



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

June 24, 2015

Mr. Mano Nazar  
President and Chief Nuclear Officer  
Nuclear Division  
NextEra Energy  
P.O. Box 14000  
700 Universe Boulevard  
Juno Beach, Florida 33408-0420

SUBJECT: ST. LUCIE PLANT, UNIT 2 - REQUEST FOR ADDITIONAL INFORMATION  
REGARDING LICENSE AMENDMENT REQUEST AND EXEMPTION  
REQUEST REGARDING THE TRANSITIONING TO AREVA FUEL  
(TAC NOS. MF5494 AND MF5495)

Dear Mr. Nazar:

By letter dated December 30, 2014, as supplemented by letter dated March 23, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML15002A091 and ML15084A011, respectively), Florida Power and Light Company (FPL) requested an amendment to the Technical Specifications (TSs) of Renewed Facility Operating License No. NPF-16 and asked for an exemption from the regulation for St. Lucie Plant, Unit No. 2 (SL-2). The proposed amendment would revise the TSs to allow the use of AREVA fuel at SL-2. Additionally, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.12, FPL requests an exemption from the provisions of 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems [ECCSs] for light-water nuclear power reactors," and Appendix K to 10 CFR Part 50, "ECCS Evaluation Models," to allow the use of M5<sup>®</sup> fuel rod cladding in future core reload applications for SL-2.

By letter dated April 8, 2015 (ADAMS Accession No. ML15090A240), FPL was informed that the U.S. Nuclear Regulatory Commission (NRC) staff finds the application of XN-NF-78-44 (NP)(A), "A Generic Analysis of the Control Rod Ejection Transient for Pressurized Water Reactors [PWRs]" (ADAMS Accession No. ML15049A093), October 1983, Exxon Nuclear Company, Inc. to AREVA Combustion Engineering (CE) 16x16 fuel, to be an expansion of the applicability of this Topical Report. The letter also stated that the staff would follow this acceptance with a request for additional information that asks the licensee to confirm the acceptability of the application of XN-NF-78-44 (NP)(A) to AREVA CE16x16 fuel by performing additional calculations using alternative methods.

Accordingly, the NRC staff has reviewed the amendment and exemption requests submitted by FPL and determined that additional information is needed as set forth in the enclosure.

On May 8, 2015, a draft of this question was sent to Mr. William Cross of your staff to ensure that the question was understandable, the regulatory basis for the question was clear, there is no proprietary information contained in the RAI, and to determine if the information was previously docketed. On June 11, 2015, a closed meeting was held to clarify the question.

M. Nazar

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During the meeting, Mr. Jay Kabadi and Mr. William Cross indicated that FPL will submit a response within 7 weeks (July 30, 2015).

The NRC staff considers that timely responses to RAIs help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources. Please note that if you do not respond to this letter by the agreed upon date or provide an acceptable alternate date in writing, we may deny your application for amendment under the provisions of Title 10 of the *Code of Federal Regulations*, Section 2.108. Please also note that review efforts on this task are continuing and additional RAIs may be forthcoming.

If you have any questions, please contact Robert L. Gladney at 301-415-1022 or [Robert.Gladney@nrc.gov](mailto:Robert.Gladney@nrc.gov).

Sincerely,

A handwritten signature in black ink that reads "Robert L. Gladney" followed by a stylized flourish.

Farideh E. Saba, Senior Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-389

Enclosure:  
Request for Additional Information

cc w/encl: Distribution via ListServ

REQUEST FOR ADDITIONAL INFORMATION  
REGARDING PROPOSED LICENSE AMENDMENT REQUEST AND EXEMPTION REQUEST  
TO ALLOW THE TRANSITION TO AREVA FUEL  
FLORIDA POWER & LIGHT COMPANY  
ST. LUCIE PLANT, UNIT NO. 2  
DOCKET NO. 50-389  
(TAC NOS. MF5494 AND MF5495)

By letter dated December 30, 2014, as supplemented by letter dated March 23, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML15002A091 and ML15084A011, respectively), Florida Power & Light Company (FPL) submitted a license amendment request to the U.S. Nuclear Regulatory Commission (NRC) for St. Lucie Plant, Unit No. 2 (SL-2). The proposed amendment would revise the TSs to allow the use of AREVA fuel at SL-2. Additionally, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.12, FPL requests an exemption from the provisions of 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems [ECCSs] for light-water nuclear power reactors," and Appendix K to 10 CFR Part 50, "ECCS Evaluation Models," to allow the use of M5 fuel rod cladding in future core reload applications for SL-2.

By letter dated April 8, 2015 (ADAMS Accession No. ML15090A240), FPL was informed that the NRC staff finds the application of XN-NF-78-44 (NP)(A), "A Generic Analysis of the Control Rod Ejection Transient for Pressurized Water Reactors [PWRs]" (ADAMS Accession No. ML15049A093), October 1983, Exxon Nuclear Company, Inc. (ENC) to AREVA (Combustion Engineering) CE 16x16 fuel, to be an expansion of the applicability of this Topical Report. The letter also stated that the staff would follow this acceptance with a request for additional information (RAI) that asks the licensee to confirm the acceptability of the application of XN-NF-78-44 (NP)(A) to AREVA CE 16x16 fuel by performing additional calculations using alternative methods.

Accordingly, the U.S. Nuclear Regulatory Commission staff has reviewed the information submitted by the licensee and, based upon this review, determined that the following additional information is required to complete the evaluation.

**SNPB-RAI-1**

Background

Section 4.25 of ANP-3347P, Revision 0, "St. Lucie, Unit 2 Fuel Transition Chapter 15 Non-LOCA [Loss of Coolant Accident] Summary Report," provides a description regarding "Spectrum of Control Element Assembly [CEA] Ejection Accidents (UFSAR [Updated Final Safety Analysis Report] 15.4.8)." The nonproprietary version of this document is publicly available under ADAMS Accession No. ML15002A092.

Enclosure

The CEA ejection accident is analyzed using the methodology described in Topical Report XN-NF-78-44 (NP)(A) for total deposited enthalpy in the fuel. Topical Report XN-NF-78-44 (NP)(A) indicates that "the ejected rod analysis presented here will be applicable to all future ENC reloads for PWR type reactors." However, as indicated in the acceptance letter of April 8, 2015, to the licensee, the application of the above methodology to AREVA's CE 16x16 fuel is considered an expansion of the applicability of this topical report.

The Phenomenon Identification and Ranking Table in Section 3 of NUREG/CR-6742, "Phenomenon Identification and Ranking Tables (PIRTs) for Rod Ejection Accidents in Pressurized Water Reactors Containing High Burnup Fuel," identifies certain fuel physical, mechanical, and thermal properties of the fuel design under high burnup conditions during the PWR Rod Ejection Accident. These parameters are fuel thermal conductivity, gap conductance, clad conductivity (including oxide layer), transient cladding-to-coolant heat transfer coefficient, heat capacities of fuel and cladding, and other applicable parameters. It is not evident from your submittal on the control rod ejection analysis whether or not a more recent fuel performance code is used to compute the fuel and clad properties.

Upon review of the control rod ejection accident analysis submitted by the licensee in ANP-3347P, Section 4.25, the staff has determined that the margin to the centerline temperature for 20 percent and 65 percent rated thermal power has been substantially reduced for beginning of cycle.

RAI

Based on the above, perform a plant-specific analysis of control rod ejection accident for St. Lucie, Unit 2 using an alternate methodology as was proposed to the staff during the pre-submittal meeting on November 3, 2014. By performing the alternate analysis using the combination of latest fuel performance methodology and the proposed supplement to the ARCADIA reactor analysis system methodology, provide additional information that is necessary for determining the acceptability of the applicability of XN-NF-78-44(NP)(A) to AREVA CE 16x16 fuel design.

M. Nazar

- 2 -

During the meeting, Mr. Jay Kabadi and Mr. William Cross indicated that FPL will submit a response within 7 weeks (July 30, 2015).

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If you have any questions, please contact Robert L. Gladney at 301-415-1022 or [Robert.Gladney@nrc.gov](mailto:Robert.Gladney@nrc.gov).

Sincerely,

*/RA by R.Gladney for/*

Farideh E. Saba, Senior Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-389

Enclosure:  
Request for Additional Information

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**ADAMS Accession No. ML15166A368**

**\* via e-mail**

OFFICE	NRR/DORL/LPL1-2/PM	NRR/DORL/LPL2-2/LA	NRR/DSS/SNPB*
NAME	R.Gladney	BClayton	JDean
DATE	06/23/2015	06/18/2015	06/15/2015
OFFICE	NRR/DORL/LPL2-2/BC	NRR/DORL/LPL2-2/PM	
NAME	Shelton (AHon for)	FSaba (R.Gladney for)	
DATE	06/24/2015	06/24/2015	

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