



SERIAL: HNP-11-076  
10 CFR 50.90

AUG 15 2011

U.S. Nuclear Regulatory Commission  
ATTENTION: Document Control Desk  
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT NO. 1  
DOCKET NO. 50-400/RENEWED LICENSE NO. NPF-63  
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION  
REGARDING MEASUREMENT UNCERTAINTY RECAPTURE  
POWER UPRATE LICENSE AMENDMENT REQUEST

- References:
1. Letter from B. Mozafari, Nuclear Regulatory Commission, to W. Jefferson, "Shearon Harris Nuclear Power Plant, Unit 1 – Request for Additional Information Regarding Measurement Uncertainty Recapture Power Uprate (TAC No. ME6169)," dated August 5, 2011
  2. Email from B. Mozafari, Nuclear Regulatory Commission, to J. Caves, "MUR RAI (Cont/Vent ME6169).docx," dated July 29, 2011.
  3. Letter from C. L. Burton to the Nuclear Regulatory Commission (Serial: HNP-11-001), "Shearon Harris Nuclear Power Plant, Unit 1, Docket No. 50-400/Renewed License No. NPF-63, Request for License Amendment, Measurement Uncertainty Recapture Power Uprate," dated April 28, 2011. (ADAMS Accession ML11124A180)

Ladies and Gentlemen:

On July 29, 2011, the Harris Nuclear Plant (HNP) received a request from the NRC (Reference 2) for additional information needed to facilitate the review of the License Amendment Request to increase the rated thermal power (RTP) level from 2900 megawatts thermal (MWt) to 2948 MWt, and make Technical Specification changes as necessary to support operation at the uprated power level. The proposed change is an increase in RTP of approximately 1.66%. The proposed uprate is characterized as a measurement uncertainty recapture using the Cameron Leading Edge Flow Meter CheckPlus System to improve plant calorimetric heat balance measurement accuracy. This original request was submitted as Serial: HNP-11-001 (Reference 3).

The Enclosure to this submittal contains HNP's response to the NRC's request for additional information.

This document contains no new Regulatory Commitment.

In accordance with 10 CFR 50.91(b), HNP is providing the state of North Carolina with a copy of this response.

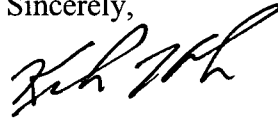
Progress Energy Carolinas, Inc.  
Harris Nuclear Plant  
P. O. Box 165  
New Hill, NC 27562

ADD.  
LIR

Please refer any questions regarding this submittal to Mr. Dave Corlett, Supervisor – HNP Licensing/Regulatory Programs, at (919) 362-3137.

I declare under penalty of perjury that the foregoing is true and correct. Executed on  
[ **AUG 15 2011** ].

Sincerely,



Keith Holbrook  
Manager – Support Services  
Harris Nuclear Plant

RKH/kab

Enclosure: Response to Request for Additional Information

cc: Mr. J. D. Austin, NRC Sr. Resident Inspector, HNP  
Mr. W. L. Cox, III, Section Chief, N.C. DENR  
Mr. V. M. McCree, NRC Regional Administrator, Region II  
Mrs. B. L. Mozafari, NRC Project Manager, HNP

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**Summary**

By letter dated April 28, 2011, (ADAMS Accession No. ML11124A180), Carolina Power & Light Company (CP&L), now doing business as Progress Energy Carolinas, Inc., submitted a proposed amendment for the Shearon Harris Nuclear Power Plant, Unit 1 (HNP). The proposed amendment will increase the rated thermal power (RTP) level from 2900 megawatts thermal (MWt) to 2948 MWt, and make Technical Specification (TS) changes as necessary to support operation at the uprated power level. The proposed change is an increase in RTP of approximately 1.66%. The proposed uprate is characterized as a measurement uncertainty recapture (MUR) using the Cameron Leading Edge Flow Meter CheckPlus System to improve plant calorimetric heat balance measurement accuracy. The proposed change will revise Renewed OL NPF-63 Maximum Power Level; Appendix A, TS definition of RTP; Reactor Core Safety Limits; Reactor Trip System Instrumentation; Minimum Allowable Power Range Neutron Flux high setpoint with Inoperable Steam Line Safety Valves; and TS Bases Section 3/4.7.1 to reflect the uprated reactor core power level.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information submitted by the licensee, and based on this review determined the following information is required to complete the evaluation of the subject amendment request:

**Request 1:**

Containment and Ventilation request for additional information (RAI):  
Section II.2.40, "Mass and Energy Releases – FSAR [Final Safety Analysis Report] 6.2.1," of Enclosure 2 to your supplemented letter dated June 23, 2011, that discussed EPITOME Code error. EPITOME is a code used by Westinghouse in the loss-of-coolant accident (LOCA) long-term mass and energy (M&E) calculation, which supplies input to the containment response. Westinghouse discovered that the computer code (EPITOME) used to generate the M&E inputs for the containment peak pressure analysis contains an error which could result in an increase in the containment pressure and temperature for the double ended pump suction LOCA, including a maximum increase in the peak containment pressure of up to 5 psi and temperature of up to 5.5 deg F. The licensee states:

The Harris Nuclear Power Plant (HNP) power uprate LOCA  
long-term mass and energy evaluation was predicated on no

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changes to the existing mass and energy release analysis of record  
due to the power uprate.

Since the licensee used the EPITOME code in its existing M&E release analysis for HNP, provide information on how this code error affects HNP's containment response analysis for a LOCA, specifically regarding the calculated peak pressure and peak temperature.

Response:

LOCA M&E Releases were recalculated to resolve the EPITOME code error and additional previously-identified discrepancies. The reanalysis was based upon the Harris analysis of record that considers inputs that bound both uprate and current operating conditions. After resolving the errors in the LOCA M&E calculation and incorporating the results into the containment response analysis, the Harris plant remains double ended hot leg (DEHL) break limited with no change in the peak DEHL break pressure at 56.50 psia and peak containment atmosphere temperature at 270.2°F. The double ended pump suction (DEPS) break blowdown peak pressure remains the same at 54.80 psia, but the post-blowdown peak pressure increases by 2.74 psia to a new value of 55.74 psia. As a result, the DEPS break case is now limited by the post blowdown pressure. Although the DEPS analysis changed, the DEHL analysis remains bounding and unchanged. Therefore, there is no impact on the subject LAR due to the referenced error in the EPITOME code.