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## IOWA ELECTRIC LIGHT AND POWER COMPANY

50-331

General Office CEDAR RAPIDS. IOWA December 14, 1976

Lee Liu VICE PRESIDENT - ENGINEERING IE-76-1961



Dear Mr. Lear:

REGULATORY DOCKET FILE COPY

Mr. George Lear, Chief **Operating Reactors Branch 3** Division of Operating Reactors Nuclear Regulatory Commission

Washington, D.C. 20555

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: Lée Liu

Vice President, Engineering

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

Notary Public in and for the State of Iowa.

Wendy Rodenbizer My Commission Expires September 39, 1979

12785

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

## 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.

Previous analyses: <u>RHR (LPCI) PUMP NET POSITIVE SUCTION HEAD</u> Parameter <u>RHR Injection Pumps</u> Comment

Uawamotow		Commont			
rarameter	A	<u><u>C</u></u>	B	D	comment
Condition No. 2A					
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	

The following table for this condition supplements our previous analyses: