

Mr. Jerry W. Yelverton  
 Vice President, Operations ANO  
 Entergy Operations, Inc.  
 1448 S. R. 333  
 Russellville, AR 72801

September 19, 1995

SUBJECT: ISSUANCE OF AMENDMENT NO. 164 TO FACILITY OPERATING LICENSE  
 NO. NPF-6 - ARKANSAS NUCLEAR ONE, UNIT NO. 2 (TAC NO. M92146)

Dear Mr. Yelverton:

The Commission has issued the enclosed Amendment No. 164 to Facility Operating License No. NPF-6 for the Arkansas Nuclear One, Unit No. 2 (ANO-2). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated March 17, 1995.

The amendment transfers requirements for cycle specific core operating limits from the Technical Specifications to the Core Operating Limits Report. Additionally, a reference to a statistical methodology for determining uncertainties is being changed to reference a methodology that was recently approved by the NRC.

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

Sincerely,

Original Signed By:

George Kalman, Senior Project Manager  
 Project Directorate IV-1  
 Division of Reactor Projects III/IV  
 Office of Nuclear Reactor Regulation

Docket No. 50-368

Enclosures: 1. Amendment No. 164 to NPF-6  
 2. Safety Evaluation

cc w/encls: See next page

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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2. Safety Evaluation

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Mr. Jerry W. Yelverton  
Entergy Operations, Inc.

Arkansas Nuclear One, Unit 2

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

ENERGY OPERATIONS, INC.

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 164  
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 March 17, 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 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. 164, 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.

FOR THE NUCLEAR REGULATORY COMMISSION



George Kalman, Senior Project Manager  
Project Directorate IV-1  
Division of Reactor Projects III/IV  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: September 19, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 164

FACILITY OPERATING LICENSE NO. NPF-6

DOCKET NO. 50-368

Revise the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.\*

REMOVE PAGES

3/4 2-5  
B 3/4 2-6\*  
6-21  
6-21a

INSERT PAGES

3/4 2-5  
B 3/4 2-6\*  
6-21  
6-21a

POWER DISTRIBUTION LIMITS

DNBR MARGIN

LIMITING CONDITION FOR OPERATION

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- 3.2.4 The DNBR limit shall be maintained by one of the following methods:
- a. Maintaining COLSS calculated core power less than or equal to COLSS calculated core power operating limit based on DNBR (when COLSS is in service, and at least one CEAC is operable); or
  - b. Maintaining COLSS calculated core power less than or equal to COLSS calculated core power operating limit based on DNBR decreased by the value specified in the CORE OPERATING LIMITS REPORT (when COLSS is in service and neither CEAC is operable); or
  - c. Operating within the region of acceptable operation specified in the CORE OPERATING LIMITS REPORT using any operable CPC channel (when COLSS is out of service and at least one CEAC is operable); or
  - d. Operating within the region of acceptable operation specified in the CORE OPERATING LIMITS REPORT using any operable CPC channel (when COLSS is out of service and neither CEAC is operable).

APPLICABILITY: MODE 1 above 20% of RATED THERMAL POWER.

ACTION:

- a. With COLSS in service and the DNBR limit not being maintained as indicated by COLSS calculated core power exceeding the COLSS calculated core power operating limit based on DNBR, within 15 minutes initiate corrective action to reduce the DNBR to within the limits and either:
  1. Restore the DNBR to within its limits within 1 hour of the initiating event, or
  2. Reduce THERMAL POWER to less than or equal to 20% of RATED THERMAL POWER within the next 6 hours.
- b. With COLSS out of service and the DNBR limit not being maintained as indicated by operation outside the region of acceptable operation specified in the CORE OPERATING LIMITS REPORT, either:
  1. Restore the DNBR to within its limits within 2 hours of the initiating event, or
  2. Reduce THERMAL POWER to less than or equal to 20% of RATED THERMAL POWER within the next 6 hours.

POWER DISTRIBUTION LIMITS

SURVEILLANCE REQUIREMENTS

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4.2.4.1 The provisions of Specification 4.0.4 are not applicable.

4.2.4.2 The DNBR shall be determined to be within its limits when THERMAL POWER is above 20% of RATED THERMAL POWER by continuously monitoring the core power distribution with the Core Operating Limit Supervisory System (COLSS) or, with the COLSS out of service, by verifying at least once per 2 hours that the DNBR, as indicated on any OPERABLE CPC channel, is within the limit specified in the CORE OPERATING LIMITS REPORT.

4.2.4.3 At least once per 31 days, the COLSS Margin Alarm shall be verified to actuate at a THERMAL POWER level less than or equal to the core power operating limit based on DNBR.

ADMINISTRATIVE CONTROL

CORE OPERATING LIMITS REPORT

6.9.5 The core operating limits shall be established and documented in the CORE OPERATING LIMITS REPORT prior to each reload cycle or any remaining part of a reload cycle.

6.9.5.1 The analytical methods used to determine the core operating limits addressed by the individual Technical Specifications shall be those previously reviewed and approved by the NRC for use at ANO-2, specifically:

- 1) "The ROCS and DIT Computer Codes for Nuclear Design", CENPD-266-P-A, April 1983 (Methodology for Specifications 3.1.1.1 and 3.1.1.2 for Shutdown Margins, 3.1.1.4 for MTC, 3.1.3.6 for Regulating CEA Insertion Limits, and 3.2.4.b for DNBR Margin).
- 2) "CE Method for Control Element Assembly Ejection Analysis," CENPD-0190-A, January 1976 (Methodology for Specification 3.1.3.6 for Regulating CEA Insertion Limits and 3.2.3 for Azimuthal Power Tilt).
- 3) "Modified Statistical Combination of Uncertainties, CEN-356(V)-P-A, Revision 01-P-A, May 1988 (Methodology for Specification 3.2.4.c and 3.2.4.d for DNBR Margin and 3.2.7 for ASI).
- 4) "Calculative Methods for the CE Large Break LOCA Evaluation Model," CENPD-132-P, August 1974 (Methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, and 3.2.7 for ASI).
- 5) "Calculational Methods for the CE Large Break LOCA Evaluation Model," CENPD-132-P, Supplement 1, February 1975 (Methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, and 3.2.7 for ASI).
- 6) "Calculational Methods for the CE Large Break LOCA Evaluation Model," CENPD-132-P, Supplement 2-P, July 1975 (Methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, and 3.2.7 for ASI).
- 7) "Calculative Methods for the CE Large Break LOCA Evaluation Model for the Analysis of CE and W Designed NSSS," CEN-132, Supplement 3-P-A, June 1985 (Methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, and 3.2.7 for ASI).
- 8) "Calculational Methods for the CE Small Break LOCA Evaluation Model," CENPD-137-P, August 1974 (Methodology for Specification 3.1.1.4 for MTC, 3.2.1 for Linear Heat Rate, 3.2.3 for Azimuthal Power Tilt, and 3.2.7 for ASI).

ADMINISTRATIVE CONTROL

CORE OPERATING LIMITS REPORT

- 9) "CESEC-Digital Simulation of a Combustion Engineering Nuclear Steam Supply System," December 1981 (Methodology for Specifications 3.1.1.1 and 3.1.1.2 for Shutdown Margin, 3.1.1.4 for MTC, 3.1.3.1 for Movable Control Assemblies - CEA Position, 3.1.3.6 for Regulating CEA Insertion Limits, 3.1.3.7 for Part Length CEA Insertion Limits, and 3.2.4.b for DNBR Margin).
- 10) Letter: O.D. Parr (NRC) to F.M. Stern (CE), dated June 13, 1975 (NRC Staff Review of the Combustion Engineering ECCS Evaluation Model). NRC approval for 6.9.5.1.4, 6.9.5.1.5, and 6.9.5.1.8 methodologies.
- 11) Letter: O.D. Parr (NRC) to A.E. Scherer (CE), dated December 9, 1975 (NRC Staff Review of the Proposed Combustion Engineering ECCS Evaluation Model changes). NRC approval for 6.9.5.1.6 methodology.
- 12) Letter: 2CNA038403, dated March 20, 1984, J.R. Miller (NRC) to J.M. Griffin (AP&L), "CESEC Code Verification." NRC approval for 6.9.5.1.9 methodology.

6.9.5.2 The core operating limits shall be determined so that all applicable limits (e.g. fuel thermal-mechanical limits, core thermal-hydraulic limits, ECCS limits, nuclear limits such as shutdown margin, and transient and accident analysis limits) of the safety analysis are met.

6.9.5.3 The CORE OPERATING LIMITS REPORT, including any mid-cycle revisions or supplements thereto, shall be provided upon issuance to the NRC Document Control Desk with copies to the Regional Administrator and Resident Inspector.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 164 TO

FACILITY OPERATING LICENSE NO. NPF-6

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NO. 2

DOCKET NO. 50-368

1.0 INTRODUCTION

By application dated March 17, 1995, Entergy Operations, Inc. (the licensee), submitted a request for changes to the Arkansas Nuclear One, Unit 2, Technical Specification (TS) 3.2.4, "Power Distribution Limits, DNBR Margin." The proposed changes would revise TS 3.2.4b (when the Core Operating Limits Supervisory System [COLSS] is in service and neither Control Element Assembly Calculator [CEAC] is operable.) The value of 13.0% which is used to decrease the departure from nucleate boiling ratio (DNBR) would be placed in the Core Operating Limits Report (COLR).

2.0 EVALUATION

There are two systems that are capable of monitoring core power distribution; the COLSS and the Core Protection Calculators (CPCs). The COLSS is normally used to monitor DNBR margin. When at least one CEAC is operable, TS 3.2.4a provides enough margin to departure from nucleate boiling (DNB) to accommodate the limiting anticipated operational occurrence (AOO) without failing fuel. When neither CEAC is operable, the CPCs lack the Control Element Assembly (CEA) position information necessary to ensure a reactor trip when needed. Therefore, the COLSS calculated core power must be reduced to ensure that the limiting AOO will not result in fuel failure. Currently, TS 3.2.4b requires that the COLSS calculated core power be maintained at 13% below the COLSS calculated power operating limit to compensate for this potential error in the CPC DNBR calculation. The value of this adjustment is based on the cycle-specific safety analyses performed for each reload evaluation using NRC-approved methodology. NRC Generic Letter 88-16 allowed licensees to remove cycle-specific parameters from TS and place them in a COLR, provided the limits are developed using an NRC-approved methodology. Therefore, the staff concludes that the adjustment value may be placed in the ANO-2 COLR, subject to specification in the TS that the value will be calculated in accordance with a specified NRC-approved methodology. In this regard, as part of this amendment, TS 6.9.5.1 is modified

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ENCLOSURE

to indicate that the Modified Statistical Combination of Uncertainties (MSCU) methodology described in CEN-356(V)-P-A, Revision 01-P-A, and approved by the NRC, will be used to obtain uncertainty factors for determining the limiting safety system setting (LSSS) and the limiting condition for operation (LCO) for the COLSS and CPC systems. The NRC staff has determined that the resultant penalties applied to the COLSS power operating limit and the CPC DNBR and local power density calculations using the MSCU methodology adequately incorporate all uncertainties at the 95/95 probability/confidence level, and is acceptable for use at ANO-2. Accordingly, the specific calculated value of 13%, used to decrease the DNBR, may be placed in the COLR. Any figure changes to this value will be controlled by use of an NRC-approved methodology, specified in the TS.

### 3.0 TECHNICAL CONCLUSION

The NRC has reviewed the proposed changes to the ANO-2 TS which would place the specific value listed in TS 3.2.4.b, as described above, in the plant COLR. The NRC-approved Modified Statistical Combination of Uncertainties methodology is also acceptable for use by ANO-2 as an approved reference.

### 4.0 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.

### 5.0 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 (60 FR 37088). 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.

### 6.0 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: L. Kopp

Date: September 19, 1995