

DCS MS-016

MAR 26 1984

Docket No. 50-368

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Mr. John M. Griffin, Vice President
Nuclear Operations
Arkansas Power & Light Company
P. O. Box 551
Little Rock, Arkansas 72203

Dear Mr. Griffin:

The Commission has issued the enclosed Amendment No. 53 to Facility Operating License No. NPF-6 for Arkansas Nuclear One, Unit No. 2. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated July 12, 1983 as supplemented by letters dated September 30, 1983 and January 6, 1984.

The amendment revises the TS pertaining to the incore detection system. Specifically, the amendment modifies the definition of an operable incore detector location. In addition, the amendment places additional requirements on the spatial distribution of operable detectors and on the total number of detector failures.

A copy of the Safety Evaluation is enclosed. The notice of issuance will be included in the Commission's next monthly Federal Register notice.

Sincerely,

Original Signed by J. R. Miller

James R. Miller, Chief
Operating Reactors Branch #3
Division of Licensing

Enclosure:

1. Amendment No. 53 to NPF-6
2. Safety Evaluation

cc w/enclosure:

See next page

ORB#3:DL
PMKretuzer
3/5/84

ORB#3:DL
RSLee/pn
3/5/84

ORB#3:DL
JRMiller
3/5/84

OELD
3/13/84

No legal objection

AD:DR:DL
GCKainas
3/12/84

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Arkansas Power & Light Company

cc:

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Little Rock, Arkansas 72203



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

ARKANSAS POWER & LIGHT COMPANY

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 53
License No. NPF-6

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Arkansas Power & Light Company (the licensee) dated July 12, 1983 as supplemented September 30, 1983 and January 6, 1984, 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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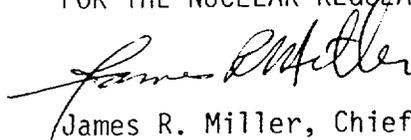
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-6 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 53, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications, except where otherwise stated in specific license conditions.

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

FOR THE NUCLEAR REGULATORY COMMISSION



James R. Miller, Chief
Operating Reactors Branch #3
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 26, 1984

ATTACHMENT TO LICENSE AMENDMENT NO. 53

FACILITY OPERATING LICENSE NO. NPF-6

DOCKET NO. 50-368

Replace the following page of the Appendix "A" Technical Specifications with the enclosed page. The revised page is identified by Amendment number and contains vertical lines indicating the areas of change.

Remove Page

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Insert Page

3/4 3-28

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>MODES IN WHICH SURVEILLANCE REQUIRED</u>
1. AREA MONITORS				
a. Spent Fuel Pool Area Monitor	S	R	M	*
2. PROCESS MONITORS				
a. Containment				
i. Gaseous Activity				
a) Purge & Exhaust Isolation	**	R	***	ALL MODES
b) RCS Leakage Detection	S	R	M	1, 2, 3, & 4
ii. Particulate Activity				
a) RCS Leakage Detection	S	R	M	1, 2, 3, & 4
b. Control Room Ventilation Intake Duct Monitor	S	R	M	ALL MODES

* With fuel in the spent fuel pool or building
 ** Within 8 hours prior to initiating containment purge operations and at least once per 12 hours during containment purge operations.
 *** Within 31 days prior to initiating containment purge operations and at least once per 31 days during containment purge operations.

INSTRUMENTATION

INCORE DETECTORS

LIMITING CONDITION FOR OPERATION

3.3.3.2 The incore detection system shall be OPERABLE with:

- a. At least 75% of all incore detectors with at least one incore detector in each quadrant at each level, and
- b. At least 75% of all incore detector locations, and
- c. Sufficient operable incore detectors to perform at least six tilt estimates with at least one tilt estimate at each of three levels.

An OPERABLE incore detector location shall consist of a fuel assembly containing either a fixed detector string with a minimum of three OPERABLE rhodium detectors or an OPERABLE movable incore detector capable of mapping the location.

A tilt estimate can be made from two sets of symmetric pairs of incore detectors. Two sets of symmetric pairs of incore detectors are formed by two pairs of diagonally opposite symmetric incore detectors, one incore detector per quadrant.

APPLICABILITY: When the incore detection system is used for monitoring the AZIMUTHAL POWER TILT, radial peaking factors, local power density or DNB margin.

ACTION:

With the incore detection system inoperable, do not use the system for the above applicable monitoring or calibration functions. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.2 The incore detection system shall be demonstrated OPERABLE:

- a. By performance of a CHANNEL CHECK within 24 hours prior to its use and at least once per 7 days thereafter when required for monitoring the AZIMUTHAL POWER TILT, radial peaking factors, local power density or DNB margin.
- b. At least once per 18 months by performance of a CHANNEL CALIBRATION operation which exempts the neutron detectors but includes all electronic components. The neutron detectors shall be calibrated prior to installation in the reactor core.

INSTRUMENTATION

INCORE DETECTORS

LIMITING CONDITION FOR OPERATION

3.3.3.2 The incore detection system shall be OPERABLE with:

- a. At least 75% of all incore detectors with at least one incore detector in each quadrant at each level, and
- b. At least 75% of all incore detector locations, and
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An OPERABLE incore detector location shall consist of a fuel assembly containing either a fixed detector string with a minimum of three OPERABLE rhodium detectors or an OPERABLE movable incore detector capable of mapping the location.

A tilt estimate can be made from two sets of symmetric pairs of incore detectors. Two sets of symmetric pairs of incore detectors are formed by two pairs of diagonally opposite symmetric incore detectors, one incore detector per quadrant.

APPLICABILITY: When the incore detection system is used for monitoring the AZIMUTHAL POWER TILT, radial peaking factors, local power density or DNB margin.

ACTION:

With the incore detection system inoperable, do not use the system for the above applicable monitoring or calibration functions. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.2 The incore detection system shall be demonstrated OPERABLE:

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 53 TO FACILITY OPERATING LICENSE NO. NPF-6

ARKANSAS POWER & LIGHT COMPANY

ARKANSAS NUCLEAR ONE, UNIT 2

DOCKET NO. 50-368

Introduction

In a letter dated July 12, 1983, Arkansas Power and Light Company requested a change to the Arkansas Nuclear One Unit 2 (ANO-2) Technical Specification 3.3.3.2 which states the requirements for operability of the incore detection system. Additional supporting information was submitted in letters dated September 30, 1983 and January 6, 1984.

Evaluation

The current technical specification requires 75% of the detector locations to be operable and defines an operable location as one which has a minimum of four operable detectors. (Each location has a detector at each of five axial levels.) It also requires that a minimum of two quadrant symmetric incore detector locations per core quadrant be operable.

The proposed specification requires the same number of operable locations but it redefines an operable detector location as one having at least three operable detectors. It adds the requirement that 75% of all detectors must be operable and changes the requirements on spatial distribution of the operable detectors. The proposed specification has a requirement of at least one operable detector in each quadrant at each level and sufficient operable detectors to perform at least six tilt estimates with at least one tilt estimate at each of three levels.

The change in the definition of operable locations from four operable detectors to three operable detectors is consistent with definitions of operability in other plants which have four detectors per location and require three operable detectors. The requirement that 75% of the detectors be operable was added to limit the total number of detector failures allowed. The proposed tilt estimate requirement ensures that at least six-4 detector-tilt estimates are available and that there is at least one tilt estimate from at least three levels. The previous spatial distribution requirements ensured at least six tilt estimates but these could be made with three of the four symmetric detectors.

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The purposes of the incore instrumentation system are to evaluate core power distributions, perform calibrations of the out of core flux measurement system and provide inputs to the Core Operating Limit Supervisory System (COLSS).

A study was performed to determine which criterion would be violated first if the detector failures were random. For the current requirements, the detector location operability criterion was violated first in all cases (200 cases run). In these cases, only 12% to 20% of the detectors had failed when the location operability criteria was reached. For the proposed requirements, the criterion of 75% of detectors operable was violated first in all cases (500 cases run). For these cases, only 3 to 8 locations were inoperable when the 75% of detectors criterion was violated.

Arkansas Power and Light Company has shown that the proposed operability requirements are consistent with the data base used for the approved CECOR Topical CENPD-153-P Per 1-P-A, May 1980.

The data base cases with the most failures were examined. These cases support operation with up to 25% of the detectors failed and 25% of the locations failed. In addition, Arkansas Power and Light Company has done simulation studies for ANO-2 to evaluate synthesis uncertainties for F_r , F_{xy} , F_g and F_c using the proposed detector operability requirements. Five different cases were used for the study.* The results of the study were presented and they indicate no increase in the uncertainties. As a matter of fact the uncertainties are well below those used in the topical which is based on 4 detectors per location because ANO-2 is a five detector per location plant. The five detectors and five axial nodes gives lower synthesis uncertainties than four detectors because of the better axial representation. Similar results have been obtained in other studies on five detector plants.

Based on our review of the material submitted by the licensee and the random detector study, we conclude that the proposed technical specification change is acceptable. There is however no justification for operation with fewer than 75% of the detectors. Any operation with fewer than 75% of the detectors would require a complete reevaluation.

* Case 1 - Most detectors ANO-2 ever had failed.

Case 2 - Case 1 plus random failure to fail 25% of detectors failed and 25% failed locations.

Case 3 - Entire core central region axially and radially failed.

Case 4 - Two quadrants contained only 1 live detector each at axial levels and selected failures in other quadrants.

Case 5 - Eleven detectors failed in one quadrant, leaving only one live string in that quadrant.

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) 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 this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: March 26, 1984

Principal Contributor:
M. Chatterton