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L-2011-390  
10 CFR 50.90

U. S. Nuclear Regulatory Commission  
Attn.: Document Control Desk  
Washington, D.C. 20555-0001

Re: Turkey Point Units 3 and 4  
Docket Nos. 50-250 and 50-251  
Supplement 2 to the Extended Power Uprate License Amendment Request No. 205  
Regarding New and Spent Fuel Storage Requirements

References:

- (1) M. Kiley (FPL) to U.S. Nuclear Regulatory Commission (L-2010-113), "License Amendment Request for Extended Power Uprate (LAR 205)," Accession No. ML103560169, October 21, 2010.
- (2) M. Kiley (FPL) to U. S. Nuclear Regulatory Commission (L-2010-169), "License Amendment Request No. 207 Fuel Storage Criticality Analysis," Accession No. ML102220022, August 5, 2010.
- (3) M. Kiley (FPL) to U. S. Nuclear Regulatory Commission (L-2011-032), "License Amendment Request No. 207 Supplement 1 to Fuel Storage Criticality Analysis," Accession No. ML110560335, February 22, 2011.
- (4) M. Kiley (FPL) to U. S. Nuclear Regulatory Commission (L-2011-386), "License Amendment Request No. 207 Fuel Storage Criticality Analysis Supplement 2," September 14, 2011.
- (5) M. Kiley (FPL) to U. S. Nuclear Regulatory Commission (L-2011-401), "License Amendment Request No. 207 Fuel Storage Criticality Analysis Supplement 3," Accession No. ML11269A213, September 22, 2011.
- (6) J. Paige (U. S. Nuclear Regulatory Commission) to M. Nazar (FPL), "Turkey Point Nuclear Plant, Units 3 and 4 – Issuance of Amendments Regarding Fuel Criticality Analysis (TAC Nos. ME4470 and ME4471), Accession No. ML11216A057, October 31, 2011.
- (7) M. Kiley (FPL) to U. S. Nuclear Regulatory Commission (L-2011-302), "Response to NRC RAI Regarding EPU LAR No. 205 - Technical Specification and Instrumentation and Control Issues," Accession No. ML11242A159, August 29, 2011.
- (8) M. Kiley (FPL) to U. S. Nuclear Regulatory Commission (L-2011-190), "Response to NRC Request for Additional Information Regarding Extended Power Uprate License Amendment Request No. 205 and Instrumentation and Control Issues," Accession No. ML11174A165, June 21, 2011.

By letter L-2010-113 dated October 21, 2010 [Reference 1], Florida Power and Light Company (FPL) requested to amend the Renewed Facility Operating Licenses DPR-31 and DPR-41 and revise the Turkey Point Units 3 and 4 Technical Specifications (TS) to implement an Extended Power Uprate (EPU) for each unit of approximately 15% that includes a 13% power uprate and a 1.7% measurement uncertainty recapture (MUR). The proposed amendments will increase each unit's licensed core power level from 2300 megawatts thermal (MWt) to 2644 MWt and revise

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the Renewed Facility Operating Licenses and Technical Specifications to support operation at this increased core thermal power level.

By letter L-2010-169 dated August 5, 2010 [Reference 2], FPL requested to amend the Renewed Facility Operating Licenses DPR-31 and DPR-41 and revise the Turkey Point Units 3 and 4 TS 5.5.1 Fuel Storage – Criticality, to include new spent fuel storage patterns that account for both the increase in fuel maximum enrichment from 4.5 wt% U-235 to 5.0 wt% U-235 and the impact on the fuel of higher power operation proposed under the EPU project. Although the fuel storage was analyzed at the higher fuel enrichment in a new criticality analysis, the fuel enrichment limit of 4.5 wt% U-235 specified in TS 5.5.1 was not changed under the license amendment request (LAR No. 207). WCAP-17094-P, Rev 2, “Turkey Point Units 3 and 4 New Fuel Storage Rack and Spent Fuel Pool Criticality Analysis,” dated July 2010 was provided in Reference 2.

By letter L-2011-032 dated February 22, 2011 [Reference 3], FPL supplemented LAR No. 207 Fuel Storage Criticality Analysis, dated August 5, 2010 [Reference 2] with new proposed TS changes and supporting criticality analysis (WCAP-17094-P, Rev 3, “Turkey Point Units 3 and 4 New Fuel Storage Rack and Spent Fuel Pool Criticality Analysis,” dated February 2011).

By letters L-2011-386 and L-2011-401 dated September 14 and 22, 2011 [References 4 and 5, respectively], FPL again supplemented LAR No. 207 to address specific NRC questions.

On October 31, 2011, the U.S. Nuclear Regulatory Commission (NRC) approved LAR No. 207 with the issuance of Amendments 246 and 242 for Turkey Point Units 3 and 4 addressing both new and spent fuel storage requirements [Reference 6].

As indicated in EPU LAR No. 205, the LAR No. 207 basis and justification for its TS changes included the impact of the higher enrichment and operation under EPU conditions so that it applies to and supports the proposed EPU TS changes. As such, the EPU proposed TS changes to TS 5.5.1 submitted in Reference 1 have been superseded by the newly issued amendments except for the proposed changes to TS 5.5.1.1.d and TS 5.5.1.2.b which will increase the maximum allowable enrichment in the spent fuel storage racks and the new fuel storage area to 5.0 wt% U-235.

Additionally, the proposed change to TS 5.5.1.2.b requires that storage of fuel assemblies in the new fuel storage area with nominal enrichments greater than 4.5 wt% U-235 have 16 or more Integral Fuel Burnable Absorber (IFBA) rods or an equivalent amount of other burnable absorber. Therefore, the previously proposed EPU changes regarding new and spent fuel storage will be superseded by the above changes to TS 5.5.1.1.d and 5.5.1.2.b. In addition, a change to the Power Range High Neutron Flux Allowable Value and Trip setpoint in TS Table 2.2-1 is being resubmitted here to correct a clerical error in the TS markup supplied via FPL letter L-2011-302 dated August 29, 2011 [Reference 7]. The TS Table 2.2-1 change was correctly submitted earlier in FPL letter L-2011-190 dated June 21, 2011 [Reference 8].

The Attachment to this letter contains a description of the proposed changes and their supporting justifications. As both the proprietary and non-proprietary versions of WCAP-17094, Rev 3, Turkey Point Units 3 and 4 New Fuel Storage Rack and Spent Fuel Pool Criticality Analysis, dated February 2011 were docketed as part of the LAR 207 supplement [Reference 3], they are not provided again as part of this submittal.

The Turkey Point Plant Nuclear Safety Committee (PNSC) has reviewed the proposed license amendments. In accordance with 10 CFR 50.91(b)(1), a copy of this letter is being forwarded to the State Designee of Florida.

This submittal does not alter the significant hazards consideration or environmental assessment previously submitted by FPL letter L-2010-113 [Reference 1] and is consistent with the approved spent fuel criticality analysis contained in Turkey Point Amendments 246 and 242 [Reference 6].

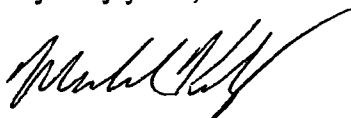
This submittal contains no new commitments and no revisions to existing commitments.

Should you have any questions regarding this submittal, please contact Mr. Robert J. Tomonto, Licensing Manager, at (305) 246-7327.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on November 9<sup>th</sup>, 2011.

Very truly yours,



Michael Kiley  
Site Vice President  
Turkey Point Nuclear Plant

Attachment

cc: USNRC Regional Administrator, Region II  
USNRC Project Manager, Turkey Point Nuclear Plant  
USNRC Senior Resident Inspector, Turkey Point Nuclear Plant  
Mr. W. A. Passetti, Florida Department of Health

Turkey Point Units 3 and 4

**SUPPLEMENT 2 TO THE EXTENDED POWER UPRATE  
LICENSE AMENDMENT REQUEST NO. 205 REGARDING  
NEW AND SPENT FUEL STORAGE REQUIREMENTS**

**ATTACHMENT**

Supplement 2 to the Extended Power Uprate License Amendment Request No. 205  
Regarding New and Spent Fuel Storage Requirement

By letter L-2010-113 dated October 21, 2010 [Reference 1], Florida Power and Light Company (FPL) requested to amend the Renewed Facility Operating Licenses DPR-31 and DPR-41 and revise the Turkey Point Units 3 and 4 Technical Specifications (TS) to implement an Extended Power Uprate (EPU) for each unit of approximately 15% that includes a 13% power uprate and a 1.7% measurement uncertainty recapture (MUR). The proposed amendments will increase each unit's licensed core power level from 2300 megawatts thermal (MWt) to 2644 MWt and revise the Renewed Facility Operating Licenses and Technical Specifications to support operation at this increased core thermal power level.

By letter L-2010-169 dated August 5, 2010 [Reference 2], FPL requested to amend the Renewed Facility Operating Licenses DPR-31 and DPR-41 and revise the Turkey Point Units 3 and 4 TS 5.5.1 Fuel Storage – Criticality, to include new spent fuel storage patterns that account for both the increase in fuel maximum enrichment from 4.5 wt% U-235 to 5.0 wt% U-235 and the impact on the fuel of higher power operation proposed under the EPU project. Although the fuel storage was analyzed at the higher fuel enrichment in a new criticality analysis, the fuel enrichment limit of 4.5 wt% U-235 specified in TS 5.5.1 was not changed under the license amendment request (LAR No. 207). WCAP-17094-P, Rev 2, “Turkey Point Units 3 and 4 New Fuel Storage Rack and Spent Fuel Pool Criticality Analysis,” dated July 2010 was provided in Reference 2.

By letter L-2011-032 dated February 22, 2011 [Reference 3], FPL supplemented LAR No. 207 Fuel Storage Criticality Analysis, dated August 5, 2010 [Reference 2] with new proposed TS changes and supporting criticality analysis (WCAP-17094-P, Rev 3, “Turkey Point Units 3 and 4 New Fuel Storage Rack and Spent Fuel Pool Criticality Analysis,” dated February 2011).

By letters L-2011-386 and L-2011-401 dated September 14 and 22, 2011 [References 4 and 5, respectively], FPL again supplemented LAR No. 207 to address specific NRC questions.

On October 31, 2011, the U.S. Nuclear Regulatory Commission (NRC) approved LAR No. 207 with the issuance of Amendments 246 and 242 for Turkey Point Units 3 and 4 addressing both new and spent fuel storage requirements [Reference 6].

As indicated in EPU LAR No. 205, the LAR No. 207 basis and justification for its TS changes included the impact of the higher enrichment and operation under EPU conditions so that it applies to and supports the proposed EPU TS changes. As such, the EPU proposed TS changes to TS 5.5.1 submitted in Reference 1 have been superseded by the newly issued amendments except for the proposed changes to TS 5.5.1.1.d and TS 5.5.1.2.b which will increase the maximum allowable enrichment in the spent fuel storage racks and the new fuel storage area to 5.0 wt% U-235. Additionally, the proposed change to TS 5.5.1.2.b requires that storage of fuel assemblies in the new fuel storage area with nominal enrichments greater than 4.5 wt% U-235 have 16 or more Integral Fuel Burnable Absorber (IFBA) rods or an equivalent amount of other burnable absorber. Therefore, the previously proposed EPU changes regarding new and spent fuel storage will be superseded by the above changes to TS 5.5.1.1.d and 5.5.1.2.b. In addition, a change to the Power Range High Neutron Flux Allowable Value and Trip setpoint in TS Table 2.2-1 is being resubmitted here to correct a clerical error in the TS markup supplied via FPL letter L-2011-302 dated August 29, 2011 [Reference 7]. The TS Table 2.2-1 change was correctly submitted earlier in FPL letter L-2011-190 dated June 21, 2011 [Reference 8].

As both the proprietary and non-proprietary versions of WCAP-17094, Rev 3, Turkey Point Units 3 and 4 New Fuel Storage Rack and Spent Fuel Pool Criticality Analysis, dated February 2011 were docketed as part of the LAR No. 207 supplement [Reference 3], they are not presented here. A description of the proposed TS changes and their supporting justifications is provided below.

### Changes to the PTN Operating Licenses and Technical Specifications

#### **Technical Specification 5.5.1 Fuel Storage - Criticality**

##### Approved TS (Amendments 246 and 242)

- 5.5.1.1 The spent fuel storage racks are designed and shall be maintained with:
- d. A maximum enrichment loading for fuel assemblies of 4.5 weight percent of U-235.
- 5.5.1.2 The racks for new fuel storage are designed to store fuel in a safe subcritical array and shall be maintained with:
- b. Fuel assemblies placed in the New Fuel Storage Area shall contain no more than 4.5 weight percent of U-235.

##### Proposed TS

- 5.5.1.1 The spent fuel storage racks are designed and shall be maintained with:
- d. A maximum enrichment loading for fuel assemblies of **5.0** weight percent of U-235.
- 5.5.1.2 The racks for new fuel storage are designed to store fuel in a safe subcritical array and shall be maintained with:
- b. Fuel assemblies placed in the New Fuel Storage Area shall contain **no more than a nominal 4.5 weight percent of U-235 if the assembly contains no burnable absorber rods and no more than 5.0 weight percent of U-235 if the assembly contains at least 16 IFBA rods (or an equivalent amount of other burnable absorber).**

TS changes previously proposed under EPU LAR 205 [Reference 1] affecting TS 5.5.1.1b, 5.5.1.1c, 5.5.1.1f, 5.5.1.3, Tables 5.5-1 through 5.5-3, and Figures 5.5-1 through 5.5-4 have been superseded by Amendments 246 and 242 and so are withdrawn. Only the TS changes indicated above remain.

##### Basis for the Change:

As stated in EPU LAR No. 205 Attachment 1 [Reference 1], LAR No. 207 [Reference 2] submitted proposed TS changes and a new criticality analysis (WCAP-17094-P, Rev 2, "Turkey Point Units 3 and 4 New Fuel Storage Rack and Spent Fuel Pool Criticality Analysis," dated July 2010) to revise the current licensing basis for both new fuel and spent fuel storage. The LAR 207 TS changes were based on analysis that accounted for both the increase in fuel maximum enrichment from 4.5 wt% U-235 to 5.0 wt% U-235 and the impact on the fuel of higher power operation proposed under EPU conditions, but did not request a change to the fuel maximum enrichment limit. These TS changes to the fuel maximum enrichment limit were reflected in the EPU LAR [Reference 1].

A supplement to LAR No. 207 [Reference 3] revised the proposed TS changes based on a further revised criticality analysis (WCAP-17094-P, Rev 3, "Turkey Point Units 3 and 4 New Fuel Storage Rack and Spent Fuel Pool Criticality Analysis," dated February 2011). The proposed TS changes and latest criticality analysis were approved by the NRC with the issuance of Amendments 246 and 242 on October 31, 2011 [Reference 6]. It did not, however, propose that the fuel enrichment limit

of 4.5 wt% U-235 be changed. In the EPU LAR, the proposed TS changes are identical except that the changes to TS 5.5.1.1.d and TS 5.5.1.2.b will increase the maximum allowable enrichment in the spent fuel storage racks and the new fuel storage area to 5.0 wt% U-235. Additionally, the proposed change to TS 5.5.1.2.b requires that storage of fuel assemblies in the new fuel storage area with nominal enrichments greater than 4.5 wt% U-235 have 16 or more IFBA rods or an equivalent amount of other burnable absorber based on the latest criticality analysis. Since the LAR No. 207 basis and justification for its proposed TS changes included the impact of the higher enrichment and operation under EPU conditions, it also applies to and supports the proposed EPU TS changes regarding fuel storage requirements.

See attached TS 5.5.1.1.d and TS 5.5.1.2.b (TS page 5-5) markup. Note Functional Unit 10, 11 and loop design flow are associated with changes previously submitted in Reference 1 and are not changed by this submittal.

**Editorial Correction to Previously Indicated Change to Technical Specification**

**Technical Specification Table 2.2-1 RTS Instrumentation Trip Setpoint Function 2a, Power Range Neutron Flux – High Setpoint**

Although the indicated text change was correctly shown in FPL letter L-2011-302 [Reference 7] and in the TS change submitted earlier via FPL letter L-2011-190 [Reference 8], the marked-up page for TS Table 2.2-1 in FPL letter L-2011-302 [Reference 7] did not correctly show the change to this function. The corrected TS Table 2.2-1 markup (page 2-4) is attached.

**Current TS**

	<u>ALLOWABLE VALUE</u>	<u>TRIP SETPOINT</u>
2. Power Range, Neutron Flux a. High Setpoint	≤ 112.0% of RTP**	≤ 109.0% of RTP**

**Proposed TS**

	<u>ALLOWABLE VALUE</u>	<u>TRIP SETPOINT</u>
2. Power Range, Neutron Flux a. High Setpoint	≤ <b>108.6%</b> of RTP**	<b>108.0%</b> of RTP**

**Basis for the Change:**

See EPU LAR-205 [Reference 1] and FPL letter L-2011-190 [Reference 8].

DESIGN FEATURES

5.5 FUEL STORAGE

5.5.1 CRITICALITY

5.5.1.1 The spent fuel storage racks are designed and shall be maintained with:

- a. A  $k_{eff}$  less than 1.0 when flooded with unborated water, which includes an allowance for biases and uncertainties as described in UFSAR Chapter 9.
- b. A  $k_{eff}$  less than or equal to 0.95 when flooded with water borated to 500 ppm, which includes an allowance for biases and uncertainties as described in UFSAR Chapter 9.
- c. A nominal 10.6 inch center-to-center distance for Region I and 9.0 inch center-to-center distance for Region II for the two region spent fuel pool storage racks. A nominal 10.1 inch center-to-center distance in the east-west direction and a nominal 10.7 inch center-to-center distance in the north-south direction for the cask area storage rack.
- d. A maximum enrichment loading for fuel assemblies of 4.5 weight percent of U-235.
- e. No restriction on storage of fresh or irradiated fuel assemblies in the cask area storage rack.
- f. Fresh or irradiated fuel assemblies not stored in the cask area storage rack shall be stored in accordance with Specification 5.5.1.3.
- g. The Metamic neutron absorber inserts shall have a minimum certified  $^{10}\text{B}$  areal density greater than or equal to 0.015 grams  $^{10}\text{B}/\text{cm}^2$ .

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5.5.1.2 The racks for new fuel storage are designed to store fuel in a safe subcritical array and shall be maintained with:

- a. A nominal 21 inch center-to-center spacing 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.
- b. Fuel assemblies placed in the New Fuel Storage Area shall contain no more than 4.5 weight percent of U-235.

no more than a nominal 4.5 weight percent of U-235 if the assembly contains no burnable absorber rods and no more than 5.0 weight percent of U-235 if the assembly contains at least 16 IFBA rods (or an equivalent amount of other burnable absorber).



TURKEY POINT - UNITS 3 & 4

2-4

AMENDMENT NOS. 191 AND 185

**TABLE 2.2-1**  
**REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS**

<u>FUNCTIONAL UNIT</u>	<u>ALLOWABLE VALUE</u>	<u>TRIP SETPOINT</u>
1. Manual Reactor Trip	N.A.	N.A.
2. Power Range, Neutron Flux a. High Setpoint b. Low Setpoint	108.6 ≤ 112.0% of RTP** ≤ 28.0% of RTP**	108.0 ≤ 109.0% of RTP** ≤ 25% of RTP**
3. Intermediate Range, Neutron Flux	≤ 31.0% of RTP**	≤ 25% of RTP**
4. Source Range, Neutron Flux	≤ 1.4 X 10 <sup>5</sup> cps	≤ 10 <sup>5</sup> cps
5. Overtemperature ΔT	See Note 2	See Note 1
6. Overpower ΔT	See Note 4	See Note 3
7. Pressurizer Pressure-Low	≥ 1817 psig	≥ 1835 psig
8. Pressurizer Pressure-High	≤ 2403 psig	≤ 2385 psig
9. Pressurizer Water Level-High	≤ 92.2% of instrument span	≤ 92% of instrument span
10. Reactor Coolant Flow-Low	89.6 ≥ 88.8% of loop design flow*	≥ 90% of loop design flow*
11. Steam Generator Water Level Low-Low	15.5 ≥ 8.15% of narrow range instrument span	16 ≥ 10% of narrow range instrument span

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\* Loop design flow = 85,000 gpm  
 \*\* RTP = Rated Thermal Power

## References

1. M. Kiley (FPL) to U.S. Nuclear Regulatory Commission (L-2010-113), "License Amendment Request for Extended Power Uprate (LAR 205)," Accession No. ML103560169, October 21, 2010.
2. M. Kiley (FPL) to U. S. Nuclear Regulatory Commission (L-2010-169), "License Amendment Request No. 207 Fuel Storage Criticality Analysis," Accession No. ML102220022, August 5, 2010.
3. M. Kiley (FPL) to U. S. Nuclear Regulatory Commission (L-2011-032), "License Amendment Request No. 207 Supplement 1 to Fuel Storage Criticality Analysis," Accession No. ML110560335, February 22, 2011.
4. M. Kiley (FPL) to U. S. Nuclear Regulatory Commission (L-2011-386), "License Amendment Request No. 207 Fuel Storage Criticality Analysis Supplement 2," September 14, 2011.
5. M. Kiley (FPL) to U. S. Nuclear Regulatory Commission (L-2011-401), "License Amendment Request No. 207 Fuel Storage Criticality Analysis Supplement 3," Accession No. ML11269A213, September 22, 2011.
6. J. Paige (U. S. Nuclear Regulatory Commission) to M. Nazar (FPL), "Turkey Point Nuclear Plant, Units 3 and 4 – Issuance of Amendments Regarding Fuel Criticality Analysis (TAC Nos. ME4470 and ME4471), Accession No. ML11216A057, October 31, 2011.
7. M. Kiley (FPL) to U. S. Nuclear Regulatory Commission (L-2011-302), "Response to NRC RAI Regarding EPU LAR No. 205 - Technical Specification and Instrumentation and Control Issues," Accession No. ML11242A159, August 29, 2011.
8. M. Kiley (FPL) to U. S. Nuclear Regulatory Commission (L-2011-190), "Response to NRC Request for Additional Information Regarding Extended Power Uprate License Amendment Request No. 205 and Instrumentation and Control Issues," Accession No. ML11174A165, June 21, 2011.