



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

November 18, 2010

Mr. Larry Meyer
Site Vice President
NextEra Energy Point Beach, LLC
6610 Nuclear Road
Two Rivers, WI 54241-9516

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2 – REQUEST FOR
ADDITIONAL INFORMATION RE: LICENSE AMENDMENT REQUEST
(LAR-261) ASSOCIATED WITH EXTENDED POWER UPRATE
(TAC NOS. ME1044 AND ME1045)

Dear Mr. Meyer:

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated April 7, 2009, (Agencywide Documents Access and Management System Accession Nos. ML091250564), NextEra Energy Point Beach, LLC, submitted a license amendment request for the Point Beach Nuclear Plant, Units 1 and 2. The proposed amendment would increase each unit's licensed thermal power level from 1540 megawatts thermal (MWt) to 1800 MWt, and revise the Technical Specifications to support operation at the increased thermal power level.

The NRC staff in the Reactor Systems Branch of the Office of Nuclear Reactor Regulation has determined that additional information is required to complete the review. The specific information requested is provided as an enclosure to this letter. During a discussion with Mr. Steve Hale on November 16, 2010, it was determined that you would attempt to provide a response to the requested information within 30 days of the date of this letter.

The NRC staff considers that timely response to the requests for additional information help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources. If circumstances result in the need to revise the requested response date, please contact me immediately at (301) 415-3049.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry A. Beltz", with a long horizontal flourish extending to the left.

Terry A. Beltz, Senior Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-266 and 50-301

Enclosure:
Request for Additional Information

cc w/encl: Distribution via ListServ

REQUEST FOR ADDITIONAL INFORMATION
RELATED TO POSTULATED STEAM GENERATOR TUBE RUPTURE
REACTOR SYSTEMS BRANCH
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2
LICENSE AMENDMENT REQUEST 261 - EXTENDED POWER UPRATE
TAC NOS. ME1044 AND ME1045

Background

The postulated steam generator tube rupture (SGTR) event, as analyzed for the Point Beach Nuclear Plant (PBNP) extended power uprate (EPU) request, is based on a conservative evaluation of the total reactor coolant mass released, through the steam generator, to the environment. The analyses supporting this evaluation rely on, among others, an assumption that operators can terminate the leakage of reactor coolant into the steam generator shell side, and ultimately, into the environment.

The validity of this assumption relies, in part, on a supplemental analysis that demonstrates that there is adequate margin to steam generator overfill. Although not a part of the PBNP licensing basis, this analysis attempts to validate the mass release evaluation by demonstrating, using a separate set of initial conditions, that following an SGTR, primary to secondary break flow can be terminated and the steam generator can be isolated before it fills with liquid water.

This supplemental analysis, however, is based on assumptions that are non-bounding of permissible plant operation, do not consider uncertainties, and do not include a limiting single active component failure in the mitigating safety system. The analyses also demonstrate a very small available margin to steam generator overfill.

Generic studies documented in WCAP-10698-P-A, "SGTR Analysis Methodology to Determine the Margin to Steam Generator Overfill," indicate that final liquid volume in the steam generator shell side will be greater, by about 12-13 percent when employing conservative input values. The U.S. Nuclear Regulatory Commission (NRC) staff accepted the technical basis underlying WCAP-10698-P-A, since it described an acceptable methodology for performing a conservative margin-to-overfill analysis for a postulated SGTR.

Adding 12-13 percent to the PBNP margin-to-overfill analysis results would predict overfill of the ruptured steam generator.

As documented in WCAP-11002-P1, the postulated consequences of a steam generator overfill could include water relief through a safety valve, which then fails due to liquid flow. The valve could either fail to reseal, or fail fully open. In either case, the ruptured steam generator would be

1 Note that the staff discussed WCAP-11002-P in its evaluation of WCAP-10698-P-A, but did not find that it provided an acceptable method for performing a licensing basis safety analysis.

unisolable and would continue to discharge effluent from the ruptured steam generator for a period of time that far exceeds the release time assumed in the licensing basis mass release analyses for PBNP EPU. The continued discharge would also impede efforts to depressurize the reactor coolant system to a pressure below the steam generator shell side pressure

Consideration of input parameter variability, uncertainties, and limiting single failures, demonstrates that the postulated SGTR event at PBNP may result in a steam generator overflow. This information challenges the assumption, employed in the mass release analyses, that the ruptured steam generator is isolable.

Applicable Regulatory Guidance

Title 10 of the *Code of Federal Regulations*, Part 50, Section 36 (10 CFR 50.36) promulgates requirements for facility technical specifications.

The regulations in 10 CFR 50.36 contain requirements for limiting safety system settings (LSSS), which are settings for automatic protective devices related to those variables having significant safety functions. Where an LSSS is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded. Certain LSSS, including those for steam generator water level, provide a basis for and/or establish an allowable range of initial conditions from which postulated accidents are assumed to initiate, and at which automatic equipment actuations are assumed to occur.

The regulations in 10 CFR 50.36 also require the establishment of limiting conditions for operation of a nuclear reactor, which include, among other things, process variables, design features, and operating restrictions that are initial conditions of design basis accident or transient analyses that either assume the failure of or present a challenge to the integrity of a fission product barrier.

Since the radiological consequences of a postulated SGTR at PBNP are evaluated using an alternative source term (AST), Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," is applicable. Regulatory Position 5.1.3 states that the numeric values that are chosen as inputs to the analyses should be selected with the objective of determining a conservative postulated dose.

Regulatory Position 5.1.4 states that the NRC staff considers the implementation of an AST to be a significant change to the design basis of a facility that is voluntarily initiated by the licensee. In order to issue a license amendment authorizing the use of an AST and the total effective dose equivalent dose criteria, the NRC staff must make a current finding of compliance with regulations applicable to the amendment. The characteristics of the ASTs and the revised dose calculational methodology *may be incompatible with many of the analysis assumptions and methods currently reflected in the facility's design basis analysis*. The NRC staff may find that new or unreviewed issues are created by a particular site-specific implementation of the AST, warranting review of staff positions approved subsequent to the initial issuance of the license. This is not considered a backfit as defined by 10 CFR 50.109, "Backfitting."

Based on Regulatory Position 5.1.4, the staff questions the licensing basis assumption that the SGTR results in only a steam release to the atmosphere, despite that a margin to steam

generator overfill is not included in the PBNP licensing basis. By referencing the EPU margin-to-overfill analysis in response to an NRC request for additional information (RAI) associated with the AST application, the licensee introduced the previously unreviewed issue concerning steam generator margin to overfill. The licensee attempted to demonstrate that PBNP has margin to overfill, but the NRC staff did not accept this analysis due to the fact that it relied on unacceptably non-conservative inputs and assumptions. The approved staff position regarding an acceptable margin to overfill analytic methodology is communicated in the Safety Evaluation Report (SER) approving WCAP-10698-P-A and in SERs approving plant-specific implementation of the WCAP-10698-P-A *in toto*.

Issue

Based on the NRC staff's independent assessment, consideration of the full range of permissible plant operation, consistent with the above regulatory and licensing basis requirements, and consideration of parametric uncertainties, for a postulated SGTR would result in a predicted overfill of the steam generator.

In order for the NRC staff to accept the proposed mass release analysis, the licensee must provide an acceptably conservative evaluation of margin to steam generator overfill to validate the assumption that the steam generator will not fill with water prior to the termination of an atmospheric release.

During a November 2, 2010, public meeting between NextEra Energy and the NRC staff, a draft version of this RAI was discussed. The licensee provided the following information for the staff's consideration:

- The licensing basis for Point Beach includes a steam generator tube rupture concurrent with a loss of offsite power (LOOP), an event expected to occur with a frequency of approximately $3E-6$ per year.
- Assuming a concurrent, limiting single equipment failure results in an event of very low frequency, $3E-9$ per year.

Also during the November 2, 2010, meeting, the licensee provided results of an analysis to demonstrate that even with the occurrence of a postulated SGTR event concurrent with a LOOP and a limiting single failure, the resulting radiological consequences would remain within NRC regulatory limits.

The licensee stated that the liquid release radiological consequences analysis was an added assurance analysis, and it was not intended for incorporation into the licensing basis. The licensee's reasoning included the fact that the steam generator tube rupture concurrent with a limiting single failure and a LOOP is beyond the design basis of PBNP, and that such an event has a very low probability.

While the NRC staff agreed that the licensee's technical approach to answering the staff's RAI was reasonable, the NRC staff communicated that the licensee would need to provide additional justification for not incorporating the limiting results into the PBNP licensing basis and that the NRC staff would continue to consider the acceptability of this approach.

The NRC staff's position remains that current regulatory guidance directs the staff to ensure that analytic assumptions contained in the radiological consequences analysis are appropriately conservative, and the information provided by the licensee to date does not provide adequate validation of the assumption that environmental releases during the postulated SGTR event would include only steam.

Request

Provide a thermal-hydraulic analysis for PBNP, at both current licensed thermal power conditions and at the proposed, uprated conditions, for a limiting margin-to-overfill/overflow scenario. One acceptable methodology would be for the analysis to align as closely as possible to what is approved in WCAP-10698-P-A; however, since the licensee has asserted that a limiting single failure is not in the PBNP licensing basis, this exception to the WCAP-10698-P-A methodology would be acceptable.

In addition to providing the analytic results, please address the following:

1. Ensure that the limiting liquid release pathway and scenario are identified. Include consideration of the steam line equipment water-release failures discussed in WCAP-11002. If a liquid release is predicted, provide analyses of the static and dynamic structural effects in the main steam system and of the consequences of passing water through the steam pressure relief valves.
2. Under the assumed LOOP conditions, address the functionality of each atmospheric dump valve (ADV). Discuss what, if any, mitigating function the ADV provides and its capability to perform that function under the assumed LOOP conditions. If valve actuation is manually performed, provide information to demonstrate that the operator is capable of causing the valve actuation within the analytically assumed time.
3. For the CLTP [current licensed thermal power] case, provide recent trending data for full-power steam generator water level to demonstrate that a conservative initial steam generator water level has been selected.
4. Identify any new operator actions credited in the analysis resulting from the response in Question 1, and confirm that each action is consistent with station procedures.
5. Update the information contained in response to RAI SRXB-5 in the September 28, 2010, supplemental letter to reflect assumptions used in the analysis performed in response to the above request.
6. Should the radiological consequences from the analyses requested in this RAI be more severe than the currently proposed radiological analyses, then update the licensing basis radiological consequence analyses for both the AST and EPU license amendment requests to reflect these results. Since the NRC staff is allowing the single failure exception to the WCAP-10698-P-A methodology, the above requested analysis represents an event that has a significantly higher likelihood of occurrence.

Please also provide the following additional information, which was discussed during the November 2, 2010, meeting:

1. Identify procedures addressing steam generator overfill conditions. What parameters do operators monitor to help ensure that overfill does not occur?
2. For any revised radiological consequence analyses, provide the basis for the assumed flashing fraction if it is less than 100 percent.

November 18, 2010

Mr. Larry Meyer
Site Vice President
NextEra Energy Point Beach, LLC
6610 Nuclear Road
Two Rivers, WI 54241-9516

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2 – REQUEST FOR ADDITIONAL INFORMATION RE: LICENSE AMENDMENT REQUEST (LAR-261) ASSOCIATED WITH EXTENDED POWER UPRATE (TAC NOS. ME1044 AND ME1045)

Dear Mr. Meyer:

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated April 7, 2009, (Agencywide Documents Access and Management System Accession Nos. ML091250564), NextEra Energy Point Beach, LLC, submitted a license amendment request for the Point Beach Nuclear Plant, Units 1 and 2. The proposed amendment would increase each unit's licensed thermal power level from 1540 megawatts thermal (MWt) to 1800 MWt, and revise the Technical Specifications to support operation at the increased thermal power level.

The NRC staff in the Reactor Systems Branch of the Office of Nuclear Reactor Regulation has determined that additional information is required to complete the review. The specific information requested is provided as an enclosure to this letter. During a discussion with Mr. Steve Hale on November 16, 2010, it was determined that you would attempt to provide a response to the requested information within 30 days of the date of this letter.

The NRC staff considers that timely response to the requests for additional information help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources. If circumstances result in the need to revise the requested response date, please contact me immediately at (301) 415-3049.

Sincerely,

/RA/

Terry A. Beltz, Senior Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-266 and 50-301

Enclosure:
Request for Additional Information

cc w/encl: Distribution via ListServ

DISTRIBUTION:

Public	RidsNrrPMPPointBeach Resource	RidsOgcRp Resource
LPL3-1 r/f	RidsAcrsAcnw_MailCTR Resource	BParks, NRR
RidsNrrDorlLpl3-1 Resource	RidsRgn3MailCenter Resource	SSun, NRR
RidsNrrLABTully Resource	RidsNrrDorlDpr Resource	RidsNrrDssSrx Resource

ADAMS Accession No.: ML103200066

OFFICE	NRR/LPL3-1/PM	NRR/LPL3-1/LA	NRR/DSS/SRXB/BC	NRR/LPL3-1/BC	NRR/LPL3-1/PM
NAME	TBeltz	BTully	TUises	RPascarelli	TBeltz
DATE	11/ 17/10	11/ 17/10	11/18/10	11/18/10	11/18/10

OFFICIAL RECORD COPY