Progress Energy

10 CFR 50.90

November 28, 2011
HNP-11-107

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

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT NO. 1
DOCKET NO. 50-400 / RENEWED LICENSE NO. NPF-63

Subject: SUPPLEMENT TO REQUEST FOR LICENSE AMENDMENT MEASUREMENT UNCERTAINTY RECAPTURE POWER UPRATE

References:
1. Letter from C.L. Burton to the U.S. NRC, "Request for License Amendment, Measurement Uncertainty Recapture Power Uprate," dated April 28, 2011.
2. Letter from B. Mozafari to W. Jefferson Jr., "Shearon Harris Nuclear Plant – Safety Evaluation for Revision to Reactor Vessel Surveillance Capsule Withdrawal Schedule (TAC No. ME6998) dated October 21, 2011.

Ladies and Gentlemen:

By letter dated April 28, 2011, as supplemented on June 23, 2011, Carolina Power & Light Company (CP&L), doing business as Progress Energy Carolinas, Inc. (PEC), requested approval from the U.S. Nuclear Regulatory Commission (NRC) to increase the core thermal power level of Shearon Harris Nuclear Power Plant, Unit 1 (HNP) from 2,900 megawatts thermal (MWt) to 2,948 MWt, an increase of approximately 1.66 percent over the present licensed power level and to change the power plant technical specifications accordingly.

An update is provided to LAR Enclosure 2, Section IV.1.C.vi - Surveillance Capsule Withdrawal Schedule. This update reflects a recently approved revision to the HNP surveillance capsule withdrawal schedule (Reference 2).

CP&L has concluded that the information provided in this response meets the intent of the original submittal (Reference 1) and does not impact the conclusions of the: 1) Technical Analysis, 2) No Significant Hazards Consideration, or 3) Environmental Consideration as provided in the original submittal.

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

Progress Energy Carolinas, Inc.
Harris Nuclear Plant
P. O. Box 165
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NRR

This document contains no new Regulatory Commitments.

Please refer any questions regarding this submittal to Mr. David 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 [11-28-11].

Sincerely,

Keith Holbrook
Manager, Support Services
Harris Nuclear Plant

Enclosure: Supplement to LAR Enclosure 2, Section IV.1.C.vi - Surveillance Capsule Withdrawal Schedule

cc: Regional Administrator, USNRC/Region II
Project Manager, Harris Nuclear Plant, USNRC/NRR
Resident Inspector, Harris Nuclear Plant, USNRC
Section Chief, NC Division of Environmental Health

HNP-11-107

Enclosure

SHEARON HARRIS NUCLEAR POWER PLANT / UNIT NO. 1
DOCKET NO. 50-400 / RENEWED LICENSE NO. NPF-63

LICENSE AMENDMENT REQUEST
MEASUREMENT UNCERTAINTY RECAPTURE POWER UPRATE
TAC ME6169

SUPPLEMENT TO LAR ENCLOSURE 2, SECTION IV.1.C.VI
SURVEILLANCE CAPSULE WITHDRAWAL SCHEDULE (3 PAGES)

The License Amendment Request (LAR), Enclosure 2, Section IV.1.C.vi - Surveillance Capsule Withdrawal Schedule, stated the following:

> *Capsule W was withdrawn during the Fall 2010 outage (end of cycle 16), with a projected fluence of 6.89 E19 n/cm^2. The Capsule W analysis will be used to optimize the neutron exposure and withdrawal schedule for the remaining two capsules (Y and Z), to obtain meaningful metallurgical data. HNP will adjust the withdrawal schedule for one of the remaining capsules based on the Capsule W analysis, so that capsule fluence will not exceed twice the maximum vessel fluence per ASTM E185-82. If the last capsule's projected fluence value is excessive, it will either be relocated to a lower neutron flux position, or withdrawn for possible future testing or reinsertion. One capsule will continue to be irradiated to at least the projected reactor vessel fluence at 80 years of operation, withdrawn and tested consistent with the industry PWR coordinated surveillance plan currently under development.*

By letter dated August 16, 2011 (ADAMS Accession No. ML 11235A730), Carolina Power & Light Company submitted for staff review a request for revising the withdrawal schedule for the reactor pressure vessel surveillance capsules for Shearon Harris Nuclear Power Plant (Harris), Unit No.1. The purpose of the licensee's submittal was to better align the withdrawal schedule with the projection of neutron fluence at the end-of-life extended, while satisfying the requirements of Appendix H. "Reactor Vessel Material Surveillance Program Requirements," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50. Section III(B)(3) of Appendix H to 10 CFR Part 50 requires that proposed withdrawal schedules must be submitted and approved by the staff prior to implementation.

In December 2008, HNP was granted an extended license for operation. NUREG-1801, Revision 2, "Generic Aging Lessons Learned Report," (GALL Report) provides additional guidance for the surveillance program during the extended period of operation, approximately 20 years. This additional guidance is necessary because the requirements found in ASTM E185-82 were designed on 40-year operating periods.

The HNP surveillance program is based on ASTM E185-82 and is compliant with the requirements of 10 CFR 50, Appendix H. ASTM E185-82 establishes the minimum number of surveillance capsules for removal and testing based on the projected ΔRT_{NDT}. For both the 40-year period and the 60-year extended period of operation, the HNP RPV has limiting ΔRT_{NDT} values below 100°F (56°C). Therefore, HNP was required to remove a minimum of three surveillance capsules during the 40-year period of operation, and must test an additional capsule for the 60-year extended period of operation to remain in compliance with ASTM E185-82 and the license renewal commitments as described in the GALL Report.

Three capsules have been withdrawn and tested (prior to Capsule W removal) covering the initial 40-year period. Capsule W was withdrawn during the Fall 2010 outage when the neutron fluence was expected to be approximately equal to the maximum neutron fluence on the clad-vessel interface at end-of-life, 55 effective full power years (EFPY). Capsule W was not analyzed as described in the LAR Section IV.1.C.vi write-up, but was placed in storage. HNP committed that

either Capsule Y or Z will be withdrawn during the 21st refueling outage scheduled for 2018, when the capsule will have been exposed to a total estimated neutron fluence of 9.39E19 n/cm^2. The other Capsule will remain in-place and maintained in readiness should it become necessary at a future date.

By letter from B. Mozafari to W. Jefferson Jr. dated October 21, 2011 (ADAMS Ascension No. ML1129A076), the NRC concluded that the proposed changes satisfied the requirements and recommendations of ASTM E185-82 and the GALL Report as pertinent to the application. Therefore, the NRC staff concluded that the modified surveillance capsule withdrawal schedule was acceptable for implementation as documented in their Safety Evaluation Report.