

MAR 14 1977

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Docket No. 50-331

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

Gentlemen:

The Commission has issued the enclosed Amendment No. 29 to Facility License No. DPR-49 for the Duane Arnold Energy Center. This amendment consists of changes to the Technical Specifications and is in response to your two applications dated July 27, 1976, as supplemented by your letter dated August 4, 1976.

This amendment corrects inadvertent oversights of previously reviewed and approved changes relating to frequency and functional test requirements for the facility's Reactor Protection System instrumentation and the trip setting associated with the Reactor Core Isolation Cooling System Turbine High Flow.

Copies of the related Safety Evaluation and the FEDERAL REGISTER Notice are also enclosed.

Sincerely,

Original signed by

George Lear, Chief
 Operating Reactors Branch #3
 Division of Operating Reactors

Enclosures:

1. Amendment No. 29
2. Safety Evaluation
3. FEDERAL REGISTER Notice

cc: See page 2

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DATE	3/1/77	3/1/77	3/9/77	3/14/77		



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

March 14, 1977

Docket No. 50-331

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

Gentlemen:

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This amendment corrects inadvertent oversights of previously reviewed and approved changes relating to frequency and functional test requirements for the facility's Reactor Protection System instrumentation and the trip setting associated with the Reactor Core Isolation Cooling System Turbine High Flow.

Copies of the related Safety Evaluation and the FEDERAL REGISTER Notice are also enclosed.

Sincerely,

A handwritten signature in cursive script that reads "George Lear".

George Lear, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Enclosures:

1. Amendment No. 29
2. Safety Evaluation
3. FEDERAL REGISTER Notice

cc: See page 2

Iowa Electric Light & Power Company - 2 -

cc:

Mr. Robert Lowenstein, Esquire
Harold F. Reis, Esquire
Lowenstein, Newman, Reis and Axelrad
1025 Connecticut Avenue, N. W.
Washington, D. C. 20036

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 & Power Company
ATTN: Ellery L. Hammond
P. O. Box 351
Cedar Rapids, Iowa 52406

Chief, Energy Systems Analysis Branch (AW-459)
Office of Radiation Programs
U. S. Environmental Protection Agency
Room 645, East Tower
401 M Street, S. W.
Washington, D. C. 20460

U. S. Environmental Protection Agency
Region VII
ATTN: EIS COORDINATOR
1735 Baltimore Avenue
Kansas City, Missouri 64108

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



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. 29
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 licensees) dated July 27, 1976, as supplemented by letter dated August 4, 1976, 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 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. 29, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION



George Lear, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 14, 1977

ATTACHMENT TO LICENSE AMENDMENT NO. 29

TO THE TECHNICAL SPECIFICATIONS

FACILITY OPERATING LICENSE NO. DPR-49

DOCKET NOS. 50-331

Replace pages 3.1-12, 3.1-13, 3.1-14, 3.2-24 through 3.2-31, 3.2-33, and 3.2-40 of this Appendix A portion of the Technical Specifications with the attached revised pages bearing the same numbers. The changed areas on the Revised pages are shown by a marginal line.

TABLE 4.1-2

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENT CALIBRATION
 MINIMUM CALIBRATION FREQUENCIES FOR REACTOR PROTECTION INSTRUMENT CHANNELS

Instrument Channel	Group (1)	Calibration (4)	Minimum Frequency (2)
IRM High Flux	C	Comparison to APRM on Controlled Shutdowns	On Controlled Shutdown
APRM High Flux Output Signal Flow Bias Signal	B B	Heat Balance With Standard Pressure Source	Daily Every refueling
LPRM Signal	B	TIP System Traverse	Every 1,000 EFPH
High Reactor Pressure	A	Standard Pressure Source	Every 3 months
High Drywell Pressure	A	Standard Pressure Source	Every 3 months
Reactor Low Water Level	A	Pressure Standard	Every 3 months
High Water Level in Scram Discharge Volume	A	Water Column	Every refueling
Main Steam Line Isolation Valve Closure	A	Note (5)	Note (5)
Main Steam Line High Radiation	B	Standard Current Source (3)	Every 3 months
Turbine First Stage Pressure Permissive	A	Standard Pressure Source	Every 6 months
Turbine Control Valve Oil Pressure Trip	A	Note (6)	Once per operating cycle

TABLE 4.1-2 (Continued)

REACTOR PROTECTION SYSTEM (SCRAM) INSTRUMENT CALIBRATION
MINIMUM CALIBRATION FREQUENCIES FOR REACTOR PROTECTION INSTRUMENT CHANNELS

Instrument Channel	Group (1)	Calibration (4)	Minimum Frequency (2)
Turbine Stop Valve Closure	A	Note (5)	Note (5)
Reactor Pressure Permissive	A	Standard Pressure Source	Every 6 months

NOTES FOR TABLE 4.1-2

1. A description of three groups is included in the bases of this Specification.
2. Calibration test is not required on the part of the system that is not required to be operable or is tripped. Calibration test shall be performed prior to returning the system to an operable status with a frequency not less than those defined in the applicable table. However, if maintenance has been performed on those components, calibration shall be performed prior to returning to service.
3. The current source provides an instrument channel alignment. Calibration using a radiation source shall be made each refueling outage.
4. Response time is not a part of the routine instrument channel test but will be checked once per operating cycle.
5. Physical inspection and actuation of these position switches will be performed during the refueling outages.
6. Measure time interval base line data for each operating cycle as follows:
From energization of fast acting solenoid, measure time interval to response of oil pressure switch, HFA relay (RPS) and position response of control valves.

TABLE 4.2-A

MINIMUM TEST AND CALIBRATION FREQUENCY FOR PCIS

<u>Instrument Channel (5)</u>	<u>Instrument Functional Test (9)</u>	<u>Calibration Frequency (9)</u>	<u>Instrument Check</u>
1) Reactor Low Pressure (Shutdown Cooling Permissive)	(1)	Once/3 months	None
2) Reactor Low-Low Water Level	(1)	Once/3 months	Once/day
3) Main Stream High Temp.	(1)	Once/operating cycle	Once/day
4) Main Steam High Flow	(1)	Once/3 months	None
5) Main Steam Low Pressure	(1)	Once/3 months	None
6) Reactor Water Cleanup High Flow (7)	(1)	Once/3 months	Once/day
7) Reactor Water Cleanup High Temp. (7)	(1)	Once/3 months	None
8) Reactor Cleanup Area High Temp. (8)	(1)	Once/operating cycle	None
9) Loss of Main Condenser Vacuum	(1)	Once/operating cycle	None
<u>Logic System Functional Test (4) (6)</u>			
1) Main Steam Line Isolation Valves Main Steam Line Drain Valves Reactor Water Sample Valves		Once/6 months	
2) RHR - Isolation Valve Control Shutdown Cooling Valves Head Spray		Once/6 months	
3) Reactor Water Cleanup Isolation		Once/6 months	

3.2-24

DARC-1

TABLE 4.2-A (Continued)
MINIMUM TEST AND CALIBRATION FREQUENCY FOR PCIS

<u>Logic System Functional Test</u> (4) (6)	<u>Calibration Frequency</u> (9)
4) Drywell Isolation Valves TIP Withdrawal Atmospheric Control Valves Sump Drain Valves	Once/6 months
5) Standby Gas Treatment System Reactor Building Isolation	Once/6 months

TABLE 4.2-B
MINIMUM TEST AND CALIBRATION FREQUENCY FOR CSCS

<u>Instrument Channel</u>	<u>Instrument Functional Test (9)</u>	<u>Calibration Frequency (9)</u>	<u>Instrument Check</u>
1) Reactor Water Level	(1)	Once/3 months	Once/day
2) Drywell Pressure	(1)	Once/3 months	None
3) Reactor Pressure	(1)	Once/3 months	None
4) Auto Sequencing Timers	N/A	Once/operating Cycle	None
5) ADS - LPCI or CS Pump Discharge Pressure Interlock	(1)	Once/3 months	None
6) Trip System Bus Power Monitors	(1)	Not applicable	None
7) Recirculation System d/p	(1)	Once/3 months	Once/day
8) Core Spray Sparger d/p	(1)	Once/3 months	Once/day
9) Steam Line High Flow (HPCI & RCIC)	(1)	Once/3 months	None
10) Steam Line High Temp. (HPCI & RCIC)	(1)	Once/operating cycle	Once/day
11) HPCI and RCIC Steam Line Low Pressure	(1)	Once/3 months	None
12) HPCI Suction Source Levels	(1)	Once/3 months	None
13) 4KV Emergency Power System Voltage Relays	Once/operating cycle	Once/5 years	None
14) Instrument A.C. and battery bus undervoltage relays	(1)	Once/operating cycle	None

TABLE 4.2-B (Continued)

MINIMUM TEST AND CALIBRATION FREQUENCY FOR CSCS

<u>Logic System Functional Test (4) (6)</u>	<u>Calibration Frequency (9)</u>
1) Core Spray Subsystem	Once/6 months
2) Low Pressure Coolant Injection Subsystem	Once/6 months
3) Containment Spray Subsystem	Once/6 months
4) HPCI Subsystem	Once/6 months
5) HPCI Subsystem Auto Isolation	Once/6 months
6) ADS Subsystem	Once/6 months
7) RCIC Subsystem Auto Isolation	Once/6 months
8) Area Cooling for Safeguard System	Once/6 months

TABLE 4.2-C

MINIMUM TEST AND CALIBRATION FREQUENCY FOR CONTROL ROD BLOCKS ACTUATION

	<u>Instrument Channel</u>	<u>Instrument Functional Test (9)</u>	<u>Calibration (9)</u>	<u>Instrument Check</u>
1)	APRM - Downscale	(1) (3)	Once/3 months	Once/day
2)	APRM - Upscale	(1) (3)	Once/3 months	Once/day
3)	IRM - Upscale	(2) (3)	Startup or Control Shutdown	(2)
4)	IRM - Downscale	(2) (3)	Startup or Control Shutdown	(2)
5)	RBM - Upscale	(1) (3)	Once/6 months	Once/day
6)	RBM - Downscale	(1) (3)	Once/6 months	Once/day
7)	SRM - Upscale	(2) (3)	Startup or Control Shutdown	(2)
8)	SRM - Detector Not in Startup Position	(2)	Refuel	N/A
9)	IRM - Detector Not in Startup Position	(2)	Refuel	N/A

TABLE 4.2-D

MINIMUM TEST AND CALIBRATION FREQUENCY FOR RADIATION MONITORING SYSTEMS

<u>Instrument Channels</u>	<u>Instrument Functional Test (9)</u>	<u>Calibration (9)</u>	<u>Instrument Check</u>
1) Refuel Area Exhaust Monitors - Upscale/Downscale	(1)	Once/3 months	Once/day
2) Reactor Building Area Exhaust Monitors - Upscale/Downscale	(1)	Once/3 months	Once/day
3) Offgas Radiation Monitors	(1)	Once/3 months	Once/day
<u>Logic System Functional Test</u> (4) (6)	<u>Frequency (9)</u>		
1) Reactor Building Isolation	Once/6 months		
2) Standby Gas Treatment System Actuation	Once/6 months		
3) Steam Jet Air Ejector Offgas Line Isolation	Once/6 months		

TABLE 4.2-E

MINIMUM TEST AND CALIBRATION FREQUENCY FOR DRYWELL LEAK DETECTION

<u>Instrument Channel</u>	<u>Instrument Functional Test (9)</u>	<u>Calibration (9)</u>	<u>Instrument Check</u>
1) Equipment Drain Sump Flow Integrator	None	Once/3 months	Once/day
2) Floor Drain Sump Flow Integrator	None	Once/3 months	Once/day
3) Air Sampling System	(1)	Once/3 months	Once/day
4) Equipment and Floor Drain Sump Flow Timers	Once/3 months	Once/Operating Cycle	None

TABLE 4.2-F

MINIMUM TEST AND CALIBRATION FREQUENCY FOR SURVEILLANCE INSTRUMENTATION

<u>Instrument Channel</u>	<u>Calibration Frequency (9)</u>	<u>Instrument Check</u>
1) Reactor Level	Once/6 months	Once Each Shift
2) Reactor Pressure	Once/6 months	Once Each Shift
3) Drywell Pressure	Once/6 months	Once Each Shift
4) Drywell Temperature	Once/6 months	Once Each Shift
5) Suppression Chamber Temperature	Once/6 months	Once Each Shift
6) Suppression Chamber Water Level	Once/6 months	Once Each Shift
7) Control Rod Position	NA	Once Each Shift
8) Neutron Monitoring	Prior to Reaching 20% Power and once per day when in Run Mode (APRM Gain Adjust when in Run Mode)	Once Each Shift (When in Startup or Run Mode)

These instrument channels will be calibrated using simulated electrical signals.

4. Simulated automatic actuation shall be performed once each operating cycle. Where possible, all logic system functional tests will be performed using the test jacks.

5. Reactor low water level, high drywell pressure and high radiation main steam line tunnel are not included on Table 4.2-A since they are tested on Table 4.1-2.

6. The logic system functional tests shall include a calibration of time delay relays and timers necessary for proper functioning of the trip systems.

7. These signals are not PCIS trip signals but isolate the Reactor Water Cleanup system only.

8. This instrumentation is excepted from the functional test definition. The functional test will consist of comparing the analog signal of the active thermocouple element feeding the isolation logic to a redundant thermocouple element.

9. Functional tests and calibrations are not required on the part of the system that is not required to be operable or is tripped. Functional tests shall be performed prior to returning the system to an operable status with a frequency not less than once per month. Calibrations shall be performed prior to returning the system to an operable status with a frequency not less than those defined in the applicable table. However, if maintenance has been performed on those components, functional tests and calibration shall be performed prior to returning to service.

The HPCI high flow and temperature instrumentation are provided to detect a break in the HPCI steam piping. Tripping of this instrumentation results in actuation of HPCI isolation valves. Tripping logic for the high flow is a 1 out of 2 logic.

Temperature is monitored at two (2) locations with four (4) temperature sensors at each location. Two (2) sensors at each location are powered by "A" direct current control bus and two (2) by "B" direct current control bus. Each pair of sensors, e.g., "A" or "B", at each location are physically separated and the tripping of either "A" or "B" bus sensor will actuate HPCI isolation valves.

The trip settings of +53" H₂O (outboard instrument) and +99" H₂O (inboard instrument) correspond to 300% of design flow for high flow and 175°F and Δ45° for high temperature are such that core uncover is prevented and fission product release is within limits.

The RCIC high flow and temperature instrumentation are arranged the same as that for the HPCI. The trip setting of 110±5" H₂O for high flow and 175° and Δ45° for temperature are based on the same criteria as the HPCI.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 29 TO LICENSE NO. DPR-49

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

DOCKET NO. 50-331

DUANE ARNOLD ENERGY CENTER

INTRODUCTION

In two letters dated July 27, 1976 and supplement thereto dated August 4, 1976, Iowa Electric Light and Power Company (IELP) proposed changes to the Technical Specifications appended to Facility Operating License No. DPR-49 for the Duane Arnold Energy Center. The changes are editorial in nature. The changes correct certain sections which were inadvertently overlooked during previous reviews and approvals by the Commission. The sections involved include the frequency and functional test requirements for Reactor Protection System instrumentation and the trip setting associated with the Reactor Core Isolation Cooling (RCIC) System Turbine High Flow.

EVALUATION

Calibration and surveillance testing of reactor protection instrumentation are incorporated into the Technical Specifications to assure the effectiveness of the instrumentation when it is required. The current specifications include the provision for eliminating these requirements if the channel is not required to be operable or is in a tripped condition. Through an oversight at the time the original Technical Specifications were issued, specific reference to this provision was not included in the Table which sets forth the minimum calibration/testing frequencies. The IELP proposed change did not specifically require recalibration of instrumentation channels prior to their return to service even though they might have undergone maintenance or repair. This provision, after telephone discussion and agreement with the IEPL representative on February 15, 1977, has been included in the specification. Accordingly, the staff finds the proposed change as revised to be acceptable.

By Amendment No. 28 to Facility Operating License No. DPR-49, dated February 11, 1977, the differential pressure trip level setting for the RCIC System Turbine High Flow was revised from 180 inches of water to 110 inches of water to be consistent with the criterion for RCIC isolation at an indication of 300% of rated steam flow. Through an oversight, the Bases portion of this specification was not changed. Accordingly, the NRC Staff finds this revision to be acceptable.

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.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) 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.

Dated: March 14, 1977

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-331

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

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 29 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 revised Technical Specifications for operation of the Duane Arnold Energy Center, located in Linn County, Iowa. The amendment is effective as of its date of issuance.

The amendment corrected inadvertent oversights of previously reviewed and approved changes relating to frequency and functional test requirements for the facility's Reactor Protection System instrumentation and the trip setting associated with the Reactor Core Isolation Cooling System Turbine High Flow.

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.

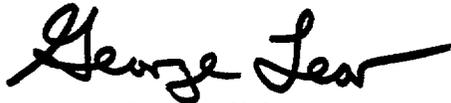
The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with this amendment.

For further details with respect to this action, see (1) the applications for amendment dated July 27, 1976 and supplement thereto dated August 4, 1976, (2) Amendment No. 29 to License No. DPR-49, and (3) the Commission's related Safety Evaluation. 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 Operating Reactors.

Dated at Bethesda, Maryland, this 14th day of March, 1977.

FOR THE NUCLEAR REGULATORY COMMISSION



George Lear, Chief
Operating Reactors Branch #3
Division of Operating Reactors