



November 21, 2014

10 CFR 50.54

SBK-L-14196

Docket No. 50-443

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

Seabrook Station

Revised Response to Follow up RAI B.2.1.31A-3 provided in SBK-L-14086  
Relating to the Alkali-Silica Reaction (ASR) Monitoring Program

References:

1. NextEra Energy Seabrook, LLC letter SBK-L-10077, "Seabrook Station Application for Renewed Operating License," May 25, 2010. (Accession Number ML101590099)
2. NRC Letter, Requests For Additional Information for the Review of the Seabrook Station, License Renewal Application- Set 20 (TAC NO. ME4028), January 15, 2014, (Accession Number ML13357A628)
3. NextEra Energy Seabrook, LLC letter SBK-L-14086, "Requests for Additional Information for the Review of the Seabrook Station, License Renewal Application- SET 20 (TAC NO. ME4028) Relating to the Alkali-Silica Reaction (ASR) Monitoring Program," May 15, 2014 (Accession Number ML14142A220).

In Reference 1, NextEra Energy Seabrook, LLC (NextEra) submitted an application for a renewed facility operating license for Seabrook Station Unit 1 in accordance with the Code of Federal Regulations, Title 10, Parts 50, 51, and 54.

In Reference 3, NextEra provided a response to NRC staff RAI B.2.1.31A-3 related to Tier 2 qualitative and quantitative monitoring criteria. Based on a subsequent teleconference with the staff on September 30, 2014, NextEra is providing additional clarifying detail. Enclosure 1 contains NextEra Seabrook revised response to RAI B.2.1.31A-3 previously provided in Reference 3.

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This letter contains no revised or new commitments.

If there are any questions or additional information is needed, please contact Mr. Edward J. Carley, Engineering Supervisor - License Renewal, at (603) 773-7957.

If you have any questions regarding this correspondence, 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 November 21, 2014.

Sincerely,



Dean Curtland  
Site Vice President  
NextEra Energy Seabrook, LLC

Enclosures:

Enclosure 1– Revised Response to Follow up RAI B.2.1.31A-3 provided in SBK-L-14086  
Relating to the Alkali-Silica Reaction (ASR) Monitoring Program

cc: W. M. Dean                   NRC Region I Administrator  
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**Enclosure 1 to SBK-L-14196**

**Revised Response to Follow up RAI B.2.1.31A-3 provided in SBK-L-14086  
Relating to the Alkali-Silica Reaction (ASR) Monitoring Program**

### **RAI B.2.1.31A-3**

#### Background:

The "acceptance criteria" program element of the applicant's ASR Monitoring Program states that the program will use the thresholds stated in its report MPR-3727, Revision 0, "Seabrook Station: Impact of ASR on Concrete Structures and Attachments" as the acceptance criteria for evaluating ASR-affected structures. The acceptance criteria stated in that report is also described in the ASR Monitoring Program description. The acceptance criteria chart in the AMP program description indicates that there are two sub-categories of Tier 2 locations, one requiring "quantitative monitoring and trending", one requiring only "qualitative monitoring".

#### Issue:

The staff noted that the applicant has performed a baseline inspection and that structural evaluations were performed for locations exceeding the Tier 3 criteria, which require structural evaluations. For the remaining areas, the staff noted that those locations exceeding the Tier 2 criteria for monitoring and trending will be inspected using crack indexing measurements and trended to monitor the progression of ASR. However, it is not clear how new locations will be identified for crack indexing at the Tier 2 frequency. If some of the Tier 2 locations are "qualitatively monitored", (i.e., visual examination with no crack indexing), the staff is unclear as to how the program will identify when new locations meet the threshold for quantitative monitoring.

#### Request:

If crack indexing will only be used for locations that exceed a CCI of .5 mm/m or individual crack width of .2 mm (Tier 2 criteria), state how the program will identify when a location is required to change from "qualitative monitoring" to "quantitative monitoring and trending".

### **Revised NextEra Energy Seabrook Response to RAI B.2.1.31A-3**

Per the Structural Monitoring Program, B.2.1.31, which has been augmented by the plant specific Alkali-Silica Reaction Monitoring Program, B.2.1.31A, visual inspections are initially performed and subsequent crack width measurements are taken if the area exceeds Tier 1 criteria. In regards to monitoring ASR related degradation, if there is no visual presence of ASR (ASR visual characteristics as defined in the U.S. Department of Transportation Federal Highway Administration's publication FHWA-HIF-12-022 "Alkali-Silica Reactivity Field Identification Handbook"), the location is considered Tier 1 and no further evaluation is performed. Tier 1 locations are deemed "Acceptable" and are monitored on a frequency set forth by the Structural Monitoring Program.

Areas with visual presence of ASR are observed and individual crack widths are measured using a Pocket-size Crack Comparator Card and/or an Optical Comparator with a magnifying power of 7X or more.

The change from Tier 2 qualitative monitoring to quantitative monitoring occurs when an area exhibits visual presence of ASR and is accompanied by either individual crack widths equal to or greater than 0.20 mm or the estimated summation, excluding craze cracking (fine random cracks or fissures in the surface of the concrete; i.e. cracks less than 0.05 mm), of individual crack widths in an area that could support a cracking index (CI) of equal to or greater than 0.50 mm/m in either the vertical or horizontal direction. If either of these two criteria are observed along with the visual presence of ASR, an indexing grid is laid out and a combined cracking index (CCI) is calculated. All Tier 2 locations will be subject to re-inspection on a 2.5 year frequency.

Based on the above discussion, a new paragraph has been added to the end of the program description of the Alkali-Silica Reaction Monitoring Program, B-2.1.31A, and the table provided in the program description of the Alkali-Silica Reaction Monitoring Program, B.2.1.31A has been modified for clarification purposes, as follows:

Tier	Structural Monitoring Program Category	Recommendation for Individual Concrete Components	Combined Cracking Index (CCI)	Individual Crack Width
3	Unacceptable (requires further evaluation)	Structural Evaluation	1.0 mm/m or greater	1.0 mm or greater
2	Acceptable with Deficiencies	Quantitative Monitoring and Trending	0.5 mm/m or greater	0.2 mm or greater
		Qualitative Monitoring	Any area with visual presence of ASR (as defined in FHWA-HIF-12-022) accompanied by individual crack widths less than 0.2 mm and an estimated summation of crack widths not supporting a 0.5 mm/m CI in the vertical or horizontal direction.	
1	Acceptable	Routine inspection as prescribed by the Structural Monitoring Program	Area has no indications of pattern cracking or water ingress- No visual presence of ASR	

Visual inspections are initially performed and subsequent crack width measurements are taken if the area exceeds Tier 1 criteria. In regards to monitoring ASR related degradation, if there is no visual presence of ASR (ASR visual characteristics as defined in FHWA-HIF-12-022 "Alkali-Silica Reactivity Field Identification Handbook"), the location is considered Tier 1 and no further evaluation is performed. Tier 1 locations are deemed "Acceptable" and are monitored on a frequency set forth by the Structural Monitoring Program.

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