GARDINIER INC.

8813 Hwy 41 South o Riverview, Florida 33569 o Telephone 813 — 677-9111 o TWX 810 — 876-0648 o Telex 52666 o FAX-813-671-6146

CERTIFIED MAIL: 723 750 481

October 4, 1990

Mr. John Reynolds
Bureau of Air Quality Management
Florida Department of
Environmental Regulation
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400

Subject: Construction Permit Application - AC29-186726
New Phosphoric Acid Filter

Dear Mr. Reynolds:

Please find enclosed four corrected copies of Figure Nos. 1 and 7 of the above-referenced application. The copies included with the application had incorrect production rates for the existing conditions.

Should you have any questions or require additional information, please feel free to call me or Ozzie Morris at 671-6207 or 671-6153, respectively.

Sincerely,

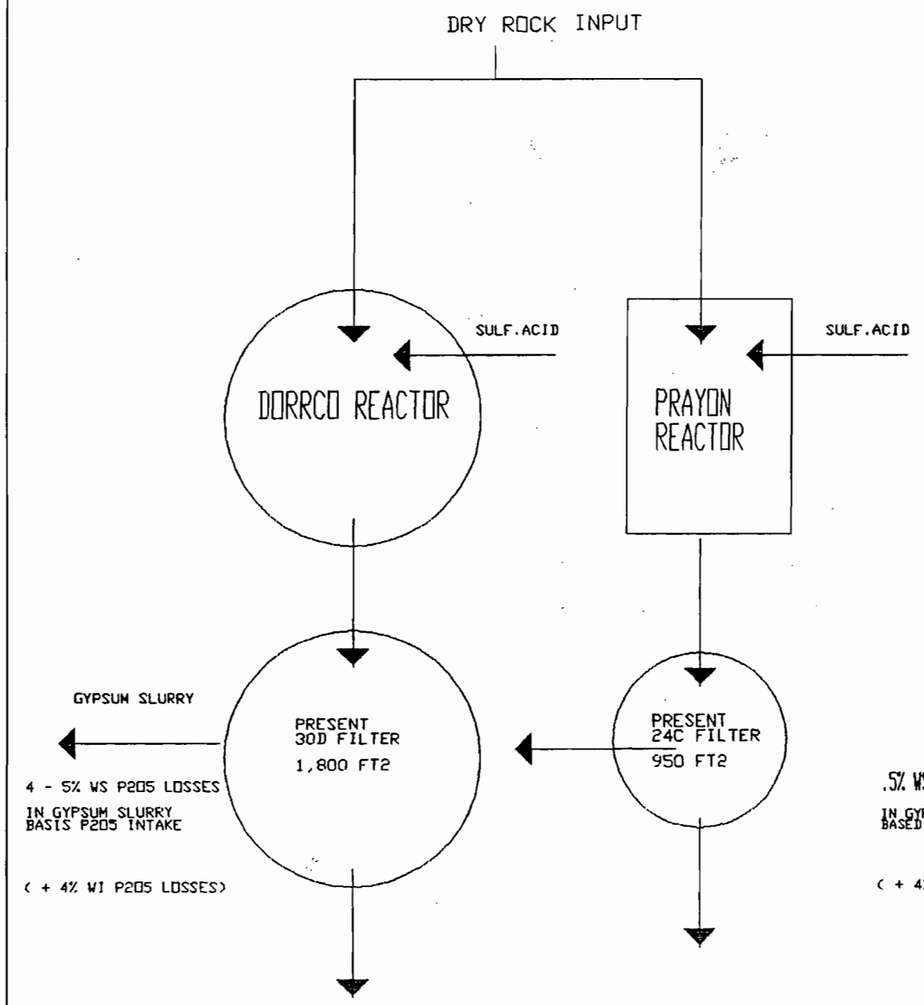
David B. Jellerson, P.E.
Environmental Supervisor

cc: J. Campbell - HCEPC - CERTIFIED: 723 750 482
Bill Thomas - FDER, Tampa - CERTIFIED: 723 750 483
P-45
C. Phillips

FIG 1

PRESENT SITUATION

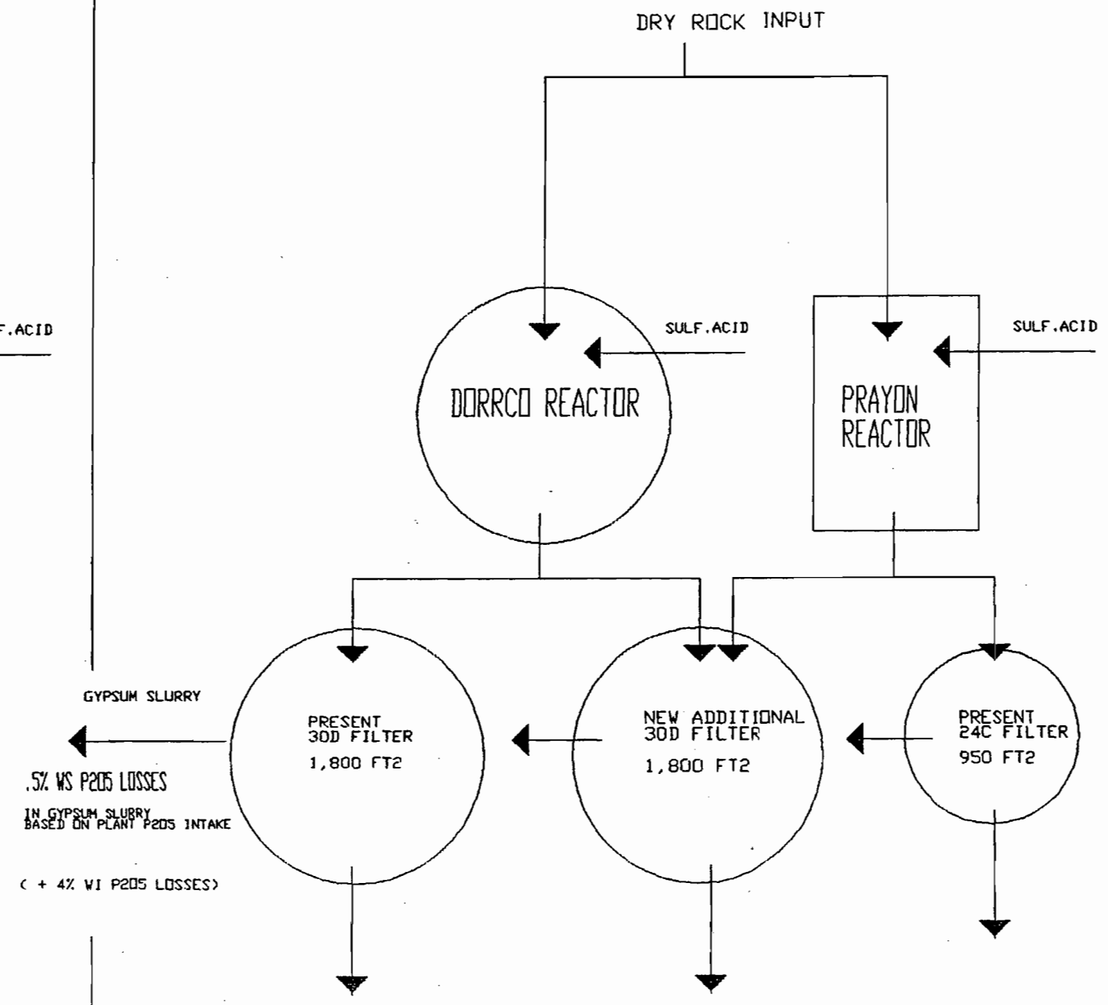
PLANT INTAKE P205: MAX 126.3 T/HR P205 OR 408 T/HR DRY ROCK
[30.85% ROCK P205]



PLANT P205 EFFICIENCY: 90%
FILTER WS P205 WASH EFFICIENCY: 95-96%
WS P205 FILTER LOADING: 1.0 TON P205 / FT2 FILTER AREA

NEW SITUATION WITH 3RD FILTER

PLANT INTAKE P205: MAX 139 T/HR P205 OR 450 T/HR DRY ROCK
[30.85% ROCK P205]



PLANT P205 EFFICIENCY: 93.4%
FILTER WS P205 WASH EFFICIENCY: 99.5%
WS P205 FILTER LOADING: .6 TON P205 / FT2 FILTER AREA

PRAYON (NO3), DORRCO (NO4) SCRUBBERS AND NEW ADDITIONAL SCRUBBER

GARDINIER 3RD FILTER PROJECT AUG 21 , '90

FIG 7

A — PRESENT SITUATION

126.3T/HR ROCK P205 MAX

40,000 ACFM , 73 MG F/ACF
122 MG F/ DRY ACF

170 DEGF
DORRCO REACTOR

13,000 ACFM , 73 MG F/ACF

170 DEGF
PRAYON REACTOR

25,000 ACFM , 8.7 MG F/ACF
9.9 MG F/DRY ACF

120 DEGF
DORRCO FILTER

8,000 ACFM , 8 MG F/ACF

PRAYON FILTER

15,000 ACFM , 8 MG F/ACF

3,000 ACFM , 9.8 MG F/DRY ACF

FILTRATION TANKS
GYPSUM SLURRY TANK

FILTRATE SUMP
FILTRATE SEAL TANKS
FSA SCUB SEAL TANKS
WEST 30% TANK
EAST 42% TANK
WEST 54% TANK

55 MG F/DRY FT3

55,000 ACFM
95 - 100 DEGF

AVERAGE: .67 LBS/HR F
.09 MG F /ACF

36,000 ACFM
95 - 100 DEGF

AVERAGE: .41 LBS/HR F
.059 MG F/ACF

TOTAL AVERAGE EMISSION 1.08 LBS/HR F
FROM PRAYON/DORRCO SCRUBBERS:

B — SITUATION WITH 3RD FILTER AND ADDITIONAL SCRUBBER

139 T/HR ROCK P205 MAX

40,000 ACFM , 73 MG F/ACF
122 MG F/ DRY ACF

170 DEGF
DORRCO REACTOR

13,000 ACFM , 73 MG F/ACF

170 DEGF
PRAYON REACTOR

14,000 ACFM , 8.7 MG F/ACF
9.9 MG F/DRY ACF

120 DEGF
DORRCO FILTER

5,000 ACFM , 8 MG/ACF

PRAYON FILTER

NEW 3RD FILTER

PRESENT DUCTING

GYPSUM TK FILTR.TKS

15,000 ACFM , 8 MG F/ACF

3,000 ACFM , 9.8 MG F/DRY ACF

FILTRATION TANKS
GYPSUM SLURRY TANK

FILTRATE SUMP
FILTRATE SEAL TANKS
FSA SCUB SEAL TANKS
WEST 30% TANK
EAST 42% TANK
WEST 54% TANK

55 MG F/DRY FT3

45,000 ACFM
90 - 100 DEGF

AVERAGE .55 LBS/HR F
.09 MG F/ACF

33,500 ACFM
95 - 100 DEGF

AVERAGE .40 LBS/HR
.09 MG F/ACF

14,000 ACFM AT 8 MG F/ACF

90 - 95 DEGF
12,500 ACFM

NEW SCRUBBER

62,000 ACFM MAX

AVERAGE .13 LBS/HR F
.02 MG F/ACF

TOTAL AVERAGE EMISSION 1.08 LBS/HR F
FROM PRAYON/DORRCO SCRUBBERS:

NEXT PHASE

139 T/HR ROCK P205 MAX

40,000 ACFM , 73 MG F/ACF
122 MG F/ DRY ACF

170 DEGF
DORRCO

13,000 ACFM , 73 MG F/ACF

170 DEGF
PRAYON REACTOR

PRESENT DUCTING

90 - 95 DEGF

27,000 ACFM AT .1 MG F/ACF
AVERAGE .36 LBS/HR F

PRESENT DUCTING

90 - 95 DEGF

9,000 ACFM AT .1 MG/ACFM
AVERAGE .12 LBS/HR F

14,000 ACFM , 8.7 MG F/ACF
9.9 MG F/DRY ACF

DORRCO FILTER

5,000 ACFM , 8 MG/ACF

PRAYON FILTER

NEW 3RD FILTER

3,000 ACFM , 9.8 MG F/DRY ACF

FILTRATION TANKS
GYPSUM SLURRY TANK

15,000 ACFM , 8 MG F/ACF

FILTRATE SUMP
FILTRATE SEAL TANKS
FSA SCUB SEAL TANKS
WEST 30% TANK
EAST 42% TANK
WEST 54% TANK

14,000 ACFM , 8.7 MG F/ACF
51,000 ACFM

90 - 95 DEGF

46,000 ACFM

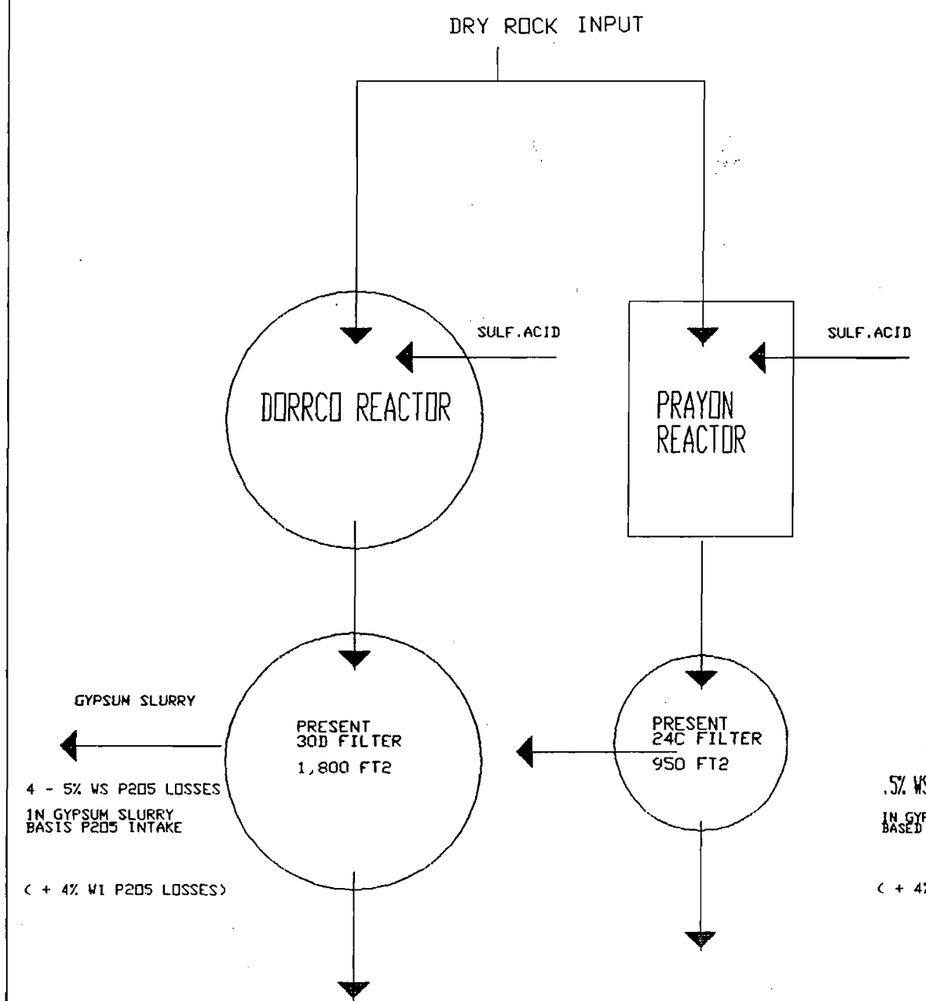
<.10 MG F/ACF
< .60 LBS/HR F AVERAGE

TOTAL AVERAGE EMISSION < 1.08 LBS/HR F
FROM PRAYON/DORRCO SCRUBBERS:

FIG 1

PRESENT SITUATION

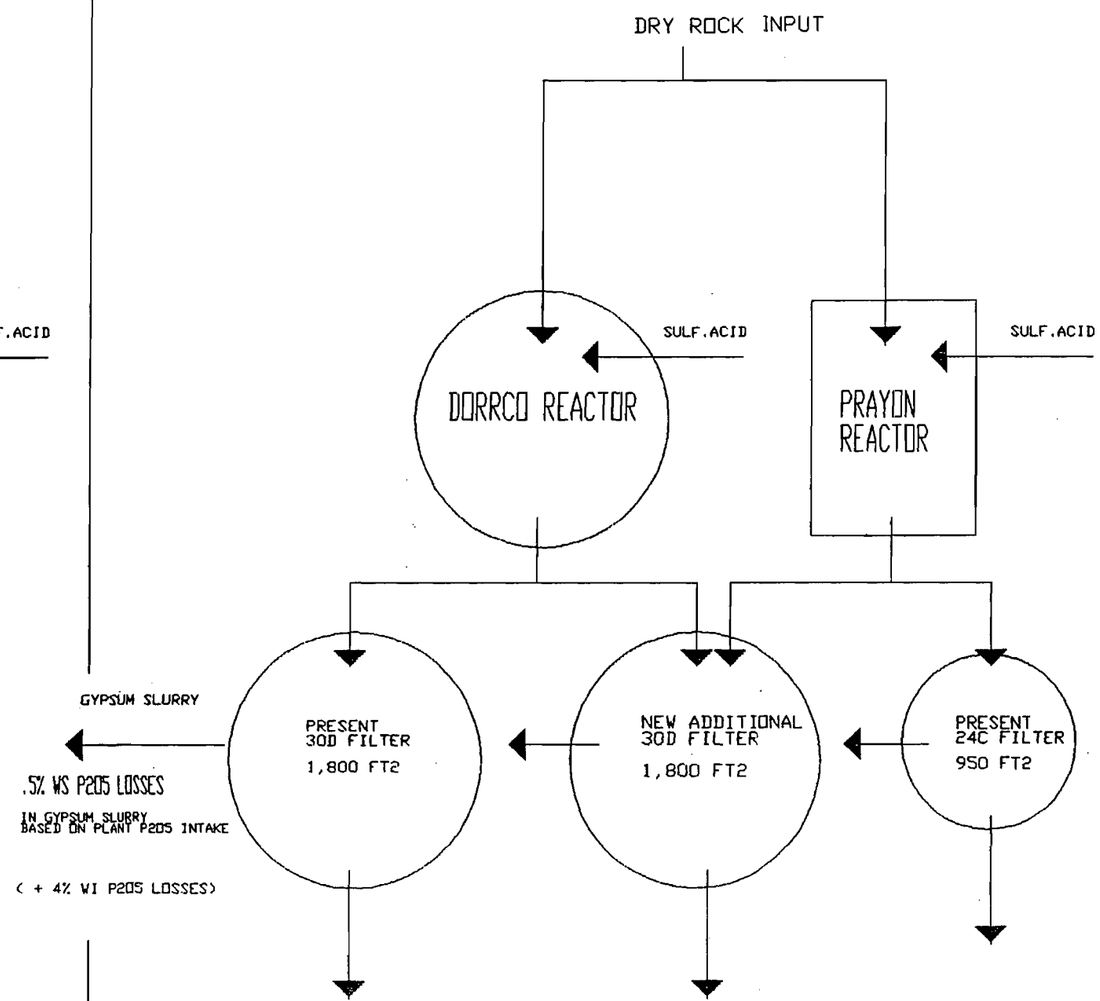
PLANT INTAKE P2O5: MAX 126.3 T/HR P2O5 OR 408 T/HR DRY ROCK
[30.85% ROCK P2O5]



PLANT P2O5 EFFICIENCY: 90%
FILTER WS P2O5 WASH EFFICIENCY: 95-96%
WS P2O5 FILTER LOADING: 1.0 TON P2O5 / FT2 FILTER AREA

NEW SITUATION WITH 3RD FILTER

PLANT INTAKE P2O5: MAX 139 T/HR P2O5 OR 450 T/HR DRY ROCK
[30.85% ROCK P2O5]



PLANT P2O5 EFFICIENCY: 93.4%
FILTER WS P2O5 WASH EFFICIENCY: 99.5%
WS P2O5 FILTER LOADING: .6 TON P2O5 / FT2 FILTER AREA

PRAYON (NO3), DORRCO (NO4) SCRUBBERS AND NEW ADDITIONAL SCRUBBER

GARDINIER 3RD FILTER PROJECT AUG 21 , '90 FIG 7

A — PRESENT SITUATION

126.3T/HR ROCK P2O5 MAX

40,000 ACFM , 73 MG F/ACF
122 MG F/ DRY ACF
170 DEGF
DORRCO REACTOR

13,000 ACFM , 73 MG F/ACF
170 DEGF
PRAYON REACTOR

25,000 ACFM , 8.7 MG F/ACF
9.9 MG F/DRY ACF
120 DEGF
DORRCO FILTER

8,000 ACFM , 8 MG F/ACF
PRAYON FILTER

15,000 ACFM , 8 MG F/ACF
FILTRATE SUMP
FILTRATE SEAL TANKS
FSA SCUB.SEAL TANKS
WEST 30Z TANK
EAST 54Z TANK
WEST 54Z TANK

3,000 ACFM , 9.8 MG F/DRY ACF
FILTRATION TANKS
GYPSUM SLURRY TANK

55 MG F/DRY FT3

55,000 ACFM
95 - 100 DEGF

AVERAGE: .67 LBS/HR F
.09 MG F /ACF

36,000 ACFM
95 - 100 DEGF

AVERAGE: .41 LBS/HR F
.09 MG F/ACF

TOTAL AVERAGE EMISSION 1.08 LBS/HR F
FROM PRAYON/DORRCO SCRUBBERS:

B — SITUATION WITH 3RD FILTER AND ADDITIONAL SCRUBBER

139 T/HR ROCK P2O5 MAX

40,000 ACFM , 73 MG F/ACF
122 MG F/ DRY ACF
170 DEGF
DORRCO REACTOR

13,000 ACFM , 73 MG F/ACF
170 DEGF
PRAYON REACTOR

14,000 ACFM , 8.7 MG F/ACF
9.9 MG F/DRY ACF
120 DEGF
DORRCO FILTER

5,000 ACFM , 8 MG/ACF
PRAYON FILTER

PRESENT DUCTING
NEW 3RD FILTER

15,000 ACFM , 8 MG F/ACF
FILTRATE SUMP
FILTRATE SEAL TANKS
FSA SCUB.SEAL TANKS
WEST 30Z TANK
EAST 54Z TANK
WEST 54Z TANK

GYPSUM TK
FILTR.TKS

3,000 ACFM , 9.8 MG F/DRY ACF
FILTRATION TANKS
GYPSUM SLURRY TANK

55 MG F/DRY FT3

45,000 ACFM
90 - 100 DEGF

AVERAGE .55 LBS/HR F
.09 MG F/ACF

33,500 ACFM
95 - 100 DEGF

AVERAGE .40 LBS/HR
.09 MG F/ACF

14,000 ACFM AT 8 MG F/ACF

90 - 95 DEGF
12,500 ACFM

NEW SCRUBBER
62,000 ACFM MAX

AVERAGE .13 LBS/HR F
.09 MG F/ACF

TOTAL AVERAGE EMISSION 1.08 LBS/HR F
FROM PRAYON/DORRCO SCRUBBERS:

NEXT PHASE

139 T/HR ROCK P2O5 MAX

40,000 ACFM , 73 MG F/ACF
122 MG F/ DRY ACF
170 DEGF
DORRCO

13,000 ACFM , 73 MG F/ACF
170 DEGF
PRAYON REACTOR

PRESENT DUCTING

90 - 95 DEGF

27,000 ACFM AT .1 MG F/ACF
AVERAGE .36 LBS/HR F

PRESENT DUCTING

90 - 95 DEGF

9,000 ACFM AT .1 MG/ACFM
AVERAGE .12 LBS/HR F

14,000 ACFM , 8.7 MG F/ACF
9.9 MG F/DRY ACF
DORRCO FILTER

5,000 ACFM , 8 MG/ACF
PRAYON FILTER

NEW 3RD FILTER

3,000 ACFM , 9.8 MG F/DRY ACF
FILTRATION TANKS
GYPSUM SLURRY TANK

15,000 ACFM , 8 MG F/ACF
FILTRATE SUMP
FILTRATE SEAL TANKS
FSA SCUB.SEAL TANKS
WEST 30Z TANK
EAST 54Z TANK
WEST 54Z TANK

14,000 ACFM , 8.7 MG F/ACF

90 - 95 DEGF
51,000 ACFM

46,000 ACFM

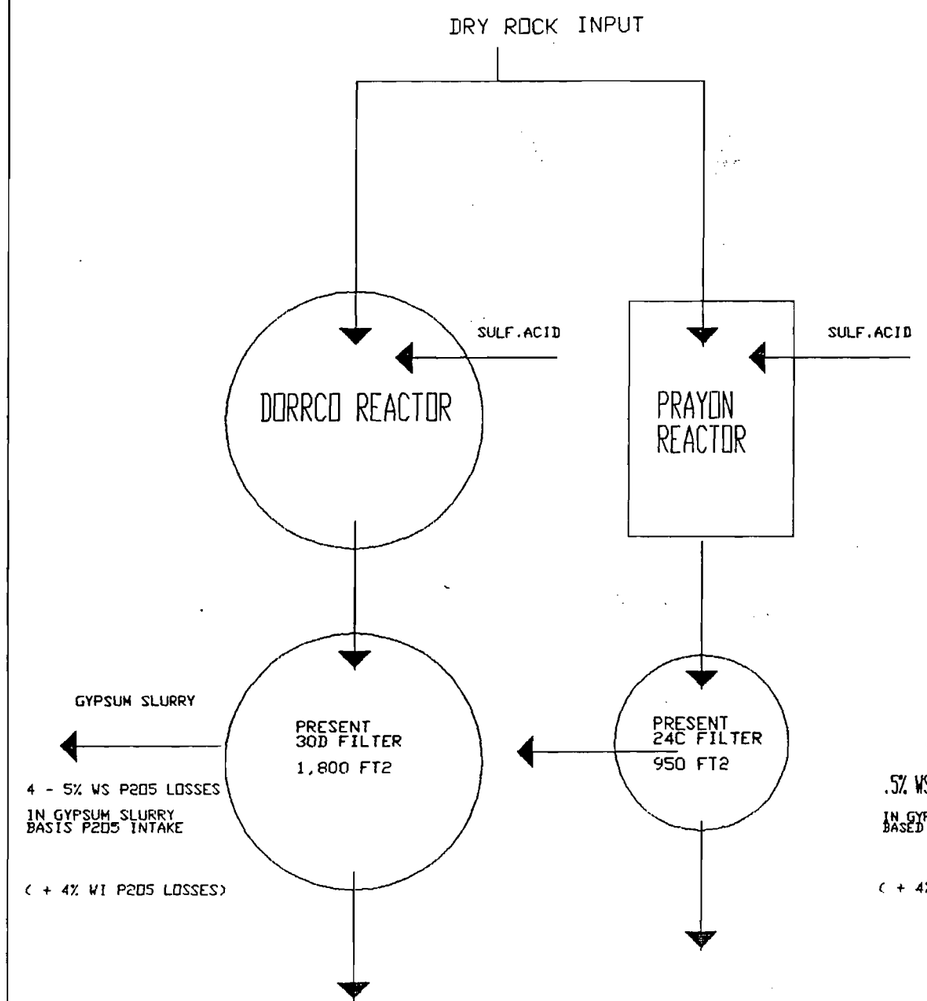
<.10 MG F/ACF
< .60 LBS/HR F AVERAGE

TOTAL AVERAGE EMISSION < 1.08 LBS/HR F
FROM PRAYON/DORRCO SCRUBBERS:

FIG 1

PRESENT SITUATION

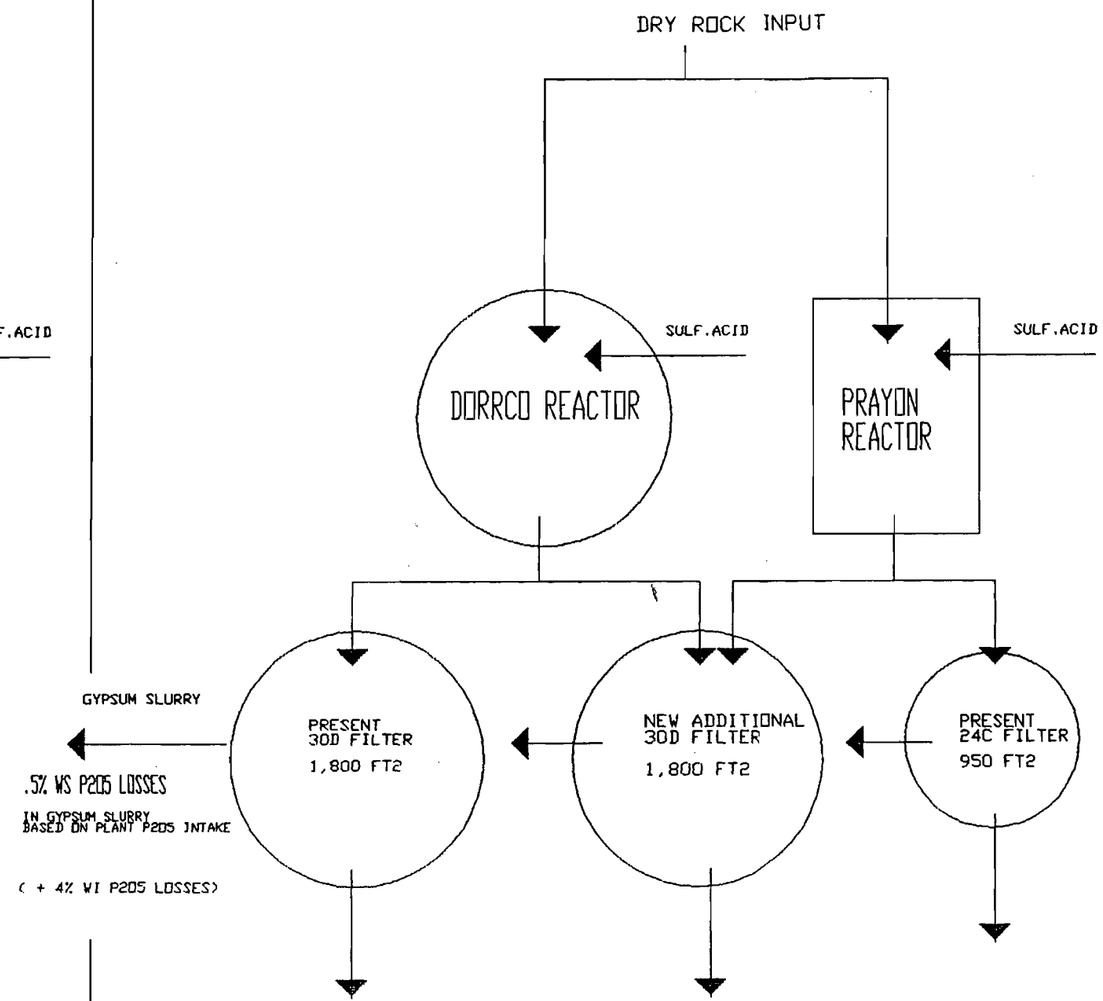
PLANT INTAKE P205: MAX 126.3 T/HR P205 OR 408 T/HR DRY ROCK [30.85% ROCK P205]



PLANT P205 EFFICIENCY: 90%
FILTER WS P205 WASH EFFICIENCY: 95-96%
WS P205 FILTER LOADING: 1.0 TON P205 / FT2 FILTER AREA

NEW SITUATION WITH 3RD FILTER

PLANT INTAKE P205: MAX 139 T/HR P205 OR 450 T/HR DRY ROCK [30.85% ROCK P205]



PLANT P205 EFFICIENCY: 93.4%
FILTER WS P205 WASH EFFICIENCY: 99.5%
WS P205 FILTER LOADING: .6 TON P205 / FT2 FILTER AREA

PRAYON (NO3), DORRCO (NO4) SCRUBBERS AND NEW ADDITIONAL SCRUBBER

GARDINIER 3RD FILTER PROJECT AUG 21 , '90 FIG 7

PRESENT SITUATION

A

126.3T/HR ROCK P2O5 MAX

40,000 ACFM , 73 MG F/ACF
122 MG F/ DRY ACF

170 DEGF
DORRCO REACTOR

13,000 ACFM , 73 MG F/ACF

170 DEGF
PRAYON REACTOR

25,000 ACFM , 8.7 MG F/ACF
9.9 MG F/DRY ACF

120 DEGF
DORRCO FILTER

8,000 ACFM , 8 MG F/ACF

PRAYON FILTER

15,000 ACFM , 8 MG F/ACF

FILTRATE SUMP
FILTRATE SEAL TANKS
FSA SCUB SEAL TANKS
WEST 80% TANK
EAST 84% TANK
WEST 54% TANK

3,000 ACFM , 9.8 MG F/DRY ACF

FILTRATION TANKS
GYPSUM SLURRY TANK

55 MG F/DRY FT3

55,000 ACFM
95 - 100 DEGF

AVERAGE: .67 LBS/HR F
.09 MG F /ACF

36,000 ACFM
95 - 100 DEGF

AVERAGE: .41 LBS/HR F
.09 MG F/ACF

TOTAL AVERAGE EMISSION 1.08 LBS/HR F
FROM PRAYON/DORRCO SCRUBBERS:

SITUATION WITH 3RD FILTER AND ADDITIONAL SCRUBBER

B

139 T/HR ROCK P2O5 MAX

40,000 ACFM , 73 MG F/ACF
122 MG F/ DRY ACF

170 DEGF
DORRCO REACTOR

13,000 ACFM , 73 MG F/ACF

170 DEGF
PRAYON REACTOR

14,000 ACFM , 8.7 MG F/ACF
9.9 MG F/DRY ACF

120 DEGF
DORRCO FILTER

5,000 ACFM , 8 MG/ACF

PRAYON FILTER

PRESENT DUCTING

NEW 3RD FILTER

GYPSUM TK
FILTR.TKS

15,000 ACFM , 8 MG F/ACF

FILTRATE SUMP
FILTRATE SEAL TANKS
FSA SCUB SEAL TANKS
WEST 80% TANK
EAST 84% TANK
WEST 54% TANK

3,000 ACFM , 9.8 MG F/DRY ACF

FILTRATION TANKS
GYPSUM SLURRY TANK

85 MG F/DRY FT3

45,000 ACFM
90 - 100 DEGF

AVERAGE .55 LBS/HR F
.09 MG F/ACF

33,500 ACFM
95 - 100 DEGF

AVERAGE .40 LBS/HR
.09 MG F/ACF

14,000 ACFM AT 8 MG F/ACF

90 - 95 DEGF
12,500 ACFM

NEW SCRUBBER

62,000 ACFM MAX

AVERAGE .13 LBS/HR F
.09 MG F/ACF

TOTAL AVERAGE EMISSION 1.08 LBS/HR F
FROM PRAYON/DORRCO SCRUBBERS:

NEXT PHASE

139 T/HR ROCK P2O5 MAX

40,000 ACFM , 73 MG F/ACF
122 MG F/ DRY ACF

170 DEGF
DORRCO

13,000 ACFM , 73 MG F/ACF

170 DEGF
PRAYON REACTOR

PRESENT DUCTING

90 - 95 DEGF

27,000 ACFM AT .1 MG F/ACF
AVERAGE .36 LBS/HR F

PRESENT DUCTING

90 - 95 DEGF

9,000 ACFM AT .1 MG/ACFM
AVERAGE .12 LBS/HR F

14,000 ACFM , 8.7 MG F/ACF
9.9 MG F/DRY ACF

DORRCO FILTER

5,000 ACFM , 8 MG/ACF

PRAYON FILTER

NEW 3RD FILTER

3,000 ACFM , 9.8 MG F/DRY ACF

FILTRATION TANKS
GYPSUM SLURRY TANK

15,000 ACFM , 8 MG F/ACF

FILTRATE SUMP
FILTRATE SEAL TANKS
FSA SCUB SEAL TANKS
WEST 80% TANK
EAST 84% TANK
WEST 54% TANK

14,000 ACFM , 8.7 MG F/ACF
51,000 ACFM

90 - 95 DEGF

46,000 ACFM

<.10 MG F/ACF
< .60 LBS/HR F AVERAGE

TOTAL AVERAGE EMISSION < 1.08 LBS/HR F
FROM PRAYON/DORRCO SCRUBBERS:

Florida Department of Environmental Regulation
Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400
Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

October 18, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. E. O. Morris
Environmental Manager
Gardinier, Inc.
8813 Highway 41 South
Riverview, Florida 33569

Dear Mr. Morris:

Re: Phosphoric Acid Production Facility, AC 29-186726

On September 19, 1990, the Department received Gardinier's application to construct a third phosphoric acid filter. The application is deemed incomplete. Additional information is required for further processing of this application.

Within 30 days of receipt of this letter, please respond to the following items of incompleteness:

1. In the present situation shown in Figure 7, what is the ratio of Dorrco reactor P_2O_5 input feedrate to Prayoon reactor P_2O_5 input feedrate?

2. In the situation with 3rd filter and additional scrubber (Phase I) shown in Figure 7;

   a. What is the ratio of Dorrco reactor P_2O_5 input feedrate to Prayon reactor P_2O_5 input feedrate?

   b. What is the P_2O_5 input feedrate to the Dorrco filter? the Prayon filter? the new 3rd filter?

   c. What is the quantity of fluoride emissions and exhaust rate from the gypsum tank and filtr(ation) tanks shown in connection with the new 3rd filter? Are these new tanks to be installed with the new filter, or are they existing tanks which are now being controlled by the new scrubber?

   d. Why is the exhaust gas flow rate for the Prayon filter scrubber shown as 33,500 ACFM when Table 2 lists the exhaust gas flow rate as 36,000 ACFM?

   e. What is the temperature of the gas from the Prayon filter? from the new 3rd filter?

3. In the next phase (II) shown in Figure 7;

   a. What is the ratio of Dorrco reactor P_2O_5 input feedrate to Prayon reactor P_2O_5 input feedrate?

b. What is the P_2O_5 input feedrate to the Dorrco filter? to the Prayon filter? to the new 3rd filter.

c. What happened to the gypsum tank and filtr(ation) tanks shown in connection with the new 3rd filter in Phase I?

d. What is the temperature of the gas fumes from the Dorrco filter? from the Prayon filter? from the new 3rd filter?

4. Please submit design calculations showing the derivation of fluoride emissions for each of the scrubbers in Phases I and II.

5. What are the design pressure drops across each of the scrubbers?

6. Please submit the name of the manufacturer and model of the proposed new scrubber. How were the efficiencies, listed in Table 2, for this scrubber derived?

7. What is the estimated increase in fluoride emissions from the scrubbers which control the No. 9 and 10 evaporators, the clarifier, and the 30 percent storage tank due to the increased product throughput?

8. What are the estimated emissions of particulate matter and PM_{10}, which include acid mist, from the phosphoric acid production facility?

9. Please submit a construction timetable for this 2½ year project. How long will phase I be in operation before Phase II is begun?

If you have any questions concerning this request for additional information, please contact Cindy Phillips at (904)488-1344.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/CP/t

cc: J. Campbell, EPCHC
H. Kerns, SW District

GARDINIER INC.

8813 Hwy 41 South o Riverview, Florida 33569 o Telephone 813 — 677-9111 o TWX 810 — 876-0648 o Telex 52666 o Cable - Gardinphos

October 26, 1990

Mr. C. H. Fancy, P.E.
Bureau of Air Quality Management
Florida Department of
Environmental Regulation
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400

Subject: Construction Permit Application - AC29-186726
New Phosphoric Acid Filter

The following information is in response to your letter dated October 18, 1990 regarding the above-referenced permit application:

1. The DORRCO reactor P2O5 feedrate is approximately 1.7 times the Prayon reactor feedrate. The rates provided in Figure 7 of the application reflect the maximum rate compliance tests for each unit. These rates were 78.9 tph P2O5 for DORRCO and 47.4 tph P2O5 for Prayon.

2a. With the new filter, the total process P2O5 feedrate will increase from 126.3 tph to 139 tph. The maximum Prayon reactor feedrate will remain unchanged while the DORRCO reactor feedrate will increase to 91.6 tph P2O5. However, the feedrates to each reactor are typical values only. In order to maintain the necessary operational flexibility, Gardinier specifically worded the permit application to reflect the total process. We request that the permit be formatted to regulate the process as a whole (139 tph P2O5) rather than inputs to the individual reactors. This will be consistent with the process train. The two reactors are fed rock slurry and sulfuric acid from common sources and the reactor slurries will be deposited to the three filters through a common system. Subsequent to filtration the filtrate from all the filters is intermingled. With such a system, compliance with the New Source Performance Standards emission limitation of 0.02 lb F per ton P2O5 input can only be determined for the entire system. Note also that the current operating permit (AO29-146224) for this system addresses the

total system without placing specific limits on the individual reactors.

2b. With the addition of the new filter, the P2O5 feedrate to all filters will be equalized. After accounting for P2O5 losses in the reactor (approximately 5% of the P2O5 entering the reactor is not available for recovery from the filters), approximately 132 tph P2O5 will be available for recovery. This will be distributed to the filters in proportion to the filter areas. The DORRCO filter and the new filter surface areas are 1,780 square feet and the Prayon filter has a surface area of 950 square feet, for a total filter area of 4,510 square feet and a resultant P2O5 feedrate of 0.0293 tph/sf. Therefore, approximately, the DORRCO filter and the new filter will each receive 52.1 tph P2O5 and the Prayon filter will receive 27.8 tph P2O5.

2c. New filtration and gypsum slurry tanks will be installed with the new filter. These tanks will be evacuated to the new scrubber. The quantity of fluoride emissions and exhaust rate from these new tanks will be the same as from the existing DORRCO filtrate and gypsum tanks, ie., 3,000 ACFM with 8 - 10 mg F/ACF.

The total exhaust rate from the DORRCO filter, gypsum tank, and filtration tanks in case "B" is 14,000 + 3,000 = 17,000 ACFM. For the new scrubber the total exhaust rate from the 3rd filter, gypsum tank, and filtration tank will be 14,000 ACFM at 8 - 10 mg F/ACF. The exhaust flow from the 3rd filter is 3,000 ACFM lower than the present DORRCO filter due to an improved cloth wash and fume hood design.

2d. The exhaust gas flow rate to the Prayon scrubber under present conditions is 36,000 ACFM (according to measurements). In case "B", the Prayon scrubber exhaust flowrate will be reduced to 33,500 ACFM because fewer vapors will be emitted from the Prayon filter. With the new filter the P2O5 feed rates to both the Prayon and DORRCO filters will be significantly reduced. Consequently, the amount of vapors that have to be evacuated from these filters is also reduced. The exhaust gas flow of 36,000 ACFM shown for the Prayon system under Phase I is incorrect. This value should be listed as 33,500 ACFM.

2e. The gas temperatures from the Prayon filter and the new 3rd filter will be 120 °F, which is the same as the temperature from the DORRCO filter.

3a. Phase II of the project is intended to be an optional phase to provide additional operational flexibility only. This phase will not entail any changes in P2O5 feed rates. Consequently, the feedrates in this phase will be identical to those described in item 2a, above.

3b. The P2O5 feedrates to the filters will not change from Phase I to Phase II.

3c. The gypsum and filtrate tanks for the 3rd filter were inadvertently omitted from Phase II in Figure 7. The exhaust flow rate from the 3rd filter, gypsum tank, and filtrate tank to the new scrubber are identical in Phases I and II (14,000 ACFM).

3d. As in Phase I, the gas fume temperatures from all three filters will be 120 °F.

4. The scrubber efficiency calculations are based on information contained in "Phosphates and Phosphoric Acid, Volume 3" Pierre Becker. Attached is a copy of the relevant section outlining the necessary calculations as follows:

$$NTU = \ln(C1 - Cvap) / (C2 - Cvap)$$

where: NTU is the number of mass transfer units characterizing the scrubber performance.

C1 is the inlet fluoride concentration to the scrubber.

C2 is the exit fluoride concentration from the scrubber.

Cvap is fluoride concentration of the gas phase in equilibrium with the wash water of the scrubber.

In Figure 8 of the application, it was calculated that the present NTU of the DORRCO scrubber was 7.1 based on an inlet fluoride concentration (C1) of 63 mg F/dry ACF. However, as shown elsewhere on Figure 8 and on Figure 7, the DORRCO scrubber inlet fluoride concentration is actually 55 mg F/ dry ACF. The exit

concentration (C2) is 0.095 mg F/ dry ACF and, at a typical pond water temperature of 95 °F with a pond water fluoride concentration of 0.7%, the equilibrium fluoride concentration (Cvap) is 0.043 mg F/ dry ACF (Fluoride vapor concentrations in "FCI, Fertilizer Technical Data Book). Therefore, the number of transfer units for the present DORRCO scrubber is:

$$NTU(DORRCO) = \ln[(55 - .043)/(.095 - .043)] = 7.0$$

Upon installation of the new 3rd filter, the DORRCO scrubber NTU will not change. The inlet concentration (C1) will remain at 55 mg F/ dry ACF, the equilibrium concentration of fluoride (Cvap) will be 0.043 mg F/ dry ACF, and the exit concentration will remain at 0.095 mg F/ dry ACF.

The Prayon scrubber efficiencies are similarly calculated. Historical data indicate that the exit fluoride concentration from this scrubber is approximately 0.13 mg F/ dry ACF (12/14/89 compliance test). As with the DORRCO scrubber, these exit concentrations will not change with the addition of the new scrubber.

The 3rd scrubber efficiency is calculated as above. However, since this scrubber will not require a packed bed as in the DORRCO scrubber, the NTUs for this unit will be 2 units lower or 5.0 NTU (see attached info from "Phosphates and Phosphoric Acid", P. Becker). As shown in Figure 8 of the application, C1 will be 9.9 mg F/ dry ACF and Cvap will be 0.043 mg F/ dry ACF. Therefore:

$$NTU(3rd\ filter) = \ln[(9.9 - .043)/(C2 - .043)] = 5.0$$

The scrubber exit fluoride concentration, then, is 0.109 mg F/ dry ACF. This will be the same for both Phase I and Phase II.

5. The scrubber design pressure drops are as follows:

DORRCO Scrubber	= 7.2" WC
Prayon Scrubber	= 7.0" WC
New Scrubber	= 4.0" WC

6. The new scrubber will be constructed similarly to the DORRCO scrubber. The DORRCO scrubber is a design by JACOBS ENGINEERING in Lakeland, Florida. It was

manufactured to specifications by VESCOR and has model No. 2155RL. The new scrubber will be manufactured according to the DORRCO scrubber design. As yet no contract for the construction has been awarded, so the manufacturer and model number have not yet been determined. The efficiency calculations for this scrubber are based on actual data for the DORRCO scrubber and are shown in item 4, above.

7. The fluoride emissions from the scrubbers which control the No. 9 and 10 evaporators, the clarifier, and the 30% acid storage tank will not increase with the addition of the new filter. The emissions from these sources are a function of contact surface areas for evaporation and temperature. These factors will not change with the additional production rate. Nevertheless, the emissions from these sources are extremely small. During the compliance tests conducted in December 1989, emissions averaged 0.009 lb/hr, 0.002 lb/hr and 0.002 lb/hr for the clarifier, 30% acid tank and evaporator scrubbers, respectively.

8. Total particulate emissions from wet-process phosphoric acid plants have not been identified but are thought to be de-minimis. The entire production process is wet and, consequently, does not lend itself to the production of particulates, either total or PM10. In fact, these sources are subject to New Source Performance Standards (NSPS) listed in 40 CFR, Subpart T. These performance standards do not identify particulate emissions as being of concern.

   Similarly, sulfuric acid mist emissions from the process are unquantifiable and have not been identified as a pollutant of concern from this type of source. There are no published acid mist emission estimates or established test methods for this type of source and no NSPS has been set.

9. The construction timetable for this project is as follows:

Permit Issued:	Begin Phase I
18 Months After Issue:	Phase I complete
30 Months After Issue:	Optional Phase II complete

   Note that the Phase II of the project is considered optional. This portion of the project if for

operational flexibility only and is not required from an environmental standpoint. However, at this time, all indications are that this phase will be conducted.

Should you have any questions or require additional information, please feel free to call me or Ozzie Morris at 671-6207 or 671-6153, respectively.

Sincerely,

David B. Jellerson, P.E.
Environmental Supervisor

cc: Cindy Philips - FDER, Tallahassee
J. Campbell - HCEPC
Bill Thomas - FDER, Tampa
P-46

BASIS FLUORINE MASS TRANSFER CALCULATIONS

SOURCE: PHOSPHATES AND PHOSPHORIC ACID , VOLUME 3
PIERRE BECKER

5.7.2 Gas Washing Equipment

Objectives

For wet process phosphoric acid plants the U.S. Environmental Protection Agency has limited the emission of fluorides to 10 g as fluorine per ton of P_2O_5 fed into the process [28]. In the case of air cooling, where one expects to release about 7000 m^3 of effluent gas per ton of P_2O_5, the stated value corresponds to 1.4 mg of fluorine per cubic meter of gaseous effluent. Similar concentration limits (2 mg of fluorine per cubic meter) have been set by European environment departments. It will be seen that this is a difficult goal to achieve.

Choosing a Wet Scrubber

Scrubbing Efficiency: Number of Transfer Units. The efficiency of scrubbing equipment is often evaluated by its number of transfer units, NTU:

$$NTU = \ln \frac{C_1 - C_{vap}}{C_2 - C_{vap}} \qquad (67)$$

NTU = number of transfer units

C_1 = fluoride concentration in inlet gas

C_2 = fluoride concentration in outlet gas

C_{vap} = fluoride concentration of the gas phase in equilibrium with the wash liquor of the scrubber

Any consistent fluorine concentration unit can be used with this equation.

The number of transfer units is a dimensionless number; it is the natural logarithm of the ratio of possible fluoride removal ($C_1 - C_{vap}$) to the removal actually not achieved by the equipment ($C_2 - C_{vap}$).

NTU numbers depend on the specific properties of the chemical compound that is to be scrubbed out, mass transfer coefficient, the wash liquor concentration used as the scrubbing medium, the temperature of the medium, the type of equipment (which creates the interface and provides the necessary energy for the mass transfer), and the speed of the gas through the equipment.

To illustrate, a scrubbing tower will increase its NTU number with a given effluent gas and a given washing liquor:

1. By increasing the liquid/gas interface (more spray nozzles, packing)
2. By increasing the liquid pressure (more liquid surface, higher speed of the droplets)
3. By decreasing the gas velocity (longer retention time of the gas in the tower)
4. By lowering the temperature of the wash liquor (lower partial pressure of fluorides over the liquor)

Table 5.10 shows some typical scrubbing systems and their corresponding NTU numbers.

TABLE 5.10 NTU Values for Typical Scrubbing Systems

Scrubber type	Speed of gas (m/sec)	Liters of water per m^3 effluent gas	NTU per equipment unit or meter of tower	Mass transfer kg F $(At)^{-1}$ $(m3)^{-1}$ $(hr)^{-1}$	Approximate power requirement in kWh for 100,000 m^3 and 1 transfer unit	Estimated equipment cost in U.S.$ × 10^3 for 100,000 m^3 of effluent gas and 1 transfer unit
Spray tower	0.25	1.7	0.55/m tower	315	4	140-200
	0.50	1.7	0.25/m tower	315	9	90-130
	1.0	1.7	0.13/m tower	315	18	60-80
Packed tower	0.45	1.6	0.9/m packing	1100	7	100-130
	0.95	1.6	0.5/m packing	1100	18	65-80
	1.90	1.6	0.35/m packing	1100	50	40-50
Spray cross-flow	1.9	5-6	0.12/m	600	50	50-60
Packed cross-flow	1.6-1.8	5-6	1.6-2.2/m packing	1400-1600	16-22	30-40
Venturi	40 (in throat)	1.5	1.6/unit	–	60	30-40
	50	1.7	2.0 unit	–	80	28-34
	60	0.5	2.4 unit	–	60	24-30
Cyclonic spray	0.7 (superficial velocity)	5	0.47-0.67	800-1000	60	50-60

GARDINIER INC.

8813 Hwy 41 South o Riverview, Florida 33569 o Telephone 813 — 677-9111 o TWX 810 — 876-0648 o Telex 52666 o Cable - Gardinphos

November 14, 1990

Ms. Cindy Philips
Bureau of Air Quality Management
Florida Department of
Environmental Regulation
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400

Subject: Construction Permit Application - AC29-186726
New Phosphoric Acid Filter

Dear Ms. Philips:

The following information is being provided in response to our meeting on November 9th regarding the above-referenced permit application:

1. Attached, please find a revised Figure 1 to the permit application. The revised figure reflects the updated design for distribution of the reactor slurries to the three filters. As previously indicated, the filter loads per sqft of filter area are identical for all three filters. The reason for this change is improved process control ability.

2. Attached please find a revised Figure 7 to the permit application. The corrected figure more accurately details the allocation of fluoride emissions and gas flow rates and reflects the production increase from 126 tph to 139 tph. Following is a description of changes to this figure:

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Case A

- All fluorine and gas flow values are actual measurements at indicated production rates and and have not been changed.
- Leakage air into the system before the scrubbers was left out of the previous Fig 7 drawing. This is included in attached Fig 7.
- The previous Fig 7 showed 55 Mg F / dry ACF to the DORRCO scrubber,which is a measured figure. However, the fluorine balance from the reactor, filter and tanks results in 63-65 Mg F / dry ACF. The Mass transfer calculations (Fig 8 in permit request) were done with the 63-65 Mg F / dry ACF.

Case B

- The evacuation gas flow from the PRAYON and DORRCO reactors will stay the same as presently. The fluorine emission will rise linear with the rock P2O5 rate. Consequently the Fluorine gas emission concentration from the reactors will increase with 139/126*100 -100 or 10%.

- Similar the gas emission concentrations from filters will rise 10%

- The evacuation gas flow from the 3rd filter can be reduced to 11,000 ACFM,compared to 14,000 ACFM at the present 30D filter due to an improved evacuation system. Consequently, the fluorine emission concentration from the 3rd filter rises (14,000/11,000)*100-100 or 27%. The total fluorine flow to the 3 scrubbers in attached Fig 7 for Case B is 636 lbs/hr. The total fluorine flow to the scrubbers for Case A, present situation, is 573 lbs/hr.

Fluorine Emissions in Case B:

Present DORRCO Scrubber:

In Fig 8 of the Permit Request the scrubbers NTU's were calculated as 7.1 based on practical data. The NTU (Number of Transfer Units) will stay 7.1 for the situation in Case B.

$$So,\ NTU = LN \frac{C1 - Cvap}{C2 - Cvap}$$

C1 = Fluorine scrubber inlet concentration (Mg F/dry ACF)
C2 = Fluorine scrubber exit concentration
Cvap= Fluorine concentration above exit scrubber wash (pond) water (equilibrium) (Mg F/dry ACF)

Case B, DORRCO scrubber:

C1 = 81 Mg F / dry ACF
Cvap= .045 Mg F / dry ACF (.7% F in pond water)

$$7.1 = LN \frac{81 - .045}{C2 - .045}$$

C2 = .11 Mg F / Dry ACF (45,000 ACFM)

= .105 Mg F / ACF (7% Moist)

Total Dorrco scrubber emission: .63 lbs/hr F

Present Prayon scrubber: Similar to above calculation results in:

Prayon scrubber emission: 0.47 lbs/hr F (33,500 ACFM)
(0.105 Mg F / dry ACF)

The new 3rd scrubber: The number of transfer units was in the permit request estimated as NTU = 5.1

(Identical scrubber as DORRCO (NTU=7.1) but without packing (2.0 transfer units less for not having the packing))

With Cvap= 0.045 and C1 at 12.8 the calculation for the C2 scrubber exit concentration is:

$$5.1 = LN \frac{12.8 - .045}{C2 - .045}$$

C2 = 0.123 Mg F / dry ACF
0.11 Mg F / ACF

Total 3rd scrubber emission: 0.18 lbs/hr (12,500 ACF)

Total Fluorine Emission for Case B: 1.28 Mg F / dry ACF

Case C

- The changes with respect to fluorine concentrations are identical to Case B
- Total fluorine emission will be smaller than the above 1.28 Lbs/hr F due to lower gas loads to the existing PRAYON and DORRCO scrubbers.
- In case C the 3rd scrubber is equipped with packing. Without packing the the emission out of the 3rd scrubber would be 0.70 Lbs/Hr F. The packing reduces this to 0.40 Lbs/Hr. (Emission estimates based on similar calculations as under Case B).

Should you have any questions or require additional information, please feel free to call me or Ozzie Morris at 671-6207 or 671-6153, respectively.

Sincerely,

David B. Jellerson

David B. Jellerson, P.E.
Environmental Supervisor

cc: J. Campbell/HCEPC
Bill Thomas/FDER/Tampa
P-46

PRAYON (NO3), DORRCO (NO4) SCRUBBERS AND NEW ADDITIONAL SCRUBBER

GARDINIER 3RD FILTER PROJECT AUG 21 , '90 FIG 7

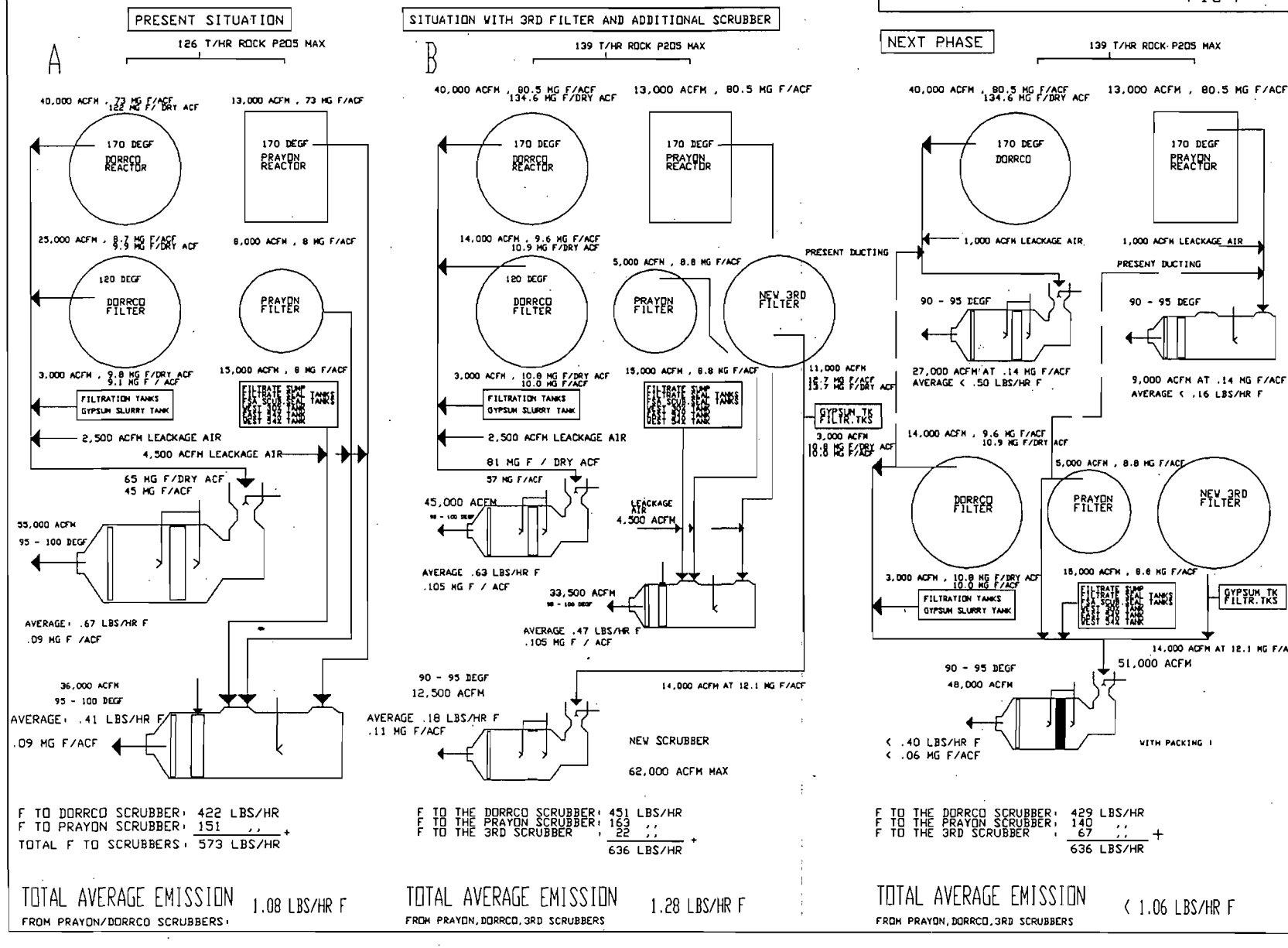
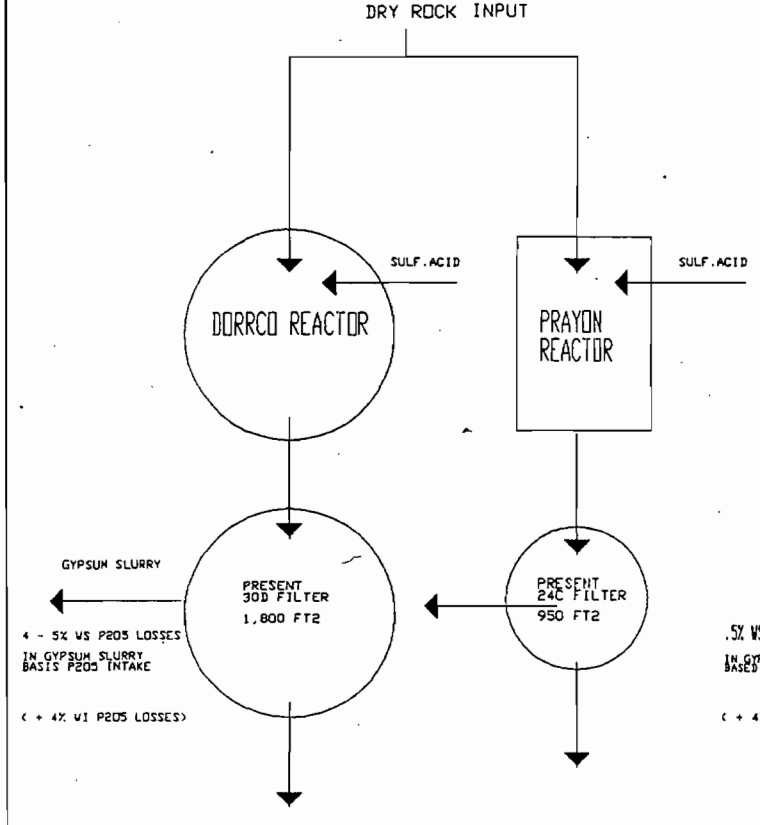


FIG 1

PRESENT SITUATION

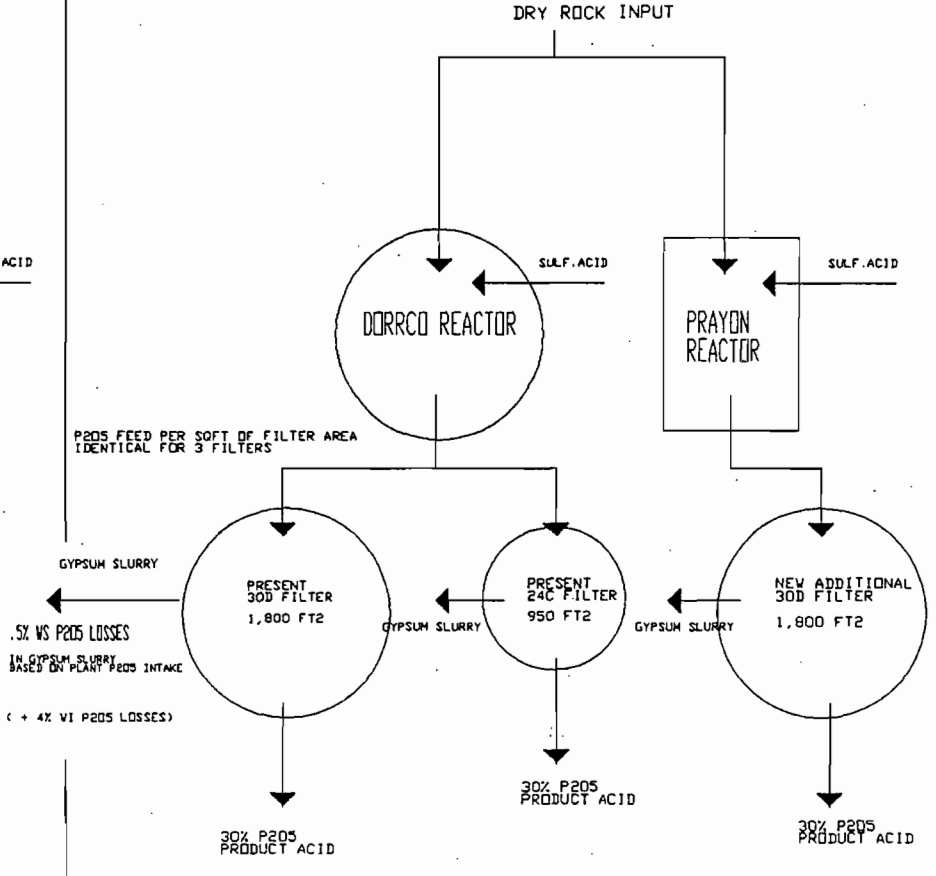
PLANT INTAKE P2O5: MAX 126 T/HR P2O5 OR 408 T/HR DRY ROCK (30.85% ROCK P2O5)



PLANT P2O5 EFFICIENCY: 90%
FILTER WS P2O5 WASH EFFICIENCY: 95-96%
WS P2O5 FILTER LOADING: 1.0 TON P2O5 / FT2 FILTER AREA

NEW SITUATION WITH 3RD FILTER

PLANT INTAKE P2O5: MAX 139 T/HR P2O5 OR 450 T/HR DRY ROCK (30.85% ROCK P2O5)



PLANT P2O5 EFFICIENCY: 93.4%
FILTER WS P2O5 WASH EFFICIENCY: 99.5%
WS P2O5 FILTER LOADING: .6 TON P2O5 / FT2 FILTER AREA

GARDINIER INC.

8813 Hwy 41 South o Riverview, Florida 33569 o Telephone 813 — 677-9111 o TWX 810 — 876-0648 o Telex 52666 o Cable - Gardinphcs

CERTIFIED MAIL: 296 372 529

November 16, 1990

Ms. Cindy Philips
Bureau of Air Quality Management
Florida Department of
Environmental Regulation
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400

Subject: Construction Permit Application - AC29-186726
New Phosphoric Acid Filter

Attached, please find a revised Figure 1 to the permit application. The revised figure reflects the updated design for distribution of the reactor slurries to the three filters. Upon completion of the project, the Prayon reactor will normally utilize the new filter. However, during maintenance periods, the Prayon reactor may discharge to the existing Prayon filter as is currently the case. During such periods, the production will be limited to current rates. The reason for this change is improved operational flexibility.

Should you have any questions or require additional information, please feel free to call me or Ozzie Morris at 671-6207 or 671-6153, respectively.

Sincerely,

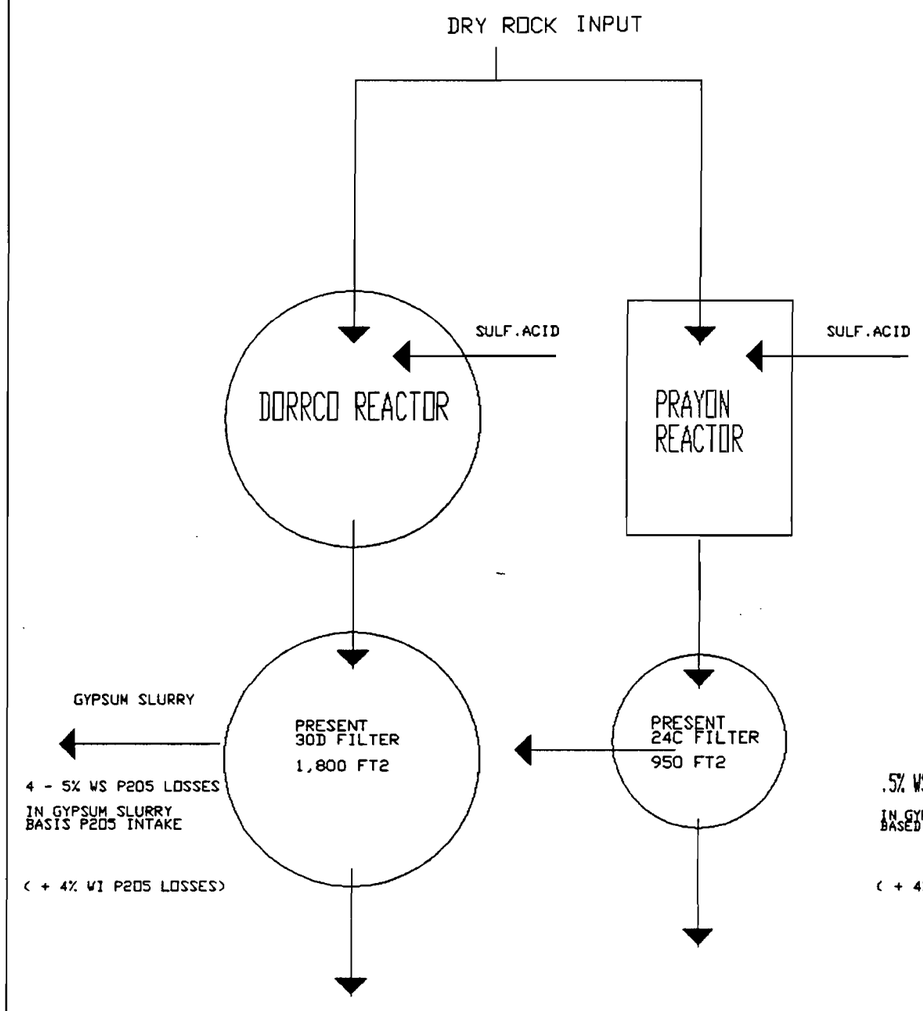
David B. Jellerson, P.E.
Environmental Supervisor

cc: J. Campbell - HCEPC
Bill Thomas - FDER, Tampa
P-46

FIG 1

PRESENT SITUATION

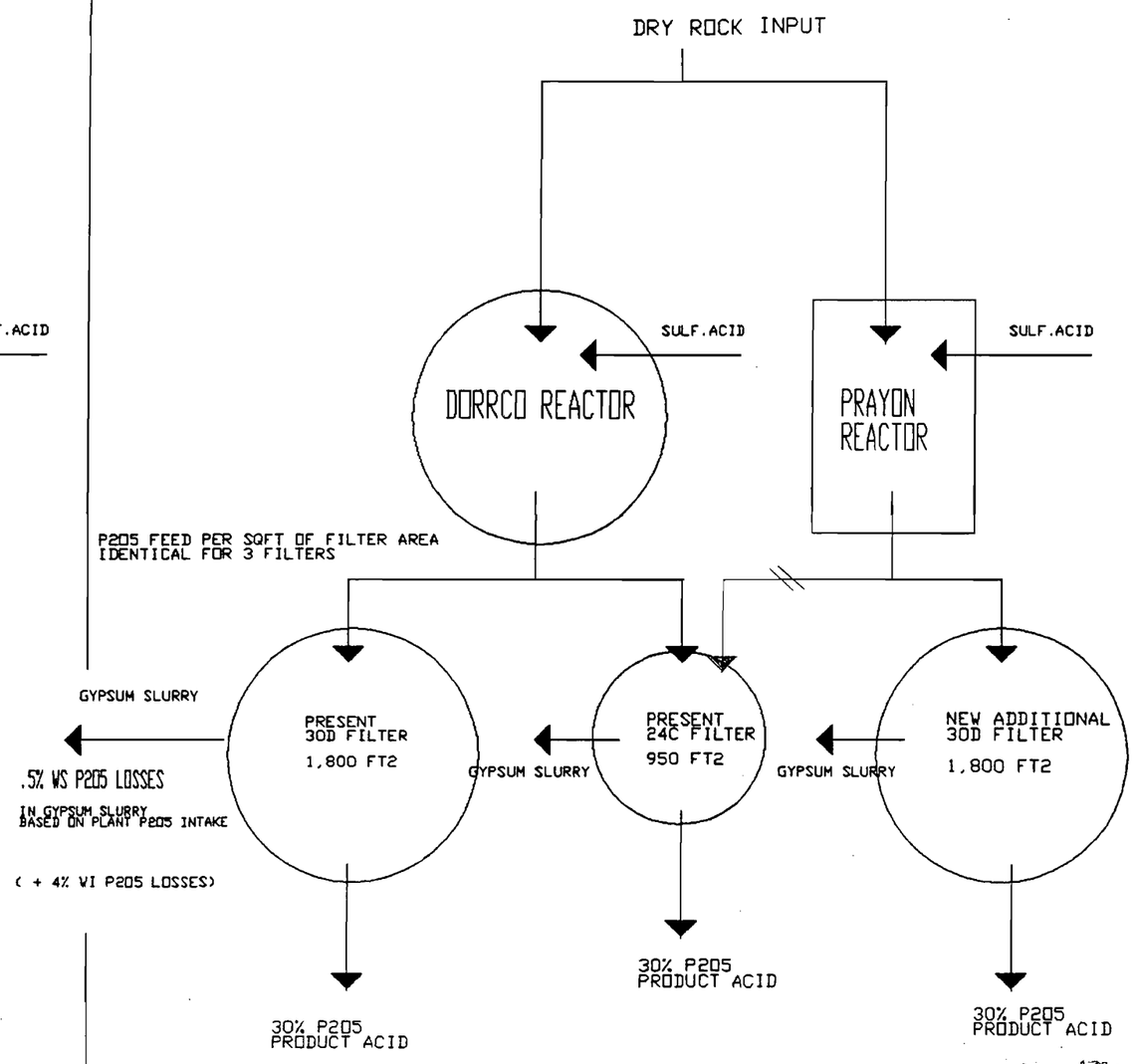
PLANT INTAKE P205: MAX 126 T/HR P205 OR 408 T/HR DRY ROCK [30.85% ROCK P205]



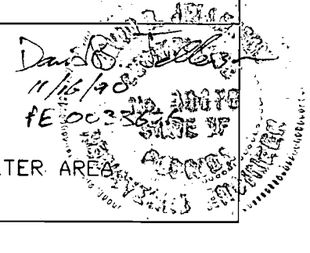
PLANT P2O5 EFFICIENCY: 90%
FILTER WS P2O5 WASH EFFICIENCY: 95-96%
WS P2O5 FILTER LOADING: 1.0 TON P2O5 / FT2 FILTER AREA

NEW SITUATION WITH 3RD FILTER

PLANT INTAKE P205: MAX 139 T/HR P205 OR 450 T/HR DRY ROCK [30.85% ROCK P205]



PLANT P2O5 EFFICIENCY: 93.4%
FILTER WS P2O5 WASH EFFICIENCY: 99.5%
WS P2O5 FILTER LOADING: .6 TON P2O5 / FT2 FILTER AREA



Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary

November 30, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. E. O. Morris
Environmental Manager
Gardinier, Inc.
8813 Highway 41 South
Riverview, FL 33569

Dear Mr. Morris:

Re: Phosphoric Acid Production Facility
Construction Permit Application AC29-186726

On November 15th and 21st, the Department received Gardinier's revisions to the referenced application. The application is still deemed incomplete and additional information is required for further processing of this application.

A review of the projected fluoride emissions indicates that the significant emission rate of 3 tons per year (TPY) defined for fluoride in Table 500-2 of Chapter 17-2.500, F.A.C., may be exceeded and New Source Review will be required.

Though it is true that the requested maximum allowable fluoride emission of 10.29 TPY is only an increase of 2.78 TPY from Gardinier's past-two-year annual average of 7.51 TPY, this average was based on a baseline feed input rate of 126 tons P_2O_5/hour which was in violation of the federally enforceable construction permit limit of 104.5 tons P_2O_5/hour. The baseline emission rate must be based on the actual fluoride emissions at the permitted rate of 104.5 tons P_2O_5/hour. Also, maximum permitted allowable emissions can not be used in place of actual emissions.

Gardinier must comply with the New Source Review Requirements or test for actual fluoride emissions at the 104.5 tons P_2O_5/hour rate to prove that the significant emission rate of 3 TPY is not exceeded.

Within 30 days of receipt of this letter, please explain how you plan to proceed with this project. If you have any questions, please call Cindy Phillips at (904)488-1344.

Sincerely,

Cindy Phillips for

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/CP

c: D. Jellerson, P.E., Gardinier
J. Campbell, EPCHC
H. Kerns, SW District

December 7, 1990
90090

Ms. Cindy Phillips
Bureau of Air Regulation
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Gardinier, Inc.
Phosphoric Acid Production Facility
Construction Permit Application AC29-186726

Dear Ms. Phillips:

This letter is in response to your recent letter dated November 30, 1990, and our meeting in Tallahassee on December 6. The main concern expressed in your letter and at the meeting, with regards to the above referenced construction permit application, was whether Gardinier had violated their maximum permitted phosphoric acid production rate in the past. If so, this in turn may have resulted in fluoride emissions above allowable levels, thereby potentially resulting in an artificially high baseline emission level for Prevention of Significant Deterioration (PSD) new source review purposes.

As was described to you, the original PSD permit issued for the facility (PSD-FL-026, issued July 11, 1980) contained specific wording which allowed greater operating rates above the 46.5 tons per hour (TPH) P_2O_5 for No. 3 Phosphoric Acid plant, and 60.0 TPH for No. 4 Phosphoric Acid plant (excerpt attached). Greater operating rates were allowed provided the allowable fluoride emission rates of 0.93 lb/hr and 1.2 lb/hr (total of 2.13 lb/hr) were not exceeded.

The construction permit issued by the Florida Department of Environmental Regulation (FDER) similarly did not limit production rates (AC29-21345, issued October 25, 1979, and AC29-21343, and November 13, 1979). An allowable fluoride emission rate was specified, based on a maximum production rate, but the maximum production rate itself was not limited. Subsequent operating permits issued by FDER have not limited production rates. Maximum fluoride emissions were limited to 0.93 lb/hr and 1.16 lb/hr, respectively, for a total of 2.09 lb/hr (9.15 tons per year).

Gardinier has indicated that the intent of the permits were never to limit production rate. This was confirmed by Bill Thomas of FDER Tampa. Gardinier has consistently achieved production rates higher than those referenced in the permits. Higher rates were achieved from the time of the initial startup of the facility, as demonstrated by performance and compliance tests. Number 3 Phosphoric Acid plant achieved a maximum production rate of 47.43 TPH P_2O_5 on December 13, 1983, and No. 4 Phosphoric Acid plant achieved a maximum production of 78.9 TPH on June 30, 1983 (total production of 127.33 TPH). Fluoride emissions were within allowable levels during these tests.

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As a result, Gardinier has not violated any of the federally enforceable or state permit limitations for the phosphoric acid plants. Consequently, the actual fluoride emissions for the last two years of operation constitute the baseline emission level for PSD applicability. As stated in the permit application, this level is 7.51 tons per year (TPY). The requested level of allowable emissions is 10.29 TPY, which represents an increase of 2.78 TPY. This net increase is below the PSD significant emission rate of 3.0 TPY.

As was also mentioned, there was a net decrease of 28.8 TPY in fluoride emissions resulting from the No. 5 DAP plant expansion at Gardinier (permit AC29-135083, issued October 14, 1987). Since this decrease occurred within the last five years, the decrease is contemporaneous with the present request. Even with the requested increase of 2.78 TPY, there would still be a net decrease of 26.0 TPY. This should further demonstrate that PSD review is not required for this modification.

We appreciated the opportunity to meet with you concerning this application. Please call if you have any questions.

Sincerely,

David A. Buff

David A. Buff
Principal Engineer

cc: B. Thomas, SW Dist
D. Graziani, EPCHC
CHF/BA

3.6

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30308

JUL 11 1980

REF: 4AH-AF

Mr. ~~Randy~~ Roy J. Cabina, Vice President
Gardinier, Inc.
P. O. Box 3269
Tampa, FL 33601

Re: Modification to Phosphate
Fertilizer Complex
PSD-FL-026

Dear Mr. Cabina:

Review of your November 26, 1979 application to modify your existing phosphate fertilizer complex (PSD-FL-026) approximately 8 miles south of Tampa has been completed. The construction is subject to rules for the Prevention of Significant Air Quality Deterioration (PSD), contained in 40 CFR 52.21.

We have determined that the construction, as described in the application, meets all applicable requirements of the PSD regulations, subject to the conditions in the conclusions section to the Final Determination (enclosed). EPA has performed the Preliminary Determination concerning the proposed construction, and published a request for public comment on May 13, 1980.

The only comments received were from your company. The comments were presented in a letter to EPA from A. E. Morrison, dated May 23, 1980. A meeting was held at the EPA offices in Atlanta to discuss these comments. Further information dated June 23, 1980 has been received and made a part of your application. These actions have resulted in two substantive changes to the Preliminary Determination which are incorporated into the Final Determination. These are:

1. The gypsum pond arrangement has been altered to ensure compliance with the source's NPDES permit. As a result, the net increase in fluoride emissions due to the modification will be 0.2 tons per year, to be contrasted with the 10 tons per year increase identified in the preliminary determination.

2. Allowable emissions limits (Conditions 1-7) have been altered to allow future capacity increases above stated maximum capacity providing that (1) total allowable limits (lb/hr) do not increase, (2) EPA is notified, and (3) compliance is verified with additional testing.

5) Emissions of fluorides from the No. 3 Phosphoric Acid Plant shall not exceed 0.93 pounds per hour. This emission limit is based on an operating rate of 46.5 tons per hour of equivalent P_2O_5 feed and a fluoride emission rate of 0.02 pounds per ton of equivalent P_2O_5 feed. At greater operating rates fluoride emissions shall be less than 0.02 pounds per tons so that the limit of 0.92 pounds of fluorides per hour shall not be exceeded. At lesser operating rates the emissions of fluorides shall not exceed 0.02 pounds per ton of equivalent P_2O_5 feed.

6) Emissions of fluorides from the No. 4 Phosphoric Acid Plant shall not exceed 1.2 pounds per hour. This emission limit is based on an operating rate of 60 tons per hour of equivalent P_2O_5 feed and a fluoride emission rate of 0.02 pounds per ton of equivalent P_2O_5 feed. At greater operating rates fluoride emissions shall be less than 0.02 pounds per ton so that the limit of 1.2 pounds of fluorides per hour shall not be exceeded. At lesser operating rates the emissions of fluorides shall not exceed 0.02 pounds per ton of equivalent P_2O_5 feed.

7) Emissions of sulfur dioxide and acid mist from the No. 7 Sulfuric Acid Plant shall not exceed 291.7 and 10.9 pounds per hour respectively. These limits are based on an operating rate of 72.9 tons per hour of 100% sulfuric acid produced, a sulfur dioxide emission rate of four pounds per ton of 100% sulfuric acid produced, and an acid mist emission rate of 0.15 pounds per ton of 100% sulfuric acid produced. At greater operating rates sulfur dioxide emissions shall be less than 4 pounds per ton and acid mist emissions shall be less than 0.15 pounds per ton so that the limits of 291.7 pounds of sulfur dioxide per hour and 10.9 pounds of acid mist per hour shall not be exceeded. At lesser operating rates, the emissions of sulfur dioxide and acid mist shall not exceed 4 and 0.15 pounds, respectively, per ton of 100% sulfuric acid produced.