

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

FILE NUMBER

TO:

Mr. George Lear

FROM:
Iowa Electric Light & Power Co.
Cedar Rapids, Iowa
Lee Liu

DATE OF DOCUMENT
12/14/76

DATE RECEIVED
12/17/76

LETTER
 ORIGINAL
 COPY

NOTORIZED
 UNCLASSIFIED

REG OP
INPUT FORM

NUMBER OF COPIES RECEIVED
Three signed
37 copies encl recvd.

DESCRIPTION

Ltr. notorized 12/14/76....w/attached....
furnishing Potential RHR (LPCI) Pump Runout
Evaluation Supplement.

(2-P)

PLANT NAME:
Duane Arnold

ENCLOSURE

ACKNOWLEDGED

DO NOT REMOVE

SAFETY	FOR ACTION/INFORMATION	ENVIRO	12/20/76	RJL
ASSIGNED AD:		ASSIGNED AD:		
<input checked="" type="checkbox"/> BRANCH CHIEF:	Lear (6)	<input checked="" type="checkbox"/> BRANCH CHIEF:		
<input checked="" type="checkbox"/> PROJECT MANAGER:	Shea	<input checked="" type="checkbox"/> PROJECT MANAGER:		
<input checked="" type="checkbox"/> LIC. ASST. :	Parrish (LTH.)	<input checked="" type="checkbox"/> LIC. ASST. :		
	VASSALLO			

INTERNAL DISTRIBUTION				
<input checked="" type="checkbox"/> REG FILE		SYSTEMS SAFETY		PLANT SYSTEMS
<input checked="" type="checkbox"/> NRC PDR		HEINEMAN	<input checked="" type="checkbox"/>	TEDESCO
<input checked="" type="checkbox"/> I & E (2)		SCHROEDER	<input checked="" type="checkbox"/>	BENAROYA
<input checked="" type="checkbox"/> OELD			<input checked="" type="checkbox"/>	LAINAS
<input checked="" type="checkbox"/> GOSSICK & STAFF		ENGINEERING		IPPOLITO
<input checked="" type="checkbox"/> MIPC		MACARRY		KIRKWOOD
<input checked="" type="checkbox"/> CASE		KNIGHT		OPERATING REACTORS
<input checked="" type="checkbox"/> HANAUER		SIHWEIL		STELLO
<input checked="" type="checkbox"/> HARLESS		PAWLICKI		
				SITE TECH.
PROJECT MANAGEMENT		REACTOR SAFETY		OPERATING TECH.
<input checked="" type="checkbox"/> BOYD	<input checked="" type="checkbox"/>	ROSS	<input checked="" type="checkbox"/>	GAMMILL
<input checked="" type="checkbox"/> P. COLLINS	<input checked="" type="checkbox"/>	NOVAK (3)	<input checked="" type="checkbox"/>	STEPP
<input checked="" type="checkbox"/> HOUSTON	<input checked="" type="checkbox"/>	ROSZTOCZY	<input checked="" type="checkbox"/>	HULMAN
<input checked="" type="checkbox"/> PETERSON		CHECK		BUTLER
<input checked="" type="checkbox"/> MELTZ				GRIMES
<input checked="" type="checkbox"/> HELTEMES		AT & I		
<input checked="" type="checkbox"/> SKOVHOLT		SALTZMAN		
		RUTBERG		
				SITE ANALYSIS
				VOLLMER
				BUNCH
				J. COLLINS
				KREGER

EXTERNAL DISTRIBUTION			CONTROL NUMBER
<input checked="" type="checkbox"/> LPDR: Cedar Rapids, Iowa	NAT. LAB:	BROOKHAVEN NAT. LAB.	12785 ^{min 4} R
<input checked="" type="checkbox"/> TIC:	REG V.IE	ULRIKSON (ORNL)	
<input checked="" type="checkbox"/> NSIC:	LA PDR		
<input checked="" type="checkbox"/> ASIB:	CONSULTANTS:		
<input checked="" type="checkbox"/> ACRS 16 CYS HOLDING/SENT :	CAT. B. (12/20/76)		

50-331

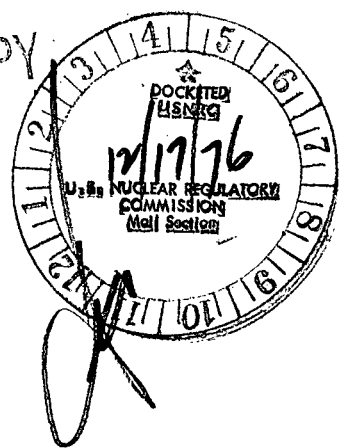
IOWA ELECTRIC LIGHT AND POWER COMPANY

General Office
CEDAR RAPIDS, IOWA

December 14, 1976
IE-76-1961

LEE LIU
VICE PRESIDENT - ENGINEERING

REGULATORY DOCKET FILE COPY



Mr. George Lear, Chief
Operating Reactors Branch 3
Division of Operating Reactors
Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Lear:

The enclosed is submitted in response to verbal questions from your staff concerning our responses of June 18, 1976 and September 24, 1976.

This additional response does not change our previous conclusion. The Duane Arnold Energy Center will not experience RHR pump cavitation or pump runout resulting in damaging motor overloading following a postulated LOCA.

Three signed originals and 37 copies of this letter and attachment are transmitted herewith. This letter and its attachment are true and accurate to the best of my knowledge and belief.

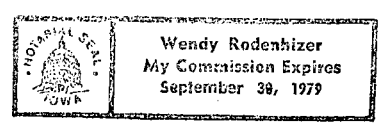
Iowa Electric Light and Power Company

By: [Signature]
Lee Liu
Vice President, Engineering

LL/KAM/ms
Attachment
cc: K. Meyer
D. Arnold
R. Lowenstein
J. Shea (NRC)
L. Root
File A-107
A-225
E-17

Subscribed and sworn to before me on this 14th day of December, 1976.

[Signature]
Notary Public in and for the State of Iowa.



12785

POTENTIAL RHR (LPCI) PUMP
RUNOUT EVALUATION SUPPLEMENT

In addition to those cases evaluated in our June 18, 1976 and September 24, 1976 submittals, we have evaluated potential runout for condition 2 with three pumps operating rather than four and a double ended line break on the "A" recirculation pump discharge pipe. The same conservatisms which were used to perform previous analyses were also used in evaluating the three pump case of condition 2 (condition 2A). The results of the evaluation indicate that the RHR pumps will remain functional with three pumps operating in condition 2. The analyses assumed that the limiting pump, pump "C", was not the one taken out of service. During runout conditions the "C" pump would have six feet of available NPSH above the approximately 14 feet which it requires. Hence, there would be no pump cavitation. The "C" pump motor current would increase to 120% of rated.

The increase in motor current in condition 2A would result in increased diesel generator loading. However, the increase would not exceed 10 1/2% (55KW) per pump. This is below the 100 KW per pump increase used to evaluate the four pump case of condition 2. Therefore, the load summary previously submitted is still applicable and the diesel generators would remain within rated conditions.

The following table for this condition supplements our previous analyses:

<u>Parameter</u>	<u>RHR (LPCI) PUMP NET POSITIVE SUCTION HEAD</u>				<u>Comment</u>
	<u>RHR Injection Pumps</u>				
	<u>A</u>	<u>C</u>	<u>B</u>	<u>D</u>	
<u>Condition No. 2A</u>					
Flowrate, GPM	6590	6794	NA	7050	No cavitation
Total head, ft	206	206	NA	137	
Avail. NPSH, ft.	22.5	20.2	NA	23.6	
Required NPSH, ft.	14	14	NA	17	