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Interoffice Communication

To John Friend
From D. Gostylo
Date November 17, 1977
Subject Wet Vent Header Connection for the EDC Wash System
Design No. 105-100-1177 DG
FINAL

The attached "Class A" design provides for the piping to connect the EDC wash system with the new Wet Vent Header System. The wash system, which consists of the caustic decanter, T-102, the acid washers, T-103 and T-103A, and the stripper feed drum, T-110, presently vents corrosive material, EDC, and VCM directly to the atmosphere. These discharges are in violation of recent EPA standards which require all exhaust streams containing more than 10 ppm VCM to be contained. The Wet Vent Header System will eventually exhaust into the new incinerator where the vent materials will be disposed of properly.

If there are any questions or comments concerning this design please contact me.

Daniel Gostylo

Daniel Gostylo
Process Engineer

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cc:

JAD-WVH-HDG(5)-JRH(4)-GLF-PE

APPROVED BY:

James O. Gibson
J. O. Gibson
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CWH 000002160

IMPACT STATEMENTS

ENVIRONMENTAL AND SAFETY

This design reduces the exposure and safety hazards resulting from the atmospheric venting of corrosive and possibly carcinogenic material by piping the discharges to the new wet vent header.

ENERGY

This design has no major impact on plant energy consumption.

DESIGN BASIS AND DISCUSSION

The EDC wash system consists of the caustic decanter, T-102, the acid washers, T-103 and T-103A, and the stripper feed drum, T-110. T-103 and T-103A vent to T-110, which then vents directly to the atmosphere. T-102 also vents to the atmosphere but at a separate location.

This design ties in the EDC wash system to the wet vent header system at an existing valved connection provided for by an earlier design. In this design, T-103 and T-103A will no longer vent to the top of T-110, but will vent through the same line as T-110. T-102, no longer having a separate system, will also vent through the same line as T-110. Block valves have been provided in the vent lines from T-103 and T-103A to allow alternate service; and a block valve has also been provided in the vent line from T-110 to allow continued operation of the wash system when the stripper feed drum is down. All line sizes in the design were chosen to correspond with existing nozzles. Also, note that it is essential that the 3" vent line from T-102 drops down into the 6" vent line from T-110 which in turn drops down into the 8" wet vent header. This arrangement is necessary to avoid any backflow from the wet vent header to the vessels or between vessels. Finally, the new 4" rupture disc, RD-1, is a common rupture disc for all vessels so that the vent lines from T-110 and T-103 or T-103A, whichever is in service, must be locked open.

WORKLIST

- 1) Replace the lower section of the 6" carbon steel vent line from T-110 with the new Furan Line 6-XH-99-R37-3. Install a 6" block valve in line 6-XH-99-R37-3 and lock the valve open. Finally, install a 3/4" bleeder valve and utility hose connection on line 6-XH-99-N-R37-3 between the vessel and new block valves.
- 2) Replace the upper section of the 6" carbon steel vent line from T-110 with the new Furan Line 4 -XH-103-N-R37-3. Install a 4" block valve in line 4-XH-103-N-R37-3 and lock the valve open. Install rupture disc, RD-1, immediately downstream of the 4" block valve and provide a rain cap for the atmospheric vent. RD-1 is set to relieve at 16 psig.
- 3) Run line 6-XH-19-N-R37-3 from line 6-XH-99-N-R37-3 to the existing 6" valve and nozzle on line 8-XH-15-N-R37-3. Install a 6" valve immediately upstream of line 8-XH-15-N-R37-3. This capped valve will be utilized in the future to connect the C-101 vent to this header.
- 4) Remove T-102 vent and drain line, 3-XH-108-N-A2-1 from service. The vent section of the line ultimately discharges to the atmosphere above C-101 and the drain line discharges to T-252 which is no longer in service.
- 5) Run line 3-XH-100-N-R37-3 from the 3" vent nozzle on T-102 to line 6 -XH-19-N-R37-3. Line 3-XH-100-N-R37-3 should drop down into line 6-XH-19-N-R37-3 to avoid any backflow to T-102. Install a 3/4" bleeder valve and utility hose connection on line 3-XH-100-N-R37-3.
- 6) Remove lines 4-XH-104-N-A2-1 and 4 XH-105-N-A2-1 from service. These lines presently allow the acid wash tanks, T-103 and T-103A, to vent directly to T-110. Remove the nitrogen supply line 1-IN-107-N-A2-1 from service.
- 7) Run line 4-XH-101-N-R37-3 from the vent nozzle on T-103A to line 4-XH-103-N-R37-3. Install a 4" block valve immediately downstream of the vessel and provide a 3/4" bleeder with utility hose connection. Provide a lock for the 4" block valve.
- 8) Run line 4-XH-102-N-R37-3 from the vent nozzle on T-103 to line 4-XH-103-N-R37-3. Install a 4" block valve immediately downstream of the vessel and provide a 3/4" bleeder with utility hose connection. Provide a lock for the 4" block valve.



ENGINEERING CENTER

PONCA CITY, OKLAHOMA
SPECIFICATION SHEET
RUPTURE DISC

A.F.E. NO. _____
DATE 11/9/77 W.O. NO. _____
MADE BY DS INQ. NO. _____
APP'D BY _____ REQ. NO. _____
B.M. NO. _____ P.O. NO. _____

PLANT VCM PROJECT WET VENT HEADER CONN. FOR WASH SYSTEM

ITEM NO. _____
SERVICE RD-1 : RELIEVES T-102, T-103, T-110

MANUFACTURER: BS+B OR EQUIVALENT

MODEL NO. : _____

FLUID : EDC, WATER, HCl, NaOH

STATE : VAPOR

REQUIRED CAPACITY: 39,310 16/HR

MOL. WT. / (S.G.R. : (AVERAGE) 58.5 / 1.13

VISCOSITY : 0.017

DESIGN PRESS OF EQUIPMENT : 16 PSIG

PRESSURE OPERATING / RELIEVING : 2 PSIG / 16 PSIG

TEMP. FLOWING / RELIEVING : 140 °F / 240 °F

BACK PRESSURE : ATMOSPHERIC

DESIGN DETAILS —

TYPE: RBP - 90

SIZE: 4"

MATERIALS: S.S. WITH A TEFLON PROTECTOR
ON THE PROCESS SIDE

HOLDER

TYPE : FLANGED

MATERIAL : OUTLET - C.S. INLET - TEFLON LINED C.S.

RATING : 150 #

ACCESSORIES : TWO SPARE RUPTURE DISCS

CWH 000002164

SHEET 1 OF 2 REV 0

CONOC

CONTINENTAL COMPANY

LAKE CHARLES VCM PLANT

LAKE CHARLES, LA.

Design No:
VCI -Sheet 2 Of 2

PIPING SCHEDULE

Desination	Flowing Fluid	Service		NORMAL		DESIGN		Flow lb/hr.	lb/ft ³	V L	Vel. ft/sec	PSI ΔP/100
				Temp. OF	Press. PSIG	Temp. OF	Press. PSIG					
6-XH-99-N-R37-3	EDC-VCM H ₂ O-HCl	T-110	4-XH-103-N-R37-3	140°	2	240	16	—	—	V	—	—
4-XH-103-N-R37-3	EDC-VCM H ₂ O-HCl	6-XH-99-N-R37-3	ATM.	140°	2	240	16	39,100	0.24	V	—	28
6-XH-19-N-R37-3	EDC-VCM H ₂ O-HCl	6-XH-99-N-R37-3	8"XH-15-N-R37-3	140°	2	240	16	—	—	V	—	—
3-XH-100-N-R37-3	EDC-VCM H ₂ O-HCl	T-102	6"XH-14-N-R37-3	140°	2	240	16	—	—	V	—	—
4-XH-101-N-R37-3	EDC-VCM H ₂ O-HCl	T-103A	4XH-102-N-R37-3	140°	2	240	16	—	—	V	—	—
4-XH-102-N-R37-3	EDC-VCM H ₂ O-HCl	T-103	4XH-103-N-R37-3	140°	2	240	16	—	—	V	—	—

CWH 000002165

NOTE: DIAGRAM SHOWS ONLY DETAIL PERTINENT TO THIS DESIGN.

