

UNITED STATES NUCLEAR  
INFRASTRUCTURE COUNCIL  
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1/17/2013  
78 FR 3853

March 18, 2013

Ms. Cindy Bladey, Chief  
Rules, Announcements, and Directives Branch (RADB)  
Office of Administration  
Mail Stop: TWB-05-B01M  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

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**Subject:** Response to NRC Request for Comments for Potential Rulemaking, *Retrievability, Cladding Integrity and Safe Handling of Spent Fuel at an Independent Spent Fuel Storage Installation and During Transportation* (78 Fed. Reg. 12, Jan. 17, 2013, at 3853).

Dear Ms. Bladey:

The United States Nuclear Infrastructure Council -- the leading U.S. think tank advocate for new nuclear energy representing fifty companies from every segment of the nuclear fuel cycle -- appreciates the opportunity to comment on the above subject request on behalf of the Transportation Subcommittee of the Back-End Fuel Cycle Working Group.<sup>1</sup> Please note that while these views represent the consensus of the Council, they do not necessarily reflect the views of specific members of the Council.

Before responding to the specific questions posed in your Request for Comment, we make some general observations that may be useful in considering the broader policy context within which these important issues are addressed.

As you know, nuclear energy provides safe, clean, economical and reliable electricity—approximately 20 percent of the Nation’s needs. In addition to the vital importance of the existing U.S. nuclear energy fleet and the jobs, competitiveness and clean energy they provide, additional reactors are currently under construction and more will be needed to meet growing demand. It is vitally important that the regulatory framework for storage and transportation provide clarity and consistency while assuring safety for workers and the public. We must also draw from the extensive body of knowledge that has been developed and validated since the first spent fuel storage installations were placed into service decades ago.

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<sup>1</sup>*Request for Comment on Retrievability, Cladding Integrity and Safe Handling of Spent Fuel at an Independent Spent Fuel Storage Installation and During Transportation*, U.S. NRC, ADAMS Accession No. ML12293A434, January 17, 2013

Spent fuel is handled and stored safely at dozens of locations in the United States and throughout the world. While the technical basis and mechanics of handling are much the same as envisioned when these installations were first licensed, there are important differences that need to be taken into account when contemplating changes to the regulatory regime. The regulations developed for dry storage, for instance, contemplated that away-from-reactor monitored retrievable storage, and eventual disposal capacity in a geologic repository, would become available relatively quickly, as provided by the Nuclear Waste Policy Act. Relatively small quantities of spent fuel would be stored onsite before acceptance by the Federal government beginning in 1998, as provided by acceptance contracts with utilities.

This acceptance, of course, has not yet commenced. While the government's continuing failure to begin meeting its obligations is regrettable, it has afforded fuel managers and engineers an opportunity to better understand how fuels of various types and configurations perform over extended periods of storage. We now have a substantial body of knowledge about safely handling not only undamaged assemblies of varying burnups, but also degraded assemblies and materials through the use of canning and other approaches.

We have also learned more about the nature of the risks posed. Experience and ongoing analysis is showing us that dry storage systems perform quite well over time, and that the greatest risks may be posed by handling such fuel systems when it is not necessary for reasons of safety to do so. Lifting, moving and potentially opening casks at every site are activities that present their own risks and costs. Increased occupational exposure during routine handling, and industrial risks resulting from handling heavy loads, are just two examples.

With these general points in mind, we offer the following comments on your specific questions in Section VI of your Request for Comment.

#### **Questions on Potential Repackaging Needs:**

Q1: Should an enhanced regulatory framework assume the licensee receiving spent fuel for disposal will be able to site and design a repository for direct disposal of these high capacity canisters without repackaging?

A1: NRC's storage and transportation regulatory framework should not be based on speculation about which canister designs and capacities may be able to be direct-disposed at some future time. If fuel can be disposed without repackaging, it will be. If not, it will be repackaged.

Q2: Should an enhanced regulatory framework assume the repository licensee will be able to handle and repackage potentially degraded/damaged fuel on large production scales?

A2: Yes. When repository operations commence, the licensee will need to have a sophisticated capability to handle and potentially repackage fuel to address a variety of conditions, some of which may not be known at this time. This is a different issue entirely from how common such conditions will be. It is entirely possible the majority of fuel will not require sophisticated handling at all, much less at the "large production scales" the question contemplates.

Q3: What effects, if any, would a canister-based retrievability policy have on a future reprocessing facility?

A3: We believe the potential handling and storage benefits of canister-based retrievability are clear and proximate. Based on what we know at this time, these benefits outweigh possible challenges which some canister designs might present for a future reprocessing facility, and which could be managed in any number of ways.

Q4. What other factors, such as cost, dose or time, should be considered?

A4: Reducing worker dose, consistent with As Low As Reasonably Achievable (ALARA) principles, should receive priority consideration as it is a primary driver of overall risk.

### **Questions on Spent Fuel Retrievability During Storage**

Q1: Provide an assessment of (1) whether ready-retrieval of individual spent fuel assemblies during storage should be maintained, or (2) whether retrievability should be canister-based.

A1: We believe the important consideration here is that, when the fuel needs to be moved for subsequent treatment or disposal away from a storage site, it can be. A growing base of knowledge suggests canister-based approaches can readily provide this assurance, with the advantages of reduced dose and risk.

### **Questions on Cladding Integrity**

Q1: Should the spent fuel cladding continue to be protected from degradation that leads to gross rupture, or otherwise confine the spent fuel, during storage such that it will not pose operational safety problems with respect to its removal from storage? In particular, provide any explanatory information discussing the additional cost, dose, and effort required to repackage potentially damaged fuel over canned spent fuel, if the prohibition against gross deformation to the cladding were removed and the spent fuel required repackaging (whether by DOE or storage licensees).

A1: NRC's requirements should be performance-based to reduce risk. If the fuel can be "otherwise confined" and still be handled safely, it should be.

Q2: Should each high burnup spent fuel assembly be canned to ensure individual fuel assembly retrievability? Additionally, should spent fuel assemblies classified as damaged prior to loading continue to be individually canned prior to placement in a storage cask? In particular, NRC is interested in gathering input on the additional cost, dose, and effort required to place individual fuel assemblies in a damaged fuel can during storage cask loading. Comparison of the upfront cost, dose, and effort to can all high burnup fuel assemblies against the cost, dose, and effort to repackage potentially damaged fuel at a repository or prior to transport to a repository, may factor into NRC's retrievability policy decisionmaking process.

A2: The Electric Power Research Institute (EPRI) is undertaking a study to examine the performance of high-burnup fuel in storage and transportation. We believe the results of that analysis should inform the issue of whether undamaged, high burnup assemblies should be canned. Damaged assemblies should continue to be managed as they are currently.

### **Questions on Transportation Retrievability**

Q1: The NRC would like external stakeholders to comment on (a) whether retrievability should be extended to transportation packages after normal conditions of transportation (similar to the storage requirements), or (b) is it acceptable for high burnup spent fuel to degrade such that damaged fuel may have to be handled when the package is opened? Extending retrievability to transportation may be important if the U.S. were to move to consolidated interim storage, and if the NRC were to maintain its current definition of assembly-based retrievability during storage.

A1: We respectfully take issue with the seeming premise of the question--that high burnup spent fuel will degrade such that fuel may become damaged following normal transport.

Q2: If it is acceptable for the fuel to degrade, should the package application for a certificate of compliance provide a description of the design and operations of any facilities and methods necessary to handle the damaged fuel (at the facility that will open the package)?

A2: Again, we take issue with the degradation premise of the question. The certificate of compliance for a transportation package is (and should be) limited to describing itself and its contents and how it should be handled. The "design and operations of any facilities and methods necessary to handle the damaged fuel" should be governed by the license conditions of those facilities.

Again, we appreciate the opportunity to comment.

Sincerely,

/s/

David R. Bennett, Co-Chair  
Transportation Subcommittee  
Back-End Fuel Cycle Working Group  
U.S. Nuclear Infrastructure Council and  
Executive Vice President,  
Tri-State Motor Transit Company