



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 2, 2013

Mr. Mano Nazar
Executive Vice President and
Chief Nuclear Officer
Florida Power & Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: TURKEY POINT UNITS 3 AND 4 - ISSUANCE OF AMENDMENTS
REGARDING THE RECIRCULATION pH CONTROL SYSTEM AND SODIUM
TETRABORATE BASKET LOADING (TAC NOS. ME9500 AND ME9501)

Dear Mr. Nazar:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 257 to Renewed Facility Operating License No. DPR-31 and Amendment No. 253 to Renewed 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 dated September 6, 2012, as supplemented by letter dated January 11, 2013.

The amendments revise Technical Specification 3/4.6.2.3, "Recirculation pH Control System and NaTB [sodium tetraborate] Basket Minimum Loading Requirement," to reduce the minimum loading requirement of sodium tetraborate. As noted in the Safety Evaluation, although the amendments will reduce the amount of NaTB, which results in a reduction in the calculated amount of chemical precipitate, the NRC will review the licensee's proposed actions to address Generic Safety Issue 191, "Assessment of Debris Accumulation on PWR [pressurized-water reactor] Sump Performance," separately.

M. Nazar

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A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Tracy J. Orf". The signature is fluid and cursive, with a long horizontal stroke at the end.

Tracy J. Orf, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-250 and 50-251

Enclosures:

1. Amendment No. 257 to DPR-31
2. Amendment No. 253 to DPR-41
3. Safety Evaluation

cc w/enclosures: Distribution via Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

FLORIDA POWER & LIGHT COMPANY

DOCKET NO. 50-250

TURKEY POINT PLANT, UNIT NO. 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 257
Renewed License No. DPR-31

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Florida Power & Light Company (the licensee) dated September 6, 2012, as supplemented by letter dated January 11, 2013, 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.

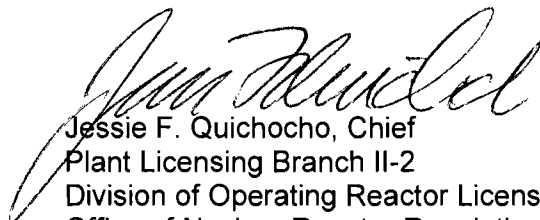
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Renewed Facility Operating License No. DPR-31 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 257 are hereby incorporated into this renewed license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into this renewed license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Jessie F. Quichocho, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Operating License
and Technical Specifications

Date of Issuance: April 2, 2013



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

FLORIDA POWER & LIGHT COMPANY

DOCKET NO. 50-251

TURKEY POINT PLANT UNIT NO. 4

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 253
Renewed License No. DPR-41

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Florida Power & Light Company (the licensee) dated September 6, 2012, as supplemented by letter dated January 11, 2013, 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.

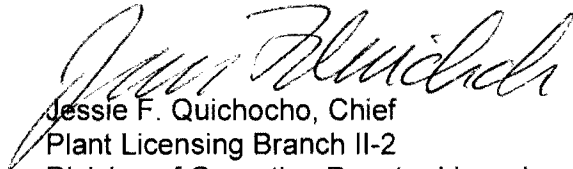
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Renewed Facility Operating License No. DPR-41 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 253 are hereby incorporated into this renewed license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into this renewed license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION


Jessie F. Quichocho, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Operating License
and Technical Specifications

Date of Issuance: April 2, 2013

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 257 RENEWED FACILITY OPERATING LICENSE NO. DPR-31

AMENDMENT NO. 253 RENEWED FACILITY OPERATING LICENSE NO. DPR-41

DOCKET NOS. 50-250 AND 50-251

Replace Page 3 of Renewed Operating License DPR-31 with the attached Page 3.

Replace Page 3 of Renewed Operating License DPR-41 with the attached Page 3.

Replace the following page of the Appendix A Technical Specifications with the attached page. The revised page is identified by amendment number and contains marginal lines indicating the area of change.

Remove page
3/4 6-15

Insert page
3/4 6-15

- E. Pursuant to the Act and 10 CFR Parts 40 and 70 to receive, possess, and use at any time 100 milligrams each of any source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactively contaminated apparatus;
 - F. Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of Turkey Point Units Nos. 3 and 4.
3. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations: 10 CFR Part 20, Section 30.34 of 10 CFR Part 30, Section 40.41 of 10 CFR Part 40, Sections 50.54 and 50.59 of 10 CFR Part 50, and Section 70.32 of 10 CFR Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect, and is subject to the additional conditions specified below:
- A. Maximum Power Level

The applicant is authorized to operate the facility at reactor core power levels not in excess of 2644 megawatts (thermal).
 - B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 257 are hereby incorporated into this renewed license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into this renewed license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.
 - C. Final Safety Analysis Report

The licensee's Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on November 1, 2001, describes certain future inspection activities to be completed before the period of extended operation. The licensee shall complete these activities no later than July 19, 2012.

The Final Safety Analysis Report supplement as revised on November 1, 2001, described above, shall be included in the next scheduled update to the Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following the issuance of this renewed license. Until that update is complete, the licensee may make changes to the programs described in such supplement without prior Commission approval, provided that the licensee evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

- E. Pursuant to the Act and 10 CFR Parts 40 and 70 to receive, possess, and use at any time 100 milligrams each of any source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactively contaminated apparatus;
 - F. Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of Turkey Point Units Nos. 3 and 4.
3. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations: 10 CFR Part 20, Section 30.34 of 10 CFR Part 30, Section 40.41 of 10 CFR Part 40, Sections 50.54 and 50.59 of 10 CFR Part 50, and Section 70.32 of 10 CFR Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect, and is subject to the additional conditions specified below:
- A. Maximum Power Level

The applicant is authorized to operate the facility at reactor core power levels not in excess of 2644 megawatts (thermal).
 - B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 253 are hereby incorporated into this renewed license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into this renewed license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.
 - C. Final Safety Analysis Report

The licensee's Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on November 1, 2001, describes certain future inspection activities to be completed before the period of extended operation. The licensee shall complete these activities no later than April 10, 2013.

The Final Safety Analysis Report supplement as revised on November 1, 2001, described above, shall be included in the next scheduled update to the Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following the issuance of this renewed license. Until that update is complete, the licensee may make changes to the programs described in such supplement without prior Commission approval, provided that the licensee evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

CONTAINMENT SYSTEMS

3/4 6.2.3 RECIRCULATION pH CONTROL SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.3 The Recirculation pH Control System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With the Recirculation pH Control System Inoperable, restore the buffering agent to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the next 72 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.3 The Recirculation pH Control System shall be demonstrated OPERABLE:

- a. At least once per 18 months by
 1. Verifying that the buffering agent baskets are in place and intact:
 2. Collectively contain \geq 7500 pounds (154 cubic feet) of sodium tetraborate decahydrate, or equivalent.



UNITED STATES
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WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 257 TO
RENEWED FACILITY OPERATING LICENSE NO. DPR-31 AND
AMENDMENT NO. 253 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-41
FLORIDA POWER & LIGHT COMPANY
TURKEY POINT PLANT, UNIT NOS. 3 AND 4
DOCKET NOS. 50-250 AND 50-251

1.0 INTRODUCTION

By application dated September 6, 2012, as supplemented by letter dated January 11, 2013, the Florida Power & Light (FPL, the licensee) proposed an amendment to the Technical Specifications (TSs) for Turkey Point Plant, Units 3 and 4. The requested changes would reduce the minimum amount of sodium tetraborate decahydrate (NaTB) specified in TS Surveillance Requirement (SR) 4.6.2.3. Specifically, the proposed amendment will decrease the minimum required mass of NaTB from 11,061 pound mass (lbm) to 7,500 lbm.

The supplement dated January 11, 2013, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on January 25, 2013 (78 FR 5505).

Until recently, the Turkey Point post-loss-of-coolant accident (post-LOCA) sump pH control method was manual addition of NaTB through the Chemical Volume and Control System in accordance with Emergency Operating Procedures. As part of an alternate source term license amendment (Amendment Nos. 244 and 240) issued by the Nuclear Regulatory Commission (NRC) on June 23, 2011 (Agencywide Documents Access Management System (ADAMS) Accession No. ML110800666), the licensee installed a passive system comprised of ten stainless steel wire mesh containers with NaTB to control the pH of the recirculating fluid in the event of a loss of coolant accident. According to the licensee, the purposes of the current amendment reducing the minimum NaTB basket loading are to lessen the long term sump pH profile, to recover design margin, and facilitate basket loading and maintenance activities.

2.0 REGULATORY EVALUATION

Section 182a of the Atomic Energy Act requires applicants for nuclear power plant operating licenses to include TSs as part of the license. The Commission's regulatory requirements related to the content of the TSs are contained in Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.36. The TS requirements in 10 CFR 50.36 include the following categories: (1) safety limits, limiting safety systems settings and control settings, (2) limiting conditions for operation, (3) surveillance requirements, (4) design features, and (5) administrative controls. The requirements for system operability during movement of irradiated fuel are included in the TSs in accordance with 10 CFR 50.36(c)(2), "Limiting Conditions for Operation."

The NRC staff reviewed the portion of the amendment dealing with the licensee's analysis for maintaining the containment pool equal to or greater than pH 7 for 30 days following a LOCA. The NRC staff review also evaluated the impact of the proposed reduction in NaTB on the containment sump performance as it relates to the impact of potential chemical effects on sump screen blockage and head loss.

The containment sump (also known as the emergency recirculation sump) is part of the emergency core cooling system (ECCS). Every nuclear power plant is required by 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," to have an ECCS to mitigate a design-basis accident. Section 50.46(a) of 10 CFR states, in part, that each pressurized light-water nuclear power reactor must be provided with an ECCS that must be designed so that its calculated cooling performance following a postulated LOCA conforms to the criteria set forth in paragraph (b) of this section. Section 50.46(b)(5) of 10 CFR, "Long-term cooling," states, "After any calculated successful initial operation of the ECCS, the calculated core temperature shall be maintained at an acceptably low value and decay heat shall be removed for the extended period of time required by the long-lived radioactivity remaining in the core." In addition, the NRC staff utilized the following regulatory guidance in performing this review:

- NUREG-0800, Standard Review Plan, Section 6.5.2, "Containment Spray as a Fission Product Cleanup System," which states, in part, that long-term iodine retention may be assumed only when the equilibrium sump solution pH, after mixing and dilution with the primary coolant and ECCS injection, is above 7.
- Regulatory Guide 1.82, Revision 4, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident," Section 1.1.2, which states, in part, that debris and chemical reaction products that could accumulate on the sump screen should be minimized.

3.0 TECHNICAL EVALUATION

Turkey Point, Units 3 and 4, currently use NaTB to control post-LOCA sump pH. As part of Amendment Nos. 244 and 240 (ADAMS Accession No. ML110800666) related to alternate source term, the NRC approved the installation of a passive system comprised of ten stainless steel wire mesh containers with NaTB to control the pH of the recirculating fluid in the event of a LOCA. The baskets are located in the lower regions of the containment such that they are fully submerged in the post-LOCA pool prior to the onset of sump recirculation flow.

The licensee provided information regarding the assumptions and calculations used to verify that the sump pH would remain greater than 7.0 by the time the ECCS system is switched to recirculation phase following a LOCA. The licensee confirmed that the minimum pH calculations provided in its September 6, 2012, letter used the same methodology that was previously provided in detail to the NRC staff in a letter dated April 28, 2010 (ADAMS Accession No. ML101200063). The NRC staff determined this methodology was acceptable as part of the review documented in the alternate source term amendment granted to the licensee in 2011. The licensee's analysis considered minimum and maximum boron concentrations and volumes for the refueling water storage tank, accumulator, and reactor coolant system. Additional inputs included the impact of strong acids generated by radiation of cable insulation and sump water.

The minimum pH evaluation used the maximum borated water source volumes and concentrations and the contribution of acid from radiolysis of cables and sump fluid to determine the minimum NaTB mass needed to ensure an equilibrium sump pH greater than 7.0. The calculation determined that 7,500 lbm of NaTB would be sufficient to maintain pH greater than 7.0. Any quantity of NaTB greater than 6,427 lbs will ensure that the sump pool pH will remain in an alkaline regime under the worst case boron concentrations, sump fluid volumes, and quantities of strong acid generated. The proposed TS surveillance requirements ensure that at least once per 18 months the licensee verifies that the baskets are in place and that they collectively contain at least 7,500 lbm (154 cubic feet based on minimum density) of NaTB. The TS limit on minimum NaTB mass will ensure that there is sufficient NaTB available to maintain the post-LOCA sump pH above 7.0.

The staff reviewed the licensee's assumptions and analysis and concluded that conservative values were used for the key parameters of the calculation. In addition, the staff verified that the proposed TS requirements for NaTB mass in the baskets will ensure sufficient buffering of the sump pool such that the post-LOCA pool pH will not drop below 7.0.

From a Generic Safety Issue (GSI) 191 perspective, the staff evaluated the licensee's proposed reduction in NaTB to determine how the change may affect the formation of chemical precipitates in the post-LOCA sump pool. In response to a staff question, the licensee indicated that calculations performed using the WCAP-16530-NP-A, "Evaluation of Post-Accident Chemical Effects in Containment Sump Fluids to Support GSI-191," methodology showed that reducing the peak post-LOCA pH from 8.01 to 7.68 resulted in a reduction in the quantity of precipitate formed. The calculated reductions are approximately 6 percent and 5 percent, for Units 3 and 4, respectively. The staff finds the proposed TS change acceptable since the reduction in the amount of NaTB at Turkey Point results in a reduction in the calculated amount of chemical precipitate. Although the NRC staff finds the proposed change acceptable to reduce potential GSI-191 chemical effects, the NRC staff will review the licensee's proposed actions to address GSI-191 separately, and the licensee will need to demonstrate acceptable ECCS performance separately in its response to Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors."

4.0 SUMMARY

Based on the NRC staff's review, the NRC staff finds that reducing the quantity of NaTB to the amount specified by the licensee will provide acceptable containment sump buffering such that the sump pH will be maintained in an acceptable range under post-LOCA conditions. Although

potential chemical effects exist with the use of NaTB in the Turkey Point containment, the NRC staff determined, based on the WCAP-16530-NP-A calculations, that chemical effects at Turkey Point will be reduced due to lowering the pH. Therefore, the staff finds that the proposed reduction in NaTB in TS SR 4.6.2.3.a.2 specified by the licensee is acceptable.

The NRC staff will be reviewing the licensee's proposed actions to address GSI-191 separately as part of its review of the licensee's submittals in response to GL 2004-02.

5.0 STATE CONSULTATION

Based upon a letter dated May 2, 2003, from Michael N. Stephens of the Florida Department of Health, Bureau of Radiation Control, to Brenda L. Mozafari, Senior Project Manager, U.S. Nuclear Regulatory Commission, the State of Florida does not desire notification of issuance of license amendments.

6.0 ENVIRONMENTAL CONSIDERATION

These amendments involve a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC 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 previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (78 FR 5505). Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 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 the amendments.

7.0 CONCLUSION

The Commission has 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, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Paul Klein

Date: April 2, 2013

M. Nazar

- 2 -

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Tracy J. Orf, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-250 and 50-251

Enclosures:

1. Amendment No. 257 to DPR-31
2. Amendment No. 253 to DPR-41
3. Safety Evaluation

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*by memo

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