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

September 5, 1984

Posted
Amdt. 103
to DPR-41

Docket Nos. 50-250
and 50-251

Mr. J. W. Williams, Jr., Vice President
Nuclear Energy Department
Florida Power and Light Company
Post Office Box 14000
Juno Beach, Florida 33408

Dear Mr. Williams:

The Commission has issued the enclosed Amendment No. 109 to Facility Operating License No. DPR-31 and Amendment No. 103 to Facility Operating License No. DPR-41 for the Turkey Point Plant Units Nos. 3 and 4, respectively. The amendments consist of changes to the Technical Specifications in response to your application transmitted by letter dated April 4, 1984 and supplemented on May 25, 1984 and June 15, 1984.

These amendments revise Section 5.2 of the Technical Specifications to delete the present enrichment restriction of 3.5 weight per cent. The fuel storage specifications, Section 5.4, is revised to allow storage of fuel with increased enrichment in the existing new fuel storage racks, spent fuel storage racks and to include an additional K_{eff} (neutron multiplication factor) requirement for the existing new fuel storage racks under conditions of low density (optimum moderation). The increase for the existing new fuel storage racks is 57.7 grams (4.5 weight per cent) of U-235 and 52.4 grams (4.1 weight per cent) for the existing spent fuel storage racks. A K_{eff} of 0.98 for optimum moderation conditions is included for the existing new fuel storage racks in addition to the existing K_{eff} of 0.95 for fully flooded with unborated water conditions which is in accordance with the NRC acceptance criteria.

The request for these amendments was noticed on June 20, 1984, (49 FR 25360) and comments, request for hearing and a petition for leave to intervene were received on July 12, 1984. The comments relevant to these amendments and a final determination of No Significant Hazards Consideration are included in the enclosed Safety Evaluation.

Copies of the related Safety Evaluation and Notice of Issuance and Final Determination of No Significant Hazards Consideration are enclosed. A repeat of the Notice of Issuance will be included in the Commission's next regular monthly Federal Register notice.

Sincerely,

Daniel G. McDonald, Jr.

Daniel G. McDonald, Jr., Project Manager
Operating Reactors Branch #1
Division of Licensing

Enclosures:
1. Amendment No. 109 to DPR-31
2. Amendment No. 103 to DPR-41
3. Safety Evaluation
4. Notice

cc: w/enclosures
See next page

J. W. Williams, Jr.
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. 109
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 April 4, 1984 and supplemented on May 25, 1984 and June 15, 1984, 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 Appendix A and B, as revised through Amendment No. 109 , 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 issuance and shall be implemented within 60 days of 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: September 5, 1984

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. 103
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 April 4, 1984 and supplemented on May 25, 1984 and June 15, 1984, 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 Appendix A and B, as revised through Amendment No. 103 , 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 issuance and shall be implemented within 60 days of 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: September 5, 1984

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 109 FACILITY OPERATING LICENSE NO. DPR-31

AMENDMENT NO. 103 FACILITY OPERATING LICENSE NO. DPR-41

DOCKET NO. 50-250 AND 50-251

Revise Appendix A as follows:

Remove Pages	Insert Pages
Page 5.2.1	Page 5.2.1
Page 5.4.1	Page 5.4.1

5.2 REACTOR

Reactor Core

1. The reactor core contains approximately 71 metric tons of uranium in the form of slightly enriched uranium dioxide pellets. The pellets are encapsulated in Zircaloy - 4 tubing to form fuel rods. The reactor core is made up of 157 fuel assemblies. Each fuel assembly contains 204 fuel rods.

2. The average enrichment of the initial core is a nominal 2.50 weight per cent of U-235. Three fuel enrichments are used in the initial core. The highest enrichment is a nominal 3.10 weight per cent of U-235.

3. Reload fuel will be similar in design to the initial core.

4. Burnable poison rods are in the form of rod clusters, which are located in vacant rod cluster control guide tubes, are used for reactivity and/or power distribution control.

5. There are 45 full length RCC assemblies and 8 partial length* RCC assemblies in the reactor core. The full

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*Any reference to part-length rods no longer applies after the part-length rods are removed from the reactor.

5.4 FUEL STORAGE

1. The new and spent fuel pit structures are designed to withstand the anticipated earthquake loadings as Class 1 structures. Each spent fuel pit has a stainless steel liner to ensure against leakage.

2. The new and spent fuel storage racks are designed so that it is impossible to insert assemblies in other than the prescribed locations. The fuel in the spent fuel pit is stored vertically in an array with sufficient center-to-center distance between assemblies to assure k_{eff} equal to or less than 0.95 with new fuel containing not more than 52.4 grams of U-235 per axial centimeter of fuel assembly even if boron was not added to the pit water.

   The fuel in the new fuel storage racks is stored vertically in an array with sufficient center-to-center distance between assemblies to assure k_{eff} equal to or less than 0.98 for optimum moderation conditions and equal to or less than 0.95 for fully flooded conditions, with new fuel containing not more than 57.7 grams of U-235 per axial centimeter of fuel assembly even if boron was not added to the pit water.

3. The boron concentration in the spent fuel pit is that used in the reactor cavity and refueling canal during refueling operations, whenever there is fuel in the pit, except for initial new fuel storage.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 109 TO FACILITY OPERATING LICENSE NO. DPR-31

AND AMENDMENT NO. 103 TO FACILITY OPERATING LICENSE NO. DPR-41

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT UNIT NOS. 3 AND 4

DOCKET NOS. 50-250 AND 50-251

I. Introduction

By letter from J. W. Williams, Jr. to D. G. Eisenhut dated April 4, 1984 and supplemented on May 25, 1984, Florida Power and Light Company (FP&L) has requested amendments to Facility Operating Licenses DPR-31 for Turkey Point Unit 3 and DPR-41 for Turkey Point Unit 4. This proposed change will increase the maximum U-235 linear loading in the spent fuel storage racks to 52.4 grams of U-235 per axial centimeter of fuel assembly from 43.9 grams of U-235 per axial centimeter. It will also increase the maximum U-235 linear loading in the new fuel storage racks to 57.7 grams of U-235 per axial centimeter from 43.9 grams of U-235 per axial centimeter of fuel assembly. At a UO_2 pellet density of 97% of theoretical, 52.4 grams of U-235 per axial centimeter corresponds to a nominal enrichment of 4.085 weight % U-235 and 57.7 grams U-235 per axial centimeter corresponds to a nominal enrichment of 4.5 weight % U-235. The amendments will also delete the reactor core U-235 enrichment specification. The submittal includes analyses of the effect of the higher U-235 linear loading on the criticality aspects of both the new and spent fuel racks at Turkey Point. Additional information requested by the staff was submitted by letter from J. W. Williams to S. A. Varga dated June 15, 1984.

The information in this June 15, 1984, submittal was to clarify the initial input. The organizations were identified which performed the initial calculations, current calculations and identification of the benchmarking results (Reference 7 of the initial submittal) was provided. The wording of the proposed Technical Specification 5.4 was changed for clarification to identify that the criticality calculations for the unirradiated fuel in the new fuel storage racks considered both low density and fully flooded (unborated) water conditions. These calculations were provided in the initial submittal. The UO_2 stack density was given in grams per axial centimeter (a typographical error) and was corrected to grams per cubic centimeters. Clarification of the uncertainties and biases used in the criticality analysis were provided and reference 7 of the initial submittal was cited for clarification. The diffusion theory model was identified as a B&W model which was also described in the initial submittal.

II. Analysis Methods

The criticality aspects of the storage of Westinghouse design fuel assemblies containing a 15X15 array of fuel rods was analyzed using the CASMO two-dimensional multigroup transport theory computer program and the AMPX-KENO multigroup Monte Carlo program. Diffusion/blackness theory calculations based on diffusion theory constants calculated by NULIF and input PDQ07 were also used to confirm the conservatism of the CASMO calculations. AMPX/KENO calculations using various neutron cross-section sets have been benchmarked against a number of critical experiments in the range of pellet diameters, water-to-fuel ratios and U-235 enrichments comparable to Turkey Point design.

III. Spent Fuel Storage Rack Analysis

The criticality of fuel assemblies in the spent fuel storage rack is prevented by maintaining a minimum separation of 13.659 inches between assemblies. The rack is composed of 0.25-inch stainless-steel boxes of 8.790-inch inside dimension and the outer water space constitues a flux-trap between the two steel plates. Although spent fuel is normally stored in borated pool water containing approximately 1950 ppm boron, the NRC acceptance criterion for spent fuel storage is that there is a 95 percent probability at a 95 percent confidence level (including uncertainties) that K_{eff} (neutron multiplication factor) of the fuel assembly array will be less than 0.95 when fully flooded with unborated water.

Uncertainties and biases in K_{eff} due to fuel enrichment and density variations, cell inside dimension tolerance variations, cell lattice spacing variations, stainless-steel thickness variations and eccentric positioning of a fuel assembly within the storage cell were included either by using worst case initial conditions or by performing sensitivity studies to obtain the appropriate values. The calculations were performed at a coolant temperature of 150°F which is the pool temperature which produces the highest K_{eff}. Lower pool temperatures are expected for normal operations. The total uncertainty in K_{eff} associated with these tolerances is $0.0243 \Delta K$.

Sensitivity studies of fuel densities and U-235 loadings (grams per axial centimeter of fuel assembly) were performed. The results show that for a given U-235 axial loading, the higher reactivity occurs for the lower assumed UO_2 stack density (10.08 grams per cubic centimeter) which corresponds to a UO_2 density of 93% of theoretical. Adding the total uncertainty of 0.0243 to the variation of K_{eff} (at an oxide density of 10.08 grams per cubic centimeter) gives a maximum K_{eff} as a function of U-235 loading. From this it is found that a U-235 loading of 52.40 grams per axial centimeter is the maximum which can assure a K_{eff} of no greater than 0.95 including uncertainties. For a UO_2 density of 10.08 grams per cubic centimeter, this corresponds to a U-235 enrichment of 4.261 weight percent.

Postulated events such as the inadvertent positioning of an extra fuel assembly adjacent to the rack in the region of the cask area would not cause a criticality accident since in this case credit may be taken for the

presence of soluble boron in the pool water by invoking the double contingency principle. We, therefore, conclude that fuel assemblies of the Westinghouse 15X15 design having a maximum loading of 52.4 grams of U-235 per axial centimeter of fuel assembly may be stored in the Turkey Point Unit 3 and 4 spent fuel pool.

IV. New Fuel Storage Rack Analysis

The criticality of fuel assemblies in the new (unirradiated) fuel storage racks is prevented by maintaining a minimum separation of 21 inches between assemblies. Although new fuel is normally stored in a dry configuration, the NRC acceptance criteria for new fuel storage is that there is a 95 percent probability at a 95 percent confidence level (including uncertainties) that K_{eff} of the fuel assembly array will be; (1) no greater than 0.95 when fully loaded and flooded with unborated water and (2) no greater than 0.98 under conditions of low density (optimum moderation) if higher reactivities can be attained at achievable moderation conditions other than full density unborated water.

The abnormal condition of optimum moderation (i.e. fog, mist or foam) had not been identified for any plant prior to the issuance of the existing Turkey Point Technical Specifications relating to the storage of new fuel. After identifying the unlikely conditions leading to optimum moderation, the NRC required all new applications or amendments relating to the storage of new fuel to analyze for optimum moderation conditions, meet the acceptance criterion (K_{eff} 0.98) and provide appropriate Technical Specifications. These requirements are in addition to the existing requirements which address the abnormal conditions leading to fully flooding the new fuel with unborated water which has an acceptance criterion of K_{eff} 0.95.

KENO calculations of K_{eff} as a function of moderator density within and between storage cells indicate a low-density reactivity peak of 0.925 at a water density of 0.10 grams per cubic centimeter. The reactivity for the fully flooded condition, calculated by diffusion theory, is approximately the same as the low-density reactivity peak. These margins in reactivity, below the limiting criteria, are more than adequate to accommodate any expected uncertainties. The calculations were done for fuel containing 57.72 grams of U-235 per axial centimeter of assembly (4.5 weight percent U-235 enrichment).

Without water moderation, any postulated event would result in a K_{eff} value lower than our acceptance criterion of 0.95 for accidents. The absence of water in the new fuel storage racks can be assumed since assuming its presence would be a second unlikely event when considerating other abnormal events or accidents.

We, therefore, conclude that fuel assemblies of the Westinghouse 15X15 design having a maximum loading of 57.72 grams of U-235 per axial centimeter of fuel assembly may be stored in the Turkey Point Units 3 and 4 fresh fuel storage racks.

V. Radiological Consequences

The proposed technical specifications would not extend fuel burnup or alter the configuration of the storage racks - two areas which could make a difference in the radiological consequences. Additionally, the licensee's technical specification (Section 3.12) prohibits the movement of spent fuel casks over spent fuel and specifies that only one spent fuel assembly will be handled at one time over the reactor or the spent fuel pool.

In a safety evaluation report (SER) on a spent fuel pool expansion (dated March 17, 1977), the NRC staff concluded that the spent fuel cask travel will be limited to the specific travel path and that the licensee's cask drop protection was adequate for the prevention of cask tip accidents.

Further, the proposed modification does not increase the radiological consequences of fuel handling accident considered in the Staff Safety Evaluation Report of March 1972, since this accident would still result in, at most, the release of the gap activity of one fuel assembly due to the limitation of the available impact kinetic energy. These doses were well within the 10 CFR Part 100 guideline values.

We, therefore, conclude that the proposed modifications are acceptable relative to the radiological consequences of fuel handling accidents and spent fuel cask drop accidents.

VI. Summary

Based on the details of our evaluation provided in Sections II, III, IV and V, we conclude that any number of Westinghouse design 15X15 fuel assemblies having a maximum loading of 52.4 grams of U-235 per axial centimeter may be stored in the spent fuel racks and those fuel assemblies having a maximum loading of 57.72 grams of U-235 per axial centimeter may be stored in the new (unirradiated) fuel racks of Turkey Point Unit 3 and 4. Our conclusion is based on the following:

1. The criticality calculations were performed with acceptable models and methods.

2. Uncertainties have been accounted for.

3. Postulated accidents have been considered.

4. The multiplication factor, including uncertainties, meets our acceptance criteria for this quantity.

Based on the details provided in Section V of our evaluation, we conclude that the likelihood of a cask drop onto irradiated fuel is sufficiently small that the offsite radiological consequences from a fuel handling accident would remain unchanged from that which was reported in the Staff Safety Evaluation Report of March 1972. These doses were determiend to be well within 10 CFR Part 100 guidelines values. We conclude, therefore, that

the proposed modifications are acceptable relative to the radiological consequences of fuel handling accidents and spent fuel cask drop accidents.

VII. Significant Hazards Consideration Comments

These proposed amendments were noticed on June 20, 1984 (49 FR 25360) and significant hazards comments, request for hearing and a petition for leave to intervene were received on July 12, 1984. The filing was on behalf of the Center for Nuclear Responsibility, Inc. (CNR) and Ms. Joette Lorion (Petitioners). We have addressed the relevant comments in the text of this Safety Evaluation. The petitioners contend:

A. The proposed increase of K_{eff} from 0.95 to 0.98 for the existing new fuel storage racks is a significant safety hazards consideration in that the new criterion does not meet the margin of safety that has been established by NRC for criticality. The criterion used by the NRC since 1976 is that the neutron multiplication factor in the spent fuel pool is to be equal to, or less than, 0.95, including all uncertainties, under all conditions as contained in the American National Standard Institute (ANSI) 210-1976, (ANSI) N-18.2, and in the "NRC Position for Review and Acceptance of Spent Fuel Storage Handling Application," April 14, 1978.

This contention is addressed in Section III (Spent Fuel Storage) and Section IV (New Fuel Storage) of this Safety Evaluation. The spent fuel storage and new fuel storage racks are separated and independent of each other. As indicated in our evaluation, new fuel is stored in a dry configuration and spent fuel is stored in borated water (approximately 1950 ppm boron).

The criterion for the neutron multiplication factor (K_{eff}) for storage of spent fuel is no greater than 0.95 under all conditions, including the abnormal condition of fully flooded with unborated water, as stated in the contention. This criteria is met for storage of spent fuel with the proposed enrichment as indicated in Section III of this Safety Evaluation. The SRP, Section 9.1.2, identifies the applicable Regulations, Regulatory Guides and Industry Standards relative to the storage of spent fuel.

NUREG-0800 "Standard Review Plan" (SRP), Section 9.1.1, identifies the applicable Regulations, Regulatory Guides and Industry Standards relative to new fuel storage facilities. The K_{eff} for storage of new (unirradiated) fuel may be (1) no greater than 0.95 when fully loaded and flooded with unborated water and (2) no greater than 0.98 under conditions of low density (optimum moderation) as stated in Section IV of this Safety Evaluation. A K_{eff} of 0.95 for new fuel when flooded with unborated water is included in the existing Technical Specifications for Turkey Point. This criterion is also met with the proposed fuel enrichment as indicated in Section IV of this evaluation.

The commenter was concerned about the increase in K_{eff} from 0.95 to 0.98 for the new fuel storage racks. This comment is apparently based on the initial Federal Register Notice on this amendment published

June 20, 1984, which stated that the K_{eff} is proposed to be increased from 0.95 to 0.98 for the existing new fuel storage racks. The notice is not clear on this point. In fact, the K_{eff} of 0.95 is not being changed for the fully flooded condition previously evaluated. Rather, a new potential condition of optimum moderation (i.e., fog, mist or foam) which had not been previously evaluted, was identified and evaluated for the Turkey Point facility and an additional limitation on K_{eff} of 0.98 for this condition is provided by this amendment.

Subsequent to the issuing of the existing new fuel storage Technical Specifications for Turkey Point, the NRC staff identified a set of conditions which could affect the neutron multiplication factor. This is referred to as conditions of low density (optimum moderation). Under conditions of unborated water less than fully flooded, such as fog, mist or foam, an increase in reactivity could occur. For this unlikely event, the NRC staff required that these conditions be analyzed and the criterion for acceptability (K_{eff}) be no greater than 0.98 for the worst case low density condition. As stated in Section IV of this Safety Evaluation, the acceptance criterion and associated Technical Specifications for optimum moderation are in addition to the existing Technical Specifications which only address the abnormal conditions leading to fully flooding the new fuel with unborated water and which has an acceptance criterion of K_{eff} 0.95.

The results of the licensee's analysis are provided in Section IV of this Safety Evaluation. These results indicate that the calculated peak reactivity value is approximately 0.925 for both the worst case low density moderation and fully flooded conditions. This value is below the K_{eff} of 0.98 for optimum moderation as well as below the K_{eff} criterion of 0.95 for fully flooded conditions. Thus, the margin of safety provided by the relevant NRC acceptance criteria for criticality is met for the storage of spent and new fuel.

B. The proposed increase of K_{eff} from 0.95 to 0.98 does not meet 10 CFR 50, Appendix K, Criterion 62 which states that "criticality in the fuel storage and handling system shall be prevented by physical systems or processes, preferably by the use of geometrically safe configurations." And, that an accidental criticality, caused by change in fuel geometry due to storage of the more highly enriched uranium fuel rods could release substantial amounts of radioactivity to the environment in violation of 10 CFR Parts 20, 50, 51, 100, and NEPA, and will pose a danger to the health and safety of the public and endanger the Biscayne Bay environment.

The 10 CFR 50 Appendix K, Criterion 62, citation is incorrect. The correct reference is Appendix A, Criterion 62. This contention is addressed in Sections III, IV and V of this Safety Evaluation. The K_{eff} criteria of 0.95 and 0.98 are discussed in response to contention A above. The geometrical configuration of the new fuel racks or the spent fuel racks are not altered by these amendments. As noted in Section V, the proposed changes do not increase the radiological consequences of the fuel handling accident since the accident will result in, at most, the gap activity of one fuel assembly due to the

limitation of the available impact kinetic energy. These doses are within the 10 CFR Part 100 guidelines. The SRP, Sections 15.7.4 and 15.7.5, identifies the applicable Regulations, Regulatory Guides and Industry Standards relative to the radiological aspects of these amendments.

C. The petitioners identified Science Applications Incorporated (SAI) Report No. SAI-84-221-WA, Rev. 1, dated July 29, 1983 and Policy Issue SECY-83-337, dated August 15, 1983, in support of their contentions.

As stated in response to the previous contentions, the K_{eff} of 0.95 is maintained for the spent fuel facilities. The referenced documents address the spent fuel storage and significant hazards considerations for their expansion. These proposed amendments relate to the existing new fuel storage facilities and spent fuel storage facilities. The proposed amendments comply with the referenced documents in relation to the K_{eff} of 0.95 for the existing spent fuel storage facilities. The documents do not address the requirements for the new fuel storage facilities. As stated above, Sections 9.1.1 and 9.1.2 of the SRP identify the applicable NRC requirements for new (unirradiated) fuel and spent fuel storage facilities. These requirements are consistent with the SAI and SECY references. Further, these amendments do not request expansion of the spent fuel pool facilities.

The licensee has requested amendments to support expansion of the spent fuel storage facilities by letter dated March 14, 1984, which was noticed on June 7, 1984 (49 FR 23715). Comments, request for a hearing and petition for leave to intervene were filed by the same petitioners and will be addressed in our evaluation of that licensing action taking into account all applicable NRC requirements.

VIII. Final No Significant Hazards Determination

The standards used to arrive at a proposed determination that a request for amendments involves no significant hazards consideration are included in the Commission's regulations, 10 CFR 50.92, which state that the operation of the facilities in accordance with the proposed amendments would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

The fuel enrichment is not a direct input to the reactor safety analysis. Fuel enrichment is used in conjunction with a number of parameters and considerations in determining safe operation of the reactor core. The fuel enrichment, number of fuel assemblies, exposure (burnup) of existing fuel, burnable poisons and fuel management schemes are used to derive measurable reactor core parameters important to safe operation. These dynamic parameters, rod worths and peaking factors are currently included in the plant's Technical Specifications. The specification of the fuel enrichment in the core design section alone does not uniquely determine nor limit the values of the reactor core parameters which are important for safe operation. The existing safety limits and limiting conditions of operation

in the plant Technical Specifications will have to be addressed and evaluated for each specific future reload and will take into account the fuel enrichment but they will not be changed by these proposed amendments.

Therefore, the deletion of the reload fuel enrichment from the reactor core design, Section 5.2 of the Technical Specification, does not result in a significant relaxation of the criteria used to establish safety limits. In turn, this portion of the amendments does not affect the probability or consequences of a previously analyzed accident or any safety margin. In addition, neither the licensee nor the NRC staff could identify any aspects of this portion of the proposed amendments which would create the possibility of a new or different kind of accident not previously evaluated.

Accordingly, the staff has determined that this portion of the amendment request does not involve a significant hazards consideration since it does not (1) involve a significant increased in the probability or consequencs of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

Criticality limits have been established for storage of both new (unirradiated) and spent fuel. A criticality analysis of the existing storage racks to allow storage of fuel with the increased enrichment is provided in the licensee's submittal. The following evaluation references the criticality analysis provided and demonstrates that the storage of fuel with the increased enrichment identified in the proposed amendments does not involve any of the three criteria for significant hazards considerations as follows:

(1) <u>The possibility of a significant increase in the probability or consequencs of an accident previously evaluated</u>.

In course of the analysis the following potential accident scenarios previously evaluated for Turkey Point Units 3 and 4 were:

1. A fuel assembly drop in the spent fuel pool.

2. Loss of spent fuel pool cooling system flow.

3. A spent fuel cask drop.

The consequences of item 1, "A fuel assembly drop in the spent fuel pool," for the criticality acceptance criterion are not changed. The radiological consequences of this type of accident in the spent fuel pool are bounded by the cask drop accident. Thus, the consequences of this type accident will not be significantly increased from previously evaluated fuel assembly drops.

The consequences of item 2, "Loss of spent fuel cooling system flow," will not be affected. As previously stated, the existing safety limits and limiting conditions of operations in the plant Technical Specifications will have to be addressed and evaluated for each specific future reload and will take into account fuel enrichment and burnup. The effect of the decay heat

characteristics due to the burnup of fuel with the proposed increased enrichment is bounded by the existing loss of spent fuel pool cooling system flow evaluation. The proposed amendments to increase the fuel storage U-235 linear loading specification will not result in an increase in the probability or consequences of an accident previously evaluated for loss of spent fuel cooling system flow.

The consequences of item 3, "A spent fuel cask drop," as previously evaluated will not be affected by an increase in fuel assembly U-235 linear loading. As stated, the existing safety limits and limiting conditions of operations in the plant Technical Specifications will have to be addressed and evaluated for each specific future reload and will take into account fuel enrichment and burnup. The fission product inventory due to the burnup of fuel with the proposed enrichment is bounded by the existing evaluation of the spent fuel cask drop and the proposed amendments do not alter the configuration of the storage racks. Therefore, the proposed amendments to increase the fuel storage U-235 linear loading will not result in an increase in the probability or consequences of an accident previously evaluated for a spent fuel cask drop.

Thus, based on this Safety Evaluation, Sections II through V, we concluded that the proposed amendments to increase the fuel storage U-235 linear loading will not involve a significant increase in the probability or consequences of an accident previously evaluated.

(2) <u>The possibility of a new or different kind of accident from any accident previously evaluated</u>

The proposed technical specification changes have been evaluated in accordance with the guidance of the NRC position paper entitled, "OT Position for Review and Acceptance of Spent Fuel Storage and Handling Applications, " applicable Regulations, Regulatory Guides and Industry Codes and Standards as listed in the SRP, Sections 9.1.1, 9.1.2, 15.7.4 and 15.7.5. Neither the licensee nor the NRC staff could identify any aspects of the proposed amendments which would create the possibility of a new or different kind of accident from any accident previously evaluated for the Turkey Point new and spent Fuel Storage Facilities.

(3) <u>Involve a significant reduction in a margin of safety</u>.

The issue of margin of safety, needs to address the area of nuclear criticality considerations when considering the storage of new (unirradiated) and spent fuel.

The established acceptance criteria for criticality, which assure a margin of safety, are that the neutron multiplication factor (K_{eff}) including all uncertainties, under all conditions:

(a) shall be less than or equal to 0.98 for optimum moderation conditions in the new fuel storage facility; and

(b) shall be less than or equal to 0.95 for fully flooded conditions in both the new fuel storage facility and the spent fuel pool.

This margin of safety has been adhered to in the criticality analysis methods for the existing spent fuel and new fuel storage, as discussed in Sections III, IV and VII of this Safety Evaluation. The methods to be used in the criticality analysis conform with applicable codes, standards, or pertinent sections thereof, as referenced in SRP as identified above.

In meeting the acceptance criteria for criticality in the Turkey Point Unit 3 and 4 fuel storage facilities, it has been established that:

(a) K_{eff} is always less than 0.98, including uncertainties at a 95/95 probability confidence level for optimum moderation conditions in the new fuel facility.

(b) K_{eff} is always less than 0.95, including all uncertainties at a 95/95 probability confidence level for fully flooded conditions in both the new fuel storage facility and in the spent fuel pool.

The proposed amendments to increase the fuel storage U-235 linear loading for both the new and spent fuel storage and to include the limiting K_{eff} in the new fuel storage area for low density (optimum moderation) conditions will not involve a significant reduction in the margin of safety for nuclear criticality concerns. The existing Technical Specifications requirement of K_{eff} 0.95 is for fully flooded with unborated water conditions which is documented in our Safety Evaluation dated March 17, 1977. This existing requirement is unchanged for the staorage of new (unirradiated) or spent fuel with the proposed enrichment. Thus, the margin of safety provided by the techncial specifications for conditions previously considered is not reduced. With respect to the new fuel storage rack analysis, this amendment addresses a condition not previously evaluated-- the potential for optimum moderation by fog, mist or foam. For this potential condition the amendment imposes a limit on K_{eff} which amounts to an additional restriction on such storage. As stated in Section IV of this Safety Evaluation, the NRC requires all new applications or amendments relating to the storage of new fuel to analyze for optimum moderation conditions, meet the established acceptance criterion of K_{eff} 0.98 and provide appropriate Technical Specifications. Including this additional restriction, not presently in the Turkey Point Technical Specifications, enhances plant safety and does not result in a reduction in the margin of safety.

Based on our review of the licensee's submittal, as described in our above evaluation, we have made a final determination that the amendment requests do not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the probability of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety; and therefore, do not involve a significant hazards consideration.

IX. Environmental Consideration

These amendments involve changes in the installation or use of the facilities components located within the restricted area as defined in 10 CFR Part 20. The staff has determined that these amendments involve no significant increase in the amounts, and no significant change in the types

of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has made a final no significant hazards consideration finding with respect to these amendments. Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR Sec 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

X. 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.

Dated: September 5, 1984

Principal Contributors:

L. Kopp
K. Dempsey

7590-01

UNITED STATES NUCLEAR REGULATORY COMMISSION

FLORIDA POWER AND LIGHT COMPANY

DOCKET NOS. 50-250 AND 50-251

NOTICE OF ISSUANCE OF AMENDMENTS TO FACILITIES OPERATING LICENSES AND FINAL DETERMINATION OF NO SIGNIFICANT HAZARD CONSIDERATION

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 109 to Facility Operating License Nos. DPR-31, and Amendment No. 103 to Facility Operating License No. DPR-41 issued to Florida Power and Light Company (the licensee), which revised Technical Specifications for operation of the 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 and shall be implemented within 60 days of issuance.

These amendments revise Section 5.2 of the Technical Specifications to delete the present enrichment restriction of 3.5 weight per cent. The fuel storage specifications, Section 5.4, are revised to allow storage of fuel with increased enrichment in the existing new fuel storage racks, spent fuel storage racks and add an additional K_{eff} (neutron multiplication factor) requirement for the existing new fuel storage racks under conditions of low density (optimum moderation). The increase for the existing new fuel storage racks is 57.7 grams (4.5 weight per cent) of U-235 and 52.4 grams (4.1 weight per cent) of the existing spent fuel storage racks. A K_{eff} of 0.98 for optimum moderation conditions is included for the existing new fuel storage

racks in addition to the existing K_{eff} of 0.95 for fully flooded with unborated water.

The application for these 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 these license amendments.

Notice of Consideration of Issuance of Amendments and Proposed No Significant Hazards Consideration Determination and Opportunity for Hearing in connection with this action was published in the FEDERAL REGISTER (49 FR 25360) on June 20, 1984. A request for a hearing was filed on July 12, 1984, by the Center for Nuclear Responsibility, Inc. and Ms. Joette Lorion.

Under its regulations, the Commission may issue and make an amendment immediately effective, notwithstanding the pendency before it of a request for a hearing from any persons, in advance of the holding and completion of any required hearing, where it has determined that no significant hazards consideration is involved.

The Commission has applied the standards of 10 CFR 50.92 and has made a final determination that these amendments involve no significant hazards consideration.

The basis for this determination is contained in the Safety Evaluation related to this action. Accordingly, as described above, these amendments have been issued and made immediately effective and any hearing will be held after issuance.

These amendments involve changes in the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendments involve no significant increase

in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has made a final no significant hazards consideration finding with respect to these amendments. Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

For further details with respect to the action see (1) the application for amendments dated April 4, 1984, as supplemented on May 25, 1984 and June 15, 1984, (2) Amendment Nos. 109 and 103 to Facility Operating 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 September 5, 1984.

FOR THE NUCLEAR REGULATORY COMMISSION

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