

July 6, 1990

Docket Nos. 50-313  
and 50-368

Mr. Neil S. Carns  
Vice President, Nuclear  
Arkansas Nuclear One  
Post Office Box 551  
Little Rock, Arkansas 72203

Dear Mr. Carns:

SUBJECT: ISSUANCE OF AMENDMENT NOS. 132 AND 107 TO FACILITY OPERATING LICENSE  
NOS. DPR-51 AND NPF-6 - ARKANSAS NUCLEAR ONE, UNITS 1 AND 2  
(TAC NOS. 76656 AND 76657)

The Commission has issued the enclosed Amendment Nos. 132 and 107 to Facility Operating License Nos. DPR-51 and NPF-6 for the Arkansas Nuclear One, Units 1 and 2 (ANO-1&2). These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated April 10, 1990.

The amendments modifies ANO-1&2 TSs to allow the use of chemicals other than just chlorine to control the biological fouling of the service water system. The proposed amendment will modify the specific references to chlorination requirements to reflect the use of equally effective biocides associated with the ANO-1 Reactor Building Cooling System Surveillance Requirement 4.5.2.1.2, and the ANO-2 Containment Systems Surveillance Requirement 4.6.2.3, and the related TSs bases for both units.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's next Bi-weekly Federal Register notice.

Sincerely,

Original signed by:

Original signed by:

Thomas W. Alexion, Project Manager  
Project Directorate IV-1  
Division of Reactor Projects - III,  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

Chester Poslusny, Jr., Project Manager  
Project Directorate IV-1  
Division of Reactor Projects - III,  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 132 to DPR-51
2. Amendment No. 107 to NPF-6
3. Safety Evaluation

cc w/enclosures:  
See next page

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

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Vice President, Nuclear  
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Post Office Box 551  
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SUBJECT: ISSUANCE OF AMENDMENT NOS. 132 AND 107 TO FACILITY OPERATING LICENSE  
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The amendments modifies ANO-1&2 TSs to allow the use of chemicals other than just chlorine to control the biological fouling of the service water system. The proposed amendment will modify the specific references to chlorination requirements to reflect the use of equally effective biocides associated with the ANO-1 Reactor Building Cooling System Surveillance Requirement 4.5.2.1.2, and the ANO-2 Containment Systems Surveillance Requirement 4.6.2.3, and the related TSs bases for both units.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's next Bi-weekly Federal Register notice.

Sincerely,

*Thomas W. Alexion*  
Thomas W. Alexion, Project Manager  
Project Directorate IV-1  
Division of Reactor Projects - III,  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

*Chester Poslusny Jr.*  
Chester Poslusny, Jr., Project Manager  
Project Directorate IV-1  
Division of Reactor Projects - III,  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 132 to DPR-51
2. Amendment No. 107 to NPF-6
3. Safety Evaluation

cc w/enclosures:  
See next page

Mr. Neil S. Carns  
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Arkansas Nuclear One, Units 1 and 2

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Honorable Joe W. Phillips  
County Judge of Pope County  
Pope County Courthouse  
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Protection  
Arkansas Department of Health  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

ENERGY OPERATIONS, INC.

DOCKET NO. 50-313

ARKANSAS NUCLEAR ONE, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 132  
License No. DPR-51

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Arkansas Power and Light Company, dated April 10, 1990, 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, as amended, 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. DPR-51 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 132, 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



Richard F. Dudley, Acting Director  
Project Directorate IV-1  
Division of Reactor Projects - III,  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications.

Date of Issuance: July 6, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 132

FACILITY OPERATING LICENSE NO. DPR-51

DOCKET NO. 50-313

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.

REMOVE PAGES

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97

INSERT PAGES

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97

## 4.5.2 Reactor Building Cooling Systems

### Applicability

Applies to testing of the reactor building cooling systems.

### Objective

To verify that the reactor building cooling systems are operable.

### Specification

#### 4.5.2.1 System Tests

##### 4.5.2.1.1 Reactor Building Spray System

- (a) Once every 18 months, a system test shall be conducted to demonstrate proper operation of the system. A test signal will be applied to demonstrate actuation of the reactor building spray system (except for reactor building inlet valves to prevent water entering nozzles).
- (b) Station compressed air or smoke will be introduced into the spray headers to verify the availability of the headers and spray nozzles at least every five years.
- (c) The test will be considered satisfactory if visual observation and control board indication verifies that all components have responded to the actuation signal properly.

##### 4.5.2.1.2 Reactor Building Cooling System

- (a) At least once per 14 days, each reactor building cooling group shall be tested to demonstrate proper operation of the system. The test shall be performed in accordance with the procedure summarized below:
  - (1) Verifying a service water flow rate of  $\geq 1200$  gpm to each group of cooling units.
  - (2) Addition of a biocide to the service water during the surveillance in 4.5.2.1.2.a.1 above, whenever service water temperature is between 60F and 80F.
- (b) At least once per 31 days, each reactor building cooling group shall be tested to demonstrate proper operation of the system. The test shall be performed in accordance with the procedure summarized below:
  - (1) Starting (unless already operating) each operational cooling unit from the control room.

1

Addition of a biocide to service water is performed during reactor building cooler surveillance to prevent buildup of Asian clams in the coolers when service water is pumped through the cooling coils. This is performed when service water temperature is between 60F and 80F since in this water temperature range Asian clams can spawn and produce larva which could pass through service water system strainers.

The delivery capability of one reactor building spray pump at a time can be tested by opening the valve in the line from the borated water storage tank, opening the corresponding valve in the test line, and starting the corresponding pump. Pump discharge pressure and flow indication demonstrate performance.

With the pumps shut down and the borated water storage tank outlet closed, the reactor building spray injection valves can each be opened and closed by operator action. With the reactor building spray inlet valves closed, low pressure air or smoke can be blown through the test connections of the reactor building spray nozzles to demonstrate that the flow paths are open.

The equipment, piping, valves, and instrumentation of the reactor building cooling system are arranged so that they can be visually inspected. The cooling units and associated piping are located outside the secondary concrete shield. Personnel can enter the reactor building during power operations to inspect and maintain this equipment. The service water piping and valves outside the reactor building are inspectable at all times. Operational tests and inspections will be performed prior to initial startup.

Two service water pumps are normally operating. At least once per month operation of one pump is shifted to the third pump, so testing will be unnecessary.

The reactor building fans are normally operating, so testing is unnecessary.

#### Reference

FSAR, Section 6



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

ENERGY OPERATIONS, INC.

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 107  
License No. NPF-6

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Arkansas Power and Light Company, dated April 10, 1990, 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, as amended, 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.

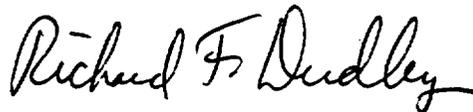
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-6 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No.107, 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



Richard F. Dudley, Acting Director  
Project Directorate IV-1  
Division of Reactor Projects - III,  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications.

Date of Issuance: July 6, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 107

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

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B 3/4 6-4

INSERT PAGES

3/4 6-15  
B 3/4 6-4

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.6.2.3 Each containment cooling group shall be demonstrated OPERABLE:

a. At least once per 14 days by:

1. Verifying a service water flow rate of  $\geq 1250$  gpm to each group of cooling units; each unit within the group having an operable fan, or by verifying a service water flow rate of  $\geq 1250$  gpm to one unit within the group; that unit having an operable fan.
2. Addition of a biocide to the service water during the surveillance in 4.6.2.3.a.1 above, whenever service water temperature is between 60°F and 80°F.

b. At least once per 31 days by:

1. Starting (unless already operating) each operational cooling unit from the control room.
2. Verifying that each operational cooling unit operates for at least 15 minutes.

c. At least once per 18 months by verifying that each cooling unit starts automatically on a CCAS test signal.

## CONTAINMENT SYSTEMS

### BASES

The containment cooling system and the containment spray system are redundant to each other in providing post accident cooling of the containment atmosphere. As a result of this redundancy in cooling capability, the allowable out-of-service time requirements for the containment cooling system have been appropriately adjusted. However, the allowable out of service time requirements for the containment spray system have been maintained consistent with that assigned other inoperable ESF equipment since the containment spray system also provides a mechanism for removing iodine from the containment atmosphere.

The addition of a biocide to the service water system is performed during containment cooler surveillance to prevent buildup of Asian clams in the coolers when service water is pumped through the cooling coils. This is performed when service water temperature is between 60°F and 80°F since in this water temperature range Asian clams can spawn and produce larva which could pass through service water system strainers.

#### 3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the time limits specified ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

#### 3/4.6.4 COMBUSTIBLE GAS CONTROL

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit is capable of controlling the expected hydrogen generation associated with 1) zirconium-water reactions, 2) radiolytic decomposition of water, and 3) corrosion of metal within containment. These hydrogen control systems are consistent with the recommendations of Regulatory Guide 1.7 "Control of Combustible Gas Concentrations in Containment Following a LOCA", March 1971.

The containment recirculation units are provided to ensure adequate mixing of the containment atmosphere following a LOCA. This mixing action will prevent localized accumulations of hydrogen from exceeding the flammable limit.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 132 AND 107 TO

FACILITY OPERATING LICENSE NOS. DPR-51 AND NPF-6

ENERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NOS. 1 AND 2

DOCKET NOS. 50-313 AND 50-368

INTRODUCTION

By letter dated April 10, 1990, Arkansas Power and Light Company requested amendments to the Technical Specifications (TSs) appended to Facility Operating License Nos. DPR-51 and NPF-6 for Arkansas Nuclear One, Units 1 and 2 (ANO-1&2). The licensee proposed changes in the TSs which would allow the use of biocides other than just chlorine for controlling biological fouling of the service water systems at ANO-1&2.

DISCUSSION

Surveillance Requirements (SRs) 4.5.2.1.2 and 4.6.2.3, for ANO-1 and 2, respectively, specify the addition of chlorine to the Service Water (SW) during performance of the flow verification surveillance and with the SW temperature between 60°F and 80°F. During flow verification testing, chlorination of the SW is required to prevent buildup of Asian Clams in the containment cooler cooling coils when SW is pumped through them. The temperature range represents the range in which Asian Clams can spawn and produce larvae which could pass through the SW system intake flow strainers. Historically, the addition of this chemical has effectively controlled the buildup of Asian Clams in the SWs with minimal effect on the piping system.

The licensee plans to implement use of biocides other than gaseous chlorine for biological fouling control. The licensee stated that there are other biocides that are as equally effective than chlorine for this purpose such as bromine. These other biocides generally do not have operational problems or personnel hazards associated with chlorine gas, and are no more destructive to the SW system piping and equipment than chlorine. In some cases, these biocides even reduced corrosion concern associated with the SW piping and equipment.

Furthermore, the NRC's Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment", dated July 18, 1989, recognized the use of equally effective biocides in the recommended program to resolve the issue of fouling of open-cycle service water systems.

### EVALUATION

The licensee is requesting that the specific references to chlorination requirements be modified to allow flexibility in the use of equally effective biocides. The staff has reviewed and concluded that, based on the information provided above, the proposed changes are acceptable. However, regarding the use of biocides, the licensee should take all necessary precautions to obey federal, state, and local environmental regulations.

### ENVIRONMENTAL CONSIDERATION

The amendments involve a change in a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes in surveillance requirements. The 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 exposures. 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. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR Section 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.

### CONCLUSION

The staff 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: July 6, 1990

Principal Contributor: L. Tran