10 CFR 50 Appendix I – Time for a Change?

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ABSTRACT

In 1975, the U.S. Nuclear Regulatory Commission (NRC) adopted the As Low as is Reasonably Achievable (ALARA) principle in regulating radioactive gaseous and liquid effluents from nuclear power plants. The requirements and numerical guidance are contained in 10 CFR Part 50 and its Appendix I. The dose criteria of Appendix I are based on recommendations from the International Commission on Radiological Protection, ICRP-2, which includes whole body and critical organ dose concepts. Prior to 1991, The Appendix I dose concepts were consistent with that used in 10 CFR Part 20. In 1991, Part 20 was revised to adopt the dosimetry concepts of ICRP-26 and ICRP-30; however, Appendix I was not changed.

Over the past decades there have been discussions with stakeholders about updating the basis of Appendix I design objectives and its supporting guidance for consistency with the dose methodology of 10 CFR Part 20. Additionally, in 2007 the ICRP published new recommendations for dosimetry concepts. Although the NRC regulations still provide adequate protection for the health and safety of the public, using different dose constructs in the different parts of the regulations introduces inefficiencies for licensees and the NRC. Because NRC's current regulatory basis is not aligned with the latest ICRP recommendations, it introduces complications when discussing dosimetry concepts with the international community. NRC staff evaluated these issues (e.g., see SECY-08-0197 and SECY-12-0064), and the Commission tasked NRC staff to develop a regulatory basis for a revision of 10 CFR 20 and Appendix I to Part 50 (SRM-SECY-12-0064) for greater alignment with the most recent dosimetry concepts (i.e., ICRP-103).

This presentation focuses on a number of different aspects of the regulatory framework that could be updated, including Appendix I, the implementing guidance, and supporting codes used for dose calculations. The author will discuss how the Appendix I design objectives, Regulatory Guides, NUREGs, Generic Communications, and associated computer software may be impacted if there is greater alignment with the dose constructs of ICRP-103. The presentation identifies other aspects of 10 CFR Part 50 requirements that are being considered for possible revision. No changes are contemplated to 10 CFR 50.34a and 50.36a regulations as these requirements do not invoke dose criteria. The presentation also offers an opportunity for the industry to provide comments and suggestions to the NRC staff developing the regulatory basis that will be sent to the Commission for consideration. Finally, the presentation provides an overview of NRC plans and the current schedule for revising the regulations.

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