

## LICENSEE EVENT REPORT

50-285/76-9

CONTROL BLOCK: 

PLEASE PRINT ALL REQUIRED INFORMATION)

LICENSEE NAME					LICENSE NUMBER										LICENSE TYPE					EVENT TYPE					
0	1	N	E	F	C	S	1	0	0	-	0	0	0	0	0	-	0	0	4	1	1	1	1	0	3
7	8	9					14	15									25	26					31	32	
CATEGORY		REPORT TYPE	REPORT SOURCE	DOCKET NUMBER						EVENT DATE					REPORT DATE										
0	1	CON'T	L	L	0	5	0	-	0	2	8	5	0	3	2	0	7	6	0	4	0	7	7	6	
7	8	57	58	59	60	61						68	69				74	75					80		

[illegible]

02	During maintenance inspection of raw water pumps, erosive wear was found on the	80
03	raw water pump impellers and galvanic corrosion was found within the connecting	80
04	threads of the top case bearing which connects the column and the upper bowl. Pumps	80
05	were always capable of pumping designed flows.	80
06		80

SYSTEM CODE		CAUSE CODE	COMPONENT CODE				PRIME COMPONENT SUPPLIER	COMPONENT MANUFACTURER				VIOLATION				
0	7	W	B	E	P	U	M	P	X	X	0	8	5	8	0	N
7	8	9	10	11	12					17	43	44			47	48

## CAUSE DESCRIPTION

08	Erosion and wear caused by erosive nature of Missouri River water which is being	
7	8	9
09	pumped. Galvanic corrosion was result of Emf series potential difference in pump	80
7	8	9
10	materials. Impellers were built up and bearing material corrected.	80
7	8	9

11	FACILITY STATUS			% POWER			OTHER STATUS			METHOD OF DISCOVERY			DISCOVERY DESCRIPTION		
7 8	G			0 0 0			NA			C			Maintenance Inspection		
9				10 12			13			44			46 80		
12	FORM OF ACTIVITY RELEASED			CONTENT OF RELEASE			AMOUNT OF ACTIVITY						LOCATION OF RELEASE		
7 8	Z			Z			NA						NA		
9				10 11			44			45			80		

## PERSONNEL EXPOSURES

NUMBER				TYPE	DESCRIPTION
1	3	0	0	0	NA

## PERSONNEL INJURIES

NUMBER				DESCRIPTION	
1	4	0	0	0	NA

## OFFSITE CONSEQUENCES

15	None
----	------

## LOSS OR DAMAGE TO FACILITY

TYPE			DESCRIPTION
15	Z		NA

## PUBLICITY

17 NA 8403260372 760407  
7 8 9 PDR ADCK 05000285  
S PDR

### ADDITIONAL FACTORS

18 | See Attachments No. 1, 2 and 3

19  
7 8 9

NAME: Steven M. Moyers

PHONE: 402-426-4011

ATTACHMENT 1

Safety Analysis

The raw water system is designed to provide screened river water to the component cooling water heat exchangers. There are four raw water pumps installed within this system and one pump is required during normal operation. During the period following a DBA, two pumps are required for operation. In the unlikely situation of the loss of component cooling water, the raw water can be utilized for direct cooling of the shutdown heat exchangers and the containment cooling coils.

Technical Specification 2.4 requires that three raw water pumps be operable during power operation and allows this requirement to go to two raw water pumps for up to 24 hours before the plant must be placed in the hot shutdown condition within 24 hours.

The operability of the raw water pumps was satisfactorily demonstrated at all times during power operation and indeed the problems described within this LER do not prevent the pumps from functioning such to provide raw water for the component cooling water heat exchangers.

ATTACHMENT 2

Corrective Action

The work was carried out under Maintenance Order No. 10264 for raw water pump AC-10D and Maintenance Order No. 10500 for raw water pump AC-10C.

The galvanic corrosion experienced resulted in the breakdown of the screwed fitting between the bronze top case bearing and the steel case. This situation was corrected through Design Change Request 76-25 which, based upon a Byron Jackson Service Department recommendation, changed the solid bronze top case bearing to a bearing made of stainless steel with a bronze bearing liner. The threads which experienced the galvanic corrosion were replaced with a more passive material.

The top case bearing serves a two fold purpose, that of being a journal bearing for the pump shaft at the upper casing area and that of connecting the inner column to the upper case. The inner column allows the flushing water to pass over the bearings from above. Because the threads were loose, the water pressure from the pump discharge was entering the inner column. This does not sacrifice the design output of the pumps. This condition can be detected by monitoring flush water pressure during pump operation. To date, raw water pump AC-10D has been the only pump to experience this type of leakage due to the galvanic corrosion of the connecting threads; however, the upper case bearing has been changed in both AC-10C and AC-10D. Those in AC-10A and AC-10B will be changed at the refueling outage scheduled for the fall of 1976.

The impeller erosion was evidenced by large clearance at the wear rings and pitting and erosion on the impeller hub and blades. These wear areas were built up by a welding process recommended by the Byron Jackson Service Department. After the wear ring area was built up it was remachined to allow .017 inch clearance with the mating part.

Complete testing of all four pumps was made after the repair work was carried out on AC-10C and AC-10D. Test confirmed the pumping capacities on all four pumps were comparable to those results obtained during the preoperational tests. It is planned that additional inspections will be carried out during the fall refueling outage.

ATTACHMENT 3

Failure Data

This is the first experience involving the raw water pumps at the Fort Calhoun Station in which problems of this nature were addressed.



# Omaha Public Power District

1623 HARNEY ■ OMAHA, NEBRASKA 68102 ■ TELEPHONE 536-4000 AREA CODE 402

April 9, 1976  
FC-114-76



Mr. E. Morris Howard  
U. S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive  
Suite 1000  
Arlington, TX 76012

Dear Mr. Howard:

Reference: Fort Calhoun Station Unit No. 1  
Docket No. 50-285

In accordance with the Fort Calhoun Station's Technical Specifications, the Omaha Public Power District, as holder of facility operating license DPR-40, submits three copies of the following licensee event report 50-285/76-9 to satisfy the requirements of Regulatory Guide 1.16.

Sincerely,

W. C. Jones  
Section Manager  
Operations

WCJ/WDD:rge

Enclosure

cc: Director, Office of Management  
Information and Program Control  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555 (3)

Director, Office of Inspection and  
Enforcement  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555 (30)

Mr. L. C. Shalla  
SARC Chairman  
PRC Chairman  
Fort Calhoun File (2)

3853