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Docket No. 50-368

Mr. William Cavanaugh III
Senior Vice President, Energy
Supply Department
Arkansas Power & Light Company
P.O. Box 551
Little Rock, Arkansas 72203

Dear Mr. Cavanaugh:

SUBJECT: CHANGES TO CORE PROTECTION CALCULATOR SYSTEM TECHNICAL SPECIFICATIONS

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 27 to Facility Operating License No. NPF-6 for the Arkansas Power and Light Company for the Arkansas Nuclear One Unit 2 plant. The amendment consists of changes to the Technical Specifications defining the minimum allowable value of the power uncertainty factor, BERR1, which is used by the CPCS in the calculation of the departure from nucleate boiling ratio (DNBR).

Amendment Nos. 24 and 26 to License No. NPF-6 have previously been issued in response to your applications submitted by letters dated February 20, 1981 and March 5, 1981. This Amendment provides further response to your application dated February 20, 1981 and March 5, 1981, as supplemented by letter dated August 12, 1981, in the form of changes to the minimum allowable value of BERR1.

Copies of the Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

Original signed by
Robert A. Clark

Robert A. Clark, Chief
Operating Reactors Branch #3
Division of Licensing

Enclosures:

1. Amendment No. 27 to NPF-6
2. Safety Evaluation
3. Notice of Issuance

cc: See next page

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AMENDMENT

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SURNAME	PMKreutzer	RMartin/ep	RAClark	TMovak	B. JONES		
DATE	8/20/81	8/12/81	8/31/81	9/1/81	9/3/81		

Arkansas Power & Light Company

cc:

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Honorable Ermil Grant
Acting County Judge of Pope County
Pope County Courthouse
Russellville, Arkansas 72801

U.S. Environmental Protection Agency
Region VI Office
ATTN: EIS COORDINATOR
1201 Elm Street
First International Building
Dallas, Texas 75270

cc w/enclosure(s) and incoming
dated: 2/20/81, 3/5/81

Director, Bureau of Environmental
Health Services
4815 West Markham Street
Little Rock, Arkansas 72201



ARKANSAS POWER AND LIGHT COMPANY

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 27
License No. NPF-6

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The applications for amendment by Arkansas Power and Light Company (the licensee) dated February 20 and March 5, 1981, as supplemented, by letter dated August 12, 1981 comply 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 applications, 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, Facility Operating License No. NPF-6 is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) is hereby amended to read as follows:

(1) Technical Specifications

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

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3. This license amendment shall be effective within 7 days of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert A. Clark, Chief
Operating Reactors Branch #3
Division of Licensing

Attachment:
Changes to the
Technical Specifications

Date of Issuance: September 9, 1981

ATTACHMENT TO LICENSE AMENDMENT NO. 27

FACILITY OPERATING LICENSE NO. NPF-6

DOCKET NO. 50-368

Replace the following page of the Appendix "A" Technical Specifications with the enclosed page. The revised page is identified by amendment number and contains vertical lines indicating the area of change. The corresponding overleaf page is also provided to maintain document completeness.

Page

2-6

TABLE 2.2-1

REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
1. Manual Reactor Trip	Not Applicable	Not Applicable
2. Linear Power Level - High		
a. Four Reactor Coolant Pumps Operating	≤ 110% of RATED THERMAL POWER	≤ 110.712% of RATED THERMAL POWER
b. Three Reactor Coolant Pumps Operating	*	*
c. Two Reactor Coolant Pumps Operating - Same Loop	*	*
d. Two Reactor Coolant Pumps Operating - Opposite Loops	*	*
3. Logarithmic Power Level - High (1)	≤ 0.75% of RATED THERMAL POWER	≤ 0.819% of RATED THERMAL POWER
4. Pressurizer Pressure - High	≤ 2362 psia	≤ 2370.887 psia
5. Pressurizer Pressure - Low	≥ 1766 psia (2)	≥ 1712.757 psia (2)
6. Containment Pressure - High	≤ 18.4 psia	≤ 19.024 psia
7. Steam Generator Pressure - Low	≥ 751 psia (3)	≥ 729.613 psia (3)
8. Steam Generator Level - Low	≥ 46.7% (4)	≥ 45.811% (4)

* These values left blank pending NRC approval of safety analyses for operation with less than four reactor coolant pumps operating.

TABLE 2.2-1 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
9. Local Power Density - High	≤ 20.3 kw/ft (5)	≤ 20.3 kw/ft (5)
10. DNBR - Low	≥ 1.24 (5)(6)	≥ 1.24 (5)(6)
11. Steam Generator Level - High	$\leq 93.7\%$ (4)	$\leq 94.589\%$ (4)

TABLE NOTATION

- (1) Trip may be manually bypassed above $10^{-4}\%$ of RATED THERMAL POWER; bypass shall be automatically removed when THERMAL POWER is $\leq 10^{-4}$ of RATED THERMAL POWER.
- (2) Value may be decreased manually, to a minimum value of 100 psia, during a planned reduction in pressurizer pressure, provided the margin between the pressurizer pressure and this value is maintained at ≤ 200 psi; the setpoint shall be increased automatically as pressurizer pressure is increased until the trip setpoint is reached. Trip may be manually bypassed below 400 psia; bypass shall be automatically removed whenever pressurizer pressure is ≥ 500 psia.
- (3) Value may be decreased manually during a planned reduction in steam generator pressure provided the margin between the steam generator pressure and this value is maintained at ≤ 200 psi; the setpoint shall be increased automatically as steam generator pressure is increased until the trip setpoint is reached.
- (4) % of the distance between steam generator upper and lower level instrument nozzles.
- (5) As stored within the Core Protection Calculator (CPC). Calculation of the trip setpoint includes measurement, calculational and processor uncertainties, and dynamic allowances. Trip may be manually bypassed below $10^{-4}\%$ of RATED THERMAL POWER; bypass shall be automatically removed when THERMAL POWER is $\geq 10^{-4}\%$ of RATED THERMAL POWER.
- (6) The minimum allowable value of the addressable constant BERR1 in each OPERABLE channel is 1.065.



SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 27 TO FACILITY OPERATING LICENSE NO. NPF-6

ARKANSAS POWER AND LIGHT COMPANY

ARKANSAS NUCLEAR ONE, UNIT NO. 2

DOCKET NO. 50-368

Introduction:

The licensee submitted an application for changes to the Technical Specifications to permit operation of the ANO-2 plant during Cycle 2 in letters dated February 20, 1981 and March 5, 1981. The application was supplemented with numerous responses to staff requests for additional information. Amendments Nos. 24 and 26, issued on June 19, 1981 and July 21, 1981, respectively, responded to the licensee's application. The licensee's supplementary information is identified in the reference section of the safety evaluations accompanying Amendments Nos. 24 and 26.

As discussed in the safety evaluations accompanying these two previous amendments, the CETOP-D code is a design analysis code used to analyze the thermal hydraulic performance of the reactor core. The CETOP2 code is a simplified faster running version of the CETOP-D code which enables it to be used as an on-line algorithm in the ANO-2 plant's core protection calculator system (CPCS) computer software. Prior to use in the plant's software the CETOP2 code must be compared to the CETOP-D code to ensure that there is a 95/95 probability/confidence level that the on-line CETOP2 results are conservative with respect to the CETOP-D results. This is accomplished by comparing the two codes over a wide range of conditions and determining a penalty factor (E) which is applied as a multiplier on the power level used by CETOP2. The staff requested information, in the form of question 492.15, on how the value of the factor E was obtained. In response, the licensee described the method of determination and noted that the value had required modification late in the Cycle 2 software development process due to certain code input discrepancies. The staff requested additional information, in the form of question 492.78, but was unable to complete its review prior to the issuance of Amendment No. 26. Therefore, as noted in Section 2.8.f of the Amendment 26 safety evaluation we required that the original factor value be used until we completed our review of the proposed new value. Since the penalty factor is built into the CPC software and is not addressable, the staff required that adjustment be made to the power uncertainty factor BERR1 as a means of imposing the original more conservative value of E upon the CPCS calculations. Accordingly BERR1 has been specified to be increased from 1.065 to 1.086 pending completion of our review.

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Evaluation

In the response to question 492.78 the licensee has explained that the change in the value of the uncertainty factor E was necessary to account for a change in the input to the CETOP2 code from hot channel power distribution and hot channel peaking factors to hot pin power distribution and hot pin peaking factors. This change is needed so that the on-line calculations of the CETOP2 and POWER algorithms are consistent with each other. THE POWER algorithm transmits the hot pin power distribution and hot pin peaking factors to the CETOP2 algorithm.

The original discrepancy in assignment of a value to the E factor resulted in the channel linear heat rate calculation in CETOP2 and the plant specific data constant of hot pin heat flux being incorrect in that both were erroneously but conservatively increased by a factor of 1.02 which is the ratio of hot pin to hot channel peaking factors. The licensee chose not to modify the CETOP2 software algorithm to account for the discrepancy. Rather, the discrepancy is accounted for through a change in the algorithm uncertainty factor E. As described in the supplement to the response to 492.15 submitted by letter dated July 20, 1981 and the response to 492.78 submitted by letter dated August 12, 1981, the licensee has rerun 6400 cases of CETOP2 to determine the revised value of the algorithm uncertainty factor. This factor is chosen to ensure with 95 percent probability at 95 percent confidence level that the on-line CETOP2 results are more conservative than CETOP-D results. We have found the revised value acceptable and therefore the penalty factor of 1.02 previously imposed on BERR1 can be removed. Therefore, the Technical Specification minimum allowable value of BERR1 is reduced from 1.086 to 1.065.

Environmental Consideration

We have determined that the amendment does 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, pursuant 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 amendment.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: September 9, 1981

Principal Contributors:

L. Phillips, CPB

G. Hsii, CPB

R. Martin, ORB#3

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-368

ARKANSAS POWER AND LIGHT COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 27 to Facility Operating License No. NPF-6 issued to the Arkansas Power and Light Company, which revised the Technical Specifications for operation of Arkansas Nuclear One, Unit No. 2, (the facility) in Pope County, Arkansas. The amendment is effective as of its date of issuance.

The Amendment consists of changes to the Facility Technical Specifications which define the minimum allowable value of the power uncertainty factor, BERR1, which is used by the core protection calculator system in the calculation of the departure from nucleate boiling ratio.

The applications for the amendment comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

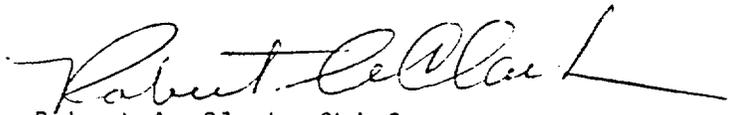
The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR Section §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

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For further details with respect to this action, see (1) the applications for amendment dated February 20 and March 5, 1981, as supplemented by the licensee's letter dated August 12, 1981, (2) Amendment No. 27 to Facility Operating License No. NPF-6, and (3) the Commission's related Safety Evaluation. These items are available for public inspection at the Commission's Public Document Room at 1717 H Street, N.W., Washington, D.C. 20555 and at the Arkansas Tech University, Russellville, Arkansas 72801. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 9th day of September, 1981.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert A. Clark, Chief
 Operating Reactors Branch #3
 Division of Licensing