

# International Conference on Management of Spent Fuel from Nuclear Power Reactors: An Integrated Approach to the Back End of the Fuel Cycle



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## The Increasing Importance of Storage Aging Management in Assuring the Sustainability of the Back End of the Fuel Cycle

On September 19, 2014 the United States Nuclear Regulatory Commission (NRC) published its final rule and supporting Generic Environmental Impact Statement (GEIS) on Continued Storage of Spent Nuclear Fuel. This action, motivated by a U.S. Court mandate following the termination of the Yucca Mountain Repository project, marked a significant shift in U.S. regulatory policy. Previously, since 1979, NRC had addressed the long-term environmental impacts of the growing inventory of spent fuel at reactor sites through a Waste Confidence rule that was largely predicated on assumptions about the availability of a repository for geologic disposal in some reasonable timeframe. However, in a world where the U.S. no longer had a repository program, and might not have one for the foreseeable future, the Court found that approach to be inadequate – remanding and vacating the Waste Confidence rule.

The shift from Waste Confidence to Continued Storage marks the beginning of a new paradigm in spent fuel management in the U.S. Under Waste Confidence, the schedule for the development of a geologic repository was the central focus toward assuring the sustainability of the back end of the fuel cycle. But Continued Storage contemplates the environmental impacts of indefinite storage either at reactor sites or centralized locations –shifting this focus to the aging management of spent fuel storage systems. While the U.S. will continue to pursue geologic disposal, it is now a given that final disposal decisions will be made by future generations. The responsibility now placed on the current generation is to provide long-term assurance that spent fuel in storage will remain safe until future disposal decisions can be made.

This paper will focus on what is being done in the U.S. to meet this responsibility. It will describe aging management programs being instituted at U.S. nuclear facilities to support the renewal of NRC storage licenses along with the research and development efforts being conducted to support these programs –highlighting industry’s response to specific postulated age related degradation mechanisms and efforts to develop enhanced inspection technologies. Finally, the paper will offer a forward-looking perspective on what additional technologies might be needed in the future to assess and mitigate age related degradation as well as to facilitate repackaging prior to ultimate disposal.

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