

Enclosure to
ULNRC-07011

2025 Annual Radioactive Effluent Release Report

(58 pages follow this cover page)

Callaway Energy Center 2025 Annual Radioactive Effluent Release Report

Renewed Facility Operating License NPF-30

Docket Numbers 50-483 and 72-1045



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1. Introduction

This Annual Radioactive Effluent Release Report (ARERR) is submitted by Union Electric Co., dba Ameren Missouri, in accordance with the requirements of 10 CFR 50.36a and 10 CFR 72.44(d)(3), Callaway Energy Center Technical Specification 5.6.3, and HI-STORM UMAX Certificate of Compliance Appendix A, Section 5.1.c. This report is for the period January 1, 2025, to December 31, 2025.

The doses to the Member of the Public from all liquid and gaseous effluents discharged during the reporting period were small fractions of the NRC and EPA regulatory limits and the Radioactive Effluent Control limits in the Offsite Dose Calculation Manual.

Abstract

The Annual Radioactive Effluent Release Report covers the operation of the Callaway Energy Center during the year 2025. The report includes a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit. The report also includes an annual summary of hourly meteorological data collected during the year and an assessment of radiation dose to the Member of the Public from liquid and gaseous effluents.

Radionuclide concentrations in liquid and gaseous effluents were obtained by effluent sampling and radiological analysis in accordance with the requirements of FSAR-SP/ODCM Radiological Effluent Control (REC) Table 16.11-1 and Table 16.11-4. Gamma spectroscopy was the primary analysis technique used to determine the radionuclide composition and concentration of liquid and gaseous effluents. Composite samples were analyzed for the hard to detect nuclides by an independent laboratory. Tritium and gross alpha were measured for both liquid and gaseous effluents using liquid scintillation counting and gas flow proportional counting techniques, respectively. The total radioactivity in effluent releases was determined from the measured concentrations of each radionuclide present and the total volume of effluents discharged.

2. Gaseous Effluents

The quantity of radioactive material released in gaseous effluents during the reporting period is summarized in Table A-1. The quarterly and annual sums of all radionuclides discharged in gaseous effluents are reported in Tables A-1A and A-1B. All gaseous effluent releases are considered to be ground level.

The quantity of ^{14}C released in gaseous effluents was calculated as described in EPRI Technical Report 1021106¹.

There were no radioactive effluents from the Independent Spent Fuel Storage Installation (ISFSI). The HI-STORM UMAX Canister Storage System does not create any radioactive materials or have any radioactive waste treatment systems. Specification 3.1.1, "Multi-Purpose Canister (MPC)", provides assurance that there are no radioactive effluents from the ISFSI.²

3. Liquid Effluents

The quantity of radioactive material released in liquid effluents during the reporting period is summarized in Table A-2. The quarterly and annual sums of all radionuclides discharged in liquid effluents are reported in Table A-2A. All liquid effluents were discharged in batch mode; there were no continuous liquid

¹ *Estimation of Carbon- 14 in Nuclear Power Plant Gaseous Effluents*, Technical Report 1021106, Electric Power Research Institute, December 2010.

² Certificate of Compliance No. 1040, Appendix A, Technical Specifications for the HI_STORM UMAX Canister Storage System, Specification 5.1.

discharges for the reporting period. Dilution by the Missouri River, in the form of the near- field dilution factor, is utilized in the ODCM dose calculation methodology.

4. Solid Waste Storage and Shipments

The volume and activity of solid waste shipped for disposal is provided in Table A-3.

5. Dose Assessments

The annual evaluation of dose to the Member of the Public is calculated in accordance with the methodology and parameters in the ODCM and is reported in Tables A-4 and A-5.

5.1 Table A-4, Dose Assessments, 10 CFR 50, Appendix I

The dose assessments reported in Table A-4 were calculated using the methodology and parameters in the ODCM and demonstrate compliance with 10 CFR 50, Appendix I. The gamma air dose and beta air dose were calculated at the nearest Site Boundary location with the highest value of X/Q, as described in the ODCM. The maximum organ dose from gaseous effluents was calculated for the ingestion, inhalation, and ground plane pathways at the location of the nearest resident with the highest value of D/Q, as described in the ODCM. The organ dose does not include the dose from ^{14}C , which is listed separately.

5.2 Table A-5, EPA 40 CFR 190 Individual in the Unrestricted Area

The dose assessments reported in Table A-5 are the doses to the Member of the Public from activities within the Site Boundary plus the doses at the location of the Nearest Residence. A large portion of the residual land of the Callaway Site is managed by the State of Missouri Department of Conservation as the Reform Wildlife Management Area. Pursuant to the guidance provided in Regulatory Guide 1.21, rev.2, the dose reported in Table A-5 is the sum of the dose from gaseous effluents (at the Nearest Resident location and within the Site Boundary), plus the dose contribution due to activities within the Site Boundary and the organ dose from inhalation of ^{14}C (at the Nearest Resident location and within the Site Boundary). The dose assessments in Table A-5 demonstrate compliance with 10 CFR 20.1301(e) and 40 CFR 190.

6. Supplemental Information

6.1 Abnormal Releases or Abnormal Discharges

There were no abnormal releases during the reporting period.

6.2 Non-routine Planned Discharges

There were no non-routine planned discharges during the reporting period.

6.3 Radioactive Waste Treatment System Changes

There were no major changes to the liquid or gaseous radwaste treatment system during the reporting period.

6.4 Annual Land Use Census Changes

There were no changes identified in the locations for dose calculation. Changes in sample locations identified in the Land Use Census are described in the Annual Radioactive Environmental Operating Report.

6.5 Effluent Monitoring System Non-functionality

Effluent monitor GTRE21A/B, the Unit Vent Effluent monitor, was out of service for more than 30 days for the year 2025. Per the Equipment Out of Service Log (EOSL), entry 25176, this monitor was placed out of service November 7, 2025, and remained out of service through the end of 2025. The issue with the monitor involved failed hardware, that is obsolete and difficult to repair. The specific component was shipped off-site to a third-party vendor for troubleshooting and repairs. The monitor was returned to service on February 26, 2026. The compensatory action of placing the Unit Vent on the sampling cart was in place for the duration of the out-of-service period, including taking 11-hour noble gas samples.

6.6 Offsite Dose Calculation Manual Changes

The Offsite Dose Calculation Manual consists of two documents: APA-ZZ-01003, "Offsite Dose Calculation Manual" (contains Methodology and Parameters) and FSAR-SP Chapter 16.11, "Offsite Dose Calculation Manual Radiological Effluent Controls (RECs)". There were no changes to APA-ZZ-01003 or FSAR 16.11 for 2025.

6.7 Process Control Program Changes

APA-ZZ-01011, "Process Control Program" was not revised during the 2025 reporting period. The current revision is 018, effective 02/29/2024.

6.8 Corrections to Previous Reports

Minor corrections are required for the Callaway Energy Center 2023 Annual Radioactive Effluent Release Report submitted in 2024, and the Callaway Energy Center 2022 Annual Radioactive Effluent Release Report submitted in 2023.

2023 Annual Report:

During review of the long-term meteorological dispersion parameters for calendar years 2014 to 2023, anomalies with the wind speed data in 2023 were identified. Subsequent review by the contract meteorologist determined the A channel 10-meter wind speed/direction was reading an impossible number of calms at night beginning in May through the beginning of December. As a result, some of the data provided in the Annual Report for calendar year 2023 was inaccurate.

The input data was modified by the contract meteorologist using the wind speed/direction data from the B channel 10-meter sensor and recalculating the dispersion parameters. The resultant shift in the joint frequency distribution to higher wind speeds resulted in lower dispersion parameters close to the site, as would be expected based on the Gaussian plume model. All changes to the reported doses are within an order of magnitude and remain well below the limits for each category. The affected pages, in their entirety, are included as an attachment to the ARERR.

Table A-4, Dose Assessments, 10 CFR 50, Appendix I, page 15:

The quarterly and yearly total dose values have decreased by a factor of ~ 4 for gamma and beta air dose and a factor of ~ 5 for the maximum organ dose.

Table A-5, EPA 40 CFR 190 Individual in the Unrestricted Area, page 16:

The whole body and thyroid dose have decreased by a factor of ~ 4 and the max other organ has decreased by a factor of ~ 3.

Appendix B, Meteorological Dispersion Parameters for the Reporting Period, page 18:

For the nearest resident, the values of X/Q decreased by factors of approximately 5, while the deposition rate (D/Q) decreased only slightly.

For the site boundary, the sector with the highest D/Q shifted slightly from SSE to SE. The values of X/Q decreased by factors of ~ 4 , while the deposition rate decreased only slightly.

Joint Frequency Distribution: Hours at Wind and Direction, pages 19-34:

The modified joint frequency distributions were determined using the B channel 10-meter wind sensor indications rather than the faulty A channel data.

See Appendix C1 for a copy of the affected pages.

2022 Annual Report:

A systemic error was identified in the determination of the Maximum Organ Yearly Total dose reported in Table A-4 during the review of the 2025 ARERR. Specifically, an error had been introduced in the past that resulted in the fourth quarter GI-LLI organ dose, instead of the annual GI-LLI organ dose being used to determine the highest annual organ dose. As a result, in some years an incorrect organ was used to report the highest annual organ dose. Review of the annual reports since 2015 determined that the only impacted report was 2022.

Table A-4, Dose Assessments 10 CFR 50, Appendix I, page 15:

The original submittal incorrectly reported the annual organ dose to the liver, which was 1.51 mrem. However, the maximum annual organ dose was for the GI-LLI, with an annual dose of $3.60E-03$ mrem.

See Appendix C2 for a copy of the affected page containing Table A-4 for 2022.

6.9 Other Information Related to Radioactive Effluents

Meteorological dispersion parameters, data recovery rate, and Joint Frequency Tables for the monitoring period are attached as Appendix B

Appendix A

Tables of Quantities Released in Liquid and Gaseous Radioactive Effluents and in Solid Radioactive Waste Shipments

Tables of Doses from the Discharge of Liquid and Gaseous Radioactive Effluents

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| Table A-1: Gaseous Effluents- Summation of All Releases | | | | | | | |
|---|-------|-----------|-----------|-----------|-----------|-----------|--|
| Summation of All Releases | Unit | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Total | Estimated Uncertainty (%) ³ |
| Fission & Activation Gases | Ci | 7.07E-01 | 1.18E-03 | 2.97E-01 | 2.56E-01 | 1.26E+00 | 20 |
| <i>Average Release Rate</i> | μCi/s | 8.96E-02 | 1.49E-04 | 3.77E-02 | 3.25E-02 | 4.00E-02 | |
| <i>% of Limit</i> | % | N/A | N/A | N/A | N/A | N/A | |
| ⁸² Bromine | Ci | ND* | ND* | ND* | 4.756E-06 | 4.756E-06 | N/A |
| ¹³¹ Iodine | Ci | ND* | ND* | ND* | ND* | ND* | N/A |
| <i>Average Release Rate</i> | μCi/s | N/A | N/A | N/A | 6.03E-07 | 1.51E-07 | |
| <i>% of Limit</i> | % | N/A | N/A | N/A | N/A | N/A | |
| Particulates | Ci | ND* | 2.11E-06 | 9.84E-06 | ND* | 1.19E-05 | N/A |
| <i>Average Release Rate</i> | μCi/s | N/A | 2.67E-07 | 1.25E-06 | N/A | 3.79E-07 | |
| <i>% of Limit</i> | % | N/A | N/A | N/A | N/A | N/A | |
| Gross Alpha | Ci | 4.50E-07 | 2.18E-07 | 5.09E-07 | 1.58E-07 | 1.34E-06 | |
| ³ H | Ci | 9.12E+00 | 2.89E+01 | 1.59E+01 | 1.16E+01 | 6.55E+01 | 14 |
| <i>Average Release Rate</i> | μCi/s | 1.16E+00 | 3.67E+00 | 2.02E+00 | 1.47E+00 | 2.08E+00 | |
| <i>% of Limit</i> | % | N/A | N/A | N/A | N/A | N/A | |
| ¹⁴ C ⁴ | Ci | 2.18E+00 | 2.18E+00 | 2.18E+00 | 2.18E+00 | 8.70E+00 | |

*ND means measurements were performed but no activity was detected.

³ Safety Analysis calculation 87-063-00, January 6, 1988

⁴ ¹⁴C activity is estimated based on EPRI report TR-1021106, *Estimation of ¹⁴C in Nuclear Power Plant Effluents*, December 2010.

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| Table A-1A: Gaseous Effluents- Ground Level Release- Batch Mode | | | | | | |
|--|--------------|------------------|------------------|------------------|------------------|---------------------------|
| Fission & Activation Gases | Units | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Total for the year |
| ⁴¹ Ar | Ci | 6.815E-02 | ND* | 3.825E-02 | 2.839E-02 | 1.348E-01 |
| ⁸⁵ Kr | Ci | 8.504E-05 | 4.304E-04 | ND* | 5.052E-05 | 5.659E-04 |
| ^{131M} XE | Ci | ND* | 7.887E-05 | ND* | ND* | 7.887E-05 |
| ¹³¹ XE | Ci | ND* | 6.677E-04 | ND* | 1.730E-04 | 8.407E-04 |
| Iodines & Halogens | Units | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Total for the year |
| | Ci | ND* | ND* | ND* | ND* | ND* |
| Particulates | Units | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Total for the year |
| | Ci | ND* | ND* | ND* | ND* | ND* |
| ³ H | Ci | 9.197E-02 | ND* | 8.083E-02 | 6.281E-02 | 2.356E-01 |
| Gross α | Ci | ND* | ND* | ND* | ND* | ND* |
| ¹⁴ C | Ci | 2.25E-02 | 2.25E-02 | 2.25E-02 | 2.25E-02 | 9.01E-02 |

*ND means measurements were performed but no activity was detected.

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| Table A-1B: Gaseous Effluents - Ground Level Release - Continuous Mode | | | | | | |
|---|--------------|------------------|------------------|------------------|------------------|---------------------------|
| Fission & Activation Gases | Units | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Total for the year |
| ⁴¹ Ar | Ci | 6.387E-01 | ND* | 2.589E-01 | 2.278E-01 | 1.125E+00 |
| Iodines & Halogens | Units | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Total for the year |
| ⁸² Br | Ci | ND* | ND* | ND* | 4.756E-06 | 4.756E-06 |
| Particulates | Units | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Total for the year |
| ⁵⁴ Mn | Ci | ND* | ND* | 2.029E-06 | ND* | 2.029E-06 |
| ⁵⁸ Co | Ci | ND* | ND* | 7.809E-06 | ND* | 7.809E-06 |
| ⁶⁰ Co | Ci | ND* | 1.254E-06 | ND* | ND* | 1.254E-06 |
| ⁹⁵ Nb | Ci | ND* | 8.519E-07 | ND* | ND* | 8.519E-07 |
| ³ H | Ci | 9.032E+00 | 2.891E+01 | 1.583E+01 | 1.151E+01 | 6.528E+01 |
| Gross α | Ci | 4.499E-07 | 2.180E-07 | 5.088E-07 | 1.584E-07 | 1.335E-06 |
| ¹⁴ C | Ci | 2.15E+00 | 2.15E+00 | 2.15E+00 | 2.15E+00 | 8.61E+00 |

*ND means measurements were performed but no activity was detected.

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| Summation of All Liquid Releases | Unit | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Total | Estimated Uncertainty (%) ⁵ |
|--|-------------------|-----------|-----------|-----------|-----------|----------|--|
| Fission and Activation Products⁶ | Ci | 1.00E-02 | 8.17E-03 | 1.93E-02 | 1.87E-03 | 3.94E-02 | 20 |
| <i>Avg Diluted Conc</i> | μCi/ml | 3.46E-08 | 5.57E-08 | 1.22E-07 | 5.83E-09 | 4.30E-08 | |
| <i>% of Limit</i> | % | N/A | N/A | N/A | N/A | N/A | |
| ³H | Ci | 7.91E+02 | 2.68E+02 | 6.63E+01 | 1.98E+02 | 1.32E+03 | 14 |
| <i>Avg Diluted Conc</i> | μCi/ml | 2.73E-03 | 1.82E-03 | 4.18E-04 | 6.16E-04 | 1.44E-03 | |
| <i>% of Limit</i> | % | N/A | N/A | N/A | N/A | N/A | |
| Dissolved & Entrained Gases | Ci | ND* | 2.05E-05 | ND* | ND* | 2.05E-05 | 27 |
| <i>Avg Diluted Conc</i> | μCi/ml | ND* | 1.40E-10 | ND* | ND* | 2.24E-11 | |
| <i>% of Limit</i> | % | N/A | N/A | N/A | N/A | N/A | |
| Gross α | Ci | 1.81E-04 | 2.97E-04 | 1.25E-04 | 3.09E-05 | 6.34E-04 | 29 |
| <i>Avg Diluted Conc</i> | μCi/ml | 6.23E-10 | 2.03E-09 | 7.88E-10 | 9.62E-11 | 6.92E-10 | |
| Vol Liquid Effluent⁷ | Liters | 5.25E+06 | 3.68E+06 | 4.99E+06 | 9.14E+06 | 2.31E+7 | |
| Dilution Volume⁸ | Liters | 2.84E+08 | 1.43E+08 | 1.54E+08 | 3.12E+08 | 8.93E+08 | |
| Avg river flow⁹ | m ³ /s | 1.08E+03 | 2.78E+03 | 2.11E+03 | 1.11E+03 | 1.77E+03 | |
| Time period for releases | hrs | 1.931E+02 | 9.360E+01 | 1.045E+02 | 2.009E+02 | 5.92E+02 | |

*ND means measurements were performed but no activity was detected.

⁵ Safety Analysis calculation 87-063-00, January 6, 1988

⁶ Excludes ³H, noble gases, and gross alpha.

⁷ Primary system liquid effluent plus secondary liquid effluent, prior to dilution.

⁸ Does not include Missouri River dilution.

⁹ Average Missouri River flow for the year at the Hermann, MO monitoring station as reported by the USGS.

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| Table A-2A: Liquid Effluents- Batch Mode | | | | | | |
|---|--------------|------------------|------------------|------------------|------------------|---------------------------|
| Fission & Activation Products | Units | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Total for the year |
| ⁵¹ Cr | Ci | ND* | 8.70E-04 | 2.57E-04 | ND* | 1.13E-03 |
| ⁵⁴ Mn | Ci | 5.25E-05 | 4.69E-05 | 1.65E-04 | ND* | 2.65E-04 |
| ⁵⁵ Fe | Ci | ND* | ND* | 3.28E-03 | ND* | 3.28E-03 |
| ⁵⁸ Co | Ci | 8.76E-06 | 1.45E-03 | 2.80E-03 | 3.50E-04 | 4.62E-03 |
| ⁶⁰ Co | Ci | 4.82E-03 | 2.46E-03 | 5.39E-03 | 1.02E-03 | 1.37E-02 |
| ⁶³ Ni | Ci | 2.90E-03 | 2.18E-03 | 2.33E-03 | ND* | 7.41E-03 |
| ⁹⁵ Zr | Ci | ND* | 5.68E-05 | 8.85E-05 | ND* | 1.45E-04 |
| ⁹⁵ Nb | Ci | ND* | 7.77E-05 | 2.29E-04 | ND* | 3.07E-04 |
| ^{110m} Ag | Ci | ND* | 6.38E-06 | ND* | ND* | 6.38E-06 |
| ¹²⁴ Sb | Ci | ND* | 3.99E-05 | 3.53E-04 | ND* | 3.93E-04 |
| ¹²⁵ Sb | Ci | 2.23E-03 | 9.63E-04 | 4.38E-03 | 4.23E-04 | 7.99E-03 |
| ¹²⁶ Sb | Ci | ND* | ND* | ND* | ND* | ND* |
| ¹³² Te | Ci | ND* | ND* | ND* | ND* | ND* |
| ¹³⁷ Cs | Ci | 1.08E-05 | 5.06E-06 | 5.96E-05 | 7.35E-05 | 1.49E-04 |
| ¹³⁸ Cs | Ci | ND* | ND* | ND* | ND* | ND* |
| Total | Ci | 1.00E-02 | 8.17E-03 | 1.93E-02 | 1.87E-03 | 3.94E-02 |
| Dissolved & Entrained Gases | Units | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Total for the year |
| ¹³³ Xe | Ci | ND* | 2.05E-05 | ND* | ND* | 2.05E-05 |
| Total | Ci | ND* | 2.05E-05 | ND* | ND* | 2.05E-05 |
| ³ H | Ci | 7.91E+02 | 2.68E+02 | 6.63E+01 | 1.98E+02 | 1.32E+03 |
| Gross α | Ci | 1.81E-04 | 2.97E-04 | 1.25E-04 | 3.09E-05 | 6.34E-04 |

*ND means measurements were performed but no activity was detected.

Table A-3: Low-Level Waste Shipped for 2025

| Resins, Filters, And Evaporator Bottoms | | | |
|---|-----------------------|----------------------|-----------------------|
| Waste Class | Volume | | Curies Shipped |
| | ft³ | m³ | |
| A | 1.13E+03 | 3.19E+01 | 2.40E+00 |
| B | 9.00E+01 | 2.55E+00 | 1.14E+02 |
| C | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Unclassified | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| All | 1.22E+03 | 3.45E+01 | 1.16E+02 |
| Major Nuclides for the Above Table: H-3, C-14, Mn-54, Fe-55, Co-58, Co-60, Ni-59, Ni-63, Zn-65, Sr-90, Tc-99, Sb-125, I-129, Cs-137, Pu-238, Pu-240, Pu-241, Am-241, Cm-242, Cm-243, Cm-244 | | | |
| Dry Active Waste (DAW) | | | |
| Waste Class | Volume | | Curies Shipped |
| | ft³ | m³ | |
| A | 7.50E+03 | 2.12E+02 | 3.86E-02 |
| B | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| C | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Unclassified | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| All | 7.50E+03 | 2.12E+02 | 3.86E-02 |
| Major Nuclides for the Above Table: H-3, C-14, Cr-51, Mn-54, Fe-55, Co-58, Co-60, Ni-63, Sr-90, Zr-95, Nb-94, Nb-95, Tc-99, Sb-125, I-129, Cs-137, Pu-238, Pu-239, Pu-240, Pu-241, Am-241, Cm-242, Cm-243, Cm-244 | | | |
| Irradiated Components | | | |
| Waste Class | Volume | | Curies Shipped |
| | ft³ | m³ | |
| A | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| B | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| C | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Unclassified | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| All | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Major Nuclides for the Above Table: N/A | | | |

| Table A-3: Low-Level Waste for 2025 (continued) | | | |
|---|-----------------|----------------|----------------|
| Other Waste | | | |
| Waste Class | Volume | | Curies Shipped |
| | ft ³ | m ³ | |
| A | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| B | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| C | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Unclassified | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| All | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Major Nuclides for the Above Table: N/A | | | |
| Sum Of All Low-Level Waste Shipped From Site | | | |
| Waste Class | Volume | | Curies Shipped |
| | ft ³ | m ³ | |
| A | 8.63E+03 | 2.44E+02 | 2.44E+00 |
| B | 9.00E+01 | 2.55E+00 | 1.14E+02 |
| C | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Unclassified | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| All | 8.72E+03 | 2.47E+02 | 1.16E+02 |
| Major Nuclides for the Above Table: H-3, C-14, Cr-51, Mn-54, Fe-55, Co-58, Co-60, Ni-59, Ni-63, Zn-65, Sr-90, Zr-95, Nb-94, Nb-95, Tc-99, Sb-125, I-129, Cs-137, Pu-238, Pu-239, Pu-240, Pu-241, Am-241, Cm-242, Cm-243, Cm-244 | | | |

SOLIDIFICATION AGENT

None used.

IRRADIATED FUEL SHIPMENTS (Disposition)

There were no shipments of irradiated fuel during the reporting period.

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| | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Yearly total |
|--|-----------|-----------|-----------|-----------|--------------|
| Liquid Effluent Dose Limit, Total Body (mrem) | 1.5 | 1.5 | 1.5 | 1.5 | 3 |
| Total Body Dose (mrem) | 1.40E-03 | 4.70E-04 | 3.08E-04 | 4.91E-04 | 2.64E-03 |
| % Limit | 0.09% | 0.03% | 0.02% | 0.03% | 0.09% |
| Liquid Effluent Dose Limit, Maximum Organ (mrem) | 5 | 5 | 5 | 5 | 10 |
| Maximum Organ Dose (mrem) | 1.52E-03 | 1.38E-03 | 2.92E-03 | 5.81E-04 | 6.10E-03 |
| % Limit | 0.03% | 0.03% | 0.06% | 0.01% | 0.06% |
| Gaseous Effluent Dose Limit, Gamma Air (mrad) | 5 | 5 | 5 | 5 | 10 |
| Gamma Air Dose (mrad) | 3.65E-04 | 1.42E-08 | 1.53E-04 | 1.32E-04 | 6.51E-04 |
| % Limit | 0.01% | 0.00% | 0.00% | 0.00% | 0.01% |
| Gaseous Effluent Dose Limit, Beta Air (mrad) | 10 | 10 | 10 | 10 | 20 |
| Beta Air Dose (mrad) | 1.29E-04 | 9.04E-08 | 5.41E-05 | 4.67E-05 | 2.30E-04 |
| % Limit | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Gaseous Effluent Dose Limit, Maximum Organ (mrem) | 7.5 | 7.5 | 7.5 | 7.5 | 15 |
| Maximum organ dose ¹⁰ (mrem) | 3.72E-03 | 9.96E-03 | 5.02E-03 | 3.65E-03 | 2.07E-02 |
| % Limit | 0.05% | 0.13% | 0.07% | 0.05% | 0.14% |
| ¹⁴C Maximum organ dose (mrem)¹¹ | 2.72E-03 | 2.72E-03 | 2.72E-03 | 2.72E-03 | 1.09E-02 |

¹⁰ Iodine, ³H, and particulates with greater than an 8 day half- life.

¹¹ Not included in above totals

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| | Whole Body | Thyroid | Max Other Organ |
|-------------------|-------------------|----------------|------------------------|
| Dose Limit | 25 mrem | 75 mrem | 25 mrem |
| Dose | 2.38E-02 | 2.38E-02 | 3.35E-02 |
| % Limit | 0.10% | 0.03% | 0.13% |

Appendix B

Meteorological Dispersion Parameters and Joint Frequency Tables;
Totals of Hours at Each Wind Speed & Direction for the period
January 1, 2025- December 31, 2025

Meteorological Dispersion Parameters for the Reporting Period

Nearest Resident Dispersion Parameters

Direction: NNW

Distance: 2913 meters

| | |
|--------------------------------|----------|
| X/Q, Undecayed and Undepleted: | 1.18E-06 |
| X/Q Decayed and Undepleted: | 1.16E-06 |
| X/Q Decayed and Depleted: | 9.82E-07 |
| D/Q Deposition rate: | 2.94E-09 |

Site Boundary Dispersion Parameters

Direction: S

Distance: 1300 meters

| | |
|--------------------------------|----------|
| X/Q, Undecayed and Undepleted: | 1.78E-06 |
| X/Q Decayed and Undepleted: | 1.75E-06 |
| X/Q Decayed and Depleted: | 1.57E-06 |
| D/Q Deposition rate: | 5.09E-09 |

Meteorological Data Recovery Rate

| | |
|---------------------|-----------------------------|
| 10 meters elevation | Hours of valid data: 8669 |
| | Total hours in period: 8760 |
| | Recovery rate: 98.96% |
| 60 meters elevation | Hours of valid data: 8669 |
| | Total hours in period: 8760 |
| | Recovery rate: 98.96% |

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| Joint Frequency Distribution: Hours at Wind and Direction | | | | | | | | | | | | | |
|---|------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--------|--------|-------|--------------------------|
| January - December, 2025 | | | | | | | | | | | | | |
| All Stabilities | | | | | | | | | | | | | |
| Elevations:: Winds 10M Stability 60M | | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | | |
| N | 6 | 47 | 69 | 77 | 142 | 107 | 59 | 31 | 25 | 0 | 0 | 563 | |
| NNE | 0 | 45 | 78 | 72 | 108 | 50 | 49 | 12 | 2 | 0 | 0 | 416 | |
| NE | 3 | 31 | 62 | 67 | 110 | 57 | 33 | 8 | 0 | 0 | 0 | 371 | |
| ENE | 5 | 32 | 56 | 53 | 104 | 51 | 37 | 4 | 0 | 0 | 0 | 342 | |
| E | 5 | 39 | 53 | 39 | 80 | 59 | 18 | 2 | 3 | 0 | 0 | 298 | |
| ESE | 5 | 42 | 70 | 64 | 107 | 68 | 22 | 4 | 1 | 0 | 0 | 383 | |
| SE | 5 | 63 | 121 | 169 | 291 | 114 | 50 | 13 | 3 | 0 | 0 | 829 | |
| SSE | 8 | 52 | 105 | 160 | 376 | 187 | 69 | 28 | 18 | 3 | 2 | 1008 | |
| S | 5 | 43 | 68 | 90 | 226 | 152 | 87 | 53 | 49 | 9 | 2 | 784 | |
| SSW | 4 | 41 | 61 | 58 | 192 | 151 | 81 | 43 | 23 | 4 | 1 | 659 | |
| SW | 5 | 49 | 58 | 74 | 120 | 47 | 28 | 15 | 10 | 3 | 0 | 409 | |
| WSW | 4 | 45 | 53 | 62 | 77 | 54 | 25 | 16 | 7 | 0 | 0 | 343 | |
| W | 3 | 40 | 73 | 70 | 171 | 122 | 41 | 25 | 16 | 0 | 0 | 561 | |
| WNW | 5 | 55 | 67 | 74 | 128 | 100 | 72 | 54 | 37 | 1 | 0 | 593 | |
| NW | 4 | 45 | 68 | 81 | 150 | 126 | 88 | 47 | 21 | 0 | 0 | 630 | |
| NNW | 2 | 32 | 44 | 49 | 107 | 99 | 61 | 45 | 12 | 0 | 0 | 451 | |
| Tot | 69 | 701 | 1106 | 1259 | 2489 | 1544 | 820 | 400 | 227 | 20 | 5 | 8640 | |
| Hours of | Calm | | | | | | | | | | | 29 | |
| Hours of | Variable Direction | | | | | | | | | | | 0 | |
| Hours of | Valid Data . . . | | | | | | | | | | | 8669 | recovery rate: 98.96% |
| Hours of | Missing Data . . . | | | | | | | | | | | 91 | |
| Hours in | Period | | | | | | | | | | | 8760 | |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2025 | | | | | | | | | | | | |
| Stability Class A Extremely Unstable based on Lapse Rate | | | | | | | | | | | | |
| Elevations:: Winds 10m Stability 60m | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| NNE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ENE | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| E | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| ESE | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 3 |
| SE | 0 | 0 | 0 | 0 | 3 | 8 | 3 | 4 | 0 | 0 | 0 | 18 |
| SSE | 0 | 0 | 0 | 1 | 1 | 9 | 2 | 0 | 1 | 0 | 0 | 14 |
| S | 0 | 0 | 0 | 0 | 13 | 2 | 2 | 4 | 7 | 0 | 0 | 28 |
| SSW | 0 | 0 | 0 | 2 | 11 | 4 | 3 | 3 | 2 | 0 | 0 | 25 |
| SW | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| WSW | 0 | 0 | 0 | 1 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 6 |
| W | 0 | 0 | 0 | 0 | 3 | 6 | 12 | 4 | 2 | 0 | 0 | 27 |
| WNW | 0 | 0 | 0 | 0 | 2 | 11 | 13 | 16 | 2 | 0 | 0 | 44 |
| NW | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 3 | 0 | 0 | 8 |
| NNW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tot | 0 | 0 | 0 | 4 | 41 | 42 | 40 | 34 | 19 | 0 | 0 | 180 |
| Hours of | Calm | | | | | | | | | | | 0 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | 180 |
| Hours of | Missing Data . . . | | | | | | | | | | | 91 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2025 | | | | | | | | | | | | |
| Stability Class B Moderately Unstable based on Lapse Rate | | | | | | | | | | | | |
| Elevations:: Winds 10m Stability 60m | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 7 |
| NNE | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| NE | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| ENE | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| E | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 3 |
| ESE | 0 | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 8 |
| SE | 0 | 0 | 0 | 3 | 14 | 9 | 3 | 2 | 0 | 0 | 0 | 31 |
| SSE | 0 | 0 | 0 | 4 | 16 | 13 | 4 | 1 | 4 | 2 | 0 | 44 |
| S | 0 | 0 | 0 | 2 | 17 | 7 | 11 | 4 | 7 | 3 | 0 | 51 |
| SSW | 0 | 0 | 1 | 1 | 15 | 16 | 6 | 2 | 3 | 1 | 1 | 46 |
| SW | 0 | 0 | 0 | 3 | 10 | 3 | 1 | 3 | 1 | 0 | 0 | 21 |
| WSW | 0 | 0 | 0 | 2 | 4 | 3 | 0 | 2 | 0 | 0 | 0 | 11 |
| W | 0 | 0 | 0 | 0 | 6 | 6 | 2 | 2 | 1 | 0 | 0 | 17 |
| WNW | 0 | 0 | 0 | 0 | 2 | 8 | 7 | 4 | 1 | 0 | 0 | 22 |
| NW | 0 | 0 | 0 | 0 | 4 | 5 | 8 | 4 | 2 | 0 | 0 | 23 |
| NNW | 0 | 0 | 0 | 0 | 2 | 4 | 1 | 3 | 1 | 0 | 0 | 11 |
| Tot | 0 | 0 | 1 | 15 | 99 | 82 | 47 | 27 | 21 | 6 | 1 | 299 |
| Hours of | Calm | | | | | | | | | | | 0 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | 299 |
| Hours of | Missing Data . . . | | | | | | | | | | | 91 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|-----------|----------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2025 | | | | | | | | | | | | |
| Stability | Class | C | Slightly | Unstable | based | on | Lapse | Rate | | | | |
| Elevations:: | Winds | 10m | Stability | 60m | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | Total |
| N | 0 | 0 | 0 | 1 | 5 | 5 | 1 | 0 | 1 | 0 | 0 | 13 |
| NNE | 0 | 0 | 2 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 7 |
| NE | 0 | 0 | 0 | 2 | 7 | 7 | 3 | 0 | 0 | 0 | 0 | 19 |
| ENE | 0 | 0 | 0 | 0 | 8 | 5 | 6 | 0 | 0 | 0 | 0 | 19 |
| E | 0 | 0 | 0 | 2 | 6 | 1 | 1 | 0 | 1 | 0 | 0 | 11 |
| ESE | 0 | 0 | 0 | 2 | 6 | 4 | 2 | 2 | 0 | 0 | 0 | 16 |
| SE | 0 | 0 | 1 | 2 | 26 | 10 | 6 | 1 | 0 | 0 | 0 | 46 |
| SSE | 0 | 0 | 2 | 3 | 19 | 10 | 9 | 1 | 2 | 1 | 0 | 47 |
| S | 0 | 0 | 0 | 4 | 14 | 20 | 12 | 4 | 10 | 4 | 1 | 69 |
| SSW | 0 | 0 | 1 | 6 | 26 | 24 | 23 | 9 | 6 | 2 | 0 | 97 |
| SW | 0 | 0 | 0 | 9 | 18 | 5 | 4 | 2 | 0 | 3 | 0 | 41 |
| WSW | 0 | 0 | 0 | 6 | 3 | 6 | 2 | 1 | 1 | 0 | 0 | 19 |
| W | 0 | 0 | 0 | 1 | 15 | 7 | 8 | 0 | 0 | 0 | 0 | 31 |
| WNW | 0 | 0 | 1 | 2 | 11 | 7 | 8 | 8 | 0 | 0 | 0 | 37 |
| NW | 0 | 0 | 0 | 1 | 7 | 12 | 14 | 3 | 5 | 0 | 0 | 42 |
| NNW | 0 | 0 | 0 | 2 | 10 | 7 | 6 | 2 | 2 | 0 | 0 | 29 |
| Tot | 0 | 0 | 7 | 43 | 185 | 131 | 105 | 33 | 28 | 10 | 1 | 543 |
| Hours of | Calm | | | | | | | | | | | 0 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | 543 |
| Hours of | Missing Data . . . | | | | | | | | | | | 91 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2025 | | | | | | | | | | | | |
| Stability Class D Neutral based on Lapse Rate | | | | | | | | | | | | |
| Elevations:: Winds 10m Stability 60m | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 0 | 0 | 13 | 23 | 89 | 87 | 53 | 31 | 23 | 0 | 0 | 319 |
| NNE | 0 | 4 | 14 | 26 | 75 | 44 | 48 | 12 | 2 | 0 | 0 | 225 |
| NE | 0 | 6 | 12 | 24 | 67 | 45 | 30 | 8 | 0 | 0 | 0 | 192 |
| ENE | 0 | 5 | 17 | 25 | 70 | 41 | 30 | 4 | 0 | 0 | 0 | 192 |
| E | 0 | 4 | 17 | 14 | 55 | 52 | 12 | 1 | 1 | 0 | 0 | 156 |
| ESE | 0 | 7 | 21 | 24 | 47 | 47 | 12 | 2 | 0 | 0 | 0 | 160 |
| SE | 0 | 4 | 20 | 36 | 102 | 45 | 32 | 5 | 3 | 0 | 0 | 247 |
| SSE | 1 | 6 | 17 | 22 | 69 | 44 | 22 | 15 | 11 | 0 | 2 | 209 |
| S | 0 | 4 | 16 | 23 | 65 | 48 | 26 | 22 | 22 | 2 | 1 | 229 |
| SSW | 0 | 5 | 15 | 18 | 60 | 48 | 31 | 23 | 12 | 1 | 0 | 213 |
| SW | 0 | 5 | 15 | 22 | 44 | 19 | 13 | 10 | 8 | 0 | 0 | 136 |
| WSW | 1 | 3 | 16 | 19 | 26 | 30 | 16 | 10 | 6 | 0 | 0 | 127 |
| W | 0 | 0 | 18 | 16 | 55 | 57 | 13 | 16 | 12 | 0 | 0 | 187 |
| WNW | 0 | 8 | 15 | 22 | 63 | 58 | 34 | 25 | 32 | 1 | 0 | 258 |
| NW | 0 | 3 | 17 | 22 | 78 | 90 | 54 | 35 | 11 | 0 | 0 | 310 |
| NNW | 0 | 1 | 6 | 25 | 57 | 66 | 52 | 38 | 9 | 0 | 0 | 254 |
| Tot | 2 | 65 | 249 | 361 | 1022 | 821 | 478 | 257 | 152 | 4 | 3 | 3414 |
| Hours of | Calm | | | | | | | | | | | 1 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | 3415 |
| Hours of | Missing Data . . . | | | | | | | | | | | 91 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2025 | | | | | | | | | | | | |
| Stability Class E Slightly Stable based on Lapse Rate | | | | | | | | | | | | |
| Elevations:: Winds 10m Stability 60m | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 0 | 11 | 15 | 32 | 37 | 11 | 5 | 0 | 0 | 0 | 0 | 111 |
| NNE | 0 | 10 | 20 | 30 | 27 | 4 | 1 | 0 | 0 | 0 | 0 | 92 |
| NE | 0 | 7 | 12 | 24 | 31 | 3 | 0 | 0 | 0 | 0 | 0 | 77 |
| ENE | 1 | 6 | 17 | 23 | 26 | 2 | 1 | 0 | 0 | 0 | 0 | 76 |
| E | 1 | 10 | 17 | 17 | 17 | 6 | 4 | 1 | 0 | 0 | 0 | 73 |
| ESE | 0 | 12 | 21 | 28 | 46 | 16 | 3 | 0 | 0 | 0 | 0 | 126 |
| SE | 0 | 15 | 44 | 54 | 103 | 34 | 6 | 1 | 0 | 0 | 0 | 257 |
| SSE | 0 | 3 | 17 | 48 | 125 | 88 | 32 | 11 | 0 | 0 | 0 | 324 |
| S | 0 | 3 | 20 | 23 | 65 | 63 | 33 | 19 | 3 | 0 | 0 | 229 |
| SSW | 0 | 5 | 22 | 22 | 52 | 45 | 16 | 6 | 0 | 0 | 0 | 168 |
| SW | 1 | 13 | 21 | 23 | 34 | 19 | 9 | 0 | 1 | 0 | 0 | 121 |
| WSW | 0 | 14 | 23 | 26 | 34 | 13 | 7 | 3 | 0 | 0 | 0 | 120 |
| W | 0 | 9 | 19 | 31 | 73 | 41 | 6 | 3 | 1 | 0 | 0 | 183 |
| WNW | 0 | 7 | 21 | 33 | 49 | 16 | 10 | 1 | 2 | 0 | 0 | 139 |
| NW | 0 | 7 | 20 | 33 | 56 | 19 | 10 | 2 | 0 | 0 | 0 | 147 |
| NNW | 0 | 5 | 11 | 11 | 31 | 21 | 2 | 2 | 0 | 0 | 0 | 83 |
| Tot | 3 | 137 | 320 | 458 | 806 | 401 | 145 | 49 | 7 | 0 | 0 | 2326 |
| Hours of | Calm | | | | | | | | | | | 1 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | 2327 |
| Hours of | Missing Data . . . | | | | | | | | | | | 91 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | | |
|---|------------------------|-------------------|---------------------|-------|-------|-------|-------|-------|-------|--------|--------|-------|-------|
| January - December, 2025 | | | | | | | | | | | | | |
| Stability Class | F | Moderately Stable | based on Lapse Rate | | | | | | | | | | |
| Elevations:: | Winds | 10m | Stability | 60m | | | | | | | | | Total |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | Total | |
| N | 0 | 19 | 18 | 12 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 54 | |
| NNE | 0 | 15 | 19 | 13 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 48 | |
| NE | 1 | 8 | 27 | 14 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 56 | |
| ENE | 1 | 15 | 21 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | |
| E | 1 | 15 | 16 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | |
| ESE | 3 | 16 | 27 | 9 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 59 | |
| SE | 1 | 24 | 46 | 64 | 37 | 2 | 0 | 0 | 0 | 0 | 0 | 174 | |
| SSE | 1 | 18 | 40 | 61 | 111 | 17 | 0 | 0 | 0 | 0 | 0 | 248 | |
| S | 1 | 10 | 21 | 32 | 46 | 10 | 3 | 0 | 0 | 0 | 0 | 123 | |
| SSW | 2 | 12 | 13 | 5 | 28 | 13 | 2 | 0 | 0 | 0 | 0 | 75 | |
| SW | 1 | 14 | 16 | 16 | 11 | 1 | 0 | 0 | 0 | 0 | 0 | 59 | |
| WSW | 1 | 15 | 7 | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 38 | |
| W | 0 | 20 | 22 | 19 | 18 | 5 | 0 | 0 | 0 | 0 | 0 | 84 | |
| WNW | 3 | 21 | 19 | 15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 59 | |
| NW | 2 | 19 | 15 | 16 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 56 | |
| NNW | 0 | 9 | 13 | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 35 | |
| Tot | 18 | 250 | 340 | 302 | 281 | 52 | 5 | 0 | 0 | 0 | 0 | 1248 | |
| Hours of | Calm | | | | | | | | | | | 4 | |
| Hours of | Variable Direction | | | | | | | | | | | 0 | |
| Hours of | Valid Data . . . | | | | | | | | | | | 1252 | |
| Hours of | Missing Data . . . | | | | | | | | | | | 91 | |
| Hours in | Period | | | | | | | | | | | 8760 | |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | | |
|---|------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--------|--------|-------|------|
| January - December, 2025 | | | | | | | | | | | | | |
| Stability Class G Extremely Stable based on Lapse Rate | | | | | | | | | | | | | |
| Elevations:: Winds 10m Stability 60m | | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | | |
| N | 6 | 17 | 23 | 9 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 58 | |
| NNE | 0 | 16 | 23 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | |
| NE | 2 | 10 | 11 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | |
| ENE | 3 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | |
| E | 3 | 10 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | |
| ESE | 2 | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | |
| SE | 4 | 20 | 10 | 10 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 56 | |
| SSE | 6 | 25 | 29 | 21 | 35 | 6 | 0 | 0 | 0 | 0 | 0 | 122 | |
| S | 4 | 26 | 11 | 6 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 55 | |
| SSW | 2 | 19 | 9 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 35 | |
| SW | 3 | 17 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | |
| WSW | 2 | 13 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | |
| W | 3 | 11 | 14 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | |
| WNW | 2 | 19 | 11 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | |
| NW | 2 | 16 | 16 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 44 | |
| NNW | 2 | 17 | 14 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | |
| Tot | 46 | 249 | 189 | 76 | 55 | 15 | 0 | 0 | 0 | 0 | 0 | 630 | |
| Hours of | Calm | | | | | | | | | | | | 23 |
| Hours of | Variable Direction | | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | | 653 |
| Hours of | Missing Data . . . | | | | | | | | | | | | 91 |
| Hours in | Period | | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | | |
|---|------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--------|--------|-------|--------------------------|
| January - December, 2025 | | | | | | | | | | | | | |
| All Stabilities | | | | | | | | | | | | | |
| Elevations:: Winds 60m Stability 60m | | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | | |
| N | 1 | 1 | 13 | 13 | 68 | 95 | 87 | 85 | 71 | 10 | 0 | 444 | |
| NNE | 1 | 4 | 16 | 18 | 66 | 109 | 101 | 72 | 43 | 5 | 0 | 435 | |
| NE | 1 | 4 | 12 | 15 | 61 | 107 | 123 | 59 | 26 | 0 | 0 | 408 | |
| ENE | 3 | 4 | 7 | 23 | 69 | 106 | 112 | 103 | 14 | 0 | 0 | 441 | |
| E | 0 | 6 | 15 | 15 | 57 | 90 | 106 | 44 | 19 | 1 | 0 | 353 | |
| ESE | 1 | 10 | 11 | 22 | 69 | 99 | 108 | 62 | 10 | 0 | 0 | 392 | |
| SE | 2 | 11 | 33 | 63 | 243 | 164 | 90 | 57 | 14 | 0 | 0 | 677 | |
| SSE | 1 | 11 | 14 | 25 | 130 | 180 | 178 | 147 | 120 | 19 | 4 | 829 | |
| S | 1 | 9 | 18 | 22 | 90 | 123 | 172 | 181 | 170 | 73 | 15 | 874 | |
| SSW | 0 | 6 | 14 | 17 | 82 | 108 | 134 | 126 | 166 | 33 | 15 | 701 | |
| SW | 3 | 2 | 13 | 26 | 84 | 97 | 98 | 75 | 119 | 35 | 14 | 566 | |
| WSW | 3 | 6 | 12 | 23 | 51 | 65 | 67 | 76 | 58 | 31 | 13 | 405 | |
| W | 3 | 9 | 5 | 17 | 57 | 62 | 75 | 99 | 110 | 25 | 9 | 471 | |
| WNW | 0 | 7 | 10 | 13 | 44 | 69 | 105 | 130 | 174 | 62 | 58 | 672 | |
| NW | 0 | 2 | 7 | 18 | 61 | 69 | 106 | 133 | 121 | 62 | 11 | 590 | |
| NNW | 2 | 7 | 8 | 19 | 46 | 45 | 85 | 86 | 73 | 14 | 1 | 386 | |
| Tot | 22 | 99 | 208 | 349 | 1278 | 1588 | 1747 | 1535 | 1308 | 370 | 140 | 8644 | |
| Hours of | Calm | | | | | | | | | | | 25 | |
| Hours of | Variable Direction | | | | | | | | | | | 0 | |
| Hours of | Valid Data . . . | | | | | | | | | | | 8669 | recovery rate: 98.96% |
| Hours of | Missing Data . . . | | | | | | | | | | | 91 | |
| Hours in | Period | | | | | | | | | | | 8760 | |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2025 | | | | | | | | | | | | |
| Stability Class A Extremely Unstable based on Lapse Rate | | | | | | | | | | | | |
| Elevations:: Winds 60m Stability 60m | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NNE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| NE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ENE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| E | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| ESE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SE | 0 | 0 | 0 | 0 | 2 | 1 | 4 | 2 | 3 | 0 | 0 | 12 |
| SSE | 0 | 0 | 0 | 0 | 1 | 7 | 5 | 4 | 1 | 0 | 0 | 18 |
| S | 0 | 0 | 0 | 1 | 2 | 3 | 3 | 2 | 4 | 6 | 1 | 22 |
| SSW | 0 | 0 | 0 | 0 | 9 | 9 | 2 | 1 | 3 | 2 | 0 | 26 |
| SW | 0 | 0 | 0 | 1 | 1 | 4 | 3 | 1 | 3 | 1 | 0 | 14 |
| WSW | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| W | 0 | 0 | 0 | 0 | 1 | 3 | 3 | 6 | 6 | 2 | 1 | 22 |
| WNW | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 4 | 18 | 13 | 3 | 43 |
| NW | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 8 | 0 | 18 |
| NNW | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Tot | 0 | 0 | 0 | 2 | 16 | 28 | 27 | 22 | 47 | 33 | 5 | 180 |
| Hours of | Calm | | | | | | | | | | | 0 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | 180 |
| Hours of | Missing Data . . . | | | | | | | | | | | 91 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2025 | | | | | | | | | | | | |
| Stability Class B Moderately Unstable based on Lapse Rate | | | | | | | | | | | | |
| Elevations:: Winds 60m Stability 60m | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 0 | 0 | 0 | 7 |
| NNE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NE | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| ENE | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| E | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| ESE | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 0 | 0 | 6 |
| SE | 0 | 0 | 0 | 0 | 8 | 6 | 1 | 5 | 2 | 0 | 0 | 22 |
| SSE | 0 | 0 | 0 | 1 | 14 | 10 | 12 | 2 | 2 | 2 | 2 | 45 |
| S | 0 | 0 | 0 | 3 | 11 | 4 | 5 | 6 | 9 | 5 | 3 | 46 |
| SSW | 0 | 0 | 0 | 0 | 13 | 6 | 12 | 7 | 3 | 3 | 3 | 47 |
| SW | 0 | 0 | 0 | 3 | 4 | 9 | 4 | 3 | 2 | 2 | 1 | 28 |
| WSW | 0 | 0 | 0 | 0 | 2 | 5 | 2 | 3 | 1 | 1 | 0 | 14 |
| W | 0 | 0 | 0 | 0 | 3 | 4 | 2 | 5 | 3 | 2 | 0 | 19 |
| WNW | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 3 | 10 | 4 | 1 | 23 |
| NW | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 4 | 5 | 7 | 0 | 20 |
| NNW | 0 | 0 | 0 | 0 | 2 | 3 | 4 | 2 | 4 | 1 | 0 | 16 |
| Tot | 0 | 0 | 0 | 7 | 59 | 59 | 53 | 42 | 42 | 27 | 10 | 299 |
| Hours of | Calm | | | | | | | | | | | 0 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | 299 |
| Hours of | Missing Data . . . | | | | | | | | | | | 91 |
| Hours in | Period | | | | | | | | | | | 8760 |

Callaway Energy Center
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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | | |
|---|------------------------|-----------|-----------|----------|-------|-------|-------|-------|-------|--------|--------|-------|------|
| January - December, 2025 | | | | | | | | | | | | | |
| Stability | Class | C | Slightly | Unstable | based | on | Lapse | Rate | | | | | |
| Elevations:: | Winds | 60m | Stability | 60m | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | Total | |
| N | 0 | 0 | 0 | 0 | 5 | 9 | 0 | 1 | 0 | 0 | 0 | 15 | |
| NNE | 0 | 0 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 1 | 0 | 10 | |
| NE | 0 | 1 | 0 | 0 | 3 | 5 | 3 | 1 | 1 | 0 | 0 | 14 | |
| ENE | 0 | 0 | 0 | 2 | 3 | 7 | 5 | 5 | 0 | 0 | 0 | 22 | |
| E | 0 | 0 | 0 | 1 | 5 | 3 | 0 | 1 | 1 | 0 | 0 | 11 | |
| ESE | 0 | 0 | 0 | 0 | 2 | 3 | 3 | 1 | 2 | 0 | 0 | 11 | |
| SE | 0 | 0 | 1 | 2 | 8 | 12 | 8 | 5 | 0 | 0 | 0 | 36 | |
| SSE | 0 | 0 | 1 | 1 | 18 | 12 | 9 | 4 | 3 | 1 | 1 | 50 | |
| S | 0 | 0 | 1 | 1 | 11 | 10 | 11 | 8 | 3 | 10 | 4 | 59 | |
| SSW | 0 | 0 | 0 | 3 | 8 | 21 | 12 | 14 | 18 | 5 | 4 | 85 | |
| SW | 0 | 0 | 1 | 2 | 16 | 18 | 5 | 3 | 11 | 4 | 3 | 63 | |
| WSW | 0 | 0 | 0 | 2 | 4 | 8 | 3 | 5 | 3 | 1 | 2 | 28 | |
| W | 0 | 0 | 0 | 0 | 5 | 4 | 4 | 4 | 4 | 1 | 0 | 22 | |
| WNW | 0 | 0 | 0 | 2 | 5 | 11 | 5 | 5 | 15 | 5 | 0 | 48 | |
| NW | 0 | 0 | 0 | 1 | 2 | 2 | 6 | 10 | 9 | 8 | 2 | 40 | |
| NNW | 0 | 0 | 0 | 0 | 7 | 5 | 5 | 6 | 5 | 1 | 0 | 29 | |
| Tot | 0 | 1 | 4 | 19 | 104 | 131 | 82 | 74 | 75 | 37 | 16 | 543 | |
| Hours of | Calm . | | | | | | | | | | | | 0 |
| Hours of | Variable | Direction | | | | | | | | | | | 0 |
| Hours of | Valid | Data ... | | | | | | | | | | | 543 |
| Hours of | Missing | Data ... | | | | | | | | | | | 91 |
| Hours in | Period | | | | | | | | | | | | 8760 |

Callaway Energy Center
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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|---------|-----------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2025 | | | | | | | | | | | | |
| Stability | Class | D | Neutral | Stability | based | on | Lapse | Rate | | | | |
| Elevations:: Winds 60m Stability 60m | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 0 | 1 | 8 | 7 | 40 | 49 | 51 | 42 | 63 | 10 | 0 | 271 |
| NNE | 0 | 1 | 12 | 12 | 45 | 69 | 56 | 44 | 34 | 3 | 0 | 276 |
| NE | 1 | 2 | 8 | 9 | 34 | 52 | 44 | 32 | 13 | 0 | 0 | 195 |
| ENE | 3 | 3 | 5 | 14 | 34 | 39 | 38 | 50 | 7 | 0 | 0 | 193 |
| E | 0 | 2 | 10 | 10 | 27 | 40 | 46 | 15 | 9 | 1 | 0 | 160 |
| ESE | 1 | 3 | 10 | 11 | 33 | 30 | 33 | 21 | 5 | 0 | 0 | 147 |
| SE | 0 | 6 | 13 | 21 | 66 | 47 | 28 | 31 | 7 | 0 | 0 | 219 |
| SSE | 0 | 8 | 6 | 11 | 41 | 54 | 35 | 31 | 24 | 13 | 1 | 224 |
| S | 1 | 4 | 12 | 11 | 42 | 35 | 26 | 20 | 34 | 26 | 6 | 217 |
| SSW | 0 | 4 | 8 | 8 | 29 | 37 | 44 | 26 | 46 | 8 | 8 | 218 |
| SW | 1 | 0 | 8 | 10 | 33 | 31 | 26 | 14 | 38 | 12 | 9 | 182 |
| WSW | 1 | 2 | 5 | 9 | 23 | 9 | 17 | 20 | 16 | 15 | 11 | 128 |
| W | 1 | 7 | 4 | 10 | 25 | 19 | 28 | 29 | 24 | 12 | 8 | 167 |
| WNW | 0 | 4 | 5 | 8 | 30 | 26 | 34 | 36 | 49 | 30 | 51 | 273 |
| NW | 0 | 1 | 4 | 11 | 41 | 33 | 47 | 64 | 65 | 35 | 9 | 310 |
| NNW | 1 | 3 | 3 | 11 | 19 | 23 | 55 | 52 | 50 | 11 | 1 | 229 |
| Tot | 10 | 51 | 121 | 173 | 562 | 593 | 608 | 527 | 484 | 176 | 104 | 3409 |
| Hours of | Calm | | | | | | | | | | | 6 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | 3415 |
| Hours of | Missing Data . . . | | | | | | | | | | | 91 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-----------|----------|--------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2025 | | | | | | | | | | | | |
| Stability | Class | E | Slightly | Stable | based | on | Lapse | Rate | | | | |
| Elevations:: Winds 60m Stability 60m | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 1 | 0 | 2 | 2 | 8 | 17 | 21 | 30 | 6 | 0 | 0 | 87 |
| NNE | 1 | 1 | 1 | 2 | 8 | 29 | 30 | 13 | 3 | 0 | 0 | 88 |
| NE | 0 | 0 | 1 | 4 | 17 | 20 | 35 | 14 | 2 | 0 | 0 | 93 |
| ENE | 0 | 0 | 1 | 1 | 14 | 32 | 25 | 15 | 1 | 0 | 0 | 89 |
| E | 0 | 1 | 2 | 3 | 12 | 24 | 22 | 11 | 8 | 0 | 0 | 83 |
| ESE | 0 | 1 | 0 | 5 | 16 | 27 | 35 | 24 | 2 | 0 | 0 | 110 |
| SE | 1 | 3 | 8 | 16 | 81 | 68 | 30 | 12 | 2 | 0 | 0 | 221 |
| SSE | 0 | 2 | 4 | 5 | 21 | 43 | 68 | 69 | 67 | 3 | 0 | 282 |
| S | 0 | 1 | 2 | 3 | 9 | 25 | 40 | 69 | 85 | 25 | 1 | 260 |
| SSW | 0 | 2 | 0 | 4 | 7 | 16 | 19 | 36 | 70 | 6 | 0 | 160 |
| SW | 0 | 0 | 3 | 5 | 16 | 25 | 31 | 36 | 38 | 13 | 1 | 168 |
| WSW | 0 | 1 | 2 | 5 | 8 | 14 | 34 | 32 | 31 | 12 | 0 | 139 |
| W | 1 | 2 | 0 | 3 | 13 | 13 | 23 | 34 | 51 | 8 | 0 | 148 |
| WNW | 0 | 1 | 2 | 1 | 4 | 11 | 38 | 58 | 58 | 10 | 3 | 186 |
| NW | 0 | 0 | 1 | 2 | 7 | 23 | 37 | 40 | 29 | 4 | 0 | 143 |
| NNW | 0 | 0 | 2 | 4 | 5 | 6 | 15 | 20 | 13 | 1 | 0 | 66 |
| Tot | 4 | 15 | 31 | 65 | 246 | 393 | 503 | 513 | 466 | 82 | 5 | 2323 |
| Hours of | Calm . | | | 4 | | | | | | | | |
| Hours of | Variable | Direction | | 0 | | | | | | | | |
| Hours of | Valid | Data ... | | 2327 | | | | | | | | |
| Hours of | Missing | Data ... | | 91 | | | | | | | | |
| Hours in | Period | | | 8760 | | | | | | | | |

Callaway Energy Center
2025 Annual Radioactive Effluent Release Report

| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2025 | | | | | | | | | | | | |
| Stability Class F Moderately Stable based on Lapse Rate | | | | | | | | | | | | |
| Elevations:: Winds 60m Stability 60m | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 0 | 0 | 0 | 3 | 2 | 6 | 9 | 9 | 1 | 0 | 0 | 30 |
| NNE | 0 | 2 | 0 | 0 | 5 | 6 | 8 | 6 | 2 | 0 | 0 | 29 |
| NE | 0 | 1 | 1 | 2 | 1 | 15 | 27 | 7 | 3 | 0 | 0 | 57 |
| ENE | 0 | 1 | 0 | 3 | 13 | 16 | 24 | 8 | 4 | 0 | 0 | 69 |
| E | 0 | 1 | 0 | 1 | 11 | 18 | 20 | 10 | 0 | 0 | 0 | 61 |
| ESE | 0 | 1 | 0 | 1 | 9 | 21 | 28 | 11 | 1 | 0 | 0 | 72 |
| SE | 0 | 0 | 3 | 16 | 56 | 26 | 16 | 2 | 0 | 0 | 0 | 119 |
| SSE | 1 | 0 | 2 | 4 | 21 | 38 | 44 | 26 | 15 | 0 | 0 | 151 |
| S | 0 | 3 | 1 | 0 | 9 | 29 | 60 | 57 | 29 | 1 | 0 | 189 |
| SSW | 0 | 0 | 0 | 1 | 7 | 12 | 39 | 34 | 24 | 7 | 0 | 124 |
| SW | 0 | 2 | 0 | 2 | 6 | 7 | 20 | 17 | 27 | 3 | 0 | 84 |
| WSW | 0 | 1 | 3 | 3 | 6 | 12 | 6 | 12 | 7 | 1 | 0 | 51 |
| W | 0 | 0 | 0 | 1 | 5 | 8 | 6 | 13 | 21 | 0 | 0 | 54 |
| WNW | 0 | 0 | 2 | 1 | 4 | 11 | 18 | 22 | 18 | 0 | 0 | 76 |
| NW | 0 | 0 | 1 | 4 | 7 | 5 | 11 | 14 | 3 | 0 | 0 | 45 |
| NNW | 0 | 2 | 3 | 2 | 9 | 5 | 6 | 5 | 1 | 0 | 0 | 33 |
| Tot | 1 | 14 | 16 | 44 | 171 | 235 | 342 | 253 | 156 | 12 | 0 | 1244 |
| Hours of | Calm | | | | | | | | | | | 8 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | 1252 |
| Hours of | Missing Data . . . | | | | | | | | | | | 91 |
| Hours in | Period | | | | | | | | | | | 8760 |

Callaway Energy Center
2025 Annual Radioactive Effluent Release Report

| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|-----------|--------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2025 | | | | | | | | | | | | |
| Stability | Class | G | Extremely | Stable | based | on | Lapse | Rate | | | | |
| Elevations:: Winds 60m Stability 60m | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 0 | 0 | 3 | 1 | 13 | 9 | 4 | 3 | 1 | 0 | 0 | 34 |
| NNE | 0 | 0 | 3 | 2 | 6 | 4 | 4 | 8 | 4 | 0 | 0 | 31 |
| NE | 0 | 0 | 2 | 0 | 6 | 14 | 13 | 5 | 7 | 0 | 0 | 47 |
| ENE | 0 | 0 | 1 | 3 | 5 | 12 | 18 | 25 | 2 | 0 | 0 | 66 |
| E | 0 | 2 | 3 | 0 | 1 | 5 | 17 | 6 | 0 | 0 | 0 | 34 |
| ESE | 0 | 5 | 1 | 5 | 9 | 14 | 9 | 3 | 0 | 0 | 0 | 46 |
| SE | 1 | 2 | 8 | 8 | 22 | 4 | 3 | 0 | 0 | 0 | 0 | 48 |
| SSE | 0 | 1 | 1 | 3 | 14 | 16 | 5 | 11 | 8 | 0 | 0 | 59 |
| S | 0 | 1 | 2 | 3 | 6 | 17 | 27 | 19 | 6 | 0 | 0 | 81 |
| SSW | 0 | 0 | 6 | 1 | 9 | 7 | 6 | 8 | 2 | 2 | 0 | 41 |
| SW | 2 | 0 | 1 | 3 | 8 | 3 | 9 | 1 | 0 | 0 | 0 | 27 |
| WSW | 2 | 2 | 2 | 4 | 8 | 16 | 5 | 4 | 0 | 1 | 0 | 44 |
| W | 1 | 0 | 1 | 3 | 5 | 11 | 9 | 8 | 1 | 0 | 0 | 39 |
| WNW | 0 | 2 | 1 | 1 | 1 | 9 | 1 | 2 | 6 | 0 | 0 | 23 |
| NW | 0 | 1 | 1 | 0 | 3 | 5 | 2 | 1 | 1 | 0 | 0 | 14 |
| NNW | 1 | 2 | 0 | 2 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 12 |
| Tot | 7 | 18 | 36 | 39 | 120 | 149 | 132 | 104 | 38 | 3 | 0 | 646 |
| Hours of | Calm | | | | | | | | | | | 7 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | 653 |
| Hours of | Missing Data . . . | | | | | | | | | | | 91 |
| Hours in | Period | | | | | | | | | | | 8760 |

Appendix C1

*Corrected pages 15-34 for the 2023 Annual Radioactive Effluent
Release Report*

Callaway Energy Center
 2023 Annual Radioactive Effluent Release Report
 Errata

| Table A-4: Dose Assessments, 10 CFR 50, Appendix I | | | | | |
|--|----------------------|----------------------|----------------------|----------------------|-------------------------|
| | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Yearly total |
| Liquid Effluent Dose Limit, Total Body (mrem) | 1.5 | 1.5 | 1.5 | 1.5 | 3 |
| Total Body Dose (mrem) | 1.42E-03 | 8.68E-04 | 1.57E-03 | 5.34E-04 | 4.37E-03 |
| % Limit | 0.09% | 0.06% | 0.10% | 0.04% | 0.15% |
| Liquid Effluent Dose Limit, Maximum Organ (mrem) | 5 | 5 | 5 | 5 | 10 |
| Maximum Organ Dose (mrem) | 2.06E-03 | 9.49E-04 | 1.60E-03 | 5.66E-04 | 5.16E-03 |
| % Limit | 0.04% | 0.02% | 0.03% | 0.01% | 0.05% |
| Gaseous Effluent Dose Limit, Gamma Air (mrad) | 5 | 5 | 5 | 5 | 10 |
| Gamma Air Dose (mrad) | 6.24E-05 | 4.83E-04 | 2.19E-03 | 2.33E-05 | 2.76E-03 |
| % Limit | 0.00% | 0.01% | 0.04% | 0.00% | 0.03% |
| Gaseous Effluent Dose Limit, Beta Air (mrad) | 10 | 10 | 10 | 10 | 20 |
| Beta Air Dose (mrad) | 2.22E-05 | 1.71E-04 | 7.74E-04 | 8.52E-06 | 9.75E-04 |
| % Limit | 0.00% | 0.00% | 0.01% | 0.00% | 0.00% |
| Gaseous Effluent Dose Limit, Maximum Organ (mrem) | 7.5 | 7.5 | 7.5 | 7.5 | 15 |
| Maximum organ dose ¹⁰ (mrem) | 2.14E-03 | 4.16E-03 | 4.54E-03 | 5.17E-03 | 1.60E-02 |
| % Limit | 0.03% | 0.06% | 0.06% | 0.07% | 0.11% |
| ¹⁴C Maximum organ dose (mrem)¹¹ | 3.51E-03 | 3.51E-03 | 3.51E-03 | 3.51E-03 | 1.40E-02 |

¹⁰ Iodine, ³H, and particulates with greater than an 8-day half- life.

¹¹ Not included in above totals

| Table A-5: EPA 40 CFR 190 Individual in the Unrestricted Area | | | |
|---|------------|----------|-----------------|
| | Whole Body | Thyroid | Max Other Organ |
| Dose Limit | 25 mrem | 75 mrem | 25 mrem |
| Dose | 2.07E-02 | 2.07E-02 | 3.31E-02 |
| % Limit | 0.08% | 0.03% | 0.13% |

Appendix B

Meteorological Dispersion Parameters and Joint Frequency Tables;
Totals of Hours at Each Wind Speed & Direction for the period
January 1, 2023- December 31, 2023

Meteorological Dispersion Parameters for the Reporting Period

Nearest Resident Dispersion Parameters

Direction: NNW

Distance: 2913 meters

| | |
|--------------------------------|----------|
| X/Q, Undecayed and Undepleted: | 1.24E-06 |
| X/Q Decayed and Undepleted: | 1.18E-06 |
| X/Q Decayed and Depleted: | 1.02E-06 |
| D/Q Deposition rate: | 3.00E-09 |

Site Boundary Dispersion Parameters

Direction: SE

Distance: 1800 meters

| | |
|--------------------------------|----------|
| X/Q, Undecayed and Undepleted: | 2.33E-06 |
| X/Q Decayed and Undepleted: | 2.25E-06 |
| X/Q Decayed and Depleted: | 2.00E-06 |
| D/Q Deposition rate: | 5.06E-09 |

Meteorological Data Recovery Rate

10 meters elevation Hours of valid data: 8760
Total hours in period: 8760
Recovery rate: 100%

60 meters elevation Hours of valid data: 8760
Total hours in period: 8760
Recovery rate: 100%

Callaway Energy Center
 2023 Annual Radioactive Effluent Release Report
 Errata

| Joint Frequency Distribution: Hours at Wind and Direction | | | | | | | | | | | | | |
|---|------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--------|--------|-------|---------------------------|
| January - December, 2023 | | | | | | | | | | | | | |
| All Stabilities | | | | | | | | | | | | | |
| Elevations:: Winds 10M Stability 60M | | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | | |
| N | 16 | 52 | 61 | 51 | 109 | 81 | 47 | 18 | 9 | 0 | 0 | 444 | |
| NNE | 16 | 69 | 82 | 61 | 107 | 74 | 14 | 2 | 0 | 0 | 0 | 425 | |
| NE | 10 | 41 | 68 | 79 | 136 | 80 | 20 | 1 | 0 | 0 | 0 | 435 | |
| ENE | 11 | 41 | 49 | 58 | 94 | 74 | 28 | 4 | 0 | 0 | 0 | 359 | |
| E | 5 | 31 | 35 | 50 | 109 | 59 | 27 | 6 | 1 | 0 | 0 | 323 | |
| ESE | 8 | 31 | 49 | 60 | 122 | 70 | 47 | 19 | 0 | 0 | 0 | 406 | |
| SE | 5 | 29 | 66 | 96 | 215 | 152 | 57 | 19 | 2 | 0 | 0 | 641 | |
| SSE | 13 | 34 | 57 | 123 | 374 | 243 | 110 | 59 | 22 | 1 | 0 | 1036 | |
| S | 7 | 43 | 43 | 63 | 240 | 191 | 95 | 65 | 41 | 10 | 0 | 798 | |
| SSW | 10 | 23 | 42 | 46 | 184 | 124 | 56 | 52 | 34 | 5 | 0 | 576 | |
| SW | 7 | 33 | 53 | 64 | 174 | 90 | 39 | 20 | 16 | 3 | 0 | 499 | |
| WSW | 6 | 34 | 48 | 76 | 97 | 61 | 24 | 14 | 7 | 1 | 0 | 368 | |
| W | 9 | 29 | 35 | 48 | 147 | 101 | 54 | 33 | 12 | 5 | 0 | 473 | |
| WNW | 16 | 48 | 55 | 76 | 145 | 119 | 98 | 63 | 30 | 3 | 0 | 653 | |
| NW | 12 | 49 | 73 | 95 | 142 | 133 | 86 | 68 | 28 | 0 | 0 | 686 | |
| NNW | 12 | 48 | 49 | 65 | 135 | 120 | 79 | 34 | 6 | 0 | 0 | 548 | |
| Tot | 163 | 635 | 865 | 1111 | 2530 | 1772 | 881 | 477 | 208 | 28 | 0 | 8670 | |
| Hours of Calm | | | | | | | | | | | | 90 | |
| Hours of Variable Direction | | | | | | | | | | | | 0 | |
| Hours of Valid Data | | | | | | | | | | | | 8760 | recovery rate: 100.00% |
| Hours of Missing Data | | | | | | | | | | | | 0 | |
| Hours in Period | | | | | | | | | | | | 8760 | |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|-----------|----------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2023 | | | | | | | | | | | | |
| Stability | Class | A | Extremely | Unstable | based | on | Lapse | Rate | | | | |
| Elevations:: | Winds | 10m | Stability | 60m | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | Total |
| N | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NNE | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| NE | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| ENE | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 |
| E | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| ESE | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 3 |
| SE | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 1 | 0 | 0 | 6 |
| SSE | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 9 | 4 | 0 | 0 | 16 |
| S | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 6 | 0 | 0 | 10 |
| SSW | 0 | 0 | 0 | 0 | 2 | 9 | 3 | 6 | 6 | 0 | 0 | 26 |
| SW | 0 | 0 | 0 | 0 | 2 | 5 | 11 | 2 | 0 | 0 | 0 | 20 |
| WSW | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 0 | 0 | 0 | 6 |
| W | 0 | 0 | 0 | 0 | 2 | 4 | 6 | 2 | 0 | 0 | 0 | 14 |
| WNW | 0 | 0 | 0 | 0 | 1 | 5 | 7 | 14 | 11 | 0 | 0 | 38 |
| NW | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 9 | 6 | 0 | 0 | 18 |
| NNW | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 4 |
| Tot | 0 | 0 | 0 | 1 | 10 | 31 | 44 | 49 | 34 | 0 | 0 | 169 |
| Hours of | Calm | 0 | | | | | | | | | | |
| Hours of | Variable Direction | 0 | | | | | | | | | | |
| Hours of | Valid Data | 169 | | | | | | | | | | |
| Hours of | Missing Data | 0 | | | | | | | | | | |
| Hours in | Period | 8760 | | | | | | | | | | |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|---------|-----------|---------------------|-------|----------|-------|------------|--------|--------|-------|
| January - December, 2023 | | | | | | | | | | | | |
| Stability | Class | | B | | Moderately Unstable | | based on | | Lapse Rate | | | |
| Elevations:: | | Winds | 10m | Stability | | 60m | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 0 | 0 | 0 | 1 | 3 | 4 | 1 | 0 | 0 | 0 | 0 | 9 |
| NNE | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| NE | 0 | 0 | 0 | 3 | 7 | 6 | 1 | 0 | 0 | 0 | 0 | 17 |
| ENE | 0 | 0 | 0 | 0 | 5 | 4 | 1 | 1 | 0 | 0 | 0 | 11 |
| E | 0 | 0 | 0 | 2 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 10 |
| ESE | 0 | 0 | 0 | 0 | 2 | 2 | 8 | 4 | 0 | 0 | 0 | 16 |
| SE | 0 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 1 | 0 | 0 | 12 |
| SSE | 0 | 0 | 0 | 1 | 2 | 13 | 13 | 5 | 5 | 1 | 0 | 40 |
| S | 0 | 0 | 0 | 0 | 2 | 6 | 10 | 8 | 4 | 0 | 0 | 30 |
| SSW | 0 | 0 | 0 | 0 | 7 | 16 | 2 | 7 | 2 | 2 | 0 | 36 |
| SW | 0 | 0 | 0 | 2 | 9 | 10 | 6 | 2 | 2 | 0 | 0 | 31 |
| WSW | 0 | 0 | 0 | 1 | 4 | 3 | 4 | 0 | 0 | 0 | 0 | 12 |
| W | 0 | 0 | 0 | 0 | 5 | 6 | 6 | 5 | 0 | 0 | 0 | 22 |
| WNW | 0 | 0 | 0 | 0 | 5 | 14 | 13 | 10 | 2 | 0 | 0 | 44 |
| NW | 0 | 0 | 0 | 0 | 4 | 8 | 8 | 5 | 3 | 0 | 0 | 28 |
| NNW | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 10 |
| Tot | 0 | 0 | 0 | 10 | 64 | 110 | 76 | 50 | 19 | 3 | 0 | 332 |
| Hours of | Calm | | | | | | | | | | | 0 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data | | | | | | | | | | | 332 |
| Hours of | Missing Data | | | | | | | | | | | 0 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|-----------|----------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2023 | | | | | | | | | | | | |
| Stability | Class | C | Slightly | Unstable | based | on | Lapse | Rate | | | | |
| Elevations:: | Winds | 10m | Stability | 60m | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | Total |
| N | 0 | 0 | 0 | 5 | 9 | 6 | 1 | 0 | 0 | 0 | 0 | 21 |
| NNE | 0 | 0 | 3 | 11 | 10 | 7 | 1 | 0 | 0 | 0 | 0 | 32 |
| NE | 0 | 0 | 0 | 5 | 23 | 7 | 0 | 0 | 0 | 0 | 0 | 35 |
| ENE | 0 | 0 | 0 | 3 | 11 | 20 | 7 | 0 | 0 | 0 | 0 | 41 |
| E | 0 | 0 | 0 | 3 | 10 | 9 | 7 | 1 | 0 | 0 | 0 | 30 |
| ESE | 0 | 0 | 0 | 1 | 10 | 8 | 7 | 1 | 0 | 0 | 0 | 27 |
| SE | 0 | 0 | 0 | 2 | 11 | 21 | 9 | 0 | 0 | 0 | 0 | 43 |
| SSE | 0 | 0 | 0 | 4 | 13 | 19 | 12 | 5 | 2 | 0 | 0 | 55 |
| S | 0 | 0 | 0 | 1 | 21 | 20 | 8 | 7 | 4 | 0 | 0 | 61 |
| SSW | 0 | 0 | 0 | 3 | 23 | 20 | 11 | 4 | 3 | 1 | 0 | 65 |
| SW | 0 | 0 | 1 | 3 | 19 | 18 | 6 | 2 | 3 | 0 | 0 | 52 |
| WSW | 0 | 0 | 0 | 5 | 10 | 9 | 0 | 1 | 0 | 0 | 0 | 25 |
| W | 0 | 0 | 0 | 0 | 16 | 18 | 4 | 3 | 0 | 0 | 0 | 41 |
| WNW | 0 | 0 | 1 | 3 | 13 | 14 | 10 | 9 | 0 | 0 | 0 | 50 |
| NW | 0 | 0 | 0 | 3 | 14 | 8 | 3 | 4 | 5 | 0 | 0 | 37 |
| NNW | 0 | 0 | 2 | 3 | 9 | 13 | 8 | 1 | 0 | 0 | 0 | 36 |
| Tot | 0 | 0 | 7 | 55 | 222 | 217 | 94 | 38 | 17 | 1 | 0 | 651 |
| Hours of | Calm | | | | | | | | | | | 0 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data | | | | | | | | | | | 651 |
| Hours of | Missing Data | | | | | | | | | | | 0 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|-----------|---------------------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2023 | | | | | | | | | | | | |
| Stability | Class | D | Neutral | based on Lapse Rate | | | | | | | | |
| Elevations:: | Winds | 10m | Stability | 60m | | | | | | | | Total |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | Total |
| N | 0 | 5 | 12 | 22 | 68 | 64 | 42 | 17 | 9 | 0 | 0 | 239 |
| NNE | 1 | 2 | 15 | 24 | 73 | 62 | 13 | 2 | 0 | 0 | 0 | 192 |
| NE | 2 | 0 | 16 | 25 | 72 | 62 | 16 | 1 | 0 | 0 | 0 | 194 |
| ENE | 1 | 3 | 5 | 20 | 52 | 43 | 18 | 2 | 0 | 0 | 0 | 144 |
| E | 0 | 0 | 6 | 17 | 50 | 38 | 14 | 5 | 1 | 0 | 0 | 131 |
| ESE | 0 | 3 | 13 | 18 | 48 | 43 | 27 | 14 | 0 | 0 | 0 | 166 |
| SE | 0 | 0 | 6 | 19 | 58 | 54 | 22 | 8 | 0 | 0 | 0 | 167 |
| SSE | 1 | 2 | 8 | 15 | 78 | 54 | 48 | 24 | 11 | 0 | 0 | 241 |
| S | 0 | 1 | 10 | 17 | 55 | 40 | 36 | 32 | 19 | 10 | 0 | 220 |
| SSW | 1 | 3 | 11 | 16 | 55 | 29 | 21 | 24 | 21 | 2 | 0 | 183 |
| SW | 1 | 6 | 14 | 17 | 55 | 35 | 12 | 11 | 8 | 2 | 0 | 161 |
| WSW | 0 | 4 | 11 | 23 | 40 | 25 | 15 | 9 | 5 | 1 | 0 | 133 |
| W | 0 | 2 | 13 | 24 | 59 | 51 | 36 | 20 | 9 | 4 | 0 | 218 |
| WNW | 0 | 3 | 10 | 25 | 61 | 65 | 63 | 30 | 16 | 2 | 0 | 275 |
| NW | 1 | 1 | 16 | 29 | 70 | 95 | 70 | 47 | 14 | 0 | 0 | 343 |
| NNW | 0 | 4 | 8 | 26 | 73 | 80 | 62 | 33 | 6 | 0 | 0 | 292 |
| Tot | 8 | 39 | 174 | 337 | 967 | 840 | 515 | 279 | 119 | 21 | 0 | 3299 |
| Hours of | Calm | | | | | | | | | | | 4 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data | | | | | | | | | | | 3303 |
| Hours of | Missing Data | | | | | | | | | | | 0 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | | |
|---|------------------------|-------|----------|-----------|----------|-------|-------|-------|-------|--------|--------|-------|--|
| January - December, 2023 | | | | | | | | | | | | | |
| Stability | Class | E | Slightly | Stable | based on | | | Lapse | Rate | | | | |
| Elevations:: | | Winds | 10m | Stability | | 60m | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | Total | |
| N | 3 | 9 | 12 | 14 | 21 | 7 | 3 | 1 | 0 | 0 | 0 | 70 | |
| NNE | 2 | 14 | 28 | 15 | 19 | 4 | 0 | 0 | 0 | 0 | 0 | 82 | |
| NE | 0 | 10 | 20 | 30 | 22 | 4 | 3 | 0 | 0 | 0 | 0 | 89 | |
| ENE | 0 | 6 | 17 | 22 | 21 | 7 | 0 | 0 | 0 | 0 | 0 | 73 | |
| E | 0 | 5 | 20 | 19 | 41 | 7 | 4 | 0 | 0 | 0 | 0 | 96 | |
| ESE | 4 | 10 | 17 | 29 | 51 | 16 | 3 | 0 | 0 | 0 | 0 | 130 | |
| SE | 1 | 3 | 16 | 36 | 111 | 71 | 20 | 6 | 0 | 0 | 0 | 264 | |
| SSE | 0 | 3 | 9 | 33 | 114 | 112 | 32 | 16 | 0 | 0 | 0 | 319 | |
| S | 1 | 6 | 11 | 17 | 84 | 104 | 40 | 15 | 8 | 0 | 0 | 286 | |
| SSW | 0 | 2 | 17 | 13 | 59 | 45 | 19 | 11 | 2 | 0 | 0 | 168 | |
| SW | 0 | 9 | 15 | 26 | 60 | 18 | 4 | 3 | 3 | 1 | 0 | 139 | |
| WSW | 0 | 9 | 19 | 34 | 31 | 20 | 4 | 3 | 2 | 0 | 0 | 122 | |
| W | 1 | 4 | 10 | 16 | 60 | 22 | 2 | 3 | 3 | 1 | 0 | 122 | |
| WNW | 1 | 8 | 22 | 26 | 62 | 21 | 5 | 0 | 1 | 1 | 0 | 147 | |
| NW | 0 | 6 | 16 | 21 | 33 | 20 | 3 | 3 | 0 | 0 | 0 | 102 | |
| NNW | 0 | 7 | 14 | 18 | 31 | 17 | 7 | 0 | 0 | 0 | 0 | 94 | |
| Tot | 13 | 111 | 263 | 369 | 820 | 495 | 149 | 61 | 19 | 3 | 0 | 2303 | |
| Hours of | Calm | | | | | | | | | | | 2 | |
| Hours of | Variable Direction | | | | | | | | | | | 0 | |
| Hours of | Valid Data . . . | | | | | | | | | | | 2305 | |
| Hours of | Missing Data . . . | | | | | | | | | | | 0 | |
| Hours in | Period | | | | | | | | | | | 8760 | |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|------------|--------|----------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2023 | | | | | | | | | | | | |
| Stability | Class | F | Moderately | Stable | based on | | | Lapse | Rate | | | |
| Elevations:: | Winds | 10m | Stability | 60m | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 3 | 15 | 12 | 5 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 42 |
| NNE | 5 | 25 | 20 | 10 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 62 |
| NE | 2 | 12 | 24 | 15 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 64 |
| ENE | 3 | 15 | 22 | 12 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 56 |
| E | 2 | 17 | 8 | 9 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 41 |
| ESE | 3 | 9 | 17 | 11 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 49 |
| SE | 1 | 17 | 35 | 34 | 30 | 3 | 0 | 0 | 0 | 0 | 0 | 120 |
| SSE | 1 | 8 | 20 | 44 | 125 | 40 | 2 | 0 | 0 | 0 | 0 | 240 |
| S | 2 | 12 | 11 | 23 | 73 | 21 | 0 | 0 | 0 | 0 | 0 | 142 |
| SSW | 1 | 7 | 10 | 13 | 33 | 5 | 0 | 0 | 0 | 0 | 0 | 69 |
| SW | 1 | 5 | 16 | 14 | 22 | 4 | 0 | 0 | 0 | 0 | 0 | 62 |
| WSW | 3 | 14 | 11 | 11 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 51 |
| W | 2 | 15 | 6 | 8 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 36 |
| WNW | 8 | 21 | 15 | 15 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 62 |
| NW | 7 | 9 | 24 | 25 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 82 |
| NNW | 3 | 11 | 7 | 10 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 47 |
| Tot | 47 | 212 | 258 | 259 | 373 | 73 | 3 | 0 | 0 | 0 | 0 | 1225 |
| Hours of | Calm | | | | | | | | | | | 19 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | 1244 |
| Hours of | Missing Data . . . | | | | | | | | | | | 0 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|-----------|--------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2023 | | | | | | | | | | | | |
| Stability | Class | G | Extremely | Stable | based | on | Lapse | Rate | | | | |
| Elevations:: | Winds | 10m | Stability | 60m | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | Total |
| N | 10 | 23 | 25 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 63 |
| NNE | 8 | 28 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 |
| NE | 6 | 19 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 |
| ENE | 7 | 17 | 5 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 31 |
| E | 3 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| ESE | 1 | 9 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| SE | 3 | 9 | 9 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 29 |
| SSE | 11 | 21 | 20 | 26 | 42 | 5 | 0 | 0 | 0 | 0 | 0 | 125 |
| S | 4 | 24 | 11 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 49 |
| SSW | 8 | 11 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 29 |
| SW | 5 | 13 | 7 | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 34 |
| WSW | 3 | 7 | 7 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 |
| W | 6 | 8 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| WNW | 7 | 16 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 |
| NW | 4 | 33 | 17 | 17 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 76 |
| NNW | 9 | 26 | 18 | 8 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 65 |
| Tot | 95 | 273 | 163 | 80 | 74 | 6 | 0 | 0 | 0 | 0 | 0 | 691 |
| Hours of | Calm | | | | | | | | | | | 65 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data | | | | | | | | | | | 756 |
| Hours of | Missing Data | | | | | | | | | | | 0 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--------|----------------|---------|
| January - December, 2023 | | | | | | | | | | | | |
| All Stabilities | | | | | | | | | | | | |
| Elevations:: Winds 60m Stability 60m | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 2 | 8 | 7 | 14 | 52 | 75 | 83 | 85 | 42 | 8 | 0 | 376 |
| NNE | 2 | 6 | 11 | 20 | 44 | 69 | 76 | 55 | 19 | 3 | 0 | 305 |
| NE | 1 | 8 | 9 | 25 | 68 | 101 | 97 | 50 | 30 | 0 | 0 | 389 |
| ENE | 2 | 5 | 4 | 14 | 71 | 104 | 120 | 117 | 15 | 0 | 0 | 452 |
| E | 1 | 9 | 13 | 14 | 51 | 95 | 120 | 74 | 25 | 0 | 0 | 402 |
| ESE | 1 | 8 | 13 | 17 | 57 | 121 | 113 | 90 | 35 | 2 | 0 | 457 |
| SE | 3 | 19 | 30 | 64 | 184 | 160 | 79 | 22 | 6 | 0 | 0 | 567 |
| SSE | 1 | 12 | 14 | 40 | 138 | 176 | 179 | 152 | 105 | 23 | 5 | 845 |
| S | 2 | 13 | 24 | 19 | 94 | 115 | 160 | 169 | 223 | 54 | 20 | 893 |
| SSW | 5 | 9 | 14 | 28 | 72 | 112 | 145 | 140 | 223 | 33 | 14 | 795 |
| SW | 8 | 11 | 16 | 25 | 74 | 86 | 96 | 100 | 144 | 21 | 10 | 591 |
| WSW | 6 | 11 | 8 | 23 | 49 | 53 | 81 | 92 | 84 | 22 | 8 | 437 |
| W | 4 | 6 | 11 | 18 | 54 | 58 | 76 | 121 | 136 | 53 | 20 | 557 |
| WNW | 1 | 3 | 10 | 15 | 44 | 59 | 71 | 133 | 178 | 76 | 31 | 621 |
| NW | 2 | 13 | 5 | 14 | 46 | 70 | 113 | 95 | 117 | 46 | 9 | 530 |
| NNW | 5 | 9 | 15 | 11 | 47 | 71 | 99 | 87 | 72 | 11 | 0 | 427 |
| Tot | 46 | 150 | 204 | 361 | 1145 | 1525 | 1708 | 1582 | 1454 | 352 | 117 | 8644 |
| Hours of | Calm | | | | | | | | | | | 116 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | 8760 |
| Hours of | Missing Data . . . | | | | | | | | | | | 0 |
| Hours in | Period | | | | | | | | | | | 8760 |
| | | | | | | | | | | | recovery rate: | 100.00% |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|-----------|----------|---------------------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2023 | | | | | | | | | | | | |
| Stability | Class | A | Extremely | Unstable | based on Lapse Rate | | | | | | | |
| Elevations:: | Winds | 60m | Stability | 60m | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | Total |
| N | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NNE | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| NE | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| ENE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 3 |
| E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| ESE | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| SE | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 2 | 0 | 0 | 0 | 7 |
| SSE | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 8 | 1 | 0 | 18 |
| S | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 7 | 1 | 14 |
| SSW | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 2 | 5 | 3 | 0 | 16 |
| SW | 0 | 0 | 0 | 0 | 1 | 3 | 4 | 6 | 10 | 0 | 0 | 24 |
| WSW | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 0 | 0 | 5 |
| W | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 5 | 6 | 0 | 14 |
| WNW | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 12 | 15 | 13 | 47 |
| NW | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 6 | 1 | 11 |
| NNW | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 3 |
| Tot | 0 | 0 | 0 | 0 | 3 | 7 | 21 | 34 | 51 | 38 | 15 | 169 |
| Hours of | Calm | 0 | | | | | | | | | | |
| Hours of | Variable Direction | 0 | | | | | | | | | | |
| Hours of | Valid Data . . . | 169 | | | | | | | | | | |
| Hours of | Missing Data . . . | 0 | | | | | | | | | | |
| Hours in | Period | 8760 | | | | | | | | | | |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|---------|-------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2023 | | | | | | | | | | | | |
| Stability Class B Moderately Unstable based on Lapse Rate | | | | | | | | | | | | |
| Elevations:: Winds 60m Stability 60m | | | | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 0 | 0 | 0 | 5 |
| NNE | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 2 | 0 | 0 | 0 | 5 |
| NE | 0 | 0 | 0 | 1 | 2 | 11 | 5 | 0 | 1 | 0 | 0 | 20 |
| ENE | 0 | 0 | 0 | 0 | 1 | 3 | 2 | 3 | 1 | 0 | 0 | 10 |
| E | 0 | 0 | 0 | 2 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 8 |
| ESE | 0 | 0 | 0 | 0 | 2 | 3 | 3 | 8 | 1 | 0 | 0 | 17 |
| SE | 0 | 0 | 0 | 0 | 2 | 6 | 2 | 4 | 1 | 0 | 0 | 15 |
| SSE | 0 | 0 | 0 | 1 | 2 | 11 | 8 | 5 | 5 | 2 | 0 | 34 |
| S | 0 | 0 | 0 | 0 | 2 | 4 | 6 | 5 | 13 | 3 | 1 | 34 |
| SSW | 0 | 0 | 0 | 0 | 1 | 6 | 11 | 5 | 12 | 1 | 3 | 39 |
| SW | 0 | 0 | 0 | 0 | 2 | 10 | 6 | 5 | 4 | 2 | 0 | 29 |
| WSW | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 4 | 5 | 2 | 0 | 15 |
| W | 0 | 0 | 0 | 0 | 1 | 3 | 3 | 6 | 6 | 4 | 0 | 23 |
| WNW | 0 | 0 | 0 | 0 | 1 | 2 | 7 | 14 | 18 | 5 | 3 | 50 |
| NW | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 1 | 7 | 3 | 1 | 20 |
| NNW | 0 | 0 | 0 | 0 | 1 | 4 | 3 | 0 | 0 | 0 | 0 | 8 |
| Tot | 0 | 0 | 0 | 5 | 22 | 71 | 67 | 63 | 74 | 22 | 8 | 332 |
| Hours of Calm | | | | | | | | | | | | 0 |
| Hours of Variable Direction | | | | | | | | | | | | 0 |
| Hours of Valid Data | | | | | | | | | | | | 332 |
| Hours of Missing Data | | | | | | | | | | | | 0 |
| Hours in Period | | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-----------|----------|---------------------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2023 | | | | | | | | | | | | |
| Stability Class | C | Slightly | Unstable | based on Lapse Rate | | | | | | | | |
| Elevations:: | Winds 60m | Stability | 60m | | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | Total |
| N | 0 | 0 | 0 | 1 | 8 | 8 | 1 | 0 | 1 | 0 | 0 | 19 |
| NNE | 0 | 0 | 0 | 6 | 9 | 10 | 6 | 2 | 0 | 0 | 0 | 33 |
| NE | 0 | 0 | 0 | 5 | 8 | 13 | 5 | 1 | 0 | 0 | 0 | 32 |
| ENE | 0 | 0 | 1 | 1 | 8 | 11 | 15 | 8 | 0 | 0 | 0 | 44 |
| E | 0 | 0 | 0 | 2 | 8 | 9 | 4 | 6 | 1 | 0 | 0 | 30 |
| ESE | 0 | 0 | 0 | 1 | 4 | 14 | 5 | 4 | 1 | 0 | 0 | 29 |
| SE | 0 | 0 | 0 | 4 | 9 | 18 | 7 | 0 | 0 | 0 | 0 | 38 |
| SSE | 0 | 0 | 2 | 1 | 15 | 15 | 8 | 6 | 1 | 2 | 0 | 50 |
| S | 0 | 0 | 2 | 2 | 13 | 19 | 7 | 5 | 13 | 3 | 0 | 64 |
| SSW | 0 | 0 | 0 | 2 | 8 | 16 | 21 | 8 | 10 | 2 | 2 | 69 |
| SW | 0 | 0 | 1 | 1 | 13 | 14 | 13 | 8 | 4 | 4 | 0 | 58 |
| WSW | 0 | 0 | 0 | 1 | 6 | 7 | 10 | 4 | 5 | 1 | 0 | 34 |
| W | 0 | 0 | 0 | 2 | 2 | 4 | 6 | 16 | 4 | 3 | 0 | 37 |
| WNW | 0 | 0 | 0 | 1 | 6 | 12 | 3 | 16 | 8 | 8 | 1 | 55 |
| NW | 0 | 0 | 0 | 3 | 4 | 8 | 4 | 2 | 6 | 5 | 1 | 33 |
| NNW | 0 | 0 | 0 | 0 | 2 | 9 | 7 | 7 | 1 | 0 | 0 | 26 |
| Tot | 0 | 0 | 6 | 33 | 123 | 187 | 122 | 93 | 55 | 28 | 4 | 651 |
| Hours of Calm | | | | | | | | | | | | 0 |
| Hours of Variable Direction | | | | | | | | | | | | 0 |
| Hours of Valid Data | | | | | | | | | | | | 651 |
| Hours of Missing Data | | | | | | | | | | | | 0 |
| Hours in Period | | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|-----------|-------------------------------|-------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2023 | | | | | | | | | | | | |
| Stability | Class | D | Neutral | Stability based on Lapse Rate | | | | | | | | |
| Elevations:: | Winds | 60m | Stability | 60m | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | Total |
| N | 1 | 2 | 4 | 7 | 22 | 44 | 48 | 45 | 31 | 8 | 0 | 212 |
| NNE | 0 | 2 | 8 | 6 | 21 | 36 | 41 | 30 | 17 | 3 | 0 | 164 |
| NE | 0 | 4 | 7 | 6 | 29 | 38 | 44 | 20 | 12 | 0 | 0 | 160 |
| ENE | 1 | 0 | 1 | 5 | 29 | 39 | 40 | 33 | 6 | 0 | 0 | 154 |
| E | 0 | 3 | 7 | 3 | 22 | 32 | 36 | 15 | 17 | 0 | 0 | 135 |
| ESE | 0 | 3 | 9 | 7 | 22 | 37 | 33 | 24 | 19 | 2 | 0 | 156 |
| SE | 0 | 5 | 5 | 17 | 39 | 35 | 19 | 4 | 1 | 0 | 0 | 125 |
| SSE | 0 | 6 | 6 | 21 | 57 | 50 | 30 | 41 | 27 | 12 | 4 | 254 |
| S | 2 | 6 | 13 | 9 | 36 | 37 | 22 | 29 | 51 | 24 | 16 | 245 |
| SSW | 2 | 3 | 9 | 11 | 28 | 42 | 38 | 32 | 36 | 11 | 6 | 218 |
| SW | 6 | 5 | 10 | 17 | 34 | 29 | 24 | 18 | 29 | 13 | 6 | 191 |
| WSW | 0 | 7 | 4 | 16 | 26 | 28 | 32 | 33 | 25 | 14 | 5 | 190 |
| W | 3 | 4 | 5 | 5 | 23 | 26 | 24 | 33 | 68 | 37 | 16 | 244 |
| WNW | 0 | 1 | 5 | 12 | 21 | 26 | 33 | 42 | 84 | 45 | 14 | 283 |
| NW | 2 | 10 | 4 | 6 | 26 | 26 | 64 | 59 | 77 | 31 | 4 | 309 |
| NNW | 3 | 6 | 14 | 7 | 29 | 35 | 53 | 32 | 52 | 11 | 0 | 242 |
| Tot | 20 | 67 | 111 | 155 | 464 | 560 | 581 | 490 | 552 | 211 | 71 | 3282 |
| Hours of | Calm | | | | | | | | | | | 21 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data | | | | | | | | | | | 3303 |
| Hours of | Missing Data | | | | | | | | | | | 0 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|-----------|--------|---------------------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2023 | | | | | | | | | | | | |
| Stability | Class | E | Slightly | Stable | based on Lapse Rate | | | | | | | |
| Elevations:: | Winds | 60m | Stability | 60m | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | Total |
| N | 1 | 2 | 1 | 2 | 7 | 17 | 21 | 16 | 7 | 0 | 0 | 74 |
| NNE | 0 | 1 | 2 | 3 | 7 | 12 | 10 | 5 | 2 | 0 | 0 | 42 |
| NE | 0 | 0 | 1 | 1 | 10 | 17 | 22 | 11 | 5 | 0 | 0 | 67 |
| ENE | 0 | 1 | 1 | 2 | 13 | 33 | 33 | 17 | 2 | 0 | 0 | 102 |
| E | 0 | 0 | 2 | 1 | 8 | 26 | 29 | 22 | 3 | 0 | 0 | 91 |
| ESE | 0 | 2 | 3 | 4 | 13 | 35 | 41 | 32 | 7 | 0 | 0 | 137 |
| SE | 0 | 3 | 5 | 16 | 74 | 80 | 38 | 9 | 2 | 0 | 0 | 227 |
| SSE | 0 | 1 | 0 | 1 | 27 | 58 | 64 | 57 | 50 | 5 | 1 | 264 |
| S | 0 | 1 | 4 | 4 | 25 | 36 | 54 | 70 | 113 | 16 | 2 | 325 |
| SSW | 0 | 2 | 2 | 6 | 20 | 26 | 39 | 43 | 99 | 15 | 3 | 255 |
| SW | 0 | 2 | 1 | 2 | 11 | 19 | 30 | 41 | 56 | 2 | 4 | 168 |
| WSW | 1 | 1 | 3 | 3 | 8 | 6 | 25 | 31 | 31 | 5 | 3 | 117 |
| W | 1 | 0 | 3 | 3 | 7 | 13 | 32 | 42 | 45 | 3 | 4 | 153 |
| WNW | 0 | 0 | 0 | 0 | 5 | 5 | 18 | 42 | 40 | 3 | 0 | 113 |
| NW | 0 | 0 | 0 | 2 | 5 | 19 | 24 | 19 | 15 | 0 | 2 | 86 |
| NNW | 0 | 1 | 0 | 3 | 7 | 8 | 25 | 15 | 10 | 0 | 0 | 69 |
| Tot | 3 | 17 | 28 | 53 | 247 | 410 | 505 | 472 | 487 | 49 | 19 | 2290 |
| Hours of | Calm | 15 | | | | | | | | | | |
| Hours of | Variable Direction | 0 | | | | | | | | | | |
| Hours of | Valid Data | 2305 | | | | | | | | | | |
| Hours of | Missing Data | 0 | | | | | | | | | | |
| Hours in | Period | 8760 | | | | | | | | | | |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|------------|--------|----------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2023 | | | | | | | | | | | | |
| Stability | Class | F | Moderately | Stable | based on | | | Lapse | Rate | | | |
| Elevations:: | Winds | 60m | Stability | 60m | | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 0 | 0 | 1 | 1 | 3 | 5 | 6 | 15 | 3 | 0 | 0 | 34 |
| NNE | 2 | 1 | 0 | 2 | 1 | 5 | 11 | 12 | 0 | 0 | 0 | 34 |
| NE | 0 | 2 | 0 | 5 | 10 | 11 | 11 | 11 | 4 | 0 | 0 | 54 |
| ENE | 0 | 1 | 0 | 3 | 6 | 9 | 17 | 28 | 3 | 0 | 0 | 67 |
| E | 1 | 2 | 1 | 4 | 6 | 13 | 24 | 19 | 3 | 0 | 0 | 73 |
| ESE | 1 | 0 | 0 | 1 | 10 | 14 | 21 | 17 | 5 | 0 | 0 | 69 |
| SE | 1 | 3 | 10 | 16 | 43 | 16 | 7 | 3 | 1 | 0 | 0 | 100 |
| SSE | 0 | 2 | 1 | 9 | 23 | 29 | 53 | 29 | 13 | 1 | 0 | 160 |
| S | 0 | 4 | 2 | 2 | 9 | 10 | 45 | 43 | 26 | 1 | 0 | 142 |
| SSW | 2 | 1 | 2 | 2 | 6 | 15 | 23 | 41 | 54 | 1 | 0 | 147 |
| SW | 2 | 1 | 1 | 3 | 11 | 9 | 18 | 17 | 35 | 0 | 0 | 97 |
| WSW | 3 | 0 | 1 | 1 | 3 | 4 | 10 | 14 | 11 | 0 | 0 | 47 |
| W | 0 | 2 | 2 | 6 | 9 | 5 | 6 | 14 | 6 | 0 | 0 | 50 |
| WNW | 0 | 1 | 0 | 0 | 8 | 7 | 4 | 11 | 12 | 0 | 0 | 43 |
| NW | 0 | 3 | 0 | 3 | 9 | 7 | 11 | 12 | 7 | 0 | 0 | 52 |
| NNW | 1 | 1 | 0 | 1 | 5 | 10 | 8 | 22 | 3 | 0 | 0 | 51 |
| Tot | 13 | 24 | 21 | 59 | 162 | 169 | 275 | 308 | 186 | 3 | 0 | 1220 |
| Hours of | Calm | | | | | | | | | | | 24 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data . . . | | | | | | | | | | | 1244 |
| Hours of | Missing Data . . . | | | | | | | | | | | 0 |
| Hours in | Period | | | | | | | | | | | 8760 |

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| Joint Frequency Distribution: Hours at Wind and direction | | | | | | | | | | | | |
|---|------------------------|-------|-----------|-----------|----------|-------|-------|-------|-------|--------|--------|-------|
| January - December, 2023 | | | | | | | | | | | | |
| Stability | Class | G | Extremely | Stable | based on | | | Lapse | Rate | | | |
| Elevations:: | | Winds | 60m | Stability | 60m | | | | | | | |
| Wind Direction Sector | Wind Speed Range (m/s) | | | | | | | | | | | Total |
| | <0.5 | 0.5-1 | 1.1-1.5 | 1.6-2 | 2.1-3 | 3.1-4 | 4.1-5 | 5.1-6 | 6.1-8 | 8.1-10 | >10.00 | |
| N | 0 | 4 | 1 | 3 | 9 | 1 | 6 | 8 | 0 | 0 | 0 | 32 |
| NNE | 0 | 2 | 1 | 3 | 3 | 5 | 8 | 4 | 0 | 0 | 0 | 26 |
| NE | 1 | 2 | 1 | 7 | 8 | 11 | 10 | 6 | 8 | 0 | 0 | 54 |
| ENE | 1 | 3 | 1 | 3 | 14 | 9 | 13 | 26 | 2 | 0 | 0 | 72 |
| E | 0 | 4 | 3 | 2 | 7 | 13 | 23 | 11 | 0 | 0 | 0 | 63 |
| ESE | 0 | 3 | 1 | 4 | 6 | 17 | 9 | 5 | 2 | 0 | 0 | 47 |
| SE | 2 | 8 | 10 | 11 | 17 | 4 | 2 | 0 | 1 | 0 | 0 | 55 |
| SSE | 1 | 3 | 5 | 7 | 14 | 13 | 15 | 6 | 1 | 0 | 0 | 65 |
| S | 0 | 2 | 3 | 2 | 9 | 9 | 25 | 16 | 3 | 0 | 0 | 69 |
| SSW | 1 | 3 | 1 | 7 | 9 | 6 | 8 | 9 | 7 | 0 | 0 | 51 |
| SW | 0 | 3 | 3 | 2 | 2 | 2 | 1 | 5 | 6 | 0 | 0 | 24 |
| WSW | 2 | 3 | 0 | 1 | 6 | 6 | 2 | 5 | 4 | 0 | 0 | 29 |
| W | 0 | 0 | 1 | 2 | 12 | 7 | 3 | 9 | 2 | 0 | 0 | 36 |
| WNW | 1 | 1 | 5 | 2 | 3 | 7 | 5 | 2 | 4 | 0 | 0 | 30 |
| NW | 0 | 0 | 1 | 0 | 2 | 7 | 4 | 1 | 3 | 1 | 0 | 19 |
| NNW | 1 | 1 | 1 | 0 | 3 | 4 | 3 | 9 | 6 | 0 | 0 | 28 |
| Tot | 10 | 42 | 38 | 56 | 124 | 121 | 137 | 122 | 49 | 1 | 0 | 700 |
| Hours of | Calm | | | | | | | | | | | 56 |
| Hours of | Variable Direction | | | | | | | | | | | 0 |
| Hours of | Valid Data | | | | | | | | | | | 756 |
| Hours of | Missing Data | | | | | | | | | | | 0 |
| Hours In | Period | | | | | | | | | | | 8760 |

Appendix C2

Corrected Table A-4 for the 2022 Annual Radioactive Effluent Release Report. No other years' Table A-4 were impacted by the error found.

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| Table A-4: Dose Assessments, 10 CFR 50, Appendix I <i>Year 2022</i> | | | | | |
|--|----------------------|----------------------|----------------------|----------------------|-------------------------|
| | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Yearly total |
| Liquid Effluent Dose Limit, Total Body (mrem) | 1.5 | 1.5 | 1.5 | 1.5 | 3 |
| Total Body Dose (mrem) | 3.10E-04 | 1.07E-03 | 7.83E-05 | 9.90E-05 | 1.56E-03 |
| % Limit | 0.02% | 0.07% | 0.01% | 0.01% | 0.05% |
| Liquid Effluent Dose Limit, Maximum Organ (mrem) | 5 | 5 | 5 | 5 | 10 |
| Maximum Organ Dose (mrem) | 3.49E-04 | 2.94E-03 | 1.80E-04 | 1.16E-04 | 3.60E-03 |
| % Limit | 0.01% | 0.06% | 0.00% | 0.00% | 0.04% |
| Gaseous Effluent Dose Limit, Gamma Air (mrad) | 5 | 5 | 5 | 5 | 10 |
| Gamma Air Dose (mrad) | 7.78E-05 | 1.73E-04 | 1.79E-04 | 5.34E-05 | 4.84E-04 |
| % Limit | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Gaseous Effluent Dose Limit, Beta Air (mrad) | 10 | 10 | 10 | 10 | 20 |
| Beta Air Dose (mrad) | 2.75E-05 | 6.20E-05 | 6.32E-05 | 1.88E-05 | 1.72E-04 |
| % Limit | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Gaseous Effluent Dose Limit, Maximum Organ (mrem) | 7.5 | 7.5 | 7.5 | 7.5 | 15 |
| Maximum organ dose ¹⁰ (mrem) | 1.57E-03 | 6.10E-03 | 3.76E-03 | 2.36E-03 | 1.38E-02 |
| % Limit | 0.02% | 0.08% | 0.05% | 0.03% | 0.09% |
| ¹⁴C Maximum organ dose (mrem)¹¹ | 3.40E-03 | 3.40E-03 | 3.40E-03 | 3.40E-03 | 1.36E-02 |

¹⁰ Iodine, ³H, and particulates with greater than an 8 day half- life.

¹¹ Not included in above totals