

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Fort St. Vrain, Unit No. 1										DOCKET NUMBER (2) 0 5 0 0 0 2 6 7				PAGE (3) 1 OF 0 5	
TITLE (4) Loop Shutdown By The PPS On Loss Of Circulator Bearing Water															
EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)					
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES N/A				DOCKET NUMBER(S) 0 5 0 0 0		
0 7	2 2	8 5	8 5	0 1 1	0 0 0	0 8	2 1	8 5					0 5 0 0 0		
OPERATING MODE (9) N		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)													
POWER LEVEL (10) 0.5		20.402(b)				20.408(c)				99.73(a)(2)(iv)				73.71(b)	
		20.408(a)(1)(i)				99.73(a)(1)				99.73(a)(2)(iv)				73.71(c)	
		20.408(a)(1)(ii)				99.73(a)(2)				99.73(a)(2)(v)				OTHER (Specify in Abstract below and in Text, NRC Form 385A)	
		20.408(a)(1)(iii)				99.73(a)(2)(i)				99.73(a)(2)(iv)(A)					
		20.408(a)(1)(iv)				99.73(a)(2)(ii)				99.73(a)(2)(iv)(B)					
		20.408(a)(1)(v)				99.73(a)(2)(iii)				99.73(a)(2)(v)					
LICENSEE CONTACT FOR THIS LER (12)															
NAME Jim Eggebroten, Superintendent, Technical Services Eng.										TELEPHONE NUMBER AREA CODE 3 0 3 7 8 5 - 2 2 2 3					
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)															
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC					
A, D, C, B		L, C, M, 1, 2, 0		N											
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)			
YES (If yes, complete EXPECTED SUBMISSION DATE: )												MONTH DAY YEAR			
X NO															

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On July 22, 1985, at approximately 0145 hours, with the reactor operating at approximately 0.5% power, a Loop 1 shutdown was initiated by the Plant Protective System (PPS) on "Loss of Bearing Water". Loss of bearing water to the Loop 1 helium circulators resulted from the exercise of the wrong level controller on the Loop 1 bearing water surge tank during performance of a scheduled surveillance test. The water level in the surge tank was lowered below the low level set point, which tripped the Loop 1 bearing water pumps leading to the loss of bearing water PPS action. The "C" circulator and steam generator in Loop 2 remained in operation providing core cooling during this event. The reactor power was reduced, and Loop 1 was restored to operation. The helium circulators, their auxiliary systems, and the PPS operated as designed in response to the low surge tank water level. This loop shutdown initiated by the PPS is being reported under 10CFR50.73(a)(2)(iv) as an automatic actuation of the reactor protection system.

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PDR ADOCK 05000267  
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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Fort St. Vrain, Unit No. 1	0500026785	—	0111	—010	02	OF 05

TEXT (if more space is required, use additional NRC Form 388A's) (17)

EVENT DESCRIPTION:

On July 22, at approximately 0145 hours, with the reactor operating at approximately 0.5% power, a Loop 1 Shutdown was initiated by the Plant Protective System (PPS) on "Loss of Bearing Water". This loss of bearing water to the Loop 1 helium circulators resulted from mistaken manipulation of level controller LC-2135 during performance of a scheduled surveillance test (SR 5.3.4b1-A) of the valves required for actuation of the Safe Shutdown Cooling (SSC) mode of operation. LC-2135 controls the water level in the Loop 1 bearing water surge tank. During testing the water level was lowered below the low level set point which tripped the Loop 1 bearing water pumps leading to the "Loss of Bearing Water" PPS action. At the time the event occurred, "B" and "C" helium circulators were operating on steam turbine drive while "A" and "D" circulators were self-turbining. Both steam generator evaporator-economizer-superheater (EES) sections were operating on emergency condensate. The "C" circulator and steam generator EES section in Loop 2 remained in operation providing core cooling during this event.

ANALYSIS OF EVENT:

A Results (Instrumentation) Engineer assisting with a scheduled surveillance test (SR 5.3.4b1-A) inadvertently exercised the wrong level controller (LC-2135) on the Loop 1 helium circulator bearing water surge tank (T-2104). See Figure 1. The level in T-2104 dropped below the set point of low level switch LSL-2137 which tripped the Loop 1 bearing water pumps and closed the pump suction block valve LV-2137. This action prevents pump damage by cavitation. The pump shutdown was sensed by PDT-2133 on low differential pressure across the pumps. An alarm (PDAL-2133) was sounded in the control room when the differential pressure dropped below approximately 800 psi. Differential pressure switches (PDIS-21179, -21181, and -21183) between the bearing water supply cavity and the main drain of "B" helium circulator actuated at approximately 475 psid as designed, supplying an input to the PPS to initiate the isolation of the Loop 1 helium circulator auxiliary water system due to loss of circulator bearing water. The "B" helium circulator steam turbine was tripped, and the bearing water accumulator supplied bearing water as the circulator slowed down. When the circulator had slowed sufficiently, the brake and seal were automatically set and all Loop 1 bearing water supply and return lines were isolated. The Loop 2 "C" circulator and steam generator EES section continued to operate providing core cooling during this event. The reactor power was reduced to approximately 0.06%, and Loop 1 was restored to operation in approximately one hour. The helium circulators, their auxiliary systems, and the PPS system responded as designed to the low surge tank water level. The surveillance test was successfully completed after restoring Loop 1 to operation.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

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FACILITY NAME (1)  Fort St. Vrain, Unit No. 1	DOCKET NUMBER (2)  0 5 0 0 0 2 6 7 8 5	LER NUMBER (5)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0 1 1	0 1 1	0 0	0 3	OF 0 5

TEXT (If more space is required, use additional NRC Form 385A's) (17)

CAUSE DESCRIPTION:

The cause of the Loop 1 shutdown on July 22, 1985 was the mistaken operation of the bearing water surge tank level controller, LC-2135, instead of the correct level controller, LC-21245, by a Results Engineer while performing the scheduled surveillance test SR 5.3.4b1-A. This lowered the level in the Loop 1 bearing water surge tank to the point where the Loop 1 bearing water pumps were automatically shutdown, and the loss of bearing water resulted in the PPS action Loop 1 Shutdown.

CORRECTIVE ACTION:

The Loop 1 primary coolant helium circulators were restored to operation.

The surveillance test procedure SR 5.3.4b1-A involved in this event was reviewed with regard to human factors. It was found that the root cause of the event was that the location of the proper controller is not specified in the procedure. There are two level controllers on the bearing water surge tank. Each controller is only accessible from a different level in the reactor building, and cannot be seen from the other controller because of intervening piping and equipment. Also contributing to the event was the relative inexperience of the person involved. The surveillance test is being revised to improve human factors considerations, and the personnel will be retrained.

No further corrective action is anticipated or required.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

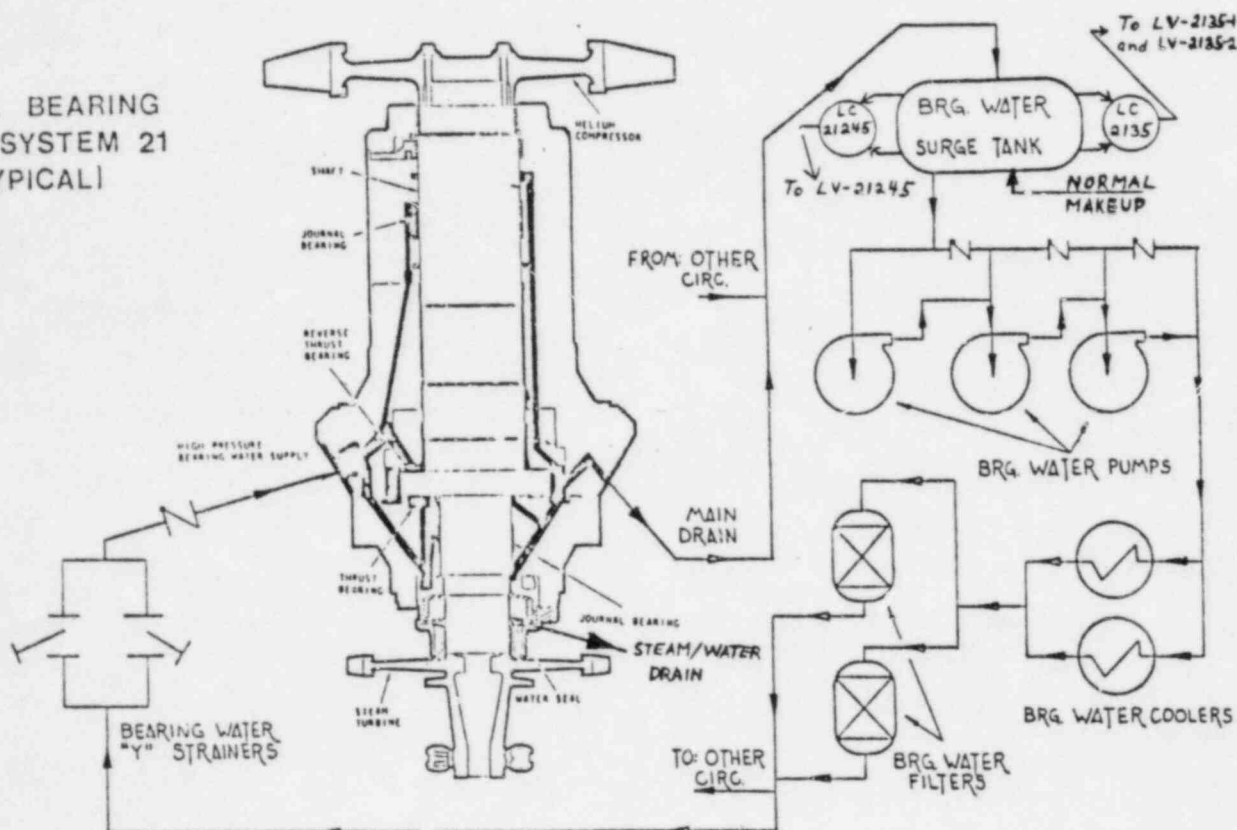
APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

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		YEAR 0 1 1	SEQUENTIAL NUMBER 0 1 1	REVISION NUMBER 0 0	0 4	OF 0 5

TEXT (If more space is required, use additional NRC Form 388A's) (17)

FIGURE 1

NORMAL BEARING  
WATER--SYSTEM 21  
(TYPICAL)

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED GJB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

Fort St. Vrain, Unit No. 1

YEAR SEQUENTIAL REVISION  
NUMBER NUMBER NUMBER

0 5 0 0 0 2 6 7 8 5 - 0 1 1 - 0 0 0 5 OF 0 5

TEXT (If more space is required, use additional NRC Form 365A's) (17)

Charles HootCharles Hoot  
ConsultantJim EggebrotenJim Eggebroten  
Superintendent, Technical Services Eng.Licensing Review By: Duane L. FayeJim GramlingJim Gramling  
Nuclear Licensing-Operations SupervisorC. H. FullerC. H. Fuller  
Station ManagerJ. W. GahmJ. W. Gahm  
Manager, Nuclear Production



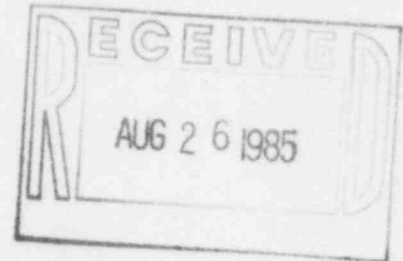


# Public Service

16805 WCR 19 1/2, Platteville, Colorado 80651

Public Service  
Company of Colorado

August 21, 1985  
Fort St. Vrain  
Unit No. 1  
P-85292



Regional Administrator  
Region IV  
U. S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 1000  
Arlington, TX 76011

Attn: Mr. Dorwin Hunter

Docket No. 50-267

SUBJECT: Licensee Event Report  
85-011, Final Report

REFERENCE: Facility Operating  
License No. DPR-34

Dear Mr. Hunter:

Enclosed please find a copy of Licensee Event Report  
No. 50-267/85-011, Final, submitted per the requirements of  
10 CFR 50.73(a)(2)(iv).

Sincerely,

J. W. Gahm  
Manager, Nuclear Production

Enclosure

cc: Director, MIPC

JWG/djm

85-759

85-759  
Return original  
TO RIV