

November 23, 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 - CORRECTION TO SAFETY EVALUATION FOR  
AMENDMENT NO. 196 REGARDING EXTENSION OF REACTOR COOLANT  
SYSTEM PRESSURE AND TEMPERATURE CURVES (TAC NO. MC5580)

Dear Mr. Stall:

On September 21, 2005, the U.S. Nuclear Regulatory Commission issued Amendment No. 196 to Renewed Facility Operating License No. DPR-67 for the St. Lucie Plant, Unit No. 1. The amendment revised applicability of the Reactor Coolant System Pressure and Temperature curves from 23.6 Effective Full Power Years (EFPY) to 35 EFPY. Due to an administrative error, the 23.6 EFPY number was incorrectly stated as 26 EFPY on 2 pages of the safety evaluation (SE). The error did not affect the conclusions of the safety evaluation.

Enclosed are revised Pages 2 and 3 of the SE with the revisions noted by a bar in the right margin. Please substitute the revised pages for those originally provided. We are sorry for any inconvenience this may have caused.

Sincerely,

Brendan T. Moroney, Project Manager  
Plant Licensing Branch D  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-335

Enclosures: Revised SE pages

cc w/enclosures: See next page

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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 284E 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 191EF at 1/4T (reactor vessel wall thickness) and 137EF 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 unforeseen 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  $1.88 \times 10^{19}$  neutrons per square centimeter ( $\text{n/cm}^2$ ), which was reduced from the maximum value of  $2.85 \times 10^{19} \text{ n/cm}^2$  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 191EF and this resulted in the proposed value of 35 EFPY. The maximum value of  $2.85 \times 10^{19} \text{ n/cm}^2$  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 191EF 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 meets 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.

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

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

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

## **ST. LUCIE PLANT**

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

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

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