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CONTROL NO: 9676

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FROM: Iowa Electric Light & Power Cedar Rapids, IA Charles W. Sandford			DATE OF DOC 9-17-74	DATE REC'D 9-20-74	LTR X	TWX	RPT	OTHER
TO: EGCase			ORIG 3 signed	CC 37	OTHER	SENT AEC PDR XXX SENT LOCAL PDR XXX		
CLASS XXX	UNCLASS	PROP INFO	INPUT XXX	NO CYS REC'D 40		DOCKET NO: 50-331		

**DESCRIPTION:**

Ltr notarized 9-17-74 trans the following....

**ENCLOSURES:**

Amendment to the OL consisting of Change to Tech Specs re change in pumphead requirements of the RHR service water pumps....

**ACKNOWLEDGED**

**DO NOT REMOVE**

PLANT NAME: DUANE ARNOLD

(40 cys encl rec'd)

FOR ACTION/INFORMATION 9-25-74 - GMC

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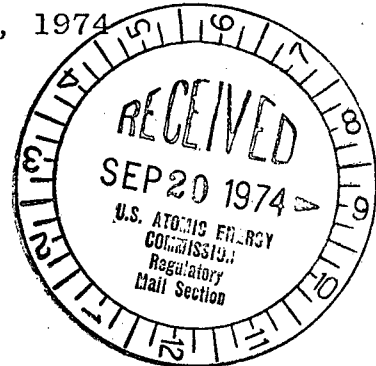
# IOWA ELECTRIC LIGHT AND POWER COMPANY

General Office  
CEDAR RAPIDS, IOWA

50-331

CHARLES W. SANDFORD  
EXECUTIVE VICE PRESIDENT

September 17, 1974  
IE-74-2047



Mr. E. G. Case  
Acting Director of Licensing  
U. S. Atomic Energy Commission  
Washington, D.C. 20545

Dear Mr. Case:

Transmitted herewith, in accordance with the requirements of 10 CFR 50.59 and 50.90 is an application for amendment of Appendix A, Technical Specifications and Bases, Operating License DPR-49 to incorporate the proposed change in technical specifications for the Duane Arnold Energy Center (DAEC), described in the enclosure hereto.

The proposed change involves a change in the pumphead requirements of the Residual Heat Removal Service Water Pumps, and is described in the enclosure.

The proposed change has been reviewed and approved by the DAEC Operations Committee and the DAEC Safety Committee and does not involve a significant hazards consideration.

Three originals and 40 copies of this application are transmitted herewith. This application, consisting of the foregoing letter and enclosure hereto, is true and accurate to the best of my knowledge and belief.

Iowa Electric Light and Power Company

By: Charles W. Sandford  
Charles W. Sandford  
Executive Vice President

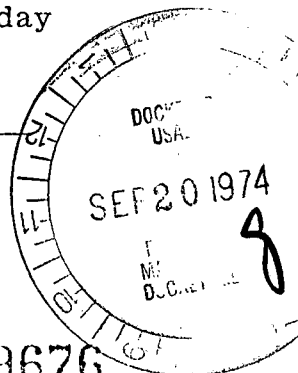
CWS:D

Sworn and subscribed to before me on this 17<sup>th</sup> day of September, 1974.

cc: w/enc.  
D. Arnold  
G. Owsley  
R. Keppler  
J. Newman

Georgia F. Marlowe  
Notary Public in and for the  
State of Iowa.

Georgia F. Marlowe  
NOTARY PUBLIC  
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Commission Expires  
September 30, 1976



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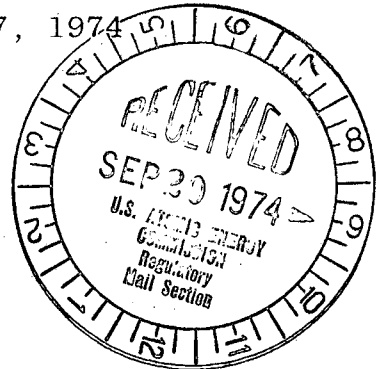
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## PROPOSED CHANGE TO DAEC TECHNICAL SPECIFICATIONS

### I. Affected Technical Specifications

The technical specifications for the DAEC (DPR-49, Appendix A) provide as follows:

Specification 4.5.C.1.b

<u>"Item</u>	<u>Frequency</u>
Flow Rate Test - Each RHR service water pump shall deliver at least 2400 gpm at a TDH of 674 ft. or more.	After major pump maintenance and every three months."

### II. Proposed Change in Technical Specifications

The licensees of DPR-49 propose the following changes in the technical specifications set forth in I (above):

In technical specification 4.5.C.1.b, change "674 ft. or more" to "610 ft. or more."

### III. Justification for Proposed Change

The Total Developed Head (TDH) requirement now in the technical specifications (674 feet or 292 psig) is based on the DAEC purchase specification which was established in a very conservative manner to assure a wide margin above the actual requirement.

The actual requirement during Containment Spray Mode is 535 feet or 232 psig. The requirement during Shutdown Cooling Mode (the most limiting condition) is 565 feet or 245 psig. This is computed as follows:

#### a) Maximum RHR Heat Exchanger Pressure

Pressure at Heat Exchanger inlet = (Reactor Pressure) + (RHR Pump TDH) + (Reactor Water Level) - (Heat Exchanger Inlet Pipe Elevation) - (Friction Losses Between the Reactor and Heat Exchanger).

Reactor pressure for normal shutdown = 50 psia

RHR Pump TDH = 390 ft. @ 4800 gpm and 281°F. = 157 psia

Reactor Water Level = 817.3 ft.

Heat Exchanger Inlet Pipe Elevation = 748.4 ft.

Friction Losses = 38.4 ft.

$$\text{Heat Exchanger Inlet Pressure} = 50 + 157 + 0.93 \left( \frac{817.3 - 748.4}{2.31} \right) - 0.93 \left( \frac{38.4}{2.31} \right)$$

Maximum Heat Exchanger Pressure = 219 psia

- b) Required differential =  $\frac{+20}{239}$  psia or 552 Ft.
- c) Atmospheric pressure  $\frac{-34}{518}$  Ft.
- d) Friction losses in Service Water  
Piping with strainers 50% plugged.  $\frac{+47}{565}$  Ft.  
TDH of

The difference between the requirement originally specified in the technical specifications and the actual requirement is thus 109 feet or a margin in excess of 16%. The proposed change in the technical specifications value represents about a 9.5% reduction from the current value but nevertheless preserves a margin of 8%. The incorrect and excessive margin now incorporated in technical specification 4.5.C.1.b could unnecessarily hinder the orderly, continuous operation of the facility.

Attached is supplementary information concerning Pump Laboratory Test Results, Pre-Operational Test Results, Special Pump Test Results, Pump Operating Time and River Silt Condition.

#### IV. Review Procedures

This proposed change has been reviewed by the DAEC Operations Committee and Safety Committee which have found that this proposed change does not involve a significant hazards consideration.

Supplementary Information Concerning

Proposed Change to RHR Service Water

Pump Head Requirements.

Layne and Bowler Pump Company Laboratory Tests

Total Head Feet	GPM			
	Pump 1P-22A	Pump 1P-22B	Pump 1P-22C	Pump 1P-22D
570	2990	2990	2920	2950
620	2820	2800	2740	2780
670	2620	2620	2540	2560
710	2420	2420	2300	2320
740	2220	2210	1700	1720
750	2020	2010	1640	1600
770	1260	1260	1250	1300

On September 9, 1974 all four RHR Service Water pumps were operated to obtain the following flow vs. head information.

<u>Pump No.</u>	<u>1500 gpm</u>	<u>2000 gpm</u>	<u>2400 gpm</u>	<u>3000 gpm</u>
1P-22A	319 psig/737ft.	309 psig/714ft.	295 psig/681ft.	231 psig/534ft.
1P-22B	345/797	331/765	321/742	260/601
1P-22C	310/716	301/695	284/656	229/529
1P-22D	325/751	312/721	292/691	240/554

On September 6, 1973 the Preoperational Test was run and the following flow vs. head information was obtained. Acceptance requirements at 290 psig were 2400  $\begin{smallmatrix} +200 \\ -0 \end{smallmatrix}$  gpm and at 230 psig were 3000  $\begin{smallmatrix} +200 \\ -0 \end{smallmatrix}$  gpm.

<u>Pump No.</u>	<u>290 <math>\begin{smallmatrix} +0 \\ -9 \end{smallmatrix}</math> psig</u>	<u>230 <math>\begin{smallmatrix} +0 \\ -9 \end{smallmatrix}</math> psig</u>
1P-22A	2500 gpm	3000 gpm
1P-22B	2500	3100
1P-22C	2400	3000
1P-22D	2400	3000

RHR Service Water Pump Operating time between Preoperational Test (9/73) and present (9/8/74).

Pump A - 44 hrs., 26 min.	}	Loop A
Pump C - 31 hrs., 37 min.		
Pump B - 142 hrs., 19 min.	}	Loop B
Pump D - 152 hrs., 3 min.		

On September 16, 1974 the following information was obtained.

RHR Heat Exchanger Shell Side

Inlet pressure - 205 psig + 14.7 = 219.7 psia

Reactor Level - 32 inches (3 inches below normal water level used in  
Tech. Spec. change submittal calculations)

Moderator Temp - 160°F (Plant in cold shutdown)

River Silt Design Condition

The information provided in the purchase specifications was as follows:

Suspended Solids: 250 ppm long term average  
1600 ppm maximum daily average  
95% of the particle size less than  
250 micron and 90% less than 100 micron

Suspended solids in the river are measured once per month. The maximum concentration measured so far has been 500 ppm. Size and distribution of the Solids is not determined.