



## Public Service®

June 19, 1991  
Fort St. Vrain  
Unit No. 1  
P-91211

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

A. Clegg Crawford  
Vice President  
Nuclear Operations

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

ATTN: 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 - Permanent Solution to Connection  
With 16 Inch Pipeline

REFERENCES: 1) PSC Letter, Crawford to Weiss, dated March 27, 1991  
(P-91111)  
2) NRC Letter, Erickson to Crawford, dated May 21, 1991  
(G-91106)

Dear Dr. Weiss:

This letter pertains to the connection between the 16 inch and 6 inch diameter natural gas collection pipelines, discussed in Reference 1. The 6 inch collection line services ten natural gas wells in the vicinity of the Fort St. Vrain Nuclear Generating Station (FSV). The connection between the 6 inch and 16 inch pipelines is located approximately 0.92 mile southwest of the FSV Reactor Building. Public Service Company of Colorado (PSC) was concerned with the relatively high natural gas flow rate (37.1 million scfd) which could backflow from the 16 inch line to a postulated rupture in the 6 inch line near the Reactor Building, assuming: a) that the 16 inch line is at a constant pressure of 250 psig, although 130 to 180 psig is the normal operating range, and b) that the 6 inch line ruptures in a clean break, so the postulated pipe rupture does not restrict flow.

An "Interim Solution" to this concern is currently in effect, as described in Reference 1. It was accomplished by closing a manual isolation valve in the 6 inch line, where the 6 inch line ties into the 16 inch line. Natural gas from the 10 wells serviced by the 6

*Foot*  
*11/1*

inch collection line flows from the 6 inch line into the 16 inch line by means of a 1.5 inch diameter equalizing line. The equalizing line can only pass 10.1 million scfd from the 16 inch line into a postulated rupture of piping in the FSV natural gas collection system, assuming the 16 inch line is pressurized to 250 psig. However, this Interim Solution is not acceptable during the winter months, due to the potential for freezing of some fluids in the natural gas stream in the 1.5 inch equalizing line, which could restrict flow through the equalizing line.

Reference 1 identifies two alternate permanent solutions which would enable the 6 inch line to be open to the 16 inch line. One alternative involves analysis to demonstrate the 37.1 million scfd flow rate from the 16 inch line is acceptable for postulated rupture of the 6 inch line near the Reactor Building. The second alternative involves installation of automatic isolation valves or redundant check valves in the 6 inch line which would automatically close upon rupture of the 6 inch line, isolating the 6 inch line from the 16 inch line. Although analysis has not been performed of the postulated 6 inch line break with the 6 inch line open to the 16 inch line, PSC has decided to install redundant check valves as the permanent solution to this concern.

In Reference 2, Amendment No. 82 to FSV's Facility Operating License, the NRC included a license condition that the 6 inch isolation valve is not to be opened (except for short-term maintenance or surveillance activities) unless the NRC reviews and approves the situation. The purpose of this letter is to provide a description of the proposed redundant check valve station and the associated proposed valve surveillance requirements for the NRC's review and approval.

Figure 1 depicts the redundant check valve station configuration, which consists of two 6 inch check valves in series, along with the necessary isolation valves, vent valves and pressure gage connections to permit testing. Should a large rupture occur in the FSV collection piping system, the check valves would shut and isolate backflow from the 16 inch line into the 6 inch line. The valves in the 1.5 inch equalizing line are normally open, and this line would continue to connect the 16 inch line with the FSV collection piping system. However, this open equalizing line was considered in the previous analyses of postulated pipeline ruptures near the Reactor Building, and found acceptable, as documented in Reference 2.

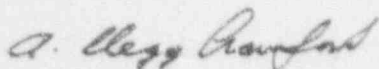
Attachment 1 presents the specifications of the new valves associated with the proposed modification. The valves are identified with letters in Figure 1, and the information on the valve types, corresponding to the letter identifiers, is provided in Attachment 1.

Attachment 2 is the proposed surveillance procedure, which is based on the valve configuration and valve letter identifiers shown in Figure 1. This proposed procedure independently tests each check valve to assure that it closes on backflow and fully seats. PSC plans to have personnel from Western Gas Supply Company, a PSC subsidiary, perform the surveillance of both check valves on a quarterly basis. Personnel from Panhandle Eastern Pipe Line Company, the owner of this collection piping, will witness each surveillance. Documentation of the results of the surveillances will be retained at FSV.

The existing analyses of the effects of postulated pipeline ruptures on the Reactor Building were based on the assumption that the 6 inch line is isolated from the 16 inch line, but the valves in the 1.5 inch equalizing line are open. At present, the existing 6 inch manual isolation valve is maintained in the closed position, except during short-term maintenance or surveillance activities, when the 6 inch valve is continuously manned by an operator who has been instructed to promptly close the valve in the event a pipeline rupture is observed or suspected. Following installation and initial testing of the redundant check valve station shown in Figure 1, manual isolation valves in the 6 inch line will be opened so that the 6 inch line is open to the 16 inch line. Valves in the 1.5 inch equalizing line will also be in the open position. Should a large pipeline rupture occur in the FSV natural gas collection system, the check valves will automatically close, and only the 1.5 inch equalizing line will connect the 16 inch line with the 6 inch line, as was assumed in the analyses of the effects of postulated pipeline ruptures on the Reactor Building. Therefore, these existing analyses, which the NRC reviewed and approved in Reference 2, will continue to be valid and applicable following installation of the proposed redundant check valve station.

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

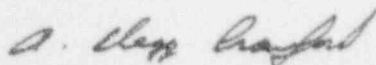
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Attachments

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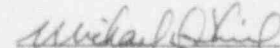
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Very truly yours,



A. Clegg Crawford  
Vice President  
Nuclear Operations

ACC/JRJ:bt  
Attachments

Reviewed by:  6-19-91

cc: Regional Administrator, Region IV

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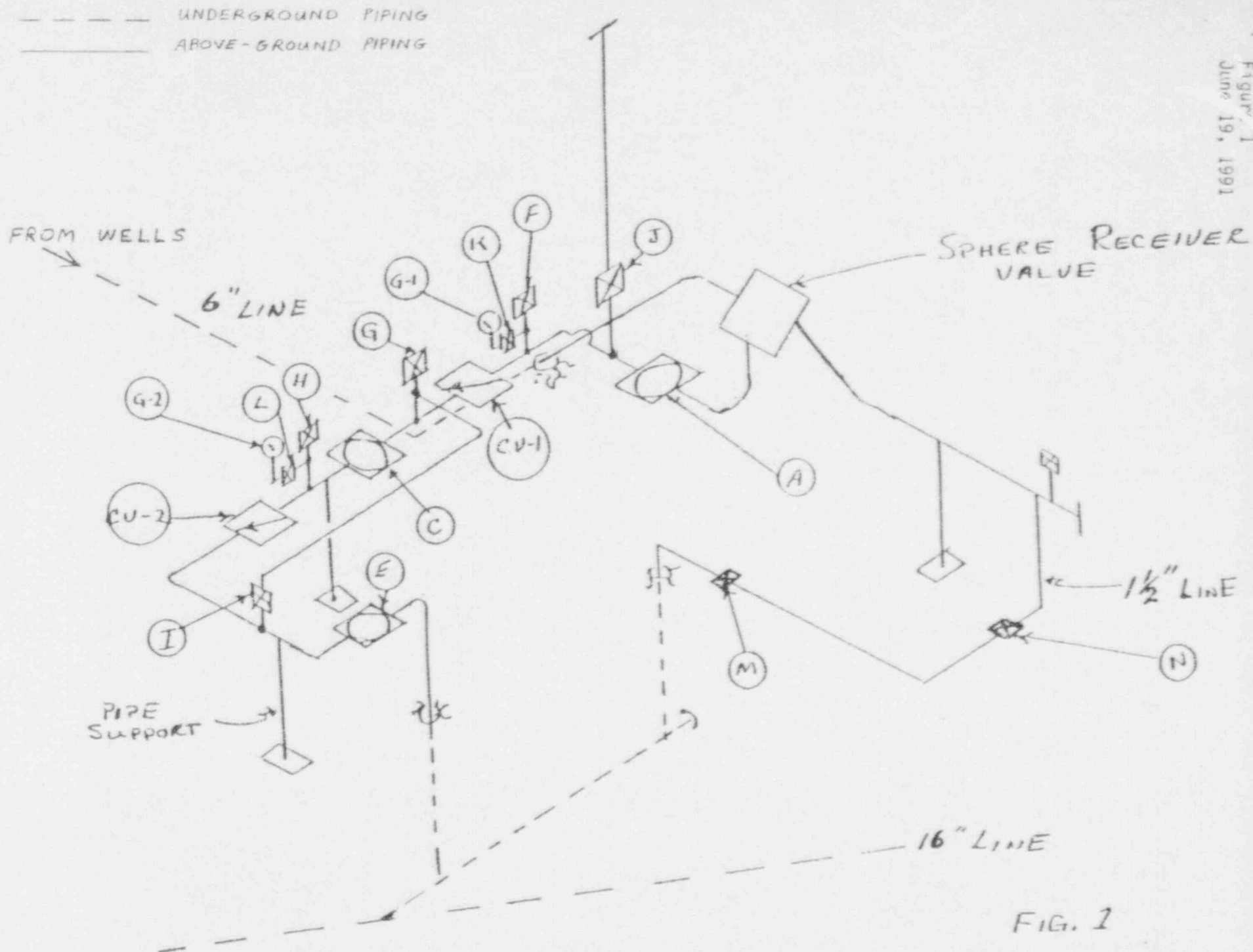


FIG. 1



### Valve Specifications

- I. Valves CV-1 and CV-2 are Hammer Judd check valves.  
Fig. No. 06-22F-07 NN001

These are ANSI 300 flange by flange, raised face valves with removable seats. These valves are rated for 720 psig.

Seat material is Buna-N70 Duro.

They conform to API GD Section 5 'Tests' Para. 5.3.

- II. Valves A, C, and E (E is an existing valve) are Cameron full opening ball valves.

ANSI 300, flange by flange, raised face. These valves are rated for 720 psig.

Double block and bleed valves.  
They are carbon steel body and trim.

- III. Valves F, G, H, and I  
1/2" carbon steel, screwed body, 3000 psig rated.

- IV. Valves K and L  
1/4" carbon steel, screwed body, 3000 psig rated.

- V. Valves M and N (existing valves)  
1-1/2" carbon steel, screwed body.

- VI. Valve J (existing blowdown valve)  
T-K Valve, 3" flange by flange, raised face, ANSI 300 ball valve  
720 psig rated water, oil, or gas service

### Test Procedure to Confirm Check Valve Operation

- I. With System in normal operation, (see attached Figure 1): valves A, C, and E should be open and valves F, G, H, I, J, K, and L should be closed. Valves M and N should be open at all times.
- II. To test check valve CV-1 (see attached Figure 1):
  1. Install test gauge at G-1.
  2. Close valves A and C (see attached Note 1).
  3. Open valves F and G to bleed pressure across CV-1.
  4. Close valve G and slowly open valve I.
  5. When CV-1 closes, there should be no gas flow through valve F. If the flow through valve F does not stop, go to Section V.
  6. Close valve F and open valve K.
  7. If there is no pressure build-up at G-1 within five (5) minutes, close valves K and I and remove gauge from G-1.
- III. To test check valve CV-2 (see attached Figure 1):
  1. Install test gauge at G-2.
  2. Open valve H slowly to bleed pressure from upstream side of CV-2.
  3. When CV-2 closes, there should be no gas flow through valve H. If the flow through valve H does not stop, go to Section V.
  4. Close valve H and open valve L.
  5. If there is no pressure build-up at G-2 within five (5) minutes, close valve L and remove test gauge.
- IV. Return System to normal operation (see attached Figure 1):
  1. Insure valves F, G, H, I, J, K and L are all closed. Replace all plugs at G-1, G-2, and open valves F, G, H, and I.
  2. Open valves A and C.
  3. Make sure valve E is open.
- V. If a pressure build-up is detected or the flow of gas continues (as indicated in Steps II-5 and 7, or III-3 and 5), then the following procedure should be followed:
  1. Verify all pressure is released from both sides of the check valve in question.
  2. Remove vent plug from cover plate (slowly) and remove cover plate.
  3. Remove removable seat and replace seat seal and clapper seal, and cover seal as per manufacturer's instructions.
  4. Re-test valve as per test procedure.
- VI. Record date, time, and names of people who performed test.  
Western Gas Supply Company will forward original test report to Public Service Company of Colorado's Manager of Quality Assurance for Nuclear Operations.  
  
Western Gas Supply will maintain a copy of test report in the West Gas Campion office, and forward a copy to Panhandle Eastern Pipe Line Company, c/o Mr. A. A. Smith, Area Superintendent, Transmission.

This test will be performed on a quarterly basis.



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Attached Note 1

When valves A and C are closed, open body bleed fitting on valve. This tests valve seals to insure there is no bleed through the valve. If bleed does occur, follow manufacturer's procedure to seal valve.