

Interoffice Communication

To J. C. Ledvina - Houston
 From J. O. Gibson - Baltimore
 Date June 17, 1980
 Subject NESHAPS STANDARD FOR BENZENE STORAGE TANKS

RECEIVED

JUN 24 1980

Attached is a letter from George Hopkins outlining the potential costs if we are forced to replace the benzene storage tanks at Baltimore with internal floating roof tanks designed per the draft NESHAPS regulation. The estimated cost is based on quotations obtained for the new LAB storage tanks. The letter also outlines some of the problems encountered in the design of the LAB tanks.

The vent collection system we are installing to control benzene emissions from the benzene storage tanks, crude storage tanks, and process sources is still three to four weeks from start-up. Thus we still do not have actual data on benzene absorption from vent streams. The design efficiency is 99.9% plus, however, and all critical rotating equipment is spared. Thus it would seem that equivalency could be shown if some reasonable provisions are included in the final regulation.

Please review the enclosed information and let me know if anything else is required to develop your comment strategy for the draft regulation.

James O. Gibson

J. O. Gibson
 Chief Process Engineer

mtw
 attachment
 cc:
 RTF THH GEH

Interoffice Communication

To J. O. Gibson

From G. E. Hopkins

Date June 10, 1980

Subject REPLACEMENT OF T-244/T-250 WITH INTERNAL FLOATING ROOF TANKS

Per your request, an approximate cost estimate to replace the two benzene storage tanks (T-244/250) with tanks containing internal floating roofs has been prepared. This estimate was made to give Joe Ledvina an idea of the expense we would incur should EPA benzene standards require these modifications at our plant.

The total cost, not including removal of T-244 and T-250 and piping changes, is estimated at \$559,600 for both tanks and breaks down as follows:

<u>Item</u>	<u>No. Req'd</u>	<u>Cost per Tank</u>	<u>Total Cost</u>
1. Tank Replacement:			
a) New 73'-6" ϕ x 40' Hgt. Cone Roof Tank (30 M bbl)	2	\$173,900	\$347,800
b) Pad for New Tank	2	3,400	6,800
c) Painting for New Tank	2	9,000	18,000
Total Tank Replacement Cost (Installed)		\$186,300	\$372,600
2. Internal Floating Roof:			
a) Floating Roof with Dbl Seal, Btm Seal, Viton, Top Seal Neoprene	2	\$ 53,800	\$107,600
b) Revisions for Double Deck Assembly to make roof unsinkable	2	28,500	57,000
c) Revisions to make Top Seal Viton (instead of Neoprene)	2	11,200	22,400
Total Internal Floating Roof Cost (Installed)		\$93,500	\$187,000
Total Project Cost:		<u>\$279,800</u>	<u>\$559,600</u>

The costs for replacing the ellipsoidal T-244/250 with cone-roof tanks were estimated using the CED Estimating Manual. The internal floating roof costs were obtained by revising quotes transmitted to Fred Linstead from Chicago Bridge and Iron Company for installing internal floating roofs in the benzene storage tanks to be used in the new LAB plant. These quotes were obtained for 30 foot and 40 foot diameter tanks.

Therefore, the costs for our 73.5 foot diameter tanks were estimated by scaling these quotes up based on: roof surface area for the internal floating roof; circumference for the viton top seal; and cost to diameter ratios for the double deck assembly.

The internal floating roof system basically consists of a 3/16" double deck floating roof with about 12" to 14" between decks. The assembly would have two seals (both viton) with polyurethane foam between them. The primary (or lower) seal is an envelope seal and the secondary (or upper) seal is a slick-faced non-reversing wiper seal. The double-deck assembly, as opposed to the standard single-pan arrangement, was included at R. W. Seymour's request to ensure that the floating roof assembly does not sink (as has happened previously at Baltimore and other locations). The Ultrafloat aluminum roofs that Conoco have used in the past were deemed unsatisfactory because they do not meet the EPA requirement that the floating roof rest on the liquid benzene surface. As a result, the proposed roof turns upward instead of downward. The deck rims have about 6" clearance from the tank wall.

In evaluating the cost estimate, the following additional items should be considered:

- 1) Of the major tank vendors contacted by the new LAB plant project group, Chicago Bridge and Iron Company was the only one that would quote an internal floating roof tank.
- 2) The estimate does not include the cost of either removing T-244 and T-250 or of preparing new dikes and installing the new tanks at a different location. Another possibility is to use T-251 and T-252 as benzene tanks and T-244/250 as crude tanks. However, the costs of these items cannot be effectively estimated without more project definition.
- 3) The piping and instrument tie-ins to the new benzene tanks are not included in the estimate. Some piping would be required due to the new tanks being cylindrical instead of ellipsoidal but the costs of these revisions are assumed to be small in comparison to the total project cost (unless the new tanks are installed in another location).

G. E. Hopkins

G. E. Hopkins
Senior Process Engineer

mtw