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Interoffice Communication

To Rich Gerlach, Westlake, Louisiana
From Lew Cresswell, Ponca City, Oklahoma
Date July 13, 1981
Subject Effluent Permit Compliance

File LCCP

Problem Description

We met with you on June 30 to discuss possible changes to the LCCP NPDES permit and required 1982 Capital Budget projects as a result of these changes. The State of Louisiana has recently required Hercules to cut their effluent BOD level by 50% and suspended solids by 75%. A short compliance schedule was given to Hercules. The State has indicated that in the future all Lake Charles area chemical plants must make reductions in their effluent pollutant levels.

The data we presented to you in the meeting for both the LCCP and VCM plant effluents are attached. LCCP effluent data for the last two years have been probability plotted and the 95% probable numbers are shown in the attachment. Regulatory agencies generally require a minimum permit compliance 95% of the time. The data indicate that LCCP effluent is slightly exceeding the present permit for the 95% probable. These values do not include the future effects of waste water from LAB, Natural Alcohol, Sludge Dewatering, and the Landfarm. Although the present VCM Plant is readily meeting its NPDES permit, the projected effluent BOD after the Plant expansion will be close to the existing permit value as shown in the attachment.

We probably should not extrapolate the Hercules requirements to Conoco Plants. The previous effluent permit of Hercules was extremely lenient. It appears that the State was basically telling Hercules to "clean up their act". This tends to be confirmed by the fact that little if any new major equipment was required for Hercules to meet their tougher permit conditions. Conversations with Jack Neeld have also confirmed these conclusions for the Hercules case. Jack indicated that Hercules was about the first Plant in the area to get an effluent permit and their permit values were more lenient than those of later permits such as the LCCP and VCM Plant.

If the LCCP were required to reduce effluent solids by any appreciable amount, filtration would probably be required to follow the existing flotation unit. Therefore, we plan to design a filter for the 1982 Capital Budget. Filtration should easily exceed even a 75% solids reduction.

The BOD problem is more difficult. If one were to assume that as much as a 50% reduction of BOD will be required, it appears to be borderline as to whether any biological treatment system or combination of systems could meet the requirement. The required BOD reduction across the treatment system on the average would be well above 95%. It is possible that activated sludge or a biodisk followed by the existing aerated lagoons would meet such a requirements since LCCP waste is relatively easy to degrade. However, pilot tests are required before a definitive conclusion can be reached.

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Trickling filters were discussed at the June 30 Plant meeting for pretreatment of the lagoon feed. We will attempt to better define the requirements in the future, but it appears that 1-3 acres of spacing may be required to construct a trickling filter.

Even if the State asks for a relatively large BOD reduction in your effluent, we suggest that you stay with biological treatment if possible. Every effort should be made to clean-up waste streams in the Plant and reduce the flow of clean waters into the treatment system. Future pilot tests will demonstrate how much BOD reduction can actually be achieved by activated sludge or bio-disk. We should resist any effort by the State to require that we go to more exotic tertiary treatment such as activated carbon. Activated carbon is extremely costly with difficult maintenance and operating problems. In a few cases, full-scale activated carbon systems have been deserted after years of failure in trying to make them operate properly. We should stand firm with the State in agreeing to not go beyond meeting the best effluent requirements that good biological treatment and filtration will give us. A strong case can probably be made against requirements beyond this, based on technology limitations.

Accordingly, we understand that you will add money in the Capital Budget for a biological system based on a scaleup of the recent Aberdeen definitive estimate for a biodisk. We will also design a submerged aeration system to better mix and aerate the existing lagoons to eliminate the existing sludge deposit problem. We will not provide budget designs for the VCM Plant treatment system based on comments at the June 30 meeting. However, we feel that VCM Plant effluent solids should easily be reduced by filtration, while appreciable BOD reductions could be more difficult to achieve than the LCCP case. VCM waste is more difficult to degrade than LCCP waste.

Compliance Timing

The short compliance timing for Hercules should not be extrapolated to our situation. It appears that the State may not get certification until 1983. The State has also indicated that new effluent permits may not be issued to us before the fourth quarter of 1982. A two year compliance period was indicated from that point, although extensions were not ruled out by the State.

To meet a 1984 compliance date would require that money be in the 1983 budget. However, it will be difficult to define the exact treatment costs until more information is available from the State. We could approach the State prior to issuance of the new permit to attempt to define our requirements. Such a meeting probably should include representatives of the LCCP, VCM Plant, and Refinery.

Pilot Tests

The Conoco waste water trailer is scheduled to be in the Denver Refinery until the end of 1981. Denver personnel must also define their future treatment costs for the 1983 budget to meet the 1984 compliance date.

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The trailer is scheduled for the Lake Charles Refinery early next year. However, if it becomes obvious that the Chemical Plant will need the trailer first, the schedule can be changed. In the meantime, LCCP personnel can hopefully better define the effluent requirements from the State. A pilot program will be considerably more time consuming and difficult to plan if the exact effluent target is unknown.

Pilot plans should consider joint VCM/LCCP treatment. Also of concern are priority pollutants, because the State has indicated a desire to limit these to under 100 parts per billion. Currently the LCCP effluent has two priority pollutants that exceed this level based on one sampling. Since Plant personnel feel that these pollutants are being discharged from the ethylene plant, pilot tests of individual waste streams may be appropriate to minimize full-scale equipment costs and achieve better removal efficiency.

Plant personnel have agreed to work with us to better define waste stream compositions and start on any pre-engineering work that can be completed prior to the pilot tests. This should be extremely beneficial in promoting a smooth and efficient pilot program.

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Table 1
LCCP Effluent

	Present Permit 30 D. Av., #/D	Present Permit, MG/L At 1228 GPM*	Possible New Permit, #/D	Possible New Permit Conc., MG/L	Present Eff., #/D 95% Prob.	Present Eff., MG/L 95% Prob.
BOD	870	59	435	30	920	62
TSS	1135	77	284	19	1,275	87

*300 GPM CW bypassed but included in calc. Did not include Sludge Dewatering Lab, Landfill, or Natural Alcohol in flow.

Table 2
VCM Plant Effluent (Expansion & PVC Plant)

	<u>Present Permit 30 D. Av., #/D</u>	<u>Present Permit, MG/L At 539 GPM*</u>	<u>Possible New Permit, #/D</u>	<u>Possible New Permit Conc., MG/L</u>	<u>Present Eff., #/D 95% Prob (1)</u>	<u>Present Eff., MG/L 95% Prob. (1)</u>
BOD	600	93	300	46	588	91
TSS	558	86	140	22	439	68

(1) After VCM Expansion & PVC Plant (Projected effluent value)

* ~325 GPM PVC Water

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Table 3
Future LCCP Waste Additions

	<u>Normal Flow</u> <u>GPM</u>	<u>Maximum Flow</u> <u>GPM</u>
LAB	152	252
Natural Alcohol	90	150
Sludge Dewater	35	?
Landfarm	-	100