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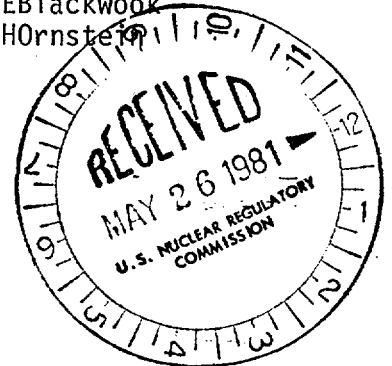
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Docket No. 50-313

Mr. William Cavanaugh, III
Vice President, Generation
and Construction
Arkansas Power & Light Company
P. O. Box 551
Little Rock, Arkansas 72203



Dear Mr. Cavanaugh:

The Commission has issued the enclosed Amendment No. 56 to Facility Operating License No. DPR-51 for Arkansas Nuclear One, Unit No. 1. This amendment consists of changes to the Technical Specifications in response to your application dated October 31, 1980, as supplemented on January 30, 1981. During our review of your proposed amendment, we found that certain modifications were necessary to meet our requirements. Your staff has agreed to these modifications and they have been incorporated in this amendment.

This amendment modifies the ANO-1 Appendix A Technical Specifications dealing with the reactor decay heat removal capability.

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

Sincerely,

Original signed by

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

Enclosures:

- 1. Amendment No. 56
- 2. Safety Evaluation
- 3. Notice

cc w/enclosures:
See next page

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Concur in amendment + Fed. Reg. instr only.
MRL

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SURNAME	RIngram	Gvissing;cf	JStolz	TNovak	M. Rothschild	Rearner
DATE	5/6/81	5/7/81	5/8/81	5/11/81	5/15/81	5/18/81

Docket file



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

May 20, 1981

Docket No. 50-313

Mr. William Cavanaugh, III
Vice President, Generation
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P. O. Box 551
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Copies of the Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

A handwritten signature in cursive script that reads "John F. Stolz".

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

Enclosures:

1. Amendment No. 56
2. Safety Evaluation
3. Notice

cc w/enclosures:

See next page

Arkansas Power & Light Company

cc w/enclosure(s):

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Washington, D. C. 20460

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Region VI Office
ATTN: EIS COORDINATOR
1201 Elm Street
First International Building
Dallas, Texas 75270

cc w/enclosure(s) & incoming dtd.:
10-31-80, 1-30-81

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



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

ARKANSAS POWER & LIGHT COMPANY

DOCKET NO. 50-313

ARKANSAS NUCLEAR ONE - UNIT NO.1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 56
License No. DPR-51

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Arkansas Power and Light Company (the licensee) dated October 31, 1980, as supplemented January 30, 1981, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;
and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.c.(2) of Facility Operating License No. DPR-51 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 56, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 20, 1981

ATTACHMENT TO LICENSE AMENDMENT NO. 56

FACILITY OPERATING LICENSE NO. DPR-51

DOCKET NO. 50-313

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

Pages

ii

16

16a (new page)

17

58

59

59a

59b (new page)

110aa (new page)

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
4.	<u>SURVEILLANCE STANDARDS</u>	67
4.1	OPERATIONAL SAFETY ITEMS	67
4.2	REACTOR COOLANT SYSTEM SURVEILLANCE	76
4.3	TESTING FOLLOWING OPENING OF SYSTEM	78
4.4	REACTOR BUILDING	79
4.4.1	<u>Reactor Building Leakage Tests</u>	79
4.4.2	<u>Structural Integrity</u>	85
4.5	EMERGENCY CORE COOLING SYSTEM AND REACTOR BUILDING COOLING SYSTEM PERIODIC TESTING	92
4.5.1	<u>Emergency Core Cooling Systems</u>	92
4.5.2	<u>Reactor Building Cooling Systems</u>	95
4.6	AUXILIARY ELECTRICAL SYSTEM TESTS	100
4.7	REACTOR CONTROL ROD SYSTEM TESTS	102
4.7.1	<u>Control Rod Drive System Functional Tests</u>	102
4.7.2	<u>Control Rod Program Verification</u>	104
4.8	EMERGENCY FEEDWATER PUMP TESTING	105
4.9	REACTIVITY ANOMALIES	106
4.10	CONTROL ROOM EMERGENCY AIR CONDITIONING AND ISOLATION SYSTEM SURVEILLANCE	107
4.11	PENETRATION ROOM VENTILATION SYSTEM SURVEILLANCE	109
4.12	HYDROGEN PURGE SYSTEM SURVEILLANCE	109b
4.13	EMERGENCY COOLING POND	110a
4.14	RADIOACTIVE MATERIALS SOURCES SURVEILLANCE	110b
4.15	AUGMENTED INSERVICE INSPECTION PROGRAM FOR HIGH ENERGY LINES OUTSIDE OF CONTAINMENT	110c
4.16	SHOCK SUPPRESSORS (SNUBBERS)	110e
4.16.1	<u>Hydraulic Shock Suppressors</u>	110e
4.17	FUEL HANDLING AREA VENTILATION SYSTEM SURVEILLANCE	110h
4.18	STEAM GENERATOR TUBING SURVEILLANCE	110j
4.19	FIRE DETECTION INSTRUMENTATION	110p
4.20	FIRE SUPPRESSION WATER SYSTEM	110q
4.21	SPRINKLER SYSTEMS	110t
4.22	CONTROL ROOM AND AUXILIARY CONTROL ROOM HALON SYSTEMS	110u
4.23	FIRE HOSE STATIONS	110v
4.24	PENETRATION FIRE BARRIERS	110w
4.25	REACTOR BUILDING PURGE FILTRATION SYSTEM	110x
4.26	REACTOR BUILDING PURGE VALVES	110z
4.27	DECAY HEAT REMOVAL	110aa
5.	<u>DESIGN FEATURES</u>	111
5.1	SITE	111
5.2	REACTOR BUILDING	112
5.3	REACTOR	114
5.4	NEW AND SPENT FUEL STORAGE FACILITIES	116
6.	<u>ADMINISTRATIVE CONTROLS</u>	117
6.1	RESPONSIBILITY	117
6.2	ORGANIZATION	117
6.3	FACILITY STAFF QUALIFICATIONS	117
6.4	TRAINING	117
6.5	REVIEW AND AUDIT	117
6.6	REPORTABLE OCCURRENCE ACTION	126
6.7	SAFETY LIMIT VIOLATION	126
6.8	PROCEDURES	127
6.9	RECORD RETENTION	128
6.10	RADIATION PROTECTION PROGRAM	129
6.11	HIGH RADIATION AREA	129
6.12	REPORTING REQUIREMENTS	140
6.13	ENVIRONMENTAL QUALIFICATION	147

3. LIMITING CONDITIONS FOR OPERATION

3.1 REACTOR COOLANT SYSTEM

Applicability

Applies to the operating status of the reactor coolant system.

Objective

To specify those limiting conditions for operation of the reactor coolant system which must be met to ensure safe reactor operations.

3.1.1 Operational Components

Specification

3.1.1.1 Reactor Coolant Pumps

- A. Pump combinations permissible for given power levels shall be as shown in Table 2.3-1.
- B. The boron concentration in the reactor coolant system shall not be reduced unless at least one reactor coolant pump or one decay heat removal pump is circulating reactor coolant.

3.1.1.2 Steam Generator

- A. Two steam generators shall be operable whenever the reactor coolant average temperature is above 280°F.

3.1.1.3 Pressurizer Safety Valves

- A. The reactor shall not remain critical unless both pressurizer code safety valves are operable.
- B. When the reactor is subcritical, at least one pressurizer code safety valve shall be operable if all reactor coolant system openings are closed, except for hydrostatic tests in accordance with ASME Boiler and Pressure Vessel Code, Section III.

3.1.1.4 Reactor Internals Vent Valves

The structural integrity and operability of the reactor internals vent valves shall be maintained at a level consistent with the acceptance criteria in Specification 4.1.

3.1.1.5 Reactor Coolant Loops

- A. With the reactor coolant average temperature above 280°F, the reactor coolant loops listed below shall be operable:

1. Reactor Coolant Loop (A) and at least one associated reactor coolant pump.
2. Reactor Coolant Loop (B) and at least one associated reactor coolant pump.

Otherwise, restore the required loops to operable status within 72 hours or reduced the reactor coolant average temperature to less than or equal to 280°F within the next 12 hours.

- B. With the reactor coolant average temperature above 280°F, at least one of the reactor coolant loops listed above shall be in operation.

Otherwise, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required loop to operation.

3.1.1.6 Decay Heat Removal

With the reactor coolant average temperature at or below 280°F, but the reactor above the refueling shutdown condition, at least two of the coolant loops listed below shall be operable, and at least one loop shall be in operation:*

1. Reactor Coolant Loop (A) and its associated steam generator and at least one associated reactor coolant pump.
2. Reactor Coolant Loop (B) and its associated steam generator and at least one associated reactor coolant pump.
3. Decay Heat Removal Loop (A)**
4. Decay Heat Removal Loop (B)**

- A. With less than the above required coolant loops OPERABLE, immediately initiate corrective action to return the required coolant loops to OPERABLE status as soon as possible; be in COLD SHUTDOWN within 20 hours.
- B. With no coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required coolant loop to operation.

*All reactor coolant pumps and decay heat removal pumps may be de-energized for up to 1 hour provided (1) no operations are permitted that would cause dilution of the reactor coolant system boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

**The normal or emergency power source may be inoperable when the reactor is in a cold shutdown condition.

BASES:

The plant is designed to operate with both reactor coolant loops and at least one reactor coolant pump per loop in operation, and maintain DNBR above 1.30 during all normal operations and anticipated transients. (1)

Whenever the reactor coolant average temperature is above 280°F, single failure considerations require that two loops be operable.

The decay heat removal system suction piping is designed for 300°F, thus, the system can remove decay heat when the reactor coolant system is below this temperature. (2,3)

One pressurizer code safety valve is capable of preventing overpressurization when the reactor is not critical since its relieving capacity is greater than that required by the sum of the available heat sources which are pump energy, pressurizer heaters, and reactor decay heat. (4) Both pressurizer code safety valves are required to be in service prior to criticality to conform to the system design relief capabilities. The code safety valves prevent overpressure for a rod withdrawal accident. (5) The pressurizer code safety valve lift set point shall be set at 2,500 psig \pm 1 percent allowance for error and each valve shall be capable of relieving 300,000 lb/h of saturated steam at a pressure not greater than 3 percent above the set pressure.

The internals vent valves are provided to relieve the pressure generated by steaming in the core following a LOCA so that the core remains sufficiently covered. Inspection and manual actuation of the internal vent valves (1) ensure operability, (2) ensure that the valves are not open during normal operation, and (3) demonstrate that the valves begin to open and are fully open at the forces equivalent to the differential pressures assumed in the safety analysis.

REFERENCES

- (1) FSAR, Tables 9-10 and 4-3 through 4-7
- (2) FSAR, Section 4.2.5.1 and 9.5.2.3
- (3) FSAR, Section 4.2.5.4
- (4) FSAR, Section 4.3.10.4 and 4.2.4
- (5) FSAR, Section 4.3.7

3.8 FUEL LOADING AND REFUELING

Applicability

Applies to fuel loading and refueling operations.

Objective

To assure that fuel loading, refueling and fuel handling operations are performed in a responsible manner.

Specification

- 3.8.1 Radiation levels in the reactor building refueling area shall be monitored by instrument RE-8017. Radiation levels in the spent fuel storage area shall be monitored by instrument RE-8009. If any of these instruments become inoperable, portable survey instrumentation, having the appropriate ranges and sensitivity to fully protect individuals involved in refueling operation, shall be used until the permanent instrumentation is returned to service.
- 3.8.2 Core subcritical neutron flux shall be continuously monitored by at least two neutron flux monitors, each with continuous indication available, whenever core geometry is being changed. When core geometry is not being changed, at least one neutron flux monitor shall be in service.
- 3.8.3.a. At least one decay heat removal loop shall be in operation.* Otherwise, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the reactor coolant system, and close all containment penetrations providing access from the containment atmosphere to the outside atmosphere within 4 hours.
- b. When the water level above the top of the irradiated fuel assemblies seated within the reactor pressure vessel is less than 23 feet, two decay heat removal loops shall be operable.**
- Otherwise, immediately initiate corrective action to return the required loops to operable status as soon as possible.
- 3.8.4 During reactor vessel head removal and while loading and unloading fuel from the reactor, the boron concentration shall be maintained at not less than that required for refueling shutdown.
- 3.8.5 Direct communications between the control room and the refueling personnel in the reactor building shall exist whenever changes in core geometry are taking place.

*The decay heat removal loop may be removed from operation for up to 1 hour per 8 hour period during the performance of core alterations.

**The normal or emergency power source may be inoperable for each shutdown cooling loop.

- 3.8.6 During the handling of irradiated fuel in the reactor building at least one door on the personnel and emergency hatches shall be closed. The equipment hatch cover shall be in place with a minimum of four bolts securing the cover to the sealing surfaces.
- 3.8.7 Isolation valves in lines containing automatic containment isolation valves shall be operable, or at least one shall be closed.
- 3.8.8 When two irradiated fuel assemblies are being moved simultaneously by the bridges within the fuel transfer canal, a minimum of 10 feet separation shall be maintained between the assemblies at all times.
- 3.8.9 If any of the above specified limiting conditions for fuel loading and refueling are not met, movement of fuel into the reactor core shall cease; action shall be initiated to correct the conditions so that the specified limits are met, and no operations which may increase the reactivity of the core shall be made.
- 3.8.10 The reactor building purge isolation system, including the radiation monitors shall be tested and verified to be operable within 7 days prior to refueling operations.
- 3.8.11 Irradiated fuel shall not be removed from the reactor until the unit has been subcritical for at least 72 hours.
- 3.8.12 All fuel handling in the Auxiliary Building shall cease upon notification of the issuance of a tornado watch for Pope, Yell, Johnson, or Logan counties in Arkansas. Fuel handling operations in progress will be completed to the extent necessary to place the fuel handling bridge and crane in their normal parked and locked position.
- 3.8.13 No loaded spent fuel shipping cask shall be carried above or into the Auxiliary Building equipment shaft unless atmospheric dispersion conditions are equal to or better than those produced by Pasquill type D stability accompanied by a wind velocity of 2 m/sec. In addition, the railroad spur door of the Turbine Building shall be closed and the fuel handling area ventilation system shall be in operation.
- 3.8.14 For the maximum fuel pool heat load capacity (i.e., seven reload batches (413 assemblies) stored in the pool at the time of discharge of the full core) the full core to be discharged shall be cooled in the reactor vessel a minimum of 175 hours prior to discharge.
- 3.8.15 Loads in excess of 2000 pounds shall be prohibited from travel over fuel assemblies in the storage pool.
- 3.8.16 The spent fuel shipping cask shall not be carried by the auxiliary building crane pending the evaluation of the spent fuel cask drop accident and the crane design by AP&L and NRC review and approval.

BASES:

Detailed written procedures will be available for use by refueling personnel. These procedures, the above specifications, and the design of the fuel handling equipment as described in Section 9.7 of the FSAR incorporating built-in interlocks and safety features, provide assurance that no incident could occur during the refueling operations that would result in a hazard to public health and safety. If no change is being made in core geometry, one flux monitor is sufficient. This permits maintenance on the instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition.

The requirement that at least one decay heat removal loop be in operation ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel at the refueling temperature (normally 140°F), and (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification. (1)

The requirement to have two decay heat removal loops operable when there is less than 23 feet of water above the core, ensures that a single failure of the operating decay heat removal loop will not result in a complete loss of decay heat removal capability. With the reactor vessel head removed and 23 feet of water above the core, a large heat sink is available for core cooling, thus in the event of a failure of the operating decay heat removal loop, adequate time is provided to initiate emergency procedures to cool the core.

The shutdown margin indicated in Specification 3.8.4 will keep the core subcritical, even with all control rods withdrawn from the core. (2) The boron concentration will be maintained above 1,800 ppm. Although this concentration is sufficient to maintain the core $k_{eff} \leq 0.99$ if all the control rods were removed from the core, only a few control rods will be removed at any one time during fuel shuffling and replacement. The k_{eff} with all rods in the core and with refueling boron concentration is approximately 0.9. Specification 3.8.5 allows the control room operator to inform the reactor building personnel of any impending unsafe condition detected from the main control board indicators during fuel movement.

The specification requiring testing reactor building purge termination is to verify that these components will function as required should a fuel handling accident occur which resulted in the release of significant fission products.

Because of physical dimensions of the fuel bridges, it is physically impossible for fuel assemblies to be within 10 feet of each other while being handled.

Specification 3.8.11 is required as the safety analysis for the fuel handling accident was based on the assumption that the reactor had been shutdown for 72 hours. (3)

Specification 3.8.14, which requires cooling of the full core for 175 hours prior to discharge to the spent fuel pool when seven reload batches are already stored in the pool, is necessary to assure that the maximum design heat load of the spent fuel pool cooling system will not be exceeded.

Specification 3.8.15 will assure that damage to fuel in the spent fuel pool will not be caused by dropping heavy objects onto the fuel. Administrative controls will prohibit the storage of fuel in locations adjoining the walls at the north and south ends of the pool, in the vicinity of cask storage area and fuel tilt pool access gates, until the review specified in 3.8.16 is completed.

Specification 3.8.16 assures that the spent fuel cask drop accident cannot occur prior to completion of the NRC staff's review of this potential accident and the completion of any modifications that may be necessary to preclude the accident or mitigate the consequences. Upon satisfactory completion of the NRC's review, Specification 3.8.16 shall be deleted.

REFERENCES

- (1) FSAR, Section 9.5
- (2) FSAR, Section 14.2.2.3
- (3) FSAR, Section 14.2.2.3.3

4.27 DECAY HEAT REMOVAL

APPLICABILITY

Applies to surveillance of the decay heat removal system and to the reactor coolant loops and associated reactor coolant pumps as needed for decay heat removal.

OBJECTIVE

To assure the operability of the decay heat removal system and the reactor coolant loops as needed for decay heat removal.

SPECIFICATION

- 4.27.1 The required reactor coolant pumps shall be determined operable once per seven (7) days by verifying correct breaker alignments and indicated power availability.
- 4.27.2 The required decay heat removal loop(s) shall be determined operable per Specification 4.2.2.
- 4.27.3 The required steam generator(s) shall be determined operable by verifying the secondary side water level to be \geq 20 inches on the startup range at least once per 12 hours.
- 4.27.4 The required reactor coolant loop(s) shall be determined operable by verifying the required loop(s) to be in operation and circulating reactor coolant at least once per 12 hours.
- 4.27.5 The required decay heat removal loop shall be determined to be in operation at least once per 12 hours.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 56 TO FACILITY OPERATING LICENSE NO. DPR-51

ARKANSAS POWER AND LIGHT COMPANY

ARKANSAS NUCLEAR ONE, UNIT NO. 1

DOCKET NO. 50-313

Introduction

By letter dated October 31, 1980, supplemented by letter dated January 30, 1981, Arkansas Power and Light Company (the licensee or AP&L) requested amendment to Facility Operating License No. DPR-51 for Arkansas Nuclear One, Unit No. 1, which would change the Technical Specifications (TSs) with respect to reactor decay heat removal capability.

Background

By letter dated June 11, 1980, the NRC requested all licensees of pressurized water reactors (PWR's) to propose TS changes which would provide for redundancy in the decay heat removal capability for their plants. This request was founded on a number of events which occurred at operating PWR's where decay heat removal capability had been seriously degraded due to inadequate administrative controls which would ensure that proper means were available to provide redundant methods of decay heat removal.

In IE Bulletin 80-12 dated May 9, 1980, the licensee also was requested to immediately implement administrative controls which would ensure that proper means are available to provide redundant methods of heat removal. Our request contained Model TSs which would provide for the permanent long term assurance that redundancy in decay heat removal capability would be maintained.

Evaluation

The ANO-1 current TSs provide for only one reactor coolant pump or one decay heat removal pump to be in operation whenever boron concentration is being reduced. This is to provide mixing which will prevent sudden positive reactivity changes by dilute coolant reaching the reactor. However, this is not adequate for single failure considerations whenever the reactor is in the standby mode, is being cooled down to the decay heat removal mode, is in the decay heat removal mode, or is in the refueling mode.

The licensee's proposed TSs would require at least one reactor coolant loop with at least one reactor coolant pump in operation and the other reactor coolant loop with at least one reactor coolant pump in standby whenever the reactor coolant temperature is above 280°F. Whenever the reactor coolant system is below 280°F but above the refueling shutdown condition (the decay heat removal mode of operation), the proposed TSs would require at least one reactor coolant loop or one decay heat removal loop in operation and another reactor coolant loop or decay heat removal loop in standby. Whenever the reactor is in the refueling mode of operation, the proposed TSs would require at least one decay heat removal loop be in operation. Whenever the reactor is in the refueling mode of operation with the water level below 23 feet above the core, the proposed TSs would also require the other decay heat removal loop to be in standby.

The proposed TSs would provide limiting conditions for operation in the event specified cooling loops were not operable. The proposed TSs would provide for surveillance requirements to assure the operability of the decay heat removal system and reactor coolant loops as needed for decay heat removal.

We have reviewed the licensee's proposed TSs and find that they provide for redundancy in the methods of heat removal during standby, cooldown and refueling operations and that they are consistent with the Model TSs which we provided in our request dated June 11, 1980. Therefore, we find the proposed TSs relating to the reactor decay heat removal capability to be acceptable.

We have also discussed with the licensee's staff an existing TS related to the handling of a fuel cask during the cycle three operation which was incorrectly presented with the proposed TSs. Since this TS was applied on a one-time basis and is no longer applicable, the licensee has agreed to have it deleted from the TSs.

We have determined that the licensee's proposed TSs, as modified, would provide for the permanent long term assurance that decay heat removal capability would be maintained. We find that the licensee's proposed change, as modified, would not decrease the margin of safety or increase the probability or consequences of an accident and therefore find the proposed change as modified acceptable.

Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: May 20, 1981

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

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 56 to Facility Operating License No. DPR-51, issued to Arkansas Power & Light Company (the licensee), which revised the Technical Specifications for operation of Arkansas Nuclear One, Unit No. 1 (ANO-1) located in Pope County, Arkansas. The amendment is effective as of its date of issuance.

The amendment modifies the ANO-1 Appendix A Technical Specifications dealing with the reactor decay heat removal capability.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

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

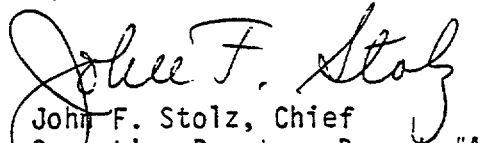
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For further details with respect to this action, see (1) the licensee's application dated October 31, 1980, as supplemented January 30, 1981, (2) Amendment No. 56 to License No. DPR-51, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. and at the Arkansas Tech University, Russellville, Arkansas. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 20th day of May 1981.

FOR THE NUCLEAR REGULATORY COMMISSION


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