

Interoffice
Communication

To: Distribution

From: P. Quinlan
Date: March 29, 1990

Subject: VCM BY-PRODUCT STREAMS

VISTA

BACKGROUND

In January 1990, a project team was formed to investigate alternate, long-term outlets for the VCM Plant's chlorinated by-product streams--Heavy Ends, Light Ends, and Muriatic Acid. (Background information on these streams is contained in my IOC of October 4, 1989, copy attached.) This investigation was prompted by the changing nature of the chlorinated solvents market, into which the Heavy Ends and Light Ends streams have been traditionally sold. With the enactment of the Montreal Protocol and the general malaise of the chlorinated solvents markets, continued dependence on customers involved in these markets could jeopardize the long-term stability of Vista's VCM operations.

The mission of the team was to determine the best means, on a long-term basis, for handling VCM Plant by-product streams. The team brainstormed a list of potential alternatives and established a set of criteria for evaluating these alternatives. Based on the established criteria, the brainstormed list was narrowed down to two basic alternatives:

1. Invest capital at Lake Charles to make Vista self-sufficient with regard to these by-product streams; or
2. Establish some type of joint venture with another producer to handle these streams.

CAPITAL INVESTMENT AT LAKE CHARLES

PED and R&D performed a preliminary analysis of five known technologies for handling chlorinated hydrocarbon streams. These technologies are:

1. BASF By-Product Recycle
2. B. F. Goodrich's (BFG) Catoxid Process
3. UOP's By-Product Conversion
4. Incineration with HCl recovery
5. Supercritical Water Oxidation

BYPROD. IOC

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The capital cost (very preliminary, order of magnitude estimates) associated with each of these options is in the \$5-10MM range, with the exception of Supercritical Water Oxidation which is believed to be more expensive. Net annual revenues of \$100-300M/year (from recovered chlorine values and elimination of current disposal costs) would be realized. Each of these processes would essentially eliminate Vista's dependence on third parties and result in the recycle of the contained chlorine as HCl to the Oxychlorination reactor. The BASF By-Product Recycle appears to be the best option for Vista based on the preliminary analysis.

JOINT VENTURE

BFG appears to be the most viable "joint venture" partner for Vista. BFG is planning to build another Catoxid Unit at LaPorte, Texas. BFG currently has Catoxid Units operating in LaPorte and Calvert City, Kentucky. (BFG's Catoxid process catalytically converts Heavy/Light Ends to HCl, which BFG uses to produce EDC.) BFG is very interested in working with Vista to provide base loading for this new unit. BFG would consider capital investment by Vista if Vista were interested, but would prefer an arrangement whereby BFG commits to take material from Vista under a long-term commitment (5-10 years) at a base fee which would escalate with inflation. The base fee proposed by BFG is \$200/ton (versus a current fee of \$60/ton at PPG). BFG's schedule for this new unit includes AFE in May/June 1990 and start-up in late 1991. BFG has requested feedback from Vista by early May regarding interest in a long-term arrangement. One drawback to this joint venture option is that the weak Muriatic Acid stream would not be included. This stream would continue to be moved to Tetra Technologies, or a capital investment (\$300M-\$1000M) would be required to recycle this material to the oxychlorination reactor.

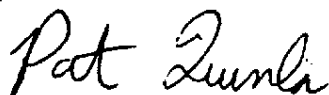
SUMMARY/RECOMMENDATION

PPG (Heavy Ends) and Vulcan (Light Ends) appear to represent, at best, tenuous long-term outlets for VCM Plant by-product streams. The chlorinated solvents markets are weak and getting weaker. By PPG's own admission, it would prefer not to take Vista Heavy Ends due to the weakness in the chlorinated solvents market and Heavy Ends being an exceptionally poor feedstock for its Per-Tri Unit. Vista, being PPG's largest chlorine customer, currently gives PPG a large incentive to continue taking the Heavy Ends. However, events beyond PPG's control (stricter incinerator regulations, further weakening of the chlorinated solvents market, etc.) could prevent PPG from continuing to take this stream. The only known alternative to PPG for Heavy Ends today is commercial incineration (at a cost of \$6-8MM/year), with costs for this option expected to continue increasing. BFG's existing Catoxid Unit in LaPorte, which was identified in 1987 as an alternative, no longer has spare capacity. Vulcan will continue to take Light Ends only as long as taking the stream does not back out Vulcan-produced chlorine.

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In order to insure the long-term stability of Vista's VCM/PVC operations, I recommend Vista pursue a 3- to 4-year evergreen arrangement with BFG to begin moving the Heavy Ends and Light Ends streams to BFG's new Catoxid Unit in late 1991 (BFG's estimate of when this unit will start up). This option requires no capital investment on the part of Vista, ties these streams to the VCM/PVC market, and results in this material being recycled instead of being incinerated. It will, however, increase Vista's cost to handle this stream by \$900-1000M/year relative to the fees currently paid to PPG. Also, I recommend PED better define by late 1990-early 1991 the costs, applicability, and installation time for the BASF By-Product Recycle Process. This will place Vista in a better position to make the capital investment and move these streams back in-house in 1994 if necessary or desirable. Under this arrangement, the weak Muriatic Acid stream will continue to move to Tetra Technologies, which appears to be a solid long-term outlet.

Based on BFG's projected timing for this project, Vista would need to begin negotiations in the very near future if this option is to be pursued. Consequently, I would like to receive your feedback no later than April 22. If you need additional information or have questions, please contact me.



P. Quinlan

Attachment

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