

LICENSEE EVENT REPORT (LER)

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

TITLE (4)
"C" Helium Circulator trip on Buffer-Mid-Buffer low

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		DOCKET NUMBER(S)
0 1	0 5	8 6	8 6	0 0 2	0 0	0 2	0 4	8 6	N/A		0 5 0 0 0
											0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)										
N	20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)	
POWER LEVEL (10)	0	0	0	20.405(a)(1)(i)			50.38(c)(1)			73.71(c)	
				20.405(a)(1)(ii)			50.38(c)(2)			XX OTHER (Specify in Abstract below and in Text, NRC Form 366A)	
				20.405(a)(1)(iii)			50.73(a)(2)(i)			Voluntary	
				20.405(a)(1)(iv)			50.73(a)(2)(ii)				
				20.405(a)(1)(v)			50.73(a)(2)(iii)				
				20.405(a)(1)(vi)			50.73(a)(2)(iv)				

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Jim Eggebroten, Superintendent, Technical Services Eng.	AREA CODE 3 0 3 7 8 5 - 2 2 2 4

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

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input checked="" type="checkbox"/>	<input type="checkbox"/>				

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

On January 5, 1986, at 0807 hours, with the reactor shut down and "A" and "D" helium circulators operating on water turbine drive, "C" helium circulator trip logic actuated on buffer-mid-buffer low differential pressure.

The cause of the buffer-mid-buffer low differential pressure was water in the buffer-mid-buffer differential pressure sensing line.

The water in the buffer-mid-buffer sensing line was "blown down" and "C" helium circulator was returned to self-turbining operation.

Single helium circulator trip actuation is considered to be that portion of the Plant Protection System (PPS) which is oriented toward protecting various plant components from major damage. It is not considered to be a part of the Reactor Protection System (RPS) and is therefore not considered to require notification or reporting in accordance with the requirements of 10CFR50.72 or 10CFR50.73. However, due to concerns expressed by the Senior Resident Inspector, the Licensee voluntarily reports single helium circulator trip actuations until this matter is fully resolved.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

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		0 0 2	0 0 2	0 0	0 2	OF	0 5

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

BACKGROUND:

A double labyrinth seal with purified helium buffer gas injected between the labyrinths ensures no leakage of primary coolant helium out of the PCRV, or of bearing water leakage into the primary coolant along the helium circulator shaft. The independent helium circulator buffer helium control system maintains the helium water drain pressure such that approximately half of the buffer helium flows upward into the primary coolant system and the remainder flows out through the helium/water drain (Figure 1).

Operation of the buffer helium labyrinth is monitored by three redundant differential pressure transmitters and bistable switches for each helium circulator. Excessive positive differential pressure across the labyrinth indicates the possible leakage of primary coolant helium from the PCRV into the bearing water system. Excessive negative differential pressure indicates possible bearing water inleakage to the primary coolant. In either event, for a single helium circulator, the plant protective system initiates an automatic shutdown of the affected helium circulator on high or low buffer-mid-buffer differential pressure, with concurrent setting of the shutdown seal.

EVENT DESCRIPTION:

"C" helium circulator was placed in operation on emergency condensate drive at 2220 hours on January 4, 1986, following troubleshooting for blockage of the buffer-mid-buffer differential pressure sensing lines.

At 0750 hours on January 5, 1986, "C" helium circulator was placed in the "self-turbining" mode of operation, and "D" helium circulator was placed in operation on emergency condensate, due to slowly decreasing buffer-mid-buffer differential pressure indication on "C" helium circulator. The brake and seal on "C" helium circulator were set at 0805 hours.

At 0807 hours on January 5, 1986, "C" helium circulator tripped on negative buffer-mid-buffer. As "C" helium circulator had already been shutdown, the PPS actuation tripped only the "C" helium circulator auxiliaries (bearing water and buffer helium).

ANALYSIS OF EVENT:

This single helium circulator trip actuation provided the appropriate equipment protection function as designed. There were no safety implications to the plant or public as a result of this event.

As each circulator's auxiliary system controls operate independently of the other circulators', the buffer-mid-buffer trip of "C" helium circulator had no effect on the operation of "A" or "D" helium circulators. In addition, with the redundancy provided by four helium circulators, it is considered incredible per FSAR Section 14.4.1 that all four helium circulators would become inoperable simultaneously.

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EXPIRES 8/31/85

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

The Fort St. Vrain Technical Specifications require that one helium circulator be operable in each loop during power operation, as safe shutdown cooling capability is assured with only one operable helium circulator. Thus, single actuations of the helium circulator trip circuitry to shut down a single helium circulator are considered an equipment protective action, and are specifically stated as such in the Basis of Technical Specification LCO 4.4.1.c. When the reporting requirements of 10CFR50.72 and 50.73 were initially proposed, the term Reactor Protection System (RPS) was not recognized nor defined for this plant. Therefore, independent, extensive evaluations were performed considering the Fort St. Vrain licensing basis, industry practice, and Nuclear Regulatory Commission guidance. These evaluations determined that single actuations of the helium circulator trip circuitry do not require Nuclear Regulatory Commission notification nor Licensee Event Reporting in accordance with the requirements of 10CFR50.72 and 50.73.

Other helium circulator trip events have been voluntarily reported in LER 85-14, 85-15, 85-16, 85-22, 85-23, 85-26, 85-30, 85-31, and 86-01.

CAUSE DESCRIPTION:

Investigation into the cause of "C" helium circulator trip revealed that bearing water had entered the buffer-mid-buffer differential pressure sensing lines, causing a gradual reduction in indicated differential pressure.

The bearing water entered the buffer-mid-buffer differential pressure line during the trip of "C" helium circulator on January 3, 1986 (LER 86-001). Because "C" helium circulator was returned to operation on January 4, 1986, this event is being reported separately.

CORRECTIVE ACTIONS:

The buffer-mid-buffer differential pressure sensing lines to "C" helium circulator were "blown down" with helium to remove the water. "C" helium circulator was returned to "self turbinng" operation at 1945 hours on January 5, 1986.

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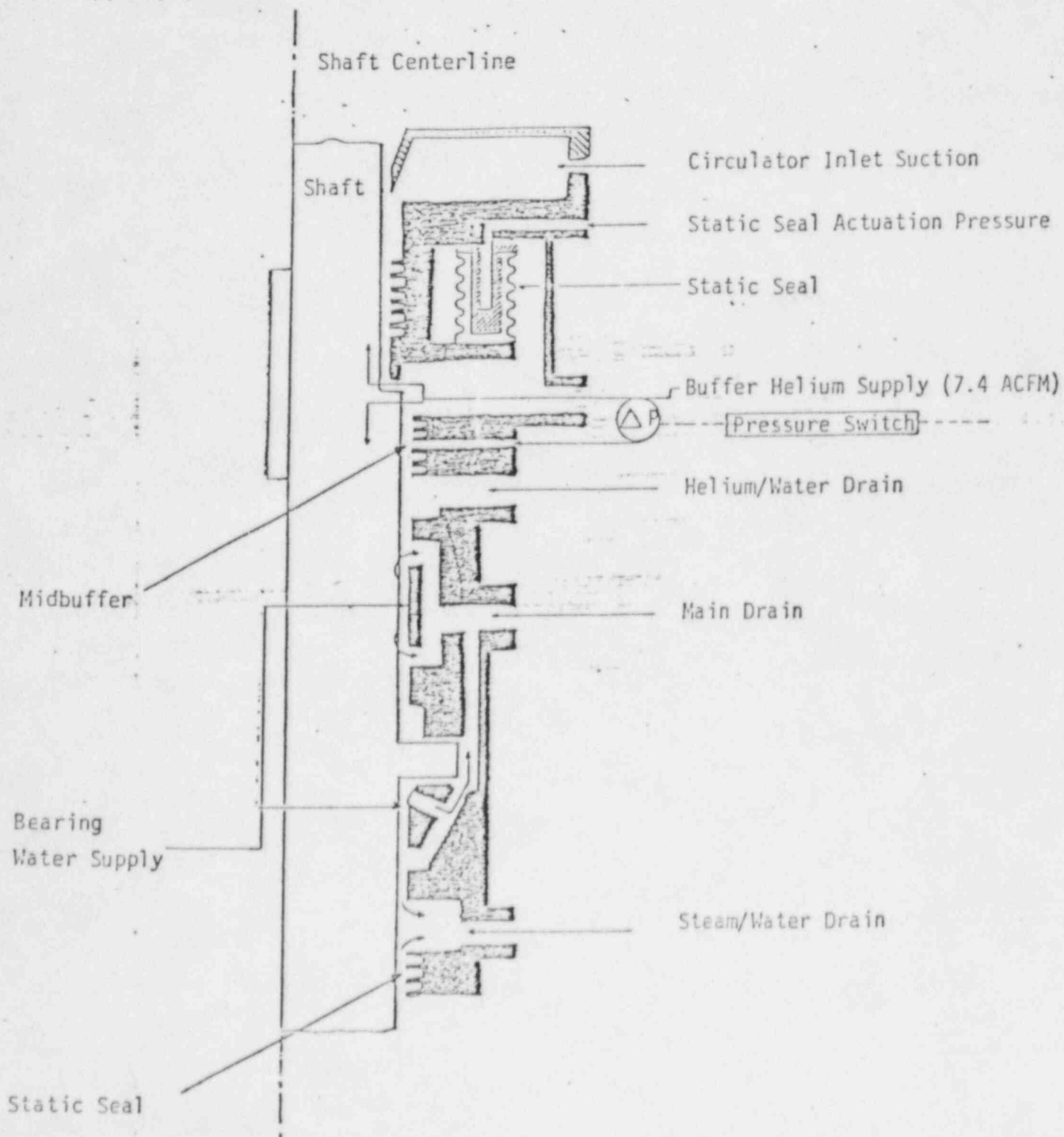
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DO NOT fill in more space as required, use additional NRC Form 308A-1 (17)

FIGURE 1



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

Art Stithem

Art Stithem
Technical Services Technician

Jim Eggebroten

Jim Eggebroten
Superintendent, Technical Services Eng.

Licensing Review By: *Sotto Hoffelt*

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Nuclear Licensing-Operations Supervisor

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Manager, Nuclear Production



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February 4, 1986
Fort St. Vrain
Unit No. 1
P-86058

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docket No. 50-267

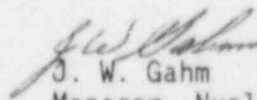
SUBJECT: Licensee Event Report
86-002, Final Report

REFERENCE: Facility Operating
License No. DPR-34

Gentlemen:

Enclosed please find a copy of Licensee Event Report
No. 50-267/86-002, Final, submitted per the requirements of
10 CFR 50.73(a)(2)(iv).

Sincerely,



J. W. Gahm
Manager, Nuclear Production

Enclosure

cc: Regional Administrator, Region IV
Attn.: Mr. E. H. Johnson, Chief
Reactor Projects Branch

cc: Director of Nuclear Reactor Regulation
Attn.: Mr. H. N. Berkow, Project Director
Standardization and Special
Project Directorate

cc: Director, MIPC

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