

DEC 13 1977

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Docket No. 50-250

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. 30 to Facility Operating License No. DPR-31 for the Turkey Point Nuclear Generating Unit No. 3. The amendment consists of changes to the Technical Specifications in response to your application dated October 4, 1976, which was superseded in its entirety by letter dated December 21, 1976 (as supplemented by letters dated January 7 and February 16, 1977).

This amendment will modify operating limits in the Technical Specifications to allow operation of Unit No. 3 at the original design conditions of 2250 psia and 546.2°F inlet temperature. The changes will also increase the allowable fuel residence time to 27,000 effective full power hours.

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

Sincerely,

Original signed by

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

Enclosures:

1. Amendment No. 30
2. Safety Evaluation
3. Federal Register Notice

cc w/enclosure:
 See next page

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OFFICE	ORB#3	ORB#3	OELD	ORB#3		
SURNAME	CParrish	RClark:acr	S. GARDNER	GLear		
DATE	12/9/77	11/29/77	12/9/77	12/13/77		

cc:

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Honorable Dewey Knight
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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 NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 30
License No. DPR-31

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Florida Power and Light Company (the licensee) dated October 4, 1976 which was superseded in its entirety by letter dated December 21, 1976 (as supplemented by letters dated January 7 and February 16, 1977), complies with the standards and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 application, 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. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

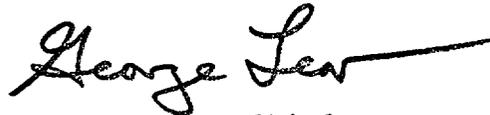
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B. of Facility Operating License No. DPR-31 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 30, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 13, 1977

ATTACHMENT TO LICENSE AMENDMENT NO. 30
TO THE TECHNICAL SPECIFICATIONS
FACILITY OPERATING LICENSE NO. DPR-31
DOCKET NO. 50-250

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised page is identified by Amendment number and contains vertical lines indicating the area of change.

Remove

1-6
2.3-2
2.3-3
3.1-7

Replace

1-6
2.3-2
2.3-3
3.1-7

1.16 INTERIM LIMITS

1.16.1 Fuel Residence Time Limit

The fuel residence time for Unit 3 shall be limited to 27,000 EFPH. The fuel residence time for Unit 4 shall be limited to 30,000 EFPH.

1.16.2 Reactor Coolant Pumps Operation

The reactor shall not be operated with less than three reactor coolant pumps in operation.

1.17 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.

Reactor Coolant Temperature

$$\text{Overtemperature } \Delta T \leq \Delta T_0 \left[K_1 - 0.0107 (T - 574) + 0.000453 (P - 2235) - f(\Delta q) \right]$$

ΔT_0 = Indicated ΔT at rated power

T = Average temperature, F

P = Pressurizer pressure, psig

$f(\Delta q)$ = a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers; with gains to be selected based on measured instrument response during startup tests such that:

For $(q_t - q_b)$ within +10 percent and -14 percent where q_t and q_b are the percent power in the top and bottom halves of the core respectively, and $q_t + q_b$ is total core power in percent of rated power, $f(\Delta q) = 0$.

For each percent that the magnitude of $(q_t - q_b)$ exceeds +10 percent, the Delta-T trip set point shall be automatically reduced by 3.5 percent of its value at interim power.

For each percent that the magnitude of $(q_t - q_b)$ exceeds -14 percent, the Delta-T trip set point shall be automatically reduced by 2 percent of its value at interim power.

K_1 (Three Loop Operation) = 1.095
 (Two Loop Operation) = 0.88

$$\text{Overpower } \Delta T \leq \Delta T_0 \left[1.11 - K_1 \frac{dT}{dt} - K_2 (T - T') - f(\Delta q) \right]$$

ΔT_0 = Indicated ΔT 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(Δq) = 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.

Under voltage 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 5% of narrow range instrument scale.

6. DNB PARAMETERS

The following DNB related parameters limits shall be maintained during power operation:

- a. Reactor Coolant System Tavg \leq 578.2 °F
- b. Pressurizer Pressure \geq 2220 psia*
- c. Reactor Coolant Flow \geq 268,500 gpm

With any of the above parameters exceeding its limit, restore the parameter to within its limit within 2 hours or reduce thermal power to less than 5% of rated thermal power using normal shutdown procedures.

Compliance with a. and b. is demonstrated by verifying that each of the parameters is within its limits at least once each 12 hours.

Compliance with c. is demonstrated by verifying that the parameter is within its limits after each refueling cycle.

* Limit not applicable during either a THERMAL POWER ramp increase in excess of (5%) RATED THERMAL POWER per minute or a THERMAL POWER step increase in excess of (10%) RATED THERMAL POWER.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 30 TO LICENSE NO. DPR-31

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT NUCLEAR GENERATING UNIT NO. 3

DOCKET NO. 50-250

Introduction

By letter dated October 4, 1976,⁽¹⁾ which was superseded in its entirety by letter dated December 21, 1976⁽²⁾ (as supplemented by letters dated January 7⁽³⁾ and February 16, 1977,⁽⁴⁾) Florida Power and Light Company (the licensee) proposed changes to the Technical Specifications of Facility Operating License DPR-31 for the Turkey Point Plant, Unit No. 3. The proposed changes would modify operating limits in the Technical Specifications to allow operation of Unit No. 3 at the original design conditions of 2250 psia and 546.2°F inlet temperature. The changes would also increase the allowable fuel residence time to 27,000 effective full power hours. Changing the primary system operating pressure from 2100 psia to the NSSS design pressure of 2250 psia also affects the Overtemperature ΔT equation, the Overpower ΔT equation, the LSSS limit for low pressurizer pressure, and the limits for certain DNB parameters.

Discussion

FPL justified their request for an increased fuel residence time limit on the basis that the previous limiting fuel region has been removed from the reactor and the operating and design parameters of the present limiting region predict an increased period to clad collapse.

FPL proposed revised Overtemperature ΔT , Overpressure ΔT , and DNB parameters to allow Unit No. 3 to return to operation at design pressure and temperature. Unit No. 3 has been operating at reduced pressure and temperature since March 1973. Operation at reduced pressure and temperature was initiated to extend the predicted time to clad collapse for fuel assemblies with low internal pressure. The replacement fuel assemblies used in cycles 3 and 4 were prepressurized to a considerably higher pressure than the fuel used in cycle 2. (The actual value for prepressurization is proprietary). All of the fuel used in cycle 2 that was prepressurized at the lower pressure has been removed. Since these low pressure fuel assemblies have been removed from the reactor, operation at low system pressure and temperature is no longer required. FPL has stated

that the proposed specifications and operating limits are the same as were in effect before low pressure operation was initiated.

1. Mechanical Design

The fuel clad flattening time, assuming 2250 psia system pressure, was recalculated for Unit No. 3 using the current Westinghouse evaluation model.⁽⁵⁾ The results of the calculation showed, for the Cycle 4 limiting fuel (Region 2), a flattening time of 27,000 effective full power hours (EFPH). Despite the increase in system pressure, this is greater than the 23,500 EFPH calculated for the Cycle 3 limiting fuel (Region 3) which has been removed from the core. The Region 2 fuel was present in the core for Cycles 1 and 2 (not Cycle 3) for a combined burnup of 17,100 EFPH. Therefore, at 2250 psia, Region 2 has an allowed residence time, for Cycle 4 of 9900 EFPH before the 27,000 EFPH Technical Specification limit would be exceeded. Since the calculation was performed with a code previously approved by the staff, we find the prediction on time to clad flattening and the accompanying Technical Specification change to be acceptable.

2. Nuclear Design

In connection with the Unit No. 3, Cycle 4 reload, the licensee evaluated the core physics parameters for both the nominal design conditions of the plant (2250 psia and 546.2°F) and for the initial planned operating conditions (2100 psia and 539°F). It was shown that for the increased system pressure and inlet temperature condition the moderator temperature coefficient, Doppler coefficient, delayed neutron fraction, prompt neutron lifetime and maximum differential rod worth were not outside their Cycle 3 range of values.

Available shutdown margin for Cycle 4 operation at design conditions was also evaluated. It was shown that although the total control rod reactivity requirements for Cycle 4 were higher than for Cycle 3, the control rod worth was higher and the shutdown margin was greater for Cycle 4.

The negative reactivity insertion rate, which was calculated by a more conservative method for Cycle 4, was found to be slower than for previous cycles. However, the total negative reactivity available is significantly greater than the values previously assumed. The reactivity insertion rate for Cycle 4 was calculated by a method

that produces a flux distribution skewed towards the bottom of the core. This flux distribution reduces the reactivity worth of the banks at the top of the core relative to their total worth. Such a calculation provides a conservative trip reactivity shape for accident analysis since the axial flux distribution is normally distributed evenly with constant axial offset control. The effects of this reduced reactivity trip rate in connection with operation at increased pressure and inlet temperature have been evaluated for those accidents affected and compared with previous analyses. This is discussed further in the Transient and Accident Analysis Section.

In addition, for both Units Nos. 3 and 4 the maximum peaking factor, F_q , has been reduced to 2.20 for values of steam generator tube plugging between 10 and 15 percent.

3. Thermal and Hydraulic Design

In order to provide Departure from Nucleate Boiling (DNB) and fuel design limit protection for operation of Unit No. 3 at a system pressure of 2250 psia and an inlet temperature of 546.2°F, changes in the Limiting Safety System Settings (LSSS) and operating limits have been made.

The LSSS for low pressurizer pressure and the equations for Overtemperature ΔT and the Overpower ΔT have been revised, and they are now the same as those being used for Unit No. 4.* The DNB limits for pressurizer pressure and T_{avg} have also been revised and a DNB limit on reactor coolant flow has been added. These limits are the same as those being used for Unit No. 4.

We have reviewed the above changes in the Technical Specifications and have concluded that they are acceptable.

4. Transient and Accident Analysis

Loss of Coolant Flow

The FSAR analysis showed that for this transient the complete 3 out of 3 pump loss of flow incident was the limiting case with respect to DNB ratio. This incident was reanalyzed for Unit No. 3 at the higher temperature and pressure and slower trip reactivity insertion rate conditions. It was shown that the minimum DNBR was greater than 1.30.

*Unit No. 4 is currently operating at a system pressure of 2250 psia and an inlet temperature of 546.2°F.

Locked Rotor Incident

This accident was reanalyzed for Unit No. 3 for both the two and three loop case. DNB was conservatively assumed to occur. The results showed that the 1500°F maximum peak clad temperature occurred for the three loop case. The two loop case resulted in the peak pressure of 2720 psia which is below the limit of 2748 psia.

Rod Ejection

The licensee has determined that the rod worths and the peaking factors following a rod ejection are within the bounds of the current limits.

Rod Withdrawal

The effect of the slower trip reactivity insertion rate for Unit No. 3 has been analyzed for this transient. The results show that the minimum DNBR is unaffected.

Rod Drop

An evaluation of peaking factors for the rod out of position, dropped RCCS and dropped bank incidents shows that the minimum DNBR is maintained above 1.3.

We have reviewed the transient and accident information submitted by the licensee and find the results acceptable.

Summary

Based on our evaluation of the proposed changes as discussed above, we conclude that it is acceptable for the licensee to operate Unit No. 3 for the remainder of Cycle 4 at an increased system pressure of 2250 psia and an increased inlet temperature of 546.2°F.

We have reviewed the proposed changes to the Technical Specifications and find them acceptable.

Environmental Considerations

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level beyond that previously authorized and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §1.5(d)(4), that an environmental impact statement, or negative declaration, and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusions

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: December 13, 1977

REFERENCES

1. Letter from Robert E. Uhrig, FPL, to NRC, L-76-347, dated October 4, 1976.
2. Letter from Robert E. Uhrig, FPL, to NRC, L-76-430, dated December 21, 1976.
3. Letter from Robert E. Uhrig, FPL, to NRC, L-77-7, dated January 7, 1977.
4. Letter from Robert E. Uhrig, FPL, to NRC, L-77-49, dated February 16, 1977.
5. "Revised Clad Flattening Model," WCAP-8377, July, 1974.

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-250

FLORIDA POWER AND LIGHT COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 30 to Facility Operating License No. DPR-31, issued to Florida Power and Light Company, which revised Technical Specifications for Operation of the Turkey Point Nuclear Generating Station, Unit No. 3, located in Dade County, Florida. The amendment is effective as of the date of issuance.

The amendment will modify operating limits in the Technical Specifications to allow operation of Unit No. 3 at the original design condition of 2250 psia and 546.2°F inlet temperature. The changes will also increase the allowable fuel residence time to 27,000 effective full power hours.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §1.5(d)(4) an environmental impact statement, negative

declaration or environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated October 4, 1976; which was superseded in its entirety by letter dated December 21, 1976 (as supplemented by letters dated January 7 and February 16, 1977), (2) Amendment No. 30 to License No. DPR-31, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Environmental & Urban Affairs Library, Florida International University, Miami, Florida 33199. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 13 day of December 1977.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink that reads "George Lear". The signature is written in a cursive style with a small circle at the end of the last name.

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