UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

August 4, 2014

Ms. Sandra Gavutis, Executive Director
C-10 Research and Education Foundation
44 Merrimac Street
Newburyport, MA 01950

Dear Ms. Gavutis:

I am responding to your letter dated June 24, 2014, that provided questions regarding concrete degradation at Seabrook Station due to Alkali-Silica Reaction (ASR) and the results of recent containment liner examinations completed at the Seabrook Station. These questions were in follow-up to our meeting with you and other members of the C-10 Foundation, prior to our public annual assessment meeting on June 24, 2014. This letter also addresses an electronic mail received by the Regional Administrator, Region I, related to our discussion of a license renewal related examination of the Seabrook fuel transfer vault.

Regarding U.S. nuclear power plants, Seabrook Station is the only plant in the U.S. that has identified ASR-affected concrete structures (nuclear plants in Canada and Belgium have also identified ASR-affected structures). The NRC issued Information Notice 2011-020, dated November 18, 2011, (ADAMS ML112241029) to all operating nuclear power plants in the U.S. to inform licensees of the occurrence of ASR at the Seabrook Station with the expectation licensees review the information for applicability at their facilities. Regarding concrete aging information, while ASR has only been identified at the Seabrook Station, we consider the information to be potentially applicable to other nuclear power plants. As we continue to be informed of industry operating experience related to concrete aging, this information will be provided to our licensees.

Your letter cited information from NRC Inspection Report (ADAMS ML14127A376) for Seabrook Station dated May 6, 2014, where NRC inspectors described their review of initial concrete expansion data from ASR-affected large scale test specimens. This review was conducted at the Ferguson Structural Engineering Laboratory (FSEL) located at the University of Texas – Austin. These results indicated “X” and “Y” direction expansion in ASR-affected specimens appeared to plateau while the through wall “Z” direction expansion continued to increase. Your letter indicated the information calls into question the Prompt Operability Determinations (POD) and asks whether the NRC staff has requested the PODs be revised using actual test results.

As described in our inspection report (ADAMS ML14127A376, Section 4OA2.3), NRC inspectors concluded the preliminary implication of these trends is that the combined crack index and crack width screening criteria currently in NextEra’s Structures Monitoring Program may not alone provide an adequate means to monitor ASR progression. Our inspection report further describes NextEra’s plans to consider changes to their monitoring programs. In regard to the PODs, our inspection report states the PODs remain unaffected because they use bounding conservative assumptions of the effect of ASR and are not dependent on the degree of expansion measured at Seabrook Station. Our view has not changed. However, we agree that the actual data from the large scale test specimens should be carefully considered by NextEra's staff for implications to their PODs. Our ongoing inspections and monitoring of NextEra's testing program includes a review of NextEra's consideration of developed test data and insights from their research.

Your letter referred to requests by your organization that further concrete core sample locations and analysis be conducted in addition to combined crack index measurements, strain gage measurements and other (unspecified) non-destructive examinations. Your letter further asked whether the NRC was requesting core sample locations, depths, material tests or developing strain gage designs. While the NRC does not request items such as core locations or develop concrete strain gage designs, our inspections and reviews will assure NextEra's actions are technically sound and appropriate to address ASR-affected structures at the Seabrook Station. The NRC has concluded the Seabrook ASR-affected safety related structures remain capable of performing their structural safety functions and that these structures represent a non-conforming condition that requires resolution. NextEra has elected to pursue a large scale test program to resolve this condition. We expect that NextEra will need to clearly establish that the results of their large scale test program are representative of actual conditions at Seabrook Station prior to formally submitting the results of their accompanying evaluations to the NRC in accordance with the requirements of 10 CFR 50.59 and 50.90 as applicable to resolve the ASR non-conforming condition.

Your letter referred to a commitment made by NextEra as a result of the NRC's ongoing review of the Seabrook license renewal application. The commitment (Commitment #50) described in NRC Safety Evaluation Report with Open Items (ADAMS ML12160A374) involves completing containment liner ultrasonic (volumetric) examinations at various locations in the vicinity of the moisture barrier prior to December 31, 2015. Your letter inquired as to whether these liner locations would be designated for augmented examination. It is our understanding that NextEra made this commitment in response to industry operating experience and not because this containment liner area met the criteria for augmented examinations described in applicable sections of the ASME Boiler and Pressure Vessel Code. Please note this activity was completed by NextEra's staff during the recent refuel outage at the Seabrook Station. Our next NRC quarterly integrated inspection report to be issued by August 15, 2014, will describe our results and conclusions regarding this activity.

The NRC Safety Evaluation Report (SER) with Open Items also discusses the NRC's review of NextEra's plans to conduct ultrasonic examination at areas of the containment liner in the fuel transfer tube vault. This was discussed on June 24, 2014, with you and other C-10 staff, and the subject of an electronic mail from C-10 staff received by the Regional Administrator on June 25, 2014. As stated in the SER, this area had been identified by NextEra as meeting the ASME Code requirements for augmented examination and NextEra described plans to reexamine the affected liner plate area. NextEra later re-evaluated the area and found that the conditions did not meet the ASME Code provisions criteria to require augmented examinations. NextEra provided this information to the NRC in a response to NRC's request for additional information (ADAMS ML11227A023) and reiterated the information in a recent submittal to the NRC (ADAMS ML14177A502). Those RAI responses are being evaluated by the NRC under the current license renewal review. The license renewal review is ongoing, and is focused on actions necessary to ensure that the NRC has reasonable assurance that the licensee will be able to manage the effects of aging on passive, long-lived structures or components during the period of extended operation, which for Seabrook Station, begins in 2030. It should be noted that the license renewal application review is ongoing and during the review process the applicant can supplement or revise the information provided in the application (including commitments). Also, the NRC has not finalized its safety evaluation report documenting whether the actions proposed by the applicant will or will not meet the applicable license renewal requirements. As such, the applicant is not obligated to complete new actions described in the application until a final decision is made on the application. The NRC's current oversight activities are ongoing to ensure that licensees maintain compliance with NRC regulations in the current term. The NRC inspected NextEra's implementation of selected activities and records related to their ASME Section XI, Subsection IWE program as part of routine baseline inspections during the Seabrook Station refuel outage. Our next NRC quarterly integrated inspection report, to be issued by August 15, 2014, will describe our results and conclusions regarding this activity.

Your letter inquired as to the percentage of aging management programs subject to NRC inspection. Inspection Procedure 71002 is implemented prior to issuing of a renewed license (ADAMS ML11238A010). Selections of aging management programs for inspection depend on the experience, training, and expertise of the lead inspector to select the appropriate number and types of aging management programs for review. Prior to the issuance of a renewed license staff from the NRC Division of License Renewal perform a team audit of all the aging management programs comparing each program against the criteria contained in NUREG 1800, Standard Review Plan for Review of License Renewal Applications (ADAMS ML103490036). As one last check, if the renewed license is issued, shortly before entering the extended period of operation, the NRC again inspects the aging management programs using inspection procedure 71003 (ADAMS ML12258A160). This procedure provides direction to inspect a majority of aging management programs with a recommendation that 70% be reviewed.

Finally your letter inquires as to our plans for continuing oversight of NextEra's staff performance related to ASR affected concrete structures at the Seabrook Station. We are in agreement this issue merits on-going and careful assessment. The NRC will continue to conduct inspections approximately every six months and document the results in publically available inspection reports. Additionally, the NRC's Seabrook ASR Technical Team charter remains in effect and this team continues to provide oversight and coordination of all NRC inspection and review activities related to resolution of ASR related issues at the Seabrook Station.

Please contact me at (610) 337-5209 or Mr. William Cook at (610) 337-5074, should you have further questions or comments to share with us.

Sincerely,

/RA/

Mel Gray, Branch Chief
Division of Reactor Safety

Docket No. 50-443
License No. NPF-86

cc: via ListServ

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Mel Gray, Branch Chief
Division of Reactor Safety

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