UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 29, 2011

Mr. Paul Freeman, Site Vice President
NextEra Energy Seabrook, LLC
P.O. Box 300
Seabrook, NH 03874

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE SEABROOK STATION LICENSE RENEWAL APPLICATION

Dear Mr. Freeman:

By letter dated May 25, 2010, NextEra Energy Seabrook, LLC, submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, to renew the operating license NPF-86 for Seabrook Station, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review.

These requests for additional information were discussed with Richard Cliche, and a mutually agreeable date for the response is within 45 days from the date of this letter. If you have any questions, please contact me via telephone at, 301-415-2927, or e-mail at, richard.plasse@nrc.gov.

Sincerely,

Richard A. Plasse, Project Manager
License Renewal Branch RPB2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosure:
As stated

cc w/encl: Listserv

SEABROOK STATION
LICENSE RENEWAL APPLICATION
REQUESTS FOR ADDITIONAL INFORMATION SET 15

Follow-up RAI B2.1.27-1:

Background:

By letter dated April 14, 2011, NextEra Energy Seabrook (the applicant) responded to a staff request for additional information (RAI) regarding testing of the containment liner for possible loss of material from the concrete side of the liner. In the response, the applicant committed to ultrasonic testing (UT) of the containment liner at 10° intervals around the accessible circumference of the containment near the moisture barrier at the -26' elevation. The applicant committed to finishing the UT no later than December 31, 2015. The applicant further stated that in accordance with ASME Section XI, Subsection IWE 1241(a), Seabrook will designate the area of the containment liner that is within 10 inches of the moisture barrier at the containment basement floor for examination.

Issue:

IWE 1241(a) requires augmented examination of the containment liner surface area in accordance with Table IWE-2500-1, examination category E-C. Item E.4.12 of Table IWE-2500-1 requires 100% UT measurement of the area designated for augmented examination during each inspection period until the areas examined remain essentially unchanged for three consecutive inspection periods. In the RAI response, the applicant did not explain why a one-time UT examination at 10° increments (~ 36 measurements) to be completed by December 31, 2015, was appropriate in lieu of IWE-1241(a) and Table IWE-2500-1 requirements.

Request:

Provide technical justification for not following the requirements of IWE-1241(a) and Table IWE-2500-1 for performing UT examination of 100% of the area designated for augmented examination during each inspection period until the area remains essentially unchanged for three consecutive inspection periods. The staff is concerned that the December 31, 2015, deadline for one-time UT examination and the spacing of the UT measurements at 10° increments around the containment circumference may not be able to detect and establish a trend of the potential degradation of the liner plate over the long term.

Follow-up RAI B2.1.27-2:

Background:

By letter dated April 14, 2011, the applicant responded to a staff RAI regarding UT examinations of the containment liner below the fuel transfer tube which had been exposed to borated water leakage. In the response, the applicant stated that the area was subject to UT examinations and had been examined and accepted.

ENCLOSURE

Issue:

The applicant provided no information about when the UT examinations had been conducted or the results of the examinations. It is not clear if the containment liner plate below the fuel transfer tube that has been exposed to the borated water leakage was designated for augmented examination in accordance with IWE-1241(a). In addition, the RAI response did not provide the timing for the initial, and three subsequent consecutive, examinations to comply with IWE-1240 and Table IWE-2500-1 requirements.

Request:

Provide the dates and results of the UT examinations of the containment liner plate area below the fuel transfer tube. If any of the values were below the minimum wall thickness, explain how the areas were repaired or evaluated.

Follow-up RAI B2.1.31-1:

Background:

By letter dated April 14, 2011, the applicant responded to a staff RAI regarding concrete degradation due to groundwater in-leakage and the occurrence of Alkali-Silica Reaction (ASR) in the concrete. The applicant stated that an extent of condition investigation regarding the ASR degradation was on-going, along with the development of a long range aging management plan. The applicant explained that the plan would not be fully developed and implemented until December 2013. The applicant's response also listed several American Society for Testing and Materials (ASTM) standards that would be used to estimate the ASR reaction rate.

Issue:

The applicant provided no specific information about the applicability of the original operability determination conducted when ASR was initially identified. The response also lacked specific information about what tests (laboratory and in-situ) would be conducted and when. The response also made no mention of how possible reductions in concrete shear strength were being estimated and addressed. In addition, the RAI response stated that cores were being taken in accordance with American Concrete Institute (ACI) 228.1R-03; however, it did not address the statistical validity and size of core samples taken or planned at each location.

Request:

1. Explain if the current operability determination remains valid until the long term aging management plan is developed and implemented.
2. Explain how the concrete tests and evaluations performed so far can be used to establish a trend in degradation of the affected structures until the long term aging management plan is implemented.

3. Provide detailed and comprehensive information regarding the planned approach to addressing ASR degradation throughout the site. The description of the actions planned to test, evaluate, and mitigate ASR in the RAI response do not provide sufficient details for the staff to determine if the aging of the structures will be adequately managed during the period of extended operation.

   At a minimum include a discussion of the following:

   a. The locations where monitoring or sampling will be conducted, and how these results will be used to address other susceptible locations.
   b. The frequency of the monitoring and sampling to establish a trend in degradation of the structures and rate of ASR, and why the provided frequency is adequate.
   c. Detailed information about the planned in-situ monitoring or testing and laboratory testing. This should include the test method, frequency, and schedule.
   d. How the number of concrete samples taken or planned from each structure will ensure statistical validity.
   e. How the length of core samples taken or planned will account for variation of ASR across the wall thickness.
   f. How the extent of degradation/corrosion of rebars will be established in the ASR affected areas during the period of extended operation.
   g. How the reduction in load carrying capacity in the steel embedments and anchors used to support equipment, piping, conduits, and other commodities will be established in the ASR affected areas during the period of extended operation.
   h. How the results of the petrographic examination will be used to determine quantitative damage in concrete and rate of degradation for the period of extended operation.
   i. Plans, if any, for relative humidity and temperature measurements of affected concrete areas over the long term.
   j. Plans to perform stiffness damage tests to estimate the expansion attained to date in ASR affected concrete.
   k. How the current and future rate of expansion of concrete will be determined to ensure that bond between the rebar and concrete is effective over the long term.
   l. How the results of concrete compressive strength and modulus of elasticity conducted so far will be adjusted to account for future degradation during the period of extended operation.

4. Explain how the possibility of a reduction in shear strength capacity due to ASR degradation is being evaluated and addressed since core samples are not being used to establish the tensile strength of concrete. The response should include a discussion of how the possible reduction is being quantified and how the reduction is shown to be acceptable for the period of extended operation.

Follow-up RAI B2.1.31-4:

Background:

By letter dated April 14, 2011, the applicant responded to a staff RAI regarding past spent fuel pool (SFP) leakage and explained that a concrete core would be taken by December 31, 2015, in an area that had been wetted by the leakage. The applicant further stated that the SFP leak-off system is routinely hydro-lazed to ensure that it is free-flowing. During a conference call on May 31, 2011, the applicant also noted that SFP leakage had been detected during the spring 2011 refueling outage.

Issue:

1. The applicant did not explain why December 31, 2015, was an acceptable deadline for the concrete core, nor did they commit to taking the core.
2. The applicant did not identify, or justify, a frequency for hydro-lazing the leak-off system. The applicant also did not commit to continuing the hydro-lazing during the period of extended operation.
3. The applicant has not provided the staff with information on the new operating experience regarding the recent SFP leakage.

Request:

1. Provide technical justification for the adequacy of the December 31, 2015, deadline for the SFP concrete core, or provide a new deadline and appropriate justification. Commit to complete the core by the proposed deadline.
2. Identify the frequency that the leak-off system is ensured to be free-flowing. Provide technical justification for the frequency and commit to maintain the leak-off system free-flowing for the remainder of the operating term, including the period of extended operation.
3. Provide information on the recent leakage from the SFP. Include when the leakage was identified, the amount of leakage, the probable leakage path and source, and how the leakage is being addressed. Explain whether or not the leakage is contained within the leak-off system and provide technical justification for this conclusion. Also provide results of any chemical analysis (e.g., pH, iron content, etc.) that has been done on the leakage in the past and whether or not periodic chemical analysis will be performed on the leakage in the future.

Follow-up RAI B2.1.28-3:

Background:

By letter dated December 17, 2010, the applicant responded to RAI B.2.1.28-3 regarding possible testing of the containment concrete. In the response, the applicant enhanced the ASME Section XI, Subsection IWL AMP to include confirmatory testing of the containment concrete to determine the compressive strength, the presence or absence of ASR, the concrete modulus of elasticity, and the presence or absence of rebar degradation. The applicant committed to complete the testing prior to the period of extended operation.

Issue:

During several conversations with the staff during the license renewal inspection the week of April 4, 2011, as well as conference calls on April 27, and May 31, 2011, the applicant indicated that they did not want to remove core bores from the containment. However, the staff is unaware of any method other than core bores that can be used to determine all the concrete properties discussed in Commitment 51 in the letter dated December 17, 2010. In addition, it is not clear how the possible degradation/corrosion of the rebar will be established. Furthermore, one time tests prior to the period of extended operation in 2030 can be used to establish a trend during the period of extended operation.

Request:

1. Verify whether or not the enhancement, and Commitment 51, regarding testing to confirm containment concrete properties, made in the letter dated December 17, 2010, is still valid.
2. If Commitment 51 is still valid as stated in the letter dated December 17, 2010, explain how these properties (compressive strength, presence of ASR, modulus of elasticity, presence of rebar degradation) can be verified without taking core samples.
3. Provide details of the plans to monitor the extent of cracking and expansion in concrete.

Justify why it is appropriate to wait until the period of extended operation, in 2030, to verify whether or not ASR is occurring in the containment and to begin trending possible degradation.

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/RA/

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License Renewal Branch RPB2
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Docket No. 50-443

Enclosure:
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cc w/encl: Listserv

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NAME	SFigueroa	RPlasse	MSpencer	DWrona	SFigueroa
DATE	06/28/2011	06/28/2011	06/28/2011	06/29/2011	06/29/2011

OFFICE	PM: DLR/RPB2
NAME	RPlasse
DATE	06/29/2011

OFFICIAL RECORD COPY

Letter to Paul Freeman from Richard A. Plasse dated June 29, 2011

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE SEABROOK STATION, LICENSE RENEWAL APPLICATION

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