

CONTROL BLOCK:

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

CON'T

0	1
7	8

REPORT SOURCE L 6 0 5 0 0 0 2 6 7 7 0 5 1 2 8 1 8 1 2 0 9 8 3 9

60 61 DOCKET NUMBER 68 69 EVENT DATE 74 75 REPORT DATE 80

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0 9		SYSTEM CODE I B		11	CAUSE CODE B		12	CAUSE SUBCODE A		13	COMPONENT CODE Z Z Z Z Z Z Z						14	COMP. SUBCODE Z		15	VALVE SUBCODE Z		16																		
7	8	9	10		11		12									18		19		20																					
17		LER/RO REPORT NUMBER		EVENT YEAR 8 1		21	22	SEQUENTIAL REPORT NO. 0 3 6		24	25	26	OCCURRENCE CODE 0 1		28	29	REPORT TYPE X		30	REVISION NO. 1		32																			
ACTION TAKEN F		18	FUTURE ACTION Z		19	EFFECT ON PLANT Z		20	SHUTDOWN METHOD Z		21	HOURS 0 0 0 0		22	ATTACHMENT SUBMITTED Y		23	NPRD-4 FORM SUB. N		24	PRIME COMP. SUPPLIER Z		25																		
33		34				35							37																												
CAUSE DESCRIPTION AND CORRECTIVE ACTIONS																							27			28			29			30			31			32			33

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 5
2 8

FACILITY STATUS (28) E

% POWER 0 7 0 (29)

OTHER STATUS N/A (30)

METHOD OF DISCOVERY C (31)

DISCOVERY DESCRIPTION (32) Liquid waste tracking sampling

10 12 13 44 45 46 80

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

		7	8	9	11	12	13
		PERSONNEL INJURIES					
		NUMBER				DESCRIPTION (41)	
1	8	0	0	0	(40)	N/A	

7 8 9 11 12

LOSS OF OR DAMAGE TO FACILITY (43)

TYPE DESCRIPTION

(1) (Q) ZI(42) N/A

8312200106 831209
PDR ADOCK 05000267
S PDR

7	8	9	10	PUBLCITY										NRC USE ONLY															
ISSUED		DESCRIPTION																											
1		2																											

NRC USE ONLY

NAME OF PREPARER: [Signature] PHONE: (303) 785-2224

NAME OF PREPARER

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REPORT DATE: December 9, 1983
Determined
OCCURRENCE DATE: May 14, 1981

REPORTABLE OCCURRENCE 81-036
ISSUE 1
Page 1 of 6

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

REPORT NO. 50-267/81-036/01-X-1

Final

IDENTIFICATION OF
OCCURRENCE:

On Thursday, May 14, 1981, at 1300 hours, it was determined that the concentration of tritium in an unrestricted area following liquid waste release number 460, which was made on May 12, 1981, exceeded the limit specified in LCO 4.8.2(a). At the time of the occurrence, the reactor was operating near 70% thermal power and approximately 230 MW electrical.

This event was reported per Fort St. Vrain Technical Specification AC 7.5.2(a)2.

CONDITIONS PRIOR
TO OCCURRENCE:

The conditions prior to occurrence or at the time of reportability determination have no bearing on this report.

DESCRIPTION OF
OCCURRENCE:

Upon analysis by plant personnel of samples taken during radioactive liquid waste release number 460, it was determined that the concentration of tritium in an unrestricted area exceeded the limit specified in LCO 4.8.2(a).

Refer to Figure 1. Effluents from the Reactor Building sump (A) and the liquid waste system (B) are discharged to a common line (C) leading to the Goosequill Ditch (D). Circulating water blowdown (E) is admitted for dilution purposes prior to the effluent reaching the Goosequill Ditch. Radiation monitors RIS-6212 and RIS-6213 (1 and 2) in the common discharge line alarm at preset values on high activity in effluent discharged from either the Reactor Building sump or the liquid waste system and provide a signal to trip the liquid waste transfer pumps (3), close HV-6212 (4), and if the release is from the Reactor Building sump, close HV-7204-2 (5), thus terminating the release.

Circulating water blowdown (dilution) flow is monitored by flow switch FSL-4101 (⑥), and at a preset value of low blowdown flow provides a signal to close HV-6212 (④) and trip the liquid waste transfer pumps (③) and Reactor Building sump pumps (⑦) (a). In order to avoid a holdup of radioactive liquid waste in the oil separator (⑧) in the discharge line common to the Reactor Building sump and liquid waste system, normally open V-62247 (⑨) is closed and normally closed V-62248 (⑩) is opened prior to initiating a liquid waste release. These two valves are returned to their normal positions upon completion of a liquid waste release.

Liquid waste release number 460 was initiated at 1235 hours on May 12, 1981, and terminated at 1545 hours on May 12, 1981. The recommended release rate was 9.0 gpm, with a recommended circulating water blowdown (dilution) rate of 2,000 gpm. A subsequent analysis indicated an average release rate of 9.2 gpm and an average circulating water blowdown (dilution) rate of 2496 gpm.

In order to track liquid waste concentrations in the unrestricted area during the course of liquid waste release number 460, Health Physics Department personnel collected samples on an hourly basis throughout the release. Subsequent analyses indicated the following results:

<u>Sample Date, Time</u>	<u>Sample Number</u>	<u>³H Concentration, μCi/ml</u>
5-12-81, 1300	RC 18349	3.55E-3*
5-12-81, 1400	RC 18370	2.36E-3
5-12-81, 1500	RC 18371	2.38E-3

*Result in excess of LCO 4.8.2(a) ³H limiting concentration in an unrestricted area (3.00E-3 μ Ci/ml).

It should be noted that the sample indicating a concentration of tritium exceeding the limit of LCO 4.8.2(a) was taken from the Goosequill Ditch, considered to be in an unrestricted area, although located on Public Service Company of Colorado property. The Goosequill Ditch flows into a 25 acre farm pond, also on Company property. The overflow of this farm pond drains into the South Platte River. The additional dilution provided by the pond ensures that the concentration of water entering the South Platte River is within the limits of LCO 4.8.2(a).

APPARENT CAUSE
OF OCCURRENCE:

- | Inadequate System Design.
- | The design of the Fort St. Vrain liquid waste discharge system was inadequate to preclude problems of this nature from arising.

ANALYSIS OF
OCCURRENCE:

| Radiochemical analysis of the liquid waste monitoring tank contents, prior to liquid waste release number 460, indicated a tritium concentration of $5.66\text{E-}1 \mu\text{Ci/ml}$. Based on the recommended release rate and dilution, the calculated tritium concentration in the unrestricted area would be $2.55\text{E-}3 \mu\text{Ci/ml}$. Based on the average release rate and dilution, the calculated tritium concentration in the unrestricted area would be $2.07\text{E-}3 \mu\text{Ci/ml}$. The results of samples taken at 1400 and 1500 hours on May 12, 1981, during liquid waste release number 460, show good agreement with the calculated concentrations. The result of the sample taken at 1300 hours on May 12, 1981, was approximately one and one half times larger than the calculated concentrations.

An analysis of the main cooling tower makeup and blowdown flow recorder (FR 4101) subsequent to the occurrence indicated that blowdown flow was interrupted at approximately 1255 hours on May 12, 1981, for approximately one to two minutes. Similar analysis of the liquid waste blowdown flow recorder (FR 6215) confirmed that the automatic control system responded properly by tripping the liquid waste transfer pump and closing HV-6212. The transfer pump was manually restarted by Operations personnel approximately eight to ten minutes after tripping, and the release was completed without further incident.

Although the automatic control actions worked properly, the approximately 150 to 200 gallons of liquid waste downstream of HV-6212 continued to be released upon loss of circulating water blowdown (dilution). The lack of sufficient dilution flow during this release period resulted in a tritium concentration in an unrestricted area in excess of the limit of LCO 4.8.2(a).

CORRECTIVE
ACTION:

| Public Service Company Change Notice (CN) No. 1433 was initiated in October 1981, and, at this time, has been completed. CN 1433, including three reissues, accomplished the following major modifications:

| Refer to Figure 1.

- | 1. Installed additional isolation valve, HV-62249, which provides automatic termination of a liquid waste release on high specific activity and/or low circulating water blowdown flow. HV-62249 is located in the end of the liquid waste discharge line just ahead of the circulating water blowdown mixing box.

- | 2. Installed three-way ball valve V-62252 which will assure effluent discharges from the reactor building sump will not occur simultaneous with discharge from the radioactive liquid waste system.
- | 3. Installed control valve FCV-6233 to improve flow control capabilities during both radioactive liquid effluent (System 62) release and subsequent flush.
- | 4. Installed a permanent flush line (System 45) to ensure complete discharge of all effluent in the radioactive liquid waste system upon completion of a release.
- | Applicable System Operating Procedures (SOPs) and Surveillance Procedures have been updated to reflect CN 1433 modifications.
- | No further corrective actions are anticipated or required.

FAILURE DATA/SIMILAR
REPORTED OCCURRENCES:

None

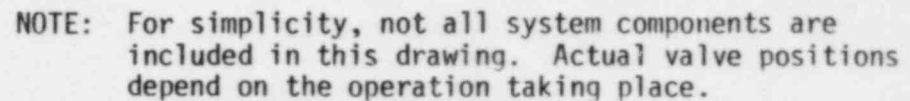
PROGRAMMATIC IMPACT:

None

CODE IMPACT:

None

Circulating Water Blowdown



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