Public Service Company of Colorado

16805 ROAD 19½
PLATTEVILLE, COLORADO 80651

February 3, 1981
Fort St. Vrain
Unit No. 1
P-81038

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. 50-267/81-007, Final, submitted per the requirements of Technical Specification AC 7.5.2(a)2.

Also, please find enclosed one copy of the Licensee Event Report for Reportable Occurrence Report No. 50-267/81-007.

Very truly yours,

Don Warembourg
Manager, Nuclear Production

DW/cls

Enclosure

cc: Director, MIPC

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

REPORT NO. 50-267/81-007/01-T-0

Final

IDENTIFICATION OF OCCURRENCE:

On Tuesday, January 20, 1981, while evaluating PCRV cooling water system temperature data in preparation of a reportable occurrence for a degraded mode of LCO 4.2.15(e), it was determined that the minimum average of the inlet and outlet cooling water temperatures in Loop 2 were less than 100°F from approximately 0400 hours on January 8, 1981, until approximately 1000 hours on January 10, 1981.

This event is reportable per Fort St. Vrain Technical Specification AC 7.5.2(a)2.

CONDITIONS PRIOR TO OCCURRENCE:

Cold shutdown.

THE MAJOR PLANT PARAMETERS AT THE TIME OF THE EVENT WERE AS FOLLOWS:

Reactor Power	0 MWt, 0%
Primary Coolant	
Pressure 300 PSIA	300 PSIA
Temperature Circulator Inlet	85°F
Temperature Core Outlet	120°F
Total Flow	144,000 #/hour 4.1%
Secondary Coolant	
Pressure	232 PSIG
Temperature	111°F
Flow	176,000 #/hour, 7.7%
Electrical	0 MWe, 0.0%

DESCRIPTION OF
OCCURRENCE:

At 0430 hours on January 8, 1981, the average of the inlet and outlet water temperature of the PCRV liner cooling system Loop 2 decreased below 100°F.

At 2330 hours on January 8, 1981, the Loop 1 average also dropped below 100°F. Loop 1 increased to 100°F at 0415 hours on January 9, 1981.

Loop 2 increased to 100°F at 1000 hours on January 10, 1981.

Fort St. Vrain Technical Specification LCO 4.2.15 states "The temperature of the PCRV cooling water system shall be maintained within the limits stated below, irrespective of whether the reactor is operating or shutdown:" One of the limits states; "The minimum average of the inlet and outlet cooling water temperatures shall be greater than or equal to 100°F."

No time limit is specified in LCO 4.2.15; however, Section 4.0 of the Technical Specifications allows a 24 hour period for correction of an LCO violation if no other time limit is specified.

The Loop 1 event, corrected within 24 hours, constitutes operation in a degraded mode allowed by an LCO and is reported as such in accordance with Section AC 7.5.2(b)2 of the Fort St. Vrain Technical Specifications.

The Loop 2 event extended for more than 24 hours and constitutes operation of a system with a parameter subject to a limiting condition less conservative than the least conservative aspect of the limiting condition for operation established in the Technical Specifications. This event is reported in accordance with AC 7.5.2(a)2 of the Fort St. Vrain Technical Specifications.

APPARENT CAUSE
OF OCCURRENCE:

Personnel error.

ANALYSIS OF
OCCURRENCE:

The reactor was shutdown on December 31, 1980, and cooled down to approximately 115°F on January 1, 1981. The primary coolant temperature was reduced further on January 6, 1981, to about 100°F, and on January 7, 1981, to approximately 80°F.

ANALYSIS OF
OCCURRENCE: (Cont'd)

During shutdown conditions, the PCRV liner cooling system continues to remove heat from the PCRV, but the heat removal rate is reduced by warming the inlet water with steam coils in the surge tanks.

The cooling water side of the PCRV liner cooling heat system heat exchanger was isolated on January 2, 1981, to reduce system heat loss, and steam was placed on the surge tank January 3, 1981. Because of primary coolant temperatures, there was little, if any, heat transfer to the PCRV cooling system from that source, and after the reduction on January 7, 1981, there may have been some heat loss to the primary coolant.

The Technical Specification LCO 4.2.15 places limits on the PCRV cooling water temperature in order to maintain the PCRV integrity. One of these limits requires that the average of the inlet and outlet cooling water temperature be greater than or equal to 100°F to ensure liner operation above the fracture transition elastic temperature.

The average of the PCRV liner cooling system Loop 2 inlet and outlet water temperature was 101.25°F at 0000 hours on January 8, 1981, but was decreasing and went below 100°F at approximately 0430 hours. Loop 1 average temperature was 100°F at 2200 hours January 8, 1981, but was below 100°F at about 2330 hours.

It is not possible to determine if the cooling water system temperature decrease was due to increased heat loss from the system or decreased heat input via the surge tanks. Probably, the decrease below 100°F resulted from a combination of these causes.

At 0130 hours, January 9, 1981, the out of limit condition was noticed by an operator, and the steam supply to the surge tank heating coils was increased. The increase in system heat input was sufficient to bring Loop 1 inlet and outlet water temperature average back above 100°F by approximately 0415 hours on January 9, 1981.

Loop 2, however, was colder (average = 96.25°F, the lowest temperature reached) and had been below 100°F for about 21 hours by the time the heat input was increased. The increase in steam supply increased the average temperature, but not sufficiently to bring it back above 100°F within the 24 hours allotted by the LCO. Loop 2 continued to operate with an inlet water, outlet water temperature average below 100°F until 1000 hours on January 10, 1981.

Loop 1 was below 100°F for about 4.75 hours while Loop 2 was below 100°F for about 53.5 hours.

CORRECTIVE ACTION:

The Loop 1 degraded condition was corrected by increasing the steam supply pressure to the system surge tanks.

The Loop 2 condition was corrected when the average water temperature increased above 100°F. No specific cause for the correction can be identified.

Correct operation of the PCRV liner cooling system during all conditions will be reviewed with all Licensed Operators by the Training Department.

A request has been sent to the Nuclear Project Department to evaluate the effects, if any, on the PCRV top head liner material as a result of the low cooling water temperature in Loop 2.

No further corrective action is anticipated or required.

FAILURE DATA/SIMILAR REPORTED OCCURRENCES:

None

PROGRAMMATIC IMPACT:

None

CODE IMPACT:

None

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