



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

May 29, 2012

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

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE  
SEABROOK STATION, LICENSE RENEWAL APPLICATION – SET 17

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 30 days from the date of this letter. If you have any questions, please contact me at 301-415-3897 or e-mail [arthur.cunanan@nrc.gov](mailto:arthur.cunanan@nrc.gov).

Sincerely,

A handwritten signature in black ink that reads "Arthur Cunanan".

Arthur Cunanan, Project Manager  
Projects Branch 1  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosure:  
Requests for Additional  
Information

cc w/encl: Listserv

SEABROOK STATION  
LICENSE RENEWAL APPLICATION  
REQUESTS FOR ADDITIONAL INFORMATION SET 17

**RAI 3.2.1.48-1**

Background:

On May 3, 2012, the staff issued License Renewal Interim Staff Guidance (LR-ISG), LR-ISG-2011-01, "Aging Management of Stainless Steel Structures and Components in Treated Borated Water," (ADAMS Accession No. ML12034A047) revising the SRP-LR and GALL Report to include the following additional aging management activities:

- Add the One-Time Inspection program to verify the effectiveness of the Water Chemistry program to manage loss of material due to pitting and crevice corrosion and cracking due to stress corrosion cracking in treated borated water.
- Add reduction of heat transfer due to fouling as an aging effect for stainless steel heat exchanger tubes exposed to treated borated water, and manage this aging effect with the Water Chemistry and One-Time Inspection programs.

This revised guidance applies to stainless steel structures and components exposed to treated borated water environments that are not actively controlled to oxygen levels less than 5 ppb.

In the license renewal application (LRA), the applicant stated that stainless steel and steel with stainless steel cladding components exposed to treated borated water will be managed for loss of material due to pitting and crevice corrosion and cracking due to stress corrosion cracking with the Water Chemistry program for those items associated with LRA Table 3.2.1, item 3.2.1-48; Table 3.2.1, item 3.2.1-49; Table 3.3.1, item 3.3.1-90; and Table 3.3.1, item 3.3.1-91.

In its response to RAI 3.2.2.2.4.2-1A, dated June 2, 2011, the applicant stated that stainless steel heat exchanger tubes exposed to treated borated water will be managed for reduction of heat transfer with the Water Chemistry program. The associated aging management review (AMR) items added in the request for additional information (RAI) response cite generic note H.

Issue:

The LRA contains several AMR items that manage stainless steel components exposed to treated borated water for loss of material, cracking, and reduction of heat transfer with the Water Chemistry program. However, the staff noted that the associated treated borated water environments may not be controlled to less than 5 ppb dissolved oxygen, and thus, the aging effects may not be effectively managed.

Request:

Describe how the effectiveness of the Water Chemistry program will be verified for those AMR items where the Water Chemistry program is used to manage loss of material, cracking, and reduction of heat transfer for stainless steel components exposed to treated borated water with greater than 5 ppb oxygen.

ENCLOSURE

**RAI B.2.1.9-2**

Background:

GALL Report AMP XI.M18, "Bolting Integrity," manages aging of closure bolting for pressure retaining components. The program includes periodic inspection of closure bolting for indication of loss of preload, cracking, and loss of material due to corrosion, rust, etc. GALL Report AMP XI.M36, "External Surfaces Monitoring of Mechanical Components," manages loss of material, cracking, and change in material properties of component external surfaces during system inspections and walkdowns.

In recent reviews of license renewal applications and operating experience, the NRC staff noted that Seabrook Station may have used, or currently uses, seal cap enclosures to contain water leakage. The staff also noted that the use of such enclosures may not be accounted for in their license renewal application. For example, the environment within seal cap enclosures may be submerged, rather than the air environment of the original component design. Also, enclosures may prevent the direct inspections of bolting and component external surfaces within the Bolting Integrity and External Surfaces Monitoring Programs, respectively.

Issue:

It is unclear to the staff whether Seabrook Station is using seal cap enclosures to contain water leakage, and if so, how bolting and component external surfaces within seal cap enclosures will be age managed, since direct inspection is not possible.

Request:

1. For all instances where seal cap enclosures surround pressure-retaining bolting and the external surfaces of in-scope components:
  - a. Describe the leaking water environment (e.g., reactor coolant, secondary water, borated water) and the materials of construction of the bolting and component external surfaces that are exposed to that environment.
  - b. Describe how the bolting and component external surfaces will be managed for loss of material, loss of preload, cracking, and change in material properties, as appropriate, in the submerged environment. Add associated AMR line items, if necessary.
  - c. If the use of seal cap enclosures prevents the direct inspections within the Bolting Integrity and External Surfaces Monitoring Programs, provide technical justification for how the aging effects will be effectively managed during the period of extended operation.
2. Describe how the use of seal cap enclosures is controlled such that aging is managed as described in 1.b and 1.c.

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Sincerely,

*/RA/*

Arthur Cunanan, Project Manager  
Projects Branch 1  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket No. 50-443

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Requests for Additional  
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cc w/encl: Listserv

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