

Regulatory Guide Periodic Review

Regulatory Guide Number: 1.143, Revision 2

Office/Division/Branch: NRO/DSEA/RPAC

Title: **Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants**

Technical Lead: Edward E. Stutzcage

Staff Action Decided: Revise

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

Regulatory Guide (RG) 1.143 Revision 2 was issued in November 2001 as part of an effort to update guidance on radioactive waste treatment and processing structures, systems, and components (SSCs). The revision addressed the design, construction, testing, and quality assurance guidance for these SSCs. Revision 2 allows flexibility in the design requirements for these SSCs based on the potential radiological hazards associated with the SSCs (i.e. SSCs containing less of a radiological hazard can be designed less robust than SSCs with a larger radiological hazard). The threshold for buildings is based on an unmitigated exposure for site personnel inside the protected area (worker dose) of 5 rem and an unmitigated release at the protected area boundary (public dose) of 500 mrem. However, the 500 mrem value is based the public dose limit from Title 10 of the *Code of Federal Regulations* (CFR) 20 which was changed to 100 mrem in the 1990s and this change needs to be addressed in the RG.

There are other issues associated with Revision 2 of RG 1.143, the two more challenging issues are that (1) The RG does not provide guidance on how to perform the unmitigated dose calculations or indicate what assumptions should be made in performing the calculation, (2) The current version of the RG is vague regarding if waste in storage should be considered in the classification of SSCs. For example, it is unclear if waste in storage areas, including waste packaged for shipment in accordance with 10 CFR 71, "Packaging and Transport of Radioactive Material," is within the scope of the RG and should be included within the SSC classification calculations. These issues have resulted in challenges associated with the use of the RG for staff and applicants, including the need for numerous Requests for Additional Information (RAIs) for some applicants.

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

There is a potential for several small modular reactor design certification applications and combined operating license applications to be submitted in the near future (next three to five years) that would require the guidance found in RG 1.143. Applications currently under NRC review would not be required to conform to a new revision of the RG however, there is a potential they could also benefit from an updated RG, if they would choose to follow it.

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

Revision of the RG will take approximately 0.2 full-time equivalent of NRC staff time. No contract dollars are needed.

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. If a Regulatory Guide should be revised, provide a conceptual plan and timeframe to accomplish this.

Following identification of technical issues in quarter (Qtr) 1 FY 2016 commence revision with planned completion of internal draft in Qtr 2 fiscal year (FY) 2016. Circulate for internal NRC review with completion estimated by Qtr 3 FY 2016. Following internal processing in NRC the staff expects to release a draft RG for public comment in Qtr 4 FY 2016.

References:

NOTE: This review was conducted in June 2015 and reflects the staff's plans as of that date. These plans are tentative and subject to change.