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# PUBLIC SUBMISSION

**Docket:** NRC-2021-0133

Use of ARCON Methodology for Calculation of Accident-Related Offsite Atmospheric Dispersion Factors

**Comment On:** NRC-2021-0133-0001

Use of ARCON Methodology for Calculation of Accident-Related Offsite Atmospheric Dispersion Factors

**Document:** NRC-2021-0133-DRAFT-0004

Comment on FR Doc # 2021-17596

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## Submitter Information

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## General Comment

Please see the attached file.

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## Attachments

Comments on DG-4030

Item	Affected Section	Comment/Basis
1	Purpose, page 1	Section 2.2.1 on page 11 and Section 2.2.2 (page 12) imply what PBA is, but a clear definition of PBA should be provided.
2	Section 2, page 7 Certain locations are affected by atmospheric transport and diffusion conditions that may be more restrictive than assumed in the contiguous 48 states, including effects caused by variations in the duration of daylight and darkness (e.g., limited inversion depths, extended persistence of various conditions). If a given design may be deployed in locations characterized by extreme and persistent restrictive dispersion conditions (e.g., in Alaska)	A performance metric should be developed for when site atmospheric transport and diffusion conditions are not suitable for application of the dispersion algorithms in ARCON, rather than deterministically excluding Alaska and Hawaii from the applicability of ARCON.
3	the applicability of the dispersion algorithms in ARCON may not apply or may require further modification.	This section is written for design certifications and may not apply to construction permits. This section should be graded in two dimensions: 1. Construction permit vs. design certification, and 2. Test reactors vs. power reactors.
4	Section 2.1.1, page 8 The size of the data set used in the $\chi/Q$ assessments should be sufficiently large such that it is representative of long-term meteorological trends at the site. The minimum amount of onsite meteorological data to be provided at the time of application (1) for a construction permit is a representative consecutive 12-month period, (2) for an operating license is a representative consecutive 24-month period, including the most recent 1-year period, and (3) for an early site permit or a combined license that does not reference an early site permit is a consecutive 24-month period of data that is defensible, representative, and complete, but not older than 10 years from the date of the application. However, three or more years of data are preferable and, if available, should be submitted with the application.	There should be a graded approach for meteorological data expectations between power reactors and test reactors.
5	Section 2.1.2, page 8 Some technical issues that might be associated with a given data source are listed below. These are not intended to be an all-inclusive list. Additional issues may be identified by an applicant or the NRC staff during pre-application meetings, subsequent agency review of any application submittals, or project execution. Use of alternative meteorological data should include the following technical details, as applicable:	There should be a graded approach for technical detail expectations when using alternative meteorological data between power reactors and test reactors.

Item	Affected Section	Comment/Basis
6	<p>Section 2.1.2, page 10</p> <p>The staff considers 5 years of hourly offsite observations to be representative of the conditions at a proposed or existing site, for the purposes of estimating <math>\chi/Q</math> values at the EAB and LPZ. However, given this relatively short time scale, added attention should be given to the comparison</p>	<p>There should be a graded approach for meteorological data expectations between power reactors and test reactors.</p>
7	<p>between the offsite station(s) and the conditions at the site, as discussed above in Sections 2.1.2 (6) and 2.1.2 (7) of this RG.</p>	<p>Is 5 years of weather data necessary to have confidence in the representativeness of data to determine 95th percentile and 99.5th percentile X/Q per RG 1.145?</p>
8		<p>The “relatively short time scale” of 5 years is long when compared to the number of hours to calculate 99.5th percentile X/Q. 5 years is also longer than the time scale requirements for onsite monitoring in RG 1.23. It is unclear why the staff considers 5 years to be a relatively short time scale.</p>
9		<p>Should 2.1.2(6) and 2.1.2(7) be 2.1.2(f) and 2.1.2(g), respectively?</p>
10	<p>Section 2.3.2, page 14</p> <p>In addition to running ARCON to determine the elevated stack <math>\chi/Q</math> values for the EAB or LPZ assessment, the analyst should calculate the maximum elevated stack <math>\chi/Q</math> value using the methodology of RG 1.145 to determine the maximum <math>\chi/Q</math> value at ground-level for the 0–2-hour interval and for the 24– 96-hour and 96–720-hour intervals. The NRC-sponsored code PAVAN, is acceptable to the staff for this assessment, as discussed in RG 1.145 and NUREG/CR-2858 (Ref. 8).</p>	<p>An acceptable method using a single code (i.e., ARCON) should be provided.</p>
11	<p>Appendix A, page A-1</p> <p>The 2-hour averaging interval should be used to derive the 0-2-hour <math>\chi/Q</math> values, as would be consistent with Regulatory Positions 1.3 and 1.4 in RG 1.145 (Ref. A-2).</p>	<p>In Section 3.7 of NUREG/CR-6331, the larger of the 1-hr and 2-hr averaging interval is used for the 0-2 hr period.</p>