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R.O. WILLIAMS, JR.
VICE PRESIDENT
NUCLEAR OPERATIONS

May 27, 1988
Fort St. Vrain
Unit No. 1
P-88115

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

Docket No. 50-267

SUBJECT: Response to Generic Letter 88-03

REFERENCE:
1) Generic Letter 88-03, dated February 17, 1988 (G-88047)

2) IE Bulletin 85-01, dated October 29, 1985 (G-85439)

Gentlemen:

Public Service Company of Colorado (PSC) has evaluated IE Bulletin 85-01 and Generic Letter 88-03 for applicability to the Fort St. Vrain (FSV) Nuclear Generating Station. Although these directives are addressed to Pressurized Water Reactor (PWR) licensees, PSC has analyzed the relevance of this guidance for the FSV High Temperature Gas Cooled Reactor (HTGR). PSC has determined that steam binding concerns, as identified in IE Bulletin 85-01 and Generic Letter 88-03, have been precluded at FSV. This conclusion is based upon the following:

Unlike a PWR, FSV does not utilize a standby auxiliary feedwater pump system to supply backup (emergency) water to the steam generator loops (2). FSV is equipped with three boiler feedwater pumps (two steam turbine driven and one electric motor driven) installed in parallel. The three pumps supply both the normal feedwater system and the emergency feedwater system through independent valves and headers to the steam generators. The major difference between the two systems at FSV is that the normal feedwater system preheats the water via two regenerative heaters downstream of the pumps while the emergency feedwater system does not employ these heaters.

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The normal boiler feedwater pump net positive suction head (NPSH) is adequate for pressure swings during load transients after allowing for the pressure drop in the pump suction line. Further NPSH protection for each pump is provided with an automatic system that injects condensate to ensure that the pump suction temperature is at least 15 degrees F below the saturation temperature during abnormal conditions. Each pump is provided with a check valve and a motor operated stop-check valve on the discharge. In addition, a nonoperating steam generator loop is isolated with control valves.

Low boiler feed pump flow is sensed by a control system that automatically recirculates feedwater to the deaerator. Therefore, this system is set to recirculate when a boiler feed pump is idle and this would also serve to protect a pump from steam binding.

Based on the above, steam backleakage into an idle boiler feedwater pump is not a concern at FSV.

In addition to the normal and emergency feedwater systems supplied by the three boiler feedwater pumps, the following alternate supplies of secondary coolant are available to the steam generators as detailed below:

1) Emergency Feedwater Header supplied by Firewater (2 pumps)

   The firewater system is normally isolated from the emergency feedwater system by a blind insert. If all other cooling water supplies are lost, the blind insert can be removed and replaced by a thru insert that will allow firewater flow through the emergency feedwater header.

2) Emergency Condensate Header supplied by:

   a) Condensate (4 pumps)

      The condensate pumps can supply water to either the economizer - evaporator - superheater sections or the reheater sections of the steam generators. Various isolation and check valves are installed that prevent inadvertent steam binding of these pumps. Additionally, various combinations of these pumps run during normal plant operation.

   b) Firewater (2 pumps)

      As additional backup, the discharge lines of the firewater pumps are also connected to the emergency condensate header. These are also protected from steam binding by the various

installed isolation and check valves. There is also a normally open valve that is piped to a "tell-tale" that will indicate steam leaking past the isolation valve from the emergency condensate header.

Since the condensate and firewater pumps do not produce sufficient head to overcome the steam back-pressure present in the steam generators under all postulated conditions, PSC has provided Safe Shutdown Cooling (SSC) procedures to assure cooling water flow through the steam generators. Procedures SSC-03 (for use after a major fire in a non-congested cable area), SSC-02 and SSC-04 (for use after a Steam Line Rupture Detection/Isolation (SLRDIS) actuation caused by a High Energy Line Break (HELB), fire, Rapid Depressurization of PCRV Design Basis Accident (DBA-2), or a spurious actuation), and SCC-05 (for use after a Design Basis Earthquake or Tornado) all require depressurization of the secondary cooling system before utilizing either the condensate pumps or the firewater pumps to provide cooling water flow through either the emergency condensate header or the emergency feedwater header to the steam generators.

These procedural requirements eliminate the possibility of steam binding for the condensate and firewater pumps.

Steam binding at Fort St. Vrain has been precluded for the feedwater pumps, condensate pumps, and fire water pumps due to their existing design, configuration, and procedural requirements. PSC has maintained and will continue to maintain these design features and procedural requirements as necessary to preclude steam binding from becoming a problem at Fort St. Vrain. If there are any questions, please contact Mr. M. H. Holmes at (303) 480-6960.

Very truly yours,

R. O. Williams, Jr.
Vice President
Nuclear Operations

ROW/WMD:brc

cc:
Regional Administrator, Region IV
ATTN: Mr. T. F. Westerman, Chief
Projects Section B

Mr. Robert Farrell
Senior Resident Inspector
Fort St. Vrain

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter	)	
	)	
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Fort St. Vrain Unit No. 1	)	

AFFIDAVIT

R. O. Williams, Jr., being first duly sworn, deposes and says: That he is Vice President, Nuclear Operations, of Public Service Company of Colorado, the Licensee herein, that he has read the foregoing information and knows the contents thereof, and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.

R. O. Williams, Jr.
Vice President
Nuclear Operations

STATE OF Colorado)
)
COUNTY OF Denver)

Subscribed and sworn to before me, a Notary Public on this 21st day of May, 1988.

Janice E. Stufflebeam
Notary Public
9330 Balsamath Circle
Thornton, Colo

My commission expires August 22, 1989.