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

October 22, 2009

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 FROM BALANCE OF PLANT BRANCH RE: AUXILIARY FEEDWATER (TAC NOS. ME1081 AND ME1082)

Dear Mr. Meyer:

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated April 7, 2009, as supplemented by two letters dated June 17, and September 25, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML091250564, ML091690087, ML091690090, and ML092750395, respectively), FPL Energy Point Beach, LLC, submitted a request to change technical specifications due to modifications to the auxiliary feedwater system (AFW). This was originally part of the extended power uprate request, but was separated out by the NRC staff.

The NRC staff is reviewing your submittal and has determined that additional information is required to complete the review. The specific information requested is addressed in the enclosure to this letter. During a discussion with your staff on October 15, 2009, it was agreed that you would provide the additional information within 30 days of the date of this letter.

The NRC staff considers that timely responses to 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 at (301) 415-2048.

Sincerely,

Justin C. Poole, 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

POINT BEACH NUCLEAR POWER PLANT, UNITS 1 AND 2

DOCKET NOS. 50-266 AND 50-301

SBPB - AFW - RAI - 1

In NUREG-0800, under Section 5.4.7, Residual Heat Removal System, the Branch Technical Position (BTP) provides guidance to the industry on meeting the requirements for shutdown cooling. The BTP permits operation at hot shutdown for at least 4 hours followed by cool down to the residual heat removal cut-in temperature from the control room with only safety grade equipment, assuming the worst-case single active failure. Normal instrument air supplies the motive force to operate the auxiliary feedwater (AFW) pump mini-flow recirculation valve and the flow control valves to steam generators (SGs). On loss of instrument air (IA) the mini flow recirculation valve fails closed, and the flow control valves to SGs fail open. The licensee has a back-up safety-related source of bottled air that can last for 4 hours.

Request

a) Based upon the proposed modification, describe the plant's licensing basis requirements for shutdown cooling, and the role that the new motor driven auxiliary feedwater (MDAFW) pumps will have.

b) If operator action is credited to control flow once IA is depleted, describe the operator actions credited to perform this function in sufficient detail for the staff to perform a human factors evaluation.

SBPB - AFW - RAI – 2

The licensee has proposed a reconstituted high-energy line break (HELB) analysis for outside containment, but requires the Nuclear Regulatory Commission (NRC) approval prior to implementation. The new assessment of the dynamic effects of postulated piping failures in fluid systems outside containment will continue to meet the requirements of Point Beach Nuclear Plant General Design Criteria 40. The licensee states that a number of postulated main steam breaks and cracks were reduced by the change in break postulation methodology. The licensee has installed jet impingement shields, pipe whip restraints and flood mitigation features as protection for the effects of piping failures. The new MDAFW pumps will be installed in a new location in the primary auxiliary building (PAB). Feedwater lines, letdown, and main steam transit through the PAB and may pose a HELB potential threat.

Request

Since the reconstituted HELB has not yet been approved by the NRC, provide an evaluation on the new MDAFW pumps exposure to HELB based upon the current approved HELB analysis. Identify the high energy lines in the PAB and potential interaction with the new MDAFW pumps. Does the new AFW pump modification rely on the new HELB analysis to meet licensing basis?

ENCLOSURE

SBPB - AFW - RAI – 3

The licensee's internal flooding basis was initiated by a 1972 Atomic Energy Commission generic communication request to determine whether a failure of non-category I (seismic) component could result in a flooding condition that could adversely affect equipment needed to get the plant to safe shutdown. The licensee is modifying the AFW system with the installation of new MDAFW pumps and suction piping in the former boric acid evaporator rooms. The modification has potential affects on equipment and floor drains system to prevent internal flooding.

Request

Evaluate the effects on the internal flooding analysis with the new AFW modifications.

SBPB - AFW - RAI - 4

The AFW pumps will be protected by a low pressure switch on the suction lines to each individual pump. However, there is time delay on the pump trip initiation. This same low pressure sensor also signals a swap-over from the condensate storage tank (CST) to the safety-related service water (SW) supply. The license allows sufficient time for the swap-over to occur, and if suction pressure is not restored, the AFW pump is tripped. In the event the nonsafety-related portion of the suction line is lost, the remaining section of protected piping needs to have sufficient supply of water to protect the pumps from damage and tripping prior to swapping over to SW.

Request

Provide details on how the logics and timing was developed for the low pressure swap-over and trip circuitry to avoid tripping the AFW pumps while still protecting the pumps from loss of suction supply, to include showing the protected piping has sufficient volume for the swap-over to occur, or trip the pump prior to damage from loss of supply.

SBPB - AFW - RAI – 5

The amendment states that in the event of evacuation of the main control room, the AFW system shall be capable of manual initiation to provide feedwater to a SG over the range from hot shutdown to cold shutdown conditions, and achieve cold shutdown within 72 hours. The AFW modification will maintain the required local controls for the MDAFW and turbine-driven auxiliary feedwater (TDAFW) pumps and associated valves. The AFW modification will ensure that either AFW pump system can supply the required AFW flow from outside the control room.

Request

For a main control room evacuation, describe the credit taken for the currently installed MDAFW that will become standby steam generator (SSGs) pumps, and the design capabilities of the new MDAFW pumps for decay heat removal following control room evacuation to ensure the same capabilities are maintained.

SBPB - AFW - RAI – 6

The design flow requirement for the new MDAFW pump is 285 gpm at 3050 ft to meet the design basis for AFW.

Request

Provide the pump curves to show that the new MDAFW pump can meet this requirement.

SBPB - AFW - RAI – 7

In the amendment, the license identifies one of the key safety analysis inputs for the loss of normal feedwater (LONF) was an AFW pump start delay time on a low-low SG water level of 30 seconds, and the same input parameter for a loss of all alternating current (LOAC) to station auxiliaries of 60 seconds. Both inputs initiate on the same signal, i.e. low-low SG level, and both accident analysis assume that one MDAFW or one TDAFWP is available. The same information is present within the technical evaluation under Section 2.8.5.2.2, and for Section 2.8.5.2.3.

Request

Explain the differences in time when AFW is initiated for the two events which correspond to same event, a LONF.

SBPB - AFW - RAI - 8

In the amendment, on page 2.5.4.5-7, the licensee states, "The limiting AFW transient is a LONF without a concurrent LOAC since the reactor is not tripped, continuing to add 100% power to the primary loop, until a low-low SG level reactor trip occurs." On page 2.5.4.5-19, the licensee states, "The current AFW analysis limiting event is a dual unit loss of all AC. For the revised EPU analysis the limiting event is a single unit loss of normal feedwater (LONF)."

Request

Clarify what is the current AFW limiting transient, and if there is a change with the installation of the new MDAFW pumps in the current configuration and when the EPU is implemented.

SBPB - AFW - RAI - 9

The safety-related supply for the AFW pumps comes from SW. The licensee does not desire to put SW in the SGs during testing. However, the licensee is required to test 100 percent of flow path of this newly installed SW line to verify flow. Granted, the licensee can test segments of the flow path individually, but collectively, the testing must show flow could transverse to entire flow path through the SW inlet motor-operated valves (MOVs) to the suction of the pumps. Since the SW return flow path is upstream of the SW supply to the AFW pumps, then the flow path from the return tap through the SW supply MOV into the AFW header is not tested.

Request

Describe how testing will verify that SW can traverse the entire flow path to the AFW pumps' suction.

AFW - RAI – 10

In regards to the currently installed MDAFW pumps, the licensee states, "If running, they will be stripped from the bus upon an AFW initiation signal or diesel safeguards sequence signal for the associated unit." However, these pumps are shared by the two units. One unit can be in startup using these SSG pumps, and the other unit can experience an AFW initiation signal.

Request

Verify that both SSGs trip if either unit experiences an AFW initiation signal or diesel safeguards sequence signal.

SBPB - AFW - RAI – 11

The AFW pump start logic shows an input from the main FW pumps, "Either or both main feedwater pump control switches in neutral position." There was a concern noted in the industry, NRC Inspection Report 2008-003 at Watts Barr and August 26, 2009, letter to Sequoyah, that licensees were not enabling a required AFW start signal during plant startup/shutdown by placing the MFW pumps' control switches/breakers in a position that would not enable an AFW pump start upon a low SG level.

Request

a) Describe the switch positions, especially the neutral position, i.e. is the switch spring loaded to go to the neutral position after the pump is turned on or off?

b) What is the position of the MFW pumps' control switches during startup/shutdown while feeding the SG with the SSG pumps?

c) Is there at any time the MFW pumps switch is not in a position that would enable an automatic AFW pump start while the unit is in a mode requiring AFW?

SBPB - AFW - RAI – 12

In technical evaluation under Section 2.5.4.5, Auxiliary Feedwater, the licensee states that the two AFW pump systems, i.e., a TDAFW pump and a MDAFW pump, in each unit has some shared discharge piping with instrumentation and controls necessary for operation of the pump system. The AFW system is designed so that a single-active failure will not disable more than one pump system in each unit.

Request

Describe the share active components and whether any of these components could result in a single-active failure causing the loss of both trains of AFW.

SBPB - AFW - RAI – 13

In technical evaluation under Section 2.5.4.5, Auxiliary Feedwater, the licensee states that there is currently one suction header routed from the CSTs to the 8' elevation of the control building connected to each of the currently installed MDAFW and TDAFW pumps. The AFW modification will retain this header as a dedicated source for the TDAFW pumps and install a new suction header from the CSTs to both new 350 Hp MDAFW pumps. However, the modification is unclear whether the new suction header will tie into the existing suction piping from the CSTs, or tie directly into the CSTs.

Request

Describe the tie-in to the CST for the new MDAFW pumps.

SBPB - AFW - RAI -14

In technical evaluation under Section 2.5.4.5, AFW, the licensee states that the minimum available net positive suction head (NPSH) to the AFW pumps occurs when the CSTs are at their lowest level. The licensee confirmed that their calculation show adequate NPSH will be available to the AFW pumps when the water level is well below the centerline of the CST nozzle elevation. However, there are indications that the licensee is changing the design to add a new penetration to the CSTs for the new MDAFW pumps. The amendment does not provide details on a new penetration and if the new penetration affects any limitations to the AFW pumps.

Request

Verify that the two CST penetrations for AFW have the same centerline elevation, or justify the new penetrations are adequate to protect the AFW pumps. In addition, describe the height of the water in the CST relative to the centerline of the CST nozzle that corresponds to this setting in order to confirm adequate NPSH will be maintained to the AFW pumps.

SBPB - AFW - RAI – 15

In the Final Safety Analysis Report Section 10.2.3, under the system evaluation for AFW for a station black out (SBO) event, the licensee states "The steam supply and auxiliary feedwater discharge valves are powered from diverse sources of vital 125V DC." The proposed modification will change the direct current (DC) power supply for the valves to repower all the valves from the same DC bus. The current configuration gives flexibility in the event of a loss of one DC bus in being able to feed at least one SG with the TDAFW pump during SBO or a fire.

Request

Provide the basis for the original design to supply the TDAFW pump with diverse DC power supplies, and a justification that the proposed modifications to the design for the TDAFW pump system will continue to meet the design requirements and requirements of 10 CFR 50.48 and 10 CFR 50.63.

SBPB - AFW - RAI – 16

AFW to the faulted SG will increase the secondary mass available for release to containment; therefore, it is essential that AFW is isolated to the faulted SG. In the amendment on page 2.5.4.5-24, the licensee states that each pump system (TDAFW pump and MDAFW pump), will have two ways using opposite train's power to stop AFW flow for events that require flow be terminated. The licensee is repowering valves and controllers to be train specific, e.g. the Unit 1 TDAFW pump and valves will become solely powered by the "A" DC bus, and the new MDAFW pump and valves will be supported from the "B" DC bus.

Request

Explain whether the function to isolate AFW flow in two ways using the opposite train's power will still be provided with the proposed AFW modifications.

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ADAMS Accession Number: ML092930834 *per memo dated October 7, 2009

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