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FLORIDA POWER & LIGHT COMPANY

August 19, 1976
L-76-300

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

Dear Mr. Stello:

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Westinghouse Safety Analyses

The Westinghouse Electric Corporation has informed Florida Power & Light Company that recent developments have affected the results of certain safety analyses for Westinghouse plants. The following information regarding this problem is being submitted to you in response to an August 13, 1976 telephone request from your staff.

One development involves the temperature of the fluid in the upper head. Past ECCS analyses assumed that the temperature in the upper head was equal to the vessel inlet temperature (T_{cold}). The conservative judgment is to assume that the temperature will be equal to the vessel outlet temperature (T_{hot}). The consequence is a reduction in maximum allowable Heat Flux Hot Channel Factor (F_Q) to prevent operation at unacceptable local power levels. The resulting F_Q limit for Turkey Point is conservatively estimated to be 2.165. The new F_Q limit was derived as shown below:

$$[2.32 - A - B + C]\ D = 2.165$$

2.32 = previous limit on F_Q

A = .26 = estimated reduction in F_Q due to increase in upper head temperature from T_{cold} to T_{hot}.

B = .04 = estimated reduction in F_Q due to plugged steam generator tubes.

C = .05 = estimated increase in F_Q due to the fact that the ECCS analysis peak clad temperature is 50° below the Final Acceptance Criteria.

$D = \frac{2300}{2200}$ = factor for increasing F_Q due to operation 100 Mwt below the power level used in the ECCS analysis.

Note: For a 925 ft^3 accumulator volume, A = .16 and F_Q = 2.27.

Another development involves rod bow. Recent test results indicate that the rod bow DNB penalty is higher than previously used. The combination of this penalty with available margins results in an estimated reduction in DNBR on a region-by-region basis. Increasing the rod bow DNB penalty can be offset by a combination of the following:

a) A reduction in the maximum allowable Nuclear Enthalpy Rise Hot Channel Factor ($F_{\Delta H}$) on a region-by-region basis.

   i) 0% to 4% reduction for new first cycle fuel applied linearly from Beginning-of-Cycle to End-of-Cycle.

   ii) 6% constant reduction for fuel which has received 1 cycle of burnup.

   iii) 7% constant reduction for fuel which has received 2 or more cycles of burnup.

b) A reduction in T_{ave} and a corresponding change in the Overtemperature ΔT equation. (1° F in T_{ave} and 1° F in the constant in the temperature difference term in the Overtemperature ΔT equation = 1% in DNBR.)

c) An increase in reactor coolant flow. 1% flow increase = 1% increase in DNBR.)

For the time being, the increased upper head fluid temperature and the increased rod bow penalty are being offset by operationally limiting F_Q and $F_{\Delta H}$ as described above. In the future, operational considerations may cause us to revise the means by which we accommodate the higher rod bow DNB penalty, in which case we may utilize some other combination of available options.

The revised limits described above represent preliminary estimates. The evaluation of these developments is continuing in

an effort to quantify the effects on the Turkey Point units more precisely.

Very truly yours,

Robert E. Uhrig

Robert E. Uhrig
Vice President

REU/MAS/hlc

cc: Norman C. Moseley, Region II
Jack R. Newman, Esq.