

December 19, 2014

NRC 2014-0078 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

Response to Request for Additional Information (Fire Protection Engineering/Fire Modeling) License Amendment Request 271 Associated with NFPA 805

- References: (1) NextEra Energy Point Beach, LLC, letter to NRC, dated June 26, 2013, "License Amendment Request 271, Transition to 10 CFR 50.48(c) -NFPA 805, 'Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants,' 2001 Edition" (ML131820453)
 - (2) NRC e-mail to NextEra Energy Point Beach, LLC, dated September 9, 2013, "Point Beach Nuclear Plant, Units 1 and 2 – Acceptance Review Regarding the NFPA 805 License Amendment Request – Opportunity to Supplement (TAC Nos. MF2372 and NF2373)" (ML13256A197)
 - (3) NextEra Energy Point Beach, LLC, letter to NRC, dated September 16, 2013, "License Amendment Request 271 Supplement 1 Transition to 10 CFR 50.48(c) – NFPA 805" (ML13259A273)
 - (4) NRC letter to NextEra Energy Point Beach, LLC, dated September 25, 2013, "Point Beach Nuclear Plant, Units 1 and 2 - Acceptance Review of Licensing Action re: License Amendment Request to Transition to NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants' (TAC NOS. MF2372 and MF2373)" (ML13267A037)
 - (5) NRC e-mail to NextEra Energy Point Beach, LLC, dated November 14, 2014, "Point Beach Nuclear Plant, Units 1 and 2 – Follow-up Requests for Additional Information (AFPB) re: NFPA 805 License Amendment Request Review (TAC Nos. MF2372 and MF2373)" (ML14325A541)

Pursuant to 10 CFR 50.90, NextEra Energy Point Beach, LLC, (NextEra) requested to amend Renewed Facility Operating Licenses DPR-24 and DPR-27 for Point Beach Nuclear Plant (PBNP), Units 1 and 2 (Reference 1 and supplemented via Reference 3). The NRC accepted the license amendment request for review in response to Reference (2), as documented in Reference (4).

The NRC Staff has determined that additional information (Reference 5) is required to complete its evaluation. The Enclosure provides the NextEra response to the NRC Staff's request for additional information.

NextEra Energy Point Beach, LLC Ro, 6610 Nuclear ad, Two Rivers, WI 54241

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

If you have any questions regarding this letter, please contact Mike Millen at (920) 755-7845.

I declare under penalty of perjury that the foregoing is true and correct. Executed on December 19, 2014.

Very truly yours,

NextEra Energy Point Beach, LLC

Zimapay

Eric McCartney 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

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

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION (FIRE PROTECTION ENGINEEERING AND FIRE MODELING) LICENSE AMENDMENT REQUEST 271 ASSOCIATED WITH NFPA 805

Pursuant to 10 CFR 50.90, NextEra Energy Point Beach, LLC, (NextEra) requested to amend renewed Facility Operating Licenses DPR-24 and DPR-27 for Point Beach Nuclear Plant (PBNP), Units 1 and 2 (Reference 1 and supplemented via Reference 3). The NRC accepted the license amendment request for review in response to Reference (2), as documented in Reference (4).

The NRC Staff has determined that additional information (Reference 5) is required to complete its evaluation. This Enclosure provides the NextEra responses to the NRC Staff's requests for additional information regarding Fire Protection Engineering (FPE) and Fire Modeling (FM).

FPE RAI 07.01

NextEra's response to FPE RAI 07 shows the arrangement of the hydrogen tanks next to the Turbine Building (TB). Along the side of the TB, there are many supply fan ducts that take air from outside and supply it to the TB ventilation system, and several of these supply fan ducts are in close proximity to the hydrogen storage tanks. As such, hydrogen could potentially be carried into the TB where it could result in an explosive mixture and cause an explosion if there are significant leaks from these tanks (including lifting of the tank relief valves).

In addition, the FPE RAI 07 response stated that the line-of-sight distance between the hydrogen tanks and the closest opening is greater than 25 feet as required by NFPA 567. However, in reviewing NFPA 567, Table 2, the required distance between the hydrogen system and air compressor intakes or inlets to ventilating or air-conditioning equipment is 50 feet.

Please provide the following additional information:

- 1. A description of the supply fan ducts along the side of the TB, including the construction details such as weather sealing and the location of the air intake openings.
- 2. Justification for citing the 25 foot separation requirement of NFPA 567 in lieu of the 50 foot requirement for supply fan ducts.

NextEra Response

 There are sixteen (16) air shafts evenly spaced along the east wall of the Turbine Building. Twelve (12) of these shafts extend vertically from elevation 20'-5" up to elevation 104'-0", and the northernmost two and southernmost two shafts extend vertically from elevation 44'-0" up to elevation 104'-0". Each of these air shafts is constructed of uninsulated metal siding with steel framing and is sealed with caulked side joints. Two of these air shafts are in the same horizontal plane as the hydrogen storage area. One of these two shafts is located north of the Nitrogen storage tank at column 15 and the other is located south of the 26'-0" elevation rollup door at column 16 (refer to the images included in Attachment G to the NextEra 60 Day RAI response – Reference 6). These shafts are totally enclosed on the exterior of the building except for two outside air intake louvers on each air shaft, one each on the north and south faces of each shaft, at elevation 97'-10".

The purpose of the Turbine Building ventilation system air shafts is to provide the means to distribute supply air from outside air intake louvers (on the north and south faces of each air shaft at elevation 97'-10") and return air from the Turbine Building (through louvers located on the west side of each air shaft at elevation 98'- $5^{11}/_{16}$ ") down to air diffusers located at elevations 20'-5" (column 15 air shaft) and 51'-0" (column 16 air shaft) to supply air into the Turbine Building. This is accomplished via fans 2-W7C (column 15 air shaft) and 2-W7D (column 16 air shaft).

The air shafts are only open to the exterior at the outside air intake louvers located near the top of the air shaft at elevation 97'-10", which is approximately 90 feet from grade (elevation 8'-0"). Given a conservative height for the hydrogen storage system of 20 feet to the tip of the vertical vent piping, the closest intake louver is approximately 70 feet from the hydrogen system. This distance is greater than the 50-foot minimum required by NFPA 567 (1963 Edition), Table 2, Item 11, for the separation of hydrogen system from air compressor intakes or inlets to ventilating or air conditioning equipment.

The air shafts are open to the interior of the Turbine Building at elevations $98'-5^{11}/_{16}$ ", 51'-0", and 20'-5". The only communication between these openings and the exterior is through the intake louvers on the 97'-10" elevation.

The 50-foot separation requirement of NFPA 567, Table 2, Item 11, also applies to hydrogen system separation from air compressor intakes. The closest air compressor intakes to the hydrogen system are located on the east side of the Turbine Building wall between columns 12.1 and 13.1, approximately 60 feet to the south of the hydrogen storage area, and thus meet the 50-foot requirement.

2. NFPA 567, Table 2, provides two unique requirements for separation of hydrogen systems from wall openings and from air compressor intakes or inlets to ventilating or air-conditioning equipment. Where the 25-foot separation requirement of NFPA 567 is cited, the openings being discussed are wall openings that are <u>not</u> air compressor intakes or inlets to ventilating or air-conditioning equipment; the 10- and 25-foot requirements in Item 2 of Table 2 apply to these openings (10-foot separation for wall openings not above the hydrogen system and 25-foot separation for wall openings above the hydrogen system). These openings include the rollup doors and louvered wall opening discussed in the response to FPE RAI 07 (Reference 6). As discussed in the response to part 1 above, the openings associated with air compressor intakes and inlets to ventilating or air-conditioning equipment are separated from the hydrogen

storage area by greater than 50 feet, which meets the requirement of Item 11 in NFPA 567, Table 2.

FM RAI 01.01

In a letter dated August 28, 2014 (ADAMS Accession No. ML14241A267), NextEra responded to FM RAI 01.c and stated that fire growth and propagation was not postulated for fully-enclosed cable trays in the Cable Spreading Room. NextEra justified this assumption, in part, on the fact that the cables are placed on a ½-inch layer of ceramic fiber insulation located in the top of the enclosed trays.

Please explain whether fire growth and propagation were not postulated in enclosed cable trays in other areas of the plant, and provide technical justification for this assumption for trays that do not have at least ½-inch of ceramic fiber insulation between the cables and the top cover.

NextEra Response

The Cable Spreading Room is the only area at Point Beach that credits fully-enclosed cable trays, with ½-inch Kaowool ceramic fiber between the cables and the top covers, to prevent fire growth and propagation. There are no fully-enclosed cable trays credited in other areas of the plant.

FM RAI 01.02

In a letter dated August 28, 2014 (ADAMS Accession No. ML14241A267), NextEra responded to FM RAI 01.i(ii) and stated that both the Beyler's method and MQH method were used in the MCA to calculate the minimum HRR required to generate a damaging HGL in the exposing compartment. NextEra described both methods, but did not provide details on which of the two methods was used in any given compartment.

Please describe the criteria that were used in the MCA to select either the method of Beyler or the method of MQH for calculating the minimum HRR required to develop a damaging HGL in each exposing compartment.

NextEra Response

The Beyler Method (hot gas layer calculation for closed-compartments) was conservatively utilized as the first initial screening for hot gas layer determination in all exposing fire compartments in the Multi-Compartment Analysis (MCA). For compartments that did not screen from hot gas layer scenarios in this initial screening, the McCaffrey, Quintiere, and Harkleroad (MQH) method, which incorporates compartment natural ventilation, was utilized to remove the initial conservatism of the closed-compartment model. The switching of methods was based on removing the conservatism associated with the initial screening and no other specific criteria.

The MQH method was utilized in the quantitative analysis of exposed compartments open to multiple adjacent compartments. Additionally, the detailed fire modeling calculations that provided input to the refined analysis of the MCA calculation utilized the MQH method for hot gas layer calculations.

FM RAI 02.01

In a letter dated July 29, 2014 (ADAMS Accession No. ML14210A645), NextEra responded to FM RAI 02.b and stated that a 6-minute delay in damage was assumed for cables in the fully enclosed cable trays in the Cable Spreading Room. NextEra justified this assumption, in part, on the fact that the cables are placed on a ½-inch layer of ceramic fiber insulation located in the top of the enclosed trays.

Please explain whether there are enclosed cable trays, or trays with a bottom cover in other areas of the plant, where a damage delay greater than 4 minutes was assumed. For each area, provide the technical justification for this assumption.

NextEra Response

There are no credited fully-enclosed cable trays in other areas of the plant other than the Cable Spreading Room. Several fire areas credit bottom tray covers to delay damage to 4 minutes based on NUREG/CR-0381. There are no areas of the plant that credit bottom tray covers for delaying damage beyond 4 minutes.

<u>References</u>

- (1) NextEra Energy Point Beach, LLC, letter to NRC, dated June 26, 2013, "License Amendment Request 271, Transition to 10 CFR 50.48(c) - NFPA 805, 'Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants,' 2001 Edition" (ML131820453)
- (2) NRC e-mail to NextEra Energy Point Beach, LLC, dated September 9, 2013, "Request for Supplemental Information Regarding the Acceptability of the Proposed Amendment Request" (ML13256A197)
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- (6) NextEra Energy Point Beach, LLC, letter to NRC, dated July 29, 2014, "Response (60 Day) to Request for Additional Information License Amendment Request Associated with NFPA 805" (ML14210A645)