

Supporting Materials for Public Meeting with Industry Stakeholders
Regarding Generic Letter 2016-01 on October 18, 2017

Draft Boral RAI

Title 10 of the Code of Federal Regulations (10 CFR) Section 50.68, "Criticality accident requirements," and General Design Criterion (GDC) 62, "Prevention of Criticality in Fuel Storage and Handling," provide the requirements for licensees with regards to maintaining sub-criticality in the SFP. For licensees that utilize neutron absorbing materials (NAM) in the SFP, the ^{10}B areal density (AD) of the NAM must be known so that the assumption for the ^{10}B minimum AD in the SFP nuclear criticality safety (NCS) analysis of record (AOR) is supported. In order for the NRC staff to verify the requirements of 10 CFR 50.68 and GDC 62 are met, the staff needs to ensure that licensees are taking appropriate action to confirm that the ^{10}B AD of their NAM can reasonably be expected to remain above the minimum assumed in the SFP NCS AOR. In addition, the condition of the NAM must be considered in the SFP NCS AOR. In order to verify whether or not the requirements of 10 CFR 50.68 and GDC 62 will be met, the staff needs to verify that the potential reactivity changes due to degradation or physical changes to the NAM are accounted for in the SFP NCS AOR. This includes any changes that would affect the neutron spectrum for the SFP (as opposed to the neutron spectrum used for attenuation testing purposes) in addition to any loss of neutron attenuation capability.

Industry operating experience, as described in Information Notices 2009-26, "Degradation of Neutron Absorbing Materials in the Spent Fuel Pool," (Agencywide Documents Access and Management System (ADAMS) Accession No. ML092440545) and 1983-29, "Fuel Binding Caused by Fuel Rack Deformation," (ADAMS Accession No. ML14043A291) has demonstrated that certain manufacturing processes and plant conditions (dose, chemistry, length of time installed, and installation configuration) have resulted in material deformation as a result of blisters or bulging associated with Boral.

[Plant] does not have a site-specific monitoring program, and consequently, is relying on general industry operating experience as a surrogate for the condition of the Boral installed in the spent fuel pool.

- a. Please describe how industry operating experience bounds the condition of the Boral at [plant], thereby providing assurance that any degradation or deformation that may affect the Boral at [plant] is identified.
- b. In addition, please discuss the criticality impact due to relevant material deformation identified in general industry operating experience, and how it can be accommodated by the nuclear criticality safety analysis of record for [plant] without exceeding NRC subcriticality requirements.