



Crystal River Nuclear Plant  
Docket No. 50-302  
Operating License No. DPR-72

July 17, 2012  
3F0712-06

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

Subject: Crystal River Unit 3 – Response to Second Request for Additional Information to Support NRC Steam Generator Tube Integrity and Chemical Engineering Branch (ESGB) Technical Review of the CR-3 Extended Power Uprate LAR (TAC No. ME6527)

References: 1. FPC to NRC letter dated June 15, 2011, "Crystal River Unit 3 – License Amendment Request #309, Revision 0, Extended Power Uprate" (ADAMS Accession No. ML112070659)  
2. NRC to FPC letter dated July 5, 2012, "Crystal River Unit 3 Nuclear Generating Plant – Request For Additional Information For Extended Power Uprate License Amendment Request (TAC No. ME6527)" (ADAMS Accession No. ML12174A292)

Dear Sir:

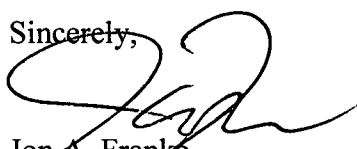
By letter dated June 15, 2011, Florida Power Corporation (FPC) requested a license amendment to increase the rated thermal power level of Crystal River Unit 3 (CR-3) from 2609 megawatts (MWt) to 3014 MWt. (Reference 1) On July 5, 2012, the NRC provided a Request for Additional Information (RAI) to support the ESGB technical review of the CR-3 Extended Power Uprate (EPU) License Amendment Request (LAR). (Reference 2)

The attachment to this correspondence, "Response to Second Request for Additional - Steam Generator Tube Integrity and Chemical Engineering Branch Technical Review of the CR-3 EPU LAR," provides the formal response to the RAI.

This correspondence contains no new regulatory commitments.

If you have any questions regarding this submittal, please contact Mr. Dan Westcott, Superintendent, Licensing and Regulatory Programs at (352) 563-4796.

Sincerely,



Jon A. Franke  
Vice President  
Crystal River Nuclear Plant

JAF/gwe

Attachment: Response to Second Request for Additional Information – Steam Generator Tube Integrity and Chemical Engineering Branch Technical Review of the CR-3 EPU LAR

xc: NRR Project Manager  
Regional Administrator, Region II  
Senior Resident Inspector  
State Contact

Crystal River Nuclear Plant  
15760 W. Powerline Street  
Crystal River, FL 34428

A001  
WRR

**STATE OF FLORIDA**

**COUNTY OF CITRUS**

Jon A. Franke states that he is the Vice President, Crystal River Nuclear Plant for Florida Power Corporation; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission the information attached hereto; and that all such statements made and matters set forth therein are true and correct to the best of his knowledge, information, and belief.



Jon A. Franke  
Vice President  
Crystal River Nuclear Plant

The foregoing document was acknowledged before me this 17 day of July, 2012, by Jon A. Franke.



Signature of Notary Public  
State of Florida



(Print, type, or stamp Commissioned  
Name of Notary Public)

Personally ☒ Known ☐ -OR- Produced Identification ☐

**FLORIDA POWER CORPORATION**

**CRYSTAL RIVER UNIT 3**

**DOCKET NUMBER 50-302 / LICENSE NUMBER DPR-72**

**ATTACHMENT**

**RESPONSE TO SECOND REQUEST FOR ADDITIONAL  
INFORMATION – STEAM GENERATOR TUBE INTEGRITY  
AND CHEMICAL ENGINEERING BRANCH TECHNICAL  
REVIEW OF THE CR-3 EPU LAR**

**RESPONSE TO SECOND REQUEST FOR ADDITIONAL  
INFORMATION – STEAM GENERATOR TUBE INTEGRITY AND  
CHEMICAL ENGINEERING BRANCH TECHNICAL REVIEW OF THE  
CR-3 EPU LAR**

By letter dated June 15, 2011, Florida Power Corporation (FPC) requested a license amendment to increase the rated thermal power level of Crystal River Unit 3 (CR-3) from 2609 megawatts (MWt) to 3014 MWt (Reference 1). On July 5, 2012, the NRC provided a Request for Additional Information (RAI) to support the ESGB technical review of the CR-3 Extended Power Uprate (EPU) License Amendment Request (LAR).

For tracking purposes, each item related to this RAI is uniquely identified as ESGB X-Y, with X indicating the RAI set and Y indicating the sequential item number.

**1. (ESGB 2-1)**

The monitoring program described in letter dated January 27, 2010 (ADAMS Accession No. ML100290366), states that CR-3 will perform in-situ neutron attenuation testing for spent fuel pools A and B. The program description does not provide the schedule for the testing. Please discuss the schedule for in-situ neutron attenuation testing for the materials in spent fuel pools A and B.

***Response:***

As described in an FPC response to an RAI associated with the CR-3 License Renewal (LR) submittal (Reference 2, Enclosure 2), the Fuel Pool Rack Neutron Absorber Monitoring Program will be enhanced and will include, in part, periodic neutron attenuation testing for materials in CR-3 Spent Fuel Pools A and B. Specifically, the enhancements to this program are scheduled to be implemented prior to the period of CR-3 extended operation as required by CR-3 LR Regulatory Commitment #27 (Reference 3, Enclosure 2) and in-situ neutron attenuation testing of the spent fuel pools will be repeated at 10-year intervals within the extended operating period as described in Enclosure 1, "Response to Request for Additional Information," of the FPC to NRC letter dated January 27, 2010 (Reference 2).

**2. (ESGB 2-2)**

Please clarify whether soluble boron is credited in the criticality safety analysis for maintaining  $k_{eff}$  [effective multiplication factor] within limits in the spent fuel pools.

***Response:***

An evaluation was performed to determine the criticality margins for the spent fuel racks in Spent Fuel Pools A and B resulting from CR-3 operation at EPU conditions. To maintain  $k_{eff}$  within the limits of 10 CFR 50.68(b)(4) in the CR-3 spent fuel pools during normal and accident conditions, soluble boron is required. As indicated in the basis of change for Improved Technical Specification (ITS) 3.7.14, "Spent Fuel Pool Boron Concentration," (Reference 1, Attachment 1), the limiting boron concentration assumptions of 203 ppm for normal conditions and 571 ppm for accident conditions in Pool B are required to meet the criticality design requirements.

As described in the CR-3 EPU LAR (Reference 1, Attachments 1, 2, 3 and 4), FPC requests, in part, a license basis change to credit the use of soluble boron in the spent fuel pool to preclude spent fuel pool criticality accidents as allowed by 10 CFR 50.68(b)(4) and proposes concomitant changes to ITS 3.7.14 and ITS 4.3.1, "Criticality."

## **References**

1. FPC to NRC letter dated June 15, 2011, "Crystal River Unit 3 – License Amendment Request #309, Revision 0, Extended Power Uprate." (ADAMS Accession No. ML112070659)
2. FPC to NRC letter dated January 27, 2010, "Crystal River Unit 3 - Response to Request for Additional Information for the Review of the Crystal River Unit 3, Nuclear Generating Plant, License Renewal Application (TAC NO. ME0274) and Amendment #9." (ADAMS Accession No. ML100290366)
3. FPC to NRC letter dated December 16, 2008, "Crystal River Unit 3 – Application for Renewal of Operating License." (ADAMS Accession No. ML090080054)