



Interoffice Communication

To R. A. Conrad - Houston
From J. A. DeBernardi
Date October 7, 1977
Subject VCM Incinerator - Government Bond Financing

Since the issuing of M. D. McGee's letter of September 9 on the subject, it has become apparent through conversations with people involved in the bonding project that the impact of the decisions asked for by McGee on the bonding issue are not fully understood. Also, since the original conception of the bond financing idea, there have been a number of changes in the scope of the pollution abatement project that have not been fully communicated or understood. These changes, I am sure, will affect the total bonding issue and must be considered in making decisions on bond financing.

The purpose of this letter is to outline the present situation related to the pollution abatement project to be bonded. It is my belief that a meeting will be required involving Stamford, Houston, Ponca City, and Lake Charles people involved in the bonding project to obtain an understanding by all related to financing, and set the basis for bringing this project to conclusion as quickly as possible.

Pollution Project Scope

As originally conceived, the VCM Plant in order to meet the EPA-VCM Emission Standard promulgated in October, 1976 was to install a vent gas and liquid thermal incinerator, hydrochloric acid absorbing tower, and caustic vent gas scrubber. In addition to this, a recovery system was planned to produce anhydrous HCl from the hydrochloric acid produced in the absorbing tower, and this anhydrous material recirculated to the oxy system for EDC production or to methyl chloride production.

After numerous discussions with EPA on stream factor of the incineration unit and its affect on our ability to operate the VCM Plant should the incineration unit fail, the decision was made to install a duplicate incineration train to ensure our VCM production potential was maintained while meeting the letter of the EPA emission standard.

Subsequent investigations by our Houston Business Area and Project Development people uncovered a sales potential for muriatic acid to a Gulf Coast muriatic acid marketer. This discovery eliminated the need for the anhydrous HCl recovery scheme, and is an economically attractive alternate compared to the recovery scheme. Therefore, acid recovery is no longer being pursued related to the pollution abatement project.

CCR 000056192

However, in order to make the absorber produced muriatic acid saleable to the marketer, it must be fortified above its produced strength, stored, and loaded into the marketer's trucks. Also, to ensure VCM Plant operation against sudden changes in the muriatic acid marketing picture, a stand-by acid neutralization system will be required to dispose of acid should market demand fall below production potential. The funds originally budgeted in the 1977 Capital Budget for anhydrous recovery are now to be used to cover the anticipated expenditures required for acid fortifying, storage and loading, as well as stand-by neutralization.

Therefore, as the pollution project now stands we will have two complete incineration and acid absorption trains, an acid neutralization facility, and an acid fortifying storage and loading facility. I have attached a brief description of each of these project sections for your information including capital and operating cost data.

Energy Utilization

Included as part of the incinerator package was a waste heat boiler to recover the heat of combustion as 250 psig steam. The original plan related to energy saving was to use the steam generated in the boiler as the energy source for the anhydrous HCl recovery system. The back-up consideration was transfer of the steam to LCCP for their use. In the interim, the VCM Plant has defined a use for this steam in the existing plant as part of an overall energy reduction program. This program will require a capital expenditure of approximately \$769 M and will be accomplished out of 1977 Capital Budget funds as well as 1978 Capital Budget proposals. The LCCP usage potential has also been eliminated based on their energy reduction program included in the proposed 1978 Capital Budget.

Therefore, the assumptions made in McGee's letter related to excess steam utilization are not valid under the present plan. However, additional capital will need to be expended by the VCM Plant to enable the incinerator generated steam to be used.

Incineration Operation Plan

The plant's plan related to incinerator area operation is as follows:

- 1) The first incinerator (AFE 1-34-8196) will be operated as the primary control device. Normal plant vents plus minimum by-product light ends will be fired in this unit.
- 2) The second incinerator (AFE 1-34-8217) will be used as a stand-by unit. It will be maintained at temperature using natural gas firing so that it is immediately usable should a serious problem occur in the number one unit.

- 3) Vent gas from the #1 incinerator will be absorbed to form a muriatic acid solution of approximately 23% strength.
- 4) The 23% acid will be stored in check tanks as it comes off the absorber.
- 5) From the 23% acid check tank the acid will be fortified to 31.5% using anhydrous HCl gas from the VCM Plant or from Olin Corporation over a falling film absorber.
- 6) The 31.5% acid will be stored in product tanks and loaded into the marketer's trucks at the tank truck loading facility.
- 7) Should the acid be off-specification non-saleable, or should the acid market demand be less than production, the acid will be neutralized using a clam shell and caustic trim system. Also, the neutralization system will be used to handle any emergency dumps that occur due to boiler or absorbing tower malfunctions.
- 8) Steam generated by the waste heat boiler in the incineration train will be consumed in the existing VCM Plant after completion of the energy savings projects anticipated by the plant. Complete utilization of steam should occur in 1979 when all energy projects are scheduled to be completed.

It can be seen from the preceding discussion that although much of McGee's letter remains applicable to the project as it now stands, there have been project changes that can affect bond financing criteria. I do not believe the consequences of decisions related to these changes are understood, nor am I convinced that we have enough in-put as a whole to make an intelligent decision related to financing at this point in time.

Your comments and suggestions will be greatly appreciated.



J. A. DeBernardi

is
Enc
CC + enc:
RDG-REL-CEM-JFA-GLF-JF-MDMcG-JHMc

CCR 000056194

POLLUTION PROJECT STATUS SUMMARY⁶

<u>Name</u>	<u>AFE No.</u>	<u>\$ Amount</u>	<u>Status</u>
Vent Gas Incinerator	1-34-8196	5.6 MM	Mechanical design, equipment procurement, and on-site work in progress. Scheduled for mechanical completion 7-1-78. On line before October, 1978.
Standby Incinerator	1-34-8217	3.26 MM	Mechanical design and equipment procurement in progress. Scheduled mechanical completion estimated November, 1978.
Anhydrous HCl Recovery	-	3.3 MM ¹	Process engineering at outside contractor AFE'd for \$150,000 as partial AFE. Project will be halted after process design complete.
Acid Neutralization Facility	-	1.4 MM ²	Process design in progress to lead to definitive estimate for AFE purposes by December, 1977. Will use anhydrous HCl recovery funds. Project will complete July, 1978.
Acid Fortification, Storage and Loading Facility	-	1.5 MM ³	Process design in progress to lead to definitive estimate for AFE purposes by December, 1977. Will use anhydrous HCl recovery funds. Project will complete July, 1978.
<u>Energy Projects Baring On-Stream Utilization</u>			
a) Propylene Turbine Replacement	-	.42 MM ⁴	Turbine replacement funds will come from unallocated capital. A portion of capital (\$75 M + \$125 M OMS) were included in the LCCP 1977 Capital Budget. Project will complete in 1979.
b) Oxy Vent and VCM Column Interchanger	-	.349 M ⁵	Project included in 1978 Proposed Capital Budget. If approved, work will complete in 1979.

¹ Amount included in 1977 Capital Budget.

² Very preliminary estimate.

³ Educated guess estimate.

⁴ Order of magnitude estimate.

⁵ Budget quality estimate.

⁶ See attached pages for further project details.

(CCK 000056195

Project Description

In order to comply with EPA-VCM Emission Standards, a thermal incinerator with waste heat recovery, HCl absorber, and vent gas caustic scrubber will be installed. The system will handle all plant process vents and also burn waste by-product liquids as required.

Operating Costs

Fixed and variable costs budgeted for operation of the incineration area for 1978 amount to \$109,000 per million lbs. of acid produced (dry basis). In 1978 we expect to produce approximately 11.5 MM lbs. of acid (dry basis) in six months of operation of the unit. A full year's operation would therefore expect to produce 23 MM lbs. of acid (dry basis).

Revenues

No revenues were claimed since steam produced in incinerator area will be unusable until 1979 when energy saving projects in the main plant are completed.

¹ AFE amount based on a definitive project estimate.

Project Description

In order to ensure uninterrupted VCM production potential and comply with the letter of the EPA-VCM Emission Standard, a complete spare thermal incineration system with heat recovery, HCl absorber, and vent gas caustic scrubber system will be installed. This system will handle all plant process vents and also burn waste by-product liquids as required. This unit will be held in the hot stand-by mode by burning natural gas so that it is ready for immediate service should a serious problem develop in the primary incinerator unit causing it to be shut down.

Operating Costs

Fixed and variable costs for this unit were included as part of the incinerator area costs stated on the vent gas incinerator description page.

Revenues

No revenues were claimed since steam produced in incinerator area will be unusable until 1979 when energy saving projects in the main plant are completed.

¹ AFE amount based on a definitive project estimate.

ACID NEUTRALIZATION FACILITY

\$1.4 MM¹

Project Description

Should sale of muriatic acid generated in the vent gas incineration area not be possible, the acid must be neutralized prior to disposal to meet EPA Clean Water Standards. Neutralization of the acid will be accomplished in two clam shell pits with a secondary NaOH trim neutralization system. The pits will be covered with a fume collection and scrubbing system being provided to protect operating personnel and the environment. Normally this unit will be in a standby mode and not in use since sale of muriatic acid is now planned.

Operating Costs

Major operating cost is for neutralization materials (clam shell and caustic) and are estimated to be \$11,000 per million lbs. of acid neutralized (dry basis). Proposed incinerator operation scheme should produce approximately 23 MM lbs. of acid per year (dry basis).

Revenues

None from this project. Purely an environmental project when and if the standby facility is used. Ensures VCM production capability should acid sales be reduced below production potential.

¹ Based on a very preliminary estimate by CED.

CCR 000056198

Project Description

In order to make the muriatic acid produced in the vent gas incineration project saleable, it must be fortified from a produced strength of 23% to a market strength of 31.5%. Also, the fortified material will be transported from the plant in tank trucks, thereby requiring storage and loading facilities. This project will include weak acid check tanks, a falling film absorbing system using Olin Corporation or VCM produced anhydrous HCl for fortification, strong acid storage tanks, and tank truck loading facilities with fume scrubbing for personnel protection and environmental control.

Operating Costs

The major operating cost related to this project is anhydrous acid purchase for produced acid fortification. Assuming produced acid at 23% strength to be fortified to 31.5%, and the use of Olin anhydrous material for fortification at 2.9 ¢/lb., this cost would be \$14,500 per million lbs. of acid produced (dry basis) yearly acid production should be about 23 MM lbs. (dry basis).

Revenues

Undefined at present since contract negotiations with potential muriatic acid customer have not been completed. Latest proposal would indicate that the acid would be sold to the marketer at 35% of list price for 31.5% acid. Quoted list in August was \$46 per ton of 31.5% acid. Assuming 23 MM lbs. of acid production per year (dry basis) this would yield 36,500 tons of 31.5% muriatic acid for sale.

¹ Based on a plant level educated guess. Design of system is presently underway at PED.

PROPYLENE TURBINE REPLACEMENT

\$.42 MM¹

Project Description

In order to reduce steam usage within the VCM Plant and maintain VCM production potential using lower temperature steam produced by oil firing of boilers, a replacement turbine will be purchased and installed on the propylene compressing system. The new turbine will be more efficient than the existing unit related to steam usage, thereby reducing plant steam consumption and energy cost. This project coupled with budgeted energy saving projects involving process heat exchangers will enable the use of the steam generated in the incinerator area by the main plant.

Project Economics

Economics are based on steam savings and offsetting of lost VCM production due to lower temperature steam when using fuel oil for steam production. A greater than 95% DCF return is calculated for the project with a discounted payout period of 0.9 years. The average cash flow for the project is \$648,620 per year.

¹ Order of magnitude estimate.

CCR 000056200

Project Description

This project provides for the installation of two interchangers, an oxy vent interchanger and a vinyl column feed to bottoms interchanger. Installation of this equipment will reduce the plant's consumption of steam at both the 600 psig and 250 psig levels. Coupled with the propylene turbine replacement project, this will make possible the use of steam produced in the incineration area by the main plant. This project is included in the 1978 Proposed Capital Budget.

Project Economics

The 66,200 MM BTU/yr. steam savings realized from this project will yield a 29.3% DCF return and a discounted payout period of 4.0 years. The average cash flow of the project is \$111,000 per year.

¹ Budget quality estimate presented in 1978 Proposed Capital Budget.