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Docket Nos. 50-250
and 50-251

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Posted
Amdt. 70
to DPR-41

Dr. Robert E. Uhrig, Vice President
Advanced Systems and Technology
Florida Power and Light Company
Post Office Box 529100
Miami, Florida 33152

Dear Dr. Uhrig:

The Commission has issued the enclosed Amendment No. 76 to Facility Operating License No. DPR-31 and Amendment No. 70 to Facility Operating License No. DPR-41 for the Turkey Point Plant Unit Nos. 3 and 4, respectively. The amendments consist of changes to the Technical Specifications in response to your application transmitted by letter dated December 10, 1981, as supplemented January 20 and 28, 1982.

These amendments change the moderator temperature coefficient for power operation less than 70%.

Copies of the Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

Original signed by
M. Grotenhuis

Marshall Grotenhuis, Project Manager
Operating Reactors Branch #1
Division of Licensing

Enclosures:
1. Amendment No. 76 to DPR-31
2. Amendment No. 70 to DPR-41
3. Safety Evaluation
4. Notice of Issuance

cc w/enclosures:
See next page

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Robert E. Uhrig
Florida Power and Light Company

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

FLORIDA POWER AND LIGHT COMPANY

DOCKET NO. 50-250

TURKEY POINT PLANT UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 76
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 December 10, 1981, as supplemented on January 20 and 28, 1982, 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) <u>Technical Specifications</u>

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 76 , 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

Steven A. Varga

Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 4, 1982

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

FLORIDA POWER AND LIGHT COMPANY

DOCKET NO. 50-251

TURKEY POINT PLANT UNIT NO. 4

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 70
License No. DPR-41

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

   A. The application for amendment by Florida Power and Light Company (the licensee) dated December 10, 1981, as supplemented on January 20 and 28, 1982, 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-41 is hereby amended to read as follows:

   (B) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 70 , 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

Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing

Attachment:
Changes to the Technical Specifications

Date of Issuance: February 4, 1982

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 76 TO FACILITY OPERATING LICENSE NO. DPR-31

AMENDMENT NO. 70 TO FACILITY OPERATING LICENSE NO. DPR-41

DOCKET NOS. 50-250 AND 50-251

Revise Appendix A as follows:

Remove Page	Insert Page
3.1-2	3.1-2

2. PRESSURE-TEMPERATURE LIMITS

The Reactor Coolant System (except for the pressurizer) pressure and temperature shall be limited during heatup, cooldown, criticality (except for low power physics tests), and inservice leak and hydrostatic testing in accordance with the limit lines shown on Figures 3.1-1a through 3.1-1b. Allowable pressure-temperature combinations are BELOW AND TO THE RIGHT of the lines on the Figures. Heatup and cooldown rate limits are:

a. A maximum heatup rate of 100°F in any one hour.

b. A maximum cooldown rate of 100°F in any one hour.

c. A maximum temperature change of $\geq$ 5°F in any one hour during hydrostatic testing operation above system design pressure.

The pressurizer pressure and temperature shall be limited in accordance with the following:

d. The pressurizer shall be limited to a maximum heatup rate of 100 °F in any one hour, and a maximum cooldown rate of 200 °F in any one hour.

e. The pressurizer shall be limited to a maximum Reactor Coolant System spray water temperature differential of 320°F.

With any of the above limits exceeded, restore the temperature and/or pressure within the limits within 30 minutes, determine that the RCS or pressurizer remains acceptable for continued operations or, if at power, be in at least Hot Shutdown within the next 6 hours and Cold Shutdown within the following 30 hours.

With reactor power less than 70 percent Rated Thermal Power, the moderator temperature coefficient* shall not be more positive than $+5 \times 10^{-5}\ \Delta K/K/^{o}F$. When this condition is not met, the reactor shall be made subcritical by an amount equal to or greater than the potential reactivity insertion due to depressurization and cooldown.

With reactor power greater than or equal to 70 percent Rated Thermal Power, the moderator temperature coeffieicient shall not be more positive than $0\ \Delta K/K/^{o}F$. When this condition is not met, the reactor shall be made subcritical by an amount equal to or greater than the potential reactivity insertion due to depressurization and cooldown.

* These moderator temperature coefficient conditions do not apply to low power physics tests.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 76 TO FACILITY OPERATING LICENSE NO. DPR -31
AND AMENDMENT NO. 70 TO FACILITY OPERATING LICENSE NO. DPR-41
FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT PLANT UNIT NOS. 3 AND 4
DOCKET NOS. 50-250 AND 50-251

INTRODUCTION

By letter dated December 10, 1981, as supplemented on January 20 and 28, 1982, Florida Power and Light Company (the licensee) requested amendments to Facility License Nos. DPR-31 and DPR-41 for the Turkey Point Plant Unit Nos. 3 and 4.

The licensee requested a change to the Turkey Point Units 3 and 4 moderator temperature coefficient (MTC) Technical Specification. The request proposes to increase the upper bound of the MTC from 0 to 0.5×10^{-5} $\Delta K/K°F$ for power levels below 70% of rated power.

EVALUATION

The licensee provided a safety analysis that assessed the impact of a positive moderator temperature coefficient of reactivity (MTC) on the accident analyses presented in Chapter 14 of the Turkey Point Units 3 and 4 Final Safety Analyses Report (FSAR). Those transients which were found to be sensitive to a positive or near zero MTC were reanalyzed. These are limited to transients which cause the reactor coolant system (RCS) temperature to increase. Transients that result in a reduction in RCS temperature for which a negative MTC is more limiting; and those for which heatup effects following reactor trip are not sensitive to MTC were not reanalyzed.

The transients not reanalyzed are:

A. RCCA misalignment/drop
B. Startup of an inactive RCS loop
C. Excessive heat removal due to feedwater system malfunctions
D. Excessive load increase
E. Loss of normal feedwater, loss of offsite power
F. Rupture of a main steam pipe
G. Loss of coolant accident (LOCA)

The transients reanalyzed, with one exception, used a MTC=+5 x 10^{-5} $\Delta K/K/°F$ assumed to remain constant for variations in temperature. The exception is the rod ejection accident for which the model assumes the MTC becomes less positive at higher temperatures. This is acceptable since the MTC is actually zero or negative above 70% power as required by the proposed Technical Specification.

The transients analyzed and their results are:

A. <u>Boron Dilution</u>

The reactivity addition due to a boron dilution at power will cause an increase in power and RCS temperature. Due to the temperature increase a positive MTC would add additional reactivity and increase the severity of the transient. With the reactor in automatic control, the rod insertion alarms provide the operator with adequate time to terminate the dilution before shutdown margin is lost. With the reactor in manual control the boron dilution incident is no more severe than a rod withdrawal at power, which is analyzed in item C below.

B. <u>Control Rod Withdrawal from a Subcritical Condition</u>

This transient results in an uncontrolled addition of reactivity leading to a power excursion causing a heatup of the moderator and fuel. The time the core is critical before a reactor trip is very short so that the RCS temperature does not increase significantly; hence the effect of a positive MTC is small. The analysis results show a transient average heat flux which does not exceed the steady state full power value and an increased core water temperature that remains below the full power value. To provide assurance that the above cirteria are sufficient bases for acceptance, the licensee submitted comparison analyses (letter from R. Ulrig, FPL to D. Eisenhut, NRC, dated Janaury 28, 1982) with reactors that use newer approved methods to calculate DNBR using power distributions that would occur during the transient. These results show that the DNBR remains above 1.3 during the transient. This is acceptable since it is expected that the Turkey Point reactor would have similar results for the rod withdrawal error from a subcritical condition.

C. <u>Uncontrolled Control and Assembly Withdrawal at Power</u>

This transient produces a mismatch in steam flow and core power, resulting in an increase in RCS temperature. However, the results show that the nuclear flux and overtemperature ΔT trips prevent the core minimum DNB ratio from falling below 1.3 for this transient, so the conclusions presented in the FSAR are still valid.

D. Loss of Coolant Flow

The most severe loss of flow transient is caused by the simultaneous loss of power to all three reactor coolant pumps (RCP's). This case was reanalyzed to determine the effect of a positive MTC on the nuclear power transient and the resultant effect on the minimum DNBR reached during the transient. The RCS temperature increases 6°F above the initial value and a minimum DNBR of 1.6 is obtained for this transient. Since this is the limiting loss of flow transient present in the FSAR and since the DNBR ratio remains above 1.3 the results from the FSAR are still valid and acceptable.

E. Locked Rotor

The locked rotor event was reanalyzed because of the potential effect of the positive MTC on the nuclear power transient and thus on RCS pressure and fuel temperature. A positive MTC will not affect the time to DNB because DNB is conservatively assumed to occur at the beginning of the transient. The results show that the FSAR analysis at 100% power and a 0 MTC is more limiting than the $+5\times10^{-5}$ $\Delta K/K/°F$ MTC at 70% power. The peak fuel pellet average temperature reached during transient was 2137°F, the peak cladding temperature was 1587°F, and the peak RCS pressure was 2430 psia, which do not exceed the accepted safety limits as presented in the FSAR.

F. Loss of External Electric Load

The loss of external electric load transient was reanalyzed for beginning of cycle (BOC) since the MTC will be negative at end of cycle (EOC) and will give the same results as in the FSAR. Two cases were analyzed: (1) reactor in the automatic rod control mode with operation of the pressurizer spray and pressurizer power operated relief valves (PORV); and (2) reactor in the manual control mode with no credit for pressurizer spray or PORV's. The result of a loss of load is a core power that momentarily exceeds the secondary system power removal, causing an increase in RCS coolant temperature. The reactivity addition due to a positive MTC, causes an increase in both nuclear power and RCS pressure. The result for the control rods in the automatic control and assuming pressurizer spray and relief is an RCS pressure of 2443 psia following a reactor trip on overtemperature ΔT. A minimum DNBR of 1.74 is reached shortly after reactor trip. The result for the case of rods in manual control with no credit for pressure control is a peak RCS pressure of 2534 psia following a reactor trip on high pressure. The minimum DNBR is initially 1.86 and increases throughout the transient. Since the DNB ratio remains above 1.3 and the peak RCS pressure is less than 110% of design the conclusions presented in the FSAR are still applicable.

G. Control Rod Ejection

The rod ejection transient was analyzed only for BOC since the MTC will be negative at EOC and the previous analysis (Unit 4 Cycle 4 Reload Safety Evaluation) results are applicable. The high nuclear power levels and hotspot fuel temperatures resulting from a rod ejection are increased by a positive MTC. The results of BOC reanalysis show that the fuel and clad temperatures are within the limiting values specified in the FSAR and the Unit 4, Cycle 4 Reload Safety Evaluation and as such are acceptable. The peak hotspot fuel centerline temperature exceeded the melting temperature for the full power case; however, melting was restricted to less than the innermost ten percent of the pellet. The maximum fuel enthalpy reached 177 cal/gr which is below the specified limit of 200 cal/gr stated in the Cycle 4 Reload Safety Evaluation.

SUMMARY

Since the reanalysis of the affected plant transients do not result in exceeding any of the fuel limits or safety limits specified in the Turkey Point Units 3 and 4 FSAR or Cycle 4 Reload Safety Evaluation, we conclude that the proposed Technical Specification will not pose an undue risk to the health and safety of the public, and is therefore acceptable.

ENVIRONMENTAL CONSIDERATION

We have determined that the amendments do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendments involve an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the amendments to not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do 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 these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: February 4, 1982

Principal Contributors:
R. F. Frahm
H. Richings

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NOS. 50-250 AND 50-251

FLORIDA POWER AND LIGHT COMPANY

NOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No.76 to Facility Operating License No. DPR-31 and Amendment No. 70 to Facility Operating License No. DPR-41 issued to Florida Power and Light Company (the licensee), which revised Technical specifications for operation of Turkey Point Plant, Unit Nos. 3 and 4 (the facilities) located in Dade County, Florida. The amendments are effective as of the date of issuance.

The amendments change the moderator temperature coefficient for power operation less than 70%.

The application for the amendments 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 amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to this action, see (1) the application for amendments dated December 10, 1982, as supplemented on January 20 and 28, 1982, (2) Amendment Nos.76 and 70 to License Nos DPR-31 and DPR-41, 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 and 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 Licensing.

Dated at Bethesda, Maryland, this 4th day of February, 1982.

FOR THE NUCLEAR REGULATORY COMMISSION

Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing