

NUCLEAR REGULATORY COMMISSION

[NRC-2011-0194]

Florida Power and Light Company

Docket Nos. 50-335 and 50-389

St. Lucie Plant, Units 1 and 2

Environmental Assessment and Finding of

No Significant Impact

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an exemption from Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix G, Section IV.A.2, for Facility Operating License Nos. DPR-67 and NPF-16, issued to Florida Power and Light Company, et al. (the licensee, FPL), for operation of St. Lucie Nuclear Plant, Units 1 and 2, located on Hutchinson Island in St. Lucie County, Florida. Therefore, as required by 10 CFR 51.21, the NRC performed an environmental assessment. Based on the results of the environmental assessment, the NRC is issuing a finding of no significant impact.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action:

The proposed action would approve an exemption for St. Lucie Nuclear Plant, Units 1 and 2, from certain requirements of 10 CFR Part 50, Appendix G, "Fracture Toughness Requirements." Specifically, the licensee requests approval of an exemption from the requirements of 10 CFR Part 50, Appendix G, Section IV.A.2, "Pressure-Temperature Limits and Minimum Temperature Requirements."

The methodology developed by Combustion Engineering to calculate reactor coolant system (RCS) pressure-temperature (P-T) curves, heatup and cooldown limits and low temperature overpressure protection (LTOP) requirements is documented in topical report CE

NPSD-683-A (Agencywide Documents Access and Management System (ADAMS) Accession No. ML011350387). The staff noted in its March 16, 2001 safety evaluation for this report that: "The CE [Combustion Engineering] NSSS [nuclear steam supply system] methodology does not invoke the methods in the 1995 edition of Appendix G to the Code for calculating K_{IM} factors, and instead applies FEM [finite element modeling] methods for estimating the K_{IM} factors for the RPV shell . . . Except for loading inputs, the staff has determined that the K_{IM} calculation methods apply FEM modeling that is similar to that used for the determination of the K_{IT} factors. The staff has also determined that there is only a slight non-conservative difference between the P-T limits generated from the 1989 edition of Appendix G to the Code and those generated from CE NSSS methodology as documented in Evaluation No. 063-PENG-ER-096, Revision 00. The staff considers this difference to be reasonable and should be consistent with the expected improvements in P-T generation methods that have been incorporated into the 1995 edition of Appendix G to the Code. The staff therefore concludes that the CE NSSS methodology for generating P-T limits is equivalent to the current methodology in the 1995 edition of Appendix G to the Code, and is acceptable for P-T limit applications." The staff has extended this conclusion to the Section XI, Appendix G methodology of Code Editions through the 2004 Edition.

The staff has advised licensees to specify whether membrane stress intensity factors due to pressure loading, K_{IM} , are determined by obtaining a closed-form solution (per the American Society of Mechanical Engineers (ASME) Code, Section XI, Appendix G) or determined by applying finite element modeling methods (per CE NPSD-683-A, Revision 6). Stress intensity values, K_{IM} , for St. Lucie, Units 1 and 2 are calculated using the CE NSSS finite element modeling methods.

The Need for the Proposed Action:

FPL is implementing the methodology documented in Topical Report CE NPSD-683-A to calculate the RCS pressure-temperature curves and LTOP limits for St. Lucie Nuclear Plant, Units 1 and 2. This methodology uses an FEM calculation that, although similar to the ASME Section XI requirements, is slightly less conservative. Section IV.A.2 of Appendix G to 10 CFR Part 50 states, "The pressure-temperature limits identified as 'ASME Appendix G limits' in Table 3 require that the limits must be at least as conservative as limits obtained by following the methods of analysis and the margins of safety of Appendix G of Section XI of the ASME Code." Therefore, the use of the methodology documented in topical report CE NPSD-683-A requires an exemption from 10 CFR Part 50, Appendix G, Section IV.A.2, in order to implement that methodology with a license granted under 10 CFR Part 50.

Environmental Impacts of the Proposed Action:

The NRC staff has completed its environmental assessment of the proposed exemption and has concluded that the proposed exemption from the implementation of the requirements of 10 CFR Part 50, Appendix G, Section IV.A.2 would not significantly affect plant safety and would not have a significant adverse affect on the probability of occurrence of an accident.

The proposed action would not result in any increased radiological hazards beyond those previously evaluated by the NRC staff in the Safety Evaluation Reports, dated November 8 and November 7, 1974, related to operation of St. Lucie Plant, Units 1 and 2, respectively. No changes are being made in the types of effluents that may be released offsite. There is no significant increase in the amount of any effluent released offsite. There is no significant increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

The proposed action does not result in changes to land use or water use, or result in changes to the quality or quantity of non-radiological effluents. No changes to the National Pollution Discharge Elimination System permit are needed. No effects on the aquatic or terrestrial habitat in the vicinity of the plant, or to threatened, endangered, or protected species under the Endangered Species Act, or impacts to essential fish habitat covered by the Magnuson-Stevens Act are expected. There are no impacts to the air or ambient air quality. There are no impacts to historical and cultural resources. There would be no noticeable effect on socioeconomic conditions in the region. Therefore, no changes or different types of non-radiological environmental impacts are expected as a result of the proposed action. Accordingly, the NRC concludes that there are no significant environmental impacts associated with the proposed action.

The NRC has previously determined, as stated above, that methodology documented in CE NPSD-683-A provides similar results as those produced by the methods in Appendix G of 10 CFR Part 50. Although, in practice, the exemption allows the licensee to not meet the requirements of Appendix G, the differences between the two methodologies are small and the health and safety of the public remain adequately protected.

The details of the staff's safety evaluation will be provided in the exemption that will be issued as part of the letter to the licensee approving the exemption to the regulation, if granted.

Environmental Impacts of the Alternatives to the Proposed Action:

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the no-action alternative). Denial of the exemption request would result in no change in current environmental impacts. If the proposed action were denied, the licensee would have to comply with the requirements of 10 CFR Part 50, Appendix G, Section IV.A.2. This would cause unnecessary burden on the licensee, without a significant benefit in

environmental impacts. The environmental impacts of the proposed exemption and the “no action” alternative are similar.

Alternative Use of Resources:

The action does not involve the use of any different resources than those considered in the Final Environmental Statement related to the St. Lucie Nuclear Plant, Unit 1, dated June 1973; the Final Environmental Statement related to the operation of St. Lucie Nuclear Plant, Unit 2 (NUREG-0842), dated April 1982; and, the plant-specific Supplement 11 to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants," (GEIS). Supplement 11 of the GEIS, issued on May 16, 2003, addresses the renewal of operating licenses DPR-67 and NPF-16 for St. Lucie Plant, Units 1 and 2, for an additional 20 years of operation.

Agencies and Persons Consulted:

In accordance with its stated policy, on August 17, 2011, the NRC staff consulted with the Florida State official, Mr. William A. Passetti of the Bureau of Radiation Control, regarding the environmental impact of the proposed action. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letters dated March 3, 2011 (ADAMS Accession No. ML110660300), and April 28, 2011 (ADAMS Accession No. ML11119A136). Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, Public File Area O1 F21, 11555

Rockville Pike (first floor), Rockville, Maryland. Publicly available documents created or received at the NRC are accessible electronically through ADAMS in the NRC Library at <http://www.nrc.gov/reading-rm/adams.html>. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC PDR Reference staff by telephone at 1-800-397-4209 or 301-415-4737, or send an e-mail to pdr.resource@nrc.gov.

Dated at Rockville, Maryland, this 18th day of August 2011.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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