March 8, 1984

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. 94 to Facility Operating License No. DPR-49 for the Duane Arnold Energy Center. This to your application dated November 30, 1976 and following discussions between the NRC staff and your staff.

The amendment revises the Technical Specifications pertaining to verification of sensor response time for the reactor protection system.

A copy of the related Safety Evaluation is also enclosed.

Sincerely,

Orginal Signed by /
Mohan C. Thadani, Project Manager
Operating Reactors Branch #2
Division of Licensing

Enclosures:
1. Amendment No. 94 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:

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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. 94
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 November 30, 1976, 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 Appendices A and B, as revised through Amendment No. 94 , 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: March 8, 1984

ATTACHMENT TO LICENSE AMENDMENT NO. 94

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

v
1.0-8
3.1-1
3.1-4a
3.1-16

TECHNICAL SPECIFICATIONS
LIST OF TABLES

26. SURVEILLANCE FREQUENCY

Periodic surveillance tests, checks, calibrations and examinations shall be performed within the specified surveillance intervals. These intervals may be adjusted plus or minus 25%. The operating cycle interval as pertaining to instrument and electrical surveillance shall never exceed 15 months. In cases where the elapsed interval has exceeded 100% of the specified interval, the next surveillance interval shall commence at the end of the original specified interval.

27. FIRE SUPPRESSION WATER SYSTEM

A fire suppression water system shall consist of a water source, pumps, and distribution piping with associated sectionalizing control or isolation valves. Such valves include yard hydrant curb valves, the first valve ahead of the water flow alarm device on each sprinkler, hose standpipe or deluge system riser.

28. REACTOR TRIP SYSTEM RESPONSE TIME

Reactor trip system response time is the time interval from when the monitored parameter exceeds its trip setpoint at the channel sensor until deenergization of the scram pilot valve solenoids.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENT
3.1 REACTOR PROTECTION SYSTEM	4.1 REACTOR PROTECTION SYSTEM
Applicability:	Applicability:
Applies to the instrumentation and associated devices which initiate a reactor scram.	Applies to the surveillance of the instrumentation and associated devices which initiate reactor scram.
Objective:	Objective:
To assure the operability of the reactor protection system.	To specify the type and frequency of surveillance to be applied to the protection instrumentation.
Specification:	Specification:
A. The setpoints, minimum number of trip systems, and minimum number of instrument channels that must be operable for each position of the reactor mode switch shall be as given in Table 3.1-1. The designed system response times from the opening of the sensor contact up to and including the opening of the trip actuator contacts shall not exceed 50 milliseconds.	A.1 Instrumentation systems shall be functionally tested and calibrated as indicated in Tables 4.1-1 and 4.1-2 respectively.
As a minimum, the reactor protection system instrumentation channels of Table 3.1-1 shall be operable with response times as shown in Table 3.1-2.	.2 Response time measurements (from actuation of sensor contacts or trip point to de-energization of scram solenoid relay) are not part of the normal instrument calibration. The reactor trip system response time of each reactor trip function shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months and one channel per function such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function.
	.3 Daily during reactor power operation, the MFLPD and the FRP shall be checked and the APRM SCRAM and APRM Rod Block settings given by equations in Specification 2.1.A.1 and 2.1.B shall be calculated if the MFLPD exceeds the FRP.
	.4 When it is determined that a channel has failed in the unsafe condition, the other RPS channels that monitor the same variable shall be functionally

TABLE 3.1-2

PROTECTIVE INSTRUMENTATION RESPONSE TIMES

Functional Unit	Sensor Response Time	Reactor Trip System Response Time
1. Reactor Vessel Steam Dome Pressure - High	<.5 seconds	≤ .55 seconds
2. Reactor Vessel Water Level - Low	<1.0 seconds	≤ 1.05 seconds

from the manual scram push buttons and the reactor mode switch. Each remaining subchannel has an input from at least one independent instrument channel which monitors a critical parameter.

The outputs of the subchannels are combined in a 1 out of 2 logic: i.e., an input signal on either one or both of the subchannels will cause a trip system trip. The outputs of the trip systems are arranged so that a trip on both trip systems is required to produce a reactor scram.

This system meets the intent of IEEE - 279 for Nuclear Power Plant Protection Systems. The system has a reliability greater than that of a 2 out of 3 system and somewhat less than that of a 1 out of 2 system.

The measurement of response time at the specified frequencies provides assurance that the protective, isolation and emergency core cooling functions associated with each channel is completed within the time limit assumed in the accident analysis.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements, provided such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either: 1) inplace on-site or off-site test measurements, or 2) utilizing replacement sensors with certified response times.

With the exception of the Average Power Range Monitor (APRM) channels, the Intermediate Range Monitor (IRM) channels, the Main Steam Isolation Valve closure and the Turbine Stop Valve closure, each subchannel has one instrument channel. When the minimum condition for operation on the number of operable instrument channels per untripped protection trip system is met or if it cannot be met and the affected protection trip system is placed in a tripped condition, the effectiveness of the protection system is preserved.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 94 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

By letter dated November 30, 1976 Iowa Electric Light and Power Company (the licensee) transmitted, in accordance with the requirements of 10 CFR 50.59 and 50.90, an application for amendment of Operating License No. DPR-49 to incorporate proposed changes in Technical Specifications (Appendix A to the license) for Duane Arnold Energy Center (DAEC) related to Specifications 3.1 and 4.1.A describing Limiting Conditions for Operation and Surveillance Requirements for response time testing of Reactor Protection System instrumentation. Since the receipt of the licensee's request pages 1.0-16, 3.1-1 and 3.1-2 have been revised as a result of later amendments to the DAEC Technical Specifications. We have therefore based our review on the current version of these pages.

2.0 Evaluation

The staff has reviewed the information provided by the licensee in the letter dated November 30, 1976 and follow-on discussions beteween the staff and the licensee. We find that the proposed methods for response time testing of Reactor Vessel Steam Dome Pressure-High and Reactor Vessel Water Level-Low are acceptable. The staff understands that the test procedures for Turbine Control Valve Fast Closure and Trip Oil Pressure-Low can be handled in a like manner, and therefore, are acceptable.

The response times for Main Steam Isolation Valve (MSIV) Closure and Turbine Stop Valve (TSV) Closure are limited by Section 3.1 of the Technical Specifications. As a result of our telephone conversations with the licensee's staff, the testing procedures for response times for MSIV Closure and TSV Closure are found to be acceptable.

3.0 Environmental Considerations

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.

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 Reviewer: M. Wigor

Dated: March 8, 1984