P. O. Box 361, Platteville, Colorado 80651

October 17, 1975

10-23-75

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. 50-267/75/16, Final, submitted per the requirements of the Technical Specifications.

Very truly yours,

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

FES/alk

cc: Mr. Roger S. Boyd

12093

REPORT DATE: October 17, 1975

UNUSUAL EVENT 75/16

OCCURRENCE DATE: October 9, 1975

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

REPORT NO. 50-267/75/16

Final

IDENTIFICATION OF OCCURRENCE:

Apparent failure of control system for "C" circulator high pressure separator resulted in flooding of the high pressure separator.

In discussion with NRC on October 9, 1975, this was identified as an unusual event per section 7.6 of the Technical Specifications, paragraph (C) 2, Non-Routine Reports.

CONDITIONS PRIOR TO OCCURRENCE:

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

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

Power	RTR	0	MWth
	ELECT	0	MWe
Secondary	Pressure	2,700	psig
	Temperature	1,100	°F
	Flow	40,000	#/hr.
Primary Coolant	Pressure	-0.4	psig
	Temperature	104	°F Core Inlet
		106	°F Core Outlet
	Flow	42,000	#/hr.

DESCRIPTION OF OCCURRENCE:

On August 30, 1975, with "C" helium circulator operating at 4,000 rpm on the Pelton wheel drive, the reactor operator called the Results Department to report "C" high pressure separator flow was high.

Results Department personnel reported to the control room and found the reactor operator had placed HC-2176 ("C" circulator main drain valve controller) in manual and to the full open position. (See attached drawing for schematic of controls.)

Results went to check operation of PCV-2176 ("C" circulator main drain valve) and PDC-2176 local controller. Results also verified that LV-21304 ("C" high pressure separator drain valve was open and controlling level. PDV-2176 was full open and the setpoint on PDC-2176 was at -5 ΔP (equivalent to 3 psi or less from current to pneumatic converter, XEP-2176), which is a full open signal.

The air line from the XEP output (setpoint for PDC-2176) was leaking. The air line was repaired and PDV-2176 was then manually operated from HC-2176 in the control room and after satisfactory operation, was placed in "auto". The high pressure separator level and flow were controlling near normal.

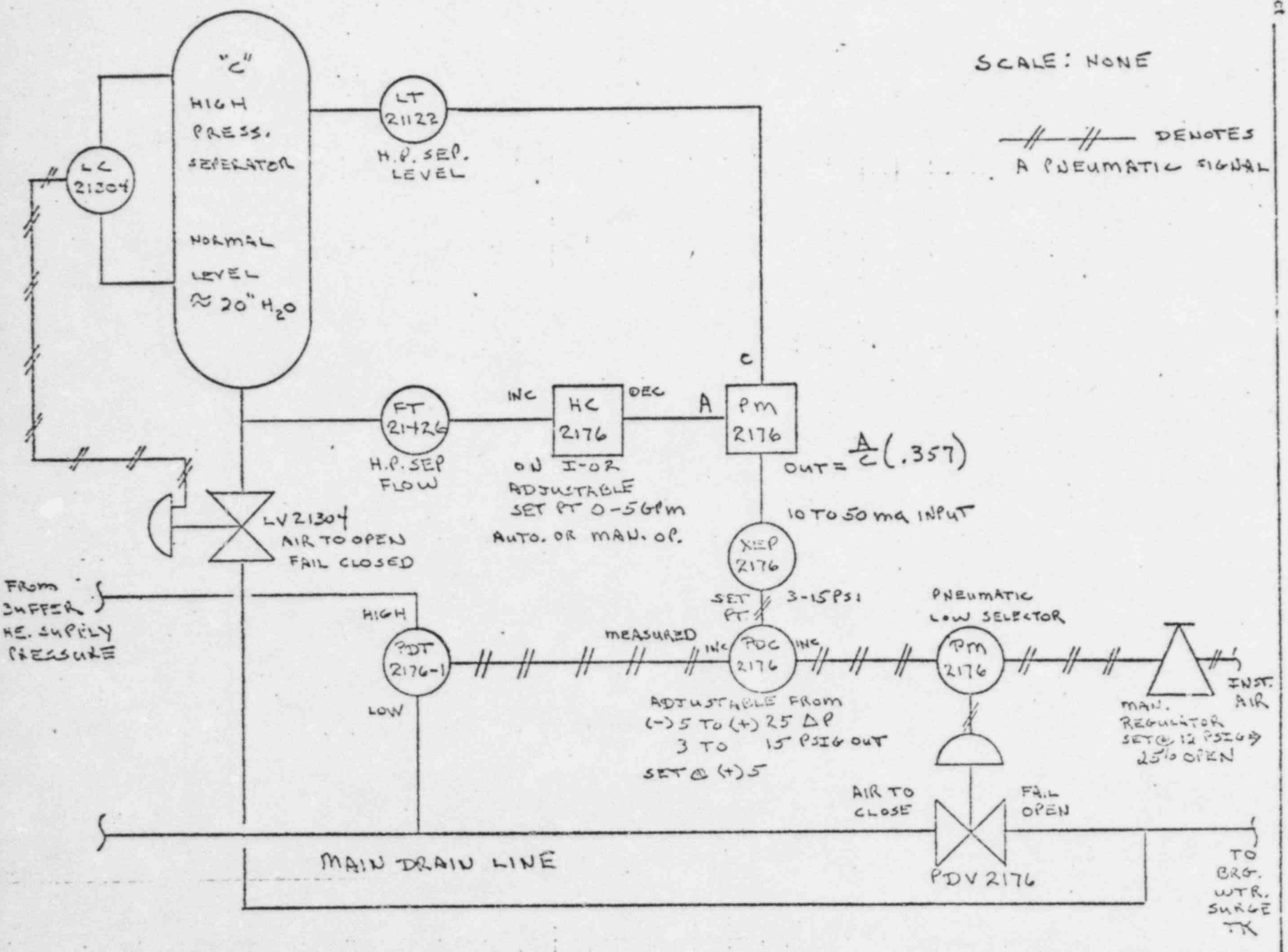
Approximately twenty minutes later "C" high pressure separator level began to rise. The reactor operator placed HC-2176 in manual and drove the output to "fully open" signal for PDV-2176. The high pressure separator level rose to 60", and the buffer/mid-buffer measurement was reduced to a slightly positive pressure.
This represented a flooded condition which persisted for about five minutes before the reactor operator manually tripped "C" circulator.

Since an increase in PCRV moisture level was observed, "D" circulator speed was increased to 4,000 rpm and the purification system flow was increased to 120 ACFM to remove the moisture and maximize system cleanup rate.

APPARENT CAUSE OF OCCURRENCE:

	Design		Unusual Service Cond. Including Environ.
	Manufacture		Component Failure
	Installation/Const.	X	Other (specify)
	Operator	Unable to identify cause.	
	Procedure		

It was first believed that a control offset signal was generated by a failure of the pneumatic low selector. A manual regulator in the system, set at 12 psig (equivalent to a 25% open position on PDV-2176) supplies an input to the low selector to prevent the main drain valve from going beyond 75% shut. However, no failures could be found to support this supposition.



FORM (W) 340-24-0650

Co.—Div. _____
City — Town _____
Dept. _____
By _____
Project _____

Sheet No. _____
Date _____
Job No. _____

ANALYSIS OF OCCURRENCE:

Analysis indicated that the high pressure separator flooding probably occurred during the manual stroking of PDV-2176 with the "C" circulator operating at 4,000 rpm. The valve was stroked after repairs were made on the broken air line to the XEP. Although PDV-2176 is a fail-open valve, a control signal offset could have caused the valve to fail shut. This could cause the high pressure separator to flood.

CORRECTIVE ACTION:

The low selector was removed, disassembled, inspected, and cleaned since failure of this component could be the only way PDV-2176 could have shut. No problems of any kind were found with the pneumatic low selector. The main drain control system and valve were completely checked out and operated under simulated conditions for all inputs. The system operated correctly as designed. LV-21304, high pressure separator drain valve, was observed to be operating properly.

FAILURE DATA/SIMILAR REPORTED OCCURRENCE:

None

PROGRAMMATIC IMPACT:

None

CODE IMPACT:

None

Submitted by: _____
Harvey W. Hillyard, Jr.
Technical Services Supervisor

Reviewed by: _____
H. Larry Brey
Superintendent, Nuclear Production

Approved by: _____
Frederic E. Swart
Superintendent, Nuclear Production