[7590-01-P]

NUCLEAR REGULATORY COMMISSION

10 CFR Parts 50 and 52

[NRC-2021-0179]

Regulatory Guide: Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Final guide; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is issuing Revision 1 to Regulatory Guide (RG), 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." This RG describes a method that the NRC staff considers acceptable in complying with regulations for design basis accident dose consequence analysis using an alternative source term. This guidance for light-water reactor (LWR) designs includes the scope, nature, and documentation of associated analyses and evaluations; consideration of impacts on analyzed risk; and content of submittals.

DATES: Revision 1 to RG 1.183 is available on **[INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

ADDRESSES: Please refer to Docket ID **NRC-2021-0179** 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-2021-0179**. Address questions about Docket 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. The ADAMS accession number for each document referenced (if it is available in ADAMS) is provided the first time that it is mentioned in this document.
- **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 1 to RG 1.183 and the regulatory analysis may be found in ADAMS under Accession Nos. ML23082A305 and ML21204A066, respectively.

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SUPPLEMENTARY INFORMATION:

I. Discussion

The NRC is issuing a revision 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.

The proposed Revision 1 to RG 1.183 was issued with a temporary identification of Draft Regulatory Guide, DG-1389. (ADAMS Accession No. ML21204A065).

This revision of the guide (Revision 1) addresses new issues identified since the guide was originally issued. These include (1) using the term maximum hypothetical accident loss-of-coolant accident (LOCA) to clarify the accident that the staff finds acceptable to use to meet the description in the applicable regulations, identified in Section A of RG 1.183, Revision 1, with a clear delineation between source term assumptions and plant response; (2) adding transient release fractions from empirical data from in-pile, prompt power pulse test programs and analyses from several international publications of fuel rod performance under prompt power excursion conditions; (3) revising steady-state release fractions for accidents other than the LOCA based on a revision to the American National Standards Institute/American Nuclear Society Standard 5.4, “Method for Calculating the Fractional Release of Volatile Fission Products from Oxide Fuel”; (4) adding information to acknowledge that the RG may provide useful information for satisfying the radiological dose analysis requirements in parts 50 and 52 of title 10 of the *Code of Federal Regulations* (10 CFR), for new LWR applicants, including advanced evolutionary and passive LWR design and siting; (5) providing additional guidance for modeling boiling-water reactor main steam isolation valve leakage; (6) adding guidance for accident tolerant fuel, high-burnup fuel, and increased enrichment source term analyses; (7) revising transport and decontamination models for the fuel handling design basis accident; (8) adding guidance for crediting hold-up and retention of main steam isolation valve leakage within the main steamlines and condenser for boiling-water reactors; and (9) providing additional guidance on meteorological assumptions.

II. Additional Information

The NRC published a notice of the availability of DG-1389 in the *Federal Register* on April 21, 2022 (87 FR 23891) for a 60-day public comment period. The public comment period closed on June 21, 2022. Public comments on DG-1389 and the staff responses to the public comments are available under ADAMS under Accession No. ML23082A309.

In the notice of availability for DG-1389, Section IV, "Specific Request for Comment," the NRC sought specific comments on the draft staff technical assessment titled, "Technical Assessment of Hold-up and Retention of Main Steam Isolation Valve Leakage within the Main Steam Lines and Main Condenser" (ADAMS Accession No. ML20085J042); the NRC staff did not receive any public comments on the draft staff technical assessment. At this time, the staff has determined to incorporate the supporting technical basis information from that draft staff technical assessment into RG 1.183, Revision 1, Appendix A, Section A-5.5, rather than finalizing the draft staff technical assessment separately for inclusion in this RG. Accordingly, the reference to the draft staff technical assessment was deleted from the final RG.

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 1.183, Revision 1, does not constitute backfitting as 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); affect the issue finality of an approval under 10 CFR part 52; or constitute forward fitting as defined and described in MD 8.4

because, as explained in RG 1.183, Revision 1, applicants and licensees are not required to comply with the positions set forth in this RG.

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: October 11, 2023.

For the Nuclear Regulatory Commission.

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