



## MEMO

**TO:** Christopher Newport, NRC resident inspector, Seabrook Station  
**FROM:** Natalie Hildt Treat, executive director, C-10 Research & Education Foundation  
**CC:** C-10 Board of Directors, Dr. Victor Saouma  
**DATE:** August 26, 2021

**RE:** ***Questions regarding the 2021 Second Quarter Integrated Inspection Report (05000443/2021002)***

As a public interest nonprofit focused on the safe operation of Seabrook Station and the group whose legal challenge resulted in new conditions relative to concrete monitoring being added to NextEra Energy Seabrook's operating license, C-10 appreciates the thoroughness and transparency of the Nuclear Regulatory Commission's most recent [integrated inspection report](#), issued on August 11, 2021.

Because C-10 and our *pro bono* expert, Dr. Victor Saouma, have spent countless hours following the problems with Seabrook's degrading concrete, it is our responsibility to ask follow-up questions that will help us better understand the state of Seabrook's concrete structures, and the NRC's findings with regards to NextEra's management of alkali-silica reaction (ASR).

On behalf of the C-10 board members who compiled these questions, I ask that you and your team consider these questions and respond in writing as soon as is practicable; within the next month if possible. C-10 hopes that these questions will help you to think more critically about your work as overseers of Seabrook Station and protectors of the public. Below are questions organized by topic, and the relevant passages of the Q2 inspection report that we reference:

### **1. Failure to Assess Additional ASR Loads**

"Specifically, NextEra staff did not trend and project the periodic threshold monitoring data for the affected structural elements to ensure the structures would remain capable of performing their safety functions to the next scheduled inspection" (p. 2 and p. 10). Per the current inspection report: "The inspectors determined that NextEra staff appropriately collected the structural monitoring data..." (p. 10).

*Q1: Why were neither the increased loads nor the impact on the affected structural elements determined for the current period ending June 30, 2021?*

### **2. Failure to Project Sufficient Margin**

"Specifically, NextEra staff did not trend the periodic threshold monitoring data for the affected discrete individual structural elements and did not provide new limits with sufficient margin to ensure the structures remain capable of performing their intended safety functions for the duration the POD remained in effect, that is to the next scheduled examination" (p. 10).

*Q2A: Why did the NextEra staff fail to compute new limits reflecting sufficient margin to ensure the structures would remain capable of performing their intended safety functions through to the next inspection period of December 31, 2021?*

*Q2B: Was Form EN-AA-203-1001-F01, related to NextEra Procedure EN-AA-203-1001 "Operability Determinations/ Functionality Assessments," as well as the guidance in Attachments 4 and 5 and Sections 6.C and 6.E, completed for this inspection period? What information did NextEra staff complete on this Form?*

### **3. Failure of ASR Infected Structures to Meet Design Basis:**

Prompt operability determination (POD) under AR02276197 evaluates "structures affected by ASR with discrete structural elements that do not meet NextEra's current licensing and design basis" (p. 9).

"The inspectors selected the emergency feedwater pumphouse, service water cooling tower, and the control and diesel generator building for review because NextEra staff had evaluated the structures in accordance with their methodology document (via a stage 3 evaluation), determined some specific structural elements (wall, slab or beam) did not meet demand to capacity ratio in localized areas as required by their current licensing and design basis..." (p. 15).

"In addition, the inspectors conducted interviews with responsible NextEra staff and their contractors to determine the status of ASR monitoring and the long-term corrective action plans to restore compliance of various Seabrook structures with structural elements which do not meet the current license and design basis" (p.15).

*Q3A: Since these structures remain out of design basis and ASR is progressive and irreversible, please provide the specific details of the existing and proposed long-term corrective action plans that will restore these structures so that they comply with the current license and design basis.*

*Q3B: When the "highest linear rate of expansion" was noted, did NextEra's staff consider inspecting other critical structures including Tier 2 structures? If not, why not?*

*Q3C: Specifically, which other critical structures at Seabrook continue to fall into the "out-of-design-basis" category?*

*Q3D: Has the Containment Enclosure Building (CEB) been inspected and the related ASR load and margins calculated every 6 months, or more frequently, if required? Please provide the calculations.*

### **4. Partial Failure to Comply with Authoritative Conditions - ASLB Order LBP-20-9**

"The inspectors reviewed implementation of the three license conditions by verifying that licensee procedures and guidance documents were updated to ensure that each of the license conditions would be carried out during implementation of the ASR monitoring program. The inspectors also reviewed samples of completed inspections and documentation to ensure that the procedures were being implemented correctly. The inspectors did not note any significant deficiencies with the implementation of license conditions (c), (e), or (f)" (p. 13).

The definition of "implementation" in the above paragraph is limited to "verifying that licensee procedures and guidance documents were updated" ... and "implemented correctly."

*Q4A: Although samples of inspections were reviewed and inspectors found "no significant deficiencies with the implementation," what, if any deficiencies were noted in the sample inspection results?*

"inspectors... reviewed NextEra's performance to meet ASR license condition (d), which states, "if stress analyses conducted pursuant to the structural evaluation methodology show that the stress in the rebar from ASR-induced

expansion and other loads will exceed the yield strength of the rebar, NextEra must develop a monitoring program sufficient to ensure that rebar failure or yielding does not occur, or is detected if it has already occurred, in the areas at-risk of rebar failure or yielding." ...the inspectors did not observe documented guidance or assessment related to this license condition in NextEra's POD for those specific structural elements that do not currently meet the acceptance criteria" (p. 13).

By C-10's account, NextEra failed to comply with the requirements for condition (d) within the initial year of its enactment.

*Q4B: Based on inspectors' requirements, what date is scheduled for the monitoring, application of additional qualitative criteria and additional measurement techniques to be applied to the rebar in affected structures?*

The actions described above "...were not documented in the plant procedures or in the POD...". The inspectors concluded "there was not a performance deficiency" ... "because actions were initiated..."

*Q4C: Please explain how the lack of documentation, application, and implementation by the licensee is not a performance deficiency.*

#### **5. Documentation Requested:**

A) "For instance, grids DG102-01B and MF101-01A Index 2 in the control and diesel generator building exhibited an average vertical expansion trend of 12 mils/month between March 2020 and March 2021. This was the highest linear rate of expansion noted by the inspectors' sampling review of data" (p. 9).

- *Please provide the raw data and the related reports for the two locations noted above.*
- *Please include the gage length (i.e. the distance along which this expansion took place) and the strain for the 12 mils/month expansion.*

B) "...NextEra staff determined there were seven Seabrook structures that had specific structural elements (walls, slabs or beams) that would require physical modification or additional analysis to comply with their current licensing and design basis requirements.

"NextEra staff combined the specific structural elements from these seven structures into one consolidated POD under AR 02276197 and documented the additional evaluations and calculations performed and their basis for concluding these structures remained functional, that is, capable of performing their intended safety functions to support continued plant safety" (p. 14-15). "The inspectors added to their inspection scope the mechanical penetration area structure because it was approaching the established limits" (p. 15).

- *Please provide the raw data and the related reports for the locations noted above.*

C) "The inspectors observed that the consolidated POD analyzed the limiting load combinations of these structures using the approved methodology with the most recent ASR expansion measurements and an ASR threshold factor of 1.0. The updated analyses showed that the structures have a demand to capacity ratio less than 1, except in a few structural elements. The inspectors reviewed the exceedances in these locations and determined that NextEra staff had identified appropriate conservatisms in the calculations to provide reasonable assurance the structures would remain functional until the next monitoring activity" (p. 15).

C-10 would argue that "appropriate conservatisms" is subjective and not scientific.

- *Please provide the initial calculated results.*
- *Please provide the revised calculations.*
- *Please list and justify the objective impact these "conservatisms" had on the revised result in C.*

#### **6. Performance Deficiency is More than Minor**

"The inspectors determined the performance deficiency [NextEra staff did not adequately account for the future progression of ASR in their POD for several Seabrook structures] was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. This issue was similar to several examples in NRC Inspection Manual Chapter 0612, Appendix E, including 3.h and 3.k. where margin was unfavorable and had to be addressed by different design approaches to establish functionality or operability" (p. 10).

*Q6A: What is the "more significant safety concern" noted above?*

*Q6B: Does this direct correlation by the inspectors to unfavorable margins point to willful negligence by NextEra relative to margin projections? If not, why not?*

*Q6C: Specifically, what different approaches were used to establish functionality or operability? Please supply detailed evidence of approaches and the date(s) the alternatives were applied to validate functionality?*

In the case of ASR at Seabrook Station's degraded concrete, timing of structural and/or safety failure are unknown. The best chance to predict a failure is through sophisticated testing and analysis. The consequences of not doing so accurately could have catastrophic consequences for our region.

*Q6D: Why is this failure to project sufficient margin only classified as a "green violation" considering the magnitude of this omission?*

#### **7. NRC's Reliance on Corrective Actions**

"NextEra staff... did not provide new limits with sufficient margin to ensure the structures remain capable of performing their intended safety functions for the duration the POD remained in effect, that is to the next scheduled examination" (p. 10).

"Specifically, NextEra staff did not periodically analyze the threshold monitoring data to identify the adverse trends in expansion data for several grids in the control and diesel generator building" (p. 11).

"When degraded conditions are identified by plant personnel, ARs are required to be generated in a timely manner (defined as within 24 hours) per PI-AA-104-1000, Corrective Action, Revision 29." Example: A vendor outlined two ASR threshold limit measurements exceeding their limits (p. 11). "The report was received by engineering personnel in December of 2020. An AR documenting the results was not generated until February 4, 2021, after prompting by the NRC inspectors" (p. 11).

*Q7A: When NextEra realized it did not assess loads and project margins, why did they establish a corrective action in lieu of immediately correcting these omissions as they claimed to have all of the relevant data?*

*Q7B: Are corrective actions prioritized based on safety? For what length of time on average do the most critical corrective actions on ASR affected structures remain open? What process is in place to periodically review and close corrective actions?*

*Q7C: Please provide a list detailing all outstanding corrective actions—including inception date and current status—relative to ASR at Seabrook Station.*

*Q7D: What legitimacy can be ascribed to the licensees' option to regularly use "corrective actions" when public safety is in increasing jeopardy?*

C-10 urges the NRC to establish ASR regulations that incorporate timely licensee accountability and actions.

We realize that these questions are extensive, and will take some work to answer. Speaking on behalf of our members, many of whom live “within the ten-mile radius,” we thank you for your efforts. C-10 has stated that the public should feel more confident knowing that the problem is getting tough scrutiny by the NRC’s inspectors.

We sincerely hope that you view our inquiry not as a burden, but as the chance to do your job even better. Thank you for your work, and please let me know if you would like to set up a time to speak about the issues we have raised.

Sincerely,



Natalie H. Treat

Executive Director

C-10 Research and Education Foundation

ph: (978) 465-6646 e: natalie@c-10.org