

Docket No. 50-313

JUN 9 1977

Arkansas Power & Light Company  
ATTN: Mr. J. D. Phillips  
Senior Vice President  
Production, Transmission  
and Engineering  
Sixth and Pine Streets  
Pine Bluff, Arkansas 71601

Gentlemen:

By letter dated June 3, 1977, you requested immediate changes to the Arkansas Nuclear One - Unit No. 1 (ANO-1) Technical Specifications to allow additional time (beyond 36 hours) for the repair of a failed reactor building emergency cooling fan. Such a change, to allow continued ANO-1 operation up to 7 days with one (1) of four (4) cooling fans inoperable, was issued as an emergency technical specification change on the evening of June 3, 1977. Our bases for issuance were: (1) the ANO-1 technical specifications were more stringent with regard to cooling fan requirements than need be, since the ANO-1 Final Safety Analysis Report (FSAR) stated that only one (1) spray pump and two (2) cooler fans were needed for pressure reduction; and (2) the latest regulatory guidance, in the form of Standard Technical Specifications, allows a certain period of time for operation in which certain safety-related equipment (including the spray pumps and fan coolers) may be out-of-service.

On June 7, 1977, prior to our preparation and formal issuance of the aforementioned Technical Specification amendment, you notified us by letter that no Loss-of-Coolant Accident (LOCA) - qualified replacement motor for the failed fan could be located in the United States or Europe. You requested additional changes to the Technical Specifications in order to operate indefinitely with one fan cooler out-of-service. We required an analysis in support of this request and specified that you must assume post-LOCA failure-to-start of one diesel generator system, with consequent loss of one spray system and two cooler fans, concurrent with the already out-of-service fan. In this condition, with one spray system and one cooler fan in operation, containment integrity and pressure reduction criteria must be met.

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JUN 9 1977

Your analysis forwarded by letter dated June 8, 1977, as supplemented by our own intensive review, has shown that the aforementioned criteria are indeed met. Therefore, we have issued the enclosed Amendment No. 26 to Facility Operating License No. DPR-51 for the ANO-1 facility.

Copies of our related Safety Evaluations (June 3, 1977, and for the enclosed action) and the Notice of Issuance are also enclosed.

Sincerely,  
Original signed by



Don K. Davis, Acting Chief  
Operating Reactors Branch #2  
Division of Operating Reactors

Enclosures:

1. Amendment No. 26 to License No. DPR-51
2. Safety Evaluations
3. Notice

cc w/enclosures:  
See next page

DISTRIBUTION=

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- DEisenhut
- WButler
- OPA CTare Miles
- DRoss
- ACRS (16)
- TBAbernathy
- JRBuchanan

*6/9/77 - 1745  
Notified Don Reuter (AP&L)*  
*6/9/77 - 1730  
Notified Kermit Whitt (I&E)*

OFFICE →	DOR:ORB #2	DOR:ORB #2	DOR:AD/OT	DOR:PSB/OT	OELD	DOR:ORB #2
SURNAME →	RPSnaider:ro	RMDiggs	DEisenhut	WButler	Taukello	DKDavis
DATE →	6/9/77	6/9/77	6/9/77	6/9/77	6/9/77	6/9/77

JUN 9 1977

cc w/enclosures:

Horace Jewell, Esquire  
House, Holms & Jewell  
1550 Tower Building  
Little Rock, Arkansas 72201

Phillip K. Lyon, Esquire  
House, Holms & Jewell  
1550 Tower Building  
Little Rock, Arkansas 72201

Mr. Donald Rueter  
Manager, Licensing  
Arkansas Power & Light Company  
Post Office Box 551  
Little Rock, Arkansas 72201

Arkansas Polytechnic College  
Russellville, Arkansas 72801

Chief, Energy Systems Analyses  
Branch (AW-459)  
Office of Radiation Programs  
U. S. Environmental Protection  
Agency  
Room 645, East Tower  
401 M Street, S. W.  
Washington, D. C. 20460

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

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

cc w/enclosures and a copy of  
AP&L letters dated June 3, 7 & 8,  
1977

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

*(w/cy of 6/3/77 auth.)*

*— w/cy of 6/3/77 auth.*

*— w/cy of 6/3/77 auth.*

*— w/cy of 6/3/77. auth.*

ARKANSAS POWER & LIGHT COMPANY

DOCKET NO. 50-313

ARKANSAS NUCLEAR ONE - UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. *26*  
License No. DPR-51

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The applications for amendment by Arkansas Power & Light Company (the licensee) dated June 3 and June 7, 1977, as supplemented by letter dated June 8, 1977, 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 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.

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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 License No. DPR-51 is hereby amended to read as follows:

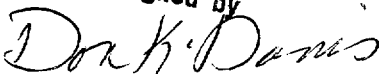
(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 26, 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

*Original signed by*



Don K. Davis, Acting Chief  
Operating Reactors Branch #2  
Division of Operating Reactors

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: JUN 9 1977

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DATE ➤						

ATTACHMENT TO LICENSE AMENDMENT NO. 26

FACILITY OPERATING LICENSE NO. DPR-51

DOCKET NO. 50-313

Accomplish page changes to the Appendix A portion of the Technical Specifications as noted below. The changed areas on the revised pages are identified by a marginal line.

Remove Existing Page

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Add Revised Page

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### 3.3 EMERGENCY CORE COOLING, REACTOR BUILDING COOLING AND REACTOR BUILDING SPRAY SYSTEMS

#### Applicability

Applies to the emergency core cooling, reactor building cooling and reactor building spray systems.

#### Objectivity

To define the conditions necessary to assure immediate availability of the emergency core cooling, reactor building cooling and reactor building spray systems.

#### Specification

3.3.1 The following equipment shall be operable whenever containment integrity is established as required by Specification 3.6.1:

- (A) One reactor building spray pump and its associated spray nozzle header.
- (B) One reactor building cooling fan and its associated cooling unit.
- (C) Two out of three service water pumps shall be operable, powered from independent essential buses, to provide redundant and independent flow paths.
- (D) Two engineered safety feature actuated low pressure injection pumps shall be operable.
- (E) Both low pressure injection coolers and their cooling water supplies shall be operable.
- (F) Two BWST level instrument channels shall be operable.
- (G) The borated water storage tank shall contain a minimum level of 35.9 feet (350,000 gallons) of water having a minimum concentration of 2270 ppm boron at a temperature not less than 40F. The manual valve on the discharge line from the borated water storage tank shall be locked open.
- (H) The four reactor building emergency sump isolation valves to the LPI system shall be either manually or remote-manually operable.

- (I) The engineered safety features valves associated with each of the above systems shall be operable or locked in the ES position.
- 3.3.2 In addition to 3.3.1 above, the following ECCS equipment shall be operable when the reactor coolant system is above 350F and irradiated fuel is in the core:
- (A) Two out of three high pressure injection (makeup) pumps shall be maintained operable, powered from independent essential busses, to provide redundant and independent flow paths.
  - (B) Engineered safety features valves associated with 3.3.2.a above shall be operable or locked in the ES position.
- 3.3.3 In addition to 3.3.1 and 3.3.2 above, the following ECCS equipment shall be operable when the reactor coolant system is above 800 psig:
- (A) The two core flooding tanks shall each contain an indicated minimum of  $13 \pm 0.4$  feet ( $1040 \pm 30$  ft<sup>3</sup>) of borated water at  $600 \pm 25$  psig.
  - (B) Core flooding tank boron concentration shall not be less than 2270 ppm boron.
  - (C) The electrically operated discharge valves from the core flood tanks shall be open and breakers locked open and tagged.
  - (D) One of the two pressure instrument channels and one of the two level instrument channels per core flood tank shall be operable.
- 3.3.4 The reactor shall not be made critical unless the following equipment in addition to 3.3.1, 3.3.2, and 3.3.3 above is operable.
- (A) Two reactor building spray pumps and their associated spray nozzle headers and two reactor building emergency cooling fans and associated cooling units powered from operable independent emergency buses.
  - (B) The sodium thiosulfate tank shall contain an indicated 31 ft of 30 wt% solution sodium thiosulfate (37,500 lb). The sodium hydroxide tank shall contain an indicated 31 ft. of 20 wt% solution sodium hydroxide (20,500 lb.).
  - (C) All manual valves in the main discharge lines of the sodium thiosulfate and sodium hydroxide tanks shall be locked open.
  - (D) Engineered safety feature valves and interlocks associated with 3.3.1, 3.3.2, and 3.3.3 shall be operable or locked in the ES position.
- 3.3.5 Maintenance shall be allowed during power operation on any component(s) in the high pressure injection, low pressure injection, service water, reactor building spray and reactor building cooling



systems which will not remove more than one train of each system from service. Maintenance shall not be performed on components which would make the affected system train inoperable for more than 24 consecutive hours. Prior to initiating maintenance on any component of a train in any system, the redundant component of that system shall be demonstrated to be operable within 24 hours prior to the maintenance.

3.3.6 If the conditions of Specifications 3.3.1, 3.3.2, 3.3.3, 3.3.4 and 3.3.5 cannot be met except as noted in 3.3.7 below, reactor shutdown shall be initiated and the reactor shall be in hot shutdown condition within 36 hours, and, if not corrected, in cold shutdown condition within an additional 72 hours.

3.3.7 Exceptions to 3.3.6 shall be as follows:

- (A) If the conditions of Specification 3.3.1(F) cannot be met, reactor operation is permissible only during the succeeding seven days unless such components are sooner made operable, provided that during such seven days the other BWST level instrument channel shall be operable.
- (B) If the conditions of Specification 3.3.3(D) cannot be met, reactor operation is permissible only during the succeeding seven days unless such components are sooner made operable, provided that during such seven days the other CFT instrument channel (pressure or level) shall be operable.

#### Bases

The requirements of Specification 3.3.1 assure that below 350F, adequate long term core cooling is provided. Two low pressure injection pumps are specified. However, only one is necessary to supply emergency coolant to the reactor in the event of a loss-of-coolant accident.

The post-accident reactor building cooling and long-term pressure reduction may be accomplished by four cooling units, by two spray units or by a combination of one cooling unit and one spray unit. Post-accident iodine removal may be accomplished by one of the two spray system strings. The specified requirements assure that the required post-accident components are available for both reactor building cooling and iodine removal. Specification 3.3.1 assures that the required equipment is operational.

The borated water storage tank is used for three purposes:

- (A) As a supply of borated water for accident conditions.
- (B) As a alternate supply of borated water for reaching cold shutdown. (2)
- (C) As a supply of borated water for flooding the fuel transfer canal during refueling operation. (3)



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 26 TO FACILITY OPERATING LICENSE NO. DPR-51

ARKANSAS POWER & LIGHT COMPANY

ARKANSAS NUCLEAR ONE - UNIT 1

DOCKET NO. 50-313

INTRODUCTION

By its letter, dated June 3, 1977, the Arkansas Power & Light Company (AP&L) requested an emergency change to the Technical Specifications for Arkansas Nuclear One - Unit No. 1 (ANO-1). The proposed change would allow operation of ANO-1 for a limited period of time with one (1) of the four reactor building emergency cooling fans being out-of-service. This request, necessitated by the failure of one such fan, was granted, during the evening of June 3, 1977, by the NRC for a period of seven days so that the associated repairs may be made while the plant continues in operation. The bases for granting the request were: (1) the specifications as written were more stringent than need be, since the ANO-1 Final Safety Analysis Report (FSAR) demonstrated that only one (1) spray pump and two (2) cooler fans were needed for satisfactory pressure reduction; and (2) the latest regulatory guidance, in the form of Standard Technical Specifications, allows a certain period of time for continued plant operation during which certain safety-related equipment (including spray pumps and fan coolers) may be out-of-service.

On June 7, 1977, prior to our preparation and formal issuance of the conforming change to the Technical Specifications, the licensee notified the staff by letter that a suitably-qualified replacement motor for the failed fan cooler could not be located in either the United States or Europe. Therefore, AP&L has requested that an additional change to the Technical Specifications be made to authorize continued operation for an indefinite period with one fan cooler out-of-service.

We required an analysis in support of this additional request and specified that AP&L assume post-Loss-of-Coolant Accident (LOCA) failure-to-start of one diesel generator system, resulting in the loss of one spray system and two fan coolers, additional to the already out-of-service fan cooler. In this degraded condition, with only one spray system and one fan cooler in operation, containment integrity and pressure reduction had to be achieved satisfactorily.

This Safety Evaluation addresses the present action as well as the separate action of June 3, 1977.

#### DISCUSSION AND EVALUATION

The Reactor Building Cooling System (RBCS), in conjunction with the Reactor Building Spray System (RBSS), constitute the active systems for heat removal from the primary containment in the event of a loss-of-coolant accident (LOCA). Following the postulated LOCA, the primary containment pressure and temperature will rise as a result of the mass and energy released to the containment atmosphere from the primary system. As the rate of mass and energy release decays, the pressure rise in the containment is terminated by the effects of energy absorption in the containment structures. Subsequently, the RBCS fan coolers and RBSS sprays are activated to reduce the containment pressure and limit the release of fission products to the environment.

In the Final Safety Analysis Report (FSAR) for ANO-1, the analyses of the design basis LOCA indicated that reactor building cooling and long-term pressure reduction could be satisfactorily accomplished either by all four RBCS fan coolers or by both RBSS spray trains. A combination of one RBSS spray train and two RBCS fan coolers was also shown to be satisfactory. The staff reviewed these analyses and found them to be acceptable as reported in the staff's Safety Evaluation Report for ANO-1, dated June 6, 1973.

AP&L has reanalyzed the design basis LOCA, assuming that only one RBSS spray train and one RBCS fan cooler are available for containment heat removal, while maintaining all of the other conservative assumptions previously made in the FSAR analyses. The results of this reanalysis demonstrate that satisfactory reactor building cooling and long-term pressure reduction can be accomplished with the combination of one RBSS spray train and one RBCS fan cooler. That is, the resultant pressure reduction rate satisfies the staff's acceptance criterion of a two-fold pressure reduction within 24 hours. Consequently, AP&L has submitted a proposed change to the Technical Specifications which will assure the availability of at least one RBSS spray train and one RBCS fan cooler in the event of a LOCA. We have reviewed the results of the licensee's reanalysis, and find that the combination of at least one RBSS spray train and one RBCS fan cooler for heat removal following the postulated LOCA will provide the required amount of containment cooling. Since the consequences of an accident are not increased beyond those already identified in the FSAR and since the proposed change to the Technical Specifications will not increase the probability of an accident, we conclude that the proposed change to the Technical Specifications is 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~~ <sup>the</sup> issuance of this amendment.

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CONCLUSIONS

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: JUN 9 1977



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

SAFETY EVALUATION - ARKANSAS 1 50-313

By teletype dated June 3, 1977, Arkansas Power and Light Company (AP&L) documented the failure of one (1) reactor building emergency cooling fan (of four) at Arkansas Nuclear One - Unit 1 (ANO-1). Present ANO-1 Technical Specifications would require initiation of reactor shutdown and establishment of hot shutdown conditions within 36 hours and, if the situation is not corrected, establishment of cold shutdown conditions within an additional 72 hours.

AP&L believes, and we concur, that the present ANO-1 Technical Specifications are too stringent in this regard. The ANO-1 FSAR analysis of post-Loss of Coolant Accident (LOCA) reactor building cooling and long-term pressure reduction shows that such cooling and pressure reduction may be accomplished by four cooling units, by two spray units, or by a combination of two cooling units and one spray unit. Because this is the case, we can agree with AP&L that the loss of one fan unit for a 7 day period does not present a significant hazards consideration. In addition, such reduction in fan capacity, and reduction in spray capacity for limited periods of time for repair, are presently allowed by Standard Technical Specifications.

Because the proposed change will not increase the chance of an accident and will not significantly increase the consequences of an accident, and is in accordance with the latest regulatory guidance, we have concluded that the change is acceptable.

Original signed by

A handwritten signature in cursive script that reads "Richard P. Snaider".

Richard P. Snaider, Project Manager  
Operating Reactors Branch #2  
Division of Operating Reactors

DATE: June 3, 1977

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-313

ARKANSAS POWER & LIGHT COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY  
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 26 to Facility Operating License No. DPR-51, issued to Arkansas Power & Light Company (the licensee), which revised Technical Specifications for operation of Arkansas Nuclear One - Unit No. 1 (ANO-1) (the facility) located in Pope County, Arkansas. The amendment is effective as of its date of issuance.

The amendment revised the Technical Specifications for the facility to authorize operation with two (2) reactor building emergency cooling units operable instead of the four (4) units previously required. This modification is the result of a June 2, 1977 fan failure at ANO-1, subsequent information that a replacement fan would not be available for approximately 45 days, and an NRC-requested AP&L analysis which showed that the original Final Safety Analysis Report analyses had been conservative and that only one cooling unit and one spray system are necessary. An emergency technical specification change, allowing seven (7) days for fan repair, had been issued by letter dated June 3, 1977. This action supersedes that change.

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

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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 was not required since these actions do 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)~~ 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.

For further details with respect to this action, see (1) the applications for amendment dated June 3 and June 7, 1977, as supplemented by letter dated June 8, 1977, (2) Change authorization letter dated June 3, 1977, and its related Safety Evaluation dated June 3, 1977, (3) Amendment No. 26 to License No. DPR-51, and (4) the Commission's currently issued 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 Polytechnic College, Russellville, Arkansas 72801. A single copy of items (2) (3) and (4) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this *ninth day of June, 1977.*

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by

*Don K. Davis*

OFFICE ➤					
SURNAME ➤			Don K. Davis, Acting Chief		
DATE ➤			Operating Reactors Branch #2		
			Division of Operating Reactors		