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 CLARK, R.A. Operating Reactors Branch 3

SUBJECT: Forwards analysis supporting conclusion that 830128 proposed changes to Tech Specs re shutdown margin & moderator temp coefficient limits involve NSHC.

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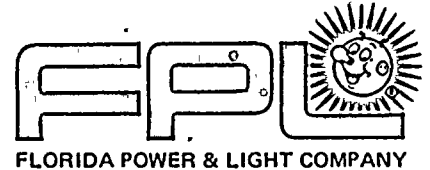
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July 15, 1983
L-83-408

Office of Nuclear Reactor Regulation
Attention: Mr. Robert A. Clark, Chief
Operating Reactors Branch #3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

RE: St. Lucie Unit 1
Docket No: 50-335
Significant Hazards Statement
for St. Lucie Unit 1 Cycle 6 Proposed
Technical Specification Amendment

Dear Mr. Clark:

Our letter L-83-27, dated January 28, 1983 transmitted our request for an amendment to our Technical Specifications. The request proposed a change to our Shutdown Margin and Moderator Temperature Coefficient limits.

As a result of discussions with your staff, the attached analysis has been prepared, which more completely supports the conclusion that the proposed changes involve no significant hazards considerations.

Very truly yours,

A handwritten signature in cursive script that reads 'Robert E. Uhrig'.

Robert E. Uhrig
Vice President
Advanced Systems and Technology

REU/ARM/jc

cc: Harold F. Reis, Esquire

Attachment

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SAFETY ANALYSIS

Reference [1] proposes two changes to Technical Specifications: altering the required shutdown margin (SDM) (p. 3/4 1-11 & B 3/4 1-1) and changing the moderator temperature coefficient (MTC) limits (p. 3/4 1-5 & B 3/4 1-1); respectively. The acceptability of these changes, in that they involve no significant hazard considerations as defined by 10CFR50.92(c) is discussed for both of these changes.

Shutdown Margin (p: 3/4 1-11 & B 3/4 1-1)

This proposed amendment reduces the required shutdown margin from 5.0% $\Delta R/k$ to 3.6% $\Delta R/k$.

1) 10CFR50.92 (c)(1): The reduction in required shutdown margin will not involve a significant increase in the probability or consequences of an accident previously evaluated for the following reasons:

a) Shutdown margin (SDM) is an intrinsic property of the reactor system and is in no way connected with any accident initiator. Consequently, the probability of occurrence of any accident is unchanged if the SDM is changed.

b) The Design Basis Event found to require the highest SDM for St. Lucie Unit 1 is the Hot Zero Power Main Steam Line Break (HZP MSLB).

The basis for reducing the required Cycle 6 SDM from 5.0 to 3.6% $\Delta R/k$ is an analysis for the HZP MSLB provided by Florida Power and Light's fuel vendor, Exxon Nuclear Corporation [Reference 1]. During Cycle 6 design, Exxon was instructed to determine a shutdown margin requirement which would lead to consequences no worse than those determined in a prior Cycle 5 vendor (Combustion Engineering) analysis submitted in 1981 [Reference 2]. Nearly equivalent consequences have been predicted by both analyses. Achievement of comparable consequences with different shutdown margin requirements is the result of differences in the calculational methodologies between the two vendors [Reference 3].

2) 10CFR50.92 (c)(2): The change in required shutdown margin does not create the possibility of a new or different kind of accident from any accident previously evaluated because it does not modify the configuration of the plant or the manner in which it is operated. Since no changes to the plant or its operation are made in the proposed change, there is no increase in the possibility of creating an accident of a new or different type over what currently exists without the proposed change.

3) 10CFR50.92 (c)(3): The change in required shutdown margin does not involve a significant reduction in a margin of safety due to the following:

The acceptance criterion for St. Lucie Unit 1 for determining the adequacy of the shutdown margin is the requirement that there be no Departure from Nucleate Boiling (DNB) after a Steam Line Break. As mentioned in item 1(b), the latest analysis shows that, as before, this criterion is met (low core heat flux), no fuel

Moderator Temperature Coefficient (p. 3/4 1-5 & B 3/4 1-1)

The proposed amendment raises the maximum positive value for the Moderator Temperature Coefficient (MTC) from $0.5 \times 10^{-4} \Delta k/k / ^\circ F$ to $0.7 \times 10^{-4} \Delta k/k / ^\circ F$ at 70% rated power and lowers the most negative value (increases the absolute magnitude) of the MTC from -2.2×10^{-4} to $-2.8 \times 10^{-4} \Delta k/k / ^\circ F$ at rated power.

1) 10CFR50.92 (c)(1): The changes to the MTC limits will not involve a significant increase in the probability or consequences of any accident previously analyzed for the following reasons:

- a) MTC is an intrinsic property of the reactor system and is in no way connected with any accident initiator. Consequently, the probability of occurrence of any accident is unchanged if MTC is changed.
- b) The limiting accidents affected by this parameter were analyzed by the fuel vendor (Exxon).

The results have been previously forwarded [Reference 1]. analyses assumed MTC values fixed at the proposed new limits (positive or negative, as appropriate). Predicted consequences show no significant changes when compared to prior vendor (Combustion Engineering) analyses submitted in 1981 in Support of Cycle 5. (References [2] and [4]) Exxon has judged and FPL has concurred that accidents not reanalyzed are either bounded by those that have been and/or are not significantly affected by the assumed value for MTC.

2. 10CFR50.92 (c)(2): The change in MTC limits does not create the possibility of a new or different kind of accident from any accident previously evaluated because it does not modify the configuration of the plant or the manner in which it is operated. Since no changes to the plant or its operation are made to the proposed change, there is no increase in the possibility of creating an accident of a new or different type over what currently exists without the proposed change.
3. 10CFR50.92 (c)(3): The change in MTC limits does not involve a significant reduction in margin of safety due to the following:

As mentioned in item 1(b) above, limiting accidents have been reanalyzed assuming MTC values at the new limits with no appreciable increase in the severity of predicted consequences. The margin of safety is therefore not significantly reduced.

failures are expected and therefore there is no
significant reduction in the margin of safety.

References

- 1) R. E. Uhrig (FPL) to D. G. Eisenhut (NRC), "St. Lucie Unit 1; Docket 50-335, Reload Safety Analysis and Proposed License Amendment Associated with Cycle 6 Reload"; L-83-27 dtd January 28, 1983.
- 2) R. E. Uhrig (FPL) to D. G. Eisenhut (NRC), "St. Lucie Unit 1, Docket No. 50-335, Proposed License Amendment to Facility Operating License DPR-67, Shutdown Margin, Main Steam Isolation System Changes, and Control Element Assembly Sleaving", L-81-306 dtd July 23, 1981.
- 3) R. E. Uhrig (FPL) to D. G. Eisenhut (NRC), "St. Lucie Unit No. 1; Docket No. 50-335, Cycle 6 Reload", L-83-290 dtd May 9, 1983.
- 4) R. E. Uhrig (FPL) to D. G. Eisenhut (NRC), "St. Lucie Unit 1; Proposed Amendment to Facility Operating License DPR-67", L-80-381 dtd November 14, 1980.