September 21, 2005

Mr. J. A. Stall
Senior Vice President, Nuclear and
Chief Nuclear Officer
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: ST. LUCIE UNIT 1 - ISSUANCE OF AMENDMENT REGARDING EXTENSION OF THE REACTOR COOLANT SYSTEM PRESSURE AND TEMPERATURE CURVE LIMITS TO 35 EFPY (TAC NO. MC5580)

Dear Mr. Stall:

The Commission has issued the enclosed Amendment No. 196 to Renewed Facility Operating License No. DPR-67 for the St. Lucie Plant, Unit No. 1. This amendment consist of changes to the Technical Specifications in response to your application dated December 20, 2004.

This amendment revises Technical Specifications Figures 3.1-1b, 3.4-2a, 3.4-2b and 3.4-3 to reflect an extension in the effectiveness of the pressure and temperature (P/T) limit curves from 23.6 to 35 effective full-power years (EFPY). The low temperature overpressure protection requirements, which are based on the P/T limits, are also extended to 35 EFPY.

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/
Brendan T. Moroney, Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-335

Enclosures:
1. Amendment No. 196 to DPR-67
2. Safety Evaluation

cc w/enclosures: See next page

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FLORIDA POWER & LIGHT COMPANY

DOCKET NO. 50-335

ST. LUCIE PLANT UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 196
Renewed License No. DPR-67

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

   A. The application for amendment by Florida Power & Light Company (the licensee), dated December 20, 2004, 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, Renewed Facility Operating License No. DPR-67 is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and by amending paragraph 3.B to read as follows:

   B. Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 196, 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 its date of issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/
Michael L. Marshall, Jr., Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 21, 2005

ATTACHMENT TO LICENSE AMENDMENT NO. 196

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-67

DOCKET NO. 50-335

Replace the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

Remove Pages	Insert Pages
3/4 1-9a	3/4 1-9a
3/4 4-23a	3/4 4-23a
3/4 4-23b	3/4 4-23b
3/4 4-23c	3/4 4-23c

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 196

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-67

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT, UNIT NO. 1

DOCKET NO. 50-335

1.0 INTRODUCTION

By letter dated December 20, 2004, Florida Power and Light Company (the licensee) requested to amend Renewed Operating License DPR-67 for St. Lucie Unit 1, by revising the Technical Specifications (TSs). The proposed amendment would extend the effectiveness of the reactor coolant system (RCS) pressure and temperature (P/T) limit curves from 23.6 to 35 effective full-power years (EFPY). The low temperature overpressure protection (LTOP) requirements, which are based on the P/T limits, are also extended to 35 EFPY.

The P/T limit curves and LTOP analyses were approved for 15 EFPY by the U.S. Nuclear Regulatory Commission (NRC) in Amendment No. 104 to the St. Lucie Unit 1 TSs, dated June 11, 1990. The period of applicability of the curves was extended to 23.6 EFPY in Amendment 141, dated October 27, 1995.

However, in the original calculations, the fluence was overestimated. In addition, following the initial plant operating cycles, low-leakage fuel loading patterns widened the fluence conservatism. The licensee has also identified conservatism in the reactor vessel material properties. Finally, since the original calculations, two additional surveillance capsules were removed from the reactor vessel and testing indicated that actual accumulated fluence and benchmarked fluence projections are significantly less than previously projected. Based on the conservatism in the projections and results of the surveillance capsule testing, the licensee concludes that the material properties are valid for irradiation to 35 EFPY.

2.0 REGULATORY EVALUATION

The P/T limits satisfy Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix A, General Design Criteria (GDC) 14, 30 and 31. These design criteria require that the reactor coolant pressure boundary be designed, fabricated, erected, and tested in order to have an extremely low probability of abnormal leakage, and of rapid or gross failure. The criteria also require that the reactor coolant pressure boundary be designed with sufficient margin to assure that when stressed, the boundary behaves in a nonbrittle manner and the probability of rapidly propagating fracture is minimized.

The method to predict the reactor vessel material irradiation damage is provided in Regulatory Guide (RG) 1.99, Rev. 2, “Radiation Embrittlement of Reactor Vessel Materials.”

RG 1.190, “Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence,” describes methods and assumptions acceptable to the NRC staff for determining the pressure vessel neutron fluence, and is intended to ensure the accuracy and reliability of the fluence determination required by GDC 14, 30, and 31.

3.0 TECHNICAL EVALUATION

The purpose of this review and the following evaluation is to establish the validity of the fluence value and the correctness of the 35 EFPY estimate.

Westinghouse Commercial Atomic Power report, WCAP-15446, Revision 1, “Analysis of Capsule 284° from the Florida Power and Light St. Lucie Unit 1 Reactor Vessel Radiation Surveillance Program,” dated January 2002, includes updates that reflect data from two additional surveillance capsules that were removed since the original fluence evaluation. Review of WCAP-15446, Revision 1, by the NRC staff indicated that the calculations were carried out using the correct methodology, correct approximations and correct cross sections.

The original Adjusted Reference Temperature (ART) is 191°F at 1/4T (reactor vessel wall thickness) and 137°F at 3/4T for the lower shell axial welds. The licensee calculated projected values of vessel fluence for the lower shell axial welds utilizing the maximum fluence value for Operating Cycle 15 as the benchmark, a conservative assumption for future fuel loadings, and a 10 percent increase to cover unforseen variations. These calculations are conservative with respect to the guidance in RG 1.190 and are acceptable. The new critical weld fluence for 35 EFPY is 1.88×10^{19} neutrons per square centimeter (n/cm^2), which was reduced from the maximum value of 2.85×10^{19} n/cm2 in the original assessment.

WCAP-15446, Revision 1, provides materials information regarding the critical lower shell axial weld based on limiting weld heat No. 305424, which is part of the Beaver Valley surveillance capsule test program. The licensee examined all of the materials in the belt zone and concluded that the lower shell axial weld remains the critical element.

This material was then used to back-calculate the fluence for which the 1/4T ART is 191°F and this resulted in the proposed value of 35 EFPY. The maximum value of 2.85×10^{19} n/cm^2 was applied to all circumferential welds to assure that the lower shell axial weld is the critical element. The calculation is straight forward and the equations used are in accordance with RG 1.99. The NRC staff verified that the calculations were performed correctly. Therefore, the proposed extension of applicability of the P/T limit curves to 35 EFPY is acceptable. The limiting values in the P/T limit curves, which include the lowest service temperature, minimum boltup temperature, and minimum pressure limits, do not change from the previously approved values, since these limits are not based on fluence.

St. Lucie Unit 1 TS 3.4.9.1 establishes a limiting condition for operation based on the RCS P/T limits, as shown in Figures 3.4-2a, 3.4-2b and 3.4-3. The proposed amendment revises the title of each figure to indicate a change in applicability from 23.6 EFPY to 35 EFPY. The curves are not changed. This is acceptable based on the preceding evaluation. Figures 3.4-2a and 3.4-2b also have a note added to indicate the limiting material and limiting ART value used in the

analysis. The information is consistent with the analysis and has no operational impact and, therefore, the change is acceptable.

The LTOP setpoints are also based on the existing P/T limit analysis and, therefore, do not change. TS Figure 3.1-1b provides limits on maximum allowable RCS heatup and cooldown rates for a single high head safety injection pump in operation during LTOP conditions, The proposed amendment revises the title of Figure 3.1-1b to indicate a change in applicability from 23.6 EFPY to 35 EFPY. Since the curve is not changed and is based on the P/T curves, the proposed change is acceptable.

The licensee proposes to continue the practice of not applying instrument uncertainties to the P/T limit curves. However, as indicated on page 10 of Attachment 1 of the submittal, the licensee accounts for instrument uncertainties in the LTOP analysis for the relief valve enable and pressure lift setpoints. Therefore, they do not need to be accounted for in the P/T limit curves.

In summary, the NRC staff reviewed the submitted information and the request to extend the applicability of the P/T limit curves and the LTOP setpoints for St. Lucie Unit 1. The request is based on vessel fluence conservatism in the existing P/T curves. This was demonstrated by recalculation of the fluence with methods that adhere to the guidance in RG 1.190, and therefore, are acceptable. The ART value for 35 EFPY was calculated to match the existing 1/4T value of 191°F of the current P/T curves. The staff finds this acceptable, because it assures that the proposed extension of the P/T curves is valid. The LTOP setpoints remain unchanged because they are based on the P/T curves.

4.0 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.

5.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves 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 amendment involves no significant hazards consideration and there has been no public comment on such finding (70 FR 9993, dated March 1, 2005). Accordingly, this amendment 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 this amendment.

6.0 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) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: Lambros Lois
James Medoff

Date: September 21, 2005

Mr. J. A. Stall
Florida Power and Light Company

ST. LUCIE PLANT

cc:
Senior Resident Inspector
St. Lucie Plant
U.S. Nuclear Regulatory Commission
P.O. Box 6090
Jensen Beach, Florida 34957

Craig Fugate, Director
Division of Emergency Preparedness
Department of Community Affairs
2740 Centerview Drive
Tallahassee, Florida 32399-2100

M. S. Ross, Managing Attorney
Florida Power & Light Company
P.O. Box 14000
Juno Beach, FL 33408-0420

Marjan Mashhadi, Senior Attorney
Florida Power & Light Company
801 Pennsylvania Avenue, NW.
Suite 220
Washington, DC 20004

Mr. Douglas Anderson
County Administrator
St. Lucie County
2300 Virginia Avenue
Fort Pierce, Florida 34982

Mr. William A. Passetti, Chief
Department of Health
Bureau of Radiation Control
2020 Capital Circle, SE, Bin #C21
Tallahassee, Florida 32399-1741

Licensing Manager
St. Lucie Nuclear Plant
6351 South Ocean Drive
Jensen Beach, Florida 34957

Mr. Mark Warner, Vice President
Nuclear Operations Support
Florida Power and Light Company
P.O. Box 14000
Juno Beach, FL 33408-0420

Mr. Rajiv S. Kundalkar
Vice President - Nuclear Engineering
Florida Power & Light Company
P.O. Box 14000
Juno Beach, FL 33408-0420

Mr. J. Kammel
Radiological Emergency
Planning Administrator
Department of Public Safety
6000 Southeast Tower Drive
Stuart, Florida 34997

Mr. William Jefferson, Jr.
Site Vice President
St. Lucie Nuclear Plant
6351 South Ocean Drive
Jensen Beach, Florida 34957-2000

Mr. G. L. Johnston
Plant General Manager
St. Lucie Nuclear Plant
6351 South Ocean Drive
Jensen Beach, Florida 34957

Mr. Terry Patterson