NRC FORM 195 (2-76) B09818 U.S. NUCLEAR REGULATORY COMMISSION

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Mr. Victor Stello	Florida Power & Light Company Miami, Florida Mr. Robert E. Uhrig	4/4/77 DATE RECEIVED 4/7/77

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DESCRIPTION

Ltr. w/attached document..notorized 4/4/77...trans the following:

ACKNOWLEDGED

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ENCLOSURE

Amdt. to OL/change to Appendix A tech specs..concerns the effects of fuel rod bowing with attached report entitled "Margins in Turkey Point Units 3, 4 Safety Analysis to Offset the Effects of Fuel Rod Bowing"... Rec'd

PLANT NAME: (2-P) (40-P)

Turkey Points Units 3 & 4

RJL

(40 cys rec'd)

FOR ACTION/INFORMATION

SAFETY		ENVIRO
ASSIGNED AD:		ASSIGNED AD:
BRANCH CHIEF:	Lear (5)	BRANCH CHIEF:
PROJECT MANAGER:	Elliot	PROJECT MANAGER:
LIC. ASST.:	Parrish	LIC. ASST.:

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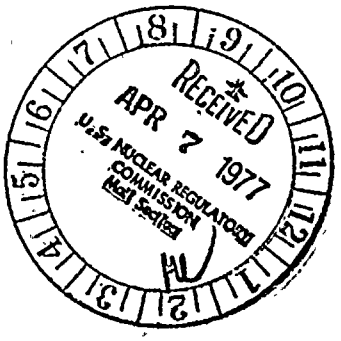
P. O. BOX 013100, MIAMI, FL 33101

FLORIDA POWER & LIGHT COMPANY

Regulatory File Cy.

April 4, 1977
L-77-106



Office of Nuclear Reactor Regulation
Attention: Mr. Victor Stello, Director
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Stello:

Re: Turkey Point Units 3 and 4
Dockets No. 50-250 and 50-251
Proposed Amendment to Facility
Operating Licenses DPR-31 and DPR-41

In our letter of August 19, 1976 (L-76-300) we described the options available at Turkey Point Units 3 & 4 for offsetting an increased rod bow penalty. Since then, FPL has performed analyses which account for the effects of fuel rod bowing on the DNBR margin of the Turkey Point nuclear units, and which are in conformance with the DNBR penalties promulgated by the NRC for the type of fuel (Westinghouse LOPAR) currently in the cores of the Turkey Point units. However, instead of taking the rod bow penalty in terms of a reduction in $F_{\Delta H}$, we show in the attached safety analysis that sufficient plant specific DNB margin exists to absorb the entire penalty due to the low power level at which the units are operating. This margin is available because the setpoints and transient thermal-hydraulic analyses are based on a considerably higher enthalpy rise hot channel factor than the one under which the plants are now operating.

Only the curves of reactor core thermal and hydraulic safety limits for normal operation shown in the Technical Specifications need be revised, as the new curves are based on the current enthalpy rise hot channel factor. As this fact is not reflected in the basis of the Technical Specification, the basis needs revision also. Therefore, in accordance with 10 CFR 50.30, three (3) signed originals and forty (40) copies of a request to amend Appendix A of Facility Operating Licenses DPR-31 and 41 are hereby submitted for your review. The proposed changes are described below and shown on the accompanying Technical Specification pages bearing the date of this letter in the lower right hand corner.

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Figure 2.1-1

This is the replacement figure for the thermal and hydraulic safety limits and includes the rod bow penalty.

Page B2.1-1

The values for F_Q^N and $F_{\Delta H}^N$ are changed to reflect the current values. A statement is added that the safety limits have been reduced to account for rod bow.

Page B2.1-2

The statement on the reactor control and protection system is expanded to indicate that this system is based on the original design values of F_Q^N and $F_{\Delta H}^N$, which therefore leads to highly conservative setpoints.

This proposed amendment has been reviewed by the Turkey Point Plant Nuclear Safety Committee and the Florida Power & Light Company Nuclear Review Board. They have concluded that the proposed amendment does not involve a significant hazards consideration and should not involve prenoticing pursuant to 10 CFR 2.105.

Until such time as this change is approved, the administrative procedures with regard to DNB margin, detailed in our letter of August 19, 1976, will be continued.

Very truly yours,

Robert E. Uhrig

Robert E. Uhrig
Vice President

REU/RDH/MAS/cpc

Attachment

cc: Mr. Norman C. Moseley, Region II
Robert Lowenstein, Esquire

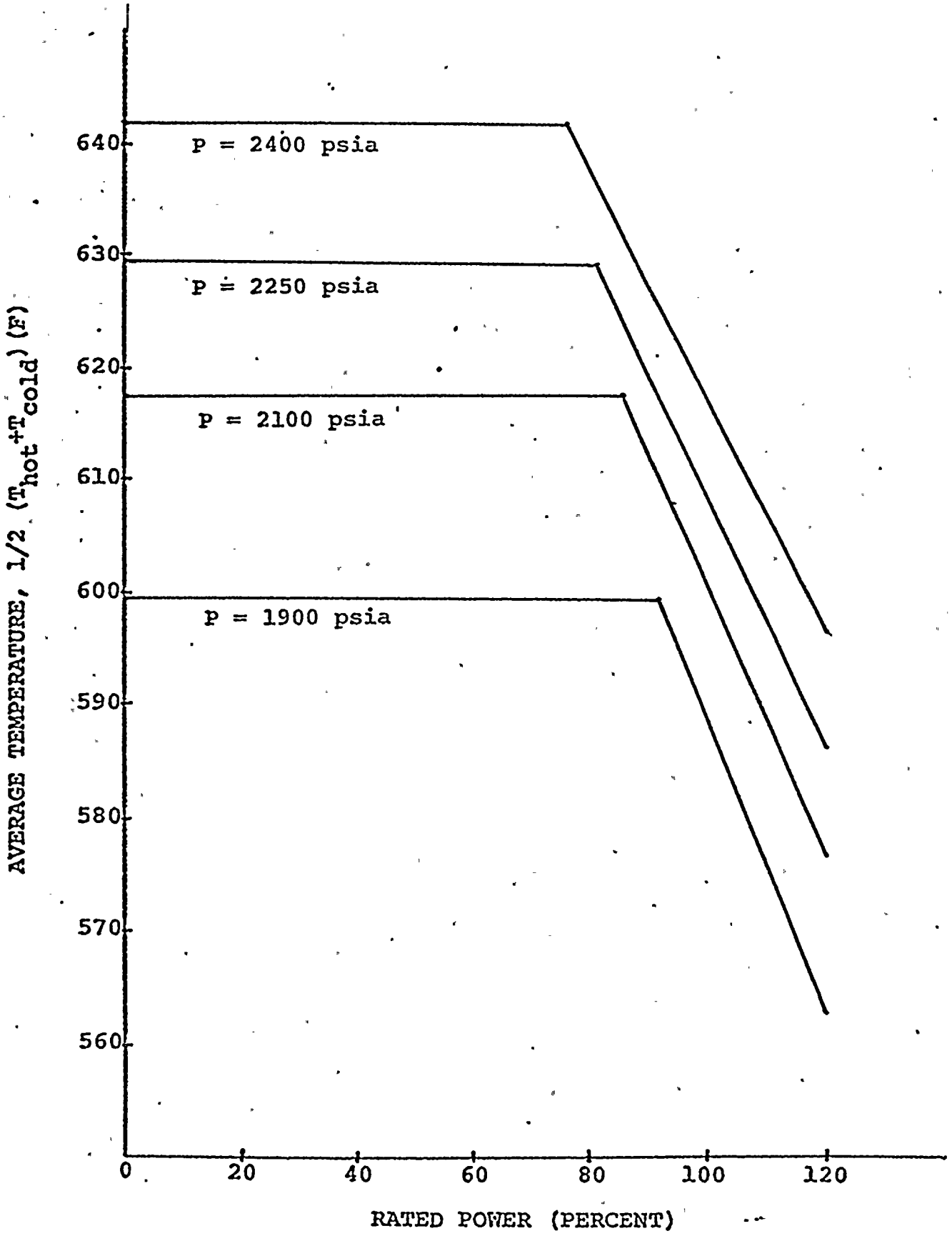

Figure 2.1-1. Reactor Core Thermal and Hydraulic Safety Limits, Three Loop Operation

4/4/77

B2.1 BASES FOR SAFETY LIMIT, REACTOR CORE

To maintain the integrity of the fuel cladding and prevent fission product release, it is necessary to prevent overheating of the cladding under all operating conditions. This is accomplished by operating within the nucleate boiling regime of heat transfer, wherein the heat transfer coefficient is very large and the clad surface temperature is only a few degrees Fahrenheit above the coolant saturation temperature. The upper boundary of the nucleate boiling regime is termed departure from nucleate boiling (DNB) and at this point there is a sharp reduction of the heat transfer coefficient, which would result in high clad temperatures and the possibility of clad failure. DNB is not, however, an observable parameter during reactor operation. Therefore, the observable parameters; thermal power, reactor coolant temperature and pressure; have been related to DNB through the W-3 DNB correlation. The W-3 DNB correlation has been developed to predict the DNB flux and the location of DNB for axially uniform and non-uniform heat flux distributions. The local DNB heat flux ratio (DNBR), defined as the ratio of the heat flux that would cause DNB at a particular core location to the local heat flux, is indicative of the margin to DNB.

The curves in the Specification represent the loci of points of thermal power, coolant system pressure and average temperature which ensure that the design limits on minimum DNBR are not exceeded. (1)

The curves are based on the following nuclear hot channel factors:

$$F_q^N = 2.41$$

$$F_{\Delta H}^N = 1.55$$

These limiting hot channel factors are higher than those calculated at full power for the range from all control rods fully withdrawn to maximum allowable control rod insertion. The control rod insertion limits are covered by Specification 3.2. Slightly higher hot channel factors could occur at lower power levels because additional control rods are in the core. However, the control rod insertion limits dictated by Figure 3.2-1 ensure that the DNBR is always greater at partial power than at full power.

The hot channel factors are also sufficiently large to account for the degree of malpositioning of part-length rods that is allowed before the reactor trip set points are reduced and rod withdrawal block and load runback may be required.(2) Rod withdrawal block and load runback occur before reactor trip setpoints are reached.

The Reactor Control and Protection System is designed to prevent any anticipated combination of transient conditions that would result in exceeding DNBR design limits. The setpoints are based on the original values of F_q^N and $F_{\Delta H}^N$ in the FSAR, 3.13 and 1.75 respectively, and represent conservative values even with the rod bow penalty included.

References

(1) FPL report NAD-QR-25

(2) FSAR 3.2.2

STATE OF FLORIDA)
) ss.
COUNTY OF DADE)

Robert E. Uhrig, being first duly sworn, deposes and says:

That he is a Vice President of Florida Power & Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this said document are true and correct to the best of his knowledge, information, and belief, and that he is authorized to execute the document on behalf of said Licensee.

Robert E. Uhrig

Robert E. Uhrig

Subscribed and sworn to before me this

4th day of April, 1977

Helen L. Carson

NOTARY PUBLIC, in and for the County of Dade, State of Florida

NOTARY PUBLIC STATE OF FLORIDA AT LARGE
MY COMMISSION EXPIRES NOV. 30 1979
BONDED THRU GENERAL INS. UNDERWRITERS

My commission expires: