

UNITED STATES OF AMERICA  
ATOMIC ENERGY COMMISSION



In the Matter of )  
 )  
ARKANSAS POWER & LIGHT COMPANY )  
 )  
(Russellville Nuclear Unit) )

Docket No. 50-313

PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW  
BY THE APPLICANT AND THE AEC REGULATORY STAFF  
(IN THE FORM OF A PROPOSED INITIAL DECISION)

Preliminary Statement

1. This proceeding involves the application of the Arkansas Power & Light Company ("Applicant"), dated November 29, 1967, and ten subsequent amendments (hereinafter collectively referred to as the "application"), properly filed under section 104 b. of the Atomic Energy Act of 1954, as amended ("Act"), for a provisional construction permit to construct a pressurized water reactor, designed to operate initially at 2452 megawatts (thermal), to be located at the Applicant's site in Polk County, Arkansas, approximately six miles from Russellville, Arkansas.

2. The application has been reviewed by the regulatory staff ("staff") of the Atomic Energy Commission ("Commission") and the Advisory Committee on Reactor Safeguards, both of which concluded that there is reasonable assurance that the proposed facility can be constructed and operated at the proposed site without undue risk to the health and safety of the public. (Staff Safety Evaluation, Tr. 139, pp. 3, 43 and 45.)

3. In accordance with the requirements of the Act and a Notice of Hearing published September 20, 1968, 33 F.R. 14243), <sup>1/</sup> a public hearing was held before this Atomic Safety and Licensing Board ("Board") in Russellville, Arkansas, on October 30, 1968, to consider whether a provisional construction permit should be issued to the Applicant. The parties to the proceeding were the Applicant and the staff. The proceeding was not a "contested proceeding" within the meaning of 10 CFR § 2.4(n) of the Commission's "Rules of Practice".

4. Pursuant to 10 CFR § 2.715 of the Commission's "Rules of Practice", limited appearances were made during the hearing By the Director of the State of Arkansas Pollution Control

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<sup>1/</sup> Pursuant thereto a prehearing conference was held on October 15, 1968, in Washington, D. C.

Commission, a representative of the State of Arkansas Department of Health, and by one other person. (Tr. pp. 92-97, 98-100, 101-106.)

#### Findings of Fact

5. The Applicant is a corporation, all of whose common stock is owned by Middle South Utilities, Inc., a public utility holding company. It is soundly financed and has significant resources at its command. The Applicant plans to finance the cost of construction of the proposed facility as an integral part of its total construction program, namely in the ordinary course of business through funds derived from operations and through sale of securities. (Testimony of A. B. Coen, Tr. 109-114; testimony of C. A. Lovejoy, Tr. 134, pp. 2-4)

6. The application contains a description of the site and the basis for its suitability, a detailed description of the proposed facility, including those reactor systems and features which are essential to safety, an analysis of the safety features provided for in the facility design, and an evaluation of various postulated accidents and hazards involved in the operation of such a facility and the engineered safety

features provided to limit their effect. Additional testimony and documentary evidence relative to these matters is included in the evidentiary record. Also included in the application is evidence of the technical qualifications of the Applicant, including those of its contractors, to design and construct the facility. The Staff Safety Evaluation sets forth the consideration given to the important safety features of the proposed facility and the significance assigned to those systems and features important to the prevention or mitigation of accidents and to the health and safety of the public. (Tr. 139)

7. The Applicant has gained experience in the construction and operation of nuclear powered generating stations as a result of its participation in the Southwest Experimental Fast Oxide Reactor Facility (SEFOR) and through its participation in the Peach Bottom Atomic Power Station Project. (Summary of Application, Tr. 131, p. 44; Staff Safety Evaluation, Tr. 139, p. 38.) The Babcock & Wilcox Company, which will design and furnish the nuclear steam supply system and the first core, has had considerable experience in the design, development and construction of reactor systems and components. The Bechtel Corporation, which has had broad experience in the nuclear field, has been retained by the Applicant as Architect/Engineer

and Manager of Construction of the facility and will provide engineering services for design and construction. (Summary of Application, Tr. 131, pp. 43-47; Staff Safety Evaluation, Tr. 139, pp. 38-39.)

8. The plant site is located in Pope County, Arkansas, on the north bank of the Dardanelle Reservoir on the Arkansas River. The site covers about 1,100 acres and has a minimum exclusion area radius of 3,430 feet. The area around the site is largely undeveloped and rural. The nearest population center having a population in excess of 25,000 is located about 55 miles south of the plant. (Summary of Application, Tr. 131, pp. 5 and 6; Staff Safety Evaluation, Tr. 139, p. 4.) The plant design will take into account local hydrological and other special conditions (such as the gas transmission line) as well as the possibility of earthquakes, floods and severe meteorological conditions such as tornadoes. (Summary of Application, Tr. 131, pp. 6-12; Staff Safety Evaluation, Tr. 139, pp. 5-6 and 13; testimony of Mr. H. T. Holmes, Tr. pp. 190-195 and testimony of Mr. Albert Schwencer, Tr. pp. 196-197.)

9. The design of the plant's major systems and components which bear significantly on the acceptability of the facility

at the proposed site under the site criteria guidelines identified in 10 CFR Part 100 of the Commission's regulations have been analyzed and evaluated by the Applicant and the staff at a core power level of 2568 megawatts (thermal) the ultimate reactor power level expected for the facility. (Summary of Application, Tr. 131, p. 3; Staff Safety Evaluation, Tr. 139, p. 1.)

10. The proposed facility incorporates numerous systems, components and features for the protection of plant personnel and the public and is similar in design to plants incorporating pressured water reactors which have been previously approved for construction by the Commission. (Staff Safety Evaluation, Tr. 139, p. 6.) An important safety feature is the containment system which will completely enclose the reactor and major components of the primary coolant system. The containment system consists of a reinforced prestressed concrete structure lined with a vapor tight steel plate. The containment structure is designed to accommodate, without loss of integrity, functional loads resulting from a loss-of-coolant accident occurring simultaneously with the maximum hypothetical earthquake and normal operating loads. (Summary of Application,

Tr. 131, pp. 19-21; Staff Safety Evaluation, Tr. 139, pp. 22-25.)

11. The proposed facility has two separable cooling systems which assure adequate core cooling and pressure reduction within the containment structure even if a loss-of-coolant accident should occur. For immediate short-term cooling, an emergency core cooling system will inject cool borated water into each of the primary coolant loops and directly into the reactor vessel, thereby limiting energy and fission product release into the containment. For cooling containment air to reduce containment vessel internal pressure in the event of an accident, there are two independent spray systems which deliver cool borated water into the containment atmosphere. These systems will provide borated water containing dissolved sodium thiosulphate and sodium hydride to remove iodine in the event of an accident. (Summary of Application, Tr. 131, pp. 21-23; Staff Safety Analysis, Tr. 139, pp. 7, 9 and 18-22, and testimony of Mr. H. T. Holmes, Tr. 146, pp. 1-8, Staff Exhibit No. 3.)

12. The Applicant and the staff recognize that in order

to develop the final design of the facility further information and data will be needed. Such additional information and data will be developed by research and development projects in the course of the final design work for the plant. In addition, some of the basic work in progress is expected to provide added confirmation that the proposed designs are conservative. The major areas of research and development include the emergency core cooling system; development of final thermal-hydraulic, nuclear, and mechanical design parameters including fuel failure tests, xenon oscillation studies, and fuel burnup tests; control rod drive unit tests, in-core neutron detector tests; once through steam generator development and tests; development of design details of iodine removal system; and development of prompt fuel failure detectors. The objectives of these programs have been defined, and a schedule for the furnishing of information prior to completion of construction of the proposed facility has been established. (Summary of Application, Tr. 131, pp. 37-42; Staff Safety Evaluation, Tr. 139, pp. 32-34; testimony of Mr. H. T. Holmes, Tr. 148, pp. 1-8.)

13. The Applicant, Bechtel and Babcock and Wilcox have



established an adequate quality control and assurance program to assure facility conformance with design requirements, recognized codes, and good engineering practice. The quality assurance and control programs of the Applicant will be separate and independent from its vendors, contractors, and construction manager. (Summary of Application, Tr. 131, pp. 33-36; Staff Safety Evaluation, Tr. 139, pp. 39-42; testimony of Mr. H. T. Holmes, Tr. 154-171 and testimony of Mr. C. G. Long, Tr. pp. 182-185.)

14. The activities to be conducted under the provisional construction permit will be within the jurisdiction of the United States, and all of the directors and principal officers of the Applicant are United States citizens. The Applicant is not owned, controlled or dominated by an alien, a foreign corporation or a foreign government. The activities to be conducted do not involve any restricted data, but the Applicant has agreed to safeguard any such data which might become involved in accordance with 10 CFR § 50.33(j). Special nuclear material for use as fuel in the proposed facility will be subject to Commission regulations and will be obtained from

sources of supply, so that there will be no diversion of such material. (Summary of Application, Tr. 131, pp. 47-48; Staff Safety Evaluation, Tr. 139, p. 42.)

15. The application and the proceeding thereon comply with the requirements of the Act and the Commission's regulations. There are no unresolved safety questions pertinent to the issuance of the provisional construction permit.

#### Conclusions

16. Upon consideration of the entire record in this proceeding and the foregoing findings of fact and conclusions of law set forth above, this Board concludes that the application and the record of the proceeding contain sufficient information, and the review of the application by the staff has been adequate to support (1) the findings proposed to be made by the Director of Regulation, and (2) the issuance of the provisional construction permit as proposed by the Director of Regulation, as set forth in the Notice of Hearing in this proceeding.

Order

17. Pursuant to the Act and the Commission's regulations, IT IS ORDERED that the Director of Regulation issue a provisional construction permit to the Arkansas Power & Light Company substantially in the form set forth in Appendix "A" to the Notice of Hearing in this proceeding. IT IS FURTHER ORDERED, in accordance with 10 CFR §§ 2.760, 2.762 and 2.764 of the Commission's "Rules of Practice", that this Initial Decision shall be effective immediately and shall constitute the final action of the Commission forty-five (45) days after the date of issuance, subject to review thereof and further decision of the Commission upon its own motion or upon exceptions filed pursuant to the cited rules.

ATOMIC SAFETY AND LICENSING BOARD

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Algie A. Wells, Chairman

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R. B. Briggs

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Lawrence R. Quarles

Dated

this        day of November, 1968

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ATOMIC ENERGY COMMISSION

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(Russellville Nuclear Unit)

Docket No. 50-313

CERTIFICATE OF SERVICE

I hereby certify that copies of ORDER CORRECTING TRANSCRIPT dated November 27, 1968 in the captioned matter have been served on the following by deposit in the United States mail, first class or air mail, this 27th day of November 1968:

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