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

December 14, 2010

Mr. Paul Freeman
Site Vice President
c/o Mr. Michael O'Keefe
NextEra Energy Seabrook, LLC
P.O. Box 300
Seabrook, NH 03874

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RELATED TO THE REVIEW OF THE SEABROOK STATION, LICENSE RENEWAL APPLICATION (TAC NO ME4028) – AGING MANAGEMENT PROGRAMS

Dear Mr. Freeman:

By letter dated May 25, 2010, NextEra Energy Seabrook, LLC (NextEra) 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, Unit 1 (Seabrook) 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.

The request for additional information was discussed with Mr. Rick Cliche, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-1427 or by e-mail at richard.plasse@nrc.gov.

Sincerely,

Richard Plasse, Project Manager
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosure:
As stated

cc w/encl: Distribution via Listserv

Seabrook Station
License Renewal Application
Request for Additional Information Set 5
Aging Management Programs

RAI B.2.1.20-1

Background
Generic Aging Lessons Learned (GALL) aging management program (AMP) XI.M32, "One-Time Inspection," states in element 4, "detection of aging effects," that the inspection includes a representative sample of the system population, and, where practical, focuses on the bounding or lead components most susceptible to aging due to time in service, severity of operating conditions, and lowest design margin.

License renewal application (LRA) Section B2.1.20, One-Time Inspection, states that the inspection sample includes locations where the most severe aging effect(s) would be expected to occur. The inspection population will be based on such aspects of the systems and components as similarity of materials of construction, operating environment, and aging effects. The sample size will be based on such aspects of the systems and components as the specific aging effect, location, system, and structure design, materials of construction, service environment, or previous failure history. The selection criteria will include stagnant or low-flow areas.

Issue
Due to the uncertainty in determining the most susceptible locations and the potential for aging to occur in other locations, the staff noted that large sample sizes (at least 20%) may be required in order to adequately confirm an aging effect is not occurring. The applicant's One-Time Inspection Program did not include specific information regarding how the selected set of components to be sampled or the sample size will be determined.

Request
Provide specific information regarding how the selected set of components to be sampled will be determined and the size of the sample of components that will be inspected.

RAI B.2.1.22-1

Background
LRA Section B.2.1.22 states that the cathodic protection system protects the service water, diesel generator cooling water and instrument air piping systems as well as portions of the fire protection and control building air handling system. The staff noted that the auxiliary boiler, auxiliary steam condensate, auxiliary steam heating, condensate, feedwater, and plant floor drains as well as portions of the control building air handling and fire protection systems are not provided with cathodic protection. The applicant stated that opportunistic and/or directed visual inspections will be performed in areas with the highest likelihood of corrosion problems or areas with a history of corrosion problems.

ENCLOSURE

Issue

For the cathodically protected portions of in-scope buried piping, given that coatings can be missing, degraded or nonconforming (e.g., holidays), the staff believes that a cathodic protection system is most effective when it is available at least 90% of the time or not frequently removed from service. The LRA does not contain details on the availability of the cathodic protection system.

Given that several in-scope buried piping systems do not have cathodic protection, selection of inspection quantities and locations is particularly important to ensure that the most susceptible locations are being inspected. The applicant did not provide details on how it will determine localized data (e.g., soil pH, composition of the soil, water table, chemical runoff probability, soil resistivity, and potential for stray currents) or localized corrosion rates in order to inform its inspection quantities and locations. As a result of not having this information, the staff cannot make a determination that the number and locations of planned buried piping inspections is sufficient to maintain the pipe wall thickness at or above design minimum values throughout the period of extended operation.

Request

Note: Although gray cast iron is included within the scope of the GALL Report Section IX definition of steel, the below request does not apply to piping segments constructed of this material in the fire protection system.

For the in-scope buried piping systems that are protected by a cathodic protection system, state the availability of the cathodic protection system, and if portions of the system are not available 90% of the time or will be allowed to be out of service for greater than 90 days in any given year, justify how the piping will meet or exceed the minimum design wall thickness throughout the period of extended operation.

For the in-scope buried systems and portions of systems constructed of steel that are not cathodically protected:

a. State the lengths of the in-scope buried portions of piping for each system that is not provided with or only potions are provided with cathodic protection.
b. Provide details on plant-specific data of localized soil conditions (e.g., pH, composition of the soil, water table, chemical runoff probability, soil resistivity, potential for stray currents), plant –specific operating experience, and localized corrosion rates that will be utilized to optimize inspection quantities and locations. If this data does not exist, state what samples will be taken and how they will be utilized in selecting inspection locations.
c. Justify the basis of the inspection population size (i.e., linear feet of buried piping) in relation to standard industrial sampling methods so as to maintain pipe wall thickness at or above design minimum values throughout the period of extended operation.

RAI B.2.1.22-2

Background
In footnote 5 to the Buried Pipe Inspection Locations chart in the "detection of aging effects" program element, the applicant stated that if during inspections of a particular material type, damage to coatings or base materials is determined to have been caused by backfill, the backfill will be considered to be "inadequate" for that material type only. The staff noted that the number of proscribed inspections increases if backfill is determined to be inadequate. In the "preventive action" program element, the applicant did not state that backfill requirements were dependent on the material type of the buried pipe.

Issue
Given that backfill specifications are not dependent on the material type of the buried pipe, the staff believes that the results of inspections of backfill quality for a given piping material (e.g., steel) should be applied to the inspection sample size of the other material types (e.g., stainless steel, polymeric).

Request
Justify why an inadequate backfill determination for a single material type inspection should not be applied to the other material types.

RAI B.2.1.22-3

Background
In LRA Section B.2.1.22 the applicant stated that the service water system contains inaccessible submerged steel piping exposed to raw water in two vaults, one with four fifteen foot lines and one with a piping segment less than ten feet long. The applicant also stated that the piping is cathodically protected and coated. During the AMP audit the applicant stated that these vaults are normally filled with raw water but are periodically drained to conduct inspections. The applicant further stated that the vault containing this piping gradually re-fills with raw water as a result of in-leakage of groundwater.

Issue
The staff does not have sufficient information to determine how visual inspections of the external surfaces of the piping (i.e., inspection of the coatings) will detect corrosion of the piping that can occur either due to the permeability of the coating or undetected holidays in the coating. Coatings, in this case, could mask an on-going corrosion issue.

Request
State how the corrosion of the piping that could occur either due to permeability of the coating or undetected holidays in the coating will be detected.

RAI B.2.1.22-4

Background
In LRA Section B.2.1.22, the applicant stated that in November 2000, buried in-scope fuel supply piping leaked as a result of damaged wrapping. The applicant also stated that during subsequent extent of condition inspections of the same piping system, further damage was discovered, ultimately leading to a decision to not return this buried fuel supply line to service.

In footnote 5 to the Buried Pipe Inspection Locations chart in the "detection of aging effects" program element, the applicant stated, "This line is not in use and has been drained and flushed and is awaiting replacement per a design change. The inspection criteria for the replacement piping will be determined based [on] material selection, coating, cathodic protection and quality of backfill." During the audit the applicant stated that temporary fuel oil piping and tanks have been installed to replace the effected buried fuel oil supply piping and the associated above-ground fuel oil storage tank.

Issue
Given that the leakage from the buried fuel oil supply piping was the result of corrosion due to degraded wrapping, what extent of condition reviews were conducted to evaluate the condition of the wrapping for other in-scope systems containing non-cathodically protected, buried piping.

The staff noted that temporary piping and tanks are currently installed to support the in-scope function once served by the buried fuel oil supply piping and the associated above-ground fuel oil storage tank. The staff also noted that the LRA does not discuss if/when this temporary arrangement will be replaced with a permanent arrangement or how either the temporary piping and tanks or permanent arrangement will be age managed through the period of extended operation.

Request
1. Provide details (if any) regarding what extent of condition reviews, beyond the inspections performed of the fuel oil piping system, were conducted to determine the extent of coating damage in other in-scope, non-cathodically protected, buried piping systems.
2. Given that temporary piping and tanks are currently installed to support the in-scope function once served by the buried fuel oil supply piping and the associated above-ground fuel oil storage tank, describe how either the temporary piping and tanks or a possible future permanent arrangement will be age managed through the period of extended operation.

RAI B.2.1.30-1

Background
GALL Report (NUREG-1801), AMP XI.S4, "10 CFR Part 50, Appendix J," Element 4 states that a containment LRT program is effective in detecting degradation of containment shells, liners, and components that compromise the containment pressure boundary, including seals and gaskets. While the calculation of leakage rates demonstrates the leak-tightness and structural integrity of the containment, it does not by itself provide information that would indicate that aging degradation has initiated or that the capacity of the containment may have been reduced for other types of loads, such as seismic loading. This would be achieved with the additional implementation of an acceptable containment inservice inspection program as described in XI.S1 and XI.S2. In addition, 10 CFR Part 50, Appendix J requires a general inspection of internal and external surfaces of the containment prior to a Type A test.

Issue

According to the applicant, the containment surfaces were inspected prior to the most recent Type A test which was performed in 2008 using the "Complex Procedure" for reactor containment integrated leakage rate testing. This "Complex Procedure" states that visual inspections of the exposed interior and exterior surfaces of the containment vessel and the containment enclosure building will be performed. Based on a review of the procedure, the staff noted that the containment inspection section of the procedure does not specify examination methods for conducting internal and external inspections that are consistent with ASME Section XI, Subsections IWE and IWL requirements.

Request

The applicant is requested to provide the following information:

1. Describe the methods and procedures used to conduct a general inspection of internal and external surfaces of the containment prior to the most recent Type A test.
2. Indicate whether these methods and procedures are consistent with the containment inservice inspection programs described in GALL AMP XI.S1 and XI.S2.
3. Describe the method being used to ensure that internal and external containment inspections are being implemented as described in GALL AMP XI.S1 and XI.S2 and consistent with element 4 of GALL AMP XI.S4, "10 CFR Part 50, Appendix J."

The staff needs the above information to confirm that the effects of aging of the concrete containment will be adequately managed so that it's intended function will be maintained consistent with the current licensing basis for the period of extended operation, as required by 10 CFR 54.21(a)(3).

RAI B.2.1.30-2

Background

GALL Report (NUREG-1801), AMP XI.S4, "10 CFR Part 50, Appendix J," states that Appendix J provides two options, A and B, either of which can be chosen to meet the requirements of a containment LRT program. Under Option A, all of the testing must be performed on a periodic interval. Option B is a performance-based approach. More detailed information for Option B is provided in Regulatory Guide (RG) 1.163 and NEI 94-01, Rev. 0.

Nuclear Energy Institute (NEI) 94-01 states that a general visual inspection of the accessible interior and exterior surfaces of the containment system for structural deterioration which may affect the containment leak-tight integrity must be conducted prior to each test, and at a periodic interval between tests based on the performance of the containment system. In addition, NEI 94-01 recommended that these inspections be performed in conjunction or coordinated with the ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWE/IWL required examinations.

Regulations for codes and standards in 10 CFR 50.55a require personnel that examine containment concrete surfaces and tendon hardware, wires, or strands must meet the qualification provisions in IWA-2300 and that the "owner-defined" personnel qualification provisions in IWL-2310(d) are not approved for use.

In LRA B.2.1.30, the applicant states that the Seabrook Station Containment Leakage Rate Testing Program, required by Seabrook Station Technical Specification, implements Option B. In addition, the Seabrook Station Leakage Test Reference is based on the guidance provided in NEI 94-01 and ANSI / ANS-56.8-1994 with the restrictions identified in RG 1.163.

Issue

During the audit of element 4, the staff reviewed the "Complex Procedure" for reactor containment integrated leakage rate testing and qualification guidance for personnel who conducted visual examinations of concrete containment surfaces. The staff concluded that the qualification of personnel who conduct visual examinations of concrete containment surfaces should be consistent with qualification provisions in IWA-2300 as required by 10 CFR 50.55a.

Request

The applicant is requested to provide plans and schedule that will ensure that (1) personnel who perform visual examinations of concrete containment surfaces to comply with the applicant's commitment to implement Option B for integrated leakage rate tests are qualified in accordance with IWA-2300 requirements and (2) the applicant's 10 CFR Part 50, Appendix J AMP is consistent with GALL AMP XI.S4, "10 CFR Part 50, Appendix J."

December 14, 2010

Mr. Paul Freeman
Site Vice President
c/o Mr. Michael O'Keefe
NextEra Energy Seabrook, LLC
P.O. Box 300
Seabrook, NH 03874

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Dear Mr. Freeman:

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Sincerely,
/RA/
Richard Plasse, Project Manager
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosure:
As stated

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DATE	12/10/10	12/10/10	12/10/10	12/12/10	12/14/10

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Letter to P. Freeman from R. Plasse dated December 14, 2010

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