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UNITED STATES NUCLEAR REGULATORY COMMISSION WASH March 15.02001

WEMORANDUM TO: Rich Laufer, Project Manager Shearon Harris Unit 1 Project Directorate II-2 Division of Licensing Project Management

FROM: Frank Akstulewicz, Chief /RA/ Pressurized Water Reactor Section Reactor Systems Branch Division of Systems Safety and Analysis

SUBJECT: SHEARON HARRIS UNIT 1: TECHNICAL SPECIFICATION CHANGE REQUEST FOR STEAM GENERATOR REPLACEMENT AND POWER UPRATE (TAC NO. MB0782)

Shearon Harris, Unit 1 Plant Name(s): Carolina Power and Light Company Utility: MB0782 TAC No(s) .: 50-400 Docket No(s).: **NPF-63** License No(s).: Project Directorate: PD 11-2 **Rich Laufer** Project Manager: SRXB/DSSA Review Branch: Complete **Review Status:**

By letter dated December 14, 2000, the Carolina Power and Light Company (CP&L) licensee for the Shearon Harris nuclear power plant, submitted information and requested technical specification changes to affect a power uprate from 2775 MWt to 2900 MWt. The power uprate will necessitate the use of once burned or fresh fuel assemblies on peripheral locations. This will contribute to higher neutron leakage and correspondingly higher pressure vessel irradiation rate. Similarly, the new operating conditions will result in higher downcomer temperatures which in turn result in lower water density, lower thermalization rate and increased neutron leakage.

The purpose of this review is to establish the acceptability of the fluence values for 36 Effective Full Power Years of operation i.e. to the end of the current license assuming an average load factor of 90 percent. Our review and evaluation is in the attachment. This completes the SRXB/DSSA pressure vessel fluence review requirements for TAC No. MB0792.

Attachment: As Stated

Contact: Lambros Lois, SRXB/DSSA, 301-415-3233

Distribution: File Center

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SRXB/DSSA SRXB/DSSA LLOIS FAKSTULEWICZ 03/15/01 03/15/01 DOCUMENT NAME: G:\SRXB\SHARRIS.PWR-UPRT.WPD

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION SHEARON HARRIS UNIT 1: PRESSURE VESSEL FLUENCE EVALUATION CAROLINA POWER AND LIGHT COMPANY

1 INTRODUCTION

By letter dated December 14, 2000, the Carolina Power and Light Company (CP&L) licensee for the Shearon Harris Unit 1 nuclear power plant, submitted information and requested technical specification changes to implement a power level uprate from 2775 MWt to 2900 MWt (Ref. 1).

The licensee states that in order to achieve the increased power level, future loadings will include once burned or even fresh fuel assemblies on peripheral locations which will increase the neutron leakage. In addition the new operating conditions will result in higher downcomer temperatures, lower water density, lower thermalization rate and therefore, higher fast neutron leakage. Finally, the proposed effective full power years (EFPYs) of operation to the end of the current license are 36, i.e. an average load factor of 90% is assumed.

The purpose of this review is to establish the acceptability of the proposed fluence values for 36 EFPYs.

2 EVALUATION

The fluence calculations are documented in BAW-2355 Supplement 1 (Ref. 2) (attached to the submittal). The calculational methodology was based on BAW-2411PA (Ref. 3) which has been reviewed and approved by the NRC. Therefore, this review will focus on proper application of the methodology.





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3 REFERENCES

- 1. Letter from J. Scarola, Carolina Power and Light Company to US NRC "Shearon Harris Nuclear Power Plant Docket No. 50-400/License No. NPF-63 License Amendment Application Power Uprate" dated December 14, 2000.
- 2. BAW-2355, Supplement 1, "Supplement to the Analysis of Capsule X Carolina Power and Light Company Shearon Harris Nuclear Power Plant" by M.J. DeVan and S.Q. King, Framatome Technologies Incorporated, Lynchburg VA. November, 1999.
- 3. BAW-2411PA, Revision 1, "Fluence and Uncertainty Methodologies" by J.R. Worsham III, Framatome Technologies Incorporated, Lynchburg VA, April 1999.