



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 25, 2018

MEMORANDUM TO: Brian E. Thomas, Director
Division of Engineering
Office of Nuclear Regulatory Research

FROM: Michael X. Franovich, Director */RA/*
Division of Risk Assessment
Office of Nuclear Reactor Regulation

SUBJECT: RESULTS OF PERIODIC REVIEW OF REGULATORY GUIDE 1.183

This memorandum documents the U.S. Nuclear Regulatory Commission's (NRC's) periodic review of Regulatory Guide (RG) 1.183, Revision 0, "Alternative Radiological Source Terms for Evaluating Design-Basis Accidents at Nuclear Power Reactors," published July 2000 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML003716792). RG 1.183 provides guidance to licensees of light water power reactors on acceptable applications of alternative source term (ASTs); the scope, nature, and documentation of associated analyses and evaluations; consideration of impacts on analyzed risk; and content of submittals. This guide also identifies acceptable radiological analysis assumptions for use in conjunction with the accepted AST. As discussed in Management Directive 6.6, "Regulatory Guides," the NRC staff reviews RGs approximately every five years to ensure that the RGs continue to provide useful guidance. Documentation of the Office of Nuclear Reactor Regulation staff review is enclosed.

Based on the results of the periodic review, the NRC staff concludes that a revision to RG 1.183 is warranted. Please see the enclosed periodic review for details.

Enclosure:
Regulatory Guide Periodic Review

CONTACT: W. Mark Blumberg, NRR/DRA
301-415-1083

SUBJECT: RESULTS OF PERIODIC REVIEW OF REGULATORY GUIDE 1.183
DATED: June 25, 2018

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OFFICE	NRR/DRA/ARCB	NRR/DRA/ARCB	NRR/DRA
NAME	MBlumberg	KHsueh	MFranovich
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REGULATORY GUIDE PERIODIC REVIEW

Regulatory Guide Number: 1.183, Revision 0

Title: Alternative Radiological Source Terms for Evaluating Design-Basis Accidents at Nuclear Power Reactors

Office/division/branch: NRR/DRA/ARCB
Technical Lead: W. Mark Blumberg

Staff Action Decided: Revise

1. What are the known technical or regulatory issues with the current version of the Regulatory Guide?

Regulatory Guide (RG) 1.183, Revision 0, "Alternative Radiological Source Terms for Evaluating Design-Basis Accidents at Nuclear Power Reactors," published July 2000 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML003716792), provides guidance to licensees of light water power reactors on acceptable applications of alternative source terms (ASTs); the scope, nature, and documentation of associated analyses and evaluations; consideration of impacts on analyzed risk; and content of submittals. This guide establishes an acceptable AST and identifies the significant attributes of other ASTs that may be found acceptable by the U.S. Nuclear Regulatory Commission staff. This guide also identifies acceptable radiological analysis assumptions for use in conjunction with the accepted AST. Licensing applications for new light water reactor designs under Part 52 have also used the guidance in RG 1.183, as applicable to the design, to prepare the design-basis accident (DBA) radiological consequences analyses in the design certification application final safety analysis report (FSAR). In addition, Part 52 combined license application FSAR DBA radiological consequence analyses have referenced design certification analyses which used RG 1.183 as guidance.

The known technical and regulatory issues are addressed in a draft revision to RG 1.183 issued for public comment (Draft Guide (DG)-1199, "Alternative Radiological Source Terms for Evaluating Design-Basis Accidents at Nuclear Power Reactors," published October 2009 (ADAMS Accession No. ML090960464)). The main technical issues are addressed in Regulatory Position (RP) 3.2, "Release Fractions," RP 5.3, "Meteorology Assumptions," and RP A-5, "Main Steam Isolation Value Leakage in Boiling Water Reactors." In addition the following editorial issues have been identified since the issuance of DG-1199. When Draft Guide-1199 is finalized the revision should include deleting the references to several RGs that have been withdrawn.

ENCLOSURE

- 2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?**

For operating reactors, the staff anticipates approximately 20-25 licensing activities per year (e.g., extended power uprates, AST amendments, etc.) involve the use of RG 1.183, Revision 0. For new reactors, the staff anticipates to be reviewing 1-2 applications in the next several years, which may involve the use of RG 1.183. Therefore, the guidance is being updated for the known issues with RG 1.183. Please see the response to Question 5 for the conceptual plan and the timeframe to address these known issues.

- 3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contractor resources?**

The FTE to finalize DG-1199 is expected to be 0.30 FTE. This estimate is based upon the assumption that revisions to DG-1199 due to existing public comments do not require the guide to be re-issued for further public review and additional comments.

- 4. Based on the answers to the questions above, what is the staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?**

Revise.

- 5. Provide a conceptual plan and timeframe to address the issues identified during the review.**

The resolution of public comments and issuance of the revision to RG 1.183 is expected prior to second quarter of calendar year 2019.

NOTE: This review was conducted in June 2018 and reflects the staff's plans as of that date. These plans are tentative and subject to change.