

September 30, 2011

MEMORANDUM TO: Douglas A. Broaddus, Branch Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Matthew A. Mitchell, Chief */RA by Simon Sheng for/*
Vessel and Internals Integrity Branch
Division of Engineering
Office of Nuclear Reactor Regulation

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT, UNIT NO. 1 –
REQUEST FOR ADDITIONAL INFORMATION REGARDING
MEASUREMENT UNCERTAINTY RECAPTURE POWER UPRATE
(TAC NO. ME6169)

By letter dated April 28, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML11124A180), Progress Energy (the licensee) requested an amendment to Facility Operating License No. NPF-63 for the Shearon Harris Nuclear Power Plant, Unit No. 1, and Appendix A, Technical Specifications (TS), of the Facility Operating License. The proposed amendment would increase the rated thermal power level from 2900 Megawatts thermal (MWt) to 2948 MWt, an increase of approximately 1.66 percent, using the installation of the Cameron Leading Edge Flow Meter CheckPlus System to improve plant calorimetric heat balance measurement accuracy in the feedwater flow measurement. The Vessel and Internals Integrity Branch (EVIB) has reviewed the licensee's submittal and finds that additional information is needed to complete its safety evaluation. The request for additional information is enclosed.

Enclosure:
As stated

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(301) 415-6719

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ADAMS ACCESSION No.: ML112730082

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SHEARON HARRIS NUCLEAR POWER PLANT, UNIT NO. 1
REQUEST FOR ADDITIONAL INFORMATION (RAI) REGARDING
MEASUREMENT UNCERTAINTY RECAPTURE (MUR) POWER UPRATE
TAC NO. ME6169

Based on the review by Vessels and Internals Integrity Branch (EVIB) staff, the following additional information is requested:

1. Table Matrix-1 of NRC RS-001, Revision 0, "Review Standard for Extended Power Uprates," provides the staff's basis for evaluating the potential for extended power uprates to induce aging effects on reactor vessel (RV) internals. Depending on the magnitude of the projected RV internals fluence, Table Matrix-1 may be applicable to the MUR application. In the Notes to Table Matrix-1, the staff states that guidance on the neutron irradiation-related threshold for irradiation-assisted stress corrosion cracking (SCC) for pressurized water reactor RV internal components are given in BAW-2248A, "Demonstration of the Management of Aging Effects for the Reactor Vessel Internals," and WCAP-14577, Revision 1-A, "License Renewal Evaluation: Aging Management for Reactor Internals." The "Notes" to Table Matrix-1 state that for thermal and neutron embrittlement of cast austenitic stainless steel, stress corrosion cracking (SCC), and void swelling, licensees will need to provide plant-specific degradation management programs or participate in industry programs to investigate degradation effects and determine appropriate management programs. The BAW-2248A report and the WCAP-14577, Revision 1-A have been superseded by the MRP-227 report, "Pressurized Water Reactor (PWR) Internals Inspection and Evaluation Guidelines," which summarized the industry's most current recommended inspection and evaluation guidelines for RV internals. The safety evaluation dated June 22, 2011, lists the limitations and conditions imposed by the staff on use of the MRP-227 report. Please confirm the establishment of an inspection plan to manage the age-related degradation in the Shearon Harris, Unit 1 RV internals, or whether participation is planned in the industry's initiatives on age-related degradation of PWR RV internals, including submittal of a plant-specific program consistent with the MRP-227 report guidelines. For the former case, discuss your management of the above-mentioned aging effects on RV internals and demonstrate that the management is appropriate to ensure integrity and operability of RV internals to the end of license.
2. Enclosure 2, Section IV.1.C.v, "Effect on Upper Shelf Energy Calculation," states that all RV materials have Charpy upper shelf energy (USE) greater than the 50 ft-lb acceptance criteria of 10 CFR Part 50, Appendix G, including the power uprate. Provide the specific Charpy USE value calculated for the limiting beltline material for 55 effective full power years (EFPY) neutron fluence, including the power uprate.

ENCLOSURE