

Interoffice
Communication

To: M. L. Ashby

From: J. B. Chorn - Alliance Engineering
Date: February 11, 1987

Subject: Pressure Control Loop for VCM Loading Lines -
Final Issue - Design No. 240-400-287-JBC

VIST

A VCM release occurred on 2/28/86 when the line to the shiploading dock overpressured and caused the relief valve on S-402 to relieve momentarily. The attached control loop design will enable the dock loading line pressure to be maintained above the normal loading pressure but below the relieving pressure (200 psig) of the Bauxite Dryer, S-402. The excess pressure will be relieved into the VCM recirculation line and recovered in the sphere being loaded from. An operating procedure is attached as a part of the design.

By copy of this design to J. R. Holcomb, a definitive estimate is requested. If you have any questions, please call me at 5075. Since the comments from the review issue were few and minor, they were addressed in the final issue and no review meeting was held.



J. B. Chorn
Alliance Engineering

br

cc: RAC-PEM-GEH-SRA-MLA(4)-JRH(4)-WPS-MGH-ERT-BED-SCR
DKH-HEK-RDH-SVC

CWH 000001887

Work List

Reference: VCM shiploading Line Pressure Control Loop Drawings
1 and 2

This project should be done when the dock loading line can be out of service for a week.

Preparatory Work

- 1) Mount the local controller, PIC-701, at a convenient spot.
- 2) Run instrument air supply, signal and output lines to and from PIC-701.
- 3) Run instrument air supply and signal lines to approximate PCV-701 location.

Project Execution

- 1) Close valves 2, 3, 4, 5, 6, and 7.
- 2) Depressure and clear Line C for removal per normal VCM line clearing procedures.
- 3) Remove line to a safe location for welding.
- 4) Install 2 4"-300# flanges at a convenient spot on Line C and install the Durco valve with actuator.
- 5) Put a numbered VCM VHAP tag on the valve for future monitoring.
- 6) Reinstall Line C with the new valve in the original position.
- 7) Hook up supply and signal lines to the actuator and controller.
- 8) Using the controller, open and close the new valve to verify operability.
- 9) Re-commission Line C to VCM service per normal commissioning procedures.
- 10) Open valve 2 and seal it open.
- 11) Install a red plastic sign with white letters near Valve 3 which reads:
"Open Only For Dock Loading Operations"
- 12) Install a red plastic sign with white letters near Valve 1 which reads:
"Close Only for Dock Loading Operations"

Design Basis and Discussion

A pressure control loop will be added which will prevent the pressure on the VCM line to the shiploading dock from reaching the relieving pressure (200 psig) of the Bauxite Dryer, S-402. The loop will consist of (1) an existing pressure recorder-indicator, (2) a locally mounted pneumatic indicator-controller, and (3) a 4"-300# Durco G-4 valve with an actuator and positioner. An operator can set the controller at 175 psig. Should the dock line pressure reach that point, an alarm will sound in the control room and the pressure control valve will relieve the excess pressure to the existing VCM recirculation line. When the dock line is not in use, the pressure control valve or an alternate valve should be opened to allow the pressure to relieve to the recirculation line. Valve 2 (see P&ID) must be sealed open.

Operation

When a vessel is to be loaded at the dock, valve 1 must be closed, valve 3 must be open (see P&ID), and the pressure controller set at 175 psig. If the line pressure reaches 175, the pressure control valve (PCV-702) will open and an alarm will sound in the control room.

When dock loading is complete, valve 3 should be closed to prevent accidentally refilling the dock line and valve 1 should be opened to allow the dock line and recirculation line pressures to equalize. The pressure controller setting can remain at 175 psig.

Energy Impact Statement

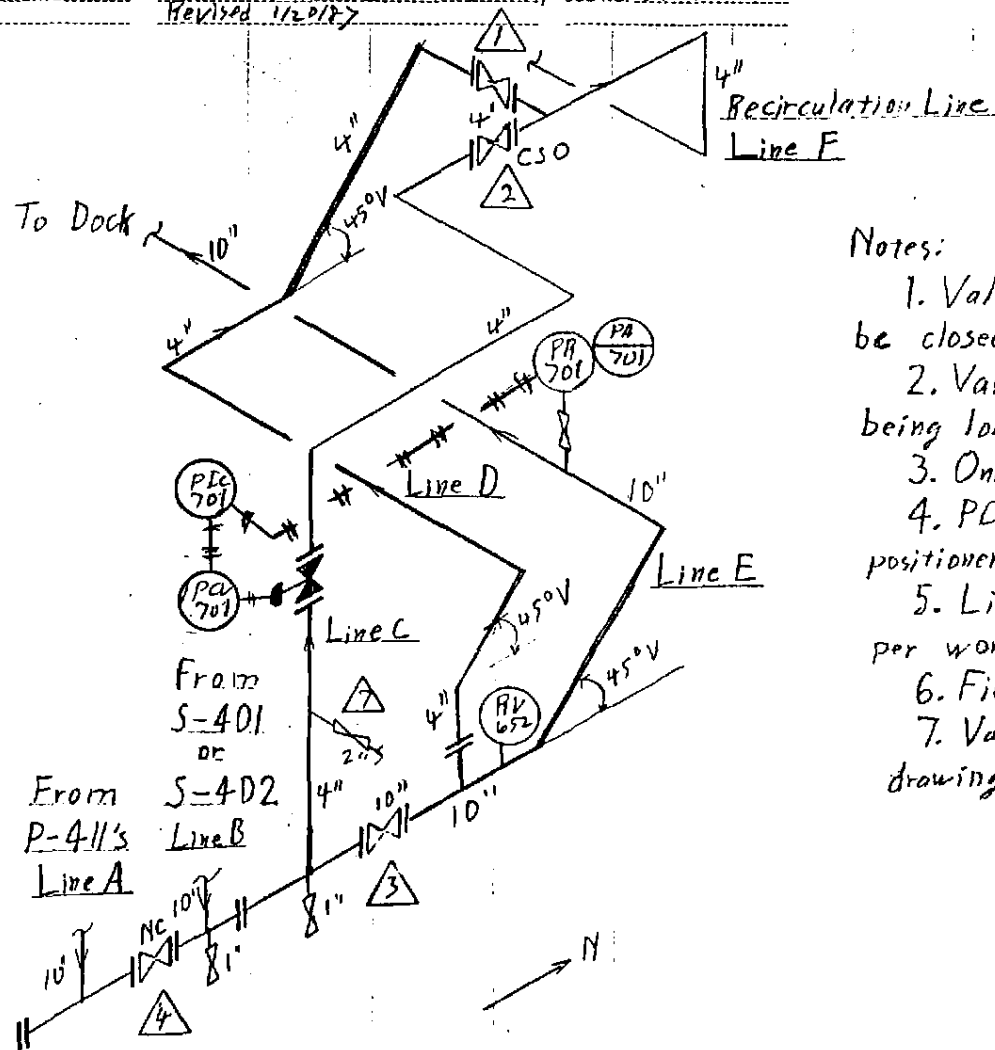
This project will have no effect on plant energy consumption. A Process Design Energy Checklist has been completed and is on file.

Environmental Impact Statement

The possibility of emergency releases of vinyl chloride to the atmosphere due to overpressurization of the dock loading line at the loading rack will be eliminated. The environmental checklist has been completed and is on file.

Safety & Health Impact Statement

The likelihood of exposure to VCM in the loading rack area will be reduced since overpressurization of the dock loading line will be relieved into the closed recirculation system. The safety checklist has been completed and is on file.



Notes:

1. Valves $\Delta 2$ & $\Delta 3$ must be open and valve $\Delta 1$ must be closed during ship loading.
2. Valve $\Delta 1$ may be open when a ship is not being loaded.
3. Only PCV-701 and PIC-701 are new.
4. PCV-701 is a 4"-300# G-4 Durco with a positioner.
5. Line C to be cleared and removed for welding per work list.
6. Field locate PCV-701 and PIC-701 on Line C.
7. Valve $\Delta 5$ on Line B is not shown by this drawing. See sheet no. 1.

CWH 000001891

Instrument List

<u>Item No.</u>	<u>No. Required</u>	<u>Description</u>
PCV-701	1	Durco G-4 Valve, Cast Steel, 4"-300#, with actuator
PIC-701	1	Foxboro 43 HP Controller, 0-200 psig

CWH 000001893



Engineering Center
Ponca City, Oklahoma

Indicators, Recorders, Controllers
(Receiver Instruments)

SPECIFICATION DATA SHEET

PROJECT NO. _____

A.F.E. NO. _____

REQ. NO. _____

DATE 1/23/87 APP'D BY _____

MADE BY J B Chorn

PLANT VCN

PROJECT Dock Line Pressure Control

GENERAL	1	ITEM NO.	<u>PIC-701</u>
	2	SERVICE	<u>VCN</u>
	3		
	4	MANUFACTURER	<u>Foxboro or equivalent</u>
DESIGN DETAILS	5	MODEL NO.	<u>43AP</u>
	6	INSTRUMENT FUNCTION	<u>Pressure Control</u>
	7	INSTRUMENT MOUNTING	<u>Outside, Local</u>
	8	ELECTRICAL CLASSIFICATION	
	9	POWER SUPPLY	
	10	INPUT SIGNAL	<u>3-15 psig</u>
	11	ACCURACY	
	12	REPEATABILITY	
	13		
	14		
INDICATOR-RECORDER	15		
	16	NO. OF PENS OR POINTERS	<u>1</u>
	17	SCALE RANGE	<u>0 - 200 psig</u>
	18	CHART SIZE AND TYPE	<u>NA</u>
	19	CHART RANGE	<u>NA</u>
	20	CHART NUMBER	<u>NA</u>
	21	CHART FACTOR	<u>NA</u>
	22	CHART DRIVE	<u>NA</u>
	23		
	24		
CONTROLLER	25	CONTROL MODE (SEE LINE 44)	<u>P, I</u>
	26	CONTROLLER ACTION	<u>Direct</u>
	27	SCALE RANGE	<u>0 - 200 psig</u>
	28	SET POINT ADJ.: MAN. — REMOTE	<u>Manual</u>
	29	AUTO — MAN. SWITCH AND ADJ.	
	30	OUTPUT SIGNAL	<u>3 - 15 psig</u>
	31		
	32		
ALARMS	33	ALARM FUNCTION	<u>Existing - High Pressure</u>
	34	QUANTITY AND FORM	
	35	CONTACT RATING	
	36		
	37		
ACCESSORIES	38		
	39		
	40		
	41		
	42		
	43		
	NOTES	44	CONTROL MODES: P = PROPORTIONAL (GAIN), I = INTEGRAL (RESET), D = DERIVATIVE (RATE), BIAS, GAP, RATIO, BATCH
45		RECORDER INK SUPPLY: CAPILLARY WITH 6 MONTHS MIN. SUPPLY.	
46		<u>Controller action should be to open the valve at pressures</u>	
47		<u>above the set point. Normal set point is 125 psig.</u>	
48			
49			
50			
51			
52			

4-439-S

QUOTATION WILL NOT BE CONSIDERED IF MANUFACTURER DOES NOT COMPLETE FORM BY FURNISHING INFORMATION FOR BLANK SPACES.

CWH 000001894
SHEET 1 OF 1



Conoco Inc.
Engineering Center
Ponca City, Oklahoma

Pressure Instruments

SPECIFICATION SHEET

PROJECT NO. _____

A.F.E. NO. _____

REQ. NO. _____

DATE 1/23/87 APP'D BY _____

MADE BY J.B. Chorn

PLANT VCM

PROJECT Dock Line Pressure Control

GENERAL		ELEMENT		VALVE		SERVICE CONDITIONS		NOTES	
1	TAG NO.	PCV-501							
2	SERVICE	VCM							
3									
4	INSTRUMENT TYPE	Pressure Control							
5	LOCATION	VCM Load Rack							
6									
7	TYPE								
8									
9	LOCATION								
10	TEMPERATURE, °F								
11	PRESSURE								
12	MATERIAL								
13	TRANSMITTER: PNEU OR ELECT.								
14	RANGE, PSIG								
15									
16	TYPE	Durco G-4							
17	LOCATION	VCM Recirc. Line							
18	MATERIAL: BODY	Trim							
19	SIZE: BODY	PORT							
20	NUMBER OF PORTS								
21	PLUG FORM	Equal Percentage							
22	ΔP: MIN.	NORM		MAX					
23	CALC CV — NORMAL FLOW	MAX FLOW							
24	VALVE CV — FULL OPEN								
25	FAILURE POSITION								
26	MAX. SHUT OFF ΔP								
27	DESIGN PRESSURE								
28									
29	FLUID (NOTE: LIQ./VAP.)	Liquid							
30	TEMP. °F: NORM	MAX							
31	PRESSURE, PSIG								
32	*API (MW)								
33	SP GR AT STD. COND.								
34	SP GR AT T&P								
35	VAPOR PRESSURE AT T, PSI A								
36	WEIGHT % VAPOR, IN-OUT								
37	VISCOSITY AT T&P								
38	% LIQ., IN	OUT							
39	RATE: NORMAL								
40	RATE: MAX	MIN							
41									
42	Valve should be equipped with a Quadra Power								
43	operator with a P-22 Honeywell Positioner with								
44	gages or equivalent.								
45									
46	Valve should open wide open at 175 PSIG. On-off action								
47	Capability to function as a pressure controller should								
48	be retained.								
49									
50									
51									

CWH 000001895

SPEC NO. _____ REV. _____

SHEET _____ OF _____

(X) INDICATES MANUFACTURER TO GIVE INFORMATION IN HIS QUOTATION.