

JUL 18 1978

Docket No. 50-368

Arkansas Power and Light Company
ATTN: Mr. William Cavanaugh III
Executive Director of Generation
and Construction
P. O. Box 551
Little Rock, Arkansas 72203

Gentlemen:

SUBJECT: ISSUANCE OF FACILITY OPERATING LICENSE NO. NPF-6
(ARKANSAS NUCLEAR ONE, UNIT 2)

The Nuclear Regulatory Commission (the Commission) has issued the enclosed Facility Operating License No. NPF-6 including Technical Specifications (Appendices A and B) to the Arkansas Power and Light Company for Arkansas Nuclear One - Unit 2 (ANU-2) located in Pope County, Arkansas. License No. NPF-6 authorizes the Arkansas Power and Light Company to load nuclear fuel into Arkansas Nuclear One - Unit 2 and maintain it in a cold shutdown condition (Operational Mode 5) in accordance with Technical Specifications (Appendices A and B) of the license. A copy of the Notice of Issuance and the supporting Safety Evaluation for issuance of a fuel load license are enclosed.

Two signed copies of Amendment No. 6 to Indemnity Agreement B-65 are enclosed for your review and acceptance. Please sign and return one copy to the Director, Division of Project Management.

Sincerely,

Original signed by:
Roger S. Boyd

Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Cont. 1
GD

Enclosures:

1. Facility Operating License No. NPF-6
2. Notice of Issuance
3. Safety Evaluation for the Issuance of a Fuel Load License
4. Amendment No. 6 to Indemnity Agreement B-65

EP/WAR
WRegan 7/14/78
VM... 7/14/78
EP (Acting)/D
DM... 7/14/78
EP/WAR
FSEchois 7/14/78
OELB
OELD/Antitrust
Rutberg
7/14/78 7/14/78

ccs w/encls:

See page 2	LWR 1	LWR 1	AS/LWR	ATG	DO/DRM	D/BPM
OFFICE	Ed Martin/red	JSto	Wass	To	RCDeYoung	RSBoyd
SURNAME	RMartin	JSto	Wass	To	RCDeYoung	RSBoyd
DATE	7/13/78	7/13/78	7/13/78	7/13/78	7/13/78	7/13/78

JUL 18 1978

Arkansas Power & Light Company

-2-

Mr. Daniel H. Williams
Manager, Licensing
Arkansas Power & Light Company
P. O. Box 551
Little Rock, Arkansas 72203

Philip K. Lyon, Esq.
House, Holms & Jewell
1550 Tower Building
Little Rock, Arkansas 72201

Mr. E. H. Smith, Project Engineer
Bechtel Power Corporation
San Francisco, California 94119

Mr. Fred Sernatinger, Project Manager
Combustion Engineering, Inc.
1000 Prospect Hill Road
Windsor, Connecticut 06095

Mr. Charles B. Brinkman, Manager
Washington Nuclear Operations
C-E Power Systems
Combustion Engineering, Inc.
4853 Cordell Avenue, Suite A-1
Bethesda, Maryland 20014

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

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

Attorney General
Justice Building
Little Rock, Arkansas 72201

Mr. Bruce Blanchard
Environmental Projects Review
Department of the Interior
Room 4256
18th and C Street, N.W.
Washington, D. C. 20240

U. S. Environmental Protection Agency
ATTN: Ms. F. Munter
Office of Federal Activities
Room W-535, Waterside Mall
401 M Street, S.W.
Washington, D. C. 20460

ARKANSAS POWER AND LIGHT COMPANY

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT 2

FACILITY OPERATING LICENSE

License No. NPF-6

1. The Nuclear Regulatory Commission (the Commission) having found regarding this license that:
 - A. The application for license filed by Arkansas Power and Light Company (the licensee) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter 1 and all required notifications to other agencies or bodies have been duly made;
 - B. Construction of Arkansas Nuclear One, Unit 2 (the facility) has been substantially completed in conformity with Construction Permit No. CPPR-89 and the application, as amended, the provisions of the Act and the regulations of the Commission;
 - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;
 - D. There is reasonable assurance: (i) that the activities authorized by this operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations of the Commission;
 - E. The licensee is technically and financially qualified to engage in the activities authorized by this operating license in accordance with the regulations of the Commission;
 - F. The licensee has satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements," of the Commission's regulations;
 - G. The issuance of this operating license will not be inimical to the common defense and security or to the health and safety of the public;

OFFICE >						
SURNAME >						
DATE >						

- H. After weighing the environmental, economic, technical and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of Facility Operating License No. NPF-6 subject to the conditions for protection of the environment set forth herein, is in accordance with 10 CFR Part 51 (formerly Appendix D to 10 CFR Part 50) of the Commission's regulations and all applicable requirements have been satisfied; and
 - I. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40 and 70, including 10 CFR Sections 30.33, 40.32, 70.23 and 70.31.
2. Facility Operating License No NPF-6 is hereby issued to Arkansas Power and Light Company to read as follows:
- A. The license applies to Arkansas Nuclear One, Unit 2, a pressurized water reactor and associated equipment (the facility) owned by the Arkansas Power and Light Company. The facility is located in Pope County, Arkansas and is described in the Final Safety Analysis Report as supplemented and amended (Amendments 20 through 47) and the Environmental Report as supplemented and amended (Amendments 1 through 7).
 - B. Subject to the Conditions and requirements incorporated herein, the Commission hereby licenses Arkansas Power and Light Company:
 - (1) Pursuant to Section 103 of the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," to possess and use, to operate the facility at the designated location in Pope County, Arkansas in accordance with the procedures and limitations set forth in this license;
 - (2) Pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

OFFICE ➤						
SURNAME ➤						
DATE ➤						

- (3) Pursuant to the Act and 10 CFR Parts 30, 40 and 70 to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I; Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to load fuel and maintain the unit in an operational Mode 5 condition (cold shutdown condition). Prior to loading fuel the licensee shall complete the pre-operational tests, startup tests and other items identified in Attachment 2 to this license. Attachment 2 is an integral part of this license.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B (Attachment 1 to this license) are hereby incorporated in this license. Arkansas Power and Light Company shall operate the facility in accordance with the Technical Specifications.

OFFICE >						
SURNAME >						
DATE >						

D. Arkansas Power and Light Company shall maintain in effect and fully implement all provisions of the approved physical security plan, including amendments and changes made pursuant to the authority of Section 50.54(p) of 10 CFR Part 50. The approved security plan consists of the licensee's proprietary documents, collectively entitled "Arkansas Nuclear One Industrial Security Plan," as follows: Revision 9 dated May 23, 1975 (This revision replaced the previous plan in its entirety), Revision 10 dated October 31, 1975 and Revision 12 dated June 9, 1978.

E. This license is subject to the following additional condition for the protection of the environment:

Before engaging in additional construction or operational activities which may result in an environmental impact that was not evaluated by the Commission, the licensee will prepare and record an environmental evaluation or such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated, in the Final Environmental Statement (NUREG-0254) or any addendum thereto, the licensee shall provide a written evaluation of such activities and obtain prior approval from the Director, Office of Nuclear Reactor Regulation.

F. This license is effective as of the date of issuance and shall expire six months from said date, unless extended for good cause shown, or upon earlier issuance or denial of a subsequent licensing action.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by
Roger S. Boyd

Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Attachments:

1. Appendices A and B - Technical Specifications
2. Preoperational Tests, Startup Tests and Other Items Which Must Be Completed Prior to Loading Fuel

EP *WR* WRegan 7/14/78
 EP *VM* VMoore 7/14/78
 EP (Acting) *DM* DMuller 7/14/78

Date of Issuance: **JUL 18 1978**

SB Clark 7/18/78
DR DRutberg 7/13/78
DELD DELD/Antitrust 7/14/78
FSE FSEchn 7/14/78

OFFICE →	LWR Eaton/rec	LWR JSt	AR/LWR DWas	ATG	DD/DPM RCD	DD/DPM RBoyd
SURNAME →	RMartin	JSt	DWas		RCD	RBoyd
DATE →	7/13/78	7/13/78	7/13/78	7/13/78	7/13/78	7/13/78

ATTACHMENT 2 TO LICENSE NPF-6

Preoperational Tests, Startup Tests, and
Other Items Which Must be Completed Prior to Loading Fuel

This attachment identifies certain preoperational tests, startup tests, and other items which must be completed to the Commission's satisfaction prior to proceeding to Operational Mode 6 (Fuel Loading). Arkansas Power & Light Company shall not proceed into Operational Mode 6 without prior written authorization from the Commission.

1. Completion of installation of excore nuclear instrumentation.
2. Completion of preoperational test 2.600.12A, "Special Tests of Boration/Dilution System."
3. Resolution of questions on installation of fire barriers at the ends of conduit rather than at wall penetrations.

OFFICE >						
SURNAME >						
DATE >						

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-368

ARKANSAS POWER AND LIGHT COMPANY

ARKANSAS NUCLEAR ONE, UNIT 2

NOTICE OF ISSUANCE OF A FACILITY OPERATING LICENSE

Notice is hereby given that the Nuclear Regulatory Commission (the Commission) has issued Facility Operating License No. NPF-6 to Arkansas Power and Light Company, authorizing the loading of fuel and maintaining the unit in an operational Mode 5 condition (cold shutdown condition). The Arkansas Nuclear One, Unit 2 plant is a pressurized water reactor located at the licensee's site in Pope County, Arkansas.

The Commission has made appropriate findings as required by the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations in 10 CFR Chapter I, which are set forth in the license. The application for the license complies with the standards and requirements of the Act and the Commission's regulations.

This action is in furtherance of the licensing action encompassed in the combined Notice of Receipt of Application for Facility Operating License; Notice of Availability of Applicant's Environmental Report; and Notice of Opportunity for Hearing published in the FEDERAL REGISTER on April 23, 1974 (39 F.R. 14371).

OFFICE >						
SURNAME >						
DATE >						

The license is effective as of its date of issuance and shall expire six months from said date, unless extended for good cause shown, or upon earlier issuance or denial of a subsequent licensing action.

A copy of (1) Facility Operating License No. NPF-6 complete with Technical Specifications (Appendices A and B) (Attachment 1), Pre-operational Tests and Other Items Which Must Be Completed Prior to Loading Fuel (Attachment 2) and the Commission's related Safety Evaluation supporting License No. NPF-6; (2) the report of the Advisory Committee on Reactor Safeguards, dated April 12, 1978; (3) the Office of Nuclear Reactor Regulation's Safety Evaluation Report (NUREG-0308) and Supplement No. 1 thereto dated November 1977 and June 1978, respectively; (4) the licensee's Final Safety Analysis Report and amendments thereto; (5) the licensee's Environmental Report and amendments thereto; (6) the Draft Environmental Statement (NUREG-0070), dated May 1976; and (7) the Final Environmental Statement (NUREG-0254), dated June 1977; are available for public inspection at the Commission's Public Document Room at 1717 H Street, N. W., Washington, D. C. 20555 and the Arkansas Polytechnic College, Russellville, Arkansas 72801.

Copies of Items (1) and (2) may be obtained upon request addressed to the United States Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Project Management. Copies of

OFFICE >						
SURNAME >						
DATE >						

Items (3) and (7) may be purchased at current rates from the National Technical Information Service, Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22151.

Dated at Bethesda, Maryland, this *18th* day of *July* 1978.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed by

John F. Stolz, Chief
Light Water Reactors Branch No. 1
Division of Project Management

OFFICE >	LWR 7	LWR 7	DEL D	LWR 7		
SURNAME >	<i>Edson/red</i>	<i>R Martin</i>	<i>W. ...</i>	<i>J Stolz</i>		
DATE >	7/13/78	7/17/78	7/14/78	7/13/78		

STAFF EVALUATION FOR ISSUANCE OF A
FUEL LOADING LICENSE

I. Background

On November 11, 1977, the Nuclear Regulatory Commission (Commission) issued its Safety Evaluation Report regarding the application for a license to operate the Arkansas Nuclear One - Unit 2 (ANO-2) facility. Supplement No. 1 to the Safety Evaluation Report was issued on June 10, 1978 and documented the resolution of certain outstanding items and summarized the status of the remaining outstanding issues. The attached table provides a listing of the issues which remained outstanding in Supplement No. 1 and of those new issues that have arisen since preparation of Supplement No. 1.

This evaluation is in support of our conclusions regarding a decision for issuance of an operating license authorizing the Arkansas Power & Light Company (AP&LCo) to load nuclear fuel into the Arkansas Nuclear One - Unit No. 2 plant and to maintain it in a cold shutdown condition.

II. Summary Evaluation

Our evaluation of the outstanding matters identified in the attached table is substantially complete. A determination that those matters have been acceptably resolved is required prior to authorizing an operating license for power operation. However, we have evaluated each of the issues identified as outstanding in the attached table relative to the requirements necessary for fuel loading and cold shutdown conditions and for the reasons stated below have concluded that nuclear fuel can be loaded into ANO-2 and maintained in a cold shutdown condition (Operational Mode 5 of the ANO-2 Technical Specifications) prior to resolving each of these outstanding issues or documenting the final safety evaluation at this time for those issues that the staff has identified as acceptably resolved.

The initial core loading of ANO-2 will consist entirely of new fuel. Operational Mode 5 of the Technical Specifications requires a reactivity condition K_{eff} less than 0.99, zero percent of rated power, and an average coolant temperature less than or equal to 200 degrees Fahrenheit with the reactor head installed.

In the highly unlikely event of a postulated loss-of-coolant accident, an inconsequential amount of decay heat would result solely from the spontaneous natural decay of the fuel. No forced cooling of the fuel would be necessary to prevent exceeding the fuel clad temperature and other requirements of Section 50.46 and Appendix K to 10 CFR Part 50.

OFFICE >						
SURNAME >						
DATE >						

Until the core is made critical and operated at power, there will no significant increase in the decay heat above that generated in the new fuel. The Technical Specifications will contain restrictions during fuel loading and cold shutdown conditions which will prevent achieving criticality even in the event of an operator error or equipment malfunction. Therefore, any radioactive release into the containment would be insignificant for a postulated loss-of-coolant accident.

III. Outstanding Matters

A more specific discussion related to our safety evaluation of each of the outstanding matters in the attached table follows:

1. Outstanding Issues Acceptably Resolved And Needing Documentation In a Safety Evaluation

3.10, 4.2, 4.2.1, 4.2.4 (CEA Rod Worth Surveillance), 5.2.9, 5.4, 6.2.1 (Main Steam Line Break Mass and Energy Releases), 6.2.4, 6.2.6, 6.3.3, 7.1, 7.5.1, 7.6.3, 7.8, 7.9.4, 8.2, 9.5.1, 13.3, 14.0, 15.4.4, and 15.4.6. Based on our review we conclude that these have been adequately resolved. Our evaluation of these items will be documented in a forthcoming safety evaluation which will be issued prior to or with the issuance of an authorization for full power operation.

Specifically, with respect to issues 3.10 and 9.5.1, we have completed our reviews, respectively, of the seismic qualification of safety related instrumentation and electrical equipment, and the licensee's fire protection program for the ANO-2 plant. Based on our review we find seismic qualification program and the licensee's fire protection program acceptable. As noted above, the results of our review of the fire protection program will be published in a forthcoming safety evaluation report.

We have included further details of our evaluation of the ANO-2 seismic qualification evaluation and of the licensee's financial qualifications to engage in the activities authorized by this license in Attachments 1 and 2 to this evaluation report.

2. Other Outstanding Issues

a. Outstanding Issues Subject to Confirmatory Test Results

Our review of the technical issues represented by outstanding items numbered 7.2.3 (CPCS Positions 1, 5, and 12),

OFFICE ➤						
SURNAME ➤						
DATE ➤						

10.6 and 15.4.2 will be fully completed when we have reviewed and approved the test data resulting from the confirmatory testing programs related to these issues. These issues, therefore, cannot be completely resolved prior to the issuance of an authorization to operate at power since the plant must be in operation at various power levels in order to conduct these confirmatory tests. However, our review of the testing program including the test methods and procedures will be required to be completed prior to authorization for power operation. Since all of the plant safety functions involved in these issues are not applicable to plant operation within Operational Mode 5, we conclude that the plant can operate within Mode 5 authorized limits prior to final resolution of these issues.

b. Other Outstanding Issues

3.11: Environmental Qualification of Safety Related Equipment

Our review of the environmental qualification for safety related equipment has been completed with acceptable findings with the following exceptions.

- (1) Qualification for four of the Foxboro and twenty-two of the Fischer Porter instrumentation transmitters used inside containment has been found unacceptable. The Foxboro Model E11 GM absolute pressure transmitter is employed for the high pressurizer pressure trip signal generation. The Foxboro Model E11 AH differential pressure transmitter is employed for the high containment pressure trip signal. The Fischer Porter Model types 50 EP and 13D24 are employed for low pressurizer pressure trip, pressurizer level and steam generator pressure and level trip signals.

These instruments provide inputs into the reactor protection system and to the engineered safety features actuation system and also provide information to the operator following a loss-of-coolant accident for the post accident monitoring of system performance.

OFFICE >						
SURNAME >						
DATE >						

- (2) Qualification for the containment electrical penetrations has been found unacceptable. These are medium voltage penetrations which carry the power cables for reactor coolant pump operation. Qualification of these penetrations must be demonstrated to ensure that in the event of a LOCA or main steam-line break the containment's capability to retain released fission products would be maintained
- (3) Qualification for the containment radiation monitors required to provide long term post accident monitoring information to the operator has been found to be unacceptable.

Since all of the plant safety functions involved in these three environmental qualification issues are not applicable to plant operation within Operational Mode 5, we conclude that the plant can operate within Mode 5 authorized limits prior to final resolution of these issues.

4.2.4: CEA Guide Tube Integrity

Degradation of the control element assembly guide tubes has been observed on several operating plants during inspections conducted during refueling outages. The degradation is believed to be caused by flow induced vibration of the tips of the control element assembly rods against the inside walls of the guide tubes. The applicant has installed sleeves within the guide tubes. Basically the presence of sleeves would ensure that much more material would be available in the walls and that any wear produced by vibration of the rod against these walls would not be expected to result in significant degradation of the guide tube structure and therefore the proper functioning of the control rods would be assured.

Such sleeving of guide tubes has been proposed by other licensees with operating plants and has been approved by the staff for the continued operations of those plants.

OFFICE >						
SURNAME >						
DATE >						

Although our evaluation has not been completed, the flow induced vibration causing the problem will not be a safety concern for the brief operating time period expected during plant operations within Operational Mode 5. We conclude that the plant can operate within Mode 5 authorized limits prior to final resolution of this issue.

5.2.1: Fracture Toughness - Appendix G

&

5.2.2: Reactor Vessel Materials Surveillance Program - Appendix H

Our evaluation of the applicants method of compliance with the technical requirements of Appendices G and H to 10 CFR Part 50 is provided in Sections 5.2.1 and 5.2.2 of our Safety Evaluation Report wherein we concluded that these matters had been acceptably resolved.

Therefore while the safety related aspects of this issue have been satisfied the issue remaining is whether an exemption will be required from the literal requirements of these appendices.

In any event the requirements of these appendices are not of considerable concern until at least one fuel cycle of operation at full power has been experienced since it requires a substantial exposure to a radiation environment before either the fracture toughness considerations of Appendix G or the material surveillance program of Appendix H become significant.

In addition, since the reactor coolant pressure boundary has previously been tested beyond the pressure limits authorized for operation in Mode 5, no fracture toughness safety concerns exist in this mode. We conclude that the plant can operate within Mode 5 authorized limits prior to final resolution of these issues.

5.6.2: Steam Generator Tube Integrity

Steam generator tube denting has occurred in an operating plant which has led to cracking of the upper partial tube support plates. Reference may be made to the staff's evaluation of this matter which is attached to the staff's letter dated April 14, 1978 to Northeast Nuclear Energy Company issuing Amendment No. 37 to facility Operating License No. DPR-65 for the Millstone Nuclear Power Station, Unit No. 2.

OFFICE ➤						
SURNAME ➤						
DATE ➤						

In brief, tube denting in these partial tube support plates causes the plates to expand and create high local stress concentrations, "hard spots," at the plate's supporting lugs attached to the tube bundle shroud. These stresses cause cracking of the plate which in turn deformed the walls of some of the tubes. The solution to the problem of plate cracking was determined to be the removal of the lugs between the plate and the tube bundle shroud and the removal of a portion of the outer rim of the plate. This would allow the plate, driven by "denting" tubes, to expand thus minimizing the possibility of further cracking of the plate.

The ANO-2 steam generators are of course "new" steam generators which have not been exposed to power operating conditions and therefore there is no evidence of the presence of the tube denting phenomena at this time. However the applicant considered it a prudent and conservative action to make the design changes to the ANO-2 steam generators at this time to minimize the possibility of cracking of the partial tube support plate and of deformation of tube walls. An additional

advantage to performing the modifications at this time is that no personnel radiation exposure is incurred and this in turn allowed for the use of more experienced personnel and better working conditions to perform the job.

These types of changes have been reviewed and approved by the staff on operating plants and under somewhat less favorable conditions than exist for the ANO-2 steam generators.

Since operation of the steam generator is not required in Operating Mode 5, we conclude that the plant can operate within Mode 5 authorized limits prior to documentation of our final safety evaluation of this issue.

OFFICE ➤						
SURNAME ➤						
DATE ➤						

6.2.1: Environmental Qualifications for Safety Related Equipment for Main Steamline Break Inside Containment

The environmental qualifications of equipment required for the loss of coolant accident is addressed in item 3.11. Issue 6.2.1 pertains to the subject of whether or not the equipment required for the main steamline break inside containment has been adequately qualified since it is considered that the mass and energy releases resulting from a main steamline break could be more severe in their effects upon equipment than the mass and energy releases associated with a loss-of-coolant accident.

The non resolution of this item at this time does not preclude the loading of fuel or operation in Mode 5. Namely, the much lower thermal energy content of any mass and energy released as a result of a main steamline break and the lack of any radioactive fission products from Mode 5 operations would not result in the severe environmental conditions upon the equipment beyond which the equipment has been acceptably qualified.

6.3.4: Emergency Core Cooling System Operation in Recirculation Mode

This issue pertains to the capability of the containment sumps to collect spilled reactor coolant after a loss of coolant accident and recirculate it to the reactor core to remove fission product decay heat.

For reasons previously stated in Section II above the non resolution of this problem at this time does not preclude loading fuel or operation in Mode 5. Namely there will be no decay heat resulting from operations in Mode 5 which would require removal in the event of a loss-of-coolant accident. This item is, however, substantially resolved and we will report our evaluation in a forthcoming safety evaluation prior to or with the authorization for operation in Mode 2 condition.

OFFICE ➤						
SURNAME ➤						
DATE ➤						

7.2.2: Input Fault and Surge Testing of Power Supplies

As reported in the Safety Evaluation Report this issue pertains to whether the power supplies used in the safety system logic design have been demonstrated to be valid isolation devices. In response to our concerns the licensee submitted analysis and a description of modifications made to support the adequacy of the design.

The modifications include replacement of static inverter power supplies, used to power the logic systems, with solid state control inverters. The cables for the new inverters are routed in separate wireways which preclude the maximum voltages of 508 volts alternating current (VAC) and 140 volts direct current (VDC) previously identified, to be imposed on the logic circuits. In addition, surge suppression devices were added on the input and output of the inverters to minimize the surge voltages to within acceptable levels determined by analysis, the design may tolerate. As a result of the modification, the redefined worst case fault voltages and surges that can occur on the ANO-2 design was determined to be 132 VAC and 100 Volts respectively.

Although the analysis indicates that the design is capable of maintaining its functional operability if subjected to fault voltages below 400 VAC and instantaneous peak surges of 328 volts, the test data results presented did not sufficiently demonstrate that the integrity of these logic circuits would be maintained at these values. The licensee was advised that we require a type test be performed which simulates the design installation, and demonstrates that the design will maintain its functional integrity when subjected to 132 VAC faults with 100 Volt surges. The licensee agreed and committed to conduct a test which would envelope these design conditions and support the assumptions made in their analysis, and has also provided a summary of the results of these tests for our review. We have reviewed these test result summaries and conclude that they acceptably demonstrate the functional integrity of the design to withstand the maximum credible faults and surges as discussed above.

OFFICE ➤						
SURNAME ➤						
DATE ➤						

Based on our review of the applicant's modifications, the analysis presented and the results of the additional confirmatory type testing, we conclude that the design is acceptable.

7.2.3: Core Protection Calculator System

The core protection calculator system portion of the reactor protection system (RPS) provides the RPS trips inputs for the departure from nucleate boiling ratio (DNBR) and the high local power density conditions. Protection from the limiting values of these parameters is not required for the reasons stated in Section II of this report for fuel loading conditions and operation in Mode 5. Namely, only an inconsequential amount of decay heat will result from the spontaneous natural decay of the fuel and no forced cooling of the fuel is necessary to prevent exceeding the requirements of Section 50.46 and Appendix H to 10 CFR Part 50. In addition, the RPS trips involved in this issue are not required within the authorized operational limits of Mode 5.

IV. Conclusions

On the basis of our evaluations, we have concluded that the fuel can be loaded into the ANO-2 plant and the plant can be maintained in a safe cold shutdown condition (Operational Mode 5) and that the health and safety of the public will not be endangered.

On the basis of our review of the matters stated above, we have concluded that the issuance of an operating license authorizing fuel loading and maintaining the reactor in a cold shutdown condition (Operational Mode 5) of Arkansas Nuclear One - Unit 2 will not be inimical to the common defense and security or to the health and safety of the public.

Attachments:

1. Financial Qualifications of Arkansas Power and Light Company to Engage in Activities Authorized by the Arkansas Nuclear One - Unit 2 Operating License
2. Seismic Qualification Evaluation

Dated: JUL 18 1978

Concurrence for Section 7.2.3 as noted

OFFICE >	AGS					
SURNAME >	MY	J. K. Wright				
DATE >	7/17/78	7/18/78				

TABLE OF OUTSTANDING ITEMS

<u>Issue Number*</u>	<u>Title</u>
3.10	Seismic Qualification of Safety Related Instrumentation
3.11	Environmental Qualification of Safety Related Equipment
4.2	Reactor Vessel Internals - Vibration Monitoring
4.2.1	Burnable Poison Design Verification
4.2.4	CEA Guide Tube Integrity
4.2.4	CEA Rod Worth Surveillance
5.2.1	Fracture Toughness - Appendix G
5.2.2	Reactor Vessel Materials Surveillance Program - Appendix H
5.2.9	Inservice Testing of Pumps and Valves
5.4	Inservice Inspection Program
5.6.2	Steam Generator Tube Integrity
6.2.1	Main Steamline Break Mass and Energy Releases
6.2.1	Environmental Qualifications for Safety Related Equipment for Main Steamline Break Inside Containment
6.2.4	Containment Isolation Systems
6.2.6	Containment Leakage Testing Program
6.3.3	Evaluation of Emergency Core Cooling System Performance
6.3.4	Emergency Core Cooling System Operation in Recirculation Mode

*These issues are numbered in accordance with the same section numbers as those of the Safety Evaluation Report and Supplement No. 1 in which these issues have been discussed.

OFFICE >						
SURNAME >						
DATE >						

<u>Issue Number</u>	<u>Title</u>
7.1	Verification of Implementation of Instrumentation and Control Systems Design
7.2.2	Input Fault and Surge Testing for Power Supplies
7.2.3	Core Protection Calculator System (CPCS)
7.5.1	Accident and Post Accident Monitoring
7.6.3	Redundant Valve Position Indication
7.8	Electrical Penetrations
7.9.4	Separation Criteria for Conduits
8.2	Offsite Grid Stability
9.5.1	Fire Protection Review
10.6	Feedwater Hammer in Steam Generators
13.3	Emergency Plan
14.0	Initial Tests and Operations
15.4.2	CESEC Code Verification Program for Reactor Coolant Pump Seizure Analysis
15.4.4	Spectrum of Piping Breaks Inside and Outside of Containment
15.4.6	ECCS Pump Room Leakage

OFFICE >						
SURNAME >						
DATE >						

ATTACHMENT 2

SEISMIC QUALIFICATION EVALUATION

In Section 3.10 of the Safety Evaluation Report we stated that we would provide the results of our evaluation of the seismic qualification program which would include both Combustion Engineering, Inc. supplied and the balance-of-plant seismic Category I instrumentation and electrical equipment.

The seismic qualification review program consisted of reviewing test methods, procedures, documentation of test results, seismic input parameters such as amplitude, duration, frequency content and directional considerations, inspection of test facilities and site visits, and including some retesting of equipment and components where our evaluation considered this to be necessary.

On the basis of our review, we have concluded that the seismic qualification program of seismic Category I instrumentation and electrical equipment for the Arkansas Nuclear One, Unit 2 plant is acceptable.

OFFICE ➤						
SURNAME ➤						
DATE ➤						



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

ARKANSAS POWER AND LIGHT COMPANY

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT 2

FACILITY OPERATING LICENSE

License No. NPI-0

1. The Nuclear Regulatory Commission (the Commission) having found regarding this license that:
 - A. The application for license filed by Arkansas Power and Light Company (the licensee) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I and all required notifications to other agencies or bodies have been duly made;
 - B. Construction of Arkansas Nuclear One, Unit 2 (the facility) has been substantially completed in conformity with Construction Permit No. CPPR-89 and the application, as amended, the provisions of the Act and the regulations of the Commission;
 - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;
 - D. There is reasonable assurance: (i) that the activities authorized by this operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations of the Commission;
 - E. The licensee is technically and financially qualified to engage in the activities authorized by this operating license in accordance with the regulations of the Commission;
 - F. The licensee has satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements," of the Commission's regulations;
 - G. The issuance of this operating license will not be inimical to the common defense and security or to the health and safety of the public;

- H. After weighing the environmental, economic, technical and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of Facility Operating License No. NPF-6 subject to the conditions for protection of the environment set forth herein, is in accordance with 10 CFR Part 51 (formerly Appendix D to 10 CFR Part 50) of the Commission's regulations and all applicable requirements have been satisfied; and
 - I. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40 and 70, including 10 CFR Sections 30.33, 40.32, 70.23 and 70.31.
2. Facility Operating License No NPF-6 is hereby issued to Arkansas Power and Light Company to read as follows:
- A. The license applies to Arkansas Nuclear One, Unit 2, a pressurized water reactor and associated equipment (the facility) owned by the Arkansas Power and Light Company. The facility is located in Pope County, Arkansas and is described in the Final Safety Analysis Report as supplemented and amended (Amendments 20 through 47) and the Environmental Report as supplemented and amended (Amendments 1 through 7).
 - B. Subject to the Conditions and requirements incorporated herein, the Commission hereby licenses Arkansas Power and Light Company:
 - (1) Pursuant to Section 103 of the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," to possess and use, to operate the facility at the designated location in Pope County, Arkansas in accordance with the procedures and limitations set forth in this license;
 - (2) Pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

- (3) Pursuant to the Act and 10 CFR Parts 30, 40 and 70 to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
 - (4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
 - (b) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I; Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
- (1) Maximum Power Level

The licensee is authorized to load fuel and maintain the unit in an operational Mode 5 condition (cold shutdown condition). Prior to loading fuel the licensee shall complete the pre-operational tests, startup tests and other items identified in Attachment 2 to this license. Attachment 2 is an integral part of this license.
 - (2) Technical Specifications

The Technical Specifications contained in Appendices A and B (Attachment 1 to this license) are hereby incorporated in this license. Arkansas Power and Light Company shall operate the facility in accordance with the Technical Specifications.

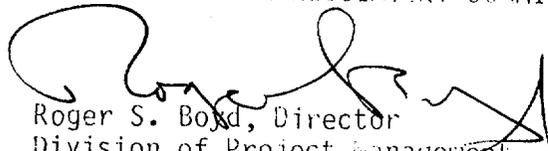
D. Arkansas Power and Light Company shall maintain in effect and fully implement all provisions of the approved physical security plan, including amendments and changes made pursuant to the authority of Section 50.54(p) of 10 CFR Part 50. The approved security plan consists of the licensee's proprietary documents, collectively entitled "Arkansas Nuclear One Industrial Security Plan," as follows: Revision 9 dated May 23, 1975 (This revision replaced the previous plan in its entirety), Revision 10 dated October 31, 1975 and Revision 12 dated June 9, 1978.

E. This license is subject to the following additional condition for the protection of the environment:

Before engaging in additional construction or operational activities which may result in an environmental impact that was not evaluated by the Commission, the licensee will prepare and record an environmental evaluation or such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated, in the Final Environmental Statement (NUREG-0254) or any addendum thereto, the licensee shall provide a written evaluation of such activities and obtain prior approval from the Director, Office of Nuclear Reactor Regulation.

F. This license is effective as of the date of issuance and shall expire six months from said date, unless extended for good cause shown, or upon earlier issuance or denial of a subsequent licensing action.

FOR THE NUCLEAR REGULATORY COMMISSION



Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Attachments:

1. Appendices A and B - Technical Specifications
2. Preoperational Tests, Startup Tests and Other Items Which Must Be Completed Prior to Loading Fuel

Date of Issuance: **JUL 18 1978**

ATTACHMENT 2 TO LICENSE NPP-6

Preoperational Tests, Startup Tests, and
Other Items which Must be Completed Prior to Loading Fuel

This attachment identifies certain preoperational tests, startup tests, and other items which must be completed to the Commission's satisfaction prior to proceeding to Operational Mode 6 (Fuel Loading). Arkansas Power & Light Company shall not proceed into Operational Mode 6 without prior written authorization from the Commission.

1. Completion of installation of excore nuclear instrumentation.
2. Completion of preoperational test 2.600.12A, "Special Tests of Boration/Dilution System."
3. Resolution of questions on installation of fire barriers at the ends of conduit rather than at wall penetrations.



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

JUL 18 1978

Docket No. 50-368

Arkansas Power and Light Company
ATTN: Mr. William Cavanaugh III
Executive Director of Generation
and Construction
P. O. Box 551
Little Rock, Arkansas 72203

Gentlemen:

SUBJECT: ISSUANCE OF FACILITY OPERATING LICENSE NO. NPF-6
(ARKANSAS NUCLEAR ONE, UNIT 2)

The Nuclear Regulatory Commission (the Commission) has issued the enclosed Facility Operating License No. NPF-6 including Technical Specifications (Appendices A and B) to the Arkansas Power and Light Company for Arkansas Nuclear One - Unit 2 (ANO-2) located in Pope County, Arkansas. License No. NPF-6 authorizes the Arkansas Power and Light Company to load nuclear fuel into Arkansas Nuclear One - Unit 2 and maintain it in a cold shutdown condition (Operational Mode 5) in accordance with Technical Specifications (Appendices A and B) of the license. A copy of the Notice of Issuance and the supporting Safety Evaluation for issuance of a fuel load license are enclosed.

Two signed copies of Amendment No. 6 to Indemnity Agreement B-65 are enclosed for your review and acceptance. Please sign and return one copy to the Director, Division of Project Management.

Sincerely,

A handwritten signature in black ink, appearing to read "Roger S. Boyd".

Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Enclosures:

1. Facility Operating License No. NPF-6
2. Notice of Issuance
3. Safety Evaluation for the Issuance
of a Fuel Load License
4. Amendment No. 6 to Indemnity
Agreement B-65

ccs w/encls:

See page 2

JUL 18 1978

Arkansas Power & Light Company

-2-

Mr. Daniel H. Williams
Manager, Licensing
Arkansas Power & Light Company
P. O. Box 551
Little Rock, Arkansas 72203

Philip K. Lyon, Esq.
House, Holms & Jewell
1550 Tower Building
Little Rock, Arkansas 72201

Mr. E. H. Smith, Project Engineer
Bechtel Power Corporation
San Francisco, California 94119

Mr. Fred Sernatinger, Project Manager
Combustion Engineering, Inc.
1000 Prospect Hill Road
Windsor, Connecticut 06095

Mr. Charles B. Brinkman, Manager
Washington Nuclear Operations
C-E Power Systems
Combustion Engineering, Inc.
4853 Cordell Avenue, Suite A-1
Bethesda, Maryland 20014

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

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

Attorney General
Justice Building
Little Rock, Arkansas 72201

Mr. Bruce Blanchard
Environmental Projects Review
Department of the Interior
Room 4256
18th and C Street, N.W.
Washington, D. C. 20240

U. S. Environmental Protection Agency
ATTN: Ms. F. Munter
Office of Federal Activities
Room W-535, Waterside Mall
401 M Street, S.W.
Washington, D. C. 20460



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

ARKANSAS POWER AND LIGHT COMPANY

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT 2

FACILITY OPERATING LICENSE

License No. NPF-6

1. The Nuclear Regulatory Commission (the Commission) having found regarding this license that:
 - A. The application for license filed by Arkansas Power and Light Company (the licensee) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I and all required notifications to other agencies or bodies have been duly made;
 - B. Construction of Arkansas Nuclear One, Unit 2 (the facility) has been substantially completed in conformity with Construction Permit No. CPPR-89 and the application, as amended, the provisions of the Act and the regulations of the Commission;
 - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;
 - D. There is reasonable assurance: (i) that the activities authorized by this operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations of the Commission;
 - E. The licensee is technically and financially qualified to engage in the activities authorized by this operating license in accordance with the regulations of the Commission;
 - F. The licensee has satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements," of the Commission's regulations;
 - G. The issuance of this operating license will not be inimical to the common defense and security or to the health and safety of the public;

- H. After weighing the environmental, economic, technical and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of Facility Operating License No. NPF-6 subject to the conditions for protection of the environment set forth herein, is in accordance with 10 CFR Part 51 (formerly Appendix D to 10 CFR Part 50) of the Commission's regulations and all applicable requirements have been satisfied; and
 - I. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40 and 70, including 10 CFR Sections 30.33, 40.32, 70.23 and 70.31.
2. Facility Operating License No NPF-6 is hereby issued to Arkansas Power and Light Company to read as follows:
- A. The license applies to Arkansas Nuclear One, Unit 2, a pressurized water reactor and associated equipment (the facility) owned by the Arkansas Power and Light Company. The facility is located in Pope County, Arkansas and is described in the Final Safety Analysis Report as supplemented and amended (Amendments 20 through 47) and the Environmental Report as supplemented and amended (Amendments 1 through 7).
 - B. Subject to the Conditions and requirements incorporated herein, the Commission hereby licenses Arkansas Power and Light Company:
 - (1) Pursuant to Section 103 of the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," to possess and use, to operate the facility at the designated location in Pope County, Arkansas in accordance with the procedures and limitations set forth in this license;
 - (2) Pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

- (3) Pursuant to the Act and 10 CFR Parts 30, 40 and 70 to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I; Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to load fuel and maintain the unit in an operational Mode 5 condition (cold shutdown condition). Prior to loading fuel the licensee shall complete the pre-operational tests, startup tests and other items identified in Attachment 2 to this license. Attachment 2 is an integral part of this license.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B (Attachment 1 to this license) are hereby incorporated in this license. Arkansas Power and Light Company shall operate the facility in accordance with the Technical Specifications.

D. Arkansas Power and Light Company shall maintain in effect and fully implement all provisions of the approved physical security plan, including amendments and changes made pursuant to the authority of Section 50.54(p) of 10 CFR Part 50. The approved security plan consists of the licensee's proprietary documents, collectively entitled "Arkansas Nuclear One Industrial Security Plan," as follows: Revision 9 dated May 23, 1975 (This revision replaced the previous plan in its entirety), Revision 10 dated October 31, 1975 and Revision 12 dated June 9, 1978.

E. This license is subject to the following additional condition for the protection of the environment:

Before engaging in additional construction or operational activities which may result in an environmental impact that was not evaluated by the Commission, the licensee will prepare and record an environmental evaluation or such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated, in the Final Environmental Statement (NUREG-0254) or any addendum thereto, the licensee shall provide a written evaluation of such activities and obtain prior approval from the Director, Office of Nuclear Reactor Regulation.

F. This license is effective as of the date of issuance and shall expire six months from said date, unless extended for good cause shown, or upon earlier issuance or denial of a subsequent licensing action.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by:
Roger S. Boyd

Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Attachments:

1. Appendices A and B - Technical Specifications
2. Preoperational Tests, Startup Tests and Other Items Which Must Be Completed Prior to Loading Fuel

Date of Issuance: **JUL 18 1978**

ATTACHMENT 2 TO LICENSE NPF-6

Preoperational Tests, Startup Tests, and
Other Items Which Must be Completed Prior to Loading Fuel

This attachment identifies certain preoperational tests, startup tests, and other items which must be completed to the Commission's satisfaction prior to proceeding to Operational Mode 6 (Fuel Loading). Arkansas Power & Light Company shall not proceed into Operational Mode 6 without prior written authorization from the Commission.

1. Completion of installation of excore nuclear instrumentation.
2. Completion of preoperational test 2.600.12A, "Special Tests of Boration/Dilution System."
3. Resolution of questions on installation of fire barriers at the ends of conduit rather than at wall penetrations.



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

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-368

ARKANSAS POWER AND LIGHT COMPANY

ARKANSAS NUCLEAR ONE, UNIT 2

NOTICE OF ISSUANCE OF A FACILITY OPERATING LICENSE

Notice is hereby given that the Nuclear Regulatory Commission (the Commission) has issued Facility Operating License No. NPF-6 to Arkansas Power and Light Company, authorizing the loading of fuel and maintaining the unit in an operational Mode 5 condition (cold shutdown condition). The Arkansas Nuclear One, Unit 2 plant is a pressurized water reactor located at the licensee's site in Pope County, Arkansas.

The Commission has made appropriate findings as required by the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations in 10 CFR Chapter I, which are set forth in the license. The application for the license complies with the standards and requirements of the Act and the Commission's regulations.

This action is in furtherance of the licensing action encompassed in the combined Notice of Receipt of Application for Facility Operating License; Notice of Availability of Applicant's Environmental Report; and Notice of Opportunity for Hearing published in the FEDERAL REGISTER on April 23, 1974 (39 F.R. 14371).

The license is effective as of its date of issuance and shall expire six months from said date, unless extended for good cause shown, or upon earlier issuance or denial of a subsequent licensing action.

A copy of (1) Facility Operating License No. NPF-6 complete with Technical Specifications (Appendices A and B) (Attachment 1), Pre-operational Tests and Other Items Which Must Be Completed Prior to Loading Fuel (Attachment 2) and the Commission's related Safety Evaluation supporting License No. NPF-6; (2) the report of the Advisory Committee on Reactor Safeguards, dated April 12, 1978; (3) the Office of Nuclear Reactor Regulation's Safety Evaluation Report (NUREG-0308) and Supplement No. 1 thereto dated November 1977 and June 1978, respectively; (4) the licensee's Final Safety Analysis Report and amendments thereto; (5) the licensee's Environmental Report and amendments thereto; (6) the Draft Environmental Statement (NUREG-0070), dated May 1976; and (7) the Final Environmental Statement (NUREG-0254), dated June 1977; are available for public inspection at the Commission's Public Document Room at 1717 H Street, N. W., Washington, D. C. 20555 and the Arkansas Polytechnic College, Russellville, Arkansas 72801.

Copies of Items (1) and (2) may be obtained upon request addressed to the United States Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Project Management. Copies of

Items (3) and (7) may be purchased at current rates from the National Technical Information Service, Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22151.

Dated at Bethesda, Maryland, this *18th* day of *July* 1978.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed by

John F. Stolz, Chief
Light Water Reactors Branch No. 1
Division of Project Management

STAFF EVALUATION FOR ISSUANCE OF A FUEL LOADING LICENSE

I. Background

On November 11, 1977, the Nuclear Regulatory Commission (Commission) issued its Safety Evaluation Report regarding the application for a license to operate the Arkansas Nuclear One - Unit 2 (ANO-2) facility. Supplement No. 1 to the Safety Evaluation Report was issued on June 10, 1978 and documented the resolution of certain outstanding items and summarized the status of the remaining outstanding issues. The attached table provides a listing of the issues which remained outstanding in Supplement No. 1 and of those new issues that have arisen since preparation of Supplement No. 1.

This evaluation is in support of our conclusions regarding a decision for issuance of an operating license authorizing the Arkansas Power & Light Company (AP&LCo) to load nuclear fuel into the Arkansas Nuclear One - Unit No. 2 plant and to maintain it in a cold shutdown condition.

II. Summary Evaluation

Our evaluation of the outstanding matters identified in the attached table is substantially complete. A determination that those matters have been acceptably resolved is required prior to authorizing an operating license for power operation. However, we have evaluated each of the issues identified as outstanding in the attached table relative to the requirements necessary for fuel loading and cold shutdown conditions and for the reasons stated below have concluded that nuclear fuel can be loaded into ANO-2 and maintained in a cold shutdown condition (Operational Mode 5 of the ANO-2 Technical Specifications) prior to resolving each of these outstanding issues or documenting the final safety evaluation at this time for those issues that the staff has identified as acceptably resolved.

The initial core loading of ANO-2 will consist entirely of new fuel. Operational Mode 5 of the Technical Specifications requires a reactivity condition K_{eff} less than 0.99, zero percent of rated power, and an average coolant temperature less than or equal to 200 degrees Fahrenheit with the reactor head installed.

In the highly unlikely event of a postulated loss-of-coolant accident, an inconsequential amount of decay heat would result solely from the spontaneous natural decay of the fuel. No forced cooling of the fuel would be necessary to prevent exceeding the fuel clad temperature and other requirements of Section 50.46 and Appendix K to 10 CFR Part 50.

Until the core is made critical and operated at power, there will no significant increase in the decay heat above that generated in the new fuel. The Technical Specifications will contain restrictions during fuel loading and cold shutdown conditions which will prevent achieving criticality even in the event of an operator error or equipment malfunction. Therefore, any radioactive release into the containment would be insignificant for a postulated loss-of-coolant accident.

III. Outstanding Matters

A more specific discussion related to our safety evaluation of each of the outstanding matters in the attached table follows:

1. Outstanding Issues Acceptably Resolved And Needing Documentation In a Safety Evaluation

3.10, 4.2, 4.2.1, 4.2.4 (CEA Rod Worth Surveillance), 5.2.9, 5.4, 6.2.1 (Main Steam Line Break Mass and Energy Releases), 6.2.4, 6.2.6, 6.3.3, 7.1, 7.5.1, 7.6.3, 7.8, 7.9.4, 8.2, 9.5.1, 13.3, 14.0, 15.4.4, and 15.4.6. Based on our review we conclude that these have been adequately resolved. Our evaluation of these items will be documented in a forthcoming safety evaluation which will be issued prior to or with the issuance of an authorization for full power operation.

Specifically, with respect to issues 3.10 and 9.5.1, we have completed our reviews, respectively, of the seismic qualification of safety related instrumentation and electrical equipment, and the licensee's fire protection program for the ANO-2 plant. Based on our review we find seismic qualification program and the licensee's fire protection program acceptable. As noted above, the results of our review of the fire protection program will be published in a forthcoming safety evaluation report.

We have included further details of our evaluation of the ANO-2 seismic qualification evaluation and of the licensee's financial qualifications to engage in the activities authorized by this license in Attachments 1 and 2 to this evaluation report.

2. Other Outstanding Issues

a. Outstanding Issues Subject to Confirmatory Test Results

Our review of the technical issues represented by outstanding items numbered 7.2.3 (CPCS Positions 1, 5, and 12),

10.6 and 15.4.2 will be fully completed when we have reviewed and approved the test data resulting from the confirmatory testing programs related to these issues. These issues, therefore, cannot be completely resolved prior to the issuance of an authorization to operate at power since the plant must be in operation at various power levels in order to conduct these confirmatory tests. However, our review of the testing program including the test methods and procedures will be required to be completed prior to authorization for power operation. Since all of the plant safety functions involved in these issues are not applicable to plant operation within Operational Mode 5, we conclude that the plant can operate within Mode 5 authorized limits prior to final resolution of these issues.

b. Other Outstanding Issues

3.11: Environmental Qualification of Safety Related Equipment

Our review of the environmental qualification for safety related equipment has been completed with acceptable findings with the following exceptions.

- (1) Qualification for four of the Foxboro and twenty-two of the Fischer Porter instrumentation transmitters used inside containment has been found unacceptable. The Foxboro Model E11 GM absolute pressure transmitter is employed for the high pressurizer pressure trip signal generation. The Foxboro Model E11 AH differential pressure transmitter is employed for the high containment pressure trip signal. The Fischer Porter Model types 50 EP and 13D24 are employed for low pressurizer pressure trip, pressurizer level and steam generator pressure and level trip signals.

These instruments provide inputs into the reactor protection system and to the engineered safety features actuation system and also provide information to the operator following a loss-of-coolant accident for the post accident monitoring of system performance.

- (2) Qualification for the containment electrical penetrations has been found unacceptable. These are medium voltage penetrations which carry the power cables for reactor coolant pump operation. Qualification of these penetrations must be demonstrated to ensure that in the event of a LOCA or main steam-line break the containment's capability to retain released fission products would be maintained
- (3) Qualification for the containment radiation monitors required to provide long term post accident monitoring information to the operator has been found to be unacceptable.

Since all of the plant safety functions involved in these three environmental qualification issues are not applicable to plant operation within Operational Mode 5, we conclude that the plant can operate within Mode 5 authorized limits prior to final resolution of these issues.

4.2.4: CEA Guide Tube Integrity

Degradation of the control element assembly guide tubes has been observed on several operating plants during inspections conducted during refueling outages. The degradation is believed to be caused by flow induced vibration of the tips of the control element assembly rods against the inside walls of the guide tubes. The applicant has installed sleeves within the guide tubes. Basically the presence of sleeves would ensure that much more material would be available in the walls and that any wear produced by vibration of the rod against these walls would not be expected to result in significant degradation of the guide tube structure and therefore the proper functioning of the control rods would be assured.

Such sleeving of guide tubes has been proposed by other licensees with operating plants and has been approved by the staff for the continued operations of those plants.

Although our evaluation has not been completed, the flow induced vibration causing the problem will not be a safety concern for the brief operating time period expected during plant operations within Operational Mode 5. We conclude that the plant can operate within Mode 5 authorized limits prior to final resolution of this issue.

5.2.1: Fracture Toughness - Appendix G

&

5.2.2: Reactor Vessel Materials Surveillance Program - Appendix H

Our evaluation of the applicants method of compliance with the technical requirements of Appendices G and H to 10 CFR Part 50 is provided in Sections 5.2.1 and 5.2.2 of our Safety Evaluation Report wherein we concluded that these matters had been acceptably resolved.

Therefore while the safety related aspects of this issue have been satisfied the issue remaining is whether an exemption will be required from the literal requirements of these appendices.

In any event the requirements of these appendices are not of considerable concern until at least one fuel cycle of operation at full power has been experienced since it requires a substantial exposure to a radiation environment before either the fracture toughness considerations of Appendix G or the material surveillance program of Appendix H become significant.

In addition, since the reactor coolant pressure boundary has previously been tested beyond the pressure limits authorized for operation in Mode 5, no fracture toughness safety concerns exist in this mode. We conclude that the plant can operate within Mode 5 authorized limits prior to final resolution of these issues.

5.6.2: Steam Generator Tube Integrity

Steam generator tube denting has occurred in an operating plant which has led to cracking of the upper partial tube support plates. Reference may be made to the staff's evaluation of this matter which is attached to the staff's letter dated April 14, 1978 to Northeast Nuclear Energy Company issuing Amendment No. 37 to facility Operating License No. DPR-65 for the Millstone Nuclear Power Station, Unit No. 2.

In brief, tube denting in these partial tube support plates causes the plates to expand and create high local stress concentrations, "hard spots," at the plate's supporting lugs attached to the tube bundle shroud. These stresses cause cracking of the plate which in turn deformed the walls of some of the tubes. The solution to the problem of plate cracking was determined to be the removal of the lugs between the plate and the tube bundle shroud and the removal of a portion of the outer rim of the plate. This would allow the plate, driven by "denting" tubes, to expand thus minimizing the possibility of further cracking of the plate.

The ANO-2 steam generators are of course "new" steam generators which have not been exposed to power operating conditions and therefore there is no evidence of the presence of the tube denting phenomena at this time. However the applicant considered it a prudent and conservative action to make the design changes to the ANO-2 steam generators at this time to minimize the possibility of cracking of the partial tube support plate and of deformation of tube walls. An additional

advantage to performing the modifications at this time is that no personnel radiation exposure is incurred and this in turn allowed for the use of more experienced personnel and better working conditions to perform the job.

These types of changes have been reviewed and approved by the staff on operating plants and under somewhat less favorable conditions than exist for the ANO-2 steam generators.

Since operation of the steam generator is not required in Operating Mode 5, we conclude that the plant can operate within Mode 5 authorized limits prior to documentation of our final safety evaluation of this issue.

6.2.1: Environmental Qualifications for Safety Related Equipment for Main Steamline Break Inside Containment

The environmental qualifications of equipment required for the loss of coolant accident is addressed in item 3.11. Issue 6.2.1 pertains to the subject of whether or not the equipment required for the main steamline break inside containment has been adequately qualified since it is considered that the mass and energy releases resulting from a main steamline break could be more severe in their effects upon equipment than the mass and energy releases associated with a loss-of-coolant accident.

The non resolution of this item at this time does not preclude the loading of fuel or operation in Mode 5. Namely, the much lower thermal energy content of any mass and energy released as a result of a main steamline break and the lack of any radioactive fission products from Mode 5 operations would not result in the severe environmental conditions upon the equipment beyond which the equipment has been acceptably qualified.

6.3.4: Emergency Core Cooling System Operation in Recirculation Mode

This issue pertains to the capability of the containment sumps to collect spilled reactor coolant after a loss of coolant accident and recirculate it to the reactor core to remove fission product decay heat.

For reasons previously stated in Section II above the non resolution of this problem at this time does not preclude loading fuel or operation in Mode 5. Namely there will be no decay heat resulting from operations in Mode 5 which would require removal in the event of a loss-of-coolant accident. This item is, however, substantially resolved and we will report our evaluation in a forthcoming safety evaluation prior to or with the authorization for operation in Mode 2 condition.

7.2.2: Input Fault and Surge Testing of Power Supplies

As reported in the Safety Evaluation Report this issue pertains to whether the power supplies used in the safety system logic design have been demonstrated to be valid isolation devices. In response to our concerns the licensee submitted analysis and a description of modifications made to support the adequacy of the design.

The modifications include replacement of static inverter power supplies, used to power the logic systems, with solid state control inverters. The cables for the new inverters are routed in separate wireways which preclude the maximum voltages of 508 volts alternating current (VAC) and 140 volts direct current (VDC) previously identified, to be imposed on the logic circuits. In addition, surge suppression devices were added on the input and output of the inverters to minimize the surge voltages to within acceptable levels determined by analysis, the design may tolerate. As a result of the modification, the redefined worst case fault voltages and surges that can occur on the ANO-2 design was determined to be 132 VAC and 100 Volts respectively.

Although the analysis indicates that the design is capable of maintaining its functional operability if subjected to fault voltages below 400 VAC and instantaneous peak surges of 328 volts, the test data results presented did not sufficiently demonstrate that the integrity of these logic circuits would be maintained at these values. The licensee was advised that we require a type test be performed which simulates the design installation, and demonstrates that the design will maintain its functional integrity when subjected to 132 VAC faults with 100 Volt surges. The licensee agreed and committed to conduct a test which would envelope these design conditions and support the assumptions made in their analysis, and has also provided a summary of the results of these tests for our review. We have reviewed these test result summaries and conclude that they acceptably demonstrate the functional integrity of the design to withstand the maximum credible faults and surges as discussed above.

Based on our review of the applicant's modifications, the analysis presented and the results of the additional confirmatory type testing, we conclude that the design is acceptable.

7.2.3: Core Protection Calculator System

The core protection calculator system portion of the reactor protection system (RPS) provides the RPS trips inputs for the departure from nucleate boiling ratio (DNBR) and the high local power density conditions. Protection from the limiting values of these parameters is not required for the reasons stated in Section II of this report for fuel loading conditions and operation in Mode 5. Namely, only an inconsequential amount of decay heat will result from the spontaneous natural decay of the fuel and no forced cooling of the fuel is necessary to prevent exceeding the requirements of Section 50.46 and Appendix H to 10 CFR Part 50. In addition, the RPS trips involved in this issue are not required within the authorized operational limits of Mode 5.

IV. Conclusions

On the basis of our evaluations, we have concluded that the fuel can be loaded into the ANO-2 plant and the plant can be maintained in a safe cold shutdown condition (Operational Mode 5) and that the health and safety of the public will not be endangered.

On the basis of our review of the matters stated above, we have concluded that the issuance of an operating license authorizing fuel loading and maintaining the reactor in a cold shutdown condition (Operational Mode 5) of Arkansas Nuclear One - Unit 2 will not be inimical to the common defense and security or to the health and safety of the public.

Attachments:

1. Financial Qualifications of Arkansas Power and Light Company to Engage in Activities Authorized by the Arkansas Nuclear One - Unit 2 Operating License
2. Seismic Qualification Evaluation

Dated: **JUL 18 1978**

TABLE OF OUTSTANDING ITEMS

<u>Issue Number*</u>	<u>Title</u>
3.10	Seismic Qualification of Safety Related Instrumentation
3.11	Environmental Qualification of Safety Related Equipment
4.2	Reactor Vessel Internals - Vibration Monitoring
4.2.1	Burnable Poison Design Verification
4.2.4	CEA Guide Tube Integrity
4.2.4	CEA Rod Worth Surveillance
5.2.1	Fracture Toughness - Appendix G
5.2.2	Reactor Vessel Materials Surveillance Program - Appendix H
5.2.9	Inservice Testing of Pumps and Valves
5.4	Inservice Inspection Program
5.6.2	Steam Generator Tube Integrity
6.2.1	Main Steamline Break Mass and Energy Releases
6.2.1	Environmental Qualifications for Safety Related Equipment for Main Steamline Break Inside Containment
6.2.4	Containment Isolation Systems
6.2.6	Containment Leakage Testing Program
6.3.3	Evaluation of Emergency Core Cooling System Performance
6.3.4	Emergency Core Cooling System Operation in Recirculation Mode

*These issues are numbered in accordance with the same section numbers as those of the Safety Evaluation Report and Supplement No. 1 in which these issues have been discussed.

<u>Issue Number</u>	<u>Title</u>
7.1	Verification of Implementation of Instrumentation and Control Systems Design
7.2.2	Input Fault and Surge Testing for Power Supplies
7.2.3	Core Protection Calculator System (CPCS)
7.5.1	Accident and Post Accident Monitoring
7.6.3	Redundant Valve Position Indication
7.8	Electrical Penetrations
7.9.4	Separation Criteria for Conduits
8.2	Offsite Grid Stability
9.5.1	Fire Protection Review
10.6	Feedwater Hammer in Steam Generators
13.3	Emergency Plan
14.0	Initial Tests and Operations
15.4.2	CESEC Code Verification Program for Reactor Coolant Pump Seizure Analysis
15.4.4	Spectrum of Piping Breaks Inside and Outside of Containment
15.4.6	ECCS Pump Room Leakage

ATTACHMENT 1
FINANCIAL QUALIFICATIONS OF ARKANSAS POWER & LIGHT COMPANY
TO ENSURE IN ACTIVITIES AUTHORIZED BY THE
ARKANSAS NUCLEAR ONE - UNIT 2 OPERATING LICENSE

Introduction

The Nuclear Regulatory Commission's regulations relating to the determination of financial qualifications of applicants for facility operating licenses appear in Section 50.33(f) and Appendix C of 10 CFR Part 50. In accordance with these regulations, Arkansas Power and Light Company, hereinafter APLCo, submitted operating cost estimates with its application as well as providing additional financial information at the Staff's request. The following analysis summarizes the review of the financial information and addresses APLCo's financial qualifications to operate Arkansas Nuclear One - Unit 2 and to permanently shut down the facility and maintain it in a safe shutdown condition, should that become necessary.

APLCo is a wholly owned operating subsidiary of Middle South Utilities, Inc. serving 62 of the 75 counties in the State of Arkansas. The four other principal operating companies of the Middle South system - Mississippi Power and Light Company, Louisiana Power and Light Company, Arkansas - Missouri Power Company, and New Orleans Public Service, Inc., share generation capacity and other power resources with APLCo. Sales of electric energy account entirely for the total gross operating revenues of APLCo, thereby comprising approximately 37 percent of the affiliated group's consolidated revenues. Its customers include

residential, commercial, industrial and wholesale users. Operating revenues for the 12 months ended September 30, 1977 were \$511.3 million and net income was \$63.2 million. Invested capital at July 31, 1977 amounted to \$1.189 billion and consisted of 49.7 percent long-term debt, 14.5 percent preferred and preference stock, and 35.8 percent common equity. The first mortgage bonds are rated Baa, medium grade obligations, by Moody's and A by Standard and Poor's.

Estimated Operating and Shutdown Costs

For the purpose of estimating the unit's annual operating costs, the applicant assumed that Arkansas Nuclear One - Unit 2 would commence operation in January 1979. Arkansas Power and Light Company's estimate of the total annual cost of operating the units during each of the first five years of commercial operation are presented below. The unit costs (mills per kWh) are based on a net electrical capacity of 912 MWe and the projected plant capacity factors as shown below. The five-year average costs were calculated by averaging the estimated data for the years 1979 to 1983 inclusively.

ARKANSAS NUCLEAR ONE - UNIT 2

ESTIMATED OPERATING COSTS

	<u>Total Cost (thousands)</u>	<u>Plant Capacity Factor (percent)</u>	<u>Mills per kWh</u>
1979	\$112,391	58.0	24.26
1980	109,840	71.0	19.31
1981	112,676	80.0	17.63
1982	109,943	80.0	17.20
1983	<u>107,610</u>	80.0	16.84
TOTAL	\$552,460		
5-year average			19.05

The estimates of operating costs consider operating and maintenance expenses (including fuel expense), depreciation, and a return on investment.

In estimating the costs of permanently shutting down the facility, the company assumed that after forty (40) years of operation the plant would be fully decommissioned and no longer used as a commercial nuclear power facility. Expected decommissioning activities include processing, shipping and disposal of removable nuclear waste material, removal of all salvagable components, decontamination of radioactive areas by chemical cleaning and flushing, packaging and

shipment of resultant radioactive waste to a storage facility, and the entombment of plant components. Present day decommissioning costs are estimated to total \$10.0 million. APLCo estimates the annual cost of maintenance after decommissioning to be \$40,000. Included in this estimate are the costs of a security force, surveillance, radiation monitoring and miscellaneous operating expenses. Based upon currently available information such costs are considered reasonable. Additionally, applicant's decommissioning expenses are nominal in light of applicant's total financial resources, and their ultimate impact in unit costs.

Source of Funds

APLCo expects to cover all operating costs through the revenues generated from its system-wide sales of electricity. Current operating costs will be paid out of current operating revenues. The estimated unit operating costs shown in Section 20.2, above, compare favorably with APLCo's revenue experience. Its average unit price for electricity sold during the 12 months ending July 31, 1977 was 2.852 cents per kWh, (excluding system sales and sales to Middle South Power Pool), well above the total estimated unit operating costs for the subject facility. Additionally, it is noted that the above unit price data does not reflect possible rate increases to be allowed during the first five years of this facility's operation.

Financial data consisting of gross revenues realized and net income earned by the applicant during the years 1972 to 1976, inclusively, are as follows:

ARKANSAS POWER AND LIGHT COMPANY
(Millions of Dollars)

<u>Year</u>	<u>Gross Revenues</u>	<u>Net Income</u>
1972	\$184.8	\$36.7
1973	\$209.3	\$41.9
1974	\$296.8	\$55.6
1975	\$316.8	\$40.7
1976	\$396.6	\$47.0

Based upon the above, the applicant has consistently demonstrated the ability to achieve revenues sufficient to cover all operating expenses and interest charges.

Conclusion

In accordance with the regulations cited in Section 20.1 above, there must be reasonable assurance that the applicant can obtain the necessary funds to cover the estimated costs of the activities contemplated under the license. This reasonable assurance standard must be viewed in light of the potentially long period of commercial utilization of the facility. Consequently, the assumption is implicit that there will be rational regulatory policies over this period with respect to the setting of rates. This further implies that rates will be set to at least cover the cost of service, including the cost of capital.

Based on the preceding analysis, we conclude that Arkansas Power and Light Company has satisfied this reasonable assurance standard and is accordingly financially qualified to operate and, if necessary, to permanently shut down Arkansas Nuclear One - Unit 2 and maintain it in a safe shutdown condition. This determination is predicated upon the demonstrated ability of the applicant to achieve revenues sufficient to cover all operating costs and interest charges, the favorable comparison of current energy unit prices with those as projected for this facility, and the regulated status of the applicant.

ATTACHMENT 2

SEISMIC QUALIFICATION EVALUATION

In Section 3.10 of the Safety Evaluation Report we stated that we would provide the results of our evaluation of the seismic qualification program which would include both Combustion Engineering, Inc. supplied and the balance-of-plant seismic Category I instrumentation and electrical equipment.

The seismic qualification review program consisted of reviewing test methods, procedures, documentation of test results, seismic input parameters such as amplitude, duration, frequency content and directional considerations, inspection of test facilities and site visits, and including some retesting of equipment and components where our evaluation considered this to be necessary.

On the basis of our review, we have concluded that the seismic qualification program of seismic Category I instrumentation and electrical equipment for the Arkansas Nuclear One, Unit 2 plant is acceptable.



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

Docket Nos. 50-313
50-368

AMENDMENT TO INDEMNITY AGREEMENT NO. B-65

AMENDMENT NO. 6

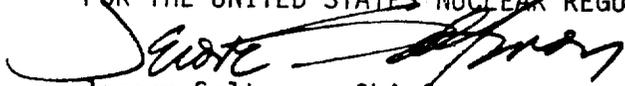
Effective **JUL 18 1978**, Indemnity Agreement No. B-65, between Arkansas Power & Light Company, and the Atomic Energy Commission, dated November 8, 1972, as amended, is hereby further amended as follows:

Item 3 of the Attachment to the indemnity agreement is deleted in its entirety and the following substituted therefor:

Item 3 License number or numbers

SNM-1321	(From 12:01 a.m., November 8, 1972, to 12 midnight, May 20, 1974, inclusive)
DPR-51	(From 12:01 a.m., May 21, 1974)
SNM-1680	(From 12:01 a.m., August 20, 1977, to 12 midnight, JUL 17 1978 inclusive)
NPF-6	(From 12:01 a.m., JUL 18 1978)

FOR THE UNITED STATES NUCLEAR REGULATORY COMMISSION


Jerome Saltzman, Chief
Antitrust and Indemnity Group
Office of Nuclear Reactor Regulation

Accepted _____, 1978

By _____
ARKANSAS POWER & LIGHT COMPANY

ARKANSAS NUCLEAR ONE, UNIT 2 OPERATING LICENSE NO. NPF-6 DATED JULY 18, 1978

Distribution

Docket File ←
NRC PDR
Local PDR
*LWR 1 File
Attorney, ELD
*R. S. Boyd
*R. C. DeYoung
*D. B. Vassallo
J. F. Stolz
R. Martin
E. Hylton (5)
*F. J. Williams
*D. Crutchfield
*Lana Cobb
IE (5)
*N. Dube, MPA
M. Jinks, OA (4)
*R. Diggs, ADM
*V. A. Moore, DSE
*Director, DSE
*R. H. Vollmer, DSE
*M. L. Ernst, DSE
*R. P. Denise, DSE
*R. J. Mattson, SS
*J. P. Knight, SS
*D. F. Ross, SS
*R. L. Tedesco, SS
*B. Scharf, ADM (15 copies)
*D. Skovholt
*I. Dinitz
*A. Toalston, AIG
*H. Bristow, NMSS
*S. Duncan, NMSS
*V. Stello, OR
*B. Grimes, OR
J. McGough, OR
*D. Eisenhut, OR
W. Pasciak, OR
F. S. Echols, EP
P. Kreutzer, EP

bcc: J. R. Buchanan, NSIC
T. B. Abernathy, TIC
A. Rosenthal, ASLAB
J. Yore, ASLBP
ACRS (16)

*w/o Tech Specs.