

**KRISTOPHER W. CUMMINGS**

*Sr. Project Manager, Used Fuel Programs*

1201 F Street, NW, Suite 1100  
Washington, DC 20004  
P: 202.739.8082  
kwc@nei.org  
nei.org



April 18, 2014

Mr. Timothy J. McGinty  
Director  
Division of Safety Systems  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**Subject:** Submittal of NEI 12-16, *Guidance for Performing Criticality Analyses of Fuel Storage at Light-Water Reactor Power Plants*, Revision 1, dated April 2014

**Project Number: 689**

Dear Mr. McGinty:

On behalf of the nuclear energy industry, the Nuclear Energy Institute (NEI)<sup>1</sup> submits the attached NEI 12-16, *Guidance for Performing Criticality Analyses of Fuel Storage at Light-Water Reactor Power Plants*, Revision 1 dated April 2014 for NRC review and endorsement.<sup>2</sup>

NEI 12-16, Revision 1, provides guidance for performing criticality analyses at light water reactor power plants in accordance with 10 CFR 50.68 and 10 CFR Part 50, Appendix A, GDC 62. As a means to achieve regulatory efficiency and effectiveness, we recommend that the NRC review NEI 12-16 for endorsement through a regulatory guide. This proposal would fulfill the need for more durable guidance identified in the NRC/NRR Action Plan, *On Site Spent Fuel Criticality Analyses*, as updated December 16, 2013 (ML13350A480). We appreciate the opportunity to extensively discuss this revision and receive feedback from the NRC at the series of public meetings conducted between September 2013 and February 2014. NEI 12-16, Revision 1, has been updated to address the feedback and actions captured during these meetings.

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<sup>1</sup> NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

<sup>2</sup> NEI transmitted Revision 0 of NEI 12-16 on March 22, 2013 (ML13084A047) requesting endorsement and an exemption from fees. The fee waiver request was granted on September 27, 2013 (ML13261A080).

Mr. Timothy J. McGinty

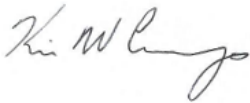
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NEI 12-16 builds upon existing guidance for spent fuel pool criticality analyses from several sources, including NRC's DSS-ISG-2012-01 and 1998 Kopp Memorandum, to add further detail and knowledge gained from more recent work. For example, the guidance incorporates a recently developed methodology on determination of the depletion uncertainty published by the Electric Power Research Institute (EPRI). Additionally, EPRI has conducted sensitivity calculations to determine the importance of various parameters in the criticality analysis.

If you have any questions or require additional information, please contact me.

Sincerely,



Kristopher W. Cummings

Attachment

c: Mr. Eric J. Leeds, NRR, NRC  
Ms. Jennifer L. Uhle, NRR, NRC  
Mr. Daniel H. Dorman, NRR, NRC  
Mr. David L. Pelton, NRR/DPR/PGCB, NRC  
Mr. Christopher P. Jackson, NRR/DSS/SRXB, NRC  
Mr. Kent A. Wood, NRR/DSS/SRXB/SFT, NRC  
Ms. Emma L. Wong, NRR/SFAS/YMV2B, NRC  
Mr. Matthew G. Yoder, NRR/DE/ESGB, NRC  
Mr. Joseph Holonich, Jr., NRR/DPR/PLPB, NRC