

February 5, 1985

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

Dear Mr. Liu:

The Commission has issued the enclosed Amendment No. 111 to Facility Operating License No. DPR-49 for the Duane Arnold Energy Center. This amendment consists of changes to the Technical Specifications in response to your application dated August 17, 1984.

The amendment revises the Technical Specifications to incorporate the revised setpoint for bypass of reactor scrams during turbine trips and generator load rejection at low power levels.

A copy of the related Safety Evaluation is also enclosed.

Sincerely,

Original signed by/

Mohan C. Thadani, Project Manager  
Operating Reactors Branch #2  
Division of Licensing

Enclosures:

1. Amendment No. 111 to License No. DPR-49
2. Safety Evaluation

cc w/enclosures:  
See next page

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Mr. Lee Liu  
Iowa Electric Light and Power Company  
Duane Arnold Energy Center

cc:

Jack Newman, Esquire  
Harold F. Reis, Esquire  
Newman and Holtzinger  
1615 L Street, N. W.  
Washington, D. C. 20036

Mr. Thomas Houvenagle  
Regulatory Engineer  
Iowa Commerce Commission  
Lucas State Office Building  
Des Moines, Iowa 50319

Office for Planning and Programming  
523 East 12th Street  
Des Moines, Iowa 50319

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

Iowa Electric Light and Power Company  
ATTN: D. L. Mineck  
Post Office Box 351  
Cedar Rapids, Iowa 52406

U. S. Nuclear Regulatory Commission  
Resident Inspector's Office  
Rural Route #1  
Palo, Iowa 52324

James G. Keppler  
Regional Radiation Representative  
Region III Office  
U. S. Nuclear Regulatory Commission  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137



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. 111  
License No. DPR-49

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Iowa Electric Light & Power Company, et al, dated August 17, 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.
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:

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(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 111, 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.

FOR THE NUCLEAR REGULATORY COMMISSION

Domenic B. Vassallo, Chief  
Operating Reactors Branch #2  
Division of Licensing

Attachment:  
Changes to the  
Technical Specifications

Date of Issuance: February 5, 1985

ATTACHMENT TO LICENSE AMENDMENT NO. 111

FACILITY OPERATING LICENSE NO. DPR-49

DOCKET NO. 50-331

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

AFFECTED PAGES

3.1-4  
3.1-6  
3.1-21

TABLE 3.1-1 (Continued)

## REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENTATION REQUIREMENT

Minimum No. of Operable Instrument Channels for Trip System (1)	Trip Function	Trip Level Setting	Modes in Which Function Must be Operable			Number of Instrument Channels Provided By Design	Action (1)
			Refuel (6)	Startup	Run		
2	High Drywell Pressure	$\leq 2.0$ psig	X(7)	X(8)	X	4 Instrument Channels	A
2	Reactor Low Water Level	$> +170''$ Indicated Level (15)	X	X	X	4 Instrument Channels	A
2	High Water Level in Scram Discharge Volume	$\leq 60$ Gallons	X(2)	X	X	4 Instrument Channels	A
2	Main Steam Line High Radiation	$< 3 \times$ Normal Rated Power Background*	X	X	X	4 Instrument Channels	A
4	Main Steam Line Isolation Valve Closure	$\leq 10\%$ Valve Closure	X (3)(13)	X (3)(13)	X(13)	8 Instrument Channels	A or C
2	Turbine Control Valve Fast Closure (Loss of Control Oil Pressure)	Within 30 milliseconds of the Start of Control Valve Fast Closure			X(4)	4 Instrument Channels	A or D
4	Turbine Stop Valve Closure	$\leq 10\%$ Valve Closure			X(4)	8 Instrument Channels	A or D
2	First Stage	Bypass below 155 psig	X	X	X	4 Instrument Channels	A or D

\*Alarm setting  $\leq 1.5 \times$  Normal Rated Power Background

3. A main steam line isolation valve closure trip bypass is effective when the reactor mode switch is in the shutdown, refuel or startup positions.
4. Bypassed when turbine first stage pressure is less than 155 psig (corresponding to 30% of rated core power). This value of first stage pressure assumes that the second stage reheaters are not in-service below 30% of rated core power..
5. IRM's are bypassed when APRM's are on-scale and the reactor mode switch is in the run position.
6. When the reactor is subcritical and the reactor water temperature is less than 212°F, only the following trip functions need to be operable:
  - a. Mode switch in shutdown
  - b. Manual scram
  - c. High flux IRM
  - d. Scram discharge volume high level - may be bypassed in the refuel and shutdown modes for the purpose of resetting the scram.
  - e. APRM 15% flux

to the Refuel mode during reactor power operation does not diminish the protection provided by the reactor protection system.

Turbine stop valve closure trip occurs at approximately 10% of valve closure. Below 155 psig turbine first stage pressure (corresponding to 30% of rated core power), the scram signal due to turbine stop valve closure is by-passed because the flux and pressure scrams are adequate to protect the reactor below 30% of rated core power.

Turbine Control valve fast closure scram trip shall initiate within 30 milliseconds of the start of control valve fast closure. The trip level setting is verified by measuring the time interval from energizing the fast acting solenoid (from valve test switch) to pressure switch response; the measured result is compared to base line data taken during each refueling outage. Turbine control valve fast closure is sensed by measuring disc dump electro-hydraulic oil line pressure (Relay Emergency Trip Supply) which decreases rapidly upon generator load rejection. This scram is only effective when turbine first stage pressure is above 155 psig (corresponding to 30% of rated core power).

The requirement that the IRM's be inserted in the core when the APRM's read 5 as indicated on the scale in the Startup and Refuel modes assures that there is proper overlap in the neutron monitoring system functions and thus, that adequate coverage is provided for all ranges of reactor operation.





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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 111 TO 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

As a result of a review of the engineering designs related to the Duane Arnold Energy Center (DAEC) the Iowa Electric Light and Power Company (the licensee) discovered a discrepancy in a pressure instrument setpoint for automatic bypass of turbine control valve fast closure scram and turbine stop valve closure scram. The instrument setpoint was set at a turbine first stage pressure corresponding to 30% of the "turbine power." The Final Safety Analyses Report (FSAR) evaluation which was reviewed and approved by the Commission, was based on the pressure instrument to be set at turbine pressure corresponding to 30% of the "core power." The use of 30% of the "turbine power" instead of 30% of the "core power" has resulted in a nonconservative setpoint. The licensee has, therefore, requested a change to the Technical Specifications to correct the value of the turbine first stage setpoint pressure to correspond to 30% of the "core power" as stated in the FSAR and evaluated by the staff.

2.0 Evaluation

The proposed change corrects an error in the instrument setpoint dealing with the scram signal bypass at a low reactor power. The staff has verified that the FSAR evaluation of the setpoint in question refers to a setting at 30% of the "core power." Since the FSAR was evaluated by the staff and the evaluation accepted prior to the issuance of the DAEC license, we find the proposed request to correct the erroneous setting to be acceptable.

3.0 Environmental Considerations

This 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 exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on

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such finding. Accordingly, this 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 this amendment.

#### 4.0 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.

Principal Contributor: M. Thadani

Dated: February 5, 1985

#### 5.0 Reference

Duane Arnold Energy Center Procedures for Establishing Turbine Pressure, letter from General Electric Company to Iowa Electric Light and Power Company, dated August 10, 1984.