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November 8, 2019

Ms. Andrea Kock, Director  
Division of Fuel Management  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**Subject: Industry White Paper – Defining Spent Fuel Performance Margins**  
**Project Number: 689**

Dear Ms. Kock:

The Nuclear Energy Institute (NEI)<sup>1</sup>, on behalf of its members, submits for your consideration a White Paper entitled *Defining Spent Fuel Performance Margins*. The purpose of this White Paper is to communicate what has been learned about dry storage safety margin through the deployment of more than 3,000 storage systems over the past 33 years in order to improve the efficiency of the dry storage licensing process, consistent with NRC's principles of good regulation. This paper constitutes industry's vision for implementing the "Key Principles for Nuclear Material Safety and Safeguards Reviews" articulated by Marc Dapas in his January 15, 2019 memorandum to NRC staff<sup>2</sup>. It has been informed by substantial dialogue between industry and NRC staff over the past year, including during a public meeting specifically focused on this topic that was held on April 23, 2019.

This paper examines performance margin in 5 areas: 1) Source Terms, 2) Thermal Parameters, 3) Radiological Parameters, 4) Fuel Qualification, and 5) Criticality. Based on what is now understood about performance margin in each of these areas, the paper develops 16 specific recommendations. These recommendations fall into the following three categories:

1. Actions that industry can take within the confines of existing regulations and guidance,
2. Actions that NRC can take by tailoring their regulatory guidance and their review and inspection practices to recognize the existence of performance margin, and

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<sup>1</sup> The Nuclear Energy Institute (NEI) is responsible for establishing unified policy on behalf of its members relating to matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect and engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations involved in the nuclear energy industry.

<sup>2</sup> Key Principles for Nuclear Material Safety and Safeguards Reviews, Marc Dapas, January 15, 2019 ML19015A290

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3. Actions that will need industry and NRC to engage in a dialogue to develop improved regulatory tools and guidance.

Because none of these recommendations will require rulemaking and many of them can be implemented without the development of additional formal guidance, the paper concludes that meaningful improvements in regulatory efficiency can be achieved in a relatively short period of time and with minimal resources (with respect to the Category 1 and 2 recommendations). These improvements can be further extended through dialogue proposed in the Category 3 Recommendations. Some of the recommendations will translate into Certificate of Compliance Amendments or Topical Reports that industry would submit to NRC for review and approval. These improvements will be vital to assuring the continued long-term success of dry spent fuel storage.

We look forward to discussing this White Paper and its recommendations with NRC staff in the public meeting scheduled for November 18. We understand that the main purpose of the public meeting is to discuss an industry Petition for Rulemaking (PRM 72-7) that was filed in 2012. We are hopeful that the discussion at this meeting will lead to consensus that most of the objectives of PRM 72-7 can be better accomplished through the recommendations of the enclosed White Paper, hence obviating the need to devote resources to a time-consuming rulemaking. We think the conduct of a series of public workshops between industry and NRC would represent a productive way to advance these recommendations.

We trust that NRC will find the enclosed White Paper to be useful. We request a written response from NRC summarizing the discussion on November 18, providing any initial feedback on the White Paper, and outlining NRC's intentions regarding future workshops addressing our recommendations. An initial response would be appreciated by December 20, 2019. Please contact me or Mark Richter of my staff ([mar@nei.org](mailto:mar@nei.org)) with any comments or questions on the content of this letter.

Sincerely,



Rod McCullum

Enclosure: Industry White Paper – *Defining Spent Fuel Performance Margins*

c: Mr. John Lubinski, NRC/NMSS  
Mr. Christopher Regan, NRC/NMSS/DFM  
Mr. James Rubenstone, NRC/NMSS/DFM