

Fort St. Vrain, Unit No. 1

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/93

Fort St. Vrain, Unit No. 1

DOCKET NUMBER 85-01

LER NUMBER 01

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YEAR SEQUENTIAL NUMBER REVISION NUMBER

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EVENT DESCRIPTION:

At 0753 hours on December 26, 1985, with the reactor shutdown, "A" and "D" circulators operating via condensate drive, and condensate being supplied to the economizer-evaporator-superheater (EES) sections of both loops, "A" circulator was brought to self-turbining status to help diagnose a potential moisture ingress problem. Approximately seven hours later, "A" circulator's brake and seal were set to facilitate an investigation of the main drain pressure differential controller (PDC). Manual shutdown of "A" circulator resulted in an automatic loop 1 shutdown, as expected, since "B" circulator (the other circulator in Loop 1) was shutdown for Environmental Qualification (EQ) work at the time.

At 1645 hours, upon completion of the main drain PDC investigation, circulator auxiliaries were re-established on "A" circulator. However, at 1652 hours, about two minutes after releasing "A" circulator's brake and seal, the circulator tripped on low buffer-mid-buffer differential pressure (ΔP). "A" circulator's helium dryer discharge valve, HV-21601, did not open upon actuation of controller HC-21601. Thus, there was no buffer helium return flow from the Loop 1 helium dryer unit to "A" circulator (see Figure 1). Since "B" circulator was already shutdown for EQ work, the flow of "A" circulator buffer helium through the helium/water drain stopped, and all buffer helium makeup flow to "A" circulator from the purified helium header was directed up the circulator shaft into the primary coolant system. The loss of buffer helium flow down the circulator shaft resulted in a low buffer-mid-buffer ΔP circulator trip.

HV-21601 was manually unseated and then controlled by HC-21601. Circulator auxiliaries were again placed on "A" circulator at 1720 hours, and the circulator was returned to operation at 1733 hours.

Similar circulator trip events were reported in LER #85-014, 85-015, 85-016, 85-022, 85-023, and 85-026.

ANALYSIS OF EVENT:

The buffer helium system consists of two separate and independent buffer helium loops, with each loop serving two helium circulators. Independent circulator control systems adjust the pressure in the helium/water drain cavity to split the buffer helium supply flow so that approximately half flows into the primary coolant system and the other half flows out through the helium/water drain. This controlled flow of buffer helium separates primary coolant and bearing water.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED DATE NO. 7-30-2006

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V-21601 failed to open upon actuation of controller HC-21601. With HV-21601 closed and "B" circulator shutdown for Environmental Qualification work, buffer helium could not be discharged from the Loop 1 helium dryer unit (S-2111) (see Figure 1). Eventually, buffer helium flow through the helium/water drain stopped, and all buffer helium makeup flow to "A" circulator from the purified helium header was directed up the circulator shaft into the primary coolant system. This resulted in low buffer-mid-buffer P on "A" circulator and a subsequent circulator trip.

As each circulator's auxiliary system (buffer helium and bearing water) controls operate independently of the other's, this trip had no effect on "D" circulator operation, which was the only other operating circulator. The circulator auxiliaries were designed with independence and redundancy so as to preclude a single failure from affecting more than one circulator. Also, with the redundancies provided by the four circulators, it is considered incredible in the PSAR design basis that all circulators would become simultaneously inoperable (FSAR Section 14.4.1).

Single actuations of the circulator trip circuitry to shut down a single circulator are considered an equipment protective action, and are specifically stated as such in the Basis of Technical Specification LCO 4.4.1.c. When the reporting requirements of 10CFR50.72 and 50.73 were initially proposed, the term Reactor Protection system (RPS) was not recognized nor defined for this plant. Therefore, independent, extensive evaluations were performed considering the Fort St. Vrain licensing basis, industry practice, and Nuclear Regulatory Commission guidance. These evaluations determined that single actuations of the circulator trip circuitry do not require Nuclear Regulatory Commission notification, nor Licensee Event Reporting, in accordance with the requirements of 10CFR50.72 and 50.73.

CAUSE DESCRIPTION:

Foreign material in the valve operator of HV-21601 is postulated to have prevented the valve from opening. This resulted in low buffer-mid-buffer ΔP on "A" circulator, and a subsequent circulator trip.

CORRECTIVE ACTION:

HV-21601 was manually unseated, and "A" circulator was returned to operation without further incident. Following this circulator trip, a Station Service Request (SSR) was initiated to repair HV-21601 (SSR #85515215). Through this SSR, the valve operator will be cleaned, as necessary, to prevent recurrence of this event.

LICENSEE EVENT REPORT (LEAR) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED FOR RELEASE 2014
EXEMPTED FROM GDS

PLANT NAME (1)

UNIT/STACK NAME (2)

LEAR NUMBER (3)

PAGE (3)

YEAR	SEQUENT AL C. WEEK	SEQUENT NUMBER
05	00	02

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1. If space is not required, use appropriate NRC Form 255A-2 (11)

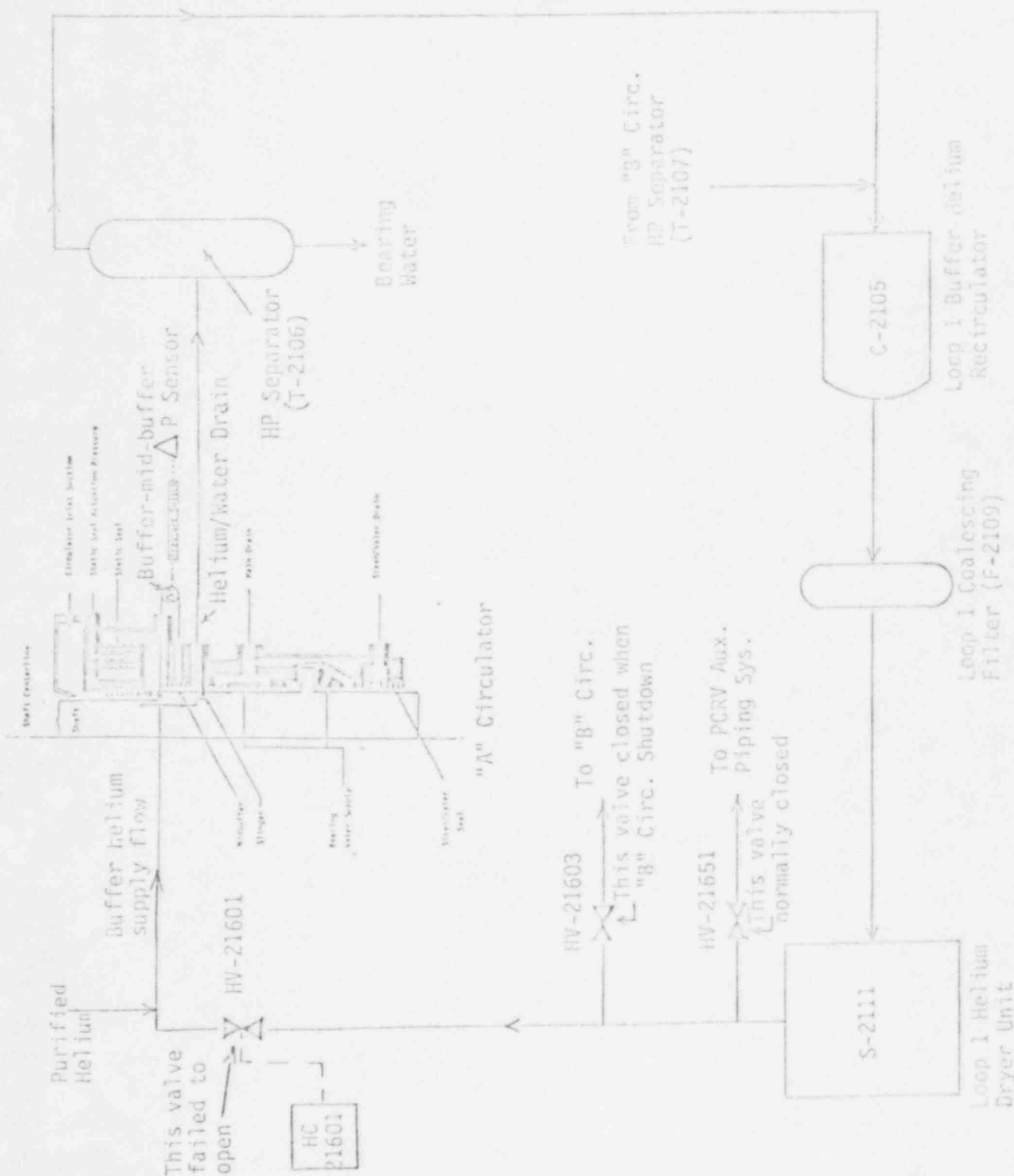


Figure 1

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION
APPENDIX ONE NO. 1-10-0104
EXHIBIT 6-11-89

Fort St. Vrain, Unit No. 1

EVENT NUMBER (2)

LER NUMBER (3)

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January 25, 1986
Fort St. Vrain
Unit No. 1
P-86060

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docket No. 50-267

SUBJECT: Licensee Event Report
85-030, Final Report

REFERENCE: Facility Operating
License No. DPR-34

Gentlemen:

Enclosed please find a copy of Licensee Event Report
No. 50-267/85-030, Final, submitted per the requirements of
10 CFR 50.73(a)(2)(iv).

Sincerely,

J. W. Gahm
Manager, Nuclear Production

Enclosure

cc: Regional Administrator, Region IV
Attn.: Mr. E. H. Johnson, Chief
Reactor Projects Branch

cc: Director of Nuclear Reactor Regulation
Attn.: Mr. H. N. Berkow, Project Director
Standardization and Special
Project Directorate

cc: Director, MIPC

JWG/jlr

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