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

August 28, 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, FL 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, 2011, August 25, 2011, October 11, 2011, October 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, June 18, 2012, June 29, 2012, July 17, 2012 (two letters), July 31, 2012 (two letters), and August 21, 2012 (two letters), 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 August 23, 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,

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, 2011, August 25, 2011, October 11, 2011, October 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, June 18, 2012, June 29, 2012, July 17, 2012 (two letters), July 31, 2012 (two letters), and August 21, 2012 (two letters) (ADAMS Accession Nos. ML112010674, ML11228A032, ML11234A051, ML11234A427, ML11242A140, ML112860156, ML113040176, ML11354A232, ML11354A233, ML11361A460, ML12011A035, ML12030A209, ML12024A300, ML12024A301, ML12032A280, ML12081A293, ML12086A107, ML120970114, ML12097A246, ML12107A216, ML12114A002, ML12118A498, ML12173A391, ML122060421, ML122050452, ML12205A268, ML12216A354, ML12216A355, ML12240A009, and ML12240A010, 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). Portions of the letters dated June 15, 2011, August 11, 2011 (ADAMS Accession No. ML11228A032), January 31, 2012, June 18, 2012, and July 17, 2012 (ADAMS Accession No. ML122050452), contain sensitive unclassified non-safeguards information and, accordingly, those portions have been withheld from public disclosure. In order to complete its review of the above documents, the U.S. Nuclear Regulatory Commission (NRC) staff requests additional information originating from its Instrumentation and Controls Branch (EICB):

EICB REQUEST FOR ADDITIONAL INFORMATION

1. In order to comply with the regulatory requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Sections 50.55a(a)(1), 10 CFR 50.55a(h), 10 CFR 50.34(f)(2)(xxii) [II.K.2.9], and the general design criteria related to the control systems of a LAR, the licensee is required to complete appropriate analyses, such as independence and diversity analyses, and failure modes and effects analyses, for balance-of-plant control systems that were modified due to the replacement of components and control logics that could either increase challenges to the initiation of plant safety systems or otherwise impact the ability of plant systems to respond to events.

   The licensee submitted the original LAR of CR-3 EPU on June 15, 2011. Section 2.4.4.2, "Integrated Control System (ICS)" of the Attachment 5 of the original LAR describes the ICS modifications. However, this section does not demonstrate how the licensee's analysis

results verify that the modifications of the control systems will not impact the safety system functions or impact the ability of plant control systems to respond to the transient or accident events.

For the instrumentation and controls system and other balance-of-plant control system modifications that were implemented as part of the EPU, please provide a summary of analyses that were performed to ensure that:

a) the failure of any control system component or any auxiliary supporting system for control systems, such as loss of power sources, does not cause plant conditions more severe than those described in the analysis of anticipated operational occurrences in Chapter 15 of the safety analyses report (SAR).

b) the consequential effects of anticipated operational occurrences and accidents do not lead to control system failures that would result in consequences more severe than those described in the analysis in Chapter 15 of the SAR.

c) the independence of the normal control systems from safety system functions has been verified.

d) the design of the control system limits the potential for inadvertent actuation and challenges to safety systems.

e) the control systems are appropriately designed and are of sufficient quality to minimize the potential for challenges to safety systems.

f) ICS modifications do not change any conclusion of the original failure mode and effect analyses.

2. In various places (e.g., the last paragraph of page 2.4.2.3-1) of the Attachment 5 of the original LAR, the licensee mentions that Inadequate Core Cooling Monitoring System (ICCMS) receives inputs from "incore thermocouples" or "incore thermocouple temperatures," but the proposed CR-3 Improved Technical Specification Table 3.3.19-1 "Inadequate Core Cooling Monitoring System (ICCMS) Instrumentation," FUNCTIONS 1d, 2c, and 3c (Attachments 2 and 3 of the original LAR) uses the term "Core Exit Thermocouples (CETs)" as ICCMS inputs.

   Are those two terms the same? If they are the same, which one is the proper term to use? If they are different, please explain in detail.

3. During a loss of subcooling margin (LOSCM) event concurrent with a reactor trip, ICCMS will automatically trip the reactor coolant pumps within one minute and will additionally raise the steam generator (SG) secondary side water level to the inadequate subcooling margin setpoint within 10 minutes. How does the licensee ensure that the system meets these two response time requirements?

4. During a LOSCM event concurrent with inadequate high-pressure injection (HPI) flow, the existing emergency operating procedures direct the operator to manually perform a rapid primary system cooldown via SG pressure reduction. This action is being automated with the installation of the ICCMS and fast cooldown system (FCS). For EPU, FCS actuation is required within 10 minutes of LOSCM if HPI flow is inadequate. How does the licensee ensure that the system meets this response time requirement?

5. Clause 5.8.3 of the Enclosure 3, "IEEE 603-1991 and IEEE 279-1971 Compliance Matrix" of the licensee's supplemental letter dated August 18, 2011, states:

   "**System Spec 5.9.2.1** Fifteen (15) TRIP/AUTO/BYPASS Switches shall be provided to allow bypassing or tripping each output trip function in each initiation channel and bypassing or tripping each output trip function in each actuation train. The TRIP/AUTO/BYPASS Switches shall be located in the channel enclosure."

   a) Where are channel cabinets located?
   b) What controls and indications are available to the operator?
   c) Please provide detailed description of the initiation channel TRIP/AUTO/BYPASS switches (including diagrams, function, and operation).

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Sincerely,
/ra/
Siva P. Lingam, Project Manager
Plant Licensing Branch II-2
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