

November 16, 2001

Mr. Craig G. Anderson
Vice President, Operations ANO
Entergy Operations, Inc.
1448 S. R. 333
Russellville, AR 72801

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT NO. 2 - ISSUANCE OF AMENDMENT RE:
DELETION OF MODERATOR TEMPERATURE COEFFICIENT (MTC)
DETERMINATION AT TWO-THIRDS CORE BURNUP (TAC NO. MB1840)

Dear Mr. Anderson:

The Commission has issued the enclosed Amendment No. 236 to Facility Operating License No. NPF-6 for Arkansas Nuclear One, Unit No. 2 (ANO-2). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated May 2, 2001, as supplemented by letter dated August 23, 2001.

The amendment revises the TSs to not require the MTC determination in TS 4.1.1.4.2c if the results of the MTC determination required in TSs 4.1.1.4.2a and 4.1.1.4.2b are within a certain tolerance of the corresponding design values.

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,

/RA/

Thomas W. Alexion, Project Manager, Section 1
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-368

Enclosures:

1. Amendment No. 236 to NPF-6
2. Safety Evaluation

cc w/encls: See next page

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ENERGY OPERATIONS, INC.

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 236
License No. NPF-6

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Entergy Operations, Inc. (the licensee), dated May 2, 2001, as supplemented by letter dated August 23, 2001, 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.

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. NPF-6 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 236, 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 60 days from the date of issuance. Implementation shall include updating Section 4.5 of the Safety Analysis Report to list the CE methodology specified in CE NPSD-911-A and Amendment 1-A, "Analysis of Moderator Temperature Coefficients in Support of a Change in the Technical Specifications End-of-Cycle Negative MTC Limits," dated September 15, 2000.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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

Attachment: Changes to the Technical
Specifications

Date of Issuance: November 16, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 236

FACILITY OPERATING LICENSE NO. NPF-6

DOCKET NO. 50-368

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

3/4 1-5
B 3/4 1-1

Insert

3/4 1-5
B 3/4 1-1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 236 TO

FACILITY OPERATING LICENSE NO. NPF-6

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NO. 2

DOCKET NO. 50-368

1.0 INTRODUCTION

By letter dated May 2, 2001, as supplemented by letter dated August 23, 2001, Entergy Operations, Inc. (the licensee), submitted a request for changes to the Arkansas Nuclear One, Unit No. 2, Technical Specifications (TSs). The requested changes would revise the TSs to not require the moderator temperature coefficient (MTC) determination in TS 4.1.1.4.2c if the results of the MTC determination required in TSs 4.1.1.4.2a and 4.1.1.4.2b are within a certain tolerance of the corresponding design values.

The August 23, 2001, supplemental letter provided clarifying information that did not change the scope of the original *Federal Register* notice (66 FR 31706, June 12, 2001) or the initial no significant hazards consideration determination.

2.0 BACKGROUND

By letter dated May 2, 2001, the licensee proposed changes to TS Surveillance Requirement (SR) 4.1.1.4.2c to allow the option to eliminate the MTC measurement at two-thirds of core burnup if the results of the first two MTC measurements are within a tolerance limit. However, if either of the first two measurements are not within the tolerance limit, then performance of the two-thirds cycle surveillance will be required. The Combustion Engineering (CE) Owners Group topical report CE NPSD-911-A and Amendment 1-A, "Analysis of Moderator Temperature Coefficients in Support of a Change in the Technical Specifications End-of-Cycle Negative MTC Limits," dated September 15, 2000, provide justification for the proposed change. Additional information and clarification was provided by the licensee in a supplemental letter dated August 23, 2001.

3.0 EVALUATION

TS 3.1.1.4, through the Core Operating Limits Report, provides limitations on the MTC to ensure that the assumptions used in the accident and transient analysis remain valid through each fuel cycle. Accurate knowledge of the MTC at end-of-cycle (EOC) is of prime importance

in order to ensure that the most negative MTC will always be conservative with respect to the TS limit. The requirements to measure the MTC at the beginning-of-cycle (BOC) (one at hot zero power and one at power) and near EOC (i.e., two-thirds expected core burnup) provide confirmation that the measured MTC value is within its limits and will remain in its limits throughout each cycle.

The proposed change modifies the MTC TSs to eliminate the two-thirds cycle MTC surveillance if the results of the first two MTC measurements fall within $\pm 0.16 \times 10^{-4} \Delta k/k/^{\circ}F$ of the calculated MTC (design value). However, if the results of the first two tests are not within that limit, then performance of the two-thirds cycle surveillance will be required.

CE NPSD-911-A and Amendment 1-A provide the justification for this proposed TS change. The report concluded that if the MTC measurements at the BOC are within $\pm 0.16 \times 10^{-4} \Delta k/k/^{\circ}F$ of the design value, then the MTC at the EOC will also be within $\pm 0.16 \times 10^{-4} \Delta k/k/^{\circ}F$ of the design value. The U.S. Nuclear Regulatory Commission (NRC or the Commission) staff concluded that the approach described in the topical report was acceptable subject to conditions stated in the NRC staff safety evaluation dated June 14, 2000, and repeated below:

1. In order to ensure that the MTC will not exceed the TS limit with a confidence/tolerance of 95/95 percent, the cycle must be designed, using the CE methodology, such that the best estimate MTC is:
 - a. more negative than the BOC TS limit by the design margin
 - b. more positive than the EOC TS limit by the design margin
2. The design margin is determined to be 1.6 pcm/ $^{\circ}F$ at all times in life (1 pcm = $10^{-5} \Delta k/k$).
3. The analysis of the revised data base, including the most recent measured and calculated MTCs, has established that if the measured BOC MTCs are within 1.6 pcm/ $^{\circ}F$ of the best estimate prediction, then it can be assumed that the EOC coefficient will also be within 1.6 pcm/ $^{\circ}F$ of the prediction, and its measurement is not required.
4. The measured data reduction must be based on the current CE methodology as described in the report.
5. If the BOC measurements fail the acceptance criteria of ± 1.6 pcm/ $^{\circ}F$ and the discrepancy cannot be resolved, the EOC surveillance test must be performed.

The licensee addressed the conditions in the May 2, 2001, application. However, the licensee's response to Condition 4 referred to a section in Amendment 1 of CE NPSD-911 that the staff found unacceptable during its review of the topical report. In response to the staff's questions, the licensee provided clarification of their response to Conditions 1 and 2, as well as an acceptable response to Condition 4 in the August 23, 2001, supplemental letter. With the combination of the information provided in the May 2, 2001, application and the August 23, 2001, supplemental letter, the licensee has committed to observe the conditions as stated in the NRC staff safety evaluation dated June 14, 2000. In particular, the licensee indicated that it would use the current CE methodology specified in the approved topical report

(CE NPSD-911-A and Amendment 1-A) to perform the appropriate calculations. Because this methodology will be specified in the Safety Analysis Report, changes to it would be controlled under the provisions of 10 CFR 50.59.

4.0 EVALUATION SUMMARY

Based on the licensee's commitments to the conditions and CE NPSD-911-A and Amendment 1-A, the staff concludes that the change to TS SR 4.1.1.4.2c, to allow elimination of the test if the tests required in SR 4.1.1.4.2a and SR 4.1.1.4.2b are within a tolerance of $\pm 0.16 \times 10^{-4} \Delta k/k/^\circ F$ from the corresponding design values, is acceptable.

5.0 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.

6.0 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 and changes surveillance requirements. 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 (66 FR 31706, dated June 12, 2001). 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.

7.0 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: M. Chatterton

Date: November 16, 2001

Arkansas Nuclear One

cc:

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