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

REPORT NO. 50-267/79-02/03-L-0

Preliminary

IDENTIFICATION OF OCCURRENCE:

On January 27, 1979, operation in a degraded mode of LCO 4.2.10 and LCO 4.2.11 resulted during repairs to the seat of a buffer helium dryer purge valve. Operation in a degraded mode of LCO 4.2.10 again occurred on January 27, 1979, and January 30, 1979, during the return to power operation.

These events are reportable per Fort St. Vrain Technical Specification AC 7.5.2(b)2.

EVENT DESCRIPTION:

At about 1630 hours on January 27, 1979, Operations personnel observed that leakage past the seat of a buffer helium dryer purge valve had developed. The buffer helium dryer was bypassed and a reduction in reactor power from 62% to 41% was begun in anticipation of an increase in the primary coolant moisture and oxidant concentrations (refer to Figure 1, Point (1) . By 1700 Hours, Point (2) , the oxidant concentration had risen to 10.0 volume parts per million (10.0 vpm). Although reactor power was being reduced at that time, the core average outlet temperature did not decrease below 1,200°F until about 1815 hours. Therefore, operation in a degraded mode of LCO 4.2.10 resulted.

While repairs were being made to the purge valve, the primary coolant moisture concentration continued to increase. By 2000 hours, the reactor dew point exceeded the limits of LCO 4.2.11, Figure 4.2.11-1. Reactor power was further reduced to 32% to decrease the core average outlet temperature. The primary coolant moisture concentration returned to within the specifications of LCO 4.2.11 at 0200 hours on January 28, 1979.

At 0600 hours on January 28, 1979, reactor power was increased to 42% to aid in removal of moisture from the reactor core graphite. This power level was maintained until the moisture concentration could be reduced.

The total oxidant and moisture concentration had decreased to 15.0 vpm and 0.6 vpm, respectively, by 0800 hours on January 29, 1979. Because as much moisture as possible had been removed for the existing plant conditions, reactor power was increased to 60% and the core average outlet temperature again exceeded 1,200°F (Point (3)).

EVENT
DESCRIPTION (continued):

The increase in the primary coolant temperature caused residual moisture to be removed from the core graphite and an increase in the total oxidant concentration to about 25 vpm. Because this concentration persisted, the reactor power was again reduced to 42% at 2040 hours (Point (4)). The core average outlet temperature was again less than 1,200°F by 2125 hours.

On January 30, 1979, at 0800 hours, reactor power was raised to 60% while the oxidant concentration was at 10.8 vpm and on a downward trend (Point (5)). At 1338 hours (Point (6)), while performing electrical maintenance, a voltage transient caused a reactor scram. No further degraded mode operations of LCO 4.2.10 or LCO 4.2.11 have occurred to date.

CAUSE
DESCRIPTION:

Normally, dry helium from the buffer helium dryer is supplied to the circulator upper journal bearing seals at a pressure slightly higher than primary coolant pressure. By design, approximately half of the buffer helium enters the PCRV, and the other half is returned to the buffer helium dryer where moisture picked up from the journal bearing water cavities is removed.

When the buffer helium dryer purge valve developed seat leakage it was necessary to bypass the dryer to perform repairs. When the dryer is bypassed, some moist buffer helium can enter the PCRV via the circulator seals resulting in an increase in the primary coolant moisture and oxidant concentrations.

The cause of the purge valve seat leakage was a cracked seat insert. The insert was replaced in kind and the buffer helium dryer returned to normal operation.

The cause for the failure of the disc insert has not been determined. This is the third occurrence of this type since December 24, 1978, (reference Reportable Occurrence Report No. 50-267/78-39/03-L-0).

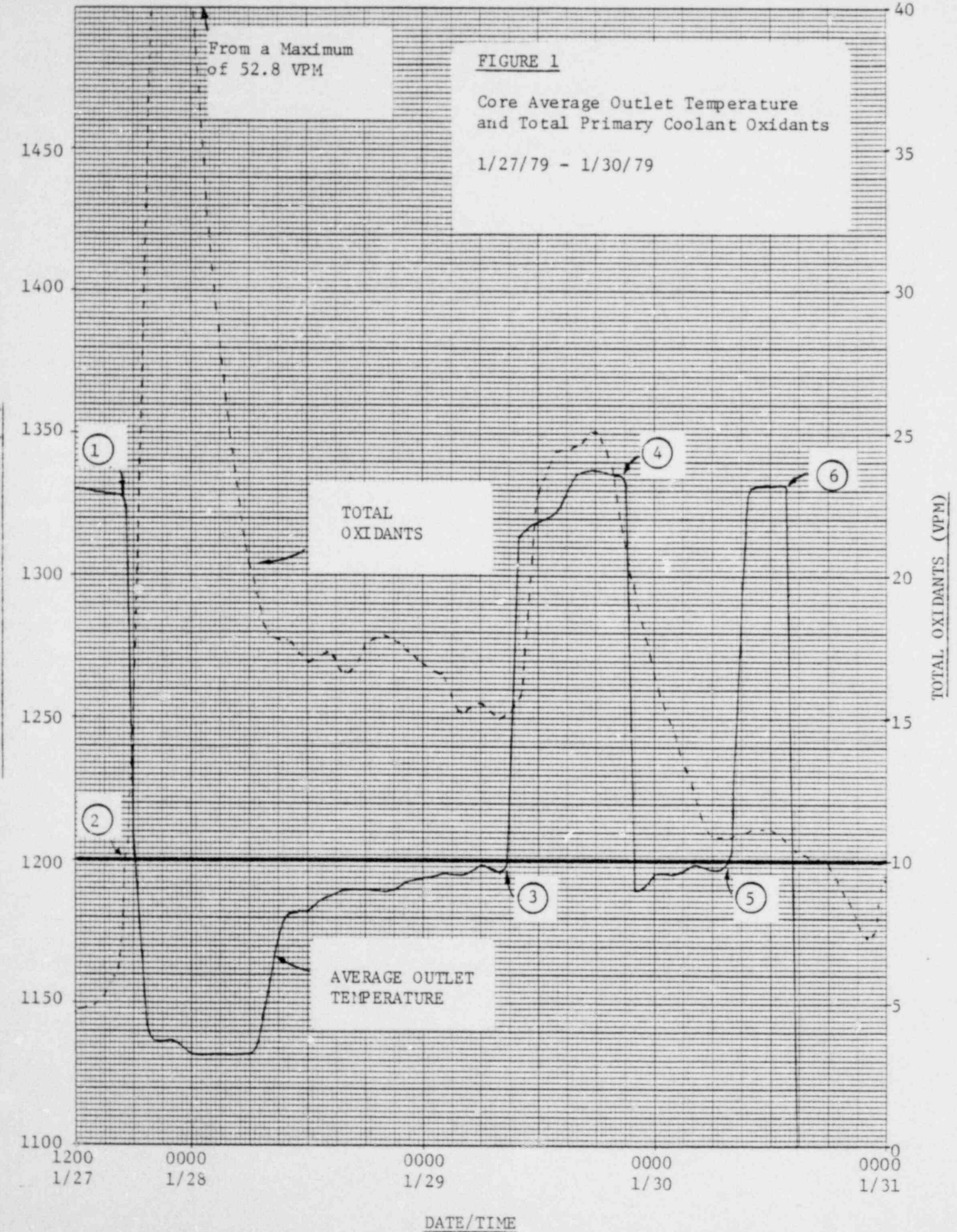
CORRECTIVE
ACTION:

For the event of January 27, 1979, reactor power was reduced to 32% to decrease the core average outlet temperature. Buffer helium supply and return flows to the circulators were approximately equalized to reduce the amount of moisture introduced into the PCRV via the circulator upper journal bearing seals. Monitoring of the primary coolant moisture concentration was increased to 10 minute intervals. The faulty valve was repaired and the buffer helium dryer returned to service.

The core average outlet temperature was maintained below 1,200°F while the purification system removed the oxidant impurities. Reactor power was not increased until the moisture concentration had been reduced as much as possible for the plant conditions.

CORRECTIVE
ACTION (continued):

The reason for the recent failures of the purge valve seat inserts has not yet been determined. Results of an investigation into the problem will be included in a final supplement to this report.


From a Maximum of 52.8 VPM
FIGURE 1
Core Average Outlet Temperature and Total Primary Coolant Oxidants
1/27/79 - 1/30/79
TOTAL OXIDANTS
AVERAGE OUTLET TEMPERATURE
1
2
3
4
5
6
CORE AVERAGE OUTLET TEMPERATURE (°F)
1450
1400
1350
1300
1250
1200
1150
1100
TOTAL OXIDANTS (VPM)
40
35
30
25
20
15
10
5
0
1200 1/27
0000 1/28
0000 1/29
0000 1/30
0000 1/31
DATE/TIME

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(7-77)

LICENSEE EVENT REPORT

CONTROL BLOCK: | | | | | | | (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1	LICENSEE CODE: C O F S V 1 (2)	LICENSE NUMBER: 0 0 - 0 0 0 0 0 - 0 0 (3)	LICENSE TYPE: 4 1 1 2 0 (4)	CAT: (5)	
CON'T 0 1	REPORT SOURCE: L (6)	DOCKET NUMBER: 0 5 0 0 0 2 6 7 (7)	EVENT DATE: 0 1 2 7 7 9 (8)	REPORT DATE: 0 2 2 6 7 9 (9)	

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 2 On January 27, 1979, operation in a degraded mode of LCO 4.2.10 and LCO 4.2.11 re-
0 3 sulted during repairs to the seat of a buffer helium purge valve. Operation in a
0 4 degraded mode of LCO 4.2.10 occurred on January 29 and January 30, 1979, during the
0 5 return to power operation. These conditions are reportable per Fort St. Vrain Tech-
0 6 nical Specification AC 7.5.2(b)2.
0 7
0 8

	SYSTEM CODE	CAUSE CODE	CAUSE SUBCODE	COMPONENT CODE	COMP. SUBCODE	VALVE SUBCODE
0 9	C B (11)	E (12)	F (13)	V A L V E X (14)	F (15)	D (16)

(17) LER/RO REPORT NUMBER	EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE	REPORT TYPE		REVISION NO.
	7 9	—	0 0 2	/	0 3	L	—	0

ACTION TAKEN	FUTURE ACTION	EFFECT ON PLANT	SHUTDOWN METHOD	HOURS (22)	ATTACHMENT SUBMITTED	NPRD-4 FORM SUB.	PRIME COMP. SUPPLIER	COMPONENT MANUFACTURER
A (18)	X (19)	B (20)	Z (21)	0 0 7 0	Y (23)	N (24)	N (25)	V 0 8 0 (26)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 Leakage past the valve seat insert of Velan Model P-33876-N/78R valve required by-
1 1 pass of buffer helium dryer. Third failure of this type. Refer to RO 78-39/03-L-0.
1 2 Investigation into cause of problem will be reported in final supplement to this
1 3 report.
1 4

	FACILITY STATUS	% POWER	OTHER STATUS (30)	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION (32)
1 5	E (28)	0 6 2 (29)	N/A	A (31)	Operator Observation

	ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY (35)	LOCATION OF RELEASE (36)
1 6	Z (33)	Z (34)	N/A	N/A

PERSONNEL EXPOSURES

	NUMBER	TYPE	DESCRIPTION (39)
1 7	0 0 0 (37)	Z (38)	N/A

PERSONNEL INJURIES

	NUMBER	DESCRIPTION (41)
1 8	0 0 0 (40)	N/A

LOSS OF OR DAMAGE TO FACILITY (43)

	TYPE	DESCRIPTION
1 9	Z (42)	N/A

PUBLICITY (45)

	ISSUED	DESCRIPTION	NRC USE ONLY
2 0	N (44)	N/A	

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