

**Omaha Public Power District**  
1623 Harney Omaha, Nebraska 68102-2247  
402/536-4000

July 8, 1988  
LIC-88-579

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Mail Station P1-137  
Washington, DC 20555

Reference: 1. Docket No. 50-285  
2. NRC Bulletin 88-04 dated May 5, 1988

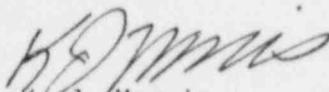
Gentlemen:

SUBJECT: Response to NRC Bulletin 88-04

Enclosed herewith is Omaha Public Power District's (OPPD) response to NRC Bulletin 88-04, regarding potential safety-related pump loss. This response was also discussed between Mr. J. Fisicaro of my staff and Mr. P. Milano, Fort Calhoun's NRC Project Manager. Pursuant to the provisions of Section 182a of the Atomic Energy Act of 1954, as amended, this response is submitted under oath and affirmation.

If you should have any questions, please do not hesitate to call.

Sincerely,



K. J. Morris  
Division Manager  
Nuclear Operations

Attachments

KJM/me

c: LeBoeuf, Lamb, Leiby & MacRae  
1333 New Hampshire Ave., N.W.  
Washington, DC 20036

R. D. Martin, NRC Regional Administrator  
P. D. Milano, NRC Project Manager  
P. H. Harrell, NRC Senior Resident Inspector

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )  
 )  
Omaha Public Power District ) Docket No.50-285  
(Fort Calhoun Station )  
Unit No. 1) )

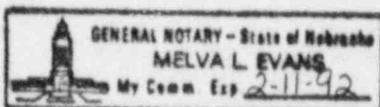
AFFIDAVIT

K. J. Morris, being duly sworn, hereby deposes and says that he is the Division Manager - Nuclear Operations Division of the Omaha Public Power District; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached information concerning the response to NRC Bulletin 88-04; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information, and belief.

  
\_\_\_\_\_  
Division Manager -  
Nuclear Operations

STATE OF NEBRASKA)  
 ) ss  
COUNTY OF DOUGLAS)

Subscribed and sworn to me, a Notary Public in and for the State of Nebraska on the 8<sup>th</sup> day of July, 1988.



  
\_\_\_\_\_  
Notary Public

## ATTACHMENT

NRC Bulletin 88-04 requests a written response regarding potential safety-related pump loss. The bulletin expresses concerns about simultaneous operation of safety-related pumps on minirecirculation flowpaths.

The scope of this response has been limited only to those safety-related centrifugal pumps equipped with common miniflow recirculation lines. This criterion is based on the Bulletin's content, which details concerns about pump miniflow mode operation. Based on this criterion, the following pumps at Fort Calhoun station are included in the scope of the Bulletin:

FW-6        Motor-Driven Auxiliary Feedwater Pump  
FW-10       Steam Turbine-Driven Auxiliary Feedwater Pump  
SI-1A/B     Low Pressure Safety Injection Pumps  
SI-2A/B/C   High Pressure Safety Injection Pumps  
SI-3A/B/C   Containment Spray Pumps

Responses to the items in the Bulletin are as follows:

**Item 1. Determine if piping configuration precludes pump-to-pump interaction during miniflow operation.**

### Auxiliary Feedwater Pumps

Each auxiliary feedwater pump has its own independent miniflow recirculation line to the emergency feedwater storage tank. Since there are two separate lines, there is no possibility of pump-to-pump interaction during simultaneous miniflow operation of FW-6 and FW-10.

### Safety Injection/Containment Spray Pumps

Each safety injection and containment spray pump has its own individual miniflow recirculation orifice, but the safety injection and containment spray pumps' recirculation lines tie together (downstream of the orifices) into a common header prior to discharge into the safety injection/refueling water storage tank.

**Item 2. If Item 1 is applicable, evaluate the system for flow division.**

### Auxiliary Feedwater Pumps

This item is not applicable to the FW-6 and FW-10 auxiliary feedwater pumps, since no pump-to-pump interaction is possible.

### Safety Injection/Containment Spray Pumps

To determine actual line pressures for these pumps during simultaneous miniflow recirculation operation, extensive calculations must be performed. Because of the complex nature of the calculations, an extension is requested for response

## Attachment (Continued)

to the Bulletin in this area. It should be noted that Fort Calhoun's safety injection pumps are equipped with individual orifices for each pump, unlike the Westinghouse design of common orifices for multiple pumps which prompted Information Notice 87-59. The calculations will determine if Fort Calhoun's design is adequate to preclude pump-to-pump interaction during simultaneous miniflow operation. An extension of 90 days is requested to complete this response. If our schedule should change, we will contact you.

### Item 3. Evaluate the adequacy of the miniflow recirculation lines.

#### Auxiliary Feedwater Pumps

The manufacturer of the FW-6 auxiliary feedwater pump has received numerous requests for confirmation of proper miniflow recirculation capacity. Although a written request for this information has been submitted to the pump manufacturer, a confirmation could not be obtained for this submittal. An extension is needed for response in this area.

The adequacy of the sizing of the FW-10 miniflow recirculation line has been confirmed with the pump manufacturer.

Each auxiliary feedwater pump's recirculation line is equipped with a pneumatically operated control valve (fail open). These valves are tied into the pump suction flow instruments. As flow decreases, the valves automatically open to maintain minimum flow through the pumps to prevent overheating and damage. The valves are normally open.

The FW-6 and FW-10 pumps are presently surveillance tested on a monthly and annual basis using the miniflow recirculation flowpath. (Monthly for pump pressure/flow/vibration data, and annually for pump bearing temperatures.) Surveillance test data records for FW-10 and FW-6 were reviewed. The pump data (dating back to 1979) shows no evidence of pump degradation.

Based on past operating and testing experience with FW-10, together with the manufacturer's confirmation of proper miniflow line capacity, it is concluded that the present miniflow recirculation design for FW-10 is adequate to preclude pump damage. Surveillance test results suggest this to also be true for FW-6, but OPPD has not yet received confirmation from the FW-6 manufacturer that the miniflow line is adequate. An extension of 90 days is requested to complete this response. If our schedule should change, we will contact you.

#### Safety Injection/Containment Spray Pumps

The manufacturers of these pumps have been inundated with requests from utilities concerning confirmation of the adequacy of the miniflow recirculation lines. Although a written request for this information has been submitted to the pump manufacturer, a response could not be obtained for this submittal. An extension of 90 days is requested to complete this response. If our schedule should change, we will contact you.

The safety injection and containment spray pumps are surveillance tested individually on a quarterly and annual basis using the miniflow recirculation flowpath. (Quarterly for pump pressure/flow/vibration data, and annually for pump bearing temperatures.) Surveillance test records for these pumps were reviewed. As was the case with the auxiliary feedwater pumps, the pump data shows no adverse trends or other evidence of pump degradation.

Attachment (Continued)

Item 4. Provide written response which summarizes problems, identifies corrective actions, provides schedule for implementation of corrective actions, and provides justification for continued operation.

Based on surveillance test results, OPPD has no evidence of degradation of any of the pumps covered by the scope of the Bulletin. No conditions have been identified which require modification of any hardware or plant procedures. Thus, no list of corrective actions or schedule for implementation is necessary at this time.

In summary, the status of the pumps covered by the bulletin is as follows:

FW-10 Auxiliary Feedwater Pump: No possibility of pump-to-pump interaction during miniflow operation. Miniflow capacity has been confirmed with the pump manufacturer. No further action is required.

FW-6 Auxiliary Feedwater Pump: No possibility of pump-to-pump interaction during miniflow operation. An extension is needed to obtain manufacturer confirmation of proper miniflow capacity.

SI-1A/B, SI-2A/B/C, SI-3A/B/C Safety Injection/Containment Spray Pumps: An extension is needed to perform calculations which will determine if pump-to-pump interaction during simultaneous miniflow operation is precluded by Fort Calhoun's individual orifice design. An extension is also needed to obtain manufacturer confirmation of proper miniflow capacity.

An extension of 90 days is requested in order to complete and analyze the calculations and obtain the remaining confirmations from the pump manufacturers. If our schedule should change, we will contact you. Since no problems have yet been identified by OPPD as a result of the Bulletin, continued operation is justified at this time. Should problems be identified during the extension period, the issue of justification for continued operation will be addressed at that time.