

ETHYL CORPORATION

INTER-OFFICE

FROM Dr. R. A. Kehoe
K. C. Jost
SUBJECT Fluid Pumping

ADDRESS

ADDRESS Detroit

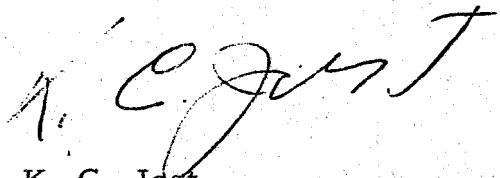
DATE October 23, 1968

As discussed with you by phone, we would appreciate your views on fluid pumping at refinery mixing plants. You may want to, if not too late, include your thoughts on this in your overall report to Dr. Kirby -- Mr. R. A. Douglass has discussed fluid pumping with Dr. Kirby and Dr. Kirby feels that you and your committee should render a decision or basis for a decision on fluid pumping.

You will recall, we did discuss fluid pumping at considerable length in meetings with you. Also as background, the subject is covered in my memo to you, copy attached.

In summary:

1. Some overseas refineries pump fluid whereas domestic refineries do not.
2. We have a research project underway to determine the feasibility of fluid pumping from a technical standpoint.
3. If we find an acceptable system, we will not arbitrarily introduce this to the industry without first having complete agreement from high level management including the Medical department that it is wise to do so.
4. Some EID representatives feel they are losing business because of Ethyl's eductor method of handling lead. To answer this, C. L. Foushee, EID, has prepared a proposed letter to EID personnel, copy attached. He has not mailed this; we would like your comments on his memo.


K. C. Jost

KCJ/lad
Enclosure

KE 0002615

A major change is that safety is no longer a line function. In practice it has not been for many years. This is not, in my opinion, a deterrent to fulfillment of the policy. In fact, it is stronger considering today's overall industry corporate structure.

You will note that changes have been made in certain requirements; for example, Mixing Observations are no longer an annual requirement for tank car plants. This is because mixing is becoming an automatic operation with the operator sitting in a control room pushing buttons and watching lights while the lead plant is unattended except for start-up and shut-down. A blend may take in excess of 24 hours.

We have added a new requirement, Blending System Surveillance. I feel we actually strengthened our program by changing our requirements to fit today's operating practices.

We may have a problem in a few years because of retirement of men who have a strong background and understanding of the need for safety. Our big job will be to motivate and educate people filling these positions on the need for a strong safety program.

II PROJECT #AA 4 -- The attached describes our project for determining "can we or can we not safely handle fluid under pressure." We are faced with the problem of pumping fluid more every day. Pumping is being done overseas and the web is closing in on us. Sooner or later some domestic refinery will pump fluid whether we like it or not. I feel Ethyl, as a leader in fluid handling should do sufficient research and engineering to answer the question of -- "Can fluid be safely pumped?". I would much appreciate your reaction to this.

III CI-2 HANDLING -- The attached describes handling procedures -- CI-2 is sold by Ethyl directly to the end user in most cases and usually in 10 gallon drums. Principal use areas are:

1. The military
2. Power generating stations like New York Consolidated Edison
3. Marine application -- used in ship's fuel. This is a very scattered usage and normally in one gallon containers.
4. Aircraft engine manufacturers -- Used in test work. The intent is to reduce smoke during take-off and landing of aircraft.
5. By a few oil refineries like, Gulf and Atlantic Richfield.

Generally speaking, CI-2 is handled in "open" systems.

IV. TRANSPORTATION PROBLEMS -- No attachment. In the last six months we have had six or seven domestic railroad accidents. The frequency of railroad accidents will, according to authorities, increase because of lack of manpower for adequate maintenance. Furthermore, railroad equipment is becoming bigger without real improvement in road beds. Of real concern is a major accident involving a spill of Ethyl fluid in a populated area. This could be particularly acute if the product is TML. We have a project underway to determine how best to handle such a situation.

The Boston Maru incident points out the seriousness of transportation accidents and we still feel backlashes from this.

Very truly yours,

K. C. Jost

KCJ/vd/lad
Enclosures

KE

0002617

FLUID TRANSFER PROJECT

(Supplemental Information to Project Analysis)

OBJECTIVE --- To develop a safe, efficient, economical, system for pumping antiknock on customer property by customer personnel without Ethyl attendance. A pumping system would be developed for each of the following two refinery operations.

1. Blending antiknock from the Ethyl Mixing Plant to a remotely located gasoline blend header.
2. Unloading antiknock from a shipping container into a remotely located Ethyl Mixing Plant.

The project would be conducted in two parts with priority given to the blending system because it has greater apparent application to refining needs.

Each test evaluation would give major consideration to:

- Toxic and thermal characteristics of anti-knock to achieve a safe operation.
- Performance, durability, and system design to achieve a trouble free operation.

TESTWORK LOCATION --- At Houston EMP

TASK FORCE --- Has been organized to carry out project. It consists of:

J. F. Wallis, Project Coordinator,	PCD	Detroit
R. L. Tedter	R&D	Houston
R. J. Fendley	R&D	Houston
L. M. Reeder	Manufacturing	Houston
E. J. Zatopek	Eng.	Baton Rouge

TEST DURATION --- Target completion date is first quarter of 1969.

KE

INERT APPLICATION --- Pumping systems would be intended primarily for ineries with unique in-line blending design problems. Traditionally, the um system has and is used to transfer antiknock at all domestic refineries. is not pumped. The vacuum has been adequate and successful because ineries have used primarily the batch method of gasoline blending.

With the advent of in-line blending, there is today a need for antiknock pumping systems. For in-line blending the gasoline blend header and Ethyl Mixing Plant should ideally be in close proximity. Because of the vacuum system, some refiners must relocate their railroad spur and Ethyl Mixing Plant or install a "fixed ratio" system. Both options are costly.

PRIMARY ECONOMICS --- A refiner would select a pumping system, if its cost were lower than the cost of moving a railroad spur and/or Ethyl Mixing Plant.

Ethyl should Undertake This Project To:

- Simplify refinery in-line blending system installation costs.
- Counter any move on antiknock pumping by competitors.
- Provide intelligent answers to customer inquiries on antiknock pumping.
- Maintain high safety standards in refining industry - ULTIMATELY, refiners will pump antiknock. Ethyl should lead the way.
- Maintain Ethyl leadership in antiknock handling.

PROJECT COSTS --- Total cost is \$159,500 for all divisions. PCD project analysis will reflect these costs. Of this amount, R&D will request a working budget of \$85,000. Summary of estimated costs are:

<u>Description</u>					
R&D - Material - out of pocket	\$	41,000 maximum	*	\$	22,500 minimum
R&D - Houston Manuf. Plant labor					
Engineering and overhead		44,000	"	36,500	"
R&D - EMP personnel (2 men already assigned)		50,000	"	25,000	"
Eng.- Baton Rouge		12,500	"	10,500	"
PCD - PS&S		12,000	"	9,000	"
TOTAL PROJECT COST		\$ 159,500 maximum		\$ 103,500 minimum	

- * \$189,500 maximum reflects total project cost for testing multiple systems.
- \$103,500 minimum reflects total cost if first system tested for blending and for unloading is successful. Project can then be terminated.

1. INTRODUCING PUMPING SYSTEM TO INDUSTRY --- Of major importance is the handling of test results upon completion of project. THERE IS NO INTENT TO PROMOTE OR DISCOURAGE PUMPING SYSTEMS WITH DOMESTIC CUSTOMERS WITHOUT COMPLETE SUPPORT AND APPROVAL OF ECD MANAGEMENT. Should Ethyl choose to offer a pumping system to a domestic customer, consideration should be given to first discussing the matter with Dupont, other competitors, API groups, and selected customer management for these reasons.

ANTIKNOCK SAFETY PRACTICES AND POLICIES WERE ESTABLISHED BY ETHYL, THEN ADOPTED BY DUPONT, THEN BY OTHER SUPPLIERS. LEAD SUPPLIERS HAVE BEEN VERY CAREFUL NOT TO DEVIATE FROM BASIC SAFETY PRACTICES OF WHICH THE VACUUM SYSTEM IS ONE. THIS IS PARTICULARLY TRUE TODAY BECAUSE OF THE CONTINUED THREAT OF FEDERAL CONTROLS ON THE USE OF LEAD.

The vacuum system has been a major factor in establishing a phenomenal safety record -- no illnesses or deaths resulting from mixing plant operation.

ETHYL MANUFACTURING EXPERIENCE --- Will be of vital importance to this project. However, it should be recognized that Ethyl's manufacturing requirements are totally different from the refiner.

- Ethyl -- Uses Lewis long shaft vertical pumps, which are relatively low head and medium capacity and relatively free of thermal problems. Nitrogen is also used.
- Ethyl manufacturing personnel -- are fully conversant and technically competent to handle pump malfunctions, repairs, and spills.
- Refineries
 - A blending system requires a very low capacity pump with a much higher heat input.
 - An unloading system requires a medium capacity pump which takes suction on the tank car to avoid spills at the point of unloading line connection. This makes the use of submerged pumps or nitrogen in tank cars undesirable.

KE 0002620