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Docket No. 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 February 10, 1978, issued by the Commission for Turkey Point Unit No. 4. This Order amends paragraph 3.D of the Turkey Point Unit No. 4 Facility Operating License DPR-41 and permits continued operation of Turkey Point Unit No. 4 for six equivalent weeks of Cycle 4 operation.

A copy of the Order is being filed with the Office of the FEDERAL REGISTER for publication.

Sincerely,

Original signed by
George Lear, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Enclosure:
Order for Modification of License

cc w/enclosure:
See next page

2/10/78

See Comments on Notes & Clark 2/10/78

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DATE	2/10/78	2/10/78	2/10/78	2/10/78	2/10/78	2/ /78

cc:

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
FLORIDA POWER AND LIGHT COMPANY	)	Docket No. 50-251
	)	
Turkey Point Plant Unit No. 4	)	

ORDER FOR MODIFICATION OF LICENSE

I.

The Florida Power and Light Company (the Licensee), is the holder of Facility Operating License No. DPR-41 which authorizes the operation of the nuclear power reactor known as Turkey Point Unit No. 4 (the facility) at steady state reactor power levels not in excess of 2200 thermal megawatts (rated power). The facility is a pressurized water reactor (PWR) located at the Licensee's site in Dade County, Florida.

II.

On August 3, 1977, the Nuclear Regulatory Commission ordered Turkey Point Unit No. 4 to perform an inspection of steam generators after six equivalent months of cycle 4 operation. By letter dated January 18, 1978, supplemented by letters dated February 1, 1978 and February 9, 1978, the licensee requested approval to continue operation of Turkey Point Unit No. 4 until the end of the current fuel cycle, currently estimated to be about July 22, 1978. The NRC staff has evaluated this information and has assessed continued operation of the facility. This evaluation is set forth in the accompanying Safety Evaluation Report. Based on its review, the staff has concluded that operation of the facility, under the conditions previously imposed, may be continued

for an additional period of six weeks (7 1/2 equivalent months of cycle 4 operation) and that the limitations contained in this Order will provide reasonable assurance that the public health and safety will not be endangered by continued operation of Unit No. 4. This Order continues in effect the leakage and radioiodine concentration limits imposed.

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) the licensee's letter of January 18, 1978, supplemented by letters dated February 1, 1978 and February 9, 1978, (2) the Order for Modification of License, In the Matter of Florida Power and Light Company (Turkey Point Unit No. 4), Docket No. 50-251 dated August 3, 1977 and (3) this Order for Modification of License, In the Matter of Florida Power and Light Company (Turkey Point Plant, Unit No. 4), Docket No. 50-251.

III.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's Rules and Regulations in 10 CFR Part 2 and 50, IT IS ORDERED THAT paragraph 3.D of Facility Operating License No. DPR-41 is hereby amended as follows:

D. Steam Generator Operation

1. Turkey Point Unit No. 4 shall be brought to the cold shutdown condition in order to peform an inspection of the steam generators after seven and one-half (7 1/2) equivalent months of cycle 4 operation. Nuclear Regulatory Commission approval shall be obtained before resuming power operation following this inspection. For the purpose of this requirement, equivalent operation is defined as operation with a primary coolant temperature greater than 350 F.

FOR THE NUCLEAR RGULATORY COMMISSION

Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation

Dated in Bethesda, Maryland
this 10th day of February, 1978

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING ORDER FOR MODIFICATION OF LICENSE

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT NUCLEAR GENERATING UNIT NO. 4

DOCKET NO. 50-251

Introduction

On August 3, 1977, we issued an Order for Modification of License for Turkey Point Unit No. 4. Our Order amended Facility Operating License DPR-41 and permitted continued operation of Unit No. 4 for six months of cycle 4 operation (the current fuel cycle), at which time Unit No. 4 was to be brought to a cold shutdown condition for inspection of the three steam generators. By letter dated January 18, 1977, Florida Power and Light Company (FPL) requested that Turkey Point Unit No. 4 be authorized to continue operation until the end of the current fuel cycle (about July 22, 1978). The information in the January 18, 1977 submittal was supplemented by additional letters dated February 1, 1978 and February 9, 1978.

Discussion

The requested periods of operation are an extension beyond the six (6) equivalent months approved in the August 3, 1977, NRC Order. The basis for determining the six month period of operation was the preventive tube plugging criteria that FPL implemented after the inspection of the steam generators and prior to the restart of Turkey Point 4. The criterion for preventive tube plugging as determined from the predicted growth of regions in the tube support plate in which the severity of tube denting would be susceptible to stress corrosion cracking. Specifically, the rate of growth of these regions was one third tube spacing per month of equivalent power operation for tubes in columns 14 thru 80 and one third to two thirds tube spacing per month in columns 1 thru 13 and 81 thru 94.

In the event that uneven growths of the regions (i.e., in which tube cracking was expected) were to occur due to the partial cracking of support plates, some tubes could be dented further during the extended period of operation and become susceptible to stress corrosion cracking. If the crack penetrates through the tube wall, it will cause detectable leaking during normal operation. Should this occur, proper actions can be taken and, therefore, the consequences will not be severe. However, it a number of tubes were to crack partially through the wall, e.g., 85% to <100% of tube wall thickness, these tubes will probably

crack through and leak during postulated main steam line break (MSLB) accident. In this respect, the licensee has estimated that the total primary to secondary leakage rate in the affected steam generator will not exceed 1.4 gpm.

The licensee has also presented an evaluation of the effect of primary to secondary coolant flow during a postulated MSLB for Turkey Point Unit No. 4. The evaluation is based upon a leak rate of 10 gpm concurrent with a MSLB accident. The licensee states that a loss of 10 gallons of primary coolant would have a negligible effect on the primary system thermal hydraulic parameters. Additionally, FPL has concluded that the effect of secondary to primary leakage which could occur during a LOCA would be negligible relative to primary system thermal hydraulic parameters when compared to the effects of the LOCA on these parameters.

Evaluation

The licensee based its leakage rate on the assumption that 14 tubes, twice the number it predicts will currently restrict a 0.540" eddy current probe, are in a state of incipient failure. The NRC staff has reviewed the basis upon which the licensee estimated the total primary to secondary leakage rate of no more than 1.4 GPM in the affected steam generator during a MSLB accident and concluded that it is not acceptable. In the absence of more information, using the available data the NRC staff has bounded the possible effect by an extremely conservative calculation, which assumes that all 175 unplugged tubes bounded by the 15 percent tube hoop strain contour could develop thru-wall cracks during a postulated MSLB accident. These calculations show that in this event the maximum leakage rate during an MSLB accident could approach 8.75 GPM.

Although the leakage rate calculated by the NRC staff is significantly higher than the rate calculated by the licensee, since the effect of primary to secondary leakage concurrent with a MSLB was evaluated assuming a leakage rate of 10 gpm the conclusions drawn by the licensee remain valid. Therefore, the NRC staff has concluded the following:

1. The type of cracks associated with tube denting are constrained by the support plate, and will not burst open during a MSLB accident.

2. The leak rate associated with these cracks is very small. The estimated leakage rate of 0.05 gpm per tube under accident loads is reasonably conservative. This leakage rate has been determined experimentally by Westinghouse and submitted on the Surry docket.

3. The number of tubes involved in the worst steam generator, i.e., tubes containing 85% to <100% partial thru wall cracks, will most likely be bounded by the number of unplugged tubes predicted to lie within the 15% strain contour.

4. Therefore, the total leakage rate in the affected steam generator will not exceed 8.75 gpm.

5. A primary to secondary leak rate of 10 gpm will have a negligible effect on the DNB ratio, the percentage of reactor coolant volume lost by leakage, and the time to terminate the core transient during a postulated MSLB accident.

6. The effect of secondary to primary leakage during a LOCA would be negligible relative to primary system thermal hydraulic parameters when compared to the effects of the LOCA itself on these parameters.

7. An additional six (6) equivalent weeks of operation of Turkey Point Unit No. 4 is therefore acceptable.

Environmental Considerations

We have determined that the revised operating limitations do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and pusuant to 10 CFR 51.5(d)(4) that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this action.

Conclusion

For the foregoing reasons, we conclude that an additional six weeks of operation will not significantly change the basic conclusions stated in the previous safety evaluation report attached to the NRC Order issued on August 3, 1977. Therefore, we find that operation of Turkey Point Unit No. 4 under the conditions previously imposed may be continued for an additional six equivalent weeks with reasonable assurance that the public health and safety will not be endangered. Furthermore, we have concluded that Unit No. 4 will be operated in compliance with the Commission's regulations and that issuance of this Order will not be inimical to the common defense and security or to the health and safety of the public.

Dated: February 10, 1978