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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Edwin I. Hatch Nuclear Plant Units 1 and 2
Response to NRC RAIs Regarding Generic Letter 2016-01

Ladies and Gentlemen:

By letter dated November 2, 2016 (ML16307A295), Southern Nuclear Operating Company (SNC) provided a response to Nuclear Regulatory Commission (NRC) Generic Letter (GL) 2016-01, "Monitoring of Neutron Absorbing Materials in Spent Fuel Pools" (ML16097A169) for Edwin I. Hatch Nuclear Plant, Units 1 and 2 (HNP). By letter dated November 7, 2017 (ML17284A354), the NRC requested supplemental information to complete its review.

Enclosed is the SNC response.

This letter contains no NRC commitments. If you have any questions, please contact Ken McElroy at (205) 992-7369.

Respectfully submitted,

J. J. Hutto
Regulatory Affairs Director

jjh/efb/cbg

Enclosure: Response to NRC RAIs Regarding Generic Letter 2016-01

cc: NRC Regional Administrator, Region II
NRC NRR Project Manager – Hatch
NRC Senior Resident Inspector – Hatch
SNC Records RTYPE: CHA02.004

Edwin I. Hatch Nuclear Plant (HNP) Units 1 and 2

Enclosure

Response to NRC RAIs Regarding Generic Letter 2016-01

NRC Request for Supplemental Information

Plant-Specific Monitoring Information

For licensees that utilize neutron-absorbing materials (NAM) in the Spent Fuel Pool (SFP), the ^{10}B areal density (AD) of the NAM must be verified so that the assumption for the ^{10}B minimum AD in the SFP criticality analysis is supported. The NRC staff needs to ensure the programs are in place to monitor the condition of NAM in the SFP are appropriate for their intended purpose. In addition, the condition of the NAM must be considered in the SFP nuclear criticality analysis (NCS) analysis of record (AOR). To verify that the potential reactivity changes due to degradation of physical changes to the NAM are accounted for in the SFP NCS AOR, the following information is requested.

Hatch-RAI-1. *In the response to Question 1(a), the licensee states that the SFP racks were installed in 1980. However, in the response to Question 2(b(ii)(2), the licensee states that the Boral coupons were placed in the SFPs on May 23, 1987. How are the Boral coupons representative of the in-service material, given the approximately 7-year difference in the length of time that the material has been exposed to the SFP conditions?*

SNC Response

The HNP high density spent fuel storage racks were installed using a phased-in approach over a few years. Based on information from the Boral manufacturer, Brooks and Perkins, when the coupons were ordered, the Boral depletion during the first few years of operation was expected to be negligible. The B-10 depletion over the first 40 years of operation was expected to be negligible also.

As stated in SNC's November 2, 2016 response to GL 2016-01:

"The visual and dimensional examinations of the coupons have been used to observe for any instances of surface corrosion, degradation or deformation of the material (e.g., blistering, bulging, pitting, or warping). The neutron attenuation and ^{10}B areal density measurements have been used to ensure that the results are within the assumptions of the spent fuel pool criticality analysis.

There have been no indications of deformation or degradation of Boral, and the surveillance results have been generally consistent over the years. No blisters have been observed, except for blisters that developed during the drying process. No corrosion has been observed, except for small, insignificant pits identifiable only under magnification.

The minimum allowable areal density used within the criticality analysis was conservatively assumed to be $0.013 \text{ g } ^{10}\text{B}/\text{cm}^2$ as compared to the nominal areal density of $0.020 \text{ g } ^{10}\text{B}/\text{cm}^2$. The test coupon results of the neutron attenuation and ^{10}B areal density measurements have been consistent with the material as fabricated and installed in the spent fuel pools, $0.020 \text{ g } ^{10}\text{B}/\text{cm}^2$."

The results of the Hatch coupon surveillance program are consistent with the original expectations of negligible Boral depletion, and therefore the Boral coupons are representative of

the in-service material, despite the difference in length of time that the in-service material has been exposed to the SFP conditions.

Hatch-RAI-2. *In Revision 34 of the Updated Final Safety Analysis Report (UFSAR), the licensee states that Holtec Boral racks are used in addition to the General Electric/Brooks and Perkins spent fuel pool racks that were described in the response to the Generic Letter (GL) 2016-01. The NRC staff believes that the Holtec Boral racks are covered by the scope of the GL. Provide the appropriate information requested by the GL for the Holtec SFP racks described in Revision 34 of the UFSAR.*

SNC Response

The HNP Unit 1 Holtec rack was purchased but never installed in the plant.

The HNP Unit 2 Holtec rack was installed, but is not used to store spent fuel. The Holtec rack is only used to store non-fuel equipment, such as, shroud head bolts, tri-nukes, and buckets.

Hatch-RAI-3. *In the response to Question 2(a)(iii), the licensee states:*

There has not been a strict "acceptance criteria" associated with the coupon testing program in that the purpose of the program is to determine whether deformation or degradation is occurring and for any indications of deformation or degradation to be entered into the corrective action program for further assessments of impacts, extent of condition, trending, determination of functionality, and implementation of corrective actions. The visual examination is intended to detect missing Boral or surface anomalies. The ¹⁰B areal density determination ensures that the areal density is greater than or equal to the amount assumed in the spent fuel pool criticality calculations (0.013 g ¹⁰B/cm²).

In lieu of strict acceptance criteria, how does the monitoring program ensure adequate performance of the neutron absorbing material?

SNC Response

SNC's procedure contains the following acceptance criteria:

1. Coupon fully intact with no noticeable areas of missing Boral or surface anomalies.
2. All measured dimensions within 5% of original dimensions.
3. Coupon weight (wet and dry as available) greater than original weight.
4. B-10 areal densities greater than 0.013 grams B-10/cm².