

To: D. L. Davis - Houston

From: P. E. Markey  
Date: December 9, 1985

Subject: 1985 Cost Reduction Items  
LCVCM Plant

Interoffice  
Communication

VISTA

As requested in your IOC dated November 15, 1985, we have prepared the following list of cost reduction items for the LCVCM operation.

I. Raw Materials and By-Products

A. Olin HCl as an Oxychlorination Feedstock

Estimated Annual Savings: \$200M - \$600M

Description: Piping and Instrumentation modifications were completed in June 1985 to permit import of Olin HCl as an Oxychlorination Unit feedstock. The net effect of the project is to back out a portion of the more expensive chlorine used in the Direct Chlorination Area.

B. Waste Muriatic Acid Sales to Texas United

Estimated Annual Savings: \$100M - \$140M

Description: In November 1985 we began to sell low grade acid off the Incinerators to Texas United. The major thrust of the savings is attributable to reduced limestone and caustic neutralization costs.

C. Use of LCVCM Plant Muriatic Acid for Exchanger Cleaning

Estimated Savings in 1985 - \$6M

Description: LCVCM Muriatic Acid was used in chemical cleaning activities at the LAB Plant and LCVCM during the 1985 turnarounds.

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D. Exercising Contractual Take-or-Pay Relief on Oxygen Purchases from Big 3

Estimated Savings: \$52.5M in 1985

Description: The oxygen contract with Big 3 specifies a 15-day Take-or-Pay relief period if advance written notice of the outage is provided. Verbal notice was made prior to the 1984 turnaround and relief was not granted. Conoco was notified for possible recourse. It is important that the plants participate in contract preparation and that they have on file an executed copy. Line operation approval of invoices is desirable.

E. LCVCM Operation of Ethylene Storage Terminal

Estimated Annual Savings: \$500M - \$600M

Description: In December 1984 the VCM Plant assumed operating responsibility for the Ethylene Storage Terminal in Sulphur, LA. The Terminal was formerly operated by Union Texas Petroleum. The Terminal is now under a 10 year lease to Vista.

II. Processing Supplies and Operating Supplies

A. Nitrogen Cost Reduction

Estimated Annual Savings: \$170M

Description: A number of steps have been taken in this area:

- Competitive bidding for ship and equipment purging results in nitrogen costs of approximately 50 ¢/100 SCF vs. \$1.30/100 SCF list price.
- Pipeline Leak Checks of lines and associated equipment and instrumentation.
- Optimizing pipeline nitrogen usage. The contract with Liquid Air provides a double tiered price structure with the unit price increasing by a factor of 8 at 40,000 SCFH. Purging activities are structured to stay under the higher tier pricing level.

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- Nitrogen invoices are checked monthly by operating personnel for accuracy. (See comments under O<sub>2</sub> contract)
- A backup liquid nitrogen tank was eliminated as redundant since existing gas bottles and compressor could provide the same service.

B. Polymer Optimization at Secondary Waste Water Treatment

Estimated Annual Savings: \$15M

Description: Prompted by a vendor recently shutting down an area distribution terminal the plant was faced with higher inventory and transportation costs. To avert these costs the plant screened polymers of competitive vendors and found lower dosages of lower priced polymers could be used without adversely affecting the effluent water quality.

C. Modification of the Caustic Decanter, S-206

Estimated Annual Savings: \$40M - \$80M

Description: Engineering evaluations of this vessel determined inefficient phase separation was occurring which resulted in increased Flake Caustic consumption in the downstream dryers. A cross sectional baffle and redundant level instrumentation were installed to improve the decanter's operation. The primary driving force for the study was to reduce monomer alkalinity and thereby improve product quality. The Flake Caustic savings were an added benefit.

D. Cooling Water Treatment Improvements

Estimated Annual Savings: Not Quantified

Description: In December 1985 the plant switched cooling water treatment vendors, the treatment system (phosphate to zinc) and reassigned sampling from the lab to operations. Results to date have been favorable with reduced corrosion, reduced fouling and better overall system control. The improved cooling water treatment was a contributing factor of the extended run length recently achieved.

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### III. Utilities and Energy Conservation

#### A. Air compressor Control Scheme Revisions, BL-302

Estimated Annual Savings: \$73M

Description: Based on Engineering studies of the plant air compressor it was determined a closed control scheme with modified load and unload set points could save energy. The changes were made in October 1985 with no surge problems encountered. The change will save an estimated 1,350,000 KWH annually.

#### B. EDC Purification Reflux Pump Replacement

Estimated Annual Savings: \$28M (Capital Cost: \$33M)

Description: Operational changes and lower by-product production associated with the new oxygen-based process have reduced tower reflux rates on the purification columns to the point the pumps were operating well under their rated capacity. To energy optimize the system, two smaller reflux pumps were purchased and installed and two pumps were relocated on the 1985 turnaround.

#### C. Exercising Contractual Take-or-Pay Relief on Electricity Purchases from GSU during 1985 Turnaround

1985 Turnaround Savings: \$10M

Description: During summer months the LCCC contract with GSU provides for electrical Take-or-Pay relief provided GSU is notified of the Megawatt reduction 30-days in advance in writing.

#### D. Cracking Furnace Efficiency Improvements

Estimated Annual Savings: Not Quantified

Description: Cracking Furnace improvements were a key factor contributing to the Fiscal 1985 Production and Energy Conservation Records. The improvements included:

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- Replaced bad order refractory in both heaters with new fiber type refractory.
- Replacement of all burner tips
- Revised decoke procedure
- Increased use of cracking promoter to maximize production rates.
- Al Thomas was brought in during the 1985 Turnaround to assist in evaluating and inspecting the cracking furnaces. A number of improvement areas were identified.

IV. Maintenance Cost Reduction Projects

A. Acid Circulation Pump Replacement

Estimated Annual Savings: \$11M (Capital Cost: \$33M)

Description: Eight (8) high maintenance lined steel pumps were replaced with fiberglass pumps in the Incinerator Area.

B. EDC Tar Stills Pump Replacement

Estimated Annual Savings: \$15M (Capital Cost: \$6M Miscellaneous Funds)

Description: A high maintenance diaphragm pump in heavy ends service was replaced with a surplus centrifugal pump with a double mechanical seal and flush system in October 1985. The replacement pump has performed very well to date eliminating a chronic maintenance and potential safety problem. An alternate capital project was being considered to install a Pressure Pot Transfer System at a cost of \$80M. Based on the pump's performance to date the higher cost capital project will not be needed.

C. In-plant Railcar Relief Valve Maintenance

Estimated Annual Savings: \$20M - \$30M

Description: VCM railcars are required to have their relief valves changed every 5 years. The work is now performed at the plant vs. an outside shop.

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D. Utilization of Transportation Terminal for LCVCM Road Vehicle Maintenance

Estimated Annual Savings: \$5M

Description: During Fiscal 1985 the VCM Plant phased out the use of contract road vehicle maintenance and now utilizes the S&T Terminal to perform routine maintenance on road vehicles.

E. Identification of Improved Oil Seal for Ethylene Recycle Compressor, BL-307

Estimated Annual Savings: Not Quantified  
Seal Cost: \$33M

Description: Based on discussions with LCCP they were able to reduce oil leakage substantially by utilization of the new "G" Seal in their Elliott 29M Compressor. LCVCM has budgeted the purchase of a "G" Seal for the Ethylene Recycle Compressor, BL-307. Oil leakage into the Ethylene may be a contributing cause to pressure drop in the lead Oxychlorination reactor which is the primary limitation on plant run length between turnarounds.

F. Phase Out of Loose Teflon Lined Vessels in Corrosive Service

Estimated Annual Savings: Not Quantified

Description: The VCM Plant has had poor success using loose teflon lined vessels. The loose liners are prone to leaks and difficult to repair. All of the plant's three (3) loose lined vessels were replaced with bonded lined vessels in 1985.

G. Redesigned Reboiler Bundles

Estimated Annual Savings: Not Quantified

Description: The plant has experienced high cleaning cost on the Light Ends and Heavy Ends column monel reboilers. A new design with a rectangular pitch vs. a tight square pitch made of carbon steel is being

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evaluated along with the use of carbon steel metallurgy. The changes should result in lower initial cost and reduced cleaning costs.

V. Miscellaneous

A. Use of Personal Computers

Estimated Annual Savings: \$7M

Description: Personal computers were utilized to reduce use of the more expensive EDS system.

If there are any questions, please advise.



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cc: RTF-RAC-GEH

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