

## SeabrookNPEM Resource

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**From:** Wentzel, Michael  
**Sent:** Monday, March 07, 2011 6:46 AM  
**To:** Cliche, Richard; Carley, Edward  
**Cc:** OKeefe, Michael  
**Subject:** Request for Information re: Seabrook LRA SAMA Review  
**Attachments:** Seabrook Follow-up SAMA RAIs.pdf

Gentlemen,

Attached, please find a request for additional information related to the Seabrook Station LRA Environmental Report. Your response is requested within 45 days. If you cannot respond within 45 days, or require additional clarification as to what is being requested, please feel free to contact me.

Thanks,  
Mike

Michael Wentzel  
Project Manager  
NRR/DLR/RPB1  
(301) 415-6459  
[michael.wentzel@nrc.gov](mailto:michael.wentzel@nrc.gov)

**Hearing Identifier:** Seabrook\_License\_Renewal\_NonPublic  
**Email Number:** 809

**Mail Envelope Properties** (Michael.Wentzel@nrc.gov20110307064500)

**Subject:** Request for Information re: Seabrook LRA SAMA Review  
**Sent Date:** 3/7/2011 6:45:49 AM  
**Received Date:** 3/7/2011 6:45:00 AM  
**From:** Wentzel, Michael

**Created By:** Michael.Wentzel@nrc.gov

**Recipients:**

"OKeefe, Michael" <Michael.OKeefe@fpl.com>  
Tracking Status: None  
"Cliche, Richard" <Richard.Cliche@fpl.com>  
Tracking Status: None  
"Carley, Edward" <Edward.Carley@fpl.com>  
Tracking Status: None

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Seabrook Follow-up SAMA RAIs.pdf		318861

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

March 4, 2011

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

SUBJECT: SCHEDULE REVISION AND REQUEST FOR ADDITIONAL INFORMATION  
FOR THE REVIEW OF THE SEABROOK STATION LICENSE RENEWAL  
APPLICATION ENVIRONMENTAL REVIEW (TAC NUMBER ME3959)

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 (10 CFR Part 54), to renew Operating License NPF-86 for Seabrook Station Unit 1 (Seabrook). By letter dated July 13, 2010 (ADAMS Accession No. ML101690417), the staff issued a proposed schedule for the review of the Seabrook license renewal application.

By letter dated November 16, 2010 (ADAMS Accession No. ML103090215), the NRC issued requests for additional information (RAIs) related to the Severe Accident Mitigation Alternatives (SAMA) review of the Seabrook Environmental Report (ER). By letter dated January 13, 2011, NextEra submitted its responses to the staff's RAIs. Following a telephone conference between NextEra and the NRC, the staff identified areas where additional information is necessary to complete the SAMA review (see enclosure). Items in the enclosure were discussed with your staff and a mutually agreeable date for the response is within 45 days from the date of this letter.


As a result of this need for additional information, the staff will no longer be able to issue the Draft Supplemental Environmental Impact Statement (DSEIS) for Seabrook as previously scheduled for May 13, 2011. Upon receipt of NextEra's responses to the enclosed RAIs, the NRC staff will evaluate them and provide an update to the environmental review milestones schedule, as necessary. I would like to emphasize that the revised issuance date will largely depend on the completeness and timeliness of your responses.

P. Freeman

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If you have any questions, please contact the Environmental Project Manager at 301-415-6459 or by e-mail at [michael.wentzel@nrc.gov](mailto:michael.wentzel@nrc.gov).

Sincerely,

A handwritten signature in black ink, consisting of a large, stylized loop with a horizontal line extending to the right.

Bo Phan, Chief  
Projects Branch 1  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosure:  
As stated

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION  
REGARDING THE ANALYSIS OF SEVERE ACCIDENT MITIGATION ALTERNATIVES  
FOR THE SEABROOK STATION LICENSE RENEWAL REVIEW

1. The responses to RAI 1.f and 2.e state that Tables F.3.1.1.1-2 and F.3.2.1-2 consider initiating events. However, Tables F.3.1.1.1-2 and F.3.2.1-2 show only basic events, and so it is not clear how initiating events are explicitly considered in the importance analysis. For example, the most dominant initiating event contributor according to the listing in Table F.3.1.1.1-1 is loss of offsite power due to weather (LOSPW), but there appears to be no corresponding event in Tables F.3.1.1.1-2 or F.3.2.1-2. Additionally, the responses to RAI 1.f and 2.e state that Attachment F.A describes a number of SAMA probabilistic risk assessment (PRA) cases that specifically addressed initiating events. While this is the case, it is unclear if all of the dominant initiating events in Table F.3.1.1.1-1 are addressed. For example, while Attachment F.A describes "NOLOSP" as the modeling case used to determine the benefit of eliminating all Loss of Off-site Power (LOSP) events, none of the SAMAs evaluated using this case (i.e., SAMAs 13, 14, 16, 24, and 156) specifically addressed initiating event FLLP, "Flood in Turbine Building (causing LOSP)." Other examples from Attachment F.A are PRA cases "FIRE1" and "FIRE2," which are the PRA model cases used to determine the benefit of eliminating control room induced LOCA and fire in Turbine Building causing loss of power to emergency buses, respectively. Neither of these modeling cases addresses the specific scenario of a fire in Switchgear Rooms A or B and no SAMAs were identified or developed to specifically address fire in Switchgear Rooms A and B. Please provide an explanation, including a table, which correlates SAMA candidates to each of the risk-important initiating events and identifies whether there are any potentially lower cost plant-specific SAMA candidates for the specific initiating events identified. Include, as an example, a demonstration in Tables F.3.1.1.1-2 and F.3.2.1-2 of how LOSPW is considered.
  
2. Concerning the NextEra response to staff RAI 3.b:
  - a. Relative to the FIVE fire risk analysis methodology, clarify if fire-induced failures of components or human actions credited for mitigating the initiator are assessed, given that the initiator is now fire-induced (including identifying either new components or actions to be modeled or re-quantifying the random failure probabilities of previously modeled ones). In addition, clarify if hot shorts are considered and, if so, what probabilities are assigned to these. If the assigned probabilities are not bounded by currently accepted values (e.g., best estimates of 0.3 and 0.6, respectively, for intra-cable hot shorts for circuits protected vs. not protected by control power transformers in Tables 10-1 through 10-5 of NUREG/CR-6850 [2005], which are based on Electric Power Research Institute (EPRI) 1006961 [2002]), either provide a technical basis for the values assumed (such as circuit analysis) or perform a sensitivity evaluation using the currently accepted values to determine the effect on the potential cost-benefit of the SAMAs.

ENCLOSURE

- b. Relative to the fire-induced interfacing system loss-of-coolant accident (ISLOCA) & Containment Impact section. For the “only area where isolation valves both inside and outside containment could be affected,” clarify how “important isolation valves [that] could be controlled locally at the valve” would be so controlled for valves inside containment during operation. For the letdown system and its “several; fail closed air-operated valves (AOVs),” clarify the basis for the statement “it is not credible for all three valves to hot short.” For “isolation failure of one or more valves of a single train,” clarify the statement “the ability to remove power from fail closed valves to provide isolation” and the case for failed open valves due to hot shorting (which could not be de-powered?).
3. The response to RAI 3.c.a states that “[h]owever, the present PRA model has been updated to the more recent EPRI hazards,” and that “[t]his was done because, while the methodology and experts used in developing the EPRI hazard are essentially the same as the Seabrook Station Probabilistic Safety Assessment (SSPSA), the EPRI hazard is more recent and the EPRI uniform hazard spectrum (UHS) developed for the Seabrook Station site is more realistic than that used in the SSPSA.” Since the EPRI hazard curve was assessed in the individual plant examination external events (IPEEE) as a sensitivity case, and the SSPSA curves were considered the baseline, please clarify the basis for considering the SSPSA curves as the baseline and the EPRI curves as the sensitivity case, and why replacing the SSPSA hazard curves with the EPRI hazard curves is now more appropriate as the baseline representation for Seabrook Station.
4. A seismic core damage frequency (CDF) of 2.2E-05 per year, based on the updated 2008 United States Geologic Survey (USGS) seismic hazard curves (as determined from GI-199 information), was used to develop a factor of 2.6 multiplier on the maximum attainable benefit (MAB). The potential effect of this factor is three-fold: (1) for those Phase II SAMAs that were previously screened on high cost or low benefit, the use of this factor could result in some of these SAMAs being reconsidered for a quantitative Phase II evaluation, (2) for those Phase II SAMAs previously evaluated quantitatively and dismissed as non-cost-beneficial, the use of this factor could now render some of these potentially cost-beneficial, and (3) for those Phase II SAMAs previously evaluated and determined to be cost-beneficial, the use of this factor could increase the degree of cost-benefit. The revised MAB based on the 2.6 factor was used to re-assess only those Phase II SAMAs that were qualitatively screened based on high cost or low benefit (Item 1). Phase II SAMAs that were quantitatively evaluated in the original analysis were not re-assessed in the RAI response (Items 2 and 3). Based on a scoping assessment by the NRC staff, applying the 2.6 multiplier to the estimated benefit for these non-re-assessed SAMAs will result in many SAMAs becoming potentially cost-beneficial, based on the current cost estimates. Please provide an assessment of the impact of the higher seismic CDF on all SAMAs, including those identified and evaluated in response to the staff’s original RAIs. Note that this re-evaluation applies to all SAMAs, whether or not they result from internal or external event considerations. Specifically, please discuss whether random failures are included in the seismic analysis and, if not, use the 2.6 factor to assess the impact of the higher seismic CDF on the SAMA evaluation.

5. The response to staff's RAI 5.b states that all top ranked basic events related to large early release frequency (LERF) have been addressed in response to RAI 2.f. This appears to be the case with the exception of basic event FWP161.FS, which has a LERF risk reduction worth (RRW) of 1.0886 (see Environmental Report Table F.3.2.1-2). Please provide an assessment of this basic event for SAMAs, including an identification of the specific basic events that bound this basic event and the associated SAMAs.
6. The response to staff's RAI 5.b provides the same disposition (not beneficial based on eliminating all supplemental electric power system (SEPS) failures), same associated SAMAs (#9 and #14), and same two pairs of case studies (PRA cases SEPS for #s 8-9 and OSEP1 for #s 10-11) for basic events #8, #9, #10, and #11, yet the estimated benefits are different between the pairs #s 8-9 and #s 10-11. Clarify the differences in the treatment of these four SAMAs, including the two different case studies and provide additional details on the modeling assumptions for each.
7. Clarify why NextEra believes the uncertainty distribution represents the uncertainty in the fire and seismic portions of the PRA model. Include a discussion of whether probability distributions were assigned for external events (such as for fire ignition frequencies, non-suppression probabilities, hot short probabilities, seismic frequencies, other seismic parameters) and, if not or only done so partially, how this impacts the SAMA analysis, including any specific examples of where probability distributions were applied in the fire and seismic models.
8. In the response to RAI 5.f for Essential Switchgear Rooms, clarify if electrical raceway fire barriers are also considered for areas where cables for redundant trains may be co-located.

P. Freeman

- 2 -

If you have any questions, please contact the Environmental Project Manager at 301-415-6459 or by e-mail at [michael.wentzel@nrc.gov](mailto:michael.wentzel@nrc.gov).

Sincerely,

*/RA/*

Bo M. Pham, Chief  
Projects Branch 1  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosure:  
As stated

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**ADAMS Accession Number: ML110590638**

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<b>DATE</b>	02/28/2011	03/01/2011	03/01/2011	03/04/2011	03/04/2011

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Letter to Paul Freeman from Bo M. Pham dated March 04, 2011

**SUBJECT: SCHEDULE REVISION AND REQUEST FOR ADDITIONAL INFORMATION  
FOR THE REVIEW OF THE SEABROOK STATION LICENSE RENEWAL  
APPLICATION ENVIRONMENTAL REVIEW (TAC NUMBER ME3959)**

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