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Overview of the Update of the Dosimetry Basis of 10 CFR Part 50, Appendix I Design Objectives and Seeking Stakeholders and Public Involvement

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Overview

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Basis for Update

- Outdated Appendix I numerical guides for design objectives
  - dose criteria based on ICRP 2 dosimetry concepts
  - criteria inconsistent with current Part 20 (ICRP 26 & 30)
  - criteria inconsistent with ICRP 60 and 103 approach
- Difficult to defend a dual system of radiation protection which is inefficient for licensees and NRC staff
- Inconsistent with global approach in licensing new plants which is a potential challenge during design certification & licensing reviews
- SECY-08-0197 and SECY-12-0064 provide details
- SRM-SECY-12-0064 provides directions to staff on next steps
- For Part 50, Appendix I, the SRM places no constraints on staff

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Overview of Update (1 of 2)

- Focus of Update to Part 50, Appendix I & Guidance

  - Align App. I criteria with Part 20 under ICRP 103 or EPA FGR
  - Express dose criteria as TED or ED in Sections II.A, II.B, and II.C
  - Update cost-benefit criteria in Section II.D – ongoing effort by NRR
  - Update definition of dose receptors in Sections II and IV
  - Revise Section I in differentiating applicability between LWR and other non-LWR designs
  - Review and update NRC guidance and regulatory guides
  - Define implementation period of revised regulations
  - Initiate as parallel rulemakings, Part 20 and Part 50, Appendix I
  - Implement revised regulations on a common effective date

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Overview of Update (2 of 2)

- Other Associated Revisions
  - Redefine compliance requirements for "licensed operation" for sites with multiple licensees under Part 20.1301(a)(1)
  - Provide further elaboration on compliance with Part 20.1301(e) [40 CFR Part 190] in Part 20 or guidance
  - Update NRC licensing guidance & documents:
    > NUREG-0800 (SRP Chpt. 11), RG 1.206, 1.109, et al.,
    > combine NUREG-1301, -1302, -0543, and -0133 as one
    > update computer codes and supporting documents
    > combine LADTAP II and GASPAR II as one code

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Overview of Issues

- Should the NRC update Part 50, App. I as considered?
- Should the focus be only on radiation dosimetry and dose nomenclatures and associated DCFs, with no other changes made to the balance of Part 50, App. I and guidance?
- What are the benefits and impacts to the industry?
- What impacts should the NRC consider in moving forward?
- For the stated impacts, are there estimates of costs and cost-offsets for BWR and PWR plants?
- Is there a preferred industry option for the implementation of revised regulations and guidance?
- What should be the duration of the implementation period?

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Issues for Discussion (1 of 4)

- Linkage of Part 50, App. I and Part 20
  - Since Part 50, App. I is not a safety standard, leave it as is
  - Align Part 50, App. I with Part 20 for regulatory consistency
- Questions
  - What is the industry's position on linking the alignment of Part 50, App. I dosimetry basis with the revision of Part 20?
  - What are the benefits and impacts to the industry?
  - What are the impacts on operational programs in revising procedures, computer codes, and personnel training?
  - What are the associated initial and long-term costs?
  - What are potential long-term benefits and cost savings?
  - Could the industry provide initial cost estimates for a typical BWR and PWR, and aggregate cost for the operating fleet?

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Issues for Discussion (2 of 4)

- Mandatory vs. Voluntary Implementation
  - Mandatory vs. voluntary implementation was once considered
  - Mandatory implementation is now considered as the only option
  - As with any rulemaking, a backfit analysis will be conducted
- Questions
  - What is the industry's position on implementation?
  - What should be the duration of the implementation period?
  - Given that Part 20 was implemented over three years, is that adequate to implement a revision of Part 50, App. I?
  - Is there an advantage in doing it faster, e.g., 2 years?

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Issues for Discussion (3 of 4)

- Technical Approach in Revising Part 50, App. I
  - SECY-08-0197 identifies three levels of complexity
  - Described as: limited, expanded, and full scope
  - The SECY paper recommends, the expanded scope
  - Expended scope would revise the methodology and DCFs, and first tier parameters, such as bio-accumulation factors, human food and animal feed consumption rates, agricultural productivity rates, shoreline width factors, etc.
- Questions
  - What is the industry's position on the scope of the revision?
  - Are there operational impacts that the NRC should consider in defining an implementation period?
  - Are there specific technical issues that the NRC should consider in planning and scoping out the revision?

Issues for Discussion (4 of 4)

- Technical Scope Part 50, App. I Revision
  - The revision will address technical topics and conforming changes given alignment with ICRP 103 methodology
  - While conforming changes are expected to be simpler to resolve, the technical revision is expected to be more challenging.

Questions

- Should separate dose criteria remain for liquid and gaseous effluents?
- Should a common criterion (e.g., 5 mrem) be used for either type of effluent?
- Should gamma and beta air dose criteria be retained or converted to a specific dose receptor (e.g., individual in the nearest unrestricted area)?
- Should provisions or dose criteria be kept for releases and doses dominated by noble gases and radio-iodines?
- Would there be a need to report organ doses, e.g., skin and thyroid?
- Would industry provide information to update direct, maintenance, operating, and labor costs in RG 1.110 appendices?

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What Have We Heard So Far?

- Wide range of views on policy, regulatory, and technical considerations
- General support for an integrated alignment of Part 20 and Part 50, App. I with ICRP 103 recommendations
- Strong recommendations in including EPA in the dosimetry alignment process, given Part 20.1301(e)
- Some concerns expressed as to the justification for the proposed revision of Part 50, App. I
- Since Part 50.34a is not a safety standard, why align Part 50, App. I design objectives with Part 20?
- Concerns expressed on implementation time and costs to the industry

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Past Outreach Activities

- Fed. Reg. notice inviting input (Vol. 75, No. 186, p.59160)
- NRC public workshops held in Oct. and Nov. 2010
- Future meetings (NEI, HP Forum, HPS, RETS/REMP)
- FSME Newsletter (No. 09-1)
- Press release (No. 09-078)
- All State Letter (FSME 09-025)
- NRC website for press releases and links:
  http://www.nrc.gov/about-nrc/regulatory/rulemaking/potential-rulemaking/opt-revise/faqs.html
  http://www.nrc.gov/about-nrc/regulatory/rulemaking/potential-rulemaking/opt-revise.html

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Future Plans

- Continue public and industry interactions
- Interact with EPA on its plans to revise 40 CFR 190
- Monitor international efforts in implementing ICRP 103
- Monitor progress in development of ICRP 103 or FGR DCFs
- Finalize planning efforts for the rulemaking
- Conduct three public meetings and industry workshops
- Issue FRN early CY2014 regarding workshops
- Evaluate public and industry comments
- Develop technical basis for the Part 50, App. I update
- Coordinate efforts with parallel Part 20 rulemaking activities
- Expect final rule to be issued in 2020, at the earliest

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Update of Appendix I to Part 50

- Thanks for your attention
- Any questions?
- Contact:

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Acronyms

- ALARA – As Low As is Reasonably Achievable
- BWR – boiling water reactor
- CBA – cost-benefit analysis
- ED – effective dose
- DC – dose coefficient
- DCF – dose conversion factor
- FGR – Federal Guidance Report (issued by the EPA and used by all Federal agencies)
- GASPAR II – An NRC computer code to calculate doses from gaseous and particulate effluents
- ICRP – International Commission on Radiological Protection
- LADTAP II – An NRC computer code to calculate doses from liquid effluents
- LWR – light water reactor
- mrem – a unit of radiation exposure, see 10 CFR Part 20
- NEI – Nuclear Energy Institute (located in Washington, DC)
- PWR – pressurized water reactor
- RG – regulatory guide
- SRP – standard review plan
- SRM – staff requirement memorandum
- TED – total effective dose