



January 29, 2014

10 CFR 50.90

SBK-L-14018

Docket No. 50-443

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

Seabrook Station

Response to Request for Additional Information for License Amendment Request 11-04,  
Changes to Technical Specifications for Spent Fuel Storage

References:

1. NextEra Energy Seabrook, LLC letter SBK-L-11245, "License Amendment Request 11-04, Changes to the Technical Specifications for New and Spent Fuel Storage," January 30, 2012 (ML12038A036)
2. NRC letter "Seabrook Station, Unit No. 1 – Supplemental Information Needed for Acceptance of Requested Licensing Action Regarding License Amendment Request 11-04, Changes to the Technical Specifications for New and Spent Fuel Storage (TAC No. ME7946)," March 30, 2012 (ML120730270)
3. NextEra Energy Seabrook, LLC letter SBK-L-12099, "Supplement to LAR 11-04, Changes to the Technical Specifications for New and Spent Fuel Storage," May 10, 2012 (ML12136A126)
4. NRC Letter "Seabrook Station, Unit No. 1 – Request for Additional Information Regarding License Amendment Request 11-04, Changes to Technical Specifications for New and Spent Fuel Storage (TAC No. ME8688)," July 24, 2012 (ML12192A232)
5. NextEra Energy Seabrook, LLC letter SBK-L-12199, "Response to Request for Additional Information Regarding License Amendment Request 11-04, Changes to Technical Specifications for New and Spent Fuel Storage," September 20, 2012 (ML12271A276)
6. NRC Letter "Seabrook Station, Unit No. 1 – Request for Additional Information Regarding License Amendment Request 11-04, Changes to Technical Specifications for New and Spent Fuel Storage (TAC No. ME8688)," December 5, 2012 (ML12270A423)

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7. NextEra Energy Seabrook, LLC letter SBK-L-13061, "Response to December 2012 Request for Additional Information Regarding License Amendment Request 11-04, Changes to Technical Specifications for New and Spent Fuel Storage," March 27, 2013 (ML13099A022)
8. NextEra Energy Seabrook, LLC letter SBK-L-13224, "Request for Review and Approval of License Amendment Request (LAR) 11-04, Changes to Technical Specifications for New and Spent Fuel Storage, in Two Parts," December 20, 2013 (ML13360A645)
9. NRC letter "Seabrook Station, Unit No. 1 – Request for Additional Information for License Amendment Request 11-04, Changes to Technical Specifications for Spent Fuel Storage (TAC No. 8688)," January 8, 2014 (ML13268A468)

In Reference 1 and supplemented by References 3, 5, and 7, NextEra Energy Seabrook, LLC (NextEra) submitted a request for an amendment to the Technical Specifications (TS) for Seabrook Station. The proposed change would revise the TS for new and spent fuel storage as the result of new criticality analyses for the new fuel vault and the spent fuel pool. In Reference 8, NextEra requested that the spent fuel pool and new fuel vault portions of the license amendment request (LAR) be separated into two LARs.

In Reference 9, the NRC staff requested additional information in order to complete its review of the spent fuel pool LAR. The Enclosure to this letter contains NextEra's response to the request for additional information. This response does not modify the changes to the TS as previously proposed and does not alter the conclusion in Reference 1 that the changes do not present a significant hazards consideration.

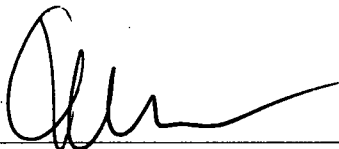
This letter contains no regulatory commitments.

Should you have any questions regarding this letter, please contact Mr. Michael Ossing, Licensing Manager, at (603) 773-7512.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on January 29, 2014.

Sincerely,



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Kevin T. Walsh  
Site Vice President  
NextEra Energy Seabrook, LLC

Enclosure

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cc: NRC Region I Administrator  
NRC Project Manager, Project Directorate I-2  
NRC Senior Resident Inspector

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**ENCLOSURE TO SBK-L-14018**

Response to Request for Additional Information for License Amendment Request 11-04,  
Changes to Technical Specifications for Spent Fuel Storage

### Request for Additional Information (RAI)

Several of the initial RAIs requested information that affected loading curve generation. Following resolution of these issues, it is noted that unexpected trends are still present in the RC5 (Loading pattern D) loading curves. In particular, the loading curves for lower cooling times and enrichments above 3.6 weight percent appear to bend up. This is inconsistent with the other loading curves documented in this analysis and with trends seen in other SFP analyses. Please explain the unexpected trends and verify that the fuel composition and  $k_{\text{eff}}$  calculations for the RCS loading curves were performed correctly.

### NextEra's Response

As noted, the loading curves of RC5 (Pattern D) for fuel with enrichment above 3.6 wt%  $^{235}\text{U}$  bend up, which is different from the other loading curves. In response to this RAI, the fuel composition,  $k_{\text{eff}}$  calculations, and polynomial generation for the curves were reviewed again and confirmed to be correct.

The  $k_{\text{eff}}$  calculations are performed for different enrichment steps to determine minimum burnup requirements for each enrichment, and then three enrichments are selected to fit to second order polynomial functions in the form of:

$$\text{BU} = \text{A} + \text{B} * \text{E} + \text{C} * \text{E}^2$$

With

BU	Minimum Burnup in GWd/MTU
E	Enrichment in wt%
A, B, C	Coefficients

The coefficients were selected so that the burnup calculated from the polynomial functions are always equal to or higher than the values from  $k_{\text{eff}}$  calculations directly. For the analysis, 3.6 wt%, 4.5 wt% and 5.0 wt%  $^{235}\text{U}$  were selected to fit to polynomial functions for the loading curves.

The reason for the RC5 (Pattern D) curves bending up is due to how the axial burnup profiles are developed and used in the analysis. A relative burnup as a linear function of the assembly average burnup is determined such that it bounds any values in any of the assemblies in the database. However, for assembly average burnups above 45 GWd/MTU, the relative burnup is kept constant at the value of 45 GWd/MTU. This is a very conservative assumption for all burnups larger than 45 GWd/MTU. In the loading curves of RC5 (Pattern D), it is observed that for most points with enrichment of 5.0 wt%, the burnup is larger than 45 GWd/MTU, thus the additional conservatism at the end of the enrichment range pulls the curve up. This does not occur with the other curves as the assembly average burnups are not above 45 GWd/MTU.