



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

July 17, 2012

Mr. Jon A. Franke, Vice President
Crystal River Nuclear Plant (NA2C)
ATTN: Supervisor, Licensing and
Regulatory Programs (NA1B)
15760 W. Power Line Street
Crystal River, Florida 34428-6708

SUBJECT: CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT – REQUEST FOR
ADDITIONAL INFORMATION FOR EXTENDED POWER UPRATE LICENSE
AMENDMENT REQUEST (TAC NO. ME6527)

Dear Mr. Franke:

By letter dated June 15, 2011, as supplemented by letters dated July 5, 2011; August 11, 2011 (two letters); August 18 and 25, 2011; October 11 and 25, 2011; December 15, 2011 (two letters); December 21, 2011; January 5, 2012 (two letters); January 19, 2012 (two letters); January 31, 2012; March 19, 2012; March 22, 2012; and April 4, 2012 (two letters); April 12, 2012; April 16, 2012; April 26, 2012, and June 18, 2012, Florida Power Corporation, doing business as Progress Energy Florida, Inc., submitted a license amendment request for an extended power uprate to increase thermal power level from 2609 megawatts thermal (MWt) to 3014 MWt for Crystal River Unit 3 Nuclear Generating Plant.

The U.S. Nuclear Regulatory Commission staff is reviewing the submittal and has determined that additional information is required to complete its evaluation. This request was discussed with Mr. Dan Westcott of your staff on July 3, 2012; and it was agreed that a response to the enclosed request for additional information would be provided within 45 days from the date of this letter.

If you have any questions regarding this matter, I can be reached at 301-415-1564.

Sincerely,

A handwritten signature in black ink, reading "Siva P. Lingam".

Siva P. Lingam, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosure:
Request for Additional Information

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION
REGARDING EXTENDED POWER UPRATE TO INCREASE THERMAL POWER LEVEL
FROM 2609 MEGAWATTS THERMAL TO 3014 MEGAWATTS THERMAL
CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT
DOCKET NO. 50-302

By letter dated June 15, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML112070659), as supplemented by letters dated July 5, 2011; August 11, 2011 (two letters); August 18 and 25, 2011; October 11 and 25, 2011; December 15, 2011 (two letters); December 21, 2011; January 5, 2012 (two letters); January 19, 2012 (two letters); January 31, 2012; March 19, 2012; March 22, 2012; April 4, 2012 (two letters), April 12, 2012, April 16, 2012, April 26, 2012, and June 18, 2012 (ADAMS Accession Nos. ML112010674, ML11228A032, ML11234A051, ML11234A427, ML11242A140, ML112860156, ML113040176, ML11354A232, ML11354A233, ML11361A460, ML12011A035, ML12030A209, ML12024A300, ML12024A301, ML120330114, ML12081A293, ML12086A107, ML12097A183, ML12097A246, ML12107A216, ML12114A002, ML12118A498, and ML121730557, respectively), Florida Power Corporation (the licensee), doing business as Progress Energy Florida, Inc., submitted a license amendment request (LAR) for an extended power uprate (EPU) to increase thermal power level from 2609 megawatts thermal (MWt) to 3014 MWt for Crystal River Unit 3 Nuclear Generating Plant (Crystal River 3 or CR-3). By letter dated April 16, 2012, the licensee provided responses to the requests for additional information (RAIs) originating from our Electrical Engineering Branch (EEEB). Based on its review of the licensee's responses, the Nuclear Regulatory Commission (NRC) staff has additional RAIs from our EEEB. The NRC staff also requests the additional information originating from our Safety Issue Resolution Branch (SSIB).

EEEB REQUEST FOR ADDITIONAL INFORMATION

1. In response to EEEB 1-2 dated April 16, 2012, the licensee stated that the new equipment listed in the original LAR (dated June 15, 2011) Section 2.3.1, "Environmental Qualification [EQ] of Electrical Equipment," are being evaluated in the associated CR-3 Engineering Change packages. The licensee also stated that finalization of the EPU plant modifications is currently in progress and includes the associated EQ evaluations which will be completed once the specific location and type of component is known.

In view of above the NRC staff has the following questions:

- a) The licensee's EQ equipment and component design finalization and the determination of the specific location(s) have not been completed for the EPU operation, and therefore the NRC staff cannot accept the response without the submittal of the completed design. The licensee needs to provide the completed design information with type of equipment, specific location, and category/environmental characteristics, with a complete list of all new and

Enclosure

replacement equipment (with Tag number(s)) that need to be environmentally qualified under EPU conditions.

- b) The licensee's response in (iii) dated April 16, 2012, is that a vendor qualification package for the new differential pressure switches associated with the emergency feedwater (EFW) system is being finalized for the new EQ components. The NRC staff needs the final EQ details of the new differential pressure switches to complete the safety review.
 - c) The licensee stated in response (iv) dated April 16, 2012, that eight core exit thermocouples are being upgraded to safety-related in support of the new Inadequate core cooling mitigation system. Clarify if upgrading means that these thermocouples will be new equipment? Also clarify whether these thermocouples are being added to the EQ master list. If so, provide information that demonstrates that the EQ of these components bounds EPU conditions.
2. In response to EEEB 1-5 dated April 16, 2012, the licensee stated that with the exception of the reactor building sump transmitter capillary tubes, electrical equipment important to safety is installed above the expected flood level.

Provide clarification that the sump transmitter and its wiring to the equipment are also above the expected flood level so that the function is not impacted by any flooding conditions during EPU operation. Provide a discussion on how these are appropriately qualified.

3. In response to EEEB 1-8 dated April 16, 2012, regarding short-circuit current available at the isolated phase bus (IPB) duct versus the IPB short-circuit capacity rating, the licensee stated that the changes that impact electrical calculations are not yet included in the formal calculations, but are evaluated using the electrical system calculation Impact Assessment process to ensure that the composite effect of the electrical system changes are acceptable. The licensee further stated that additional changes due to EPU operation are being evaluated and are expected to be bounded by the equipment ratings.

Provide the summary of the final results of the completed calculation to demonstrate that the maximum short circuit capacity of the IPB is adequate to support operation at EPU conditions.

4. In response to EEEB 1-11 dated April 16, 2012, the licensee stated that subsequent to the submittal of the CR-3 EPU LAR, the licensee discovered an incorrect design input in the nonsafety related electrical transient analyzer program analysis. This condition was evaluated in the corrective action program and the short-circuit analysis has been re-done. The analysis indicates that the short-circuit ratings are exceeded at EPU conditions on several nonsegregated bus ducts that require modification for higher short-circuit rating. As a result, the licensee stated that the five 4160 volt nonsegregated bus duct sections will be replaced prior to EPU operation.

Identify the five 4160 volt nonsegregated bus duct sections discussed above and provide the continuous and short-circuit current ratings at EPU operation. Clarify if this modification is a part of the Regulatory Commitment in Attachment 10 of the LAR, where it is stated that "CR-3 will implement all EPU modifications."

5. In response to EEEB 1-12 dated April 16, 2012, the licensee provided a discussion on the Class 1E battery system for the EFW System pump recirculation line modification. The licensee stated that this modification adds 2 amperes to the B-positive battery and less than 2 amperes to the diesel driven EFW (emergency feedwater pump (EFP-3) battery.
- a) Provide the latest direct current (DC) one line diagram of the Class 1E battery and the EFP-3 battery systems. Provide a discussion on the configuration of the B-positive and B-negative Class 1E station batteries.
 - b) Clarify that the above additional loads will not adversely impact the capacity margin of the Class 1E battery and the EFW (EFP-3) battery systems.
 - c) The licensee stated that "In accordance with the CR-3 engineering change process, the electrical loading calculation will be revised to incorporate the actual DC electrical loading impacts from the EPU operation and EPU-related modifications following finalization of the modifications to confirm the battery loading is acceptable for operation at EPU conditions."

Provide the summary of the final results of the completed calculation to demonstrate that the battery loading is bounded at EPU conditions by the available battery capacity.

SSIB RAIs

With regard to resolving issues identified in the NRC Generic Safety Issue 191, "Assessment of Debris Accumulation on Pressurized-Water Reactor Sump Performance," Attachment 5 of the original EPU LAR dated June 15, 2011, Section 2.8.5.6.3 cites NRC correspondence dated October 2, 2009 (Farideh E. Saba (NRC) Letter to Jon A. Franke (Progress Energy)), Crystal River Unit 3 Nuclear Generating Plant - Partial Close out and Request for Additional Information Related to Generic Letter 2004-02 (TAC NO. MC4678), ADAMS Accession No. ML092670261) to show that with the exception of in-vessel downstream effects, CR-3 has resolved the issues identified in Generic Safety Issue-191.

Consistent with the guidance in the NRC staff's safety evaluation on Nuclear Energy Institute [NEI]-04-07, the equipment in the emergency core cooling system (ECCS) and containment spray system, such as pumps and valves, at CR-3 has been evaluated for the effects of debris in the recirculated fluid that bypasses (or passes through) the suction strainers. The power uprate submittal states that valves and piping are being added to the ECCS to support a passive cross-tie between the decay heat removal/low-pressure injection system and reactor cooling system hot-leg B. Please describe the method(s) used to evaluate the new piping system components for blockage and wear and the results of those evaluations.

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/RA/

Siva P. Lingam, Project Manager
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