

December 12, 1995

DISTRIBUTION
See attached sheet

Mr. J. H. Goldberg
President-Nuclear Division
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: TURKEY POINT UNITS 3 AND 4 - ISSUANCE OF AMENDMENTS RE: NUCLEAR INSTRUMENTATION SYSTEM ADJUSTMENTS BASED ON CALORIMETRIC MEASUREMENTS AT REDUCED POWER LEVELS (TAC NOS. M93062 AND M93063)

Dear Mr. Goldberg:

The Commission has issued the enclosed Amendment No. 180 to Facility Operating License No. DPR-31 and Amendment No. 174 to Facility Operating License No. DPR-41 for the Turkey Point Plant, Unit Nos. 3 and 4, respectively. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated July 26, 1995, relating to nuclear instrumentation system adjustments based on calorimetric measurements at reduced power levels.

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,

Original signed by:

Richard P. Croteau, Project Manager
Project Directorate II-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-250
and 50-251

Enclosures:

1. Amendment No. 180 to DPR-31
2. Amendment No. 174 to DPR-41
3. Safety Evaluation

cc w/enclosures: See next page

Document Name: G:TURKEY\TP93062.AMD

* see previous concurrence

OFFICE	LA:PDII-1	PM:PDII-1		OGC <i>EB</i>	D:PDII <i>BAJ</i>
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DATE	11/17/95	11/20/95		11/20/95	12/12/95
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Mr. J. H. Goldberg
Florida Power and Light Company

Turkey Point Plant

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DATED: December 12, 1995

AMENDMENT NO. 180 TO FACILITY OPERATING LICENSE NO. DPR-31-TURKEY POINT UNIT 3
AMENDMENT NO. 174 TO FACILITY OPERATING LICENSE NO. DPR-41-TURKEY POINT UNIT 4

Distribution

Docket File

NRC & Local PDRs

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

FLORIDA POWER AND LIGHT COMPANY

DOCKET NO. 50-250

TURKEY POINT PLANT UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 180
License No. DPR-31

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Florida Power and Light Company (the licensee) dated July 26, 1995, 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.

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2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-31 is hereby amended to read as follows:

(B) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 180, are hereby incorporated in the license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Barth C. Buckley for
David B. Matthews, Director
Project Directorate II-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 12, 1995



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

FLORIDA POWER AND LIGHT COMPANY

DOCKET NO. 50-251

TURKEY POINT PLANT UNIT NO. 4

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 174
License No. DPR-41

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Florida Power and Light Company (the licensee) dated July 26, 1995, 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, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-41 is hereby amended to read as follows:

(B) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 174, are hereby incorporated in the license. The Environmental Protection Plan contained in Appendix B is hereby incorporated into the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

David B. Matthews for

David B. Matthews, Director
Project Directorate II-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 12, 1995

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 180 FACILITY OPERATING LICENSE NO. DPR-31

AMENDMENT NO. 174 FACILITY OPERATING LICENSE NO. DPR-41

DOCKET NOS. 50-250 AND 50-251

Revise Appendix A as follows:

Remove page

3/4 3-11

Insert page

3/4 3-11

TABLE 4.3-1 (Continued)

TABLE NOTATIONS

- * When the Reactor Trip System breakers are closed and the Control Rod Drive System is capable of rod withdrawal.
- ** Below P-6 (Intermediate Range Neutron Flux Interlock) Setpoint.
- *** Below P-10 (Low Setpoint Power Range Neutron Flux Interlock) Setpoint.
- (1) If not performed in previous 31 days.
- (2) Comparison of calorimetric to excore power level indication above 15% of RATED THERMAL POWER (RTP). Adjust excore channel gains consistent with calorimetric power level if the absolute difference is greater than 2%. Below 70% RTP, downward adjustments of NIS excore channel gains to match a lower calorimetric power level are not required. The provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.
- (3) Single point comparison of incore to excore AXIAL FLUX DIFFERENCE above 15% of RATED THERMAL POWER. Recalibrate if the absolute difference is greater than or equal to 3%. The provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.
- (4) Neutron detectors may be excluded from CHANNEL CALIBRATION.
- (5) This table Notation number is not used.
- (6) Incore-Excore Calibration, above 75% of RATED THERMAL POWER (RTP). If the quarterly surveillance requirement coincides with sustained operation between 30% and 75% of RTP, calibration shall be performed at this lower power level. The provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.
- (7) Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.
- (8) DELETED
- (9) Quarterly surveillance in MODES 3*, 4*, and 5* shall also include verification that permissive P-6 and P-10 are in their required state for existing plant conditions by observation of the permissive annunciator window. Quarterly surveillance shall include verification of the High Flux at Shutdown Alarm Setpoint of 1/2 decade above the existing count rate.
- (10) Setpoint verification is not applicable.
- (11) The TRIP ACTUATING DEVICE OPERATIONAL TEST shall include independent verification of the OPERABILITY of the undervoltage and shunt trip attachment of the Reactor Trip Breakers.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 180 TO FACILITY OPERATING LICENSE NO. DPR-31
AND AMENDMENT NO. 174 TO FACILITY OPERATING LICENSE NO. DPR-41
FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT UNIT NOS. 3 AND 4
DOCKET NOS. 50-250 AND 50-251

1.0 INTRODUCTION

By letter dated July 26, 1995, Florida Power and Light Company (FPL), the licensee, requested changes to the Technical Specifications (TS) for Turkey Point Units 3 and 4. The licensee proposed to delete the requirement to adjust the Nuclear Instrumentation System (NIS) downward when operating at less than 70% of Rated Thermal Power (RTP).

2.0 DISCUSSION

Turkey Point Units 3 and 4 TS require daily calorimetric power comparisons with the NIS at power levels above 15% of RTP. For all power levels above 15% of RTP, the TS require that the NIS excore channel gains must be adjusted to within 2% of the measured calorimetric power. The current design basis calorimetric analysis evaluated power calorimetric uncertainties and concluded that power calorimetric measurements at Turkey Point are accurate to within 2.0% of RTP.

At reduced power levels, feedwater flow uncertainty is the largest constituent element of calorimetric power measurement uncertainties since feedwater flow measurement has large flow uncertainties under low flow conditions. The large feedwater flow uncertainties create the potential for a non-conservative gain adjustment of the NIS. The potential for non-conservative NIS adjustments exists when the NIS is adjusted downward to match calorimetric power based on feedwater flow measurements at reduced power levels. This may result in a non-conservative NIS power level indication when operating at higher power levels. In a design basis event, non-conservative NIS gain adjustments could cause the NIS Power Range High Neutron Flux trip to occur at power levels beyond that assumed in the plant safety analyses.

2.1 Vendor Recommendations to Address the Issue:

The potential for non-conservative NIS adjustments was identified by Turkey Point's Nuclear Steam Supply System (NSSS) vendor, Westinghouse. Westinghouse addressed calibration adjustments of the NIS based on

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reactor power level at the time the calorimetric is performed, and recommended that for,

1) Reactor power <50% of RTP: If the NIS power level is indicating low, then adjust it upward to match the calorimetric. If the NIS power level is indicating high, then adjust it only if the adjustment is required for power ascension. (Typically, this will occur when the NIS over-power trip setpoint is reduced for a post refueling startup.)

2) Reactor power >50% of RTP: The NIS indicated power level shall be adjusted to within 2% of the calorimetric power.

3) If, within the previous 24 hours, a calorimetric/NIS power level comparison has been performed at or near full power (i.e., reactor power \geq 90% of RTP), then no comparison at reduced power levels (i.e., reactor power \leq 90% of RTP) should be performed. The TS require daily comparisons; therefore, no surveillance is required at the reduced power level condition. Only when the surveillance is required should a reduced power level comparison be made.

As a result of Westinghouse's recommendations, Turkey Point plant procedures 3/4-OSP-059.5 were revised by the licensee to include precautions alerting the operator to the potential for non-conservative adjustments when performing NIS calorimetric comparisons below 50% of RTP.

3.0 EVALUATION

Turkey Point TS Table 4.3-1, Table Notation (2), requires daily calorimetric power level comparisons with the NIS at power levels above 15% of RTP. If NIS indicated power level deviates by more than 2% from the power level determined from calorimetric measurements, then Table 4.3-1, Table Notation (2), requires that the excore channel gain be adjusted consistent with measured calorimetric power level.

Power level calorimetrics performed at Turkey Point based on secondary side measurements of feedwater temperature, pressure, flow and steam pressure. Of these secondary parameters, feedwater flow is the only parameter for which uncertainties increase at reduced power levels. Feedwater flow is determined by measuring the differential pressure across the feedwater venturi. The feedwater venturi is factory calibrated to 0.25% accuracy over the feedwater flow range of interest. Transmitters which measure the venturi differential pressure have typical accuracy, drift, temperature, and pressure performance specifications. The inherent transmitter errors and calibration errors are assumed to be constant over the entire pressure span. However, the relationship of differential pressure to flow is not a constant relationship for varying feedwater flow rates. The relationship between measured pressure differential and flow is a square root function. When the relatively constant differential pressure measurement uncertainties (as mentioned above) are considered in relationship to the associated flows, the flow uncertainties become significantly larger at low flow conditions.

The TS include NIS reactor trip setpoint which considers Total Allowance (TA) parameters. The TA parameter represents the difference between the setpoint and the analyzed Safety Analysis Limit (SAL). The basis of the TS is to assure that there is sufficient margin between the setpoint and the SAL to account for instrument uncertainties. The inherent calorimetric uncertainties at low power levels appear to represent uncertainties which may not have been accounted for in the documented setpoint analyses.

The TS required adjustment of NIS for consistency with measured secondary calorimetric power is an instrument gain adjustment. The gain adjustment changes the slope of the NIS response to neutron flux leakage (which is a linear relationship). Consequently, a relatively small adjustment at low power levels could have a large effect on the trip setpoint for higher power levels if the calculated calorimetric power deviates from actual power level, and the NIS is adjusted to meet calorimetric power levels with large uncertainties. An NIS adjustment reducing NIS power to match a calorimetric power level with large uncertainties is non-conservative and could result in a reactor trip occurring at a reactor power level above the currently analyzed SAL.

The licensee stated that the Turkey Point feedwater flow measurement uncertainty was incorporated into the overall power calorimetric uncertainty determination, and it was determined that flow uncertainties may have a significant effect on low power calorimetric. However, sufficient margin exists between the reactor trip setpoint and the SAL to account for NIS reactor trip uncertainties, including power calorimetric uncertainties, down to 70% of RTP. This conclusion is also consistent with the guidance provided by the vendor, and that the use of a 70% of RTP threshold is conservative with respect to the 50% of RTP threshold recommended by the vendor.

Based on the above discussion, the staff agrees with the licensee that the proposed changes to the TS are intended to remove the requirement which could result in non-conservative gain adjustments of the NIS at reduced power levels (below 70% of RTP), and therefore, the staff finds the change acceptable.

4.0 CONCLUSION

The staff concluded that the licensee's request to delete the TS requirement to adjust the NIS downward when operating at less than 70% of RTP is acceptable. The proposed changes to the TS are intended to remove the requirement which could result in non-conservative gain adjustments of the NIS at reduced power levels (below 70% of RTP).

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 amendments will not be inimical to the common defense and security or to the health and

safety of the public.

5.0 STATE CONSULTATION

Based upon the written notice of the proposed amendments, the Florida State official had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

These amendments involve a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendments involve 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 amendments involve no significant hazards consideration, and there has been no public comment on such finding (60 FR 47617). Accordingly, these amendments 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 the amendments.

Principal Contributor: M. Razzaque

Date: December 12, 1995