

LICENSEE EVENT REPORT

CONTROL BLOCK:

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(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

0 1 8 9 C O F S V 1 14 2 15 0 0 - 0 0 0 0 0 - 0 0 25 3 26 4 1 1 2 0 4 57 CAT 58 5

LICENSEE CODE LICENSE NUMBER LICENSE TYPE

DON'T

REPORT SOURCE L 6 0 5 0 1 0 0 2 6 7 7 0 6 2 6 7 9 8 7 9 0 7 1 0 80
60 61 DOCKET NUMBER 68 69 EVENT DATE 74 75 REPORT DATE 80

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)	
02	While operating at 1.5% thermal power and zero electrical power, fault current trip
03	on non-essential 480 volt switchgear 5 occurred. This resulted in a reactor scram
04	and 15 minute interruption of reactor cooling. Reportable per Technical Specification
05	AC 7.5.2(a)5. Did not effect public health of safety. Similar events RO 76-01 and
06	RO 77-14.

0	7
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0 8

7 8 9

0 9

SYSTEM CODE

E D (11)

CAUSE CODE

X (12)

CAUSE SUBCODE

X (13)

COMP. SUBCODE

Z (14)

VALVE SUBCODE

Z (15)

REVISION

17	LER RO REPORT NUMBER	EVENT YEAR	21	7	9	22	23	24	0	1	7	26	27	28	0	1	29	30	T	31	32	0																			
	ACTION TAKEN	FUTURE ACTION	18	Z	19	33	34	EFFECT ON PLANT	35	Z	20	36	SHUTDOWN METHOD	37	C	21	38	HOURS	39	0	0	0	0	40	41	Y	23	42	N	24	43	Z	25	44	Z	9	9	9	9	47	26

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS	
1 0	Resin barrels being flushed with feedwater. Hose coupling separated and sprayed water
1 1	into switchgear causing a phase to phase short circuit which resulted in bus voltage
1 2	perturbation and trip of normal bearing water pumps. Re-established forced circula-
1 3	tion. See attachment for additional corrective action.

14 _____ 80

7 8 9
FACILITY STATUS
1 5 E 28
% POWER 0 0 1 29
OTHER STATUS 30 N/A
METHOD OF DISCOVERY A 31
DISCOVERY DESCRIPTION 32 Operator Observations

ACTIVITY CONTENT
RELEASED OF RELEASE AMOUNT OF ACTIVITY (35) LOCATION OF RELEASE (36)

1 6 | Z | (33) | Z | (34) | N/A | N/A

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

7		8		9		11		12		13	
PERSONNEL INJURIES		NUMBER		DESCRIPTION		(41)					
0	0	0	0	0	0	0	0	0	0	0	0
										444 275	

7 8 9 11 12
LOSS OF OR DAMAGE TO FACILITY (43)
TYPE DESCRIPTION
1 2 3 4 5 6 7 8 9 10 11 12
N/A

1 9 7 8 9 10
PUBLICITY (42)
ISSUED DESCRIPTION (45)
7907130391

2 0 N (44) N/A 68 69 8
7 8 9 10
NAME OF PREPARER J. W. Gahm PHONE (303) 785-2253

POOR ORIGINAL

7907130391

J. W. Gahm

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REPORT DATE: July 10, 1979

REPORTABLE OCCURRENCE 79-17

OCCURRENCE DATE: June 26, 1979

ISSUE 0

Page 1 of 7

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

REPORT NO. 50-267/79-17/01-T-0

Final

IDENTIFICATION OF
OCCURRENCE:

On Tuesday, June 26, 1979, while operating the plant at approximately 1.5% of rated power, a fault current trip on non-essential 480 volt switchgear 5 occurred. This resulted in a reactor scram and 15 minute interruption of reactor cooling.

This is reportable per Fort St. Vrain Technical Specification AC 7.5.2(a)5.

CONDITIONS PRIOR
TO OCCURRENCE:

Steady State Power

DESCRIPTION OF
OCCURRENCE:

Conditions Prior to Event

Reactor critical at approximately 1.5% power.

Circulators: 1A on steam turbine drive at 1,500 rpm.
1B self-turbining.
1C self-turbining.
1D on steam turbine drive at 1,500 rpm.

Total primary coolant flow 12%.

Average circulator inlet temperature 290°F.

Average core outlet temperature 462°F.

Reactor pressure 385 psia.

1A boiler feed pump supplying feedwater at approximately 1,000 psig and 150,000 pounds per hour per loop.

444 276

DESCRIPTION OF
OCCURRENCE (continued):

Conditions Prior to Event (continued):

Electrical plant configuration as shown on Figure 1 and described below:

Main generator disconnect links open.

House power being supplied by backfeeding from the unit auxiliary transformer (UAT) to 4160 volt switchgears 1 and 3.

4160 volt switchgear 1 to 2 bus tie circuit breaker closed.

Two normal bearing water pumps operating in each loop.

Backup bearing water not in service, nor required by Technical Specifications.

Conditions Which Lead Up to Event

Time: From 1600 to 1700 Hours. Operations and Chemistry personnel were adding new resin to the cation tank from level 6 in the turbine building (Elevation 4811') at the funnel used for resin addition.

The resin barrels were being flushed with feedwater and a hose was connected to the barrel by a Chicago coupling.

Time: Approximately 1720 Hours. The personnel adding the resin left the area to get another barrel of resin. When they returned, they noticed that the coupling had come loose and water was being sprayed onto the 480 volt switchgear 5 cabinet. The water was secured and a visual inspection of the exterior of the switchgear indicated that no problems existed. No unusual odors were detected nor were any temperature changes on the switchgear noticed, so flushing continued.

Event

Time: 1724 Hours. 480 volt switchgear 5 tripped due to a short circuit caused by water spray from the hose which was being used for resin barrel flushing. Two phases on the transformer were blown.

An explosion accompanied by yellow and gray smoke was noted by the personnel near the switchgear.

Upon observing the explosion and smoke from the switchgear, the personnel working near the switchgear notified the control room.

DESCRIPTION OF
OCCURRENCE (continued):

Event (continued):

Time: 1724 Hours (continued). The high and low side breakers on the 4160/480 volt transformer tripped. This was verified locally by the personnel working near the switchgear.

The emergency was announced and the fire alarm was sounded. When the shift supervisor arrived on the scene, he determined that there was no fire in 480 volt switchgear 5.

The reactor operator placed the handswitches for the circuit breakers to the affected transformer in the pull-to-lock position, assuring that the breakers remained tripped.

The fault on 480 volt switchgear 5 was reflected into the 4160 volt buses and 480 volt buses resulting in a decrease in 480 volt bus voltage before the high and low side breakers on switchgear 5 tripped to isolate the transformer.

As a result of the voltage drop on the 480 volt buses, the voltage relays installed to trip/inhibit the normal bearing water pump breakers on a loss of 480 volt essential buses were de-energized. This tripped both operating bearing water pumps in each loop. Since backup bearing water was not in operation, nor required by LCO 4.2.1 or LCO 4.2.2, all four circulators tripped on loss of bearing water.

A Loop 1 shutdown and two loop trouble scram automatically occurred.

The temporary auxiliary boiler tripped causing an interruption of steam flow to the 1A boiler feed pump and subsequent decrease in feedwater flow to Loop 2 steam generators. Condenser vacuum was lost as well as operation of startup bypass valves, PV-22129-1 and PV-22130-1.

The yellow lights on Channels A and B of the Plant Power Loss modules were on indicating that low voltage had occurred on 480 volt buses 1 and 2. No automatic emergency diesel generator operation occurred nor was any required since the condition was not a loss of voltage, but a voltage fluctuation.

The primary coolant flow was interrupted for a period which lasted 15 minutes.

APPARENT CAUSE
OF OCCURRENCE:

Water spray into switchgear as a result of hose coupling separation caused short circuit and bus voltage perturbation.

ANALYSIS OF
OCCURRENCE:

The 480 volt switchgear 5 is located in the turbine building on level 6 (Elevation 4811') and feeds non-essential motor control centers in the reactor building and turbine building. Located in the switchgear is a 4160 volt to 480 volt transformer. After water sprayed into the switchgear (and the transformer), a phase to phase short circuit occurred which blew two phases of the high (4160 volt) side of the transformer and cables between the switchgear and the bus. Since the fault which occurred was phase to phase and not phase to ground, the high side circuit breaker overcurrent trip was not instantaneous, but delayed per the design intent. Therefore, a voltage decrease was reflected onto 4160 volt switchgears 1 and 2 and all 480 volt buses before the high and low (480 volt) side circuit breakers on switchgear 5 tripped to isolate the transformer.

As a result of the voltage drop on the 480 volt buses, the voltage relays installed to trip/inhibit the normal bearing water pump circuit breakers and initiate backup bearing water (BUEW) on a loss of 480 volt essential buses were de-energized or dropped out. This tripped both of the operating bearing water pumps in each loop. Since backup bearing water was not in operation, nor required by LCO 4.2.1 or LCO 4.2.2, all four circulators tripped on loss of bearing water.

A Loop 1 shutdown and two loop trouble scram automatically occurred.

The temporary auxiliary boiler tripped causing a loss of steam flow to the 1A boiler feed pump and subsequent decrease in feedwater flow to the Loop 2 steam generators. The 1A boiler feed pump was the only feedwater pump in service at the time.

No automatic emergency diesel generator operation occurred nor was any required since the condition was not a loss of voltage but a voltage fluctuation. Therefore, no conditions existed on the reserve auxiliary transformer which would have necessitated emergency diesel generator operation.

A request for a revision to Specification LCO 4.2.18, Primary Coolant Depressurization, was sent to the Nuclear Regulatory Commission January 3, 1979, in our letter P-79001. The proposed revision to the basis of the LCO and the curves attached to the proposal illustrate that a significant increase in time is allowed for starting of depressurization with an average core outlet temperature less than 1,000°F. Refer to Figure 4.2.18-2 of proposed change. With the core outlet temperature at 462°F, the time available prior to start of depressurization would be approximately six hours and 50 minutes. Under the conditions which existed, the time allowable for restoring core cooling is approximately twelve hours. Thus the fifteen minute interruption of coolant flow would not have any adverse effects.

CORRECTIVE
ACTION: -

Forced circulation was re-established using condensate on the steam generators and as motive force to the 1B and 1D circulator Pelton drive. Power was re-stored to 480 volt switchgear 5. Bus 5 had been left isolated until it was confirmed that there was not a possibility of closing in on a fault on the bus. Bus 5 was energized via the Bus 4 to Bus 5 tie breaker. The transformer was replaced with a spare, the 480 volt cables from the switchgear to the bus were replaced, the 4160 volt circuit breaker was tested and found to operate properly, and the transformer was returned to service.

FAILURE DATA/SIMILAR REPORTED OCCURRENCES:

Similar occurrences were reported in Reportable Occurrence Report No. 50-267/76-01 and Reportable Occurrence Report No. 50-267/77-14.

PROGRAMMATIC IMPACT:

None

CODE IMPACT:

None



444 281

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