



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DEC 5 1978

MEMORANDUM FOR: William P. Gammill, Assistant Director for
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FROM: George Kuzmycz, Project Manager
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THRU: *TKS* 12-4-78
Themis P. Speis, Chief
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SUBJECT: FORT ST. VRAIN - MINOR RELEASE OF ACTIVITY

Don Warembourg, Nuclear Production Manager of Fort St. Vrain, called to report a minor activity release at Fort St. Vrain on November 29, 1978, at 1610 hours. The stack monitor indicated readings of 100 counts per minute ($\sim 1 \times 10^{-12}$ curies/cubic centimeter) of noble gas, which is 60 counts per minute (cpm) above background, and 60 cpm of particulates, which is 20 cpm above background. Airborne activity inside the reactor building was as follows:

- a. basement floor - 1.0×10^4 cpm
- b. middle level 5 - 2×10^4 cpm (3×10^{-15} Ci/cc)
- c. refueling floor - 1.5×10^4 cpm

The stack activity readings above were the peak values and lasted for about 3 minutes before decreasing in value. It is estimated that the total release was about 1 curie of noble gases.

The detailed sequence of events was as follows:

11/29

- 1408 Trip of "B" circulator due to buffer-mid-buffer upset
- 1427 Recovered "B" circulator to normal operation
- 1515 Noted minor swings in "C" and "D" circulator buffer-mid-buffer pressure

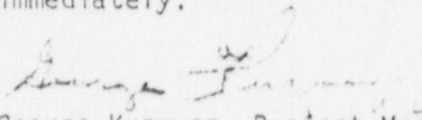
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Preliminary cause of the trouble is postulated to be a breach found in the aftercooler of "B" helium buffer compressor between the first and second stage. The breach allowed service water to enter the gas side of the compressor and be circulated through the buffer system. This caused the upset in the buffer-mid-buffer seal labyrinth and also filled up the knockout pot. After being drained the knockout pot again filled with service water and after filling the controls bypassed the pot. The wet buffer helium then entered the helium dryer where the water flashed into steam, increasing the pressure, and lifting the relief valves. The lifted relief valve opened a path for the primary coolant helium to the reactor building.

It is estimated that only a few pounds of helium escaped through the opened relief valves.

As in the past, any upset in the buffer-mid-buffer system causes water to enter the primary system. In this instance, only 60 ppm moisture was observed in the primary coolant. Also during this incident, the secondary coolant water chemistry was upset. The drains from the knockout pot, low-pressure separator, and helium dryer are routed into the condenser. Since service water entered the buffer system, various impurities, viz, iron and sodium, entered the condensate system. These impurities will have to be removed before the plant can be started up again. A new aftercooler is already being air shipped to the site, so that repairs can be initiated immediately.


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