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DENTON,H.R.	Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards "HB Robinson Unit 2 Pressurized Thermal Shock Risk Study." Risk considerably lower than generic case used to set screening criteria.
"See ~~Depts~~ Subjects" WCAP-10318

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NOV 07 1983

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

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
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PRESSURIZED THERMAL SHOCK - RISK STUDY

Dear Mr. Denton:

During the last two years, Carolina Power & Light Company (CP&L) has undertaken a very broad scope project designed to resolve the Pressurized Thermal Shock (PTS) issue for our H. B. Robinson Unit No. 2 (HBR2). That project has produced a triad of programs which each individually have the capability to resolve the issue for HBR2. That triad consists of 1) the HBR2 Flux Reduction Program (Reference: CP&L letter LAP-83-439 dated September 30, 1983), 2) the HBR2 Material Properties Research Program which was discussed with your staff on September 13, 1983, and 3) the HBR2 PTS Risk Study. The purpose of this letter and the attached report is to document the results of the PTS Risk Study.

The attached report is broken into two parts; an Executive Summary, and a detailed description of the study methodology and results. In brief, the study was designed to build on the generic probabilistic PTS work done by the Westinghouse Owners' Group (WOG) in May, 1982 and to provide a plant specific estimate of PTS risk for HBR2 which would be comparable to the methodologies accepted by the NRC in formulating the proposed PTS Screening Criteria. Carolina Power & Light Company believes that the work contained in this study advances significantly the current knowledge and calculational technique associated with the risk due to PTS. The conclusions of the report are as follows:

1. The screening criterion calculated for H. B. Robinson that compares to the NRC generically determined screening criterion was calculated to be 340°F.

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2. The single major contribution to this improvement is the circumferential versus axial orientation for the welds of interest. (Note that only one circumferential weld at HBR2 was predicted to exceed the NRC's screening criteria prior to the present flux reduction program).

3. The above result demonstrates the considerable conservatism in the NRC proposed screening criterion of 300°F RT_{NDT} for circumferential welds. (Note CP&L is limiting the end of life RT_{NDT} for the critical circumferential weld to 300°F).

4. The frequency of significant flaw extension beyond 75 percent of the reactor vessel wall for H. B. Robinson was determined to be 7×10^{-7} occurrences per reactor year at the end of plant life with current flux reductions and the planned loading of Partial Length Shielded Assemblies (PLSAs) at the next refueling.

In summary, CP&L believes that this report demonstrates that the PTS risk associated with HBR2 is considerably less than the generic case used to set the PTS Screening Criteria. Additionally, when coupled with the Flux Reduction Program documented in our September 30, 1983 letter to you, it is apparent that PTS is resolved as an issue for the H. B. Robinson plant. Carolina Power & Light Company is confident that the ongoing work in the A-49 program will serve to confirm these conclusions. Therefore, as requested previously, CP&L requests that you and your staff formally recognize the results documented here and transmit those results in future reports which you make to the NRC Commissioners and others.

If you have any questions on this letter, please contact our staff.

Yours very truly,

A. B. Cutter
Vice President
Nuclear Engineering & Licensing

JJS/kjr (8361JJS)
Attachment

cc: Mr. J. P. O'Reilly (NRC-RII)
Mr. G. Requa (NRC)
Mr. F. Schroeder (NRC)
Mr. T. Spies (NRC)
Mr. S. A. Varga (NRC)
Mr. Steve Weise (NRC-HBR)
Mr. R. Woods (NRC)