



NUCLEAR REGULATORY COMMISSION

10 CFR Parts 50, 52 and 100

[NRC-2021-0133]

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

AGENCY: Nuclear Regulatory Commission.

ACTION: Final guide; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is issuing a new Regulatory Guide (RG) 1.249 (Revision 0), "Use of ARCON Methodology for Calculation of Accident-Related Offsite Atmospheric Dispersion Factors." This new RG describes an approach for reactor applicants and licensees for determining atmospheric relative concentration (χ/Q) values in support of modeling onsite releases to offsite boundaries from a design-basis accident. Also, this RG 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.

DATES: Revision 0 to RG 1.249 is available on **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Please refer to Docket ID **NRC-2021-0133** when contacting the NRC about the availability of information regarding this document. You may obtain publicly available information related to this document using any of the following methods:

- **Federal Rulemaking Website:** Go to <https://www.regulations.gov> and search for Docket ID **NRC-2021-0133**. Address questions about Dockets IDs in Regulations.gov to Stacy Schumann; telephone: 301-415-0624; email: Stacy.Schumann@nrc.gov. For technical questions, contact the individuals listed in the "For Further Information Contact" section of this document.

- **NRC's Agencywide Documents Access and Management System**

(ADAMS): You may obtain publicly available documents online in the ADAMS Public Documents collection at <https://www.nrc.gov/reading-rm/adams.html>. To begin the search, select “Begin Web-based ADAMS Search.” For problems with ADAMS, please contact the NRC’s Public Document Room (PDR) reference staff at 1-800-397-4209, at 301-415-4737, or by email to PDR.Resource@nrc.gov.

- **NRC’s PDR:** The PDR, where you may examine and order copies of publicly available documents, is open by appointment. To make an appointment to visit the PDR, please send an email to PDR.Resource@nrc.gov or call 1-800-397-4209 or 301-415-4737, between 8 a.m. and 4 p.m. eastern time (ET), Monday through Friday, except Federal holidays.

Revision 0 to RG 1.249 and the regulatory analysis may be found in ADAMS under Accession Nos. ML22024A241 and ML21165A007, respectively.

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FOR FURTHER INFORMATION CONTACT: Kevin Quinlan, Office of Nuclear Reactor Regulation, telephone: 301-415-6809, email: Kevin.Quinlan@nrc.gov, or Jason White, Office of Nuclear Reactor Regulation, telephone: 301-415-3212, email: Jason.White@nrc.gov, or Harriet Karagiannis, Office of Nuclear Regulatory Research, telephone: 301-415-2493, email: Harriet.Karagiannis@nrc.gov. All are staff of the U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

SUPPLEMENTARY INFORMATION:

I. Discussion

The NRC is issuing a new guide in the NRC’s “Regulatory Guide” series. This series was developed to describe methods that are acceptable to the NRC staff for implementing specific parts of the agency’s regulations, to explain techniques that the staff uses in evaluating specific issues or postulated events, and to describe information that the staff needs in its review of applications for permits and licenses.

For clarification, Revision 0 of RG 1.249 was issued for public comment with a

temporary identification of draft Regulatory Guide (DG), DG-4030, to RG 4.28, titled, "Use of ARCON Methodology for Calculation of Accident-Related Offsite Atmospheric Dispersion Factors." After further consideration of the applicability of this RG, the staff decided that it is more suitable to be listed under the RGs of Division 1, titled, "Power Reactors." As a result, the RG number was changed to RG 1.249 using the same RG title, instead of being listed under Division 4, titled, "Environmental and Siting," as RG 4.28. The content of the RG did not change due to it being issued under Division 1 instead of Division 4.

II. Additional Information

The NRC published a notice of the availability of DG-4030 (ADAMS Accession No. ML21165A005), in the *Federal Register* on August 17, 2021 (86 FR 46024), for a 30-day public comment period. The public comment period closed on September 16, 2021. The staff received 5 comment submissions and a total of 30 public comments. Public comments on DG-4030 and the staff responses to the public comments are available in ADAMS under Accession No. ML22024A245.

This new RG provides guidance to industry for complying with and implementing the NRC requirements by endorsing the use of the ARCON computer code to calculate offsite dispersion values out to distances of 1,200 m (3937 ft) that could include the exclusion area boundary and/or low-population zone.

RG 1.194 (ADAMS Accession No. ML031530505) endorses the use of the ARCON96 computer code for calculating accident-related onsite (control room and technical support center) atmospheric dispersion values which are direct inputs to habitability dose assessments. In addition, RG 1.145 (ADAMS Accession No. ML12216A014) provides the present methodology incorporated into the PAVAN computer code, as reviewed by the staff using NUREG-0800 at <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/index.html> (ADAMS Accession No. ML070810350), Standard Review Plan (SRP) Section 2.3.4 for calculating accident-related related, offsite atmospheric dispersion values.

RG 1.249 will provide new guidance for applicants and licensees subject to part 50 of title 10 of the *Code of Federal Regulations* (10 CFR), “Domestic Licensing of Production and Utilization Facilities”; 10 CFR part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants”; and 10 CFR part 100, “Reactor site criteria.”

As noted in the *Federal Register* on December 9, 2022 (87 FR 75671), this document is being published in the “Rules” section of the *Federal Register* to comply with publication requirements under 1 CFR chapter I.

III. Congressional Review Act

This RG is a rule as defined in the Congressional Review Act (5 U.S.C. 801-808). However, the Office of Management and Budget has not found it to be a major rule as defined in the Congressional Review Act.

IV. Backfitting, Forward Fitting, and Issue Finality

Issuance of RG 1.249, Revision 0, does not constitute backfitting as that term is defined in 10 CFR 50.109, “Backfitting” and as described in NRC Management Directive (MD) 8.4, “Management of Backfitting, Forward Fitting, Issue Finality, and Information Requests” (ADAMS Accession No. ML18093B087); constitute forward fitting as that term is defined and described in MD 8.4; or affect issue finality of any approval issued under 10 CFR part 52. As explained in RG 1.249, applicants and licensees are not required to comply with the positions set forth in this regulatory guide.

V. Submitting Suggestions for Improvement of Regulatory Guides

A member of the public may, at any time, submit suggestions to the NRC for improvement of existing RGs or for the development of new RGs. Suggestions can be submitted on the NRC’s public website at <https://www.nrc.gov/reading-rm/doc-collections/reg-guides/contactus.html>. Suggestions will be considered in future updates and enhancements to the “Regulatory Guide” series.

Dated: August 16, 2023.

For the Nuclear Regulatory Commission.

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