Regulatory Guide Periodic Review

Regulatory Guide Number:	**1.112, Revision 1**
Title:	**Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Light-Water-Cooled Nuclear Power Reactors**
Office/division/branch:	**NRO/DSEA/RPAC**
Technical Lead:	**Zachary Gran**
Staff Action Decided:	**Revise**

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

This RG, issued in 2007, provides guidance for calculating annual average expected releases of radioactive material in gaseous and liquid effluents from light-water-cooled nuclear power reactors. It endorses the American National Standards Institute (ANSI)/American Nuclear Society (ANSI) ANSI/ANS-18.1-1999, "Radioactive Source Term for Normal Operation for Light Water Reactors." In 2016, the ANSI/ANS-18.1 standard was updated with new source terms for large light water reactors (LWRs). The NRC has not yet endorsed the ANSI/ANS-18.1-2016 standard and could possibly do so in a proposed RG update following the staff's review.

In addition to the updated source terms provided in ANSI/ANS-18.1-2016, the staff expects to gain new reactor licensing lessons learned on a proposed alternate method for source term development from the small modular reactor (SMR) Design Certification Application (DCA) currently under review. This proposed alternative method is used in lieu of the NRC endorsed GALE86 code and the ANSI/ANS-18.1-1999 standard for licensing large LWRs in the United States (U.S.). Additional guidance needs to be developed by the staff which would provide the acceptance and evaluation criteria for when an alternate method is proposed by an applicant or licensee. This guidance would also be applicable to advanced reactor designs.

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

The primary use of this RG is for reactor licensing. There is little or no impact on internal and external stakeholders if the NRC endorsed GALE86 code and the ANSI/ANS-18.1-1999 standard is used in licensing large LWR designs in the U.S. However, the staff is not expecting any large LWR applications in the near future. There are some non-LWR and advanced reactor design applications anticipated. Therefore, when an applicant or licensee uses calculation models, design parameters, and assumptions that differ from GALE86 and the ANSI/ANS-18.1-1999 standard, the alternative method requires additional review time and requests for additional information.

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?

An estimate of the effort needed to review relevant technical and regulatory issues of this RG and to consider new reactor licensing lessons learned from the SMR DCA currently under staff review is 1 FTE. This work can be performed by the staff without the need for contract support.

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 staff plans to develop a draft revision of this RG by September 2019 and issue it for public comment by the end of FY 2020.

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