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ZIMMERMAN,S.R. Carolina Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards response to draft SER Open Items 32 & 33 re irradiation strengthened zircaloy yield strengths & predicted cladding collapse time, respectively. Response corrects 830518 submittal.

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Carolina Power & Light Company

JUN 03 1983

Serial: LAP-83-198

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT
UNIT NOS. 1 AND 2
DOCKET NOS. 50-400 AND 50-401
DRAFT SAFETY EVALUATION REPORT RESPONSES
CORE PERFORMANCE BRANCH

Dear Mr. Denton:

Carolina Power & Light Company (CP&L) hereby retransmits one original and forty copies of the responses to the Shearon Harris Nuclear Power Plant Draft Safety Evaluation Report (DSER) CP&L Open Items 32 and 33. These responses were previously submitted to the Staff in a letter dated May 18, 1983 (Serial: LAP-83-175) under the incorrect heading, "Materials Engineering Branch."

Yours very truly,

S. K. Zimmerman
Manager
Licensing & Permits

PS/ccc (6928PSA)

Attachment

cc: Mr. N. Prasad Kadambi (NRC)
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SHEARON HARRIS NUCLEAR POWER PLANT
DRAFT SAFETY EVALUATION REPORT (DSER)

Open Item 32 (DSER Sections 4.2.1.1, and 4.2.3.1, pages 4-4, 4-16, and 4-28)

Resolve the use of irradiation-strengthened Zircaloy yield strengths.

Response

The fact that credit is taken for irradiation strengthening for the Zircaloy clad yield strength was documented as part of the WCAP-9500, "Reference Core Report 17x17 Optimized Fuel Assembly," and acknowledged in the NRC's Safety Evaluation dated May 1981 (page 7).

In support of this Westinghouse provided supplementary information to the staff[1] that demonstrated excellent agreement between experimental data, BMI-NUREG-1948, and the best estimate curves described in the equation in the Westinghouse Materials Design Manual, WCAP-9179, Rev. 1.

[1] Letter from E. P. Rahe to C. O. Thomas, NS-EPR-2687, dated November 30, 1982.

SHEARON HARRIS NUCLEAR POWER PLANT
DRAFT SAFETY EVALUATION REPORT (DSER)

Open Item 33 (DSER Section 4.2.3.2, pages 4-21, 4-22, and 4-29)

Confirm that the predicted cladding collapse time exceeds the expected lifetime of the fuel.

Response

The Shearon Harris fuel is designed and operated so that clad flattening will not occur as predicted by the Westinghouse model.(1) The predicted cladding collapse time for the fuel is >40,000 EFPH. The expected lifetime of the fuel is <40,000 EFPH.

(1) George, R. A., et. al., "Revised Clad Flattening Model", WCAP-8381, July 1974.