

Docket File

JUNE 3 1981

Docket No. 50-331



Mr. Duane Arnold, President
Iowa Electric Light and Power Company
P.O. Box 351
Cedar Rapids, Iowa 52406

Dear Mr. Arnold:

The Commission has issued the enclosed Amendment No. 69 to Facility Operating License No. DPR-49 for the Duane Arnold Energy Center (DAEC). This amendment consists of changes to the Technical Specifications in final response to your submittals dated 1) April 23, 1976 (RTS-60) and 2) October 26, 1977 (ETS-23, RTS-93 and RTS-96) and subsequent discussions between the NRC staff and your staff.

We have reviewed your submittals of April 23, 1976 (RTS-60) and October 26, 1977 (ETS-23, RTS-93 and RTS-96) and have determined that it involves an amendment which revises the Technical Specifications to:

- 1) Clarify manning requirements during core alterations to reflect the most recent Standard Technical Specifications (STS - NUREG-0123 Rev. 3) and to incorporate the most recent STS definition of Core Alterations;
- 2) Change Technical Specification requirements concerning Maximum Average Planar Linear Heat Generation Rate (MAPLHGR), Linear Heat Generation Rate (LHGR), Minimum Critical Power Ratio (MCPR) and Reportable Occurrence Actions to conform to the most recent STS;
- 3) Change the requirement of the Appendix B Technical Specifications for a monthly composite sample analysis for SR-89 to a quarterly composite sample analysis requirement in accordance with the guidance of Regulatory Guide 1.21 Rev. 1.

Consequently, this amendment is acceptable as an administrative change implementing a previously reviewed and approved action by the Commission.

We have evaluated the potential for environmental impact of plant operation in accordance with the enclosed amendment and 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

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Mr. Duane Arnold

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, negative declaration or environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Since the amendment applies only to administrative details, it does not involve significant new safety information of a type not considered by a previous Commission safety review of the facility. It does not involve a significant increase in the probability or consequences of an accident, does not involve a significant decrease in a safety margin, and therefore does not involve a significant hazards consideration. We have also concluded that there is reasonable assurance that the health and safety of the public will not be endangered by this action.

A copy of the related Notice of Issuance is also enclosed.

Sincerely,

Thomas A. Ippolito, Chief
Operating Reactors Branch #2
Division of Licensing

Enclosures:

- 1. Amendment No. 69
- 2. Notice

cc w/enclosures:
See next page

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

June 3, 1981

Docket No. 50-331

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Iowa Electric Light and Power Company
P.O. Box 351
Cedar Rapids, Iowa 52406

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Consequently, this amendment is acceptable as an administrative change implementing a previously reviewed and approved action by the Commission.

We have evaluated the potential for environmental impact of plant operation in accordance with the enclosed amendment and 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

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Mr. Duane Arnold

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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, negative declaration or environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

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A copy of the related Notice of Issuance is also enclosed.

Sincerely,



Thomas A. Ippolito, Chief
Operating Reactors Branch #2
Division of Licensing

Enclosures:

1. Amendment No. 69
2. Notice

cc w/enclosures:

See next page

Mr. Duane Arnold
Iowa Electric Light & Power Company

cc:

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Cedar Rapids, Iowa 52406

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Cedar Rapids, Iowa 52406

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Region VII Office
ATTN: EIS COORDINATOR
324 East 11th Street
Kansas City, Missouri 64106

Cedar Rapids Public Library
428 Third Avenue, S.E.
Cedar Rapids, Iowa 52401

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



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

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 69
License No. DPR-49

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The applications for amendment by Iowa Electric Light and Power Company, Central Iowa Power Cooperative, and Corn Belt Power Cooperative (the licensee) dated April 23, 1976, and October 26, 1977 comply 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 applications, 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 Appendices A and B, as revised through Amendment No. 69, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION


Thomas A. Appolito, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 3, 1981

ATTACHMENT TO LICENSE AMENDMENT NO. 69

FACILITY OPERATING LICENSE NO. DPR-49

DOCKET NO. 50-331

Remove the following pages and insert identically numbered pages into the Appendix A Technical Specifications.

iii

1.0-5

3.12-1

3.12-2

3.12-3

3.12-8

6.2-1

6.2-3

Remove the following page and insert an identically numbered page into the Appendix B Technical Specifications.

2.3-8

<u>LIMITING CONDITION FOR OPERATION</u>	<u>SURVEILLANCE REQUIREMENTS</u>	
3.7 Containment Systems	4.7	3.7-1
A. Primary Containment	A	3.7-1
B. Standby Gas Treatment	B	3.7-15
C. Secondary Containment	C	3.7-17
D. Primary Containment Power Operated Isolation Valves	D	3.7-18
3.8 Auxiliary Electrical Systems	4.8	3.8-1
A. Auxiliary Electrical Equipment	A	3.8-1
B. Operation with Inoperable Components	B	3.8-3
C. Emergency Service Water System	C	3.8-6
3.9 Core Alterations	4.9	3.9-1
A. Refueling Interlocks	A	3.9-1
B. Core Monitoring	B	3.9-4
C. Spent Fuel Pool Water Level	C	3.9-4
3.10 Additional Safety Related Plant Capabilities	4.10	3.10-1
A. Main Control Room Ventilation	A	3.10-1
B. Emergency Shutdown Control Panel	B	3.10-2
3.11 River Level Specification	4.11	3.11-1
3.12 Core Thermal Limits	4.12	3.12-1
A. Maximum Average Planar Linear Heat Generation Rate	A	3.12-1
B. Linear Heat Generation Rate	B	3.12-2
C. Minimum Critical Power Ratio	C	3.12-3

19. ALTERATION OF THE REACTOR CORE (CORE ALTERATION)

The addition, removal, relocation or movement of fuel, sources, incore instruments or reactivity controls within the reactor pressure vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of the movement of a component to a safe conservative position.

20. REACTOR VESSEL PRESSURE

Unless otherwise indicated, reactor vessel pressures listed in the Technical Specifications are those measured by the reactor vessel steam space detectors.

21. THERMAL PARAMETERS

- a. Minimum Critical Power Ratio (MCPR) - The value of critical power ratio (CPR) for that fuel bundle having the lowest CPR.
- b. Critical Power Ratio (CPR) - The ratio of that fuel bundle power which would produce boiling transition to the actual fuel bundle power.
- c. Transition Boiling - Transition boiling means the boiling regime between nucleate and film boiling. Transition boiling is the regime in which both nucleate and film boiling occur intermittently with neither type being completely stable.
- d. Deleted
- e. Linear Heat Generation Rate - the heat output per unit length of fuel pin.
- f. Fraction of Limiting Power Density (FLPD) - The fraction of limiting power density is the ratio of the linear heat generation rate (LHGR) existing at a given location to the design LHGR for that bundle type.
- g. Maximum Fraction of Limiting Power Density (MFLPD) - The maximum fraction of limiting power density is the highest value existing in the core of the fraction of limiting power density (FLPD).
- h. Fraction of Rated Power (FRP) - The fraction of rated power is the ratio of core thermal power to rated thermal power of 1593 MWth.

LIMITING CONDITION FOR OPERATIONSURVEILLANCE REQUIREMENT3.12 CORE THERMAL LIMITSApplicability

The Limiting Conditions for Operation associated with the fuel rods apply to those parameters which monitor the fuel rod operating conditions.

Objective

The Objective of the Limiting Conditions for Operation is to assure the performance of the fuel rods.

SpecificationsA. Maximum Average Planar Linear Heat Generation Rate (MAPLHGR)

During reactor power operation, the actual MAPLHGR for each type of fuel as a function of average planar exposure shall not exceed the limiting value shown in Figs. 3.12-2, -3, -4, -5, -6, and 7. If at any time during reactor power operation it is determined by normal surveillance that the limiting value for MAPLHGR (LAPLHGR) is being exceeded, action shall then be initiated within 15 minutes to restore operation to within the prescribed limits. If the MAPLHGR (LAPLHGR) is not returned to within the prescribed limits within 2 hours, reduce reactor power to $\leq 25\%$ of Rated Thermal Power within the next 4 hours. Surveillance and corresponding action shall continue until the prescribed limits are again being met.

4.12 CORE THERMAL LIMITSApplicability

The Surveillance Requirements apply to the parameters which monitor the fuel rod operating conditions.

Objective

The Objective of the Surveillance Requirements is to specify the type and frequency of surveillance to be applied to the fuel rods.

SpecificationsA. Maximum Average Planar Linear Heat Generation Rate (MAPLHGR)

The MAPLHGR for each type of fuel as a function of average planar exposure shall be determined daily during reactor operation at $\geq 25\%$ rated thermal power and following any change in power level or distribution that would cause operation with a limiting control rod pattern as described in the bases for Specification 3.3.2. During operation with a limiting control rod pattern, the MAPLHGR shall be determined at least once per 12 hours.

LIMITING CONDITION FOR OPERATION

SURVEILLANCE REQUIREMENT

B. Linear Heat Generation Rate
(LHGR)

1. During reactor power operation, the linear heat generation rate (LHGR) of any rod in any 7x7 fuel assembly at any axial location shall not exceed the maximum allowable LHGR as calculated by the following equation:

$$LHGR_{\max} \leq LHGR_d [1 - \{(\Delta P/P)_{\max} (L/LT)\}]$$

$$LHGR_d = \text{Design LHGR} = 18.5 \text{ KW/ft} \\ (7 \times 7 \text{ array})$$

$$(\Delta P/P)_{\max} = \text{Maximum power spiking penalty} \\ = 0.026$$

LT = Total core length - 12 feet

L = Axial position above bottom of core.

2. During reactor power operation the linear heat generation rate (LHGR) of any rod in any 8x8 fuel assembly shall not exceed 13.4 KW/ft.

If at any time during reactor power operation it is determined by normal surveillance that the limiting value for LHGR is being exceeded, action shall then be initiated within 15 minutes to restore operation to within the prescribed limits. If the LHGR is not returned to within the prescribed limits within 2 hours, reduce reactor power to $\leq 25\%$ of Rated Thermal Power within the next 4 hours. Surveillance and corresponding action shall continue until the prescribed limits are again being met.

B. Linear Heat Generation Rate
(LHGR)

The LHGR as a function of core height shall be checked daily during reactor operation at $> 25\%$ rated thermal power and following any change in power level or distribution that would cause operation with a limiting control rod pattern as described in the bases for Specification 3.3.2. During operation with a limiting control rod pattern the LHGR shall be determined at least once per 12 hours.

LIMITING CONDITIONS FOR OPERATIONSURVEILLANCE REQUIREMENTSC. Minimum Critical Power Ratio (MCPR)

During reactor power operations, MCPR shall be \geq values as indicated in Table 3.12-2 at rated power and flow. If at any time during reactor power operation it is determined by normal surveillance that the limiting value for MCPR is being exceeded, action shall then be initiated within 15 minutes to restore operation to within the prescribed limits. If the operating MCPR is not returned to within the prescribed limits within 2 hours, reduce reactor power to \leq 25% of Rated Thermal Power within the next 4 hours. Surveillance and corresponding action shall continue until the prescribed limits are again being met.

For core flows other than rated the MCPR shall be \geq values as indicated in Table 3.12-2 times K_f , where K_f is as shown in Figure 3.12-1.

C. Minimum Critical Power Ratio (MCPR)

MCPR shall be determined daily during reactor power operation at \geq 25% rated thermal power and following any change in power level or distribution that would cause operation with a limiting control rod pattern as described in the bases for Specification 3.3.2. During operation with a limiting control rod pattern, the MCPR shall be determined at least once per 12 hours.

For operation in the automatic flow control mode, the same procedure was employed except the initial power distribution was established such that the MCPR was equal to the operating limit MCPR at rated power and flow.

The K_f factors shown in Figure 3.12-1 are conservative for Duane Arnold operation because the operating limit MCPR of values as indicated in Table 3.12-2 is greater than the original 1.20 operating limit MCPR used for the generic derivation of K_f .

6.2 PLANT STAFF ORGANIZATION.

6.2.1 The plant staff organization shall conform to that shown in Figure 6.2-1.

6.2.2 The following manning requirements shall be met:

1. All CORE ALTERATIONS shall be directly supervised by either a Senior Licensed Operator or Senior Licensed Operator Limited to Fuel Handling who has no other concurrent responsibilities during this operation.
2. At all times when there is fuel in the reactor:
 - a. A senior licensed operator shall be on the plant site.
 - b. A licensed operator shall be in the control room.
 - c. Two licensed operators shall be in the control room during startup, scheduled shutdown, and during recovery from trips caused by transients or emergencies.
 - d. Minimum operating shift crew compositions shall conform to those shown in Table 6.2-1.

DAEC Job Title	Reactor Mode	
	Other Than Cold Shutdown	Cold Shutdown
Shift Supervising Engineer	1 - SLO	1 - SLO*
Nuclear Station Operating Engineer	1 - LO	1 - LO
Assistant Nuclear Station Operating Engineer	1 - LO	
Second Assistant Nuclear Station Operating Engineer	1	1
Nuclear Station Auxiliaries Engineer	1	
Shift Technical Advisor	<u>1</u>	<u>None Required</u>
Minimum Total Personnel	<u><u>6</u></u>	<u><u>3</u></u>

SLO - Senior Licensed Operator

LO - Licensed Operator

Substitutions - without changing minimum total personnel requirements:

- a. Individuals with senior operator license may substitute for licensed operator or nonlicensed position.
- b. Individuals with operator license may, if otherwise qualified, substitute for nonlicensed position.

*Does not include the SLO or SLO Limited to Fuel Handling, Supervising Core Alterations.

TABLE 3.3-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS

<u>Sample Type</u>	<u>Sample Frequency</u>	<u>Sample Analysis</u>	<u>Sample Detectable Limit</u> (5)(2)
Waste Tank to be released	Each Batch	Gamma Scan (3)	5×10^{-7} $\mu\text{Ci/ml}$
Proportional Composite of Batches	Monthly	Tritium	1×10^{-5} $\mu\text{Ci/ml}$
		Gross alpha	5×10^{-7} $\mu\text{Ci/ml}$ (4)
Proportional Composite of Batches	Quarterly	Sr ⁹⁰ , Sr ⁸⁹	5×10^{-8} $\mu\text{Ci/ml}$
One Batch	Monthly	Dissolved noble gases	1×10^{-5} $\mu\text{Ci/ml}$

Notes:

1. Certain mixtures of radionuclides may cause interference in the measurement of individual radionuclides at their detectable limit especially if other radionuclides are at much higher concentrations. Under these circumstances use of known ratios of radionuclides will be appropriate to calculate the levels of such radionuclides.
2. The above sample detectable limits are applicable to grab samples used to determine liquid waste release levels. Reported data shall reflect any improvement in detectable limits as such improvements are achieved.
3. Significant radionuclides are to be identified and where possible, quantitative values obtained.
4. Self absorption will result in a higher detectable limit for alpha counting.
5. Sample detectable limits are subject to revision. The values listed are believed to be attainable.

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-331IOWA ELECTRIC LIGHT AND POWER COMPANY, ET ALNOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 69 to Facility Operating License No. DPR-49 issued to Iowa Electric Light and Power Company, Central Iowa Power Cooperative, and Corn Belt Power Cooperative, which revises the Technical Specifications for operation of the Duane Arnold Energy Center, (DAEC) located in Linn County, Iowa. The amendment is effective as of the date of its issuance.

This amendment changes the Technical Specifications to clarify requirements concerning 1) core alterations, 2) core thermal limits, 3) reportable occurrence actions, 4) minimum sample analysis frequencies for SR-89, and to incorporate current Standard Technical Specifications requirements into these Technical Specifications. The applications for the amendment comply 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.

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The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR Section 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.

For further details with respect to this action, see (1) the applications for amendment dated April 23, 1976 and October 26, 1977, (2) Amendment No. 69 to License No. DPR-49, and (3) the Commission's letter to the Iowa Electric Light and Power Company dated June 3, 1981. 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 Cedar Rapids Public Library, 426 Third Avenue, S.E., Cedar Rapids, Iowa 52401. 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 3rd day of June 1981.

FOR THE NUCLEAR REGULATORY COMMISSION


Thomas A. Ippolito, Chief
Operating Reactors Branch #2
Division of Licensing