NEXTera ENERGY POINT BEACH

December 30, 2010

NRC 2010-0197
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 Clarification

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 March 4, 2010, DRAFT - Request for Additional Information from Reactor Systems RE: EPU (ML100630800)
(3) NextEra Energy Point Beach, LLC letter to NRC, dated May 20, 2010, License Amendment Request 261, Extended Power Uprate, Response to Request for Additional Information (ML101440069)
(4) NRC electronic mail to NextEra Energy Point Beach, LLC, dated December 21, 2010, Point Beach Nuclear Plant, Units 1 and 2 - Request for Additional Clarification (SNPB) re: Extended Power Uprate Review (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. NextEra responded to the request for additional information in a letter dated May 20, 2010 (Reference 3). Via Reference (4), the NRC determined that additional clarification was needed for NextEra's Reference (3) response. Enclosure 1 provides the NextEra response to the NRC staff's request for clarification.

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

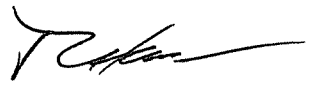
The information contained in this letter does not alter the no significant hazards consideration contained in Reference (1) and continues to satisfy the criteria of 10 CFR 51.22 for categorical exclusion from the requirements of an environmental assessment.

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 December 30, 2010.

Very truly yours,

NextEra Energy Point Beach, LLC



for
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 CLARIFICATION

The NRC staff determined that additional information was required (Reference 1) to enable the Reactor Systems Branch to complete the review of License Amendment Request (LAR) 261, Extended Power Uprate (EPU) (Reference 2). NextEra Energy Point Beach, LLC (NextEra) responded to the request for additional information in a letter dated May 20, 2010 (Reference 3). Via Reference (4), the Nuclear Performance and Code Review Branch (SNPB) in the Office of Nuclear Reactor Regulation determined that additional clarification of NextEra's Reference (3) response was required. The following information is provided by NextEra in response to the NRC staff's request for clarification.

SNPB-1

Although LHSI is not interrupted during the switchover from injection to the recirculation mode, HHSI is terminated. For a small break in the range of 2 – 6 inches in diameter, RCS pressure can remain above the shutoff head of the LHSI pump (134 psia) for a couple of hours. As such, there will be a period during the LOCA when there is no injection until the HHSI pumps are re-aligned. For small breaks on the top or side of the cold discharge leg, RCS pressure can limit the fluid in the core and upper plenum to reduced values compared to breaks on the bottom of the pipe. Therefore, when HHSI is terminated with RCS pressure above 134 psia, core uncover can occur if HHSI is not initiated within 15 minutes of drainage of the RWST.

How are small cold leg breaks in the 2 – 6 inch range handled when RCS pressure remains above the shutoff head of the LHSI pump and HHSI is terminated when the RWST drains?

How do the EOPs deal with this particular scenario? That is, if a SBLOCA occurs and RCS pressure remains above 134 psia, then the operators will need to immediately re-align HHSI to the sump to assure the time during the LOCA without any injection is minimized to limit the PCT. Please explain how this condition is handled.

NextEra Response

The emergency operating procedures (EOPs) have a common procedure for the injection phase of a loss-of-coolant-accident (LOCA). The high head safety injection (HHSI) pumps discharge to the reactor coolant system (RCS) cold legs while the low head safety injection (LHSI) pumps discharge to the reactor outlet plenum. The residual heat removal (RHR) pumps perform the function of LHSI.

When indicated by depleting refueling water storage tank (RWST) inventory, a transition to the low head recirculation procedure is made while continuing to inject with both HHSI and RHR

pumps. In the low head recirculation procedure, a diagnostic step checks to verify that the RHR flow is adequate for core cooling.

If the operating RHR pump is providing adequate flow, the procedure continues to realign the suction for the pump to the containment sump. The operating HHSI pump is then secured.

If the operating RHR pump is not providing adequate injection flow, a transition is made to the high head recirculation procedure. In this procedure, the RHR pump still takes a suction from the containment sump, but discharges to an HHSI pump suction. The HHSI pump then discharges to the RCS via the cold legs.

In either case, cooling flow to the core is maintained and is not interrupted.

SNPB-2

Background and additional clarification requested regarding the potential for injection for extended periods of time following SBLOCAs and a possible inadvertent rapid depression:

As a result of staff calculations for small breaks, failure of an ADV to open and the possible need for the PORVs to be opened to ensure a timely cooldown to actuate LPSI could be required. The staff RELAP5 calculations showed that the RCS pressure cannot be reduced below about 120 psia (i.e., the pressure required for sufficient RHR low pressure injection flow to begin flushing the core) for at least 8.0 hrs when 2 ADVs and 2 PORVs are opened at one hour following a 0.0125 ft^2 cold leg break. The staff calculations suggest that with the RCS boiling for extended periods of time, or more than 8 hours in this example, large amounts of boric acid can accumulate in the vessel. While the RCS pressure remains above 120 psia, the RCS temperature is sufficiently high to keep the boric acid in solution. As such, there is the concern that should operators regain power or the ability to more rapidly depressurize the RCS, precipitation could be inadvertently produced. It would therefore be important for the EOPs to instruct or alert the operators not to exceed the maximum cooldown limit following a small break LOCA. Staff calculations also show that the operators could also utilize the PORVs should only one of the ADVs fail to open. While the staff finds that one ADV may not depressurize the RCS to 120 psia for small breaks for many hours, the high RCS temperature will maintain the boric acid in solution. Potential modifications to the EOPs or guidance to stay within the limits of the permissible cooldown rates will prevent the operators from causing an inadvertent precipitation by limiting the depressurization rate during small breaks in the event boiling persist for extended periods of time with the RCS pressure above 120 psia (or that RCS pressure where LPSI injection can flush the core to control boric acid).

Please provide information as to how the EOPs and operating procedures instruct the operators to not exceed the permissible cooldown limits following a SBLOCA.

NextEra Response

For small breaks in the cold leg, RCS pressure will stabilize above the low head RHR cut-in pressure and the boric acid concentration in the reactor vessel will increase until upper plenum injection is established. EOP-1.2, Post-LOCA Cooldown and Depressurization, directs the operators in this scenario to depressurize the RCS using the condenser steam dump, steam generator atmospheric dump valves, or pressurizer power operated relief valve(s). Calculations for depressurization after a small break LOCA (SBLOCA) scenario show that the boric acid solution will not approach the solubility limit until approximately seven hours after the break.

When the RCS is depressurized through operator action to below 135 psia, the low head RHR pump flow to the upper plenum will provide immediate core flushing flow. Operational experience, simulator training and NOTRUMP SBLOCA cooldown/depressurization analyses indicate that operators will depressurize the RCS to less than 135 psia before seven hours after the break. Results from the SBLOCA boric acid precipitation control analysis performed for extended power uprate (EPU) demonstrate that, if upper plenum low head RHR is established within seven hours after the break, boric acid precipitation is precluded even for sudden RCS depressurization to atmospheric pressure.

For small breaks in the hot leg, RCS pressure will again stabilize above the low head RHR cut-in pressure. The boric acid concentration in the reactor vessel will not increase until the cold leg HHSI is terminated. Operators are again directed to depressurize the RCS, and maintain upper plenum infection using the RHR pumps on recirculation and terminate the high head SI as necessary. Once HHSI to the cold leg is terminated, the large hot leg break scenario bounds this scenario where cold leg SI (i.e., simultaneous injection) will be re-established no later than 4 hours, 30 minutes after termination.

For very small hot leg or cold leg breaks (less than approximately 1.2" in diameter), the RCS remains pressurized such that natural circulation will not be lost, or if lost, will be re-established. EOP actions will cooldown and depressurize the RCS under controlled conditions with eventual realignment to normal RHR shutdown cooling. Natural circulation or normal RHR shutdown cooling will dilute any build-up of boric acid in the core.

To summarize the procedural requirements related to preventing boric acid precipitation:

1. During a LOCA when high head SI flow to the cold leg is terminated upon entering sump recirculation, HHSI flow to the cold leg will be re-established within 4 hours, 30 minutes after initial termination.
2. During a SBLOCA, the RCS will be depressurized to less than the upper plenum low head RHR shut-off head within seven hours after the break occurs.
3. During a SBLOCA when RCS depressurization to the upper plenum low head RHR shut-off head does not occur without operator action, operators will take action to initiate a plant cooldown and depressurization at the maximum Technical Specification allowed cooldown rate within one hour after the break occurs.

References

(1) NRC electronic mail to NextEra Energy Point Beach, LLC, dated March 4, 2010, DRAFT - Request for Additional Information from Reactor Systems RE: EPU (ML100630800)

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