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Kr-85m	Ci	6.74E-01	4.94E-01	2.78E+00	6.28E-01	<LLD	<LLD	<LLD	<LLD
Kr-87	Ci	<LLD	<LLD	<LLD	1.63E-01	<LLD	<LLD	<LLD	<LLD
Kr-88	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-133m	Ci	<LLD	<LLD	<LLD	4.15E-01	<LLD	<LLD	<LLD	<LLD
Xe-133	Ci	2.08E+01	2.50E+01	4.54E+01	3.83E+01	<LLD	<LLD	<LLD	<LLD
Xe-135m	Ci	<LLD	<LLD	8.95E-01	<LLD	<LLD	<LLD	<LLD	<LLD
Xe-135	Ci	2.63E-01	6.47E-01	8.16E-01	1.24E+01	<LLD	<LLD	<LLD	<LLD
Xe-138	Ci	<LLD	6.90E-01	2.11E+00	<LLD	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	2.17E+01	2.68E+01	5.20E+01	5.74E+01	<LLD	<LLD	<LLD	<LLD
2. Iodines									
I-131	Ci	3.66E-05	1.15E-04	1.12E-04	1.96E-04	<LLD	<LLD	<LLD	<LLD
I-132	Ci	<LLD	3.28E-05	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
I-133	Ci	7.67E-05	1.81E-04	2.04E-04	2.62E-04	<LLD	<LLD	<LLD	<LLD
I-135	Ci	1.28E-05	7.63E-05	1.01E-04	1.44E-04	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	1.26E-04	4.04E-04	4.17E-04	6.02E-04	<LLD	<LLD	<LLD	<LLD
3. Particulates									
Sr-89	Ci	3.04E-05	2.69E-05	6.62E-05	7.75E-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	1.11E-07	1.03E-07	1.87E-07	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	3.35E-06	3.83E-06	9.25E-06	1.98E-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	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	<LLD	<LLD	3.67E-07	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	8.06E-07	2.63E-06	1.11E-06	4.49E-06	<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	2.27E-07	<LLD	3.88E-07	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	3.46E-05	3.37E-05	7.68E-05	1.03E-04	<LLD	<LLD	<LLD	<LLD
4. Tritium									
H-3	Ci	5.80E-01	3.63E+00	9.91E+00	3.67E+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	9.47E+00	9.47E+00	9.47E+00	9.47E+00	<LLD	<LLD	<LLD	<LLD

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

Period: January 1, 2019 through December 31, 2019

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	1.34E+02	7.89E+01	8.75E+01	1.65E+02	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	1.34E+02	7.89E+01	8.75E+01	1.65E+02	<LLD	<LLD	<LLD	<LLD
2. Iodines									
I-131	Ci	4.09E-05	1.90E-04	9.80E-05	3.47E-04	<LLD	<LLD	<LLD	7.46E-06
I-132	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
I-133	Ci	7.86E-05	2.64E-04	2.33E-04	3.02E-05	<LLD	<LLD	<LLD	2.68E-07
I-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	1.20E-04	4.54E-04	3.31E-04	3.78E-04	<LLD	<LLD	<LLD	7.72E-06
3. Particulates									
Sr-89	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Sr-90	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-134	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cs-137	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
La-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Cr-51	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	9.78E-06	7.12E-06	3.11E-06	2.80E-05	<LLD	<LLD	<LLD	7.01E-04
Sb-124	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	<LLD	<LLD	<LLD	<LLD	<LLD
Total For Period	Ci	9.78E-06	7.12E-06	3.11E-06	2.80E-05	<LLD	<LLD	<LLD	7.01E-04
4. Tritium									
H-3	Ci	3.14E+00	1.63E+01	1.37E+01	2.34E+01	<LLD	<LLD	<LLD	5.53E-03
5. Gross Alpha									
Gross Alpha	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
6. Carbon-14									
C-14	Ci	2.93E-01	2.93E-01	2.93E-01	2.93E-01	<LLD	<LLD	<LLD	<LLD

Liquid Effluents - Summation of All Releases

Period: January 1, 2019 to December 31, 2019

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	3.58E-03	1.64E-03	2.16E-03	3.42E-03	1.60E+01
2. Average diluted concentration for the Period	µCi/ mL	6.01E-12	2.43E-12	3.19E-12	5.29E-12	
3. Percent of applicable limit						
Total Body Dose*	%	2.53E-03%	1.59E-03%	1.85E-03%	2.43E-03%	
Organ Dose*	%	1.57E-03%	8.99E-04%	1.06E-03%	1.57E-03%	

*ODCMS 3.8.B.2.a and ODCMS 3.8.B.2.b (page 7) define the dose limit

B. Tritium						Est. Total Error %
1. Total Release	Ci	2.83E+00	2.95E+00	1.72E+00	1.66E+00	6.40E+00
2. Average diluted concentration for the Period	µCi/ mL	4.75E-09	4.39E-09	2.54E-09	2.56E-09	
3. Percent of applicable limit*	%	4.75E-04%	4.39E-04%	2.54E-04%	2.56E-04%	

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

C. Dissolved & Entrained Gases						Est. Total Error %
1. Total Release	Ci	<LLD	<LLD	1.960E-06	1.96E-05	2.80E+01
2. Average diluted concentration for the Period	µCi/ mL	<LLD	<LLD	3.69E-12	1.16E-12	
3. Percent of ODCM limit*	%	<LLD	<LLD	1.84E-06%	5.81E-07%	

*ODCMS 3.8.B.1.b Limit for all noble gases is 2.00E-04 µCi/ mL

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	1.69E+08	1.71E+08	1.73E+08	1.73E+08
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F. Volume of Dilution Water Used During Period	Liters	5.95E+11	6.69E+11	6.77E+11	6.29E+11
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Liquid Effluents Release Points – Liquid Radwaste, RHR Leaks and Groundwater

Period: January 1, 2019 through December 31, 2019

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	8.24E-07	<LLD	9.17E-07
I-131	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Co-58	Ci	3.05E-04	6.38E-05	8.49E-05	1.21E-04	<LLD	<LLD	<LLD	<LLD
Co-60	Ci	1.96E-03	1.04E-03	1.36E-03	1.99E-03	<LLD	2.00E-07	<LLD	3.08E-04
Fe-59	Ci	3.63E-05	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Zn-65	Ci	2.51E-04	1.75E-04	2.53E-04	3.04E-04	<LLD	<LLD	<LLD	<LLD
Mn-54	Ci	6.25E-04	3.22E-04	4.05E-04	6.39E-04	<LLD	<LLD	<LLD	<LLD
Cr-51	Ci	3.60E-04	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Zr-95	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Nb-95	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Mo-99	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Tc-99m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ba-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
La-140	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ce-141	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ag-110m	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Fe-55	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Sb-124	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Sb-125	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Ni-63	Ci	4.10E-05	3.49E-05	5.28E-05	5.69E-05	<LLD	<LLD	<LLD	<LLD
H-3	Ci	2.83E+00	2.95E+00	1.43E+00	1.35E+00	<LLD	1.91E-03	2.85E-01	3.08E-01
P-32	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period	Ci	2.83E+00	2.95E+00	1.43E+00	1.35E+00	<LLD	1.91E-03	2.85E-01	3.08E-01
Xe-133	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	1.96E-05
Xe-135	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	1.96E-06	<LLD
Xe-138	Ci	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD	<LLD
Total for Period (ex-tritium, gases and alpha)	Ci	3.58E-03	1.63E-03	2.16E-03	3.11E-03	<LLD	1.024E-06	<LLD	3.094E-04

Peach Bottom Atomic Power Station
Unit 2 and 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLC

ATTACHMENT 3: SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

Solid Waste Shipped

1. Type of Waste

	Units	2019	Est. error %
A: Spent Resin, Filters, Sludges, Evaporator Bottoms, etc	m ³	6.74E+01	
	Ci	1.24E+02	2.50E+01
B: Dry Compressible Waste, Contaminated Equipment, etc.	m ³	7.19E+02	
	Ci	2.75E+00	2.50E+01
C: Irradiated Components, Control Rods, etc.	m ³	1.31E-01	
	Ci	5.03E-01	2.50E+01
D: Other (Oil, SBLC)	m ³	2.95E+01	
	Ci	8.81E-03	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	0.58%	7.18E-01
C-14	0.98%	1.24E+00
Cr-51	0.17%	2.03E-01
Mn-54	2.68%	3.34E+00
Fe-55	30.54%	3.76E+01
Fe-59	0.11%	1.29E-01
Co-57	0.00%	5.52E-03
Co-58	0.25%	3.00E-01
Co-60	52.87%	6.54E+01
Ni-63	1.29%	1.61E+00
Zn-65	2.98%	3.69E+00
Se-75	0.00%	3.06E-03
Sr-89	0.00%	5.21E-05
Sr-90	0.01%	1.56E-02
Zr-95	0.00%	2.05E-03
Nb-95	0.00%	4.76E-04

Nuclide	Abundance % (no cutoff)	Activity (Ci)
Ag-110m	0.28%	3.69E-01
Sb-124	0.02%	1.81E-02
Sb-125	0.06%	8.14E-02
I-131	0.00%	7.42E-13
Cs-134	0.00%	2.43E-04
Cs-137	7.03%	8.64E+00
Ba-140	0.00%	2.05E-17
La-140	0.00%	1.03E-115
Ce-141	0.01%	6.01E-03
Ce-144	0.11%	1.37E-01
Pu-238	0.00%	5.44E-05
Pu-239	0.00%	2.16E-05
Pu-241	0.01%	6.49E-03
Am-241	0.00%	1.97E-05
Cm-242	0.00%	5.73E-07
Cm-244	0.00%	5.29E-05

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

Waste Class A

Nuclide	Abundance % (no cutoff)	Activity (Ci)
H-3	0.97%	2.40E-02
Cr-51	0.56%	1.39E-02
Mn-54	2.54%	6.25E-02
Fe-55	22.36%	5.51E-01
Fe-59	0.22%	5.40E-03
Co-57	0.01%	2.01E-04
Co-58	0.42%	1.03E-02
Co-60	53.08%	1.31E+00
Ni-63	1.47%	3.61E-02
Zn-65	5.06%	1.25E-01
Cs-137	11.64%	2.87E-01

Nuclide	Abundance % (no cutoff)	Activity (Ci)
Ce-141	0.01%	3.23E-04
Ce-144	0.20%	4.88E-03
C-14	0.92%	2.26E-02
Sr-89	0.04%	9.68E-04
Sr-90	0.03%	7.63E-04
Ag-110m	0.30%	7.37E-03
Sb-125	0.15%	3.78E-03
Sb-124	0.02%	5.70E-04
Pu-238	0.00%	7.56E-06
Pu-241	0.01%	1.91E-04

Waste Class C

Nuclide	Abundance % (no cutoff)	Activity (Ci)
H-3	3.79%	1.10E-02
C-14	0.02%	4.46E-05
Mn-54	0.00%	1.19E-06
Fe-55	1.12%	3.25E-03
Co-60	76.64%	2.22E-01
Ni-63	5.52%	1.60E-02
Zn-65	0.00%	8.78E-09
Sr-90	0.28%	8.15E-04
Tc-99	0.66%	1.91E-03

Nuclide	Abundance % (no cutoff)	Activity (Ci)
Sb-125	0.01%	2.80E-05
Cs-137	11.82%	3.43E-02
Ce-144	0.00%	4.55E-09
Pu-238	0.01%	2.60E-05
Pu-239	0.01%	2.90E-05
Pu-241	0.12%	3.58E-04
Am-241	0.01%	1.64E-05
Cm-242	0.00%	2.43E-16
Cm-244	0.00%	1.62E-06

c. Irradiated Components, Control Rods, etc.

Nuclide	Abundance % (no cutoff)	Activity (Ci)
H-3	0.33%	1.67E-03
C-14	0.03%	1.70E-04
Fe-55	3.99%	2.01E-02
Co-60	62.43%	3.14E-01
Ni-59	0.19%	9.46E-04
Ni-63	24.06%	1.21E-01

Nuclide	Abundance % (no cutoff)	Activity (Ci)
Sr-90	0.00%	7.39E-15
Tc-99	8.43%	4.24E-02
Sb-125	0.06%	3.15E-04
Cs-134	0.00%	5.54E-06
Cs-137	0.47%	2.37E-03

d. Other: Oil

Nuclide	Abundance % (no cutoff)	Activity (Ci)
H-3	0.18%	1.56E-05
Cr-51	3.70%	3.26E-04
Mn-54	2.22%	1.96E-04
Fe-55	9.42%	8.30E-04
Fe-59	1.06%	9.34E-05
Co-57	0.02%	1.78E-06
Co-58	1.20%	1.05E-04
Co-60	69.78%	6.15E-03

Nuclide	Abundance % (no cutoff)	Activity (Ci)
Ni-63	0.53%	4.70E-05
Zn-65	3.33%	2.94E-04
Ag-110m	0.72%	6.38E-05
Sb-124	0.11%	9.80E-06
Cs-137	2.63%	2.32E-04
Ce-141	0.06%	5.59E-06
Ce-144	5.03%	4.43E-04

3. Solid Waste Disposition

Number of shipments	Mode of Transportation	Destination
20	Hittman Transport Services	Energy Solutions Services (CVRF) Bear Creek Operations
4	Hittman Transport Services	Energy Solutions Services (GRF) Gallaher Road Operations
14	Hittman Transport Services	Energy Solutions LLC - Clive Disposal Site - Containerized Waste Facility
3	Landstar - Ranger	Toxco Inc. - Oak Ridge, TN

Irradiated Fuel Shipments

No shipment of irradiated fuel was made during the reporting period of 2019.

Changes to Process Control Program (PCP)

There were no changes made to RW-AA-100 "Process Control Program for Radioactive Waste" during the 2019 reporting period.

Peach Bottom Atomic Power Station
Unit 2 and 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLC

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	2.52E-01	All	1.10E+03	SSE	1.26E+00	2.00E+01	mrad
Noble Gas	Beta - Air Dose	1.71E-01	All	1.10E+03	SSE	4.28E-01	4.00E+01	mrad
Noble Gas	Total Body (gamma)	2.43E-01	All	1.10E+03	SSE	2.43E+00	1.00E+01	mrem
Noble Gas	Skin (Beta)	3.16E-01	All	1.10E+03	SSE	1.05E+00	3.00E+01	mrem
Gaseous Iodine, Particulate, Carbon-14 & Tritium	Bone	1.42E-01	Child	1.50E+03	SW	4.73E-01	3.00E+01	mrem
Gaseous Iodine, Particulate & Tritium	Thyroid	8.79E-03	Infant	1.50E+03	SW	2.93E-02	3.00E+01	mrem
Liquid	Total Body (gamma)	2.59E-04	Child	Site Boundary		4.32E-03	6.00E+00	mrem
Liquid	GI-LLI	5.10E-04	Adult			2.55E-03	2.00E+01	mrem
Direct Radiation	Total Body	0.00E+00	All	1.19E+03	SSE	0.00E+00	2.50E+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	2.43E-01	All	1.19E+03	SSE	9.73E-01	2.50E+01	mrem
Total Dose	Thyroid	8.79E-03	All	1.19E+03	SSE	1.17E-02	7.50E+01	mrem
Total Dose	Bone	1.43E-01	All	1.19E+03	SSE	5.70E-01	2.50E+01	mrem
Total Dose	Total Body	2.43E-01	All	1.19E+03	SSE	8.11E+00	3.00E+00	mrem
Total Dose	Bone	1.43E-01	All	1.19E+03	SSE	4.75E+00	3.00E+00	mrem
Total Dose	Thyroid	2.61E-01	All	1.19E+03	SSE	4.74E-01	5.50E+01	mrem

Peach Bottom Atomic Power Station
Unit 2 and 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLC

ATTACHMENT 5: METEOROLOGICAL DATA

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
 Stability Class - Extremely Unstable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	1	1	0	0	0	3
NNE	1	9	5	0	0	0	15
NE	4	5	0	0	0	0	9
ENE	8	8	0	0	0	0	16
E	7	11	0	0	0	0	18
ESE	3	8	1	0	0	0	12
SE	0	3	2	0	0	0	5
SSE	0	1	5	0	0	0	6
S	0	1	6	0	0	0	7
SSW	0	0	4	1	0	0	5
SW	0	0	0	0	0	0	0
WSW	0	0	1	0	0	0	1
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	2	0	0	2
NNW	0	5	1	5	1	0	12
Variable	0	0	0	0	0	0	0
Total	24	52	26	8	1	0	111

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

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
 Stability Class - Moderately Unstable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	1	0	0	0	0	3
NNE	1	5	6	0	0	0	12
NE	4	2	0	0	0	0	6
ENE	17	1	0	0	0	0	18
E	8	2	0	0	0	0	10
ESE	3	5	1	0	0	0	9
SE	1	2	0	0	0	0	3
SSE	0	4	0	0	0	0	4
S	0	3	9	0	0	0	12
SSW	0	0	7	1	0	0	8
SW	1	1	0	0	0	0	2
WSW	0	0	3	0	0	0	3
W	0	0	5	2	0	0	7
WNW	0	0	8	4	2	0	14
NW	0	1	11	15	6	0	33
NNW	0	1	18	9	0	0	28
Variable	0	0	0	0	0	0	0
Total	37	28	68	31	8	0	172

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: 2

Peach Bottom Atomic Power Station
Unit 2 and 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLC

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
Stability Class - Slightly Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	2	0	0	0	3
NNE	0	5	2	0	0	0	7
NE	2	2	0	0	0	0	4
ENE	6	0	0	0	0	0	6
E	6	1	0	0	0	0	7
ESE	2	5	0	0	0	0	7
SE	0	4	0	0	0	0	4
SSE	0	1	1	0	0	0	2
S	0	1	2	0	0	0	3
SSW	0	5	6	0	0	0	11
SW	0	1	0	0	0	0	1
WSW	0	1	1	0	0	0	2
W	0	0	7	1	0	0	8
WNW	0	2	16	5	1	0	24
NW	0	1	6	14	1	0	22
NNW	0	2	10	6	2	0	20
Variable	0	0	0	0	0	0	0
Total	16	32	53	26	4	0	131

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: 2

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
Stability Class - Neutral - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	7	44	9	0	0	0	60
NNE	11	29	5	0	0	0	45
NE	31	4	0	0	0	0	35
ENE	81	2	0	0	0	0	83
E	47	26	0	0	0	0	73
ESE	10	20	0	0	0	0	30
SE	7	44	8	0	0	0	59
SSE	15	73	19	0	0	0	107
S	7	37	28	15	0	0	87
SSW	3	8	5	2	0	0	18
SW	0	9	1	1	0	0	11
WSW	6	6	4	0	0	0	16
W	4	17	20	8	3	0	52
WNW	5	36	63	37	6	0	147
NW	15	39	88	65	2	0	209
NNW	8	54	46	10	1	0	119
Variable	0	0	0	0	0	0	0
Total	257	448	296	138	12	0	1151

Hours of calm in this stability class: 1
Hours of missing wind measurements in this stability class: 9
Hours of missing stability measurements in all stability classes: 2

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
Stability Class - Slightly Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	10	4	0	0	0	0	14
NNE	10	1	0	0	0	0	11
NE	9	1	0	0	0	0	10
ENE	9	4	0	0	0	0	13
E	13	3	0	0	0	0	16
ESE	10	4	0	0	0	0	14
SE	18	13	0	0	0	0	31
SSE	7	13	0	0	0	0	20
S	7	3	3	0	0	0	13
SSW	5	5	0	0	0	0	10
SW	3	7	0	1	0	0	11
WSW	18	31	3	0	0	0	52
W	15	46	5	1	0	0	67
WNW	21	40	5	1	0	0	67
NW	18	17	0	0	0	0	35
NNW	9	21	1	0	0	0	31
Variable	0	0	0	0	0	0	0
Total	182	213	17	3	0	0	415

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: 2

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
Stability Class - Moderately Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	0	0	0	0	0	2
NNE	1	0	0	0	0	0	1
NE	5	0	0	0	0	0	5
ENE	3	0	0	0	0	0	3
E	5	0	0	0	0	0	5
ESE	5	0	0	0	0	0	5
SE	2	0	0	0	0	0	2
SSE	2	0	0	0	0	0	2
S	2	0	0	0	0	0	2
SSW	3	0	0	0	0	0	3
SW	6	0	0	0	0	0	6
WSW	17	11	1	0	0	0	29
W	15	4	0	0	0	0	19
WNW	10	2	0	0	0	0	12
NW	9	0	1	0	0	0	10
NNW	8	1	0	0	0	0	9
Variable	0	0	0	0	0	0	0
Total	95	18	2	0	0	0	115

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: 2

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
 Stability Class - Extremely Stable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	0	0	0	0	0	3
NNE	2	0	0	0	0	0	2
NE	0	0	0	0	0	0	0
ENE	3	0	0	0	0	0	3
E	0	0	0	0	0	0	0
ESE	5	0	0	0	0	0	5
SE	0	0	0	0	0	0	0
SSE	1	0	0	0	0	0	1
S	0	0	0	0	0	0	0
SSW	1	0	0	0	0	0	1
SW	5	0	0	0	0	0	5
WSW	2	2	0	0	0	0	4
W	4	3	0	0	0	0	7
WNW	4	0	0	0	0	0	4
NW	5	0	0	0	0	0	5
NNW	1	0	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	36	5	0	0	0	0	41

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: 2

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
Stability Class - Extremely Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

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

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: 2

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
Stability Class - Moderately Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	1	0	0	1
NE	0	1	0	0	0	0	1
ENE	0	3	0	0	0	0	3
E	0	2	1	0	0	0	3
ESE	0	2	1	0	0	0	3
SE	0	0	1	2	0	0	3
SSE	0	0	0	0	0	0	0
S	0	0	0	1	0	0	1
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	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	8	3	5	0	0	16

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: 2

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
Stability Class - Slightly Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

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

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: 2

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
 Stability Class - Neutral - 316Ft-33Ft Delta-T (F)
 Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	11	29	17	3	0	61
NNE	5	6	37	10	0	0	58
NE	2	10	15	2	0	0	29
ENE	12	37	11	2	0	0	62
E	15	42	13	5	0	0	75
ESE	2	27	22	13	0	0	64
SE	5	25	54	19	1	0	104
SSE	1	12	48	25	0	0	86
S	0	11	40	30	19	8	108
SSW	1	9	19	12	2	1	44
SW	3	3	6	3	0	1	16
WSW	4	1	8	5	2	1	21
W	3	6	17	31	19	19	95
WNW	0	6	26	63	73	57	225
NW	1	7	21	65	65	42	201
NNW	1	12	44	49	10	7	123
Variable	0	0	0	0	0	0	0
Total	56	225	410	351	194	136	1372

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 43
 Hours of missing stability measurements in all stability classes: 2

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
Stability Class - Slightly Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	15	12	4	0	0	34
NNE	3	6	7	2	0	0	18
NE	2	7	7	0	0	0	16
ENE	1	10	9	1	0	0	21
E	3	9	4	3	0	0	19
ESE	2	8	5	4	0	0	19
SE	3	17	16	2	0	0	38
SSE	3	10	27	7	0	0	47
S	0	4	11	6	4	0	25
SSW	1	6	6	4	0	0	17
SW	4	11	4	5	0	0	24
WSW	1	7	12	13	3	0	36
W	1	7	16	20	4	1	49
WNW	3	8	26	33	12	1	83
NW	5	9	21	11	1	0	47
NNW	4	17	21	10	0	0	52
Variable	0	0	0	0	0	0	0
Total	39	151	204	125	24	2	545

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 3
Hours of missing stability measurements in all stability classes: 2

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
 Stability Class - Moderately Stable - 316Ft-33Ft Delta-T (F)
 Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	1	0	0	0	0	2
NNE	0	2	0	0	0	0	2
NE	0	1	0	0	0	0	1
ENE	2	0	0	0	0	0	2
E	2	3	0	0	0	0	5
ESE	0	4	0	0	0	0	4
SE	0	2	2	0	0	0	4
SSE	1	3	0	1	0	0	5
S	0	2	0	0	0	0	2
SSW	1	6	1	0	0	0	8
SW	0	4	5	0	0	0	9
WSW	0	4	3	3	0	0	10
W	1	4	3	4	0	0	12
WNW	1	2	2	2	0	0	7
NW	1	3	16	1	0	0	21
NNW	0	4	1	2	0	0	7
Variable	0	0	0	0	0	0	0
Total	10	45	33	13	0	0	101

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

Peach Bottom Atomic Power Station

Period of Record: January - March 2019
Stability Class - Extremely Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

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

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: 2

Peach Bottom Atomic Power Station
Unit 2 and 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLC

Peach Bottom Atomic Power Station

Period of Record: April - June 2019
Stability Class - Extremely Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	10	10	1	0	0	0	21
NNE	27	14	0	0	0	0	41
NE	23	5	0	0	0	0	28
ENE	29	4	0	0	0	0	33
E	20	5	0	0	0	0	25
ESE	11	13	1	0	0	0	25
SE	5	25	6	0	0	0	36
SSE	3	14	16	2	0	0	35
S	3	5	8	0	0	0	16
SSW	1	6	7	1	0	0	15
SW	1	1	2	0	0	0	4
WSW	0	1	1	0	0	0	2
W	2	0	3	1	1	0	7
WNW	0	0	4	1	0	0	5
NW	2	2	8	0	0	0	12
NNW	5	10	16	2	0	0	33
Variable	0	0	0	0	0	0	0
Total	142	115	73	7	1	0	338

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

Peach Bottom Atomic Power Station

Period of Record: April - June 2019

Stability Class - Moderately Unstable - 150Ft-33Ft Delta-T (F)

Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	10	2	0	0	0	16
NNE	7	6	0	0	0	0	13
NE	12	0	0	0	0	0	12
ENE	10	0	0	0	0	0	10
E	16	1	0	0	0	0	17
ESE	4	2	0	0	0	0	6
SE	0	5	2	0	0	0	7
SSE	2	4	6	1	0	0	13
S	2	9	14	2	0	0	27
SSW	1	4	6	0	0	0	11
SW	0	1	3	0	0	0	4
WSW	0	3	6	3	0	0	12
W	0	2	3	4	1	0	10
WNW	1	4	12	4	1	0	22
NW	0	10	15	2	0	0	27
NNW	2	14	28	10	0	0	54
Variable	0	0	0	0	0	0	0
Total	61	75	97	26	2	0	261

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

Peach Bottom Atomic Power Station

Period of Record: April - June 2019
Stability Class - Slightly Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	6	1	0	0	0	10
NNE	5	5	0	0	0	0	10
NE	4	1	0	0	0	0	5
ENE	5	0	0	0	0	0	5
E	3	1	0	0	0	0	4
ESE	1	0	0	0	0	0	1
SE	1	1	1	0	0	0	3
SSE	0	7	2	0	0	0	9
S	1	3	5	6	0	0	15
SSW	0	2	1	0	0	0	3
SW	1	2	2	1	0	0	6
WSW	0	0	5	0	0	0	5
W	0	1	1	1	0	0	3
WNW	0	4	5	1	2	0	12
NW	0	1	3	0	0	0	4
NNW	1	10	7	2	0	0	20
Variable	0	0	0	0	0	0	0
Total	25	44	33	11	2	0	115

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

Peach Bottom Atomic Power Station

Period of Record: April - June 2019
Stability Class - Neutral - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	16	17	2	0	0	0	35
NNE	31	8	0	0	0	0	39
NE	15	7	0	0	0	0	22
ENE	33	3	0	0	0	0	36
E	36	22	0	0	0	0	58
ESE	11	19	1	0	0	0	31
SE	9	20	6	0	0	0	35
SSE	10	34	21	1	0	0	66
S	13	27	25	9	0	0	74
SSW	4	18	2	1	0	0	25
SW	7	11	7	1	0	0	26
WSW	9	16	13	0	0	0	38
W	6	19	14	6	2	0	47
WNW	1	20	20	5	1	0	47
NW	8	18	34	9	0	0	69
NNW	11	22	30	6	0	0	69
Variable	0	0	0	0	0	0	0
Total	220	281	175	38	3	0	717

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

Peach Bottom Atomic Power Station

Period of Record: April - June 2019
Stability Class - Slightly Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	18	9	2	0	0	0	29
NNE	22	4	0	0	0	0	26
NE	23	3	0	0	0	0	26
ENE	14	1	0	0	0	0	15
E	16	2	0	0	0	0	18
ESE	18	1	0	0	0	0	19
SE	16	5	0	0	0	0	21
SSE	14	12	3	0	0	0	29
S	21	19	4	0	0	0	44
SSW	9	12	1	0	0	0	22
SW	13	15	1	0	0	0	29
WSW	15	40	6	0	0	0	61
W	14	47	2	0	0	0	63
WNW	16	41	4	0	0	0	61
NW	12	22	3	0	0	0	37
NNW	12	13	0	0	0	0	25
Variable	0	0	0	0	0	0	0
Total	253	246	26	0	0	0	525

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: 5

Peach Bottom Atomic Power Station

Period of Record: April - June 2019

Stability Class - Moderately Stable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	0	0	0	0	0	4
NNE	2	0	0	0	0	0	2
NE	2	0	0	0	0	0	2
ENE	1	0	0	0	0	0	1
E	3	0	0	0	0	0	3
ESE	4	0	0	0	0	0	4
SE	4	0	0	0	0	0	4
SSE	1	1	0	0	0	0	2
S	8	0	0	0	0	0	8
SSW	1	0	0	0	0	0	1
SW	6	0	0	0	0	0	6
WSW	13	16	0	0	0	0	29
W	25	19	1	0	0	0	45
WNW	15	7	0	0	0	0	22
NW	12	1	0	0	0	0	13
NNW	7	0	0	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	108	44	1	0	0	0	153

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

Peach Bottom Atomic Power Station

Period of Record: April - June 2019
 Stability Class - Extremely Stable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

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

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

Peach Bottom Atomic Power Station

Period of Record: April - June 2019
Stability Class - Extremely Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	1	0	1	0	0	2
ENE	0	2	3	1	0	0	6
E	0	3	5	1	1	1	11
ESE	0	0	7	8	0	0	15
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	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	7	15	11	1	1	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: 5

Peach Bottom Atomic Power Station

Period of Record: April - June 2019
 Stability Class - Moderately Unstable - 316Ft-33Ft Delta-T (F)
 Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	1	0	0	0	0	1
ENE	0	2	1	1	0	0	4
E	0	2	2	0	1	0	5
ESE	0	1	1	0	0	1	3
SE	0	0	3	2	0	0	5
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	7	7	3	1	1	19

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

Peach Bottom Atomic Power Station

Period of Record: April - June 2019
Stability Class - Slightly Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	1	0	0	0	0	1
NE	1	4	0	0	0	0	5
ENE	3	3	2	0	0	0	8
E	0	6	0	0	0	0	6
ESE	0	4	5	1	0	0	10
SE	0	0	5	2	0	0	7
SSE	0	0	1	2	0	0	3
S	0	0	5	3	0	0	8
SSW	0	0	2	0	0	0	2
SW	0	0	1	0	0	0	1
WSW	0	0	0	1	0	0	1
W	0	0	0	1	0	8	9
WNW	0	0	0	11	1	0	12
NW	0	0	0	13	2	0	15
NNW	0	1	2	1	0	0	4
Variable	0	0	0	0	0	0	0
Total	4	19	23	35	3	8	92

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

Peach Bottom Atomic Power Station
Unit 2 and 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLC

Peach Bottom Atomic Power Station

Period of Record: April - June 2019
Stability Class - Neutral - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	7	20	11	2	0	0	40
NNE	7	12	19	2	0	0	40
NE	5	14	24	2	0	0	45
ENE	13	31	41	14	0	0	99
E	8	15	19	21	4	1	68
ESE	2	19	37	37	8	0	103
SE	1	17	36	25	2	0	81
SSE	0	8	28	29	14	4	83
S	0	10	46	29	12	7	104
SSW	1	8	21	5	1	0	36
SW	0	9	13	16	5	0	43
WSW	2	10	16	24	5	1	58
W	1	8	17	25	12	17	80
WNW	0	9	23	19	19	5	75
NW	0	12	27	61	34	7	141
NNW	4	33	36	15	2	2	92
Variable	0	0	0	0	0	0	0
Total	51	235	414	326	118	44	1188

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

Peach Bottom Atomic Power Station

Period of Record: April - June 2019
Stability Class - Slightly Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	8	14	6	1	0	30
NNE	4	7	13	4	0	0	28
NE	4	14	6	4	0	0	28
ENE	1	10	11	2	0	0	24
E	3	9	4	3	2	0	21
ESE	1	11	5	2	0	0	19
SE	4	13	12	2	0	0	31
SSE	1	12	15	13	1	0	42
S	2	13	43	16	3	0	77
SSW	1	16	27	5	1	0	50
SW	1	7	13	19	1	0	41
WSW	3	9	25	24	5	0	66
W	1	13	20	26	6	0	66
WNW	0	11	17	29	6	0	63
NW	1	10	18	27	1	0	57
NNW	0	3	18	3	0	0	24
Variable	0	0	0	0	0	0	0
Total	28	166	261	185	27	0	667

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

Peach Bottom Atomic Power Station

Period of Record: April - June 2019
Stability Class - Moderately Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	4	0	0	0	4
NNE	2	3	1	0	0	0	6
NE	3	3	1	0	0	0	7
ENE	0	1	0	0	0	0	1
E	0	0	0	0	0	0	0
ESE	2	3	1	0	0	0	6
SE	0	3	0	0	0	0	3
SSE	4	10	6	1	0	0	21
S	3	3	1	0	0	0	7
SSW	1	4	3	0	0	0	8
SW	0	3	5	3	1	0	12
WSW	1	0	6	2	1	0	10
W	2	5	8	6	0	0	21
WNW	0	3	8	7	2	0	20
NW	1	3	8	3	0	0	15
NNW	0	4	6	1	0	0	11
Variable	0	0	0	0	0	0	0
Total	19	48	58	23	4	0	152

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

Peach Bottom Atomic Power Station

Period of Record: April - June 2019
Stability Class - Extremely Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	3	0	0	0	0	4
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	0	2	0	0	0	0	2
SSE	0	2	0	0	0	0	2
S	1	1	0	0	0	0	2
SSW	0	1	1	0	0	0	2
SW	0	0	0	0	0	0	0
WSW	1	2	1	0	0	0	4
W	0	0	0	1	0	0	1
WNW	0	0	0	0	0	0	0
NW	0	1	6	0	0	0	7
NNW	0	0	0	1	0	0	1
Variable	0	0	0	0	0	0	0
Total	3	13	8	2	0	0	26

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

Peach Bottom Power Atomic Station

Period of Record: July - September 2019
Stability Class - Extremely Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	11	23	1	0	0	0	35
NNE	13	22	1	0	0	0	36
NE	13	5	0	0	0	0	18
ENE	20	0	0	0	0	0	20
E	10	2	0	0	0	0	12
ESE	9	6	0	0	0	0	15
SE	5	7	0	0	0	0	12
SSE	6	31	3	0	0	0	40
S	2	9	6	0	0	0	17
SSW	0	6	2	0	0	0	8
SW	1	5	5	1	0	0	12
WSW	3	9	3	0	0	0	15
W	2	3	0	0	0	0	5
WNW	3	5	0	0	0	0	8
NW	4	2	5	0	0	0	11
NNW	6	10	4	0	0	0	20
Variable	0	0	0	0	0	0	0
Total	108	145	30	1	0	0	284

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 Power Atomic Station

Period of Record: July - September 2019
Stability Class - Moderately Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	14	0	0	0	0	17
NNE	12	15	0	0	0	0	27
NE	7	0	0	0	0	0	7
ENE	4	0	0	0	0	0	4
E	8	1	0	0	0	0	9
ESE	5	2	0	0	0	0	7
SE	1	1	0	0	0	0	2
SSE	5	23	5	0	0	0	33
S	2	20	4	0	0	0	26
SSW	0	4	1	0	0	0	5
SW	2	5	3	0	0	0	10
WSW	1	17	7	0	0	0	25
W	3	13	2	0	0	0	18
WNW	1	8	3	0	0	0	12
NW	6	6	3	0	0	0	15
NNW	2	19	11	0	0	0	32
Variable	0	0	0	0	0	0	0
Total	62	148	39	0	0	0	249

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 Power Atomic Station

Period of Record: July - September 2019
Stability Class - Slightly Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	5	0	0	0	0	9
NNE	9	9	0	0	0	0	18
NE	3	0	0	0	0	0	3
ENE	1	1	0	0	0	0	2
E	3	0	0	0	0	0	3
ESE	0	1	0	0	0	0	1
SE	1	1	0	0	0	0	2
SSE	1	6	2	0	0	0	9
S	1	7	1	0	0	0	9
SSW	1	0	1	0	0	0	2
SW	0	7	3	0	0	0	10
WSW	2	7	1	0	0	0	10
W	1	6	2	0	0	0	9
WNW	0	10	2	0	0	0	12
NW	1	8	2	0	0	0	11
NNW	2	6	1	0	0	0	9
Variable	0	0	0	0	0	0	0
Total	30	74	15	0	0	0	119

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

Peach Bottom Power Atomic Station

Period of Record: July - September 2019
Stability Class - Neutral - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	18	22	3	0	0	0	43
NNE	16	18	0	0	0	0	34
NE	8	1	0	0	0	0	9
ENE	7	0	0	0	0	0	7
E	12	0	0	0	0	0	12
ESE	14	6	0	0	0	0	20
SE	6	5	0	0	0	0	11
SSE	30	49	9	0	0	0	88
S	10	26	1	0	0	0	37
SSW	13	9	0	0	0	0	22
SW	15	14	6	0	0	0	35
WSW	12	21	2	0	0	0	35
W	15	13	0	0	0	0	28
WNW	12	17	3	0	0	0	32
NW	20	25	4	0	0	0	49
NNW	19	23	7	0	0	0	49
Variable	0	0	0	0	0	0	0
Total	227	249	35	0	0	0	511

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: 8

Peach Bottom Power Atomic Station

Period of Record: July - September 2019
Stability Class - Slightly Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	35	13	0	0	0	0	48
NNE	24	5	0	0	0	0	29
NE	7	1	0	0	0	0	8
ENE	3	0	0	0	0	0	3
E	7	0	0	0	0	0	7
ESE	15	1	0	0	0	0	16
SE	18	3	0	0	0	0	21
SSE	38	44	0	0	0	0	82
S	41	31	0	0	0	0	72
SSW	28	11	1	0	0	0	40
SW	29	14	0	0	0	0	43
WSW	31	19	1	0	0	0	51
W	33	31	2	1	0	0	67
WNW	38	28	0	0	0	0	66
NW	23	35	0	0	0	0	58
NNW	32	21	2	0	0	0	55
Variable	0	0	0	0	0	0	0
Total	402	257	6	1	0	0	666

Hours of calm in this stability class: 6
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 8

Peach Bottom Power Atomic Station

Period of Record: July - September 2019
Stability Class - Moderately Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	0	0	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	1	0	0	0	0	1
ENE	0	0	0	0	0	0	0
E	1	0	0	0	0	0	1
ESE	1	0	0	0	0	0	1
SE	2	0	0	0	0	0	2
SSE	1	0	0	0	0	0	1
S	6	1	0	0	0	0	7
SSW	16	3	0	0	0	0	19
SW	28	8	0	0	0	0	36
WSW	36	21	0	0	0	0	57
W	28	27	0	0	0	0	55
WNW	22	16	0	0	0	0	38
NW	12	7	0	0	0	0	19
NNW	3	2	0	0	0	0	5
Variable	0	0	0	0	0	0	0
Total	157	86	0	0	0	0	243

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: 8

Peach Bottom Power Atomic Station

Period of Record: July - September 2019
Stability Class - Extremely Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	2	0	0	0	0	0	2
SW	7	18	0	0	0	0	25
WSW	40	26	0	0	0	0	66
W	11	9	0	0	0	0	20
WNW	4	2	0	0	0	0	6
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	64	55	0	0	0	0	119

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

Peach Bottom Power Atomic Station

Period of Record: July - September 2019
 Stability Class - Extremely Unstable - 316Ft-33Ft Delta-T (F)
 Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	5	1	0	0	6
NE	0	1	3	2	0	0	6
ENE	0	3	8	2	0	0	13
E	1	7	5	0	0	0	13
ESE	0	2	7	0	0	0	9
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	1	13	28	5	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: 8

Peach Bottom Power Atomic Station

Period of Record: July - September 2019
Stability Class - Moderately Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	4	2	0	0	0	6
NNE	0	3	2	0	0	0	5
NE	0	2	3	0	0	0	5
ENE	0	3	0	0	0	0	3
E	0	2	3	0	0	0	5
ESE	0	3	2	0	0	0	5
SE	0	0	2	0	0	0	2
SSE	0	0	4	0	0	0	4
S	0	1	0	2	0	0	3
SSW	0	0	0	0	0	0	0
SW	0	0	0	1	0	0	1
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	18	18	3	0	0	39

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 Power Atomic Station

Period of Record: July - September 2019
Stability Class - Slightly Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	4	2	0	0	0	6
NNE	0	4	3	1	0	0	8
NE	4	3	0	1	0	0	8
ENE	3	2	0	0	0	0	5
E	0	5	2	0	0	0	7
ESE	0	7	2	0	0	0	9
SE	0	1	3	0	0	0	4
SSE	0	3	3	0	0	0	6
S	0	0	3	0	0	0	3
SSW	0	0	1	2	0	0	3
SW	0	2	5	3	0	0	10
WSW	0	0	1	0	0	0	1
W	0	0	0	0	0	0	0
WNW	0	0	1	1	0	0	2
NW	0	1	1	0	0	0	2
NNW	0	4	3	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	7	36	30	8	0	0	81

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

Peach Bottom Atomic Power Station
Unit 2 and 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLC

Peach Bottom Power Atomic Station

Period of Record: July - September 2019
Stability Class - Neutral - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	5	18	29	8	0	0	60
NNE	7	18	23	7	0	0	55
NE	7	14	8	2	0	0	31
ENE	11	21	13	1	0	0	46
E	11	35	19	13	3	0	81
ESE	5	12	13	13	0	0	43
SE	6	19	34	10	0	0	69
SSE	5	21	37	6	0	0	69
S	6	15	35	7	1	0	64
SSW	3	12	14	1	0	0	30
SW	3	18	49	9	1	0	80
WSW	2	24	24	4	0	0	54
W	3	13	25	6	0	0	47
WNW	1	14	22	14	0	0	51
NW	3	19	37	14	1	0	74
NNW	3	26	27	2	0	0	58
Variable	0	0	0	0	0	0	0
Total	81	299	409	117	6	0	912

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 Power Atomic Station

Period of Record: July - September 2019
Stability Class - Slightly Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	19	18	6	0	0	43
NNE	6	16	21	3	0	0	46
NE	3	18	17	1	0	0	39
ENE	8	16	6	0	0	0	30
E	8	13	5	1	0	0	27
ESE	4	17	5	4	0	0	30
SE	10	20	28	6	0	0	64
SSE	9	17	39	16	0	0	81
S	6	29	54	21	0	0	110
SSW	8	17	35	3	0	0	63
SW	8	15	12	2	1	0	38
WSW	1	9	13	6	4	1	34
W	4	1	12	10	0	0	27
WNW	3	21	18	10	1	0	53
NW	4	10	32	33	2	0	81
NNW	1	17	24	11	0	0	53
Variable	0	0	0	0	0	0	0
Total	83	255	339	133	8	1	819

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 Power Atomic Station

Period of Record: July - September 2019
Stability Class - Moderately Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	9	2	2	0	0	15
NNE	0	5	1	0	0	0	6
NE	4	1	1	0	0	0	6
ENE	2	2	0	0	0	0	4
E	3	0	1	0	0	0	4
ESE	2	1	0	0	0	0	3
SE	2	1	0	0	0	0	3
SSE	6	9	1	0	0	0	16
S	1	10	3	2	0	0	16
SSW	9	9	3	0	0	0	21
SW	2	8	7	3	0	0	20
WSW	2	7	13	6	1	0	29
W	0	3	7	10	0	0	20
WNW	2	7	8	11	1	0	29
NW	3	10	14	6	1	0	34
NNW	2	4	15	1	0	0	22
Variable	0	0	0	0	0	0	0
Total	42	86	76	41	3	0	248

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 Power Atomic Station

Period of Record: July - September 2019
 Stability Class - Extremely Stable - 316Ft-33Ft Delta-T (F)
 Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	1	2	1	0	0	0	4
NE	1	0	0	0	0	0	1
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	1	0	0	0	0	1
SE	1	0	0	0	0	0	1
SSE	0	1	0	0	0	0	1
S	2	5	0	0	0	0	7
SSW	4	5	1	0	0	0	10
SW	0	5	0	1	0	0	6
WSW	1	1	2	0	0	0	4
W	2	0	1	0	0	0	3
WNW	2	1	0	0	0	0	3
NW	0	4	1	0	0	0	5
NNW	3	5	0	0	0	0	8
Variable	0	0	0	0	0	0	0
Total	17	30	6	1	0	0	54

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: October - December 2019
Stability Class - Extremely Unstable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	7	2	0	0	0	13
NNE	12	21	3	0	0	0	36
NE	23	11	0	0	0	0	34
ENE	24	4	0	0	0	0	28
E	28	8	0	0	0	0	36
ESE	4	9	2	0	0	0	15
SE	3	9	3	1	0	0	16
SSE	1	14	5	1	0	0	21
S	1	2	22	2	0	0	27
SSW	1	2	5	0	1	0	9
SW	1	3	0	0	0	0	4
WSW	4	1	2	2	0	0	9
W	1	2	1	0	0	0	4
WNW	5	4	5	2	0	0	16
NW	3	9	8	0	0	0	20
NNW	3	9	6	1	0	0	19
Variable	0	0	0	0	0	0	0
Total	118	115	64	9	1	0	307

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: 39

Peach Bottom Atomic Power Station

Period of Record: October - December 2019

Stability Class - Moderately Unstable - 150Ft-33Ft Delta-T (F)

Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	5	3	1	0	0	9
NNE	6	9	0	0	0	0	15
NE	6	2	0	0	0	0	8
ENE	11	0	0	0	0	0	11
E	2	2	0	0	0	0	4
ESE	2	8	0	0	0	0	10
SE	0	2	0	0	0	0	2
SSE	0	1	2	0	0	0	3
S	0	6	3	2	0	0	11
SSW	0	1	1	0	0	0	2
SW	0	2	0	0	0	0	2
WSW	0	2	2	0	0	0	4
W	0	0	10	0	0	0	10
WNW	0	1	13	2	0	0	16
NW	0	2	8	5	0	0	15
NNW	0	3	9	10	0	0	22
Variable	0	0	0	0	0	0	0
Total	27	46	51	20	0	0	144

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: 39

Peach Bottom Atomic Power Station

Period of Record: October - December 2019
 Stability Class - Slightly Unstable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	3	0	0	0	6
NNE	3	7	1	0	0	0	11
NE	2	0	0	0	0	0	2
ENE	3	0	0	0	0	0	3
E	4	0	0	0	0	0	4
ESE	1	0	0	0	0	0	1
SE	0	1	0	0	0	0	1
SSE	0	3	4	0	0	0	7
S	0	0	0	0	0	0	0
SSW	0	2	6	0	0	0	8
SW	0	0	3	0	0	0	3
WSW	0	1	1	0	0	0	2
W	0	0	1	2	0	0	3
WNW	1	1	7	4	0	0	13
NW	1	2	8	4	0	0	15
NNW	0	5	7	2	0	0	14
Variable	0	0	0	0	0	0	0
Total	15	25	41	12	0	0	93

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: 39

Peach Bottom Atomic Power Station

Period of Record: October - December 2019
 Stability Class - Neutral - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	9	44	15	0	0	0	68
NNE	16	41	2	0	0	0	59
NE	23	19	0	0	0	0	42
ENE	11	0	0	0	0	0	11
E	15	14	0	0	0	0	29
ESE	13	3	0	0	0	0	16
SE	8	19	1	0	0	0	28
SSE	8	52	4	0	0	0	64
S	5	38	15	5	0	0	63
SSW	2	10	5	1	0	0	18
SW	0	12	4	1	0	0	17
WSW	1	13	7	0	0	0	21
W	5	20	29	14	0	0	68
WNW	4	30	45	25	0	0	104
NW	6	28	55	25	0	0	114
NNW	9	38	53	12	0	0	112
Variable	0	0	0	0	0	0	0
Total	135	381	235	83	0	0	834

Hours of calm in this stability class: 7
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 39

Peach Bottom Atomic Power Station

Period of Record: October - December 2019
Stability Class - Slightly Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	8	7	0	0	0	0	15
NNE	14	4	0	0	0	0	18
NE	8	5	0	0	0	0	13
ENE	10	1	0	0	0	0	11
E	28	0	0	0	0	0	28
ESE	16	2	0	0	0	0	18
SE	22	18	0	0	0	0	40
SSE	14	33	2	0	0	0	49
S	15	25	3	0	0	0	43
SSW	9	3	1	0	0	0	13
SW	18	11	0	0	0	0	29
WSW	12	29	4	0	0	0	45
W	15	35	2	0	0	0	52
WNW	10	29	6	0	0	0	45
NW	11	31	1	0	0	0	43
NNW	10	13	4	0	0	0	27
Variable	0	0	0	0	0	0	0
Total	220	246	23	0	0	0	489

Hours of calm in this stability class: 25
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 39

Peach Bottom Atomic Power Station

Period of Record: October - December 2019
 Stability Class - Moderately Stable - 150Ft-33Ft Delta-T (F)
 Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	0	0	0	0	0	3
NNE	3	0	0	0	0	0	3
NE	5	0	0	0	0	0	5
ENE	6	0	0	0	0	0	6
E	12	0	0	0	0	0	12
ESE	16	0	0	0	0	0	16
SE	7	0	0	0	0	0	7
SSE	2	0	0	0	0	0	2
S	1	1	0	0	0	0	2
SSW	3	0	0	0	0	0	3
SW	11	0	0	0	0	0	11
WSW	26	9	0	0	0	0	35
W	19	8	0	0	0	0	27
WNW	14	7	0	0	0	0	21
NW	8	3	0	0	0	0	11
NNW	5	2	0	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	141	30	0	0	0	0	171

Hours of calm in this stability class: 6
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 39

Peach Bottom Atomic Power Station

Period of Record: October - December 2019
Stability Class - Extremely Stable - 150Ft-33Ft Delta-T (F)
Winds Measured at 33 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	0	0	0	0	0	2
NNE	3	0	0	0	0	0	3
NE	1	0	0	0	0	0	1
ENE	2	0	0	0	0	0	2
E	2	0	0	0	0	0	2
ESE	2	0	0	0	0	0	2
SE	3	0	0	0	0	0	3
SSE	2	0	0	0	0	0	2
S	1	1	0	0	0	0	2
SSW	0	0	0	0	0	0	0
SW	5	1	0	0	0	0	6
WSW	18	11	0	0	0	0	29
W	16	1	0	0	0	0	17
WNW	8	0	0	0	0	0	8
NW	7	1	0	0	0	0	8
NNW	4	0	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	76	15	0	0	0	0	91

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: 39

Peach Bottom Atomic Power Station

Period of Record: October - December 2019

Stability Class - Extremely Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	3	0	0	3
ENE	0	3	0	0	0	0	3
E	0	2	4	0	0	0	6
ESE	0	0	1	0	0	0	1
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	5	5	3	0	0	13

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 4
 Hours of missing stability measurements in all stability classes: 39

Peach Bottom Atomic Power Station
Unit 2 and 3

Licensee: Exelon Generation Company, LLC
PSEG Nuclear, LLC

Peach Bottom Atomic Power Station

Period of Record: October - December 2019
Stability Class - Moderately Unstable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	3	0	0	3
NE	0	1	0	3	3	0	7
ENE	0	2	1	0	0	0	3
E	0	2	0	0	0	0	2
ESE	0	1	0	0	0	0	1
SE	0	0	1	0	0	0	1
SSE	0	0	0	0	0	0	0
S	0	0	2	0	0	0	2
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	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	6	5	6	3	0	20

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 3
Hours of missing stability measurements in all stability classes: 39

Peach Bottom Atomic Power Station

Period of Record: October - December 2019
 Stability Class - Slightly Unstable - 316Ft-33Ft Delta-T (F)
 Winds Measured at 320 Feet

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

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 3
 Hours of missing stability measurements in all stability classes: 39

Peach Bottom Atomic Power Station

Period of Record: October - December 2019
Stability Class - Neutral - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	14	41	34	5	0	97
NNE	5	6	29	22	0	0	62
NE	7	6	18	21	1	0	53
ENE	9	12	5	1	0	0	27
E	11	13	6	9	0	0	39
ESE	2	19	22	17	4	0	64
SE	4	13	36	7	0	2	62
SSE	0	6	32	11	6	4	59
S	1	4	31	33	4	1	74
SSW	0	4	4	9	4	0	21
SW	0	1	10	2	2	0	15
WSW	0	2	10	10	1	2	25
W	1	2	6	26	34	14	83
WNW	2	7	9	45	36	25	124
NW	2	9	30	55	57	6	159
NNW	2	11	34	31	13	0	91
Variable	0	0	0	0	0	0	0
Total	49	129	323	333	167	54	1055

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 95
Hours of missing stability measurements in all stability classes: 39

Peach Bottom Atomic Power Station

Period of Record: October - December 2019

Stability Class - Slightly Stable - 316Ft-33Ft Delta-T (F)

Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	11	17	7	0	0	38
NNE	3	8	4	6	0	0	21
NE	5	8	10	5	0	0	28
ENE	1	11	5	0	0	0	17
E	1	14	17	0	0	0	32
ESE	3	12	22	4	0	1	42
SE	4	14	30	10	0	0	58
SSE	3	7	14	10	0	0	34
S	1	5	20	13	1	0	40
SSW	2	7	15	5	0	0	29
SW	2	10	13	6	0	0	31
WSW	0	7	26	9	2	0	44
W	1	4	16	30	1	0	52
WNW	1	7	9	27	3	1	48
NW	0	8	12	25	3	0	48
NNW	3	6	20	6	1	0	36
Variable	0	0	0	0	0	0	0
Total	33	139	250	163	11	2	598

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 88
 Hours of missing stability measurements in all stability classes: 39

Peach Bottom Atomic Power Station

Period of Record: October - December 2019
Stability Class - Moderately Stable - 316Ft-33Ft Delta-T (F)
Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	6	2	0	0	0	9
NNE	0	3	3	0	0	0	6
NE	0	3	0	0	0	0	3
ENE	0	2	0	0	0	0	2
E	0	4	2	0	0	0	6
ESE	0	0	0	1	0	0	1
SE	0	3	5	0	0	0	8
SSE	1	6	1	0	0	0	8
S	0	11	7	0	0	0	18
SSW	4	4	8	0	0	0	16
SW	1	11	2	0	0	0	14
WSW	0	11	4	1	0	0	16
W	2	6	0	2	0	0	10
WNW	0	3	2	2	0	0	7
NW	2	11	2	0	0	0	15
NNW	1	2	5	1	0	0	9
Variable	0	0	0	0	0	0	0
Total	12	86	43	7	0	0	148

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 32
Hours of missing stability measurements in all stability classes: 39

Peach Bottom Atomic Power Station

Period of Record: October - December 2019
 Stability Class - Extremely Stable - 316Ft-33Ft Delta-T (F)
 Winds Measured at 320 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	1	0	0	0	0	1
ENE	2	5	0	0	0	0	7
E	0	5	1	0	0	0	6
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	1	1	0	0	0	0	2
SSW	2	4	0	0	0	0	6
SW	6	1	3	0	0	0	10
WSW	0	6	2	1	0	0	9
W	0	2	5	3	0	0	10
WNW	0	6	0	0	0	0	6
NW	2	2	3	1	0	0	8
NNW	0	5	0	1	0	0	6
Variable	0	0	0	0	0	0	0
Total	13	38	14	6	0	0	71

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: 39