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Docket No. 50-368

POSTED

Mr. T. Gene Campbell
Vice President, Nuclear
Operations
Arkansas Power and Light Company
P. O. Box 551
Little Rock, Arkansas 72203

50-368
ARKANSAS 2
AMENDMENT NO. 092
TO NPF-6

Dear Mr. Campbell:

SUBJECT: ISSUANCE OF AMENDMENT NO. 92 TO FACILITY OPERATING LICENSE
NO. NPF-6 - ARKANSAS NUCLEAR ONE, UNIT NO. 2 (TAC NO. 72890)

The Commission has issued the enclosed Amendment No. 92 to Facility Operating License No. NPF-6 for the Arkansas Nuclear One, Unit No. 2 (ANO-2). This amendment consist of changes to the Technical Specifications (TSs) in response to your application dated December 12, 1986.

The amendment changes the ANO-2 Technical Specifications related to occurrences of iodine spikes in the reactor coolant. It modifies reporting requirements in accordance with Generic Letter 85-19 and eliminates requirements that the plant be shutdown if reactor coolant iodine limits are exceeded.

A copy of our related Safety Evaluation is enclosed. Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

/s/

Chester Poslusny, Jr., Project Manager
Project Directorate - IV
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. 92 to NPF-6
- 2. Safety Evaluation

cc w/enclosures:

See next page

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Local PDR	Wanda Jones	JCalvo	ARM/LFMB
PD4 Reading	EButcher	OGC-Rockville	DHagan
EJordan	Plant File	FHebdon	

LTR NAME: ANO2 AMENDMENT TAC 72890

*SEE PREVIOUS CONCURRENCES:

PD4/LA*	PD4/PM*	OGC-Rockville*	PD4/D <i>11/6</i>
PNoonan	CPoslusny:bj		JCalvo
04/17/89	04/17/89	04/20/89	04/24/89



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555
April 24, 1989

Docket No. 50-368

Mr. T. Gene Campbell
Vice President, Nuclear
Operations
Arkansas Power and Light Company
P. O. Box 551
Little Rock, Arkansas 72203

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2. Safety Evaluation

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See next page

Mr. T. Gene Campbell
Arkansas Power & Light Company

Arkansas Nuclear One, Unit 2

cc:

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Honorable William Abernathy
County Judge of Pope County
Pope County Courthouse
Russellville, Arkansas 72801

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

ARKANSAS POWER AND LIGHT COMPANY

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 92
License No. NPF-6

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Arkansas Power and Light Company (the licensee) dated December 12, 1986, 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, as amended, 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 license amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

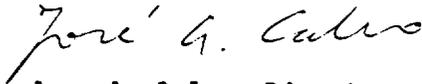
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-6 is hereby amended to read as follows:

2. Technical Specifications

- The Technical Specifications contained in Appendices A and B, as revised through Amendment No.92 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Jose A. Calvo, Director
Project Directorate - IV
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 24, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 92.

FACILITY OPERATING LICENSE NO. NPF-6

DOCKET NO. 50-368

Revise the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE PAGES

3/4 4-18
3/4 4-19
B 3/4 4-5
6-15
6-16
6-19

INSERT PAGES

3/4 4-18
3/4 4-19
B 3/4 4-5
6-15
6-16
6-19

TABLE 4.4-3
REACTOR COOLANT SYSTEM
CHEMISTRY LIMITS SURVEILLANCE REQUIREMENTS

<u>PARAMETER</u>	<u>SAMPLE AND ANALYSIS FREQUENCY</u>
DISSOLVED OXYGEN*	At least once per 72 hours
CHLORIDE	At least once per 72 hours
FLUORIDE	At least once per 72 hours

* Not required with $T_{avg} \leq 250^{\circ}\text{F}$

REACTOR COOLANT SYSTEM

SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

- 3.4.8 The specific activity of the primary coolant shall be limited to:
- a. $\leq 1.0 \mu\text{Ci}/\text{gram}$ DOSE EQUIVALENT I-131, and
 - b. $\leq 100/\bar{E} \mu\text{Ci}/\text{gram}$.

APPLICABILITY: MODES 1, 2, 3, 4, and 5.

ACTION:

MODES 1, 2 and 3*:

- a. With the specific activity of the primary coolant $> 1.0 \mu\text{Ci}/\text{gram}$ DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or exceeding the limit line shown on Figure 3.4-1, be in at least HOT STANDBY with $T_{\text{avg}} < 500^\circ\text{F}$ within 6 hours.
- b. With the specific activity of the primary coolant $> 100/\bar{E} \mu\text{Ci}/\text{gram}$, be in at least HOT STANDBY $T_{\text{avg}} < 500^\circ\text{F}$ within 6 hours.

*With $T_{\text{avg}} \geq 500^\circ\text{F}$

REACTOR COOLANT SYSTEM

(ACTION: (Continued))

MODES 1, 2, 3, 4, and 5:

- c. With the specific activity of the primary coolant $> 1.0 \mu\text{Ci}/\text{gram}$ DOSE EQUIVALENT I-131 or $> 100/E \mu\text{Ci}/\text{gram}$, perform the sampling and analysis requirements of item 4 a) of Table 4.4-4 until the specific activity of the primary coolant is restored to within its limits.

SURVEILLANCE REQUIREMENTS

4.4.8 The specific activity of the primary coolant shall be determined to be within the limits by performance of the sampling and analysis program of Table 4.4-4.

TABLE 4.4-4
PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE
AND ANALYSIS PROGRAM

<u>TYPE OF MEASUREMENT AND ANALYSIS</u>	<u>SAMPLE AND ANALYSIS FREQUENCY</u>	<u>MODES IN WHICH SAMPLE AND ANALYSIS REQUIRED</u>
1. Gross Activity Determination	At least once per 72 hours	1, 2, 3, 4
2. Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	1 per 14 days	1
3. Radiochemical for \bar{E} Determination	1 per 6 months*	1
4. Isotopic Analysis for Iodine Including I-131, I-133, and I-135	a) Once per 4 hours, whenever the DOSE EQUIVALENT I-131 exceeds 1.0 μ Ci/gram, and	1#, 2#, 3#, 4#, 5#
	b) One sample between 2 and 6 hours following a THERMAL POWER change exceeding 15 percent of the RATED THERMAL POWER within a one hour period.	1, 2, 3

Until the specific activity of the primary coolant system is restored within its limits.

* Sample to be taken after a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since reactor was last subcritical for 48 hours or longer.

REACTOR COOLANT SYSTEM

BASES

steam generator tube rupture accident in conjunction with an assumed steady state primary-to-secondary steam generator leakage rate of 1.0 GPM and a concurrent loss of offsite electrical power. The values for the limits on specific activity represent interim limits based upon a parametric evaluation by the NRC of typical site locations. These values are conservative in that specific site parameters of the Arkansas Nuclear One site, such as site boundary location and meteorological conditions, were not considered in this evaluation. The NRC is finalizing site specific criteria which will be used as the basis for the reevaluation of the specific activity limits of this site. This reevaluation may result in higher limits.

The ACTION statement permitting POWER OPERATION to continue for limited time periods with the primary coolant's specific activity $> 1.0 \mu\text{Ci/gram DOSE EQUIVALENT I-131}$, but within the allowable limit shown on Figure 3.4-1, accommodates possible iodine spiking phenomenon which may occur following changes in THERMAL POWER.

Reducing T_{avg} to $< 500^\circ\text{F}$ prevents the release of activity should a steam generator tube rupture since the saturation pressure of the primary coolant is below the lift pressure of the atmospheric steam relief valves. The surveillance requirements provide adequate assurance that excessive specific activity levels in the primary coolant will be detected in sufficient time to take corrective action. Information obtained on iodine spiking will be used to assess the parameters associated with spiking phenomena. A reduction in frequency of isotopic analyses following power changes may be permissible if justified by the data obtained.

3/4.4.9 PRESSURE/TEMPERATURE LIMITS

All components in the Reactor Coolant System are designed to withstand the effects of cyclic loads due to system temperature and pressure changes. These cyclic loads are introduced by normal load transients, reactor trips, and startup and shutdown operations. The various categories

REACTOR COOLANT SYSTEM

BASES

of load cycles used for design purposes are provided in Section 5.2.1.5 of the FSAR. During startup and shutdown, the rates of temperature and pressure changes are limited so that the maximum specified heatup and cooldown rates are consistent with the design assumptions and satisfy the stress limits for cyclic operation.

During heatup, the thermal gradients in the reactor vessel wall produce thermal stresses which vary from compressive at the inner wall to tensile at the outer wall. These thermal induced compressive stresses tend to alleviate the tensile stresses induced by the internal pressure. Therefore, a pressure-temperature curve based on steady state conditions (i.e., no thermal stresses) represents a lower bound of all similar curves for finite heatup rates when the inner wall of the vessel is treated as the governing location.

The heatup analysis also covers the determination of pressure-temperature limitations for the case in which the outer wall of the vessel becomes the controlling location. The thermal gradients established during heatup produce tensile stresses at the outer wall of the vessel. These stresses are additive to the pressure induced tensile stresses which are already present. The thermal induced stresses at the outer wall of the vessel are tensile and are dependent on both the rate of heatup and the time along the heatup ramp; therefore, a lower bound curve similar to that described for the heatup of the inner wall cannot be defined. Consequently, for the cases in which the outer wall of the vessel becomes the stress controlling location, each heatup rate of interest must be analyzed on an individual basis.

The heatup and cooldown limit curves (Figure 3.4-2) are composite curves which were prepared by determining the most conservative case, with either the inside or outside wall controlling, for any heatup or cooldown rates of up to 75°F per hour. The heatup and cooldown curves were prepared based upon the most limiting value of the predicted adjusted reference temperature at the end of the service period indicated on Figure 3.4-2.

The reactor vessel materials have been tested to determine their initial RT_{NDT}; the results of these test are shown in Table B 3/4.4-1. Reactor operation and resultant fast neutron ($E > 1$ Mev) irradiation will cause an increase in the RT_{NDT}. Therefore, an adjusted reference temperature, based upon the fluence can be predicted using Figure B 3/4.4-1. The heatup and cooldown limit curves shown on Figure 3.4-2 include predicted adjustments for this shift in RT_{NDT} at the end of the applicable service period, as well as adjustments for possible errors in the pressure and temperature sensing instruments.

ADMINISTRATIVE CONTROLS
ANNUAL REPORTS^{1/}

6.9.1.4 Annual reports covering the activities of the unit as described below for the previous calendar year shall be submitted prior to March 1 of each year. The initial report shall be submitted prior to March 1 of the year following initial criticality.

6.9.1.5. Reports required on an annual basis shall include:

- a. A tabulation on an annual basis for the number of station, utility and other personnel (including contractors) receiving exposures greater than 100 mrem/yr and their associated man rem exposure according to work and job functions,^{2/} e.g., reactor operations and surveillance, inservice inspection, routine maintenance, special maintenance (describe maintenance), waste processing, and refueling. The dose assignment to various duty functions may be estimates based on pocket dosimeter, TLD, or film badge measurements. Small exposures totalling less than 20% of the individual total dose need not be accounted for. In the aggregate, at least 80% of the total whole body dose received from external sources shall be assigned to specific major work functions.
- b. The complete results of steam generator tube inservice inspections performed during the report period (reference Specification 4.4.5.5.b).
- c. Documentation of all challenges to the pressurizer safety valves.
- d. A diesel generator data report which provides the number of valid tests and the number of valid failures for each diesel generator.
- e. The results of specific activity analysis in which the primary coolant exceeded the limits of Specification 3.4.8. The following information shall be included: (1) Reactor power history starting 48 hours prior to the first sample in which the limit was exceeded; (2) Results of the last isotopic analysis for radioiodine performed prior to exceeding the limit, results of analysis while limit was exceeded the results of one analysis after the radioiodine activity was reduced to less than limit. Each result should include date and time of sampling and the radioiodine concentrations; (3) Clean-up system flow history

1/ A single submittal may be made for a multiple unit station. The submittal should combine those sections that are common to all units at the station.

2/ This tabulation supplements the requirements of §20.407 of 10 CFR Part 20.

ADMINISTRATIVE CONTROLS

starting 48 hours prior to the first sample in which the limit was exceeded; (4) Graph of the I-131 concentration and one other radioiodine isotope concentration in microcuries per gram as a function of time for the duration of the specific activity above the steady-state level; and (5) The time duration when the specific activity of the primary coolant exceeded the radioiodine limit.

MONTHLY OPERATING REPORT

6.9.1.6 Routine reports of operating statistics and shutdown experience shall be submitted on a monthly basis to the Director, Office of Resource Management, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, with a copy to the Regional Office no later than the 15th of each month following the calendar month covered by the report.

6.9.1.7 Deleted.

6.9.1.8 Deleted.

ADMINISTRATIVE CONTROLS

SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Administrator of the Regional Office within the time period specified for each report. These reports shall be submitted covering the activities identified below pursuant to the requirements of the applicable reference specification:

- a. ECCS Actuation, Specifications 3.5.2 and 3.5.3.
- b. Inoperable Seismic Monitoring Instrumentation, Specification 3.3.3.3.
- c. Inoperable Meteorological Monitoring Instrumentation, Specification 3.3.3.4.
- d. Seismic event analysis, Specification 4.3.3.3.2.
- e. Inoperable Fire Detection Instrumentation, Specification 3.3.3.8.
- f. Inoperable Fire Suppression Systems, Specifications 3.7.10.1 and 3.7.10.2.
- g. Deleted.
- h. Radioactive Effluents, Specifications 3.11.1.1, 3.11.1.2, 3.11.1.3, 3.11.2.2, 3.11.2.3, 3.11.2.4, 3.11.2.5, and 3.11.3.

This report shall include the following:

- 1) Description of occurrence.
 - 2) Identify the cause(s) for exceeding the limit(s)
 - 3) Explain corrective action(s) taken to mitigate occurrence.
 - 4) Define action(s) taken to prevent recurrence.
 - 5) Summary of consequence(s) of occurrence.
 - 6) Describe levels exceeding 40CFR190 in accordance with 10CFR20.405(c).
- i. Inoperable Containment Radiation Monitors, Specification 3.3.3.1.
 - j. Steam Generator Tubing Surveillance -- Category C-3 Results, Specification 4.4.5.5.
 - k. Maintenance of Spent Fuel Pool Structural Integrity, Specification 3.7.12.

ADMINISTRATIVE CONTROLS

- l. Radiological Environmental Monitoring Sample Analysis, Specification 3.12.1.
- m. Unplanned Offsite Release during one hour period of 1) more than 1 curie of radioactive material in liquid effluents, 2) more than 150 curies of noble gas in gaseous effluents, or 3) more than 0.05 curies of radioiodine in gaseous effluents. This report shall be submitted within 30 days of the occurrence of the event and shall include the following information:
 1. Description of the occurrence.
 2. Identify the cause(s) of exceeding the limit(s).
 3. Explain corrective action(s) taken to mitigate occurrence.
 4. Define action(s) taken to prevent recurrence.
 5. Summary of the consequence(s) of occurrence.

SEMI-ANNUAL RADIOLOGICAL EFFLUENT RELEASE REPORT*

6.9.3 Routine radioactive effluent release reports covering the operating of the unit during the previous 6 months of operations shall be submitted within 60 days after January 1 and July 1 of each year.

*A single submittal may be made for a multiple unit station. The submittal should combine those sections that are common to all units at the station; however, for units with separate radwaste system, the submittal shall specify the releases of radioactive material from each unit.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 92 TO

FACILITY OPERATING LICENSE NO. NPF-6

ARKANSAS POWER AND LIGHT COMPANY

ARKANSAS NUCLEAR ONE, UNIT NO. 2

DOCKET NO. 50-368

INTRODUCTION

By letter dated December 12, 1986, Arkansas Power and Light Company (AP&L or the licensee) requested amendments to the Technical Specifications (TSs) appended to Facility Operating License No. NPF-6 for Arkansas Nuclear One, Unit 2 (ANO-2). The proposed amendment would change the Technical Specifications related to the occurrence of iodine spikes for ANO-2.

BACKGROUND

Generic Letter 85-19 "Reporting Requirements on Primary Coolant Iodine Spikes", dated September 25, 1985 required that certain unnecessary reporting requirements in plant Technical Specifications be eliminated. It also stated the Commission's determination that the requirement to shutdown a plant if coolant iodine activity limits are exceeded for 800 hours in a 12 month period can be eliminated.

EVALUATION

The staff has reviewed the AP&L submittal which deleted from the Technical Specifications the requirement to shutdown based on the 800 hour limit noted above and changes the reporting of iodine spiking to be included in a annual report provided to the Commission. All requested changes to the ANO-2 Technical Specifications comply with the specified requirements of Generic Letter 85-19 and therefore are determined to be acceptable.

ENVIRONMENTAL CONSIDERATION

The amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposures. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: April 24, 1989

Principal Contributor: C. Poslusny, Jr.