

**PUBLIC SERVICE COMPANY OF COLORADO**

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OSCAR E. LEE  
VICE PRESIDENT

January 24, 1985  
Fort St. Vrain  
Unit No. 1  
P-85022

Regional Administrator  
Region IV  
Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 1000  
Arlington, Texas 76011

Attn: Mr. E. H. Johnson

SUBJECT: Fort St. Vrain Improvement  
Committee Actions

REFERENCE: H. R. Denton to R. F. Walker  
October 16, 1984, Audit of  
Fort St. Vrain Operations

Dear Mr. Johnson:

The above referenced letter identifies the requirement that Public Service Company (PSC) must develop a plan to carry out modifications recommended by the PSC "Moisture Ingress Committee" that are determined by PSC to have a high potential to significantly reduce the frequency and severity of plant upsets involving injection of circulator bearing water into the primary system. Response to this issue was further addressed in the January 15, 1985 PSC/NRC meeting held in Arlington, Texas.

Public Service Company fully recognizes the seriousness of the moisture ingress events that are all too repetitious in the operation of Fort St. Vrain. Our concern with this issue and other impediments to obtaining realistic plant operation has prompted Corporate management to form the Fort St. Vrain Improvement Committee which, under the chairmanship of Mr. R. F. Walker, President and Chief Executive Officer, has as its general charter to evaluate innovative and substantial modifications at Fort St. Vrain which would have the benefit of improved availability. The membership of this committee

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is presently made up of Officers and Division Managers directly associated with the PSC nuclear program. This committee is augmented by outside organizations with strong ties to the nuclear power industry.

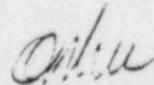
The resources and responsibilities of the new Fort St. Vrain Improvement Committee encompass but extend beyond those of the Moisture Ingress Committee. Because of this, an initial action of the Fort St. Vrain Improvement Committee was to review the substantial efforts, both completed and ongoing, of the Moisture Ingress Committee and then disbanded it.

Many issues either have been or are being addressed by these committees. Most of the issues require time consuming engineering analysis because of the complexities of the Fort St. Vrain Circulator Auxiliary System and many have been evaluated and found to lack benefit and were rejected. A sample tabulation of the issues addressed by the Fort St. Vrain Improvement Committee and/or the Moisture Ingress Committee which are either under consideration or have been found acceptable are included as an attachment to this letter. These are divided into the following four categories:

- \* Issues currently under consideration by the Fort St. Vrain Improvement Committee
- \* Circulator Auxiliary System modifications yet to be completed prior to startup
- \* Circulator Auxiliary System modifications to be completed prior to startup provided material availability and schedule permits
- \* Items identified by the Moisture Ingress Committee which are installed and operational

Public Service Company is totally committed to the dependable operation of Fort St. Vrain and intends to vigorously pursue plant improvements to obtain this goal.

Very truly yours,



O. R. Lee, Vice President  
Electric Production

ORL/HLB:pa

Attachment

Issues Currently Under Consideration by the Fort St. Vrain  
Improvement Committee

- \* Investigate the possibility of installing motor driven, magnetic bearing circulators into Fort St. Vrain.
- \* Investigate the possibility of installing motor driven, oil bearing circulators into Fort St. Vrain.
- \* Investigate installation of hydrostatic seals on the existing Fort St. Vrain circulators.
- \* Investigate seals currently designed into the conceptual large HTGR circulators for application to the existing Fort St. Vrain circulators.
- \* Investigate replacement of the main bearing water drain control valve with a fixed orifice.
- \* Plug the lower helium/water drain ports on the existing Fort St. Vrain circulator housings.
- \* Investigate removal of the trip inhibit for the second circulator in a coolant loop.
- \* Evaluate the addition of a water slinger onto the existing Fort St. Vrain circulator.
- \* Evaluate the addition of a helium/water drain forced scavenging jet pump on existing Fort St. Vrain circulator auxiliaries.
- \* Evaluate the replacement of the buffer helium recirculator with an eductor system on the existing Fort St. Vrain circulator auxiliaries.

### Circulator Auxiliary System Modifications Yet to be Completed Prior to Startup

- \* Install new positioners on the high pressure separator drain valves.
- \* Install additional computer inputs to monitor helium circulator auxiliary system parameters related to moisture ingress.
- \* Modify the high pressure separator level control system and separate it from the main drain controls.
- \* Replace the bearing water PDIS cables with shielded cables.
- \* Modify helium circulator and control rod drive helium purge supply lines to accept future moisture removal and monitoring equipment.
- \* Modify the normal bearing water isolation valves to close on specific bearing water pump signals.
- \* Although not a plant modification, a moisture ingress/removal manual will be finalized for the operator's use prior to plant startup.

### Circulator Auxiliary System Modifications to be Completed Prior to Start Up Provided Material Availability and Schedule Permits

- \* Install electronic controls on the main drain control system for all circulators.
- \* Replace the existing main drain valve on one helium circulator with a Digital valve. This modification would then be evaluated prior to installation on the other circulators.
- \* Replace the laminar flow elements on "D" circulator buffer supply and return with subsonic Venturi type elements. This modification would then be evaluated prior to installation on other helium circulators.
- \* Replace the Barton level indicating system on the buffer recirculators with a system of higher reliability.

Items Identified by the Moisture Ingress Committee Which Are Installed and Operational

- \* Indicating lights have been installed in the Control Room to show the operator when an accumulator has been fired.
- \* A seal-in circuit was added to interlock the back-up bearing water -2 valves with the normal bearing water supply valve and to require reset action to open the supply valve.
- \* Evaluation of the accumulator firing program has been completed and found to be satisfactory.
- \* System 21 instrument calibration frequency has been evaluated and necessary modifications made to these procedures.
- \* The size of the drain line from the high pressure separator has been increased to handle up to 20 gallons per minute flow rate.
- \* The drain line from the high pressure separator has been rerouted into the top of the bearing water surge tank rather than into the main drain line.
- \* The helium water drain line from the circulator to the high pressure separator has been modified to eliminate the loop seal which previously existed.
- \* A Transient Improvement Committee has been established to investigate all serious plant transients and to recommend plant modifications which might eliminate future transients from similar conditions.
- \* A computerized System 21 data acquisition system was developed and placed in service to permit better analysis of plant transients. (This system is being expanded at the present time).
- \* As an interim measure, valve opening boosters were installed on the existing main drain pneumatic valves.