June 10, 1999

Mr. C. Randy Hutchinson
Vice President, Operations ANO
Entergy Operations, Inc.
1448 S. R. 333
Russellville, AR 72801

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT NO. 1 - ISSUANCE OF AMENDMENT RE: QUADRANT POWER TILT (TAC NO. MA1717)

Dear Mr. Hutchinson:

The Commission has issued the enclosed Amendment No. 197 to Facility Operating License No. DPR-51 for the Arkansas Nuclear One, Unit No. 1. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated April 30, 1998.

The amendment revises the definition section of the TSs to allow the use of either the incore detectors or the excore detectors for determining quadrant power tilt.

A copy of our related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

ORIG. SIGNED BY
Nicholas D. Hilton, Project Manager, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-313

Enclosures: 1. Amendment No. 197 to DPR-51
2. Safety Evaluation

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cc:

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

ENTERGY OPERATIONS INC.

DOCKET NO. 50-313

ARKANSAS NUCLEAR ONE, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 197
License No. DPR-51

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Entergy Operations, Inc. (the licensee) dated April 30, 1998, 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 license 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 2.C.(2) of Facility Operating License No. DPR-51 is hereby amended to read as follows:

   2. Technical Specifications

      The Technical Specifications contained in Appendix A, as revised through Amendment No. 197, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A Gramm

Robert A. Gramm, Chief, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: June 10, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 197

FACILITY OPERATING LICENSE NO. DPR-51

DOCKET NO. 50-313

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove	Insert
4	4

1.5.4 Instrument Channel Calibration

An instrument channel calibration is a test, and adjustment (if necessary), to establish that the channel output responds with acceptable range and accuracy to known values of the parameter which the channel measures or an accurate simulation of these values. Calibration shall encompass the entire channel, including equipment actuation, alarm or trip and shall be deemed to include the channel test.

1.5.5 Heat Balance Check

A heat balance check is a comparison of the indicated neutron power and core thermal power.

1.5.6 Heat Balance Calibration

An adjustment of the power range channel amplifiers output to agree with the core thermal power as determined by a weighted primary and secondary heat balance considering all heat losses. Between 0 and 15% power, only the primary heat balance is considered. From 15 to 100% power the heat balance is weighted linearly with only the secondary heat balance being considered at 100% power.

1.6 POWER DISTRIBUTION

1.6.1 Quadrant Power Tilt

Quadrant power tilt shall be defined by the following equation and is expressed as a percentage.

$$100 \left(\frac{\text{Power in any core quadrant}}{\text{Average power of all quadrants}} - 1 \right)$$

1.6.2 Reactor Power Imbalance

Reactor power imbalance is the power in the top half of the core minus the power in the bottom half of the core expressed as a percentage of rated power. Imbalance is monitored continuously by the RPS using input from the power range channels. Imbalance limits are defined in Specification 2.1 and imbalance setpoints are defined in Specification 2.3.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 197 TO

FACILITY OPERATING LICENSE NO. DPR-51

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NO. 1

DOCKET NO. 50-313

1.0 INTRODUCTION

By letter dated April 30, 1998, Entergy Operations, Inc. (the licensee), submitted a request for changes to the Arkansas Nuclear One, Unit No. 1 (ANO-1), Technical Specifications (TSs). The requested changes were to revise the definition of quadrant power tilt (QPT) as defined in Section 1.6.1 of the TSs. The revised definition of QPT emulates that contained in the improved Standard Technical Specifications (iSTS) for Babcock and Wilcox plants, NUREG-1430, Revision 1, dated April 1995.

The licensee stated that current ANO-1 procedures establish requirements for periodic monitoring of QPT with both the incore and excore power range detectors. These procedures are based upon a literal reading of the original TS definition and its implication that excore power range detectors are the preferred set of detectors for determining QPT. However, industry practice has been to emphasize the use of incore detectors as the preferred measurement source for determining QPT. This preference for using the incore detectors is based upon the incore detectors having less uncertainty associated with their measured values.

2.0 EVALUATION

The current TS 1.6.1, Quadrant Power Tilt, provides the following definition:

> Quadrant power tilt is defined by the following equation and is expressed in percent.
>
> $$100\left[\frac{\text{Power in any core quadrant}}{\text{Average power of all quadrants}}-1\right]$$
>
> The power in any quadrant is determined from the power range channel displayed on the console for that quadrant. The average power is determined from an average of the outputs of the power range channels. If one of the power range channels is out of service, the remaining three operable power range channels or the incore detectors will be used to determine the average power.

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The quadrant power tilt limits as a function of power are stated in Specification 3.5.2.4.

The proposed amendment would revise TS 1.6.1, Quadrant Power Tilt, as follows:

> Quadrant power tilt *shall be* defined by the following equation and is expressed *as a percentage.*

$$100\left[\frac{\text{Power in any core quadrant}}{\text{Average power of all quadrants}}-1\right]$$

The proposed amendment emulates the iSTS by incorporating minor editorial changes (as noted above in *italics*) and by deleting the second paragraph in TS 1.6.1. This paragraph, which has not been revised since the original issuance of the ANO-1 TSs on May 21, 1974, implies that excore power range detectors are to be used for monitoring QPT. The licensee stated that there are three independent reactor power measurement systems at ANO-1: the primary incore detector system; the minimum incore detector system; and the excore detector system. The TS limiting conditions for operation associated with QPT and their bases do not specify a preference for which detectors should be used for determining QPT. The licensee stated that its review of both the design basis and the licensing basis for the QPT resulted in a conclusion that any one of the three detector systems could be used for measuring QPT. Any of the three detector systems provide sufficient accuracy for the calculation of quadrant power tilt. The bases for iSTS 3.2.4 also allow any of the three detector systems to measure QPT (with implied preference for the incore detector system). Therefore, revising the current TS 1.6.1 to emulate iSTS would also eliminate any ambiguities associated with the original definition. The proposed amendment would not alter any safety analysis assumptions established and implemented by the TSs.

On the basis of its evaluation, the staff has determined that the proposed amendment is acceptable since it is consistent with the iSTS and any of the three reactor power measurement systems provide sufficient accuracy for the calculation of quadrant power tilt.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Arkansas State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The 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 (64 FR 6694, February 10, 1999). Accordingly, the 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 the amendment.

5.0 CONCLUSION

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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: T. J. Kim

Date: June 10, 1999