



Interoffice Communication

To Mr. G. L. Kreutzer, CED, Ponca City

From D. L. Edwards-C. L. Saylor, MED, Ponca City

Date February 9, 1977

Subject Acid Brick Lined Scrubber - VCM Incinerator - Lake Charles VCM PLT

A scrubber of lined carbon steel construction should have the following components. A minimum of 1/8" glass reinforced furan resin membrane over a suitably cleaned and primed vessel wall. This membrane should be pin hole free. The membrane should extend into all nozzles. One course of Harbison-Walker "Duro-Brick" and one course of carbon brick (Union Carbide) should be used in the bottom section up to a point in the tower where the temperature is 160°F or less. One course of carbon brick should then run up the remainder of the tower. The brick should be of adequate thickness to maintain a skin temperature of 125°F maximum, but, a minimum of 2 1/2" of each type of brick should be used. The contractor's proposal should include provisions for lining all openings with an effective ID of 16" or larger with brick. For openings smaller than 16", a sleeve of impervious graphite or ceramic should be used.

A "Furan" resin mortar should be used for bonding the brick.

The specification prepared for purchase of the vessel and installation of the linings should include the following guidelines.

- All weld spatter to be removed.
- All welds to be ground flush and smooth.
- No nozzles should project inside the shell. They must be flush with the vessel wall.
- Be sure all the clips, braces, etc., to be welded onto the shell are done before the lining is installed.
- No hydrotesting to be done after lining is installed.
- All the lining system to be field installed.
- All lining testing to be verified by Conoco's inspector.
- External temporary insulation will be required during cold weather. Heaters must be utilized by the installers all the time to make sure the inside of the vessel is maintained above 60°F.
- Surface preparation for the primer will need to be a white or near white blasted finish. Anchor depth created to be suitable for the type and thickness of primer.

In Louisiana they need to prime what they blast each day. If not primed, it must be reblasted the following day.

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- The 1/8" membrane should be spark tested at not less than 15,000 volts to be sure it is pinhole free. All nozzles included!
- Nozzle sizes to be increased in size as required to ensure finished opening, with liner installed, meets the process requirements.
- Careful detail designs of packed bed supports to be submitted to Conoco for approval prior to fabrication of the vessel.

Same applies to the hot gas inlet configuration in the bottom of the tower.

- The bricks are to be conventional commercially available shapes and sizes to the maximum extent possible. Shapes used to turn the circles should be "flowlined" if necessary to be sure they "throw" into a good tight circle with minimum mortar in the joints.
- All bricks to be cut to shape by using an appropriate brick saw.

Cut pieces used should not be less than 1/2 the dimension of the full size brick. Cut two or three if required to ensure no small bits and pieces get put in.

- A competent experienced lining contractor is a must.

The lining installation is labor intensive. A good "bricky" is a must.

GENERAL

Once you do all these things correctly, you have built a maintenance contractor's dream. And, a Conoco maintenance superintendent's headache.

We still think Haveg is the best material.



C. L. Saylor
Senior Corrosion Engineer
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dt

CC: LDW-JBH-AJM-DHS-RGG-JFL-CLS-DLE-DEB

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MSM 6/11/80

EDC tars

VCM tars

production rate

$$\frac{2909049 \text{ lbs}}{91 \text{ days}} = 31967 \frac{\text{lbs}}{\text{day}}$$

production rate

$$\frac{861103 \text{ lbs}}{91 \text{ days}} = 9463 \frac{\text{lbs}}{\text{day}}$$

composition of combined tars — area %

1,1,2- Trichloroethane	52.49
1,2- Dichloroethane	13.30
Bis(chloroethyl) ether	3.32
Ethylene chlorohydrin	1.16
1,1,2,2- Tetrachloroethane	.79
Perchloroethylene	.29
35-40 Chlorinated C ₄ 's, C ₆ 's and unknown compounds	28.65
Non-Volatile material	<u>3.74</u>
	103.74

	(ppm)
Ash	632
Na	150
Fe	140
Ca	0.19
Cl	910

Solids content (wt %) — 2.09

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production rate for combined tars

$$\frac{3770152 \text{ lbs}}{91 \text{ days}} = 41430 \frac{\text{lbs}}{\text{day}}$$

MSM 6-10-80
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Light Ends:

composition — area% assumed to be wt%

EDC	9.41
VCM	1.79
ETCl	36.64
Vinylid	.59
Trans; 1,1-DCE	5.57
Chlop	.07
Cis; HCCl ₃	39.24
CCl ₄	7.94
Chloral	<u>.41</u>
	101.48

production rate

$$\frac{2115824 \text{ lbs}}{91 \text{ days}} = 23251 \text{ lbs/day}$$

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MJM 6-10-80
DOK 2th 2

20PPM WAS THE LEVEL CHOSEN.
BASIS WAS INFORMATION THEY
RECIEVED FROM SHELL & DATA THEY
HAD FROM CONOCO INSTALLATIONS
WHERE WE HAVE HAD PROBLEMS.
THE RECOMMENDATION IS SOMEWHAT
ARBRITRARY — AS FAR AS THE
FIRE BRICK IS CONCERNED THE
ATTACK WILL DEPEND ON THE
FORM OF THE SODIUM SALTS.

HE FEELS THAT HE WOULD SAY
NO MORE THAN 20 PPM IN
THE LIQUID.

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