

August 28, 1990

Docket No. 50-331

Mr. Lee Liu
Chairman of the Board and
Chief Executive Officer
Iowa Electric Light and Power Company
Post Office Box 351
Cedar Rapids, Iowa 52406

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Wanda Jones	JCalvo
ACRS(10)	GPA/PA
ARM/LFMB	RJones

Dear Mr. Liu:

SUBJECT: AMENDMENT NO. 168 TO FACILITY OPERATING LICENSE NO. DPR-49
(TAC NO. 77078)

The Commission has issued the enclosed Amendment No. 168 to Facility Operating License No. DPR-49 for the Duane Arnold Energy Center. This amendment consists of changes to the Technical Specifications (TS) in response to your application dated June 19, 1990.

The amendment revises the safety limit Minimum Critical Power Ratio (MCPR) in TS 1.1.A from 1.04 to 1.07 for two recirculation loop operation and from 1.07 to 1.10 for single loop operation. This increase in the safety limit MCPR is due to the use of General Electric GE 8X8NB-3 fuel during Cycle 11 operation. The NRC staff previously approved the use of this fuel design and the associated method for calculating the safety limit MCPR in Amendment 21 to NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel."

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

Sincerely,

/s/

James R. Hall, Project Manager
Project Directorate III-3
Division of Reactor Projects - III,
IV, V & Special Projects
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 168 to License No. DPR-49
2. Safety Evaluation

cc w/enclosures: See next page

Office:	LA/PDIII-3	PM/PDIII-3	PD/PDIII-3
Surname:	PKreutzer	RHall/bj	JHannon
Date:	8/16/90	8/16/90	8/17/90

BC:SRMB	OGC-WF1
RJones	all/ocw
8/17/90	8/21/90

DOCUMENT NAME: 77078 AMD

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Sincerely,

SR

James R. Hall, Project Manager
Project Directorate III-3
Division of Reactor Projects - III,
IV, V & Special Projects
Office of Nuclear Reactor Regulation

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8/17/90

OGC-WF1
RJones
8/21/90

SR
for
for

Mr. Lee Liu
Iowa Electric Light and Power Company

Duane Arnold Energy Center

cc:

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Kathleen H. Shea, Esquire
Newman and Holtzinger
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Washington, D.C. 20036

Chairman, Linn County
Board of Supervisors
Cedar Rapids, Iowa 52406

Iowa Electric Light and Power Company
ATTN: R. Hannen
Post Office Box 351
Cedar Rapids, Iowa 52406

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Resident Inspector's Office
Rural Route #1
Palo, Iowa 52324

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
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Glen Ellyn, Illinois 60137

Mr. John A. Eure
Assistant to the Division Director
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Lucas State Office Building
Des Moines, Iowa 50319



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

IOWA ELECTRIC LIGHT AND POWER COMPANY
CENTRAL IOWA POWER COOPERATIVE
CORN BELT POWER COOPERATIVE

DOCKET NO. 50-331

DUANE ARNOLD ENERGY CENTER

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 168
License No. DPR-49

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Iowa Electric Light and Power Company, et al., dated June 19, 1990 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.
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-49 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 168, 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 the date of issuance and shall be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



for John N. Hannon, Director
Project Directorate III-3
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of issuance: August 28, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 168

FACILITY OPERATING LICENSE NO. DPR-49

DOCKET NO. 50-331

Replace the following page of the Appendix A Technical Specifications with the enclosed page. The revised areas are indicated by marginal lines.

Pages

1.1-1

SAFETY LIMIT	LIMITING SAFETY SYSTEM SETTING
<p>1.1 FUEL CLADDING INTEGRITY</p> <p><u>Applicability:</u></p> <p>Applies to the inter-related variables associated with fuel thermal behavior.</p> <p><u>Objective:</u></p> <p>To establish limits which ensure the integrity of the fuel cladding.</p> <p><u>Specifications:</u></p> <p>A. <u>Reactor Pressure > 785 psig and Core Flow > 10% of Rated</u></p> <p>The existence of a minimum critical power ratio (MCPR) less than 1.07 for two recirculation loop operation [1.10 for SINGLE LOOP OPERATION (SLO)] shall constitute violation of the fuel cladding integrity safety limit.</p> <p>B. <u>Core Thermal Power Limit (Reactor Pressure < 785 psig or Core Flow < 10% of Rated)</u></p> <p>When the reactor pressure is \leq 785 psig or core flow is less than or equal to 10% of rated, the core thermal power shall not exceed 25 percent of rated thermal power.</p>	<p>2.1 FUEL CLADDING INTEGRITY</p> <p><u>Applicability:</u></p> <p>Applies to trip settings of the instruments and devices which are provided to prevent the reactor system safety limits from being exceeded.</p> <p><u>Objective:</u></p> <p>To define the level of the process variables at which automatic protective action is initiated to prevent the fuel cladding integrity safety limits from being exceeded.</p> <p><u>Specifications:</u></p> <p>The limiting safety system settings shall be as specified below:</p> <p>A. <u>Neutron Flux Trips</u></p> <p>1. <u>APRM High Flux Scram When In Run Mode</u></p> <p>The APRM scram trip setpoint shall be as shown on Figure 2.1-1 and shall be:</p> $S \leq (0.58W + 62)$ <p>with a maximum setpoint of 120% rated power at 100% rated recirculation flow or greater for two recirculation loop operation and</p> $S \leq (0.58W + 58.5)$ <p>for SLO.</p>



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 168 TO FACILITY OPERATING LICENSE NO. DPR-49

IOWA ELECTRIC LIGHT AND POWER COMPANY
CENTRAL IOWA POWER COOPERATIVE
CORN BELT POWER COOPERATIVE

DUANE ARNOLD ENERGY CENTER

DOCKET NO. 50-331

1.0 INTRODUCTION

By letter dated June 19, 1990, Iowa Electric Light and Power Company proposed a change to the Technical Specifications (TSs) for the Duane Arnold Energy Center. The proposed change would increase the safety limit Minimum Critical Power Ratio (MCPR) to reflect the use of General Electric GE 8X8NB-3 type fuel for the upcoming Cycle 11 operation.

2.0 EVALUATION

General Design Criterion 10 requires that the reactor core be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of abnormal operating transients. In order to avoid fuel damage caused by overheating of the cladding, transient consequences are limited so that more than 99.9% of the fuel rods would be expected to avoid boiling transition during a transient event. Because of this, the staff has required a safety limit stated in terms of a statistically determined Minimum Critical Power Ratio (MCPR).

The proposed safety limit MCPRs of 1.07 for two recirculation loop operation and 1.10 for single loop operation for the new GE 8X8NB-3 type fuel were determined using an NRC-approved methodology, as described in NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel," (GESTAR II). On March 17, 1989, the NRC staff approved Amendment 21 to NEDE-24011-P-A, which incorporated the GE 8X8NB-1, -2, and -3 fuel bundle designs into the GESTAR II document. In the supporting safety evaluation, the staff concluded that it is conservative and acceptable to calculate the safety limit MCPR for GE 8X8NB-3 fuel using the assumptions for a C-lattice design. The actual GE 8X8NB-3 design is between a D-lattice and C-lattice geometry, and the calculated MCPR for a C-lattice is greater than that for a D-lattice configuration. The licensee used the same conservative

assumptions in calculating the proposed MCPRs. Therefore, the staff concludes that the proposed safety limit MCPRs (1.07 for two recirculation loop operation and 1.10 for single loop operation) are acceptable for the operation of the Duane Arnold Energy Center with GE 8X8NB-3 fuel.

3.0 ENVIRONMENTAL CONSIDERATIONS

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes a surveillance requirement. 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 exposure. 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 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.

4.0 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.

Principal Contributor: James R. Hall

Dated: August 28, 1990