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2420 W. 26th Avenue, Suite 100D, Denver, Colorado 80211

Public Service
Company of Colorado
P.O. Box 840
Denver CO 80201-0840

May 10, 1991
Fort St. Vrain
Unit No. 1
P-91162

A. Clegg Crawford
Vice President
Nuclear Operations

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

Attention: Dr. Seymour H. Weiss, Director
Non-Power Reactor, Decommissioning
and Environmental Project Directorate

Docket No. 50-267

SUBJECT: Natural Gas Collection Pipelines in the Vicinity of
Fort St. Vrain

REFERENCE: PSC Letter, Crawford to Weiss, dated March 27, 1991
(P-91111)

Dear Mr. Weiss:

In a phone conversation on May 6, 1991 between Mr. Richard Dudley, Jr. of your staff and PSC's Mr. Johns and Mr. Thiel, the NRC requested additional information concerning the natural gas issue at Fort St. Vrain (FSV), primarily related to the referenced letter. The NRC's question, and PSC's response, are as follows:

NRC Question - In PSC's letter dated March 27, 1991, concerning this natural gas issue, page 2 of Attachment 2 discusses the case of a postulated rupture of the natural gas collection piping, followed by failure of a well's high-low valve to automatically close. PSC states that in this situation the shut-in valve located at the wellhead would automatically close when well casing pressure decreases to approximately 170 psig. However, PSC's letter states that the shut-in valve is operated by a pressure switch, sensing well casing pressure, which not only closes the shut-in valve upon a low casing pressure of approximately 170 psig, but also opens the shut-in valve when the casing pressure builds up to the high pressure setpoint of 350 psig. The question is, after the well had been isolated by the shut-in valve, wouldn't the well's casing pressure increase to 350 psig, causing the shut-in valve to open, permitting additional gas to flow from the well out to the rupture in the collection piping and out to atmosphere? Also, please discuss the source of the pneumatics which operate the high-low valves at the inlet to each separator, and the pressure sensing location used to actuate these valves.

PSC Response - Based on discussions with FUELCO, a PSC subsidiary who owns interest in the natural gas wells in the vicinity of FSV, and Barrett Resources, who owns interest in and operates these wells, the following is provided in response to the NRC's question:

Both the high-low valve, located at the inlet to each well's separator, and the shut-in valve, located at each well's wellhead, are pneumatically operated automatic control valves. While each of these valves has an independent control system, gas for the pneumatics for each valve is taken from the same location. The pneumatic fluid in the control system of each valve is natural gas, supplied from the outlet of the separator and reduced in pressure to a normal operating pressure of about 25 psig. The separator outlet is used to provide the pneumatic supply to assure the pneumatic actuation system has clean gas, without significant quantities of oil or water that could foul the actuators or freeze. Both the high-low valve and the shut-in valve are diaphragm operated valves designed to close by spring action in the event of loss of pneumatic pressure (fail-closed). This description applies to the high-low valves and shut-in valves for all ten FSV wells connected to the collection piping system, discussed in the referenced letter.

The pneumatic control system for the high-low valve is governed by a pressure switch which senses natural gas pressure in the separator. The pneumatic control system for the shut-in valve is governed by a pressure switch which senses the well casing pressure.

If a large rupture in the collection piping system in the vicinity of FSV is postulated to occur, then system pressure, along with separator pressure, would decrease until it reaches the low setpoint of the control system associated with the high-low valves, 25 psig, at which point these valves would be automatically closed. The collection piping, and the separators, would continue to depressurize to atmospheric pressure. At these low pressures, the pneumatic supply for the high-low valves would not be functional, and spring pressure would continue to hold the high-low valves shut.

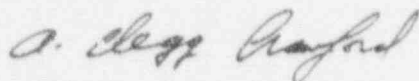
The referenced letter discusses a postulated scenario in which a rupture of the collection piping system is followed by failure of a high-low valve (located at the separator inlet) to automatically close. In this scenario, the well continues to supply gas to the collection piping and out the rupture until the well casing pressure decreases below a pressure of approximately 170 psig (the low pressure setpoint of the pressure switch which monitors well casing pressure) at which time the shut-in valve (located at the wellhead) is automatically closed. This assumes pneumatic pressure is maintained from the outlet of the separator to operate the shut-in valve. The shut-in valve fails in the closed position upon loss of pneumatic pressure. Knowledgeable personnel from FUELCO and Barrett Resources agree that in the event of a large collection piping rupture, such as the double ended rupture postulated to occur in either the 4 inch or 6 inch collection piping, as discussed in the referenced letter, the pneumatic supply pressure would be lost, causing both the shut-in valve and the high-low valve to fail closed at each well. Depending on initial well casing pressure, the shut-in

valve could fail closed on loss of pneumatic supply pressure before the control system would close the shut-in valve on low well casing pressure.

Once a well's shut-in valve is closed, well casing pressure would increase due to release of natural gas from the underground natural gas producing formation. When well casing pressure reaches the pressure switch's high pressure setpoint of approximately 350 psig, the pressure switch would normally actuate, causing pneumatic pressure to open the valve. Under the conditions resulting from a collection system piping rupture, pneumatic pressure supplied from the separator outlet to the shut-in valve's control system would be essentially atmospheric, and the spring would continue to hold the shut-in valve at the wellhead in the closed position, even though well casing pressure exceeds 350 psig.

Should you have any questions concerning this submittal, please contact Mr. M. H. Holmes at (303) 480-6960.

Very truly yours,



A. Clegg Crawford
Vice President
Nuclear Operations

ACC/JRJ:km
Attachments

cc: Regional Administrator, Region IV

Mr. J. B. Baird
Senior Resident Inspector
Fort. St. Vrain

Mr. Robert M. Quillin, Director
Radiation Control Division
Colorado Department of Health
4210 East 11th Avenue
Denver, CO 80220

Mr. Steve Ruffin
Project Manager
Irradiated Fuel Section
Fuel Cycle Safety Branch
Office of Nuclear Material Safety and Safeguards