Regulatory Guide Periodic Review

Office: **NRO/DSEA – Primary NRO User**

Regulatory Guide Number: **Regulatory Guide (RG) 1.110**

Title: **Cost-Benefit Analysis for Radwaste Systems for Light-Water-Cooled Nuclear Power Reactors, Draft For Comment, March 1976**

Recommended Staff Action: **Revise RG 1.110 and coordinate its revision with that of Part 50, Appendix I and Part 20, in response to SRM-SECY-12-0064.**

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

While outdated, the current draft version of RG 1.110 is successfully being used by NRO and NRR staff in their safety reviews and applicants in preparing license applications under Part 50, "Domestic Licensing of Production and Utilization Facilities," and Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." The revision would address all calculation methodologies, supporting assumptions and parameters listed in Appendices A, B and C of RG 1.110. The evaluation would update and reorder the listing of treatment technologies in selecting system augmentations in order of diminishing cost-benefit returns. Other aspects of the revision of RG 1.110 would include updating the listings of associated direct, maintenance, and operating costs of treatment systems; and assess the need to revise labor cost correction factors, indirect cost factors, and capital recovery factors. The evaluation should also consider adding a provision for the use of skid- mounted processing systems and define an appropriate life-cycle for such systems in calculating the capital recovery factor. For permanently installed systems, the RG assumes a 30-year life-cycle for typical effluent treatment systems.

While the cost-benefit-ratio has not been revised in Part 50, Appendix I since 1975 (still set $1000 per person-rem), it has been updated in other policy statements. The revised cost-benefit ratios are $2000 per total body man-rem and $2000 per thyroid man-rem (NUREG-1530, "Reassessment of NRC's Dollar Per Person-Rem conversion Factor Policy," and NUREG/CR-6212, "Value of Public health and Safety Actions and Radiation Dose Avoided"), and were kept at those levels in subsequent updates of NUREG/BR-0058, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission." An update of the cost-benefit ratio has been initiated by NRR and is expected to be finalized in FY2014. The revision should incorporate the revised cost-benefit ratio in determining when radwaste system augmentations are necessary under Section II.D of Part 50, Appendix I ALARA provisions.

Finally, the update should consider whether there is a need to develop a computer code or spreadsheet template to perform cost-benefit analyses.

(2) What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of licensing and inspection activities?

While RG 1.110 is outdated, the current draft version is successfully being used by NRO and NRR staff in their safety reviews and applicants in preparing license applications under Part 50 and Part 52. The ACRS, however, has questioned the staff on the draft status of RG 1.110 and inquired about a schedule for its revision.

(3) What is an estimate of the level of effort needed to address identified issues in terms of FTE and contract dollars?

It is estimated that about 500 staff-hours will be required to support the revision of RG 1.110. In addition, contractor support will be needed to revise the appendices listings of radioactive effluent treatment systems for Pressurized Water Reactor (PWR) and Boiler Water Reactor (BWR) designs and associated direct, maintenance, operating costs of treatment systems; and assess the need to revise labor cost correction factors, indirect cost factors, and capital recovery factors. The evaluation should also consider updating the assumed 30-year life-cycle for typical effluent treatment systems since many treatment systems now rely on skid-mounted systems, which present a different economic cost model. Finally, the update should include the development a computer code or a spreadsheet to perform cost-benefit analyses. Costs for contractor support are estimated to be about $300k, but this is a rough estimate that lacks specific details at this time.

(4) Based on the answers to the questions above, what is the recommended staff action for this RG (Revise, Acceptable As-Is, Administrative Change, or Withdraw)?

The staff recommends that RG 1.110 be revised given that it is still a draft version (issued initially in March 1976) and that its revision be integrated with the rulemaking directed by the Commission in the SRM-SECY-0064, “Recommendation for Policy and Technical direction to Revise Radiation Protection Regulations and Guidance.” The initial planning is currently being developed by NRO and FSME in coordinating the synchronized revisions of Part 20 and Part 50, Appendix I, which will be aligned with ICRP 103, “The 2007 Recommendations of the International Committee on Radiological Protection.” The revisions are planned under two parallel rulemakings, which would become effective on a common date. NRO has the lead in the rulemaking for the revision of Part 50, Appendix I. This effort would also incorporate the update of the cost-benefit ratio for person-rem once finalized by NRR.

(5) If a RG should be revised, provide a conceptual plan and timeframe to accomplish this (i.e., technical basis development by a contractor and anticipated year(s) of funding; endorsement of consensus standard or industry guidance document; staff review of licensing and operating experience in the technical area; need for technical coordination with other offices; related rulemaking, etc.).

The revision of RG 1.110 should be integrated with the rulemaking efforts being planned under SRM-SECY-12-0064. At this time, plans are being developed by NRO and FSME in coordinating the synchronized revisions of Part 20 and Part 50, Appendix I. The revisions are planned under two parallel rulemakings, which would become effective on a common date that is yet to be determined. The rulemaking effort for the Part 50, Appendix I revision will address the revision of RG 1.110, including the development of the technical basis, public meetings and industry workshops, and revision of NRC guidance documents and computer codes. This effort should also incorporate the update of the cost-benefit ratio once finalized by NRR.

Note: This review is intended to inform stakeholders of agency plans as of July 2013 when the review was made. Any plans articulated are tentative and subject to change.