

LICENSEE EVENT REPORT

(PLEASE PRINT ALL REQUIRED INFORMATION)

LICENSEE NAME				LICENSE NUMBER						LICENSE TYPE				EVENT TYPE							
01	C	O	F	S	V	I	00	-	00	00	00	-	00	4	1	1	2	0	0	5	
7	8	9				14	15						25	26					30	31	32

CATEGORY		REPORT TYPE	REPORT SOURCE	DOCKET NUMBER						EVENT DATE				REPORT DATE											
01	CON'T	PD	L	050-0267						032375															
7	8	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80

02	Returning backup bearing water to service caused a	80
03	buffer-mid-buffer upset which tripped two circulators.	80
04	Lead Operator tripped ^{remaining} two circulators. Vented surge tank,	80
05	restarted two circulators.	80
06	UE 75/05A	80

SYSTEM CODE CAUSE CODE COMPONENT CODE PRIME COMPONENT SUPPLIER COMPONENT MANUFACTURER VIOLATION

07 08 09 10 11 12 13 14 15 16 17 43 44 45 46 47 48

7 8 9 10 11 12 13 14 15 16 17 43 44 45 46 47 48

08 Cause was response of pressure and level controllers
09 associated with backup bearing water. System has
10 been revised and tested.

FACILITY STATUS		% POWER			OTHER STATUS		METHOD OF DISCOVERY		DISCOVERY DESCRIPTION	
11	G	0	0	0			a		NA	

FORM OF ACTIVITY RELEASED [E] CONTENT OF RELEASE [E] AMOUNT OF ACTIVITY NA LOCATION OF RELEASE NA

NUMBER				TYPE	DESCRIPTION
13	0	0	0	III	NA

NUMBER				DESCRIPTION			
1	4	0	0	0	NA		

15 N/A

TYPE		DESCRIPTION		
16	Z	NA	8311020344 760621	

17 | NA

18 NA

19 | _____

GPO 881-467



Public Service Company of Colorado
P. O. Box 361, Platteville, Colorado 80651



June 21, 1976
Fort St. Vrain
Unit No. 1
P-76140

Mr. E. Morris Howard, Director
Nuclear Regulatory Commission
Region IV
Office of Inspection and Enforcement
Suite 1000
Arlington, Texas 76012

REF: Facility Operating License
No. DPR-34

Docket No. 50-267

Dear Mr. Howard:

Enclosed please find a copy of Unusual Event Report No. 50-267/75/05A, Final, submitted per the requirements of the Technical Specifications.

Also, please find enclosed one copy of the Licensee Event Report for Unusual Event Report No. 50-267/75/05A.

Very truly yours,

Frederic E. Swart
Superintendent, Nuclear Production
Fort St. Vrain Nuclear
Generating Station

FES/alk

cc: Mr. Roger S. Boyd

COPY SENT REGION IV

6386

REPORT DATE: June 21, 1976

UNUSUAL EVENT 75/05A

Page 1 of 4

OCCURRENCE DATE: March 23, 1975

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO
P. O. BOX 361
PLATTEVILLE, COLORADO 80651

REPORT NO. 50-267/75/05A

Final

IDENTIFICATION OF
OCCURRENCE:

A situation occurred while testing the helium circulator backup bearing water system which resulted in "A" and "B" circulators automatically tripping off and the buffer indication on "C" and "D" circulators to drop resulting in operator action to set the brake and seal.

This is identified as an Unusual Event, per Technical Specification definition AC 7.6c, paragraph 3.

CONDITIONS PRIOR
TO OCCURRENCE:

<u>Steady State Power</u>	<u>Routine Shutdown</u>
<u>Hot Shutdown</u>	<u>Routine Load Change</u>
<u>X Cold Shutdown</u>	<u>Other (specify)</u>
<u>Refueling Shutdown</u>	<u></u>
<u>Routine Startup</u>	<u></u>

The major plant parameters at the time of the event were as follows:

Power	RTR <u>0</u>	MWth
	ELECT <u>0</u>	MWe
Secondary Coolant	Pressure <u>N/A</u>	psig
	Temperature <u>N/A</u>	°F
	Flow <u>N/A</u>	#/hr.
Primary Coolant	Pressure <u>85</u>	psig
	Temperature <u>~200</u>	°F Core Inlet
	<u>~200</u>	°F Core Outlet
	Flow <u>Helium circulator self-</u>	#/hr.
	<u>turbining</u>	

DESCRIPTION OF
OCCURRENCE:

The emergency feedwater header had been isolated via V-21453 in order to repair the pressure control for valve PV-21105. Upon completion of this repair, pressurization of the emergency feedwater header was initiated by slowly opening the isolation valve V-21453. The following events then occurred:

1. Helium circulators 1A and 1B tripped on negative buffer-mid-buffer differential pressure.
2. HV-2366-1 and HV-2366-2 changed from supplying makeup buffer gas to the helium circulators via the purified helium header, to the helium storage system. At a PCRV pressure of 85 psig helium density is barely sufficient to place the purified helium compressors in service. Loss of a major helium user such as circulator 1A and 1B buffer caused the purified helium compressor to trip and the automatic controls to switch to the high pressure helium storage system.
3. The bearing water surge tank pressure in both loops increased to 140 psi, causing the buffer return flows to drop to 0 on the remaining circulators. Circulator 1C buffer differential pressure decreased to 10" negative but did not trip. Circulator 1D buffer differential pressure dropped but did not go negative. The operator set the brake and seal on both of these circulators because the return flow was so low. The Rix recovery compressors were then set up to vent to atmosphere in order to get the bearing water surge tank pressure down. When surge tank pressure equalled reactor vessel pressure, 1C and 1D helium circulators were restarted.

APPARENT CAUSE
OF OCCURRENCE:

<u> X </u>	Design	<u> </u>	Unusual Service Cond. Including Environment
<u> </u>	Manufacture	<u> </u>	Component Failure
<u> </u>	Installation/Const.	<u> </u>	Other (specify)
<u> </u>	Operator	<u> </u>	
<u> </u>	Procedure	<u> </u>	

The increased pressure in the surge tanks due to the water inflow displaced helium from these tanks thereby increasing the buffer helium recirculation suction pressure. This reduced the buffer return flow from the helium circulators causing them to trip on buffer-mid-buffer.

ANALYSIS OF
OCCURRENCE:

It appears that PC-21105 failed to control as did PCV-2191 and PCV-2192. With these valves not operating while V-21453 was being opened, there was no control of the backup bearing water flow. The large amount of flow into the bearing water surge tanks caused a displacement of the helium from the surge tanks (due to a level increase). This helium flowed backward through the equalization line to the suction of the buffer helium recirculators, which caused reverse flow of the buffer return from the helium circulators. The reverse flow of buffer return caused a buffer-mid-buffer differential sufficiently negative to initiate the automatic circulator trips.

The level increase would not have occurred under normal circumstances because with the normal bearing water pumps tripped and bearing water supplied from the backup bearing water system, a feedforward signal from the control system would have opened the surge tank drain valves. Under these conditions, the possibility of high rate of change in the surge tank level and the reversal of return flow from the circulators, is eliminated.

CORRECTIVE
ACTION:

A test of the backup bearing water system was completed. This test, RT-356, was performed to verify that backup bearing water will function correctly and related transients are repeatable. This test was performed at (1) pressures simulating the most adverse requirements for backup bearing water, and (2) at the pressure which also causes the most adverse helium buffer-mid-buffer interactions.

The test of (1) was performed five (5) times, by simultaneously transferring all four circulators to backup bearing water. The results of the test results show that on the most severe transient there was a margin of 25 psid between the transient and the circulator trip point. All other test results show a larger margin.

The test of (2) was performed and the results show that the most severe differential pressure transient on the buffer-mid-buffer decreased but remained positive. The trip point is -9" water differential pressure. The results of test RT-356 verify the operability of the backup bearing water system and concludes this report.

No further corrective action is planned or required.

FAILURE DATA/
SIMILAR REPORTED OCCURRENCES:

Unusual Occurrence No. 50-267/75/02 reports a failure of PV-21105-1 in the backup bearing water system which occurred on April 10, 1975.

PROGRAMMATIC IMPACT:

None

CODE IMPACT:

None

Submitted by: Roger A. Hillyard, Jr.
H. W. Hillyard, Jr.
Technical Services Supervisor

Reviewed by: Larry Brey
H. Larry Brey
Superintendent, Operations

Approved by:

Frederic E. Swart
Frederic E. Swart
Superintendent, Nuclear Production

As further corrective action is planned or required

Training and

Supervision