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Docket: NRC-2013-0004
Retrievability, Cladding Integrity and Safe Handling of Spent Fuel at an Independent Spent Fuel Storage Installation and During Transportation

Comment On: NRC-2013-0004-0001
Retrievability, Cladding Integrity and Safe Handling of Spent Fuel at an Independent Spent Fuel Storage Installation and During Transportation

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Submitter Information

15

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General Comment

See attached file(s)

Attachments

Comments on NRC Potential Rulemaking rev 1

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Response to NRC Request for Comments on Potential Rulemaking: Docket ID NRC-2013-0004

The NRC entry in Federal Register/Vol. 78/No. 12/Thursday, January 17, 2013/Proposed Rules pages 3853 and 3854 calls for comments and invites responses to a number of questions it poses. I offer the following responses.

Acceptance of Spent Fuel by a Future Disposal or Reprocessing Facility

The text in this section includes an assumption that "...it is possible that much (if not all) of the spent fuel currently being loaded and stored *in high-capacity dry-storage canister systems* will need to be repackaged prior to disposal" (text in italics added).

Comment: In the Administration's response to the Final Report of the Blue Ribbon Commission on America's Nuclear Future, the section on "Ongoing Activities" indicates that "In FY 2013, the Department *of Energy* is undertaking disposal-related research and development work ..." (text in italics added), including into "...whether direct disposal of existing storage containers used at utility sites can be accomplished in various geologic media..."

Response to Question 1: In line with the above, an enhanced regulatory framework should take account of the possibility that the licensee of a repository may be able to dispose directly of the high-capacity canisters being loaded by the nuclear utilities. However, it should not necessarily assume that all such canisters can be disposed of directly, even if it is determined that some can be disposed of directly.

Response to Question 2: The high-capacity canisters are of several types and use different materials of construction. Thus, it is possible that some will need to be repackaged while some can be accepted for direct disposal.

Response to Question 3: In December 2012, DOE released a report titled "Categorization of Used Nuclear Fuel Inventory in Support of a Comprehensive National Nuclear Fuel Cycle Strategy" (ORNL/TM-2012/308). One of the findings of the report is that approximately "68,450 MTHM (both DOE-owned and commercial UNF) or ~98% of the total current inventory by mass, can proceed to permanent disposal without the need to ensure retrievability for reuse or research purposes." The basis for this finding is that any realistic future reprocessing option will most likely use spent nuclear fuel that will have been relatively recently discharged at that time – after, say, five years cooling time – and the report does not foresee commercial reprocessing starting "...sooner than the 2030 time frame". The corollary to that is that a canister-based retrievability policy for the spent fuel currently loaded in high-capacity storage containers, and the fuel that will be loaded in such containers before approximately 2025, would have no effect on a future reprocessing plant as that fuel would not be used as feedstock for reprocessing.

Response to Question 4: One other factor that should be considered is the large volume of low-level radioactive waste (LLW) that would be generated by repackaging. The design of the canisters and the materials of construction suggest that volume reduction would be difficult and may, of itself, generate significant additional quantities of LLW. Also, in addition to the fuel repackaging operations, the

handling, packaging, transportation and disposal of the LLW may result in additional dose to operators and incur significant additional cost.