

**ROD MCCULLUM**

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March 29, 2017

Mr. Brian J. Benney  
Senior Project Manager  
Licensing Processes Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**Subject:** Submittal for endorsement of NEI 12-16, *Guidance for Performing Criticality Analyses of Fuel Storage at Light Water Reactor Power Plants*, Revision 3 and supporting documentation

**Project Number: 689**

Dear Mr. Benney:

The Nuclear Energy Institute (NEI)<sup>1</sup> has been working with the NRC to establish regulatory guidance that may be used by industry to perform criticality analyses for the storage of new and spent fuel at light water power plants. Today's submittal represents the culmination of this effort.

NEI 12-16 Revision 3, *Guidance for Performing Criticality Analyses of Fuel Storage at Light Water Reactor Power Plants* (Attachment 1), incorporates NRC staff's feedback on all aspects of spent fuel pool criticality analysis – received through numerous public meetings and written comments on prior revisions. Industry has benefited significantly from these interactions and believes that they have resulted in expectations for criticality analyses that will withstand the test of time. Accordingly, NEI is requesting that NRC endorse NEI 12-16 Revision 3 in a timely manner.

This guidance submittal is supported by four additional documents which are as follows.

- *Utilization of the EPRI Depletion Benchmarks for Burnup Credit Validation – Revision 1*. EPRI, Palo Alto, CA: 2017. 3002010614 - <https://www.epri.com/#/pages/product/000000003002010614/>

<sup>1</sup> The Nuclear Energy Institute (NEI) is the organization responsible for establishing unified industry policy on 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/engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations and entities involved in the nuclear energy industry.

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- *Benchmarks for Quantifying Fuel Reactivity Depletion Uncertainty – Revision 1*. EPRI, Palo Alto, CA: 2017. 3002010613 report - <https://www.epri.com/#/pages/product/000000003002010613/>
- *Sensitivity Analysis for Spent Fuel Pool Criticality – Revision 1*, EPRI, Palo Alto, CA: 2017, 30022008197. - <https://www.epri.com/#/pages/product/000000003002008197/>
- Letter dated 3/21/2018 from Brandon Haugh (Studsvick) to Hatice Akkurt PhD. (EPRI) entitled *Studsvik Scandpower Quality Assurance for EPRI Burnup Credit Project*

NEI is also requesting that NRC endorse the *Benchmarks for Quantifying Fuel Reactivity Depletion Uncertainty – Revision 1* (Attachment 2). The Studsvick letter (Attachment 3) is being submitted in support of our request for endorsement of the EPRI Benchmark report. For the other two EPRI reports we are submitting only the link to publicly available versions on EPRI's website to assure that the size of this submittal does not exceed electronic transmission limits. These documents have been uploaded via the document control desk. All three EPRI reports provide important scientific and technical underpinnings for the guidance and are being incorporated into NEI 12-16 Revision 3 by reference. These have also benefited substantially from NRC's feedback.

We look forward to working with the NRC on the implementation of this important component of the regulatory framework. Use of this guidance will facilitate sustained assurance of spent fuel pool criticality safety while improving efficiency in the preparation and review of licensing documents involving spent fuel pool criticality analysis. Please do not hesitate to contact me at any time with questions.

Sincerely,



Rod McCullum

#### Attachments

c: Mr. Brian E. Holian, NRR, NRC  
Ms. Mirela Gavrilas, NRR/DSS, NRC  
Mr. Robert Lukes, NRR/DSS/SNPB, NRC  
NRC Document Control Desk