



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

October 29, 1987

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:

SUBJECT: AMENDMENT NO. 147 TO FACILITY OPERATING LICENSE NO. DPR-49;
MAINTENANCE OF FILLED DISCHARGE PIPING (TAC NO. 61446)

The Commission has issued the enclosed Amendment No. 147 to Facility Operating License No. DPR-49 for the Duane Arnold Energy Center (DAEC). This amendment consists of changes to the Technical Specifications in response to your application dated October 17, 1984, as supplemented by letter dated April 30, 1986.

The amendment revises the DAEC Technical Specifications to direct operator action in the event that the Limiting Condition for Operation Technical Specification Section 3.5.H regarding maintaining certain discharge pipes filled cannot be met.

It should be noted that we advised you of the potential for the high pressure reactor coolant to leak into the Core Spray, Low Pressure Coolant Injection, High Pressure Coolant Injection, and Reactor Core Isolation Cooling Systems and possibly form vapor pockets. Vapor pockets are undesirable since they can contribute to steam-water hammer upon startup of these systems. In a letter dated April 7, 1987, your staff committed to review this potential problem, discuss it with us and resolve it. On June 12, 1987, we met with members of your staff to discuss this issue. Your staff agreed to perform an evaluation, which would verify that vapor pockets would not be formed, thus not being a contributing factor to any steam-water hammer postulated. We find the resolution of this issue acceptable pending notification that the proposed evaluation is complete.

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Mr. Lee Liu
Iowa Electric Light and Power Company

Duane Arnold Energy Center

cc:

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Mr. Liu

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October 29, 1987

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

Sincerely,

Anthony J. Cappucci, Project Manager
Project Directorate III-1
Division of Reactor Projects-III,
IV, V & Special Projects

Enclosures:

- 1. Amendment No. 147 to License No. DPR-49
- 2. Safety Evaluation

cc w/enclosures:
See next page

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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. 147
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 October 17, 1984, as supplemented by a letter dated April 30, 1986, 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:

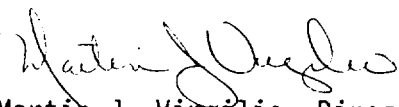
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Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. , 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


Martin J. Virgilio, Director
Project Directorate III-1
Division of Reactor Projects-III, IV, V
& Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: October 29, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 147

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 areas are indicated by marginal lines.

Pages

3.5-11

3.5-24

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
<p>H. <u>Maintenance of Filled Discharge Pipe</u></p> <p>1. Whenever core spray subsystems, LPCI subsystems, HPCI, or RCIC are required to be OPERABLE, the discharge piping from the pump discharge of these systems to the last block valve shall be filled.</p> <p>a. If the pump discharge piping of the core spray or LPCI subsystems depressurizes below the system low pressure alarm setpoint while these systems are required to be OPERABLE, the pressure shall be restored within one hour.</p> <p>b. If Specification 3.5.H.1 or 3.5.H.1.a cannot be met, either place the affected system(s) in the test mode or declare the affected system(s) inoperable and enter the applicable LIMITING CONDITION FOR OPERATION as described in Specification 3.5.A, 3.5.D or 3.5.E.</p>	<p>H. <u>Maintenance of Filled Discharge Pipe</u></p> <p>1. The following surveillance requirement shall be adhered to, to assure that the discharge piping of the core spray and LPCI subsystems are filled:</p> <p>a. The pressure switches which monitor the LPCI and core spray lines to ensure they are full shall be functionally tested annually.</p>
<p>I. <u>Engineered Safeguards Compartments Cooling and Ventilation</u></p> <p>If both unit coolers serving either the RCIC or HPCI room are out of service, the associated pump shall be considered inoperable for purposes of Specifications 3.5.D or 3.5.E as applicable.</p> <p>If the single unit cooler serving either compartment which houses two RHR pumps and a core spray pump is out of service for a period greater than seven days, the associated pumps shall be considered inoperable for purposes of Specification 3.5.A.</p>	<p>I. <u>Engineered Safeguards Compartments Cooling and Ventilation</u></p> <p>The unit coolers for each of the RCIC, HPCI, Core Spray, and RHR pump rooms shall be checked for operability during surveillance testing of the associated pumps.</p>

in this piping when the pump and/or pumps are started. If a water hammer were to occur at the time at which the system were required, the system would still perform its design function. However, to minimize damage to the discharge piping, Specification 3.5.H requires that the core spray and LPCI discharge piping pressure be restored within one hour after system depressurization when the system is required to be operable. Likewise, for HPCI and RCIC, the discharge piping to the last block valve shall be filled when these systems are required to be operable. If the discharge piping pressure for the core spray and LPCI subsystems cannot be restored within one hour or the discharge piping for HPCI and RCIC cannot be maintained in a filled condition to the last block valve, the operator is required to perform either of the following actions:

- 1) place the affected system(s) in the test mode which will ensure that the discharge piping is filled with water, or
- 2) declare the affected system(s) inoperable in which case the operator will enter the applicable LCO for the affected system(s) as defined in Specification 3.5.A (core spray and LPCI), 3.5.D (HPCI), or 3.5.E (RCIC).

The above actions minimize the possibility of a water hammer and are considered conservative in nature.

I. Engineered Safeguards Compartments Cooling and Ventilation

One unit cooler in each pump compartment is capable of providing adequate ventilation flow and cooling. Engineering analyses indicate that the temperature rise in safeguards compartments without adequate ventilation flow or cooling is such that continued operation of the safeguards equipment or associated auxiliary equipment cannot be assured.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 147 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 October 17, 1984, as supplemented April 30, 1986, Iowa Electric Light and Power Company (IELP/licensee) requested changes to the Technical Specifications (TSs) of the Duane Arnold Energy Center (DAEC).

The changes to TSs 3.5.H and 4.5.H are concerned with the maintenance of filled discharge piping from the Core Spray (CS), Low Pressure Coolant Injection (LPCI), High Pressure Coolant Injection (HPCI), and Reactor Core Isolation Cooling (RCIC) Systems. Revisions were also proposed for Bases 3.5.H.

The proposed action statements would direct operator action in the event the Limiting Condition for Operation (LCO) could not be met. Previous action statements did not provide this guidance.

2.0 EVALUATION

The present TS requires that the discharge piping of the HPCI, RCIC, LPCI, and CS systems be full to the last block valve when operability of these systems is required. This minimizes the potential for water hammer when the systems are started and may be accomplished by keep-fill systems. NUREG-0927, Rev. 1, states that a jockey pump or a storage tank at a higher elevation than the lines of concern may be considered to be adequate for a keep-fill system.

By letter dated October 17, 1984, the licensee proposed a change to TS 3.5.H. This change was similar to TS 3.5.H.1.a (described in Section 3.0) requiring the affected system pressure to be restored within one hour in the event of alarm or low discharge pressure. However, there was no stated course of action to be taken if the line(s) could not be pressurized. The NRC staff recommended that the licensee revise that proposed change to include such a course of action. The licensee submitted the changes in a letter dated April 30, 1986. Our evaluation follows.

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LPCI and CS Systems

The LPCI and CS systems use Residual Heat Removal (RHR)/core spray fill pump IP-70 as a keep-fill method.

The licensee has stated that the filled status of the CS and LPCI discharge lines are continuously monitored by measuring the static pressure in these lines. Annunciation would occur on low pressure and thus indicate a low pressure void in the piping.

In the event of low pressure, the proposed TS 3.5.H.1.a would allow one hour to restore system pressure. If the keep-fill condition is not restored (pressurized), then by proposed TS 3.5.H.1.b the affected system would be placed in the test mode and thus pressurized or declared inoperable. We find that operating in the test mode for the CS and LPCI systems is an acceptable approach to maintaining a keep-fill system. The other alternative, being declared inoperable, would impose existing TS 3.5.A.6, which requires the reactor to be brought to Cold Shutdown within 24 hours. This is also acceptable to the NRC staff.

HPIC and RCIC Systems

The HPIC and RCIC systems are normally aligned to take suction from the Condensate Storage Tank (CST). These systems are assumed full by virtue of the CST water level being higher than the discharge piping (to the last block valve). A backup source for these systems is from the torus. If these systems are aligned to the torus for some time period, voids will exist in the discharge line(s). This presently requires surveillance (TS 4.5.H.1) on a monthly basis by observing water flowing from a high point vent to assure filled piping. DAEC has proposed to delete this surveillance. Instead, when aligned to the torus for suction, proposed TS 3.5.H.1.b would apply. The affected system would be placed in the test mode or be declared inoperable. As with the LPCI and CS systems, we find that operating in the test mode for the HPIC and RCIC systems is an acceptable method for maintaining a keep-fill system. This also eliminates the need for the surveillance TS 4.5.H.1.

3.0 TECHNICAL SPECIFICATION CHANGES

A summary of IELP's proposed TS changes is presented below.

TS 3.5.H.1.a

This TS identifies the action to be taken if the discharge piping of either the CS or LPCI systems is not filled. In the event of either system alarming on low discharge line pressure, the system pressure is to be restored within one hour or proposed TS 3.5.H.1.b is to be implemented.

TS 3.5.H.1.b

This identifies the action to be taken if the pump discharge lines for the CS, LPCI, HPCI, or RCIC systems are not filled or TS 3.5.H.1.a (above) is not met. For any one of these events, the affected system would be placed in the test mode or declared inoperable.

TS 4.5.H and 4.5.H.1

This change modifies the TSs to remove surveillance of the HPCI and RCIC systems related to Maintenance of Filled Discharge Pipe.

TS 4.5.H.1.a

This change modifies the TS (formerly TS 4.5.H.2) to clarify the test frequency for the pressure switches which monitor the LPCI and CS to ensure the discharge lines are full.

Bases 3.5.H

This section, entitled "Maintenance of Filled Discharge Pipe" was modified to provide additional information relating to the proposed TS items 3.5.H.1.a and 3.5.H.1.b.

Based upon the review described above, we find the proposed TS changes acceptable.

4.0 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 and a change in surveillance requirements. We have 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 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.

5.0 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 the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: DKatze

Dated: October 29, 1987