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50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251

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UHRIG,R.E.	Florida Power & Light Co.
RECIP.NAME	RECIPIENT AFFILIATION
EISENHUT,D.G.	Division of Licensing

SUBJECT: Significant hazards evaluation for FH/FQ proposed amend to Licenses DPR-31 & DPR-41 dtd 830819.

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FLORIDA POWER & LIGHT COMPANY

September 9, 1983
L-83-477

Office of Nuclear Reactor Regulation
Attention: Mr. Darrell G. Eisenhut, Director
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Eisenhut:

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250 & 50-251
Proposed License Amendment
$F_{\Delta H}/F_Q$

Attached is the Significant Hazards Evaluation for the $F_{\Delta H}/F_Q$ Proposed License Amendment dated August 19, 1983 (L-83-455).

Also attached is a list of corrections and corrected pages to Attachment A and B of the above referenced letter. Please replace the corrected pages in that submittal.

Very truly yours,

Jack E. Vessely for

Robert E. Uhrig
Vice President
Advanced Systems & Technology

REU/SAV/cab

Attachment

cc: J. P. O'Reilly, Region II
Harold F. Reis, Esquire
Ulray Clark, Administrator
Radiation Health Services
Tallahassee, Florida 32301

A001
1/1

Significant Hazards Evaluation

$F_{\Delta H}$ / F_Q

Technical Specification Changes

Turkey Point Units 3 & 4

Three primary changes are proposed:

1. The hot channel factor $F_{\Delta H}$ limit is increased from 1.55 to 1.62.

2. The total peaking factor F_Q limit is increased from 2.30 to 2.32.

3. The Overpower ΔT setpoints and thermal-hydraulic limit curves are made more conservative.

1. <u>$F_{\Delta H}$ Limit Increase</u>

10 CFR 50.92 (c)(1): The increase in $F_{\Delta H}$ limit from 1.55 to 1.62 does not significantly increase the probability or consequences of accidents previously analyzed for the following reasons:

a) The increase in the hot channel $F_{\Delta H}$ limit entails no physical changes in plant equipment or operating procedure and therefore will not increase the probability of design basis accidents analyzed in the FSAR.

b) The concern with higher $F_{\Delta H}$ limit is the possible occurrence of fuel failure. The safety analysis shows that the proposed increase in the $F_{\Delta H}$ limit does not lead to departure from nucleate boiling (DNB) in the core and that, therefore, there would not be significant fuel failure. The consequences of previously analyzed accidents are, therefore, not significantly increased.

10 CFR 50.92 (c)(2): The increase in $F_{\Delta H}$ limit from 1.55 to 1.62 does not create the possiblity of a new or different kind of accident from any accident previously evaluated for the following reasons:

The change involves no plant equipment or operating procedure changes; therefore there is no possibility of a new accident not previously analyzed.

10 CFR 50.92 (c)(3): The increase in $F_{\Delta H}$ limit from 1.55 to 1.62 does not cause significant reduction in margin of safety explained as follows:

The safety evaluations show the fuel to be within the bounds of the same fuel failure criteria as before. Therefore, the proposed change does not cause a significant reduction in margin of safety.

This proposed amendment compares closely to example (vi) as listed in the "Examples of Amendments that are not considered likely to involve Significant Hazards Considerations," 48FR14870 (4/16/83) as shown below.

Identification of additional DNBR margin to accommodate the reduction in margin resulting from the increased $F_{\Delta H}$ limit meets the FSAR design basis therefore it is:

> (vi) A change which either may result in some increase to the probability or consequences of a previously-analyzed accident or may reduce in some way a safety margin, but where the results of the change are clearly within all acceptable criteria with respect to the system or component specified in the Standard Review Plan: for example, a change resulting from the application of a small refinement of a previously used calculational model or design method.

2. F_Q Limit Increase

10 CFR 50.92 (c)(1): The increase in F_Q limit from 2.30 to 2.32 does not significantly increase the probability or consequences of accidents previously analyzed for the following reasons:

a) The limiting accidents for total peaking factor F_Q are the small and large break loss of coolant accidents (LOCA). The increase in the F_Q limit involves no changes in plant equipment or operating procedure and therefore will not affect the probability of a LOCA; therefore the probability of design basis accidents analyzed in the FSAR is not increased.

b) The consequences of a LOCA would be fuel failure and associated fission gas releases. Analyses of small and large break loss of coolant events for 2.32 F_Q show peak clad temperatures and other core parameters indicative of fuel failure well below the acceptable limits of 10 CFR 50.46. Therefore, it is concluded that the proposed change will not significantly increase consequences of the previously analyzed accidents.

10 CFR 50.91 (c)(2): The increase in F_Q limit from 2.30 to 2.32 does not create the possibility of a new or different kind of accident from any accident previously evaluated because it does not involve equipment or procedure changes that could cause a new accident.

10 CFR 50.91 (c)(3): The increase in F_Q limit from 2.30 to 2.32 does not cause significant reduction in margin of safety.

The acceptance criteria of 10 CFR 50.46 include adequate safety margins. The LOCA analyses for 2.32 F_Q predict results well below the acceptance limits. It is therefore concluded that there is no significant reduction in margin of safety.

This proposed amendment compares closely to example (vi) as listed in the "Examples of Amendments that are not considered likely to involve Significant Hazards Considerations", 48FR14870 (4/16/83) as shown below.

The proposed change to increase F_Q is shown in the ECCS analysis to remain in compliance with 10 CFR 50.46 therefore it is:

(vi) A change which either may result in some increase to the probability or consequences of a previously-analyzed accident or may reduce in some way a safety margin, but where the results of the change are clearly within all acceptable criteria with respect to the system or component specified in the Standard Review Plan; for example, a change resulting from the application of a small refinement of a previously used calculational model or design method.

3. <u>Change in Overpower ΔT Setpoints and Thermal-Hydraulic Limit Curves</u>

The change in the Overpower ΔT setpoints and thermal-hydraulic limit curves is in the conservative direction. Therefore 10 CFR 50.92 (c)(1), (2) and (3) are negative.

This proposed amendment compares closely to example (ii) as listed in the "Examples of Amendments that are <u>not</u> considered likely to involve Significant Hazards Considerations," 48FR14870 (4/16/83) as shown below.

The Overpower ΔT setpoints and thermal-hydraulic limit curves changes are in the conservative direction therefore they are:

(ii) A change that constitutes an additional limitation, or control not presently included in the technical specifications: for example, a more stringent surveillance requirement.

List of Corrections of L-87-455

Attachment A	Instructions
List of Figures	Replace page
Page 2.3-3	Replace page
Figure 3.2-3	Replace page
Page B2.1-2	Replace page

Attachment B	
Page 10	Section 4.2, 2nd paragraph, delete third sentence "An evaluation has ..."

LIST OF FIGURES

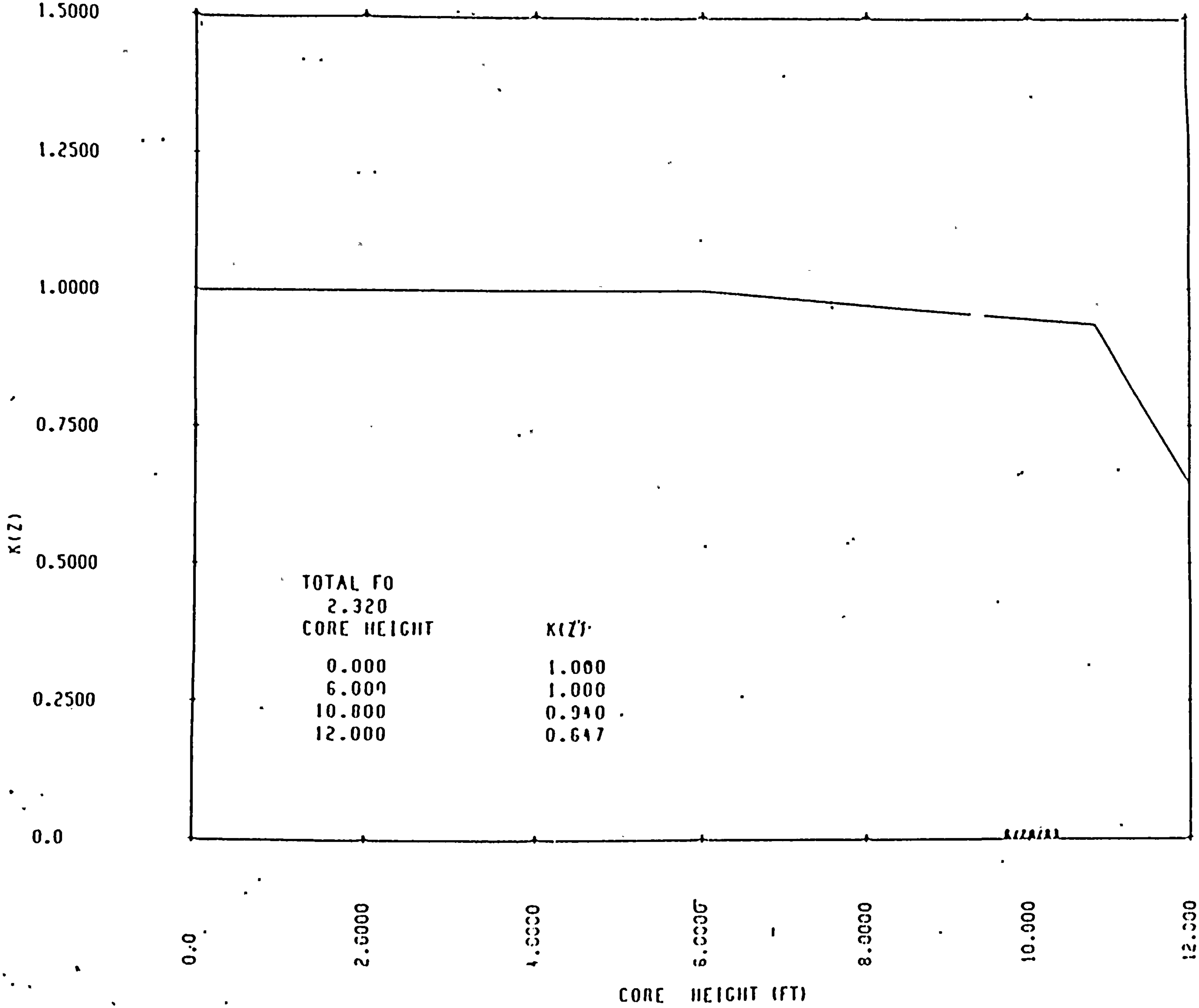
1.5000
1.2500
1.0000
0.7500
0.5000
0.2500
0.0
K(Z)
TOTAL FO
2.320
CORE HEIGHT
K(Z)
0.000 1.000
6.000 1.000
10.000 0.940
12.000 0.647
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
CORE HEIGHT (FT)

Figure 3.2-3

Overpower $\Delta T \leq \Delta T_0 \left[1.09 - K_1 \frac{dT}{dt} - K_2 (T - T') - f(\Delta q) \right]$

ΔT_0 = Indicated T at rated power, F

T = Average temperature, F

T' = Indicated average temperature at nominal conditions and rated power, F

K_1 = 0 for decreasing average temperature; 0.2 sec./F for increasing average temperature

K_2 = 0.00068 for T equal to or more than T'; 0 for T less than T'

$\frac{dT}{dt}$ = Rate of change of temperature, F/sec

$f(\Delta q)$=As defined above.

Pressurizer

Low Pressurizer pressure - equal to or greater than 1835 psig.

High Pressurizer pressure - equal to or less than 2385 psig.

High Pressurizer water level - equal to or less than 92% of full scale.

Reactor Coolant Flow

Low reactor coolant flow - equal to or greater than 90% of normal indicated flow.

Low reactor coolant pump motor frequency equal to or greater than 56.1 Hz.

Undervoltage on reactor coolant pump motor bus - equal to or greater than 60% of normal voltage.

Steam Generators

Low-low steam generator water level - equal to or greater than 15% of narrow range instrument scale.

The curves of Figure 2.1-1 show the loci of points of THERMAL POWER, Reactor Coolant System pressure and average temperature for which the calculated DNBR is no less than the design DNBR value or the average enthalpy at the vessel exit is less than the enthalpy of saturated liquid.

The curves are conservative for an enthalpy hot channel factor, $F^N_{\Delta H}$, of 1.62 and a reference cosine with a peak of 1.55 for axial power shape. An allowance is included for an increase in $F^N_{\Delta H}$ at reduced power based on the expression:

$$F^N_{\Delta H} \leq 1.62 \, [1 + 0.3 \, (1-P)]$$

where P is the fraction of RATED THERMAL POWER.

These limiting heat flux conditions are higher than those calculated for the range of all control rods fully withdrawn to the maximum allowable control rod insertion limit assuming the axial power imbalance is within the limits of the $f(\Delta q)$ function of the Overtemperature ΔT trip. When the axial power imbalance is not within the tolerance, the axial power imbalance effect on the Overtemperature ΔT trips will reduce the setpoints to provide protection consistent with core safety limits.

Fuel rod bowing reduces the values of DNB ratio (DNBR). The amount of the DNBR reduction is 4.7% for LOPAR fuel with the L-grid DNB correlation and 5.3% for the OFA fuel with the WRB-1 DNB correlation. The penalties are calculated pursuant to "Fuel Rod Bow Evaluation," WCAP-8691-P-A, Rev. 1 (proprietary) and WCAP-8692 Rev. 1 (non-proprietary). The restrictions of the Core Thermal Hydraulic Safety Limits assure that an amount of DNBR margin greater than or equal to the above penalties is retained to offset the rod bow DNBR penalty.