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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

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Submitter Information

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General Comment

Exelon Generation Company, LLC - Comments on Draft Regulatory Guide (RG) DG-4030, "Use of ARCON Methodology for Calculation of Accident-Related Offsite Atmospheric Dispersion Factors," (Federal Register 86FR46024, dated August 17, 2021, Docket ID NRC-2021-0133)

Attachments

Comment Letter Draft RG DG-4030 (NRC-2021-0133)

RS-21-100

September 16, 2021

U.S. Nuclear Regulatory Commission
Office of Administration
ATTN: Program Management, Announcements and Editing Staff
Mail Stop: TWFN-7-A60M
Washington, DC 20555-0001

Subject: Comments on Draft Regulatory Guide (RG) DG-4030, *"Use of ARCON Methodology for Calculation of Accident-Related Offsite Atmospheric Dispersion Factors,"* (Federal Register 86FR46024, dated August 17, 2021, Docket ID NRC-2021-0133)

This letter is being submitted in response to the U.S. Nuclear Regulatory Commission (NRC) request for comments concerning the subject draft Regulatory Guide (RG) DG-4030, *"Use of ARCON Methodology for Calculation of Accident-Related Offsite Atmospheric Dispersion Factors,"* published in the *Federal Register* (i.e., 86FR46024, dated August 17, 2021).

This proposed new RG describes a method acceptable to the NRC for reactor applicants and licensees for determining atmospheric relative concentration (X/Q) values in support of modeling onsite releases to offsite boundaries from a design-basis accident. Also, this proposed guidance implements the methodology in RG 1.194, *"Atmospheric Relative Concentrations for Control Room Radiological Habitability Assessments at Nuclear Power Plants,"* for offsite dose locations at boundaries.

Exelon Generation Company, LLC (Exelon) appreciates the opportunity to comment on the subject draft RG and offers the attached comments for consideration by the NRC.

If you have any questions or require additional information, please do not hesitate to contact Richard Gropp at (610) 765-5557.

Respectfully,



David P. Helker
Sr. Manager, Licensing
Exelon Generation Company, LLC

Attachment

Comments Concerning Draft Regulatory Guide DG-4030, "Use of ARCON Methodology for Calculation of Accident-Related Offsite Atmospheric Dispersion Factors"

This proposed new RG describes a method acceptable to the NRC for reactor applicants and licensees for determining atmospheric relative concentration (X/Q) values in support of modeling onsite releases to offsite boundaries from a design-basis accident. Also, this proposed guidance implements the methodology in RG 1.194, *"Atmospheric Relative Concentrations for Control Room Radiological Habitability Assessments at Nuclear Power Plants,"* for offsite dose locations at boundaries.

Exelon Generation Company, LLC (Exelon) appreciates the opportunity to comment on DG-4030 and offers the following comments for consideration by the NRC.

General Comments

1. Under the Background section (Page 5), last paragraph, last sentence, Exelon recommends inserting a period "." at the end of the sentence.
2. Section 2.1.1 (Page 8) states "...data should meet the 90-percent recovery criterion...." Exelon recommends inserting "RG 1.23" before "90-percent" for clarity purposes.
3. Section 2.1.1 (Page 8) provides guidance related to the minimum amount of onsite meteorological data that is significantly different than the guidance in RG 1.194. Exelon believes that this change in guidance should also be applicable to RG 1.194. Therefore, does the NRC plan to revise RG 1.194 to incorporate the relevant changes made in DG-4030?
4. Section 2.1.2 (Page 8) provides guidance in developing meteorological data from alternative sources that is not found in RG 1.194. Therefore, does the NRC plan to revise RG 1.194 to incorporate the relevant changes made in DG-4030?
5. Section 2.2 implies that individual ARCON runs will be run for all 16 source-to-receptor sectors. Exelon believes that it would be helpful to include additional guidance related to this, including if this is the preferred approach or if there are alternatives to running all the combinations.
6. Plants may have safety-related and seismically designed systems that process and release activity at a specific point from a building (e.g., a plant vent). Typical applications of RG 1.194 would include modelling this scenario as a point source at the vent release point, which could be on the roof. Exelon believes that Sections 2.2 and 2.3.4 do not seem to address this scenario and further clarification might be beneficial.
7. The use of point sources on the edge of a building closest to the exclusion area boundary (EAB) or low population zone (LPZ) in a given sector is considered conservative. However, the approach in Sections 2.2.1 and 2.2.2 do not provide any guidance related to robust structures that may be seismically qualified and safety-related. Exelon believes that a robust structure of this design that does not have an engineered release point on the surface should be modeled as a diffuse area source. Guidance for this situation is provided in RG 1.194, Section 3.2.4, and should also be applicable in this new RG as well.

8. The ARCON calculation process to address multiple sources, for all 16 sectors, including determining the 99.5th percentile X/Q values for the various time periods may be a challenge to implement.
9. Sections 2.3.4 and 2.3.5 (Page 15) describe modeling the source as a point or a point in the center of a diffuse area source. The guidance in Sections 2.2.1 and 2.2.2 describe modeling the source to receptor as distances from edges of buildings from which radioactive material could potentially be released. Section 2.2.2 provides a useful option for the analyst to explicitly evaluate the effects from individual release points. However, Figure 2-2 assumes that all buildings release radioactivity. Exelon believes that a better example of Figure 2-2 may be to include some buildings that do not release radioactivity.
10. Appendix A does not include examples on calculating the X/Q time intervals beyond 2 hours. ARCON methodology determines these by a weighted combination of the two applicable X/Q values. Exelon believes providing an example of calculating the 99.5th percentile for the time intervals beyond 2 hours, including equations and the procedure, is needed to ensure the analyst performs the calculation according to approved guidance.