

Regulatory Guide Number: 4.21, Revision 0

Title: Minimization of Contamination and Radioactive Waste Generation: Life-Cycle Planning

Office/division/branch: NRR/DRA/ARCB
Technical Lead: Edward Stutzcage

Staff Action Decided: Reviewed with issues identified for future consideration

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

RG 4.21 describes methods acceptable to the NRC for use by applicants in the implementation of 10 CFR 20.1406, "Minimization of contamination," which is a subsection of the license termination rule (10 CFR Part 20, Subpart E, "Radiological Criteria for License Termination.) RG 4.21, Rev. 0 remains relevant however it should be updated to reflect changes in the format of RGs since its issuance in June 2008. It should also consider the following updated guidance for meeting the requirements of 10 CFR 20.1406.

Shortly after the release of RG 4.21, the Nuclear Energy Institute (NEI) prepared and submitted to NRC for review a template to be used for a Combined Operating License (COL) submitted under 10 CFR Part 52, Subpart C. After reviewing the NEI template, NRC issued "Final Safety Evaluation for Nuclear Energy Institute Topical Report NEI 08-08, Generic Final Safety Analysis Report Template Guidance for Life-Cycle Minimization of Contamination, Revision 3," on October 19, 2009. NRC's Safety Analysis Report concluded that a site-specific operational life-cycle minimization of contamination program based on NEI 08-08 constitutes an acceptable program for meeting the requirements of 10 CFR Section 20.1406. It recommended issuance of the NEI template and NEI released it immediately as NEI 08-08A (accepted), Revision 0. NEI 08-08A references the relevant portions of the NEI 07-07, Industry Ground Water Protection Initiative – Final Guidance Document (August 2007), for the groundwater protection program. Information related to NEI 08-08A and related documents could be included in a revision to RG 4.21.

In addition, in October 2009 NRC issued DC/COL-ISG-06, "Final Interim Staff Guidance Evaluation and Acceptance Criteria for 10 CFR 20.1406 to Support Design Certification and Combined License Applications." The ISG provided clarification on the evaluation and acceptance criteria that will be used by NRC staff in reaching a reasonable assurance finding that a design certification (DC) or COL applicant has complied with the requirements of 10 CFR 20.1406. The guidance from DC/COL-ISG-06 was incorporated into NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition;" Section 12.3-12.4 Revision 5 in September 2013 and the ISG was subsequently closed.

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?

In the next four years, NRC expects to receive approximately five to ten applications for small modular reactors for which RG 4.21 will apply.

The Standard Review Plan (NUREG-0800), Chapters 11 and 12, has been updated to reference NEI 08-08A for the programmatic aspects of the 10 CFR 20.1406, and DC/COL-ISG-06 has been incorporated into the current revision of the Standard Review Plan, Section 12.3-12.4. In addition, the staff plans to reference RG 4.21 and NEI 08-08A in the Advanced Reactor Content of Applications, as guidance that can be used in meeting the requirements in 10 CFR 20.1406. Therefore, while an update to RG 4.21 could include reference to NEI 08-08A and other related documents, the relevant guidance is referenced elsewhere. Other aspects of RG 4.21 remain applicable and do not require an update for expected future applications.

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 is 0.2 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)?

Reviewed with issues identified for future consideration.

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

The staff will continue to evaluate the need to revise the RG based on upcoming licensing actions. Meanwhile the guidance remains relevant in the support of license applications.

REFERENCES

1. NEI 08-08A, Revision 0, "Generic FSAR Template Guidance for Life-Cycle Minimization of Contamination," (ML093220530)
2. NRC Safety Evaluation Report "Final Safety Evaluation for Nuclear Energy Institute Topical Report NEI 08-08, Generic Final Safety Analysis Report Template Guidance for Life-Cycle Minimization of Contamination, Revision 3" (ML092720253)
3. DC/COL-ISG-06, "Final Interim Staff Guidance Evaluation and Acceptance Criteria for 10 CFR 20.1406 to Support Design Certification and Combined License Applications" (ML092470100)

NOTE: This review was conducted in June 2023 and reflects the staff's plans as of that date. These plans are tentative and subject to change.