NEXTera ENERGY POINT BEACH

September 27, 2010

NRC 2010-0148
10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Point Beach Nuclear Plant, Units 1 and 2
Dockets 50-266 and 50-301
Renewed License Nos. DPR-24 and DPR-27

License Amendment Request 261
Extended Power Uprate
Response to Request for Additional Information

References:
(1) FPL Energy Point Beach, LLC letter to NRC, dated April 7, 2009, License Amendment Request 261, Extended Power Uprate (ML091250564)
(2) NRC electronic mail to NextEra Energy Point Beach, LLC, dated September 10, 2010, Point Beach Nuclear Plant, Units 1 and 2 - Requests for Additional Information Associated with Extended Power Uprate (TAC Nos. ME1044 and ME1045)

NextEra Energy Point Beach, LLC (NextEra) submitted License Amendment Request (LAR) 261 (Reference 1) to the NRC pursuant to 10 CFR 50.90. 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.

Via Reference (2), the NRC staff determined that additional information is required to enable the staff's continued review of the request. Enclosure 1 provides the NextEra response to the NRC staff's request.

This letter contains no new Regulatory Commitments and no revisions to existing Regulatory Commitments.

The information contained in this letter does not alter the no significant hazards consideration contained in Reference (1) and continues to satisfy the criteria of 10 CFR 51.22 for categorical exclusion from the requirements of an environmental assessment.

In accordance with 10 CFR 50.91, a copy of this letter is being provided to the designated Wisconsin Official.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on September 21, 2010.

Very truly yours,

NextEra Energy Point Beach, LLC

Larry Meyer
Site Vice President

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Point Beach Nuclear Plant, USNRC
Resident Inspector, Point Beach Nuclear Plant, USNRC
PSCW

ENCLOSURE 1

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261
EXTENDED POWER UPRATE
RESPONSE TO REQUEST FOR ADDITION INFORMATION

The NRC staff determined that additional information was required (Reference 1) to enable the Mechanical and Civil Engineering Branch to complete the review of License Amendment Request (LAR) 261, Extended Power Uprate (EPU) (Reference 2). The following information is provided by NextEra Energy Point Beach, LLC (NextEra) in response to the NRC staff's request.

EMCB (HELB) RAI 1

The licensee's calculations entitled PBNP-994-21-05-P05, Revision 0, "Steam Supply Piping to AFW Pump/GL 87-11 Break Location Determination," and PBNP-994-21-05-P06, Revision 0, "Steam Supply Piping to AFW Pump/GL 87-11 Break Location Determination," (Enclosure 1, Attachments 7 and 8, to Reference 1), establish the respective locations of intermediate high energy large breaks and leakage cracks for the 3-in steam supply piping from the main steam headers to the auxiliary feedwater (AFW) pumps 1P-29 and 2P-29, at Point Beach Units 1 and 2. However, the pipe stress analysis reports listed in Reference 6 of Attachments 7 and 8 of Reference 1 do not address EPU, and may not include increases in piping temperatures or changes to the piping configurations for these piping subsystems due to EPU.

Please provide additional detail to document that the Reference 6 calculations in Attachments 7 and 8 of Reference 1 remain valid for the EPU conditions.

NextEra Response

The maximum pressure and temperature for the three inch steam supply lines to the turbine-driven auxiliary feedwater (TDAFW) pumps occur at hot zero power conditions. These conditions will remain at the current value of 547°F (1020 psia), which is consistent with the reactor coolant system zero power Tavg of 547°F. There are no configuration changes for the auxiliary feedwater (AFW) upgrade or EPU that affect this condition. The best estimate steam generator steam pressure for the EPU full power operating conditions will be approximately 802 psia (Unit 1) and 806 psia (Unit 2).

Calculation PBNP-994-21-05-P05 for Unit 1 utilized a pressure of 1145 psig and a temperature of 563°F to determine the break and crack locations in accordance with Generic Letter (GL) 87-11, Relaxation in Arbitrary Intermediate Pipe Rupture Requirements, for the three inch steam supply to the TDAFW pump. These pressures and temperatures bound the current and EPU conditions provided above. Therefore, calculation PBNP-994-21-05-P05 and its Reference 6 pipe stress analysis reports remain valid for EPU conditions.

Calculation PBNP-994-21-05-P06 for Unit 2 utilized a pressure of 1145 psig and a temperature of 563°F to determine the break and crack locations in accordance with GL 87-11 for the three inch steam supply to the TDAFW pump. The radwaste steam and auxiliary steam lines utilized a pressure and temperature of 1085 psig and 521°F, respectively. These pressures and temperatures bound current and EPU conditions. Therefore, calculation PBNP-994-21-05-P06 and its associated pipe stress analysis reports remain valid for EPU conditions.

EMCB (HELB) RAI 2

The licensee's letter dated April 7, 2009 (Reference 2), Section 3.2.2, "High Energy Line Break," notes in part that: "For those high energy systems that did not have the benefit of having a dynamic seismic analysis, a break was postulated at the weld to every fitting, valve and welded attachment. Rather than determining all of these locations, a break was postulated in every compartment the piping run traversed. In addition, a crack was postulated to occur anywhere along the run of the pipe at the most adverse location." The Automated Engineering Services Corporation paper entitled: "Technical Position Paper for Establishing HELB Break & Leakage Crack Location Selection Criteria," Revision 1, dated August 7, 2008, is documented in several of the attachments in Enclosure 1 to Reference 1. Subsection 3.3 of Section 3.0 of the position paper, "Proposed Unified PBOC Criteria for the PBNP HELB Reconstitution Program," proposes, in part, to: "Adopt the use of GL 87-11 and MEB 3-1, Rev, 2 rules for HE lines only, including the rules for break and leakage crack locations in their entirety." Subsection 3.7 of Section 3.0 of the position paper notes that: "Where break locations are selected without the benefit of stress calculations, it is recommended that breaks be postulated at the piping welds to each fitting, valve, or welded attachment." This recommendation is consistent with the recommendation of Section B.1.c(2)(b)(i) of Branch Technical Position MEB 3-1, "Postulated Rupture Locations in Fluid System Piping Inside and Outside Containment," Revision 2, dated June 1987.

Please provide additional detail to justify implementing its HELB LAR for unanalyzed piping, without implementing Section B.1.c(2)(b)(i) of Branch Technical Position MEB 3-1.

NextEra Response

The referenced NextEra letter dated April 7, 2009 (Reference 2), and the Automated Engineering Services Corporation technical position paper are consistent with BTP MEB 3-1, Revision 2. There are three areas of the plant that contain high energy lines which have not been seismically analyzed:

1. Secondary side systems (feedwater, condensate, heater drain tank pump discharge, feedwater heater vents and drains, reheater drains, and extraction steam) in the turbine hall.

2. Chemical and volume control system (CVCS) letdown in the primary auxiliary building.

3. Steam generator blowdown in the facades.

BTP MEB 3-1, Revision 2, Section B.1.c(2)(b)(i) requires that a break be postulated at the weld to every fitting, valve and welded attachment. After review of the physical routing of the non-seismically analyzed piping and its proximity to nearby piping or components of required equipment, NextEra utilized a more conservative approach, by assuming that a break occurs in each room (compartment) at any point that the lines traverse. The consequences of line breaks in these areas were then evaluated.

For the three areas that contain high energy lines:

1. The high energy systems (feedwater, condensate, heater drain tank pump discharge, feedwater heater vents and drains, reheater drains, extraction steam) in the turbine hall are not routed in areas of the turbine hall that include any components required for mitigation of a postulated high energy line break (HELB) event from these specific high energy systems in the turbine hall.

2. The two inch CVCS letdown line is routed through a pipeway, and heat exchanger rooms. The only piping or components in proximity to this routing that are required for the CVCS letdown line HELB event are the component cooling water (CCW) lines for inside containment. Due to the CVCS letdown line size, longitudinal breaks do not have to be postulated per the December 19, 1972 Giambusso Letter. For circumferential breaks, the discharging fluid is limited by the letdown orifices inside containment thereby limiting the reaction forces on the pipe. Therefore, the nearby required CCW lines in the pipe chase are not endangered.

3. The steam generator blowdown lines are entirely routed within the applicable unit's facade and are not routed near any components required for mitigation of a postulated HELB event from a steam generator blowdown line in the facades. Since the steam generator blowdown piping is routed entirely within the lower volume of the facade, the resultant environmental conditions remain the same regardless of the break location. A HELB break analysis was performed for the steam generator blowdown lines in the facade for temperature, and the results were used for the environmental qualification of electrical equipment in the area.

Therefore, NextEra meets the intent of the requirements of BTP MEB 3-1, Revision 2, Section B.1.c(2)(b)(i), for seismically unanalyzed high energy piping.

EMCB (HELB) RAI 3

The licensee's calculation entitled PBNP-994-21-12, Revision 0, "Task 12 Jet Impingement Calculations - Attachment 2 Break Sizes and Operating Parameters," (Enclosure 1, Attachment 12, to Reference 1), prepares new jet impingement centerline pressure and temperature versus distance calculations for the Point Beach Nuclear Plant, Units 1 and 2. Based on the NRC staff's review of the calculation, the staff requests that the licensee provide the following additional details for the calculation:

(a) Provide additional details for the "operable but non-conforming" condition documented in Section 1, "Purpose," of the calculation, including a discussion to document that the calculation resolves the "operable but non-conforming condition."

(b) Provide additional details to document the discovery date of the "operable but non-conforming condition."

*(c) The staff recommends that the licensee revise Assumption F of Section 1, "Purpose," to change: "Jet expansion **with** a zone of five pipe diameters..." to: "Jet expansion **within** a zone of five pipe diameters...*

NextEra Response

(a) The "operable but non-conforming" condition referenced in Section 1, "Purpose," of this calculation is that the calculations providing the current HELB harsh environment service conditions (temperature, pressure and relative humidity) outside containment use methodologies that are not described in the current HELB licensing basis. These methodologies include the Westinghouse LOFTRAN code to calculate main steam mass and energy releases and the Sargent & Lundy COMPARE code to calculate HELB harsh environment pressure, temperature and humidity conditions. The operability of the non-conforming condition was resolved by demonstrating the adequacy of the HELB calculational methodologies identified above. The non-conforming condition did not require the completion of calculation PBNP-994-21-12 for operability resolution.

(b) The long-term corrective action to resolve this non-conforming condition is to complete the HELB licensing basis reconstitution program and associated FSAR revisions for HELB, subject to NRC approval of the HELB methodologies used and evaluations performed for LAR 261 (Reference 2). Calculation PBNP-994-21-12 does not resolve the long-term corrective action for this non-conforming condition by itself. The HELB calculations provided in Reference (3) will support the FSAR HELB licensing basis update as part of EPU implementation. The "operable but non-conforming" condition described in the Part (a) response above was identified in the PBNP corrective action program on August 7, 2007. Subsequent to this discovery date, the HELB reconstitution program was initiated, the EPU evaluations were performed using the revised HELB methodologies, and the HELB methodology changes and EPU evaluation results were submitted to the NRC for review and approval with LAR 261 (Reference 2).

(c) Assumption F of Section 1, "Purpose," of Calculation PBNP-994-21-12, Revision 1, is revised to read, "Jet expansion within a zone of five pipe diameters...".

EMCB (HELB) RAI 4

Attachment 2, "Break and Crack Sizes and Operating Parameters," (Enclosure 1, Attachment 12, to Reference 1), documents in part that: "The operating parameters for main steam and steam generator blowdown are determined at hot shutdown, which are the same at the current power level and EPU power level."

Please provide additional detail and justification to document that the main steam flow rate remains unchanged from current power levels or increases for EPU.

NextEra Response

The main steam break flow rate remains the same at EPU conditions because the maximum pressure and temperature for the main steam lines occur at hot zero power conditions. For EPU, these conditions will remain at the current value of 547°F (1020 psia). There are no configuration changes in the main steam lines that affect this condition. The physical dimensions (nominal pipe diameter and wall thickness) of the associated main steam and steam generator blowdown piping are not being changed by EPU. Therefore, the break and crack size geometry are not being changed by EPU.

The increase in main steam flow rate at EPU full-power conditions results in lower pressure and temperature conditions than at hot zero power, and therefore, does not increase the mass and energy releases for a main steam HELB event.

The same conclusions are valid for the postulated steam generator blowdown HELB event.

EMCB (HELB) RAI 5

Section 1, "Purpose," of the calculation entitled PBNP-994-21-12, Revision 0, "Task 12 Jet Impingement Calculations - Attachment 2 Break Sizes and Operating Parameters," (Enclosure 1, Attachment 12, to Reference 1), documents, in part, that the calculation "supersedes the extensive discussion of jet impingement methodology provided in FSAR Appendix A.2, Addendum 1 to reflect changes in methodologies used to determine HELB parameters..."

(a) The licensee is requested to provide a summary table documenting the differences in methodologies between the current licensing basis (CLB) and the proposed EPU.

(b) The licensee is also requested to document if any plant modifications such as pipe support modifications, or additional whip restraints, or jet shields, are required as a result of the licensee's HELB reconstitution and methodology changes.

(c) Section 8, "Calculation," documents that: "The methodology of Section 2 was applied to the break sizes and operating parameters in Attachment 2 with the assumptions in Section 3." However, the methodology is described in Section 3, not Section 2, and the assumptions are listed in Section 4 and not Section 3. The licensee is requested to clarify these discrepancies.

NextEra Response

a. The differences in the methodologies are summarized in Table 1, below:

Table 1 - Differences in Jet Impingement Methodology Between the Current Licensing Basis and Proposed EPU

Item	Current Licensing Basis	EPU Approach
Steady-State Thrust Force	Simplified approach based on Moody's 1969 paper with Fanno analysis used to consider friction effects ["Superheated Steam," Page A.2-11 of 45, and "Cold Water Flow," Page A.2-12 of 45, of Addendum 1 to FSAR Appendix A.2]	Exact evaluation of generalized steady state thrust equation using guidance from Moody's 1965 paper, taking into account the assumptions for modeling jet impingement forces in Section 3.6.2.III.3, Page 3.6.2-9, of NUREG-0800 by using ANSI/ANS-58.2-1988 [Equation (12), Section 3, Pages 9-10 of 192, of Calculation PBNP-994-21-12]
Cone-Shaped Jet Core Region	None	Included per Appendix C1.1.1 of ANSI/ANS-58.2-1988 [Equation (3), Section 3, page 8 of 192, of Calculation PBNP-994-21-12]
Unsteady Flow Thrust	Considered on Page A.2-12 of 45 of Addendum 1 to FSAR Appendix A.2	Covered by cone-shaped jet core region [Equation (3), Section 3, Page 8 of 192, of Calculation PBNP-994-21-12]
Jet Area Prior to Asymptotic Area Adjusted for Thrust at Break Plane	Jet area prior to asymptotic area not adjusted for thrust at break plane	Jet area prior to asymptotic area adjusted for thrust at break plane [Equation (18), Section 3, Page 10 of 192, of Calculation PBNP-994-21-12]

Item	Current Licensing Basis	EPU Approach
Distance to Asymptotic Area	5 times effective diameter of pipe break area [Equation (13), "Fluid Jet Impingement Forces," Page A.2-13 of 45, of Addendum 1 to FSAR Appendix A.2]	Back calculated from area of elliptically shaped jet at the distance [Equation (17), Section 3, Page 10 of 192, of Calculation PBNP-994-21-12]
Shape of Jet Up to Asymptotic Area	Circular [Equation (14), "Fluid Jet Impingement Forces," Page A.2-14 of 45, of Addendum 1 to FSAR Appendix A.2]	Dependent upon shape of break [Equation (17), Section 3, Page 10 of 192, of Calculation PBNP-994-21-12]
Constant Jet Area Region to Resolve Discontinuity in Jet Area at Distance to Asymptotic Area	Included as Region 2 ["Fluid Jet Impingement Forces," Page A.2-13 of 45, of Addendum 1 to FSAR Appendix A.2]	Jet area is continuous at Region 2, before the asymptotic area (Region 3), after asymptotic area boundary; compare Equation (20) to Equation (25) at $L = L_a$ and $A = A_a$ [Section 3, Page 11 of 192, of Calculation PBNP-994-21-12]
Shape of Jet from Longitudinal Break Beyond Asymptotic Area	Rectangular [Equation (17) "Fluid Jet Impingement Forces," Page A.2-14 of 45, of Addendum 1 to FSAR Appendix A.2]	Elliptical [Equation (26) (Section 3, Page 11 of 192, of Calculation PBNP-994-21--12]
Jet Area Beyond Asymptotic Area	Does not take into account distance to asymptotic area [Equations (16), (17) and (18), "Fluid Jet Impingement Forces," Page A.2-14 of 45, of Addendum 1 to FSAR Appendix A.2]	Takes into account distance to asymptotic area. [Equation (26), Section 3, Page 11 of 192, of Calculation PBNP-994-21-12]
Equation for Jet Area from Crack Beyond Asymptotic Area	No derivation, reference, or explanation of Equation (18) ["Fluid Jet Impingement Forces," Page A.2-14 of 45, Addendum 1 to FSAR Appendix A.2]	Application of Equation (26) to crack discussed in first paragraph below Equation (17) [Section 3, Pages 10 and 11 of 192, of Calculation PBNP-994-21-12)

b. The HELB methodologies changes and EPU evaluations did not identify new break locations that would require the addition of whip restraints or jet shields. The EPU evaluations eliminated arbitrary intermediate break locations in accordance with GL 87-11, and several other locations in accordance with the stress threshold equations contained in BTP MEB 3-1, Revision 2. Therefore, plant modifications of pipe whip restraints and jet impingement shields are not required as a result of the HELB methodology changes and EPU evaluations.

c. Discrepancies in Section 8, "Calculations," were corrected and revised in Calculation PBNP-994-21-12, Revision 1, to reflect the correct section numbers; "Section 2" was corrected to "Section 3," and "Section 3" was corrected to "Section 4."

EMCB (HELB) RAI 6

Attachment 2, "Break and Crack Sizes and Operating Parameters," (Enclosure 1, Attachment 12, to Reference 1), documents that the CLB (FSAR Appendix A.2) did not address high energy systems such as CVCS letdown or other systems in the Turbine Hall. The calculation addresses the CVCS letdown system.

Please describe if any plant modifications such as pipe support modifications, or additional whip restraints, or jet shields, are required as a result of the licensee's HELB reconstitution and methodology changes and the inclusion of the CVCS letdown system.

NextEra Response

The HELB reconstitution and methodology changes resulted in the inclusion of the following previously unidentified high energy lines:

1. In the turbine hall (feedwater, condensate, heater drain tank pump discharge, feedwater heater vents and drains, reheater drains, and extraction steam).

2. The CVCS letdown system lines in the primary auxiliary building.

3. The steam generator blowdown lines in the facades.

The inclusion of these high energy lines did not require plant modifications such as pipe supports, additional whip restraints or jet shields.

Discussions of each of these high energy systems in the three areas are provided in the NextEra response to EMCB (HELB) RAI 2.

EMCB (HELB) RAI 7

Please provide a summary list of changes, additions as well as deletions, of pipe breaks and locations, whip restraints, jet shields, jet impingement targets, consequences and mitigation of the effects of HELB, and to identify the corresponding piping systems as a result of the HELB reconstitution.

Please clarify if the above changes are due to HELB reconstitution or EPU.

NextEra Response

Since the HELB reconstitution did not identify new breaks, there are no new break locations that would require the addition of whip restraints, jet shields, jet impingement targets, or the evaluation of consequences due to a HELB.

Arbitrary intermediate break locations were eliminated in accordance with GL 87-11 and several other break locations were eliminated in accordance with the stress threshold equations contained in BTP MEB 3-1, Revision 2.

There are no changes due to the HELB reconstitution or EPU.

EMCB (HELB) RAI 8

Please provide any changes in analytical methodology, such as, coupling or decoupling of branch lines from the main line analysis for any high energy piping systems. The licensee is requested to identify any decoupled high energy lines that were coupled with the main runs in the previous stress analyses. In considering these questions, it should be noted that a branch connection to a main piping run is a terminal end of the branch run, except where the branch run is classified as part of a main run in the stress analysis.

NextEra Response

There was only one change for EPU in the analytical methodology with regard to the coupling or decoupling of branch lines from the main line stress analysis for any high energy piping systems. The three inch bypass line around the main steam isolation valves (MSIVs) was modeled into the main steam line analyses for EPU conditions. This resulted in the three inch branch lines being classified as part of the main run in the stress analyses, thus eliminating the terminal end of the branch run at the main steam headers. The three inch bypass lines around the MSIVs were included in the main steam line analyses to provide a more accurate piping model and to obtain more accurate dynamic response effects of the main steam piping on the three inch bypass lines.

The main steam line stress analyses for the EPU conditions did not decouple any high energy lines that were coupled with the main runs in the previous stress analyses. Thus, no additional terminal ends of the branch run were introduced.

EMCB (HELB) RAI 9

Since the HELB methodology is changing from the CLB in the PBNP FSAR Appendix A.2, the licensee is requested to provide a summary of the FSAR revision for the revised licensing basis.

NextEra Response

The NextEra response to a Balance of Plant Branch request for additional information question SBPB (HELB) - 2 (Reference 4) identified the sections of FSAR Appendix A.2, High Energy Line Pipe Failure Outside Containment, that will be included in the revised appendix at EPU conditions. An outline of the revised HELB licensing basis is provided as Attachment 1. The information that will be included in each section has been provided in previous RAI correspondence and the HELB site audit.

References

(1) NRC electronic mail to NextEra Energy Point Beach, LLC, dated September 10, 2010, Point Beach Nuclear Plant, Units 1 and 2 - Requests for Additional Information Associated with Extended Power Uprate (TAC Nos. ME1044 and ME1045) (ML102670745)

(2) FPL Energy Point Beach, LLC letter to NRC, dated April 7, 2009, License Amendment Request 261, Extended Power Uprate (ML091250564)

(3) NextEra Energy Point Beach, LLC letter to NRC, dated July 8, 2010, License Amendment Request 261, Extended Power Uprate, Response to Request for Additional Information (ML101940363)

(4) NextEra Energy Point Beach, LLC letter to NRC, dated August 9, 2010, License Amendment Request 261, Extended Power Uprate, Response to Request for Additional Information (ML102220151)

ENCLOSURE 1
ATTACHMENT 1

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261
EXTENDED POWER UPRATE
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

OUTLINE OF PBNP FSAR APPENDIX A.2,
HIGH ENERGY PIPE FAILURE OUTSIDE CONTAINMENT

2 pages follow

Outline: PBNP FSAR Appendix A.2, High Energy Pipe Failure Outside Containment:

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A.2.5 Topical Analyses

LIST OF TABLES

LIST OF FIGURES

Appropriate figures including certain piping isometric drawings, HELB barrier design, pipe whip restraints, and jet impingement results will be provided.