

April 4, 1983

DMB016

Docket No. 50-313

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Mr. John M. Griffin, Vice President
Nuclear Operations
Arkansas Power & Light Company
P. O. Box 551
Little Rock, Arkansas 72203

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Dear Mr. Griffin:

The Commission has issued the enclosed Amendment No. 74 to Facility Operating License No. DPR-51 for Arkansas Nuclear One, Unit No. 1 (ANO-1). The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated February 22, 1979, as supplemented August 18, November 30, and December 23, 1982, and February 15, 1983.

The amendment revises the TSs to allow the Acoustic Emission method for the inservice volumetric examination of the reactor coolant pump flywheels.

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

Sincerely,

~~Original signed by~~

Guy S. Vissing, Project Manager
Operating Reactors Branch #4
Division of Licensing

Enclosures:

1. Amendment No. 74
2. Safety Evaluation
3. Notice

cc w/enclosures:

See next page

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PDR

F.R. NOTICE + AMEND

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

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April 4, 1983

Docket No. 50-313

Docketing and Service Section
Office of the Secretary of the Commission

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 1

Two signed originals of the Federal Register Notice identified below are enclosed for your transmittal to the Office of the Federal Register for publication. Additional conformed copies (12) of the Notice are enclosed for your use.

- Notice of Receipt of Application for Construction Permit(s) and Operating License(s).
- Notice of Receipt of Partial Application for Construction Permit(s) and Facility License(s): Time for Submission of Views on Antitrust Matters.
- Notice of Availability of Applicant's Environmental Report.
- Notice of Proposed Issuance of Amendment to Facility Operating License.
- Notice of Receipt of Application for Facility License(s); Notice of Availability of Applicant's Environmental Report; and Notice of Consideration of Issuance of Facility License(s) and Notice of Opportunity for Hearing.
- Notice of Availability of NRC Draft/Final Environmental Statement.
- Notice of Limited Work Authorization.
- Notice of Availability of Safety Evaluation Report.
- Notice of Issuance of Construction Permit(s).
- Notice of Issuance of Facility Operating License(s) or Amendment(s).

Other: Amendment No. 74.
Referenced documents have been provided PDR.

Division of Licensing, ORB#4
Office of Nuclear Reactor Regulation

Enclosure:
As Stated

OFFICE →	ORB#4:DL,				
SURNAME →	RIngram;cf				
DATE →	4/6/83				

Arkansas Power & Light Company

cc w/enclosure(s):

Mr. John R. Marshall
Manager, Licensing
Arkansas Power & Light Company
P. O. Box 551
Little Rock, Arkansas 72203

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

Mr. James P. O'Hanlon
General Manager
Arkansas Nuclear One
P. O. Box 608
Russellville, Arkansas 72801

Mr. Leonard Joe Callan
U.S. Nuclear Regulatory Commission
P. O. Box 2090
Russellville, Arkansas 72801

Mr. Robert B. Borsum
Babcock & Wilcox
Nuclear Power Generation Division
Suite 220, 7910 Woodmont Avenue
Bethesda, Maryland 20814

Mr. Nicholas S. Reynolds
Debevoise & Liberman
1200 17th Street, NW
Washington, DC 20036

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

Regional Radiation Representative
EPA Region VI
1201 Elm Street
Dallas, Texas 75270

Mr. John T. Collins, Regional Administrator
U. S. Nuclear Regulatory Commission, Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011



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

ARKANSAS POWER & LIGHT COMPANY

DOCKET NO. 50-313

ARKANSAS NUCLEAR ONE, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 74
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 (the licensee) dated February 22, 1979, as supplemented August 18, 1982, November 30, 1982, December 23, 1982, and February 15, 1983, 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 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:

Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 74, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stolz, Chief
Operating Reactors Branch #4
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 4, 1983

ATTACHMENT TO LICENSE AMENDMENT NO. 74

FACILITY OPERATING LICENSE NO. DPR-51

DOCKET NO. 50-313

Replace the following page of the Appendix "A" Technical Specifications with the enclosed page. The revised page is identified by Amendment number and contains a vertical line indicating the area of change.

Page

77

<u>IS-261 Item</u>	<u>Component</u>	<u>Exception</u>
6.4	Bolting 2Ø	Not Applicable
6.6	Integrally Welded Valve Supports	Not Applicable
4.2.3	The structural integrity of the reactor coolant system boundary shall be maintained at the level required by the original acceptance standards throughout the life of the station. Any evidence, as a result of the tests outlined in Table IS-261 of Section XI of the code, that defects have developed or grown, shall be investigated.	
4.2.4	To assure the structural integrity of the reactor internals throughout the life of the unit, the two sets of main internals bolts (connecting the core barrel to the core support, shield and to the lower grid cylinder) shall remain in place and under tension. This will be verified by visual inspection to determine that the welded bolt locking caps remain in place. All locking caps will be inspected after hot functional testing and whenever the internals are removed from the vessel during a refueling or maintenance shutdown. The core barrel to core support shield caps will be inspected each refueling shutdown.	
4.2.5	Sufficient records of each inspection shall be kept to allow comparison and evaluation of future inspections.	
4.2.6	Surface and volumetric examination of the reactor coolant pump flywheels will be conducted coincident with refueling or maintenance shutdowns such that during 10 year intervals all four reactor coolant pump flywheels will be examined. Such examinations will be performed to the extent possible through the access ports, i.e., those areas of the flywheel accessible without motor disassembly. The surface and volumetric examination may be accomplished by Acoustic Emission Examination as an initial examination method. Should the results of the Acoustic Emission Examination indicate that additional examination is necessary to ensure the structural integrity of the flywheel, then other appropriate NDE methods will be performed on the area of concern.	
4.2.7	The reactor vessel material irradiation surveillance specimens removed from the reactor vessel in 1976 shall be installed, irradiated in and withdrawn from the Davis-Besse Unit No. 1 reactor vessel in accordance with the schedule shown in Table 4.2-1. Following withdrawal of each capsule listed in Table 4.2-1, Arkansas Power & Light Company shall be responsible for testing the specimens and submitting a report of test results in accordance with 10CFR50, Appendix H.	



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 74 TO
FACILITY OPERATING LICENSE NO. DPR-51
ARKANSAS POWER AND LIGHT COMPANY
ARKANSAS NUCLEAR ONE, UNIT NO. 1

DOCKET NO. 50-313

Introduction

By letter dated February 22, 1979, as supplemented by letters dated August 18, November 30, and December 23, 1982, and February 15, 1983, Arkansas Power and Light Company (the licensee or AP&L) requested amendment to the Technical Specifications (TSs) appended to Facility Operating License No. DPR-51 for Arkansas Nuclear One, Unit No. 1 (ANO-1).

The amendment would allow the Acoustic Emission (AE) method for inservice volumetric examination of the reactor coolant pump flywheels.

Discussion

General Design Criterion 4, "Environmental and Missile Design Bases," of Appendix A, 10 CFR Part 50, requires, in part, that nuclear power plant structures, systems, and components important to safety be protected against the effects of missiles that might result from equipment failures. Because reactor coolant pump flywheels have large masses and rotate at speeds of approximately 1200 revolutions per minute during normal operation, a loss of flywheel integrity could result in high energy missiles and excessive vibration of the reactor coolant pump assembly. The safety consequences could be significant because of possible damage to the reactor coolant system, the containment, or the engineered safety features. To prevent loss of structural integrity, we have recommended that all flywheels conform to the material, design and inspection requirements of Safety Guide 14 which recommends that the flywheels should have a complete ultrasonic volumetric and surface examination at approximately 10-year intervals coinciding with a plant shutdown for refueling or maintenance.

The ANO-1 flywheels are of a unique shrink-fit design with spoked web and with limited access for inspection. In order for the licensee to perform an ultrasonic (UT) and surface (MT or PT) examination of a flywheel, they must remove the rotor assembly from the pump and disassemble the flywheel from the rotor.

Since the flywheels are shrunk fit, their removal is not recommended by the manufacturer. In addition, the licensee estimates that UT and MT or PT of the four ANO-1 flywheels would result in 120 man-rem total radiation exposure.

In lieu of the surface and volumetric examination recommended by Safety Guide 14, the licensee proposes to perform an AE examination of the upper flywheels on each of the four reactor coolant pumps. The extent of examination will be the full volume of the flywheel.

In the AE method of examination, acoustic energy output from an advancing crack is utilized to locate the defect. The licensee proposes to activate potential crack progression by heating to increase the static stress from 62.5% of yield to 90% of yield. Due to the shrink fit, the hoop stress at the inner bore is 62.5% of yield when the flywheel is at rest. The licensee proposes to increase the static stress on the flywheel by maintaining an average temperature difference (ΔT) between the rotor web and the inner fiber of the flywheel of 150°F. This ΔT will be accomplished by strapping resistance heaters to the rotor web. The feasibility of this heating method has been confirmed on a mockup of a one-quarter section segment and a finite element analysis. In order to measure the ΔT during the AE examination, temperature sensors will be placed at critical locations which were established during tests on the mockups.

The licensee indicates that the acceptance/rejection criteria would be based on the interpretation of the AE response by the inspector and that all AE response signals that indicate a crack progression would be evaluated by other nondestructive examination methods to size the defects.

Evaluation

We have reviewed the licensee's proposed method of volumetric examination of the ANO-1 reactor coolant pump flywheels and the proposed TSs.

Since it is not feasible to perform surface and volumetric examination of ANO-1 flywheels to the extent recommended by Safety Guide 14 and the radiation exposure to plant personnel can be significantly reduced by performing AE instead of UT and MT or PT, we consider that AE with an induced stress of approximately 90% of yield is an acceptable alternative method for inservice surface and volumetric examination of the ANO-1 flywheels. In addition, based on this review, we have determined that the proposed TSs meet the intent of Safety Guide 14 for volumetric and surface examination of reactor coolant pump flywheels at 10-year intervals, and they are therefore acceptable.

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 an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, 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.

Dated: April 4, 1983

The following NRC personnel have contributed to this Safety Evaluation:
G. Vissing, B. Elliot.

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-313ARKANSAS POWER & LIGHT COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 74 to Facility Operating License No. DPR-51, issued to Arkansas Power and Light Company (the licensee), which revised the Technical Specifications (TSs) for operation of Arkansas Nuclear One, Unit No. 1 (ANO-1) located in Pope County, Arkansas. The amendment is effective as of the date of issuance.

The amendment revises the TSs to allow the Acoustic Emission method for the inservice volumetric examination of the reactor coolant pump flywheels.

The application for the amendment complies 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.

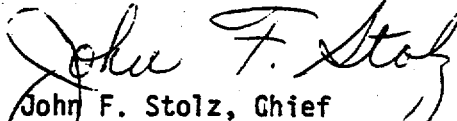
The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4), an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance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

-2-

For further details with respect to this action, see (1) the licensee's application for amendment dated February 22, 1979, as supplemented August 18, November 30, and December 23, 1982, and February 15, 1983, (2) Amendment No. 74 to License No. DPR-51, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. and at the Arkansas Tech University, Russellville, Arkansas. 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 4th day of April 1983.

FOR THE NUCLEAR REGULATORY COMMISSION


John F. Stolz, Chief
Operating Reactors Branch #4
Division of Licensing