



NUCLEAR ENERGY INSTITUTE

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Chief, Rulemaking, Directives, and Editing Branch  
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**Subject:** Proposed License Renewal Interim Staff Guidance LR-ISG-2009-01, Staff Guidance Regarding Plant-Specific Aging Management Review and Aging Management Program for Neutron-Absorbing Material in Spent Fuel Pools.

**Project Number: 689**

On December 1, 2000, the subject interim staff guidance (ISG) was published in the Federal Register for public comment (74FR62829). This proposed ISG addresses the potential loss of material and loss of neutron-adsorbing capability in spent fuel pools during the period of extended operation.

NEI has reviewed the proposed ISG and our comments are in the attached table. Our comments, in general, reflect minor corrections and some clarifications to the ISG.

We welcome the opportunity to discuss with NRC staff any of the enclosed comments. If further discussion is desired, please contact me at (202) 739-8137; [jhr@nei.org](mailto:jhr@nei.org) or Julie Keys at (202) 739-8128; [jyk@nei.org](mailto:jyk@nei.org).

Sincerely,

James H. Riley

Attachment

c: Ms. Tanya M. Mensah, NRR/ADRO/DPR/PSP, NRC  
NRC Document Control Desk

E-RIDS = ADM-03

SONSI Review Complete

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Template = ADM-013

J. Spivak (IFS)

## Comments on Draft LR-ISG-2009-01

Comment Number	Section	Comment
1.	General	<p>Clarify in the ISG that if the neutron absorber is not credited in the licensees' criticality analysis, a surveillance program for that neutron absorber is not required.</p> <p>The ISG does not provide a viable option for those licensees that do not have a coupon testing program. The ISG would require the performance of continuous neutron absorber areal density measurements (blackness testing). Please provide a viable alternative to continuous blackness testing for the effected licensees. In addition, please see comment number 7 below.</p> <p>Consider the addition of allowing licensees to demonstrate that the combination of the neutron absorber manufacturing process, spent fuel pool environment and previous/existing testing provides reasonable assurance of the continued efficacy of the neutron absorber capability in lieu of a testing program.</p>
2.	Carborundum Discussion, Last Paragraph, 3 <sup>rd</sup> sentence	<p>The sentence states that: "The swelling of the racks, which prevents fuel assemblies from being inserted or removed, indicates a potential problem with neutron-absorbing capacity." However, swelling of racks does not necessarily provide an indication of a loss of neutron absorption capacity. Root cause evaluations have not provided a clear link between swelling and the loss of neutron absorption. Therefore, please change it to: "The swelling of the racks, which prevents fuel assemblies from being inserted or removed, may indicate a potential problem with neutron-absorbing capacity."</p> <p>In addition, please clarify that another form of Carborundum does exist and it has not experienced similar degradation mechanisms to that of the plate type Carborundum found at Palisades. We suggest the addition of "This only applies to the plate type Carborundum" to the end of this paragraph.</p>
3.	GALL Report, Vol 1, Table VII.A2	Suggest revising table VII.A2 to allow credit for water chemistry in managing the aging effect of loss of material by adding a line item to reference GALL XI.M2.
4.	SRP-LR, last sentence under Revise to:	This sentence currently states, "Reduction of neutron-absorbing capacity, change in dimensions and loss of material due to the effects of the SFP environment." We recommend changing it to "Reduction of neutron-absorbing capacity, changes in dimension that increase Keff or negatively affect criticality and loss of material due to the effects of the SFP environment." This change would acknowledge that a decrease in Keff could occur and is not prohibited.
5.	GALL Report, Vol 1, Table VII.A2	In both sections change:

	AND SRP-LR	<p>"Boral, boron steel and other materials (excluding Boraflex) spent fuel storage racks neutron-absorbing sheets exposed to treated water or treated borated water and radiation effects"</p> <p>To:</p> <p>"Boral, boron steel and other materials (excluding Boraflex) utilized as neutron absorbers in spent fuel storage racks, exposed to treated water or treated borated water and radiation effect."</p> <p>This change is for clarification purposes.</p>
6.	Attachment, Evaluation and Technical Basis, Item 1, Scope of Program	It is suggested that the second sentence in Section 1: "For these materials, gamma irradiation and/or long-term exposure to the wet pool environment may cause shrinkage resulting in loss of material, and changes in dimensions such as gap formation, formation of blisters, pits and bulges, and potentially resulting in loss of neutron absorbing capability of the material" be moved to Section 3 for clarity.
7.	Attachment, Evaluation and Technical Basis, Item 3, Parameters Monitored/Inspected	Please add the following in this item: "Where it can be shown that for a specific material and environment test results are not site-specific, the use of shared industry coupon testing results is acceptable."
8.	Attachment, Evaluation and Technical Basis, Item 4, Detection of Aging Effects, first sentence	<p>Please make the following change to clarify that in-situ or coupon testing is acceptable and to eliminate the specific reference to BADGER testing so that it does not appear NRC is advocating a specific manufacturer's type of testing.</p> <p>Therefore change:</p> <p>"The loss of material and the degradation of the neutron-absorbing material capacity is determined through direct in situ measurement of boron areal density, geometric changes in the material (blistering, pitting, and bulging), detection of gaps through blackness testing and periodic verification of boron loss through areal density measurements of coupons or through techniques such as the "Boron-10 areal density gage for evaluating racks" or BADGER device."</p> <p>To:</p> <p>"The loss of material and the degradation of the neutron-absorbing material capacity are determined through coupon or in situ testing. Such testing includes measurement of boron areal density, geometric changes in the material (blistering, pitting, and bulging), detection of gaps through blackness testing, and periodic verification of boron loss through in-situ areal density measurements or coupon testing.</p>
9.	Attachment,	Please provide the basis for a testing frequency of a maximum of 10 years. Use of operating experience

	<p>Evaluation and Technical Basis, Item 4, Detection of Aging Effects. Last sentence</p>	<p>should be permitted to allow licensee's to determine the appropriate inspection frequency requirements. Therefore, we suggest you delete ", with a maximum of 10 years" from the last sentence.</p>
<p>10.</p>	<p>Attachment, Evaluation and Technical Basis, Item 7, Corrective Actions</p>	<p>In the second sentence please change "Corrective actions consist of..." to read "Corrective actions may consist of..." to clarify that the licensees' corrective action process will determine the appropriate actions.</p> <p>In addition the second sentence states; "Corrective actions consist of providing additional neutron-absorbing capacity with an alternate material, or applying other options, which are available to maintain a subcriticality margin of 5%." However, please note that those licensees with 10CFR50.68(b)(4) as their licensing basis comply with the regulatory requirement that the spent fuel pool remain subcritical without soluble boron. Therefore, the 5% subcritical margin referred to above is only applicable for normal conditions for those licensees.</p> <p>Given the above two comments, we suggest the sentence be change to read:  "Corrective actions may consist of providing additional neutron-absorbing capacity with an alternate material, or applying other options, which are available to maintain the appropriate subcriticality margin.</p>