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Dockets No.: 50-250
50-251

Florida Power and Light Company
ATTN: Dr. Robert E. Uhrig
Vice President
P. O. Box 013100
Miami, Florida 33101

Gentlemen:

The Commission has issued the enclosed Amendment No. 6 to Facility Operating License No. DPR-31 and Amendment No. 5 to Facility Operating License No. DPR-41 for Turkey Point Nuclear Generating Units 3 and 4. These amendments include Change No. 18 to the joint Technical Specifications and are in response to your requests dated October 24 and 30, 1974, supplemental letter dated January 31, 1975, and staff discussions.

These amendments modify those provisions in the Technical Specifications relating to fuel residence time and control rod insertion limits.

Copies of the related Safety Evaluation and the Federal Register Notice are also enclosed.

Sincerely,

George Lear, Chief
Operating Reactors Branch #3
Division of Reactor Licensing

Enclosures:
1. Amendment No. 6
2. Amendment No. 5
3. Safety Evaluation
4. Federal Register Notice

cc: See next page

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Mr. Jack R. Newman, Esquire
Lowenstein, Newman, Reis & Axelrad
1025 Connecticut Avenue, N. W.
Suite 1214
Washington, D. C. 20036

Mr. Ed Maroney
Bureau of Intergovernmental Relations
725 South Bronough Street
Tallahassee, Florida 32304

Honorable Ray Goode
County Manager of Metropolitan
Dade County
Miami, Florida 33130

Mr. Dave Hopkins
Environmental Protection Agency
Region IV Office
1421 Peachtree Street, N. E.
Atlanta, Georgia 30309

Mrs. Fred T. Suber, Librarian
Lily Lawrence Row Public Library
212 N. W. First Avenue
Homestead, Florida 33030

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

FLORIDA POWER AND LIGHT COMPANY

DOCKET NO. 50-250

TURKEY POINT NUCLEAR GENERATING UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 6
License No DPR-31

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The applications for amendment by Florida Power and Light Company (the licensee) dated October 24 and 30, 1974, as supplemented January 31, 1975, comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the applications, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. No request for a hearing or petition for leave to intervene was filed following notice of the proposed action.

2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 3.B of Facility Operating License No. DPR-41 is hereby amended to read as follows:

"(B). Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised, are hereby incorporated in the license. The licensee shall operated the facility in accordance with the Technical Specifications, as revised by issued changes thereto through Change No. 18."

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A. Giambusso, Director
Division of Reactor Licensing

Attachment:
Change No. 18
to Technical Specifications

Date of Issuance: FEB 19 1975

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

FLORIDA POWER AND LIGHT COMPANY

DOCKET NO. 50-251

TURKEY POINT NUCLEAR GENERATING UNIT 4

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 5
License No. DPR-41

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The applications for amendment by Florida Power and Light Company (the licensee) dated October 24 and 30, 1974, as supplemented January 31, 1975, comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the applications, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. No request for a hearing or petition for leave to intervene was filed following notice of the proposed action.

2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 3.B of Facility Operating License No. DPR-41 is hereby amended to read as follows:

"(B). Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised, are hereby incorporated in the license. The licensee shall operated the facility in accordance with the Technical Specifications, as revised by issued changes thereto through Change No. 18."

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A. Giambusso, Director
Division of Reactor Licensing

Attachment:
Change No. 18
to Technical Specifications

Date of Issuance: FEB 19 1975

ATTACHMENT TO LICENSE AMENDMENTS NO. 6 AND NO. 5

CHANGE NO. 18 TO THE TECHNICAL SPECIFICATIONS

FACILITY OPERATING LICENSE NO. DPR- 31 AND NO. DPR-41

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT NUCLEAR GENERATING UNITS 3 AND 4

DOCKETS NOS. 50-250 AND 50-251

Revise Appendix A as follows: Replace pages 1-6, 3.2-1, Figure 3.2-1, and B 3.2-1 with the attached pages. Insert new Figure 3.2-1(a).

1.15 INTERIM LIMITS

Limitations are imposed upon reactor core power and power distribution beyond previously established design bases consistent with interim bases for core cooling analysis established by the AEC in 1971 and bases for the effects of densification established in November, 1972. Interim power of the reactor core is limited to the values determined in accordance with specification 3.2. Interim power in MW_t equals N x 2200, where N is determined in accordance with Section 6.c. of specification 3.2. The fuel residence time for Unit 3 shall be limited to 23,000 effective full power hours (EFPH) under low pressure operating conditions. The fuel residence time for Unit 4, Cycle 1 shall be limited to 24,500 EFPH under low pressure operating conditions. 18

1.16 LOW POWER PHYSICS TESTS

Low power physics tests are tests below a nominal 5% of rated power which measure fundamental characteristics of the reactor core and related instrumentation.

3.2 CONTROL ROD AND POWER DISTRIBUTION LIMITS

Applicability: Applies to the operation of the control rods and power distribution limits.

Objective: To ensure (1) core subcriticality after a reactor trip, (2) a limit on potential reactivity insertions from a hypothetical control rod ejection, and (3) an acceptable core power distribution during power operation.

Specification:

1. CONTROL ROD INSERTION LIMITS

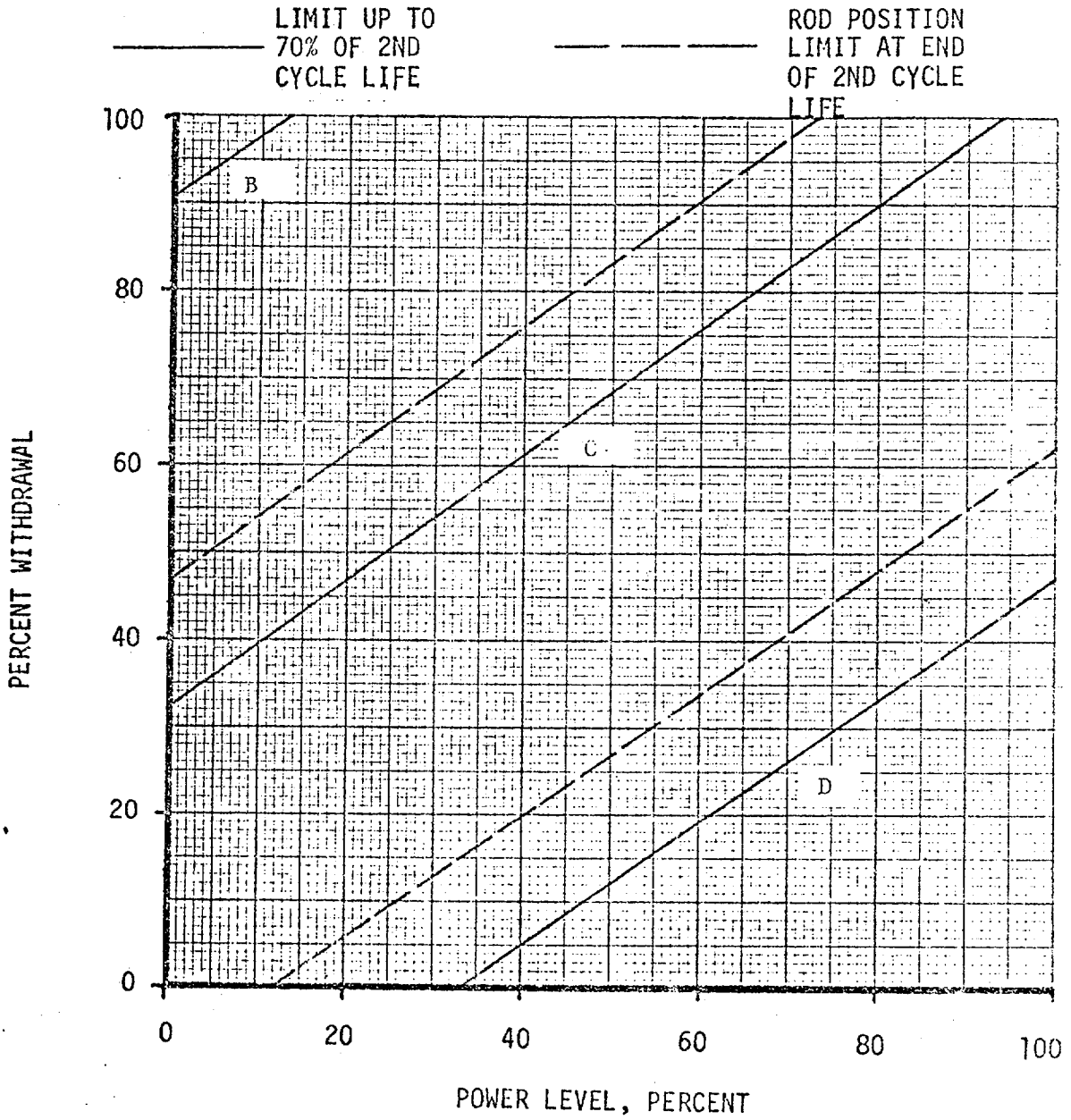
a. Whenever the reactor is critical, except for physics tests and control rod exercises, the shutdown control rods shall be fully withdrawn.

b. Whenever the reactor is critical, except for physics tests and control rod exercises, the control group rods shall be no further inserted than the limits shown by the solid lines on Figure 3.2-1 for three loop operation on Units 3 and 4 and two loop operation on Unit 4. For two loop operation on Unit 3 the control group rod insertion limits are shown on Figure 3.2-1(a). 18

c. After 70% of the second and subsequent cycles as defined by burnup, the limits shall be adjusted as a linear function of burnup toward the end-of-core life as shown by the dotted lines on Figure 3.2-1.

d. The end-of-core life limit shown on Figure 3.2-1 may be revised on the basis of physics calculations and physics data obtained during startup and subsequent operation.

e. Part length rods shall not be permitted in the core except for low power physics tests and for axial offset calibration tests performed below 75% of rated power.

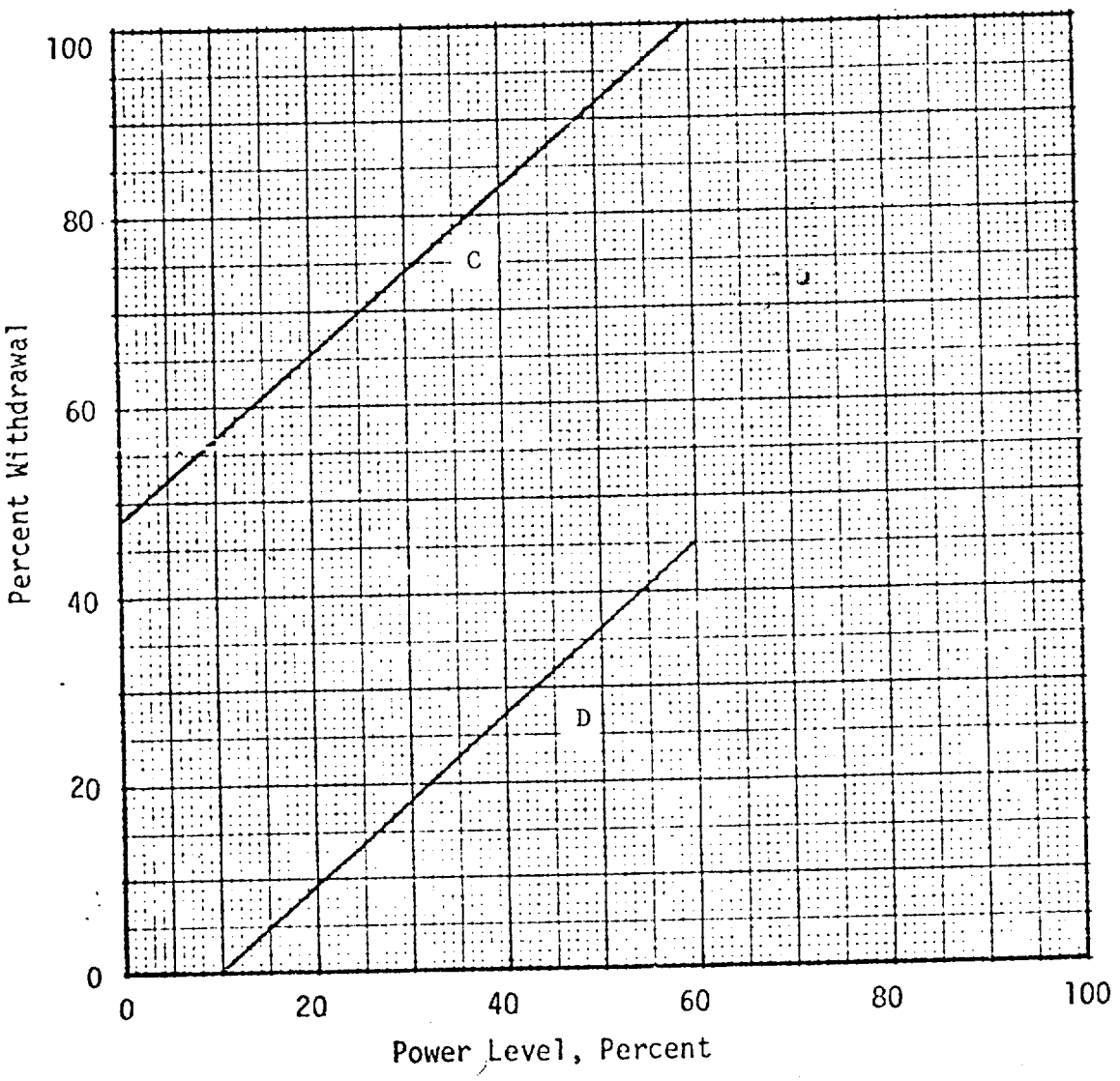


CONTROL GROUP INSERTION LIMITS FOR UNITS 3 AND 4 THREE LOOP OPERATION AND UNIT 4 TWO LOOP OPERATION | 18

FIGURE 3.2-1

FIGURE 3.2-1(a)

CONTROL GROUP INSERTION LIMITS
FOR UNIT 3 CYCLE 2
TWO LOOP OPERATION



B3.2 BASES FOR LIMITING CONDITIONS FOR OPERATION, CONTROL AND POWER DISTRIBUTION LIMITS

Reactivity changes accompanying changes in reactor power are compensated by control rod motion. Reactivity changes associated with xenon, samarium, fuel depletion, and large changes in reactor coolant temperature (operating temperature to cold shutdown) are compensated by changes in the soluble boron concentration. During power operation, the shutdown groups are fully withdrawn and control of reactor power is by the control groups. A reactor trip occurring during power operation will put the reactor into the hot shutdown condition.

The control rod insertion limits provide for achieving hot shutdown by reactor trip at any time, assuming the highest worth control rod remains fully withdrawn, with sufficient margins to meet the assumptions used in the accident analysis.(1) In addition, they provide a limit on the maximum inserted rod worth in the unlikely event of a hypothetical rod enjection, and provide for acceptable nuclear peaking factors. The solid line shown on Figure 3.2-1 meets the shutdown requirement for the first cycle and the first 70% of second and subsequent cycles for Units 3 and 4, except for two loop operation on Unit 3. Figure 3.2-1(a) shows that the shutdown requirements are met for second cycle two loop operation on Unit 3. The end-of-core-life limit may be more restrictive, as shown by the conservative estimate represented by the dotted line. The end-of-core-life limit may be determined on the basis of startup and operating data to provide a more realistic limit which will allow for more flexibility in operation and still assure compliance with the shutdown requirement. The maximum shutdown margin requirement occurs at end-of-core-life and is based on the value used in analysis of the hypothetical steam break accident. Early in core life, less shutdown margin is required, and Figure 3.2-2 shows the shutdown margin equivalent to 1.77% reactivity at end-of-core-life with respect to an uncontrolled cooldown. All other accident analyses are based on 1% reactivity shutdown margin. 18

The overlap between successive control banks is allowed because the control rod worth is lower near the top and bottom of the core than in the center.

Positioning of the part-length rods is governed by the requirement to maintain the axial power shape within specified limits or to accept an automatic cutback of the overpower ΔT and overtemperature ΔT set points (see Specification 2.3). Thus, there is no need for imposing a limit on the physical positioning of the part-length rods.

UNITED STATES
NUCLEAR REGULATORY COMMISS.
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE DIVISION OF REACTOR LICENSING

SUPPORTING AMENDMENT NO. 6 TO LICENSE NO. DPR-31, AND

AMENDMENT NO. 5 TO LICENSE NO. DPR-41

(CHANGE NO. 18 TO TECHNICAL SPECIFICATIONS)

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT NUCLEAR GENERATING UNITS 3 AND 4

DOCKETS NOS. 50-250 AND 50-251

Introduction

By letters dated October 24 and 30, 1974, Florida Power and Light Company (FPL) proposed changes in the Technical Specifications of Facility Operating Licenses DPR-31 and DPR-41 for Turkey Point Nuclear Generating Units 3 and 4. FPL requested: (1) the Unit 3 allowable fuel residence time (the minimum predicted time to clad flattening) be increased from 11,600 effective full power hours (EFPH) to 23,000 EFPH and (2) the Unit 3 control rod insertion limits for two loop operation be modified.

To justify the requested fuel residence time extension, FPL analytically determined the minimum time to clad flattening using the revised Westinghouse model described in reports WCAP-8377(1) and WCAP-8381(2). We have reviewed the revised model and have concluded that the model is acceptable and may be used to predict minimum time to clad flattening for Turkey Point Unit 3.

The presently specified fuel residence limit of 11,600 EFPH is the Unit 3 Cycle 1 limit which was maintained as an interim limit during the initial portion of fuel Cycle 2, thus allowing Unit 3 to return to power while FPL's October 24 and 30, 1974, submittals were being considered and Westinghouse's revised clad flattening model was being reviewed.

Discussion

A. Minimum Time to Clad Flattening

Westinghouse has submitted reports WCAP-8377(1) and WCAP-8381(2) which describe the details of an analytical model that predicts the minimum time to clad flattening and the flattened rod frequency of occurrence for pressurized fuel rods. The revised Westinghouse model differs from previously used models in that: (1) clad flattening is predicted to occur

when the maximum cladding stress reaches the temperature dependent yield stress for unirradiated clad material, (2) fuel densification is assumed to behave as described in WCAP-8219,[3] (3) the effect of a finite rather than an infinite gap length is included, and (4) a statistical analysis of fuel rod ovality and fuel rod power is included.

We have reviewed the Westinghouse revised model as described in the referenced reports and have concluded that it is acceptable for determining the minimum time to clad flattening and that the reports may be referenced in future case applications.

B. Control Rod Insertion Limits

Control of the operating reactor is provided by neutron absorbing control rods and soluble boric acid in the reactor coolant. The more boric acid contained in the reactor coolant the less the control rods need to be inserted to provide reactor control. Placing a limit on control rod insertion and thus increasing the amount of boric acid required: 1) assures the maintenance of sufficient reactor control ability, as expressed by available shutdown margin, 2) maintains an acceptable core power distribution, and 3) limits the potential worth of a control rod which might be ejected in a hypothetical rod ejection accident. Limiting the worth of an ejected rod limits the consequences of the rod-ejection accident.

Evaluation

A. Minimum Time to Clad Flattening

The presently specified Unit 3 fuel residence limit of 11,600 EFPH is the analytically determined minimum time to clad flattening for Unit 3 Region 3 fuel assemblies using a previously approved model and assuming continued reactor operation at 1900 psia. The minimum time to clad flattening for fuel regions other than Region 3 exceeds the time for Region 3 fuel assemblies because of higher initial fuel rod internal pressure in these other assemblies. Accordingly, Region 3 fuel assemblies remain the assemblies with the most limiting time to clad flattening regardless of the model used to predict time to clad flattening.

We previously reviewed the Unit 3 Cycle 2 core loading[4] and concluded that no significant differences existed between the Unit 3 Cycle 1 and Cycle 2 core loadings. We agreed with FPL's conclusion that the Cycle 2 core loading would not make the consequences of the accidents covered in the Turkey Point Final Safety Analysis Report more severe than previously reported. The results and conclusions

of previous safety evaluations and previously approved operating limits, now in effect, remain unchanged as long as clad flattening is predicted not to occur.

FPL has recalculated the minimum time to clad flattening using the model described in WCAP-8377 and WCAP-8381 and has determined this time to be 23,000 EFPH for Unit 3 Cycle 2 fuel assemblies, assuming continued reactor operation at 1900 psia.

We have reviewed FPL's request and have approved the requested Unit 3 fuel residence time. Our approval is based on FPL's use of the approved revised clad flattening model and our independent determination that the model was used to determine the minimum time to clad flattening for the most critical assemblies in the Cycle 2 fuel loading.

B. Control Rod Insertion Limits

FPL has analyzed the control rod insertion limits for both three loop and two loop operation and has proposed control rod insertion limits for two loop operation which are more conservative than the presently specified end-of-life (EOL) limits. FPL has not proposed a change to the control rod insertion limits for three loop operation as their analysis shows the specified three loop insertion limits are more conservative than necessary. We have reviewed FPL's request and since we find that the use of the proposed presently specified three loop control rod insertion limits and the proposed two loop control rod insertion limits will not effect previously performed applicable safety analyses, we approve of the proposed insertion limits. Use of the more conservative proposed control rod insertion limits will increase the minimum available shutdown margin, maintain an acceptable core power distribution and decrease the consequences of a control rod ejection accident.

Summary

Our evaluation supports the conclusions that: (1) clad flattening is predicted not to occur and (2) the proposed control rod insertion limits are conservative when compared to those now in effect. Since we previously determined that the results and conclusions of our earlier safety evaluations remain unchanged if clad flattening does not occur we can,for the same reason, further conclude that the proposed action will not increase the probability or consequences of a postulated accident or diminish a margin of safety.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

FEB 19 1975

BIBLIOGRAPHY

(1) George, R. A., Lee, Y. C., and Eng, G. H., "Revised Clad Flattening Model," Westinghouse Electric Corporation, WCAP-8377, (Proprietary), July 1974.

(2) George, R. A., Lee, Y. C., and Eng, G. H., "Revised Clad Flattening Model," Westinghouse Electric Corporation, WCAP-8381, July 1974.

(3) Hellman, J. A., "Fuel Densification Experimental Results and Model for Reactor Application," Westinghouse Electric Corporation, WCAP-8219, October 1973.

(4) Amendment No. 5 to Facility Operating License No. DPR-31 and Amendment No. 4 to Facility Operating License No. DPR-41 for Turkey Point Units 3 and 4 (Dockets Nos. 50-250 and 50-251) including Technical Specification Change No. 17, November 26, 1974.