



**Public Service Company of Colorado**

16805 ROAD 19½  
PLATTEVILLE, COLORADO 80651

June 18, 1981  
Fort St. Vrain  
Unit No. 1  
P-81169

Mr. Karl V. Seyfrit, Director  
Nuclear Regulatory Commission  
Region IV  
Office of Inspection and Enforcement  
611 Ryan Plaza Drive  
Suite 1000  
Arlington, Texas 76012



Reference: Facility Operating License  
No. DPR-34

Docket No. 50-267

Dear Mr. Seyfrit:

Enclosed please find a copy of Reportable Occurrence Report No. 50-267/81-008, Preliminary - Corrected and Additional Information, submitted per the requirements of Technical Specification AC 7.5.2(b)1 and AC 7.5.2(b)2.

Also, please find enclosed one copy of the Licensee Event Report for Reportable Occurrence Report No. 50-267/81-008.

Very truly yours,

*Don Warembourg*  
Don Warembourg  
Manager, Nuclear Production

DW/clis

Enclosure

cc: Director, MIPC

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1/1

REPORT DATE: June 18, 1981  
Determined  
OCCURRENCE DATE: January 20, 1981

REPORTABLE OCCURRENCE 81-008  
ISSUE 1  
Page 1 of 7

FORT ST. VRAIN NUCLEAR GENERATING STATION  
PUBLIC SERVICE COMPANY OF COLORADO  
16805 WELD COUNTY ROAD 19 1/2  
PLATTEVILLE, COLORADO 80651

REPORT NO. 50-267/81-008/03-X-1

Preliminary - Corrected  
and Additional Information

IDENTIFICATION OF  
OCCURRENCE: \_\_\_\_\_

| Routine surveillance testing of the primary coolant programmed  
| pressure scram revealed that the three pressure transmitters were out  
| of calibration and could have allowed operation with trip setpoints  
| less conservative than required by LCO 4.4.1, Table 4.4-1.

This is reportable per Fort St. Vrain Technical Specification  
AC 7.5.2(b)1 and AC 7.5.2(b)2.

EVENT  
DESCRIPTION: \_\_\_\_\_

| While the reactor was in a shutdown condition, instrument personnel  
| performing the the annual calibration of the primary coolant pressure  
| scram channels observed that the three pressure transmitters were out  
| of calibration in the nonconservative direction. This could have  
| resulted in the low pressure scram trips occurring at lower pressures  
| than allowed by the LCO requirements.

| See Figure 1. The output voltage from the pressure element ① goes  
| to the pressure transmitter ② which supplies a measured signal to  
| the pressure switch high ③ and the pressure switch low ④ .

| The high and low pressure bistables ③ and ④ are programmed by  
| circulator inlet temperature through an auctioneer circuit 5 and  
| bistable setpoint programmers ⑥ or ⑦ .

| The high pressure bistable ③ provides a trip signal to both loop  
| shutdown and steam/water dump (2 of 3) circuitry ⑧ and a scram to  
| the appropriate channel ⑨ . (Channel "A" in Figure 1) This trip  
| circuitry is designed to provide protection in the event that  
| moisture monitor trip circuitry fails to operate a loop trip  
| steam/water dump and scram on high moisture levels, resulting from a  
| rupture of the secondary coolant system.

| The low pressure bistable ④ provides a scram function only ⑨ .

| The programmed pressure temperature curve is shown in Figure 2. The  
| high output voltage from the pressure transmitters could have

resulted in the low pressure trips occurring below the allowable low pressure curve (line (B)(B)). The high pressure trips would have occurred below the high pressure trip curve (line (A)(A)) in a conservative direction.

See Table 1 for "As Found", "As Left" data and equivalent pressures.

Table 2 lists the equivalent pressure (psia), the "As Found" output of each of the three pressure transmitters (PT's) and the differential pressure between the expected output and the "As Found" output of each of the three PT's.

TABLE 2

Pressure PSIA	PT "As Found" Output Voltage - Equivalent Pressure (PSIA)			$\Delta P$		
	1108	1109	1110	1108	1109	1110
412	417	406	415	①	①	①
512	521	521	519	+9	+9	①
550	560	561	560	+10	+11	+10
612	622	624	628	+10	+12	+16
621	632	634	632	+11	+13	+11
661	670	676	671	+9	+15	+10
712	723	728	729	+11	+16	+17
720	731	736	735	+11	+16	+15
*740	751	*759	744	+11	*+19	①
812	823	825	818	+11	+13	①

① Not applicable - PT's in tolerance.

\*See Example

With the circulator inlet temperatures reading correctly, then the low reactor pressure trip curve would be line (B)(B) Figure minus the  $\Delta P$  of the particular transmitter.

For Example:

Pressure = 740 psia  
PT-1109 "As Found" Voltage/Equivalent Pressure = 759 psia  
PT-1109  $\Delta P$  = +19  
Line (B)(B), Figure 2, approximately equal to 627 psia.  
Then,  $627 - 19 = 608$  psia for a low pressure scram to occur from PT-1109.

Although the low pressure trips could have occurred at a value less conservative than that established in the Technical Specifications,

they would not prevent the fulfillment of the functional requirements of the system.

CAUSE  
DESCRIPTION:

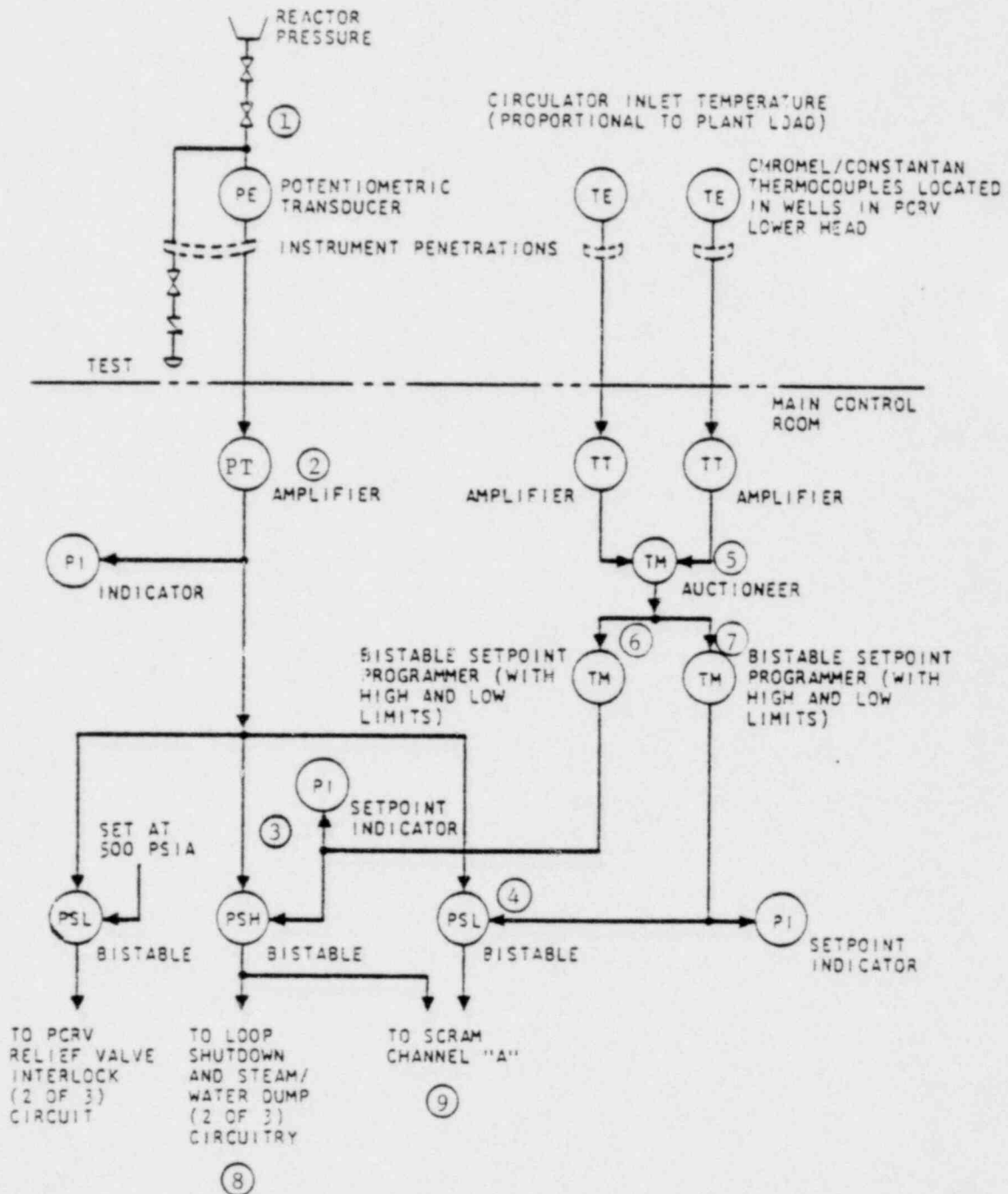
| The high output voltages from the pressure transmitters were due to  
| instrument drift of the pressure transmitters.

CORRECTIVE  
ACTION:

The pressure transmitters were calibrated during the procedure, returned to service, and the Surveillance Test was successfully completed.

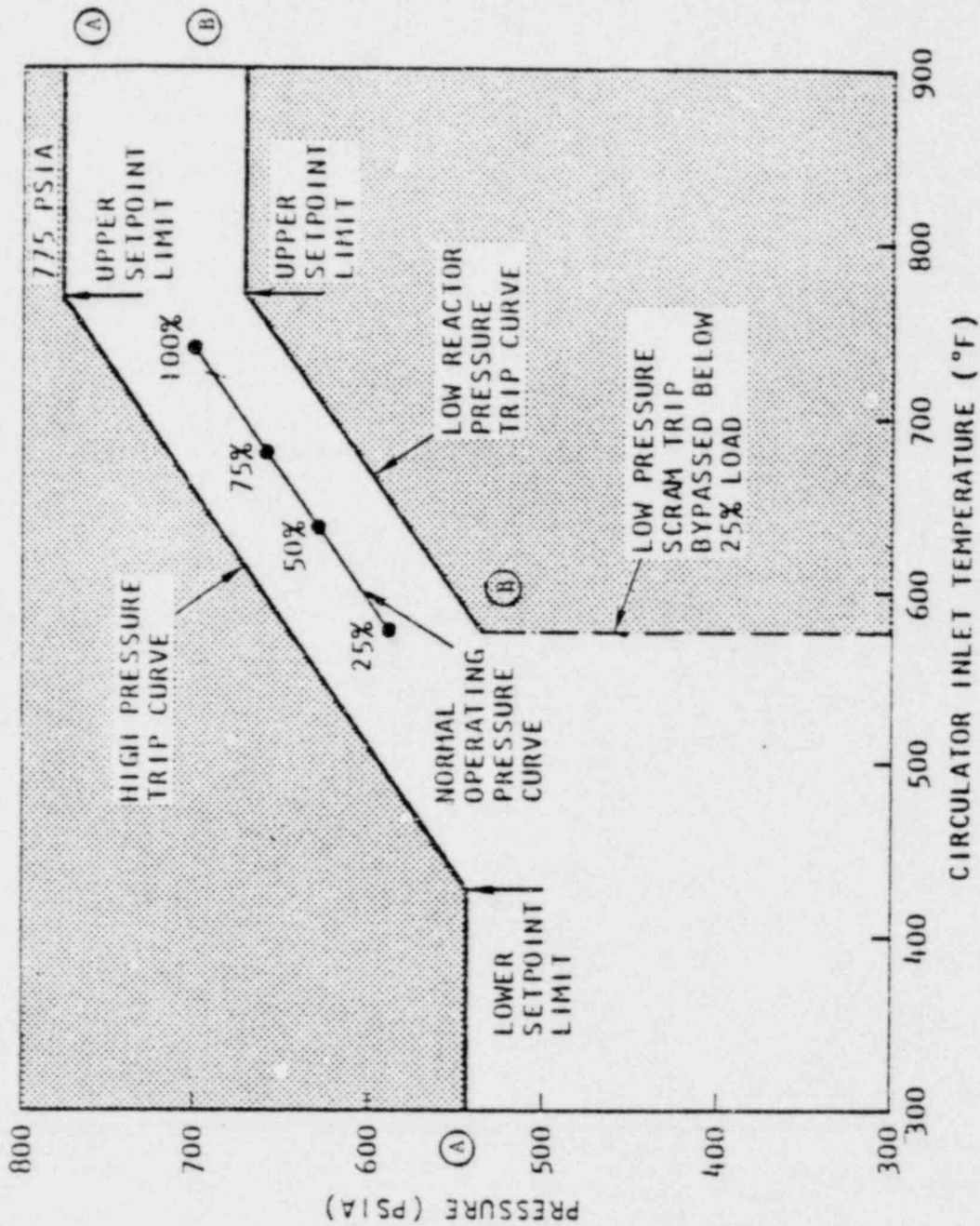
| Once a month (while the reactor is pressurized above 400 psia), on a  
| temporary basis, the pressure transmitter voltage outputs will be  
| checked against reactor pressure to determine if further instrument  
| drift is occurring. The monthly test will be conducted until the  
| next regularly scheduled surveillance calibration is required or  
| until it is determined that instrument drift is not occurring.

The results will be included in a future supplemental report.



Reactor pressure instrument channel (typ. for channels B&C)

FIGURE 1



Programmed reactor pressure high-low trip points

FIGURE 2



PRESSURE TRANSMITTER CALIBRATION DATA

APPLIED PRESSURE PSIG ( $\pm 0.5$ )	EXPECTED OUTPUT VDC ( $\pm 0.075$ )	EQUIVALENT ABSOLUTE PRESSURE (PSIA) ( $\pm 0.5$ )	PT 1108		PT 1109		PT 1110	
			AS FOUND VDC	AS LEFT VDC	AS FOUND VDC	AS LEFT VDC	AS FOUND VDC	AS LEFT VDC
400	4.124	412	4.171	4.077	4.061	4.084	4.151	4.121
500	5.124	512	5.215*	5.109	5.212*	5.093	5.190	5.142
538	5.504	550	5.604*	5.493	5.610*	5.481	5.595*	5.490
600	6.124	612	6.225*	6.102	6.245*	6.102	6.283*	6.148
609	6.214	621	6.321*	6.201	6.338*	6.194	6.323*	6.201
649	6.614	661	6.703*	6.611	6.761*	6.606	6.713*	6.650
700	7.124	712	7.236*	7.108	7.277*	7.111	7.288*	7.152
708	7.204	720	7.310*	7.182	7.357*	7.189	7.355*	7.249
728	7.404	740	7.514*	7.385	7.595*	7.399	7.438	7.421
800	8.124	812	8.235*	8.113	8.249*	8.120	8.185	8.063

\*Readings which are out of limits.

TABLE 1

Prepared By: Asa B. Reed  
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