



Interoffice Communication

To R. A. Conrad
From S. J. Reynolds
Date April 2, 1984
Subject LIGHT ENDS VALUE

The value of the light ends by-product has been re-evaluated with respect to chlorine content and light ends incineration/muriatic acid production. The incineration evaluation was based on :

- 1) A light ends production rate of 1.86MM lbs./yr.
- 2) A muriatic acid market value of \$50/ton.
- 3) A \$150M capital expenditure for the muriatic acid carbon bed project paid back in 3 years with 15% interest annually.
- 4) The 1984 variable cost budget costs and February, 1984 actual costs.

On the chlorine content basis the light ends value is approximately 2.6 ¢/lb. (1984 Variable Cost Budget). On the incineration/acid production basis the light ends value is in the approximate range of 1.8 ¢/lb. to 7.3 ¢/lb.

The chlorine content of the light ends is approximately 72.4% by weight. This percentage is based on eleven months of light ends analyses after modernization. Therefore, based on the 1984 Variable Cost Budget chlorine cost of 7.1875 ¢/lb., the light ends value is calculated as 2.6 ¢/lb.

On the basis of incineration/acid production the light ends value was evaluated on two costs bases, the 1984 Variable Cost Budget and February, 1984 actual costs. These two cases are shown in the attached Table 1 which shows a breakdown of the revenues and costs for muriatic acid production from light ends. Incorporated into each case are two maintenance cost estimates (\$30M/yr. and \$10M/yr) which are shown in Table 1. These two maintenance cost estimates are shown because although the maintenance on the incinerator and acid production units is increased during light ends incineration, it is difficult to project what the maintenance costs on these units would be if all of the light ends were incinerated during the year, and also what portion of the maintenance costs would be associated with only the light ends. Therefore, on the incineration/acid production basis, the light ends value is in the approximate range of 1.8 ¢/lb. to 3.2 ¢/lb.

In addition to valuing the light ends on the basis of muriatic acid production, the cost of the muriatic acid carbon bed project might also be included.

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If the light ends were sold instead of incinerated, the muriatic acid carbon bed would not be used during the duration of the contract with Vulcan (Heavy ends incineration excluded). Therefore, the need to recover the capital expended on the project, plus interest, can be considered by increasing the light ends sales price. It was assumed that the capital expenditure of \$150M for the project plus 15% interest annually would be payed back in three years. This leads to an incremental cost of 4.1 ¢/lb. of light ends which would be added to the muriatic acid production based light ends value (see Table 1). This evaluation leads to a light ends value in the approximate range of 5.9 ¢/lb. to 7.3 ¢/lb.

The above cases present the various bases by which light ends could be valued for sale to Vulcan. In the final analysis, we will request the maximum that Vulcan will pay and compare this to the various cases. Because the light ends production is significantly less than projected when the carbon bed was installed, the current value of the light ends as acid is less than the value received from Vulcan. If Vulcan comes back with a value higher than the current 2.25 ¢/lb. then serious consideration should be given to their proposal.

If there are any questions or comments, please contact me.

S. J. Reynolds

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Process Engineer

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TABLE 1
LIGHT ENDS VALUE

BASIS: 1.86MM lbs./yr. Light Ends, \$50/ton Muriatic Acid Market Value

<u>Revenues</u>	<u>Annual Quantity</u>	<u>February 1984 Actual</u>	<u>1984 Variable Cost Budget</u>
Natural Gas	16.3MMSCF	\$ 62.5M	\$ 63.7M
Muriatic Acid Sales	12.7MM Lbs.	<u>111.8</u> <u>\$174.3M</u>	<u>111.8</u> <u>\$175.5M</u>
<u>Costs</u>			
Electricity	25.8M KWH	\$ 0.9M	\$ 1.3M
Caustic	282M Lbs.	19.2	24.9
Sulfur Dioxide	38.6M Lbs.	9.8	10.8
Nitrogen	0.9MM SCF	0.6	0.7
Carbon	5100 Lbs	5.8	5.8
Water	380M Gal	0.1	0.1
Maintenance	(Estimate)	30.0	30.0
Anhydrous HCl	970M Lbs.	<u>68.4</u> <u>\$134.8M</u>	<u>67.8</u> <u>\$141.4M</u>
Net Revenue		\$ 39.5M	\$ 34.1M
Light Ends Value ¢/lb.		2.1 ¢/lb.	1.8 ¢/lb.
Capital Expenditure Adjustment ⁽¹⁾		<u>4.1 ¢/lb.</u>	<u>4.1 ¢/lb.</u>
Net Light Ends Value (@ \$30M Maint.)		<u>6.2 ¢/lb.</u>	<u>5.9 ¢/lb.</u>
Light Ends Value ¢/lb. (w/maintenance cost - \$10M/yr)		3.2 ¢/lb.	2.9 ¢/lb.
Capital Expenditure Adjustment (1)		<u>4.1 ¢/lb.</u>	<u>4.1 ¢/lb.</u>
Net Light Ends Value (@ \$10M maint.)		<u>7.3 ¢/lb.</u>	<u>7.0 ¢/lb.</u>

Note (1): Based on a \$150M capital expenditure for the muriatic acid carbon bed project paid back in three years with 15% interest annually.