

Docket



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

30
August 27, 1976

Docket Nos. 50-250
and 50-251

Florida Power & Light Company
ATTN: Dr. Robert E. Uhrig
Vice President
P. O. Box 013100
Miami, Florida 33101

Gentlemen:

Enclosed is a signed original of an Order for Modification of License, dated August 27, 1976, issued by the Commission for the Turkey Point Plant, Units Nos. 3 and 4. This order amends Facility Operating Licenses DPR-31 and DPR-41 by modifying the Technical Specification limit for the total nuclear peaking factor (F_0) to 2.11. This Order also requires submittal of a corrected ECCS analysis as soon as possible.

A copy of the Order is being filed with the Office of the Federal Register for publication.

Sincerely,

A handwritten signature in cursive script that reads "George Lear".

George Lear, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Enclosure:
Order for Modification
of License

cc: See next page

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cc:

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Florida Power & Light Company
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Environmental & Urban Affairs Library
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Miami, Florida 33199

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of

FLORIDA POWER AND LIGHT COMPANY

Turkey Point Plant Units Nos. 3
and 4)

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Docket Nos. 50-250
and 50-251

ORDER FOR MODIFICATION OF LICENSE

I.

The Florida Power and Light Company (the Licensee), is the holder of Facility Operating Licenses Nos. DPR-31 and DPR-41 which authorize the operation of the nuclear power reactors known as Turkey Point Plant Units Nos. 3 and 4 (the facilities) at steady state reactor power levels not in excess of 2200 thermal megawatts (rated power). The facilities are pressurized water reactors (PWR) located at the Licensee's site in Dade County Florida.

II.

In conformance with evaluations of the performance of the facilities' Emergency Core Cooling System (ECCS) submitted by the Licensee on March 10, 1975, and supplemented by letters dated April 10, April 30, May 15 and May 21, 1975, the Technical Specifications issued June 5, 1975, for the facilities limit the reactor total nuclear peaking factor (F_Q) to 2.32. The ECCS performance evaluation submitted by the Licensee was based upon a previously approved ECCS evaluation model

developed by the Westinghouse Electric Corporation (Westinghouse), the designer of the facilities, to conform with the requirements of the Commission's ECCS Acceptance Criteria, 10 CFR Part 50, §50.46 and Appendix K. The evaluation indicated that with a total nuclear peaking factor limited as set forth above, and with the other limits set forth in the facilities' Technical Specifications, the ECCS cooling performance for the facilities would conform with the criteria contained in 10 CFR §50.46(b) which govern calculated peak clad temperature, maximum cladding oxidation, maximum hydrogen generation, coolable geometry and long term cooling.

Due to the configuration of the Westinghouse reactor vessel design, a small portion of reactor inlet water which is cooler than outlet water is directed through several nozzles located on the periphery of the vessel to cool the upper portion of the vessel head. Accordingly, upper head temperatures used in evaluating ECCS performance were assumed to be equal to the reactor inlet water temperature. However, recent operating data gathered at the Connecticut Yankee facility has indicated that, contrary to this expectation, the temperature of the water in the upper head is higher than the reactor inlet water temperature, by about 60% of the difference between reactor inlet and reactor outlet temperature. This higher upper head water temperature would have the effect of increasing the calculated peak clad temperature in the event of a loss of coolant accident.

In a meeting with the staff on August 9, 1976, Westinghouse presented generic evaluations of the effect on calculated peak clad temperature for the worst break identified in previous calculations for each type of Westinghouse reactor and fuel design using an upper head water temperature exceeding reactor inlet water temperature by an amount equal to 75% of the reactor inlet - reactor outlet differential. On August 13, 1976, the staff instructed the licensee to submit an analysis similar to the Westinghouse evaluation with the clearly conservative assumption of upper head water temperature equal to reactor outlet temperature (100% of the reactor outlet - reactor inlet differential) and to operate the facilities in accordance with the results of this analysis. The results of the evaluation submitted for the Turkey Point Plant reactors indicated that with this modification of the upper head water temperature the calculated peak clad temperature for the worst case break would exceed the Commission's ECCS performance criteria by about 160°F.

Extensive sensitivity studies, submitted with previous calculations in connection with assessment of Westinghouse evaluation models, have established a relationship between the reactor total nuclear peaking factor (F_Q) and calculated peak clad temperature such that if F_Q is reduced by 0.16 the calculated peak clad temperature for the Turkey Point Plant reactors would not exceed 2200°F. As directed by

the NRC staff, the Licensee agreed to operate the facility with the total nuclear peaking factor reduced by 0.16 to 2.16. However, subsequent to the licensee's submittal, further review of data presented by Westinghouse has led the staff to conclude that an additional reduction in F_Q over that presented by the licensee is warranted. This is based on the fact that the Westinghouse generic evaluation for plants with three reactor coolant loops, used the results from two different, but approved, ECCS models (the March 1975 and the October 1975 models). When consistent ECCS models are used the calculated peak clad temperature could increase by an additional 50°F.

After discussions with the NRC staff, on August 24, 1976 the licensee amended his previous submission to account for this additional increase in peak clad temperature, by reducing F_Q to 2.11. The NRC staff believes that the licensee's actions, under the circumstances, are appropriate and should be confirmed by NRC Order.

The staff expects that, when revised calculations for the facility are submitted using an approved evaluation model with correct input for upper head water temperature, or assuming that the upper head water temperature equals reactor vessel outlet water temperature, such calculations will demonstrate that operation with this total nuclear peaking factor would

conform with the criteria of 10 CFR §50.46(b). Such revised calculations fully conforming to the requirements of 10 CFR §50.46 are to be provided for the facility as soon as possible. The additional limitations set forth in this Order will provide reasonable assurance that the public health and safety will not be endangered.

Copies of the following documents are available for public inspection in the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C., 20555 and at the Environmental and Urban Affairs Library, Florida International University, Miami, Florida: (1) ECCS performance dated March 10, 1975 and supplemented by letters dated April 10, April 30, May 15 and May 21, 1975, (2) Amendments Nos. 9 and 8 to Licenses DPR-31 and DPR-41 dated June 5, 1975, (3) Letter dated August 19, 1975, from Florida Power and Light Company to Office of Nuclear Reactor Regulation and (4) This Order for Modification of License, In the Matter of Florida Power and Light Company (Turkey Point Plant, Units Nos. 3 and 4), Dockets Nos. 50-250 and 50-251.

III.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's Rules and Regulations in 10 CFR Parts 2 and 50, IT IS ORDERED THAT Facility Operating Licenses Nos. DPR-31 and DPR-41 are hereby amended by adding the following new provisions:

1. As soon as possible, the Licensee shall submit a re-evaluation of ECCS cooling performance calculated in accordance with an approved Westinghouse Evaluation Model, with appropriate correction for upper head water temperature.
2. Until further authorization by the Commission, the Technical Specification limit for total nuclear peaking factor (Fq) shall be reduced to 2.11.

FOR THE NUCLEAR REGULATORY COMMISSION


Ben C. Rusche, Director
Office of Nuclear Reactor Regulation

Dated in Bethesda, Maryland
this 27th day of August, 1976