Preliminary Determination
and
Technical Evaluation

Found
Mobil Chemical
CO ; Dryer No.

Mobil Chemical Company

No. 4 Rock Dryer

Nichols, Polk County, Florida

Proposed Permit AC 53-090634

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting

December 14, 1984

Table of Contents

I. Project Description

A. Applicant

Mobil Chemical Company
Post Office Box 311
Nichols, Florida 33863

B. Project and Location

Mobil Chemical Company is operating a phosphate rock mining and processing facility located at Nichols Road and Anderson Road in western Polk county, known as the Nichols site.

Presently, Mobil operates three rock dryers with an average production rate of 250 tons per hour for each dryer. Two of the dryers are permitted to operate 8000 hours per year each while rock dryer No. 4 is limited by its operating permit to 4000 hours per year. The company has applied for a construction permit to increase the annual operating time of this existing No. 4 rotary dryer to 8000 hours. This will result in a significant net emission increase of particulate matter (PM) and nitrogen oxides (NO_x).

C. Process and Controls

Dryer No. 4 is a concurrent flow rotary dryer fired with No. 6 fuel oil or natural gas. The maximum feed rate to the dryer is 475 tons per hour and the maximum heat input is 94 million Btu per hour.

The exhaust gas stream from the dryer passes through dry cyclones to remove entrained coarse particulate matter, then through a Ducon venturi scrubber to remove most of the remaining particulate matter, and finally through a Ducon packed bed scrubber to reduce sulfur dioxide emissions.

The operating parameters of the venturi scrubber includes a water flow rate of 1400 gallons per minute and a pressure drop greater than 19.5 PSI. The water flow rate of the packed-bed scrubber is 1000 GPM recycle plus 150 GPM of fresh water makeup.

The phosphate rock being dried is reported to absorb 92% of the sulfur dioxide generated.

II. Rule Applicability

A. State Regulations

The proposed project is subject to preconstruction review under the provisions of Chapter 403, FS, and Chapter 17-2, FAC.

The plant site is in an area designated as unclassifiable for the pollutant particulate matter (17-2.430) and attainment for the air pollutants ozone, sulfur dioxide, carbon monoxide, and nitrogen dioxide (17-2.420). It is in the area of influence of the Hillsborough County particulate matter nonattainment area (17-2.410).

A phosphate rock processing plant is on the list of 28 Major Facility Category, Table 500-1. This facility is a major source for nitrogen oxides, particulate matter, and sulfur dioxide (17-2.100(99)). The proposed project will increase particulate matter (PM) emissions by 49.8 TPY, sulfur dioxide (SO_2) emissions by 38.8 TPY, and nitrogen oxide (NO_x) emissions by 68.7 TPY. The increased emission rates of PM and NO_x are greater than the significant emission rates listed in Table 500-2 of Chapter 17-2. Therefore, the project is subject to the Prevention of Significant Deterioration regulations (PSD), Rule 17-2.500.

Rule 17-2.500(5) requires a Best Available Control Technology (BACT) review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in Table 500-2. The pollutants in this case are particulate matter and nitrogen oxides.

III. Summary of Emissions and Air Quality Impact

The Mobil Chemical Company of Nichols, Florida, is designated a major facility for air pollution because it emits greater than 100 tons per year of at least one regulated air pollutant. The company is currently proposing to expand the production capacity of its number 4 rock dryer by doubling the number of hours it is permitted to operate. This production increase will result in a significant increase in emissions of particulate matter and nitrogen oxides. Both of these pollutants are thus subject to review under the prevention of significant deterioration (PSD) regulation. The air quality analysis required for these pollutants includes:

- An analysis of existing air quality;
- A PSD increment analysis (for PM only);
- An ambient air quality standards (AAQS) analysis;
- An analysis of impacts on soils, vegetation, visibility, and growth-related air quality impacts, and;
- A good engineering practice (GEP) stack height determination.

The analysis of existing air quality generally relies on preconstruction monitoring data collected in accordance with EPA-approved methods. The PSD increment and AAQS analyses depend on air quality dispersion modeling carried out in accordance with EPA guidelines.

Based on these required analyses, the department has reasonable assurance that the proposed production increase at the Mobil facility, as described in this report and subject to the conditions of approval proposed herein, will not cause or contribute to a violation of any PSD increment or ambient air quality standard. A discussion of the modeling methodology and required analyses follows.

Modeling Methodology

The EPA-approved Industrial Source Complex Short-Term (ISCST) dispersion model was used in the air quality impact analysis. This model predicts ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, area, and volume sources. The model allows for the separation of sources, user determined location of receptors, and several other features such as building wake downwash. The model is generally applicable to level or gently rolling terrain.

A five-year record of sequential hourly meteorological data was used in the modeling analysis. The surface data were National Weather Service data collected at the Tampa International airport during the years 1970-1974. The upper air data were also National Weather Service data collected at their office in Ruskin, Florida during the same years.

The proposed production increase for the number 4 dryer results in only an annual increase in emissions. No short-term emissions increase is proposed. As such, modeling for comparison to short-term ambient standards and PSD increments was not performed; only the net emissions increase of the number 4 dryer itself was modeled. The stack parameters and emission rates used in modeling analysis are listed in Table I.

Analysis of Existing Air Quality

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review. In general, one year of quality assured data using an EPA-reference, or the equivalent, monitor must be submitted. Sometimes less than one year of data, but no less than four months, may be accepted when department approval is given.

An exemption to the monitoring requirement can be obtained if the maximum air quality impact, as determined through air quality modeling, is less than a pollutant-specific de minimus concentration. In addition, if current monitoring data already exist and these data are representative of the proposed source area, then at the discretion of the department, these data may be used.

For the proposed production increase, the modeling results indicate that both particulate matter and nitrogen oxide emissions cause a less than de minimus impact. Therefore, no additional monitoring was required.

PSD Increment Analysis

The Mobil facility is located in an area designated as a Class II attainment area for the pollutant particulate matter (PM). Within this area, maximum allowable increases (PSD increments) represent the amount that new sources, or increases from modified sources, may increase the ambient ground-level concentration of PM. At no time, however, can the increased loading cause or contribute to a violation of the ambient air quality standards.

All PM emission increases from sources constructed or modified after December 27, 1977, will consume PSD increment. In addition, all PM emission increases associated with the construction or modification of major facilities which occurs after January 6, 1975, will consume increment. Decreases in emissions can expand increment.

The proposed production increase will result in no increase of the 24-hour average ambient ground-level concentration. The increase in the annual average PM concentration is predicted to increase by only 0.3 ug/m^3, which is less than the significant impact level of 1 ug/m^3. Therefore, no further increment analysis was necessary.

Ambient Air Quality Standards Analysis

Given existing air quality in the area of the Mobil facility, emissions from the proposed production increase are not predicted to cause or contribute to a violation of ambient air quality standards. The results of the modeling analysis are contained in Table II.

For both pollutants subject to review, PM and NO_x, the increased concentration due to the production increase are less than the significant impact levels for these pollutants. As such, no further analysis of the Mobil facility or other surrounding facilties was necessary.

Additional Impacts Analysis

The production increase at the Mobil facility results in a less than significant ambient concentration increase. As such, no additional impact on soils or vegetation will occur. In addition, no visibility reduction in the nearest Class I area, the Chassahowitzka National Wilderness Area, will occur.

The production increase will not alter growth in the area to the extent of having an air quality impact.

Good engineering practice (GEP) stack height means the greater of: 1) 65 meters; or 2) the maximum nearby building height plus 1.5 times the building height or width, whichever is less. The existing stack for the number 4 dryer is less than 65 meters high. Thus, this stack is within the limitations of GEP.

IV. Conclusion

Based on a review of the data submitted by Mobil Chemical Company, the department has concluded that the requested increased hours of operations for this dryer can be approved without causing any violations of air standards or increments.

Therefore, the department proposes to issue Mobil Chemical Company a permit for the Phosphate Rock Dryer No. 4 to increase its hours of operation from 4000 hours per year to 8000 hours per year. The General and Specific Conditions listed in the proposed permit will assure compliance with all applicable air pollution regulations.

ATTACHMENT A

Table I

Source Emissions and Stack Parameters

Source	PM (g/s)	NOx (g/s)	Stack Height (m)	Stack Diameter (m)	Gas Exit Velocity (m/s)	Gas Exit Temp. (K)
No. 4 Dryer	3.11	4.33	25.9	2.29	16.10	339

ATTACHMENT B

Table II

Air Quality Modeling Results for No. 4 Dryer

Pollutant and Averaging Time	Maximum Impact (ug/m^3) Permitted	Proposed	Increased Impact (ug/m^3)	Significant Impact (ug/m^3)	Allowed PSD Increment (ug/m^3)	AAQS (ug/m^3)
Particulate Matter						
24-hour	7.5	7.5	0	5	37	150
Annual	0.3	0.6	0.3	1	19	60
Nitrogen Dioxide Annual	0.4	0.9	0.5	1	--	100

ATTACHMENT C

 AC 53-090634

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

ST. JOHNS RIVER DISTRICT
3319 MAGUIRE BOULEVARD
SUITE 232
ORLANDO, FLORIDA 32803

DER
JUL 30 1984
BAQM

BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY
ALEX SENKEVICH
DISTRICT MANAGER

APPLICATION TO ~~OPERATE~~/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Phosphate Rock Dryer [x] New[1] [ ] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [x] Modification

COMPANY NAME: Mobil Chemical Company COUNTY: Polk

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) No. 4 Rock Dryer

SOURCE LOCATION: Street Nichols Road & Anderson Road City Nichols

UTM: East 17-398.290 North 3084.920

Latitude ____° ____' ____"N Longitude ____° ____' ____"W

APPLICANT NAME AND TITLE: K.D. Fetrow, Manager of Manufacturing

APPLICANT ADDRESS: Post Office Box 311, Nichols, Florida 33863

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Mobil Chemical Company

I certify that the statements made in this application for a Construction permit are true, correct and complete to the best of my knowledge and belief. Further I agree to maintain and operate the pollution control source and pollution contro facilities in such a manner as to comply with the provision of Chapter 403, Florid Statutes, and all the rules and regulations of the department and revisions thereof. also understand that a permit, if granted by the department, will be non-transferabl and I will promptly notify the department upon sale or legal transfer of the permitte establishment.

*Attach letter of authorization

Signed: D. E. Thomas for K. D. Fetrow

K.D. Fetrow, Manager of Manufacturing

Name and Title (Please Type)

Date: 7/12/84 Telephone No. (813)425-3011

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project hav been ~~designed~~/examined by me and found to be in conformity with modern engineerin principles applicable to the treatment and disposal of pollutants characterized in th permit application. There is reasonable assurance, in my professional judgment, tha

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed _____

John B. Koogler, P.E.
Name (Please Type)

SHOLTES & KOOGLER, ENVIRONMENTAL CONSULTANTS
Company Name (Please Type)

1213 NW 6th Street, Gainesville, FL 32601
Mailing Address (Please Type)

Florida Registration No. 12925 Date: 7/2/84 Telephone No. (904) 377-5822

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Construction permit application to increase the annual operating time of the existing No. 4 rotary phosphate rock dryer from 4000 hrs/yr to 8000 hrs/yr. The dryer is fired with either natural gas or No. 6 fuel oil and is rated at 475 tons/hr (max). Particulate matter & SO_2 emissions are controlled with a Ducon scrubber system to limits established by FDER & EPA.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction August 1984 Completion of Construction August 1984

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Not Applicable - A Ducon scrubbing system exists on the dryer to control both SO_2 and particulate matter. Neither hourly pollutant emissions rate nor scrubber performance will be affected by the increase in annual operating time.

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

AC53-24802 issued 2/12/80; Federal approval granted 5/20/80 under PSD-FL-042; and AO53-48389 issued 10/22/81 and expiring 10/15/86.

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;

if power plant, hrs/yr _____; if seasonal, describe: _____

Time will not exceed 8000 hours /year

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? NO

   a. If yes, has "offset" been applied? _____

   b. If yes, has "Lowest Achievable Emission Rate" been applied? _____

   c. If yes, list non-attainment pollutants. _____

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. YES

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. YES

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? YES

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? NO

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? NO

   a. If yes, for what pollutants? _____

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Phosphate Rock	Part. Matter	Var..	950,000*	M
(Pebble & Concentrate)				
*Maximum dryer input rate is 475 tph; Annual average drying rate is nominally 250 tph.				
Permitting is based on maximum dryer operating rate (475 tph) for 8000 hours per year.				

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 950,000 (dry weight)

2. Product Weight (lbs/hr): 926,250 (dry weight w/2.5% dryer loss)

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
Part. Matter	24.9	99.6	BACT	24.9	2727	10,908	H
SO_2	19.4	77.6	BACT	19.4	245	981	H
NOx	34.4	137.5	BACT	34.4	34	137	H
CO	3.1	12.5	NA	3.1	3.1	12.5	H
VOC	0.6	2.5	NA	0.6	0.6	2.5	H

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Ducon Venturi Scrubber	Part. Matter	99.4	>2 μm	Test
Ducon Packed-bed Scrubber	SO_2	92.0	SO_2	Test

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Natural Gas	0.080	0.091	93.75
No. 6 Oil	550	625	93.75

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis: Gas/No. 6 Oil

Percent Sulfur: Nil/2.5% Percent Ash: Nil/0.12

Density: NA/8.3 lbs/gal Typical Percent Nitrogen: Nil/NA

Heat Capacity: NA/18,072 BTU/lb 1025 BTU/ft^3/150,000 BTU/gal

Other Fuel Contaminants (which may cause air pollution): None

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average NA Maximum

G. Indicate liquid or solid wastes generated and method of disposal.

Scrubber liquor is treated by liming and clarifying in the existing Nichols water treatment system. Water is recycled from this system back to the scrubbers.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 85 ft. Stack Diameter: 7.5 ft.

Gas Flow Rate: 140,000 ACFM 90,900 DSCFM Gas Exit Temperature: 150 °F.

Water Vapor Content: 25 % Velocity: 52.8 FPS

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diameter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

_____

_____

_____

_____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

_____

_____

_____

_____

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)

5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).

6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.

7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

SECTION V

SUPPLEMENTAL REQUIREMENTS

1. Input and Product Weight

The process input weight is determined by belt weighers. The maximum input weight to the No. 4 Dryer is 475 tons per hour of dry rock. The production rate of the dryer, accounting for the losses in the dryer, is 463 tons per hour. The nominal average annual dryer production rate is 250 tons per hour.

2,3. Uncontrolled and Controlled Emissions

Particulate Matter

Uncontrolled - based on a measured particulate matter concentration at the cyclone outlet of 3.5 grains/dscf. (Cyclones are considered part of the product recovery system).

P.M. = 90,900 ft^3/min x 60 min/hr x (3.5/7000) lb/ft^3
= 2727.0 lb/hr
= x 8000/2000
= 10,908 tons/year

Controlled - based on 0.052 lb/ton of dry rock feed

P.M. = 475 tons/hr x 0.052 lb/ton
= 24.9 lb/hr
x 8000/2000
= 99.6 tons/year

4. The control system is an existing system that will not be affected by the increased annual operating time of the No. 4 Dryer.

Sulfur Dioxide

Uncontrolled - based on AP-42, Supplement 13 factor
SO_2 = 625 gal/hr x 157 (2.5) lb SO_2/1000 gal
= 245.3 lb/hr
x 8000/2000
= 981.2 tons/year

Controlled - based on 92 percent control efficiency
SO_2 = 245.3 (1-0.92)
= 19.4 lb/hr
x 8000/2000
= 77.6 tons/year

Nitrogen Oxides

Uncontrolled and Controlled - based on AP-42, Supplement 13
NOx = 625 gal/hr x 55 lb/1000 gal
= 34.4 lb/hr
x 8000/2000
= 137.5 tons/year

Carbon Monoxide

Uncontrolled and Controlled - based on AP-42, Supplement 13
CO = 625 gal/hr x 5 lb/1000 gal
= 3.1 lb/hr
x 8000/2000
= 12.5 tons/year

Volatile Organic Compounds

Uncontrolled and Controlled - based on AP-42, Supplement 13
VOC = 625 gal/hr x 1 lb/1000 gal
= 0.6 lb/hr
x 8000/2000
= 2.5 tons/year

5. Control Efficiency

Particulate Matter

$$Ep = (2727 - 24.9) \times 100/2727$$
$$= 99.1\%$$

Sulfur Dioxide

Es = 92% by design

6. Flow Diagram - Attachment 1

7. Site Plan - Attachment 2

8. Location Map - Attachment 3

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[X] Yes [ ] No

Contaminant	Rate or Concentration
Particulate Matter	0.06 lb/ton of feed

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[ ] Yes [X] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration
Particulate Matter	0.052 lb/ton of feed
NOx	0.37 lb/10^6 BTU
(See attached PSD application for data supporting the BACT proposed for this existing system.)	

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter: ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

(SEE ATTACHED PSD APPLICATION)

A. Company Monitored Data

1. _____no. sites _____ TSP _____( ) SO^{2}* _____ Wind spd/dir

Period of Monitoring ____/____/____ to ____/____/____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from _____/_____/_____ to _____/_____/_____
month day year month day year

2. Surface data obtained from (location)_____

3. Upper air (mixing height) data obtained from (location)_____

4. Stability wind rose (STAR) data obtained from (location)_____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	_____	grams/sec
SO^2	_____	grams/sec

E. Emission Data Used in Modeling

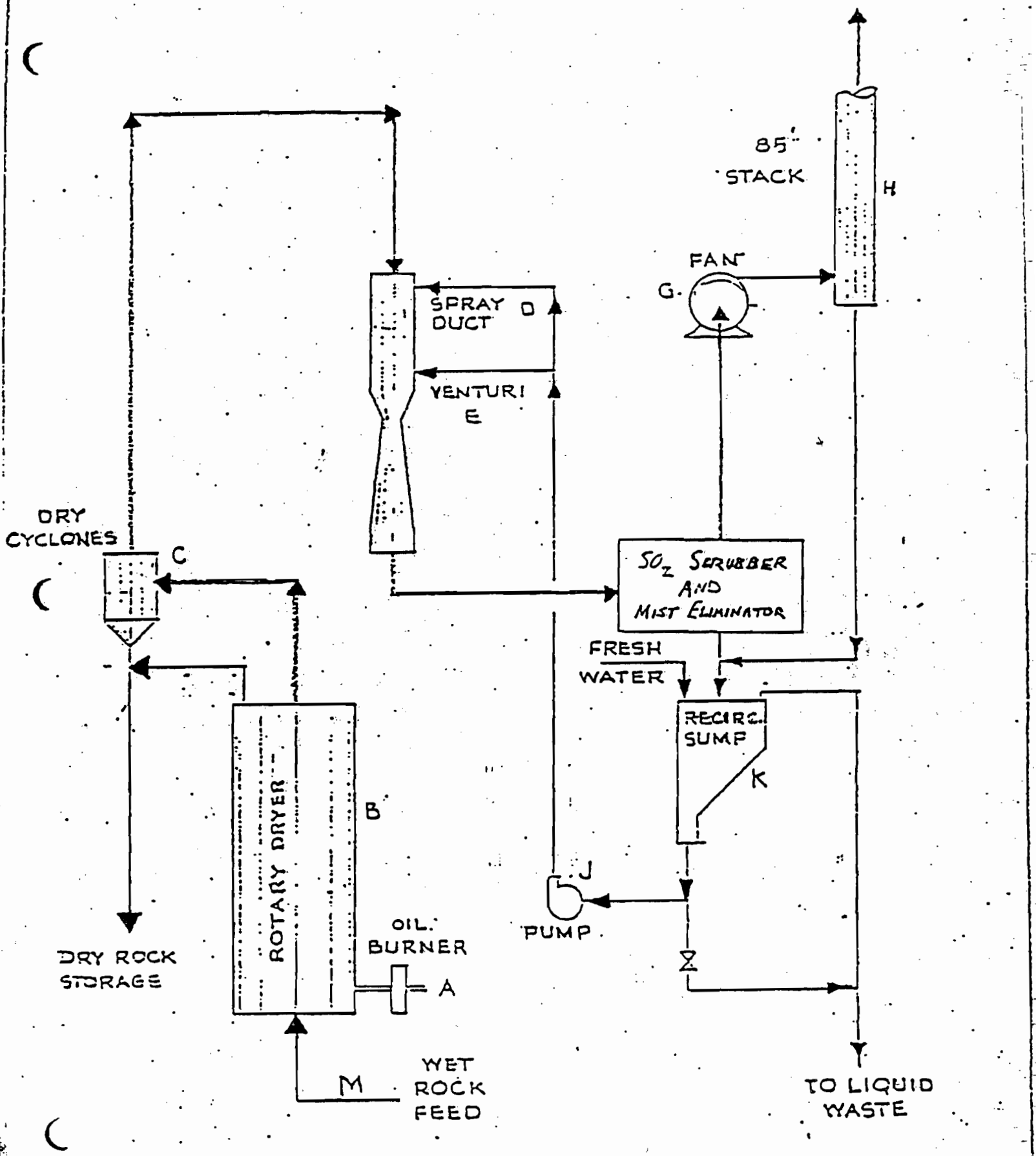
Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

ATTACHMENT 1 (1/2)



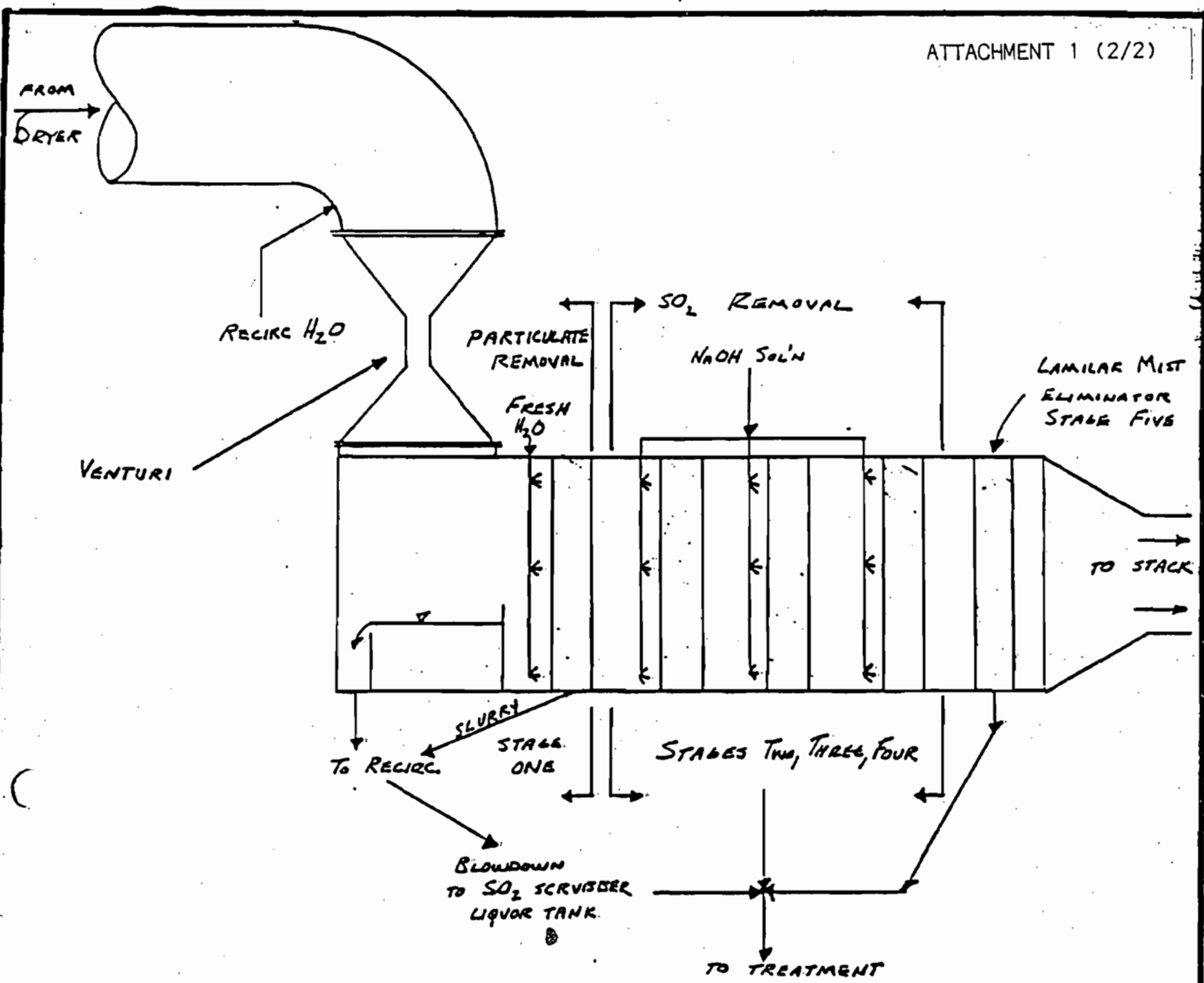
MOBIL CHEMICAL COMPANY
Minerals Division

Date

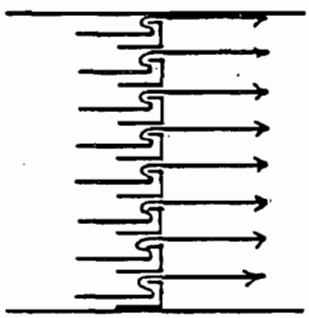
MOBIL DRY ROCK

553-0-010A

ATTACHMENT 1 (2/2)

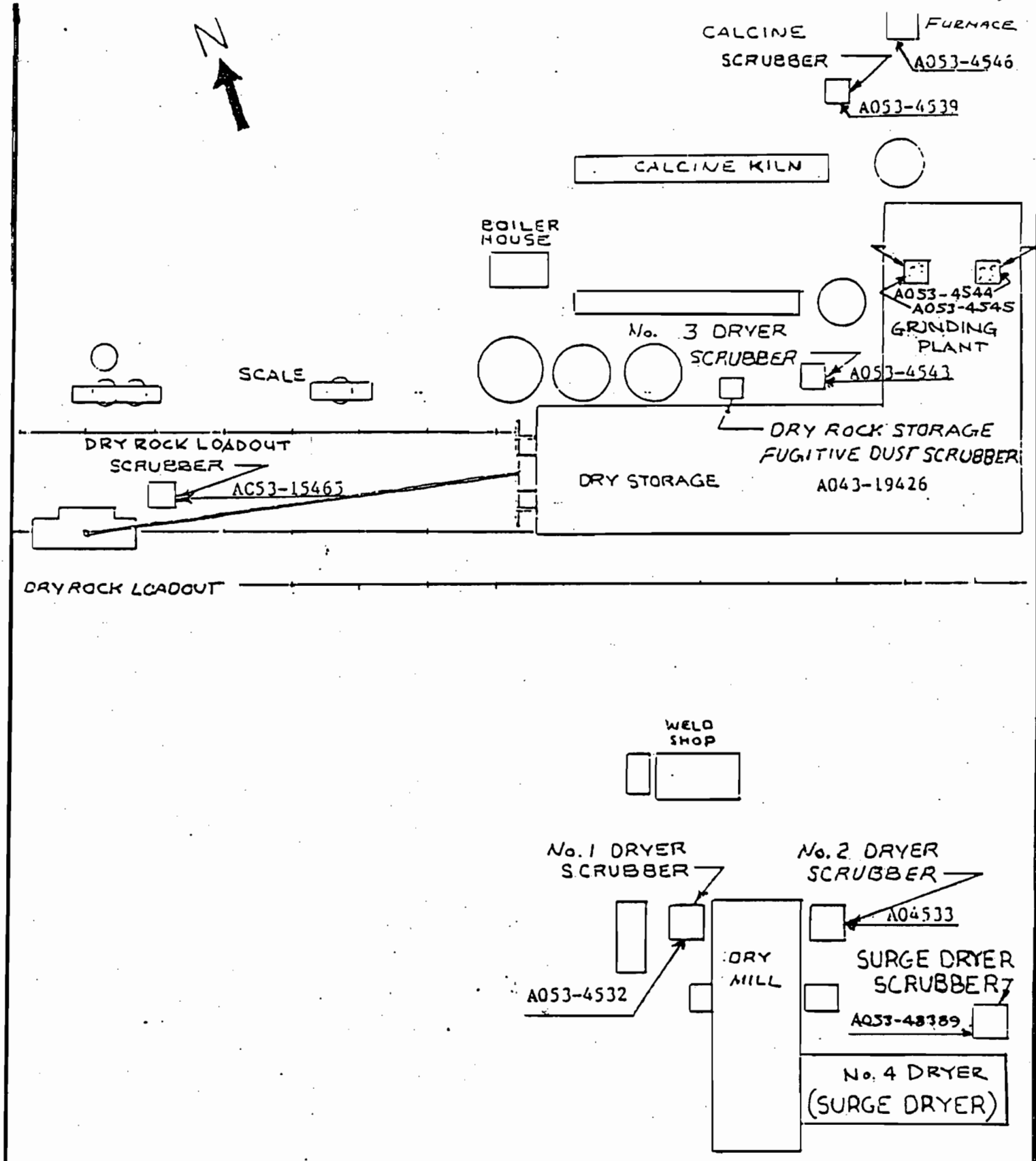


AIR FLOW IN LAMILAR SECTIONS



No Scale

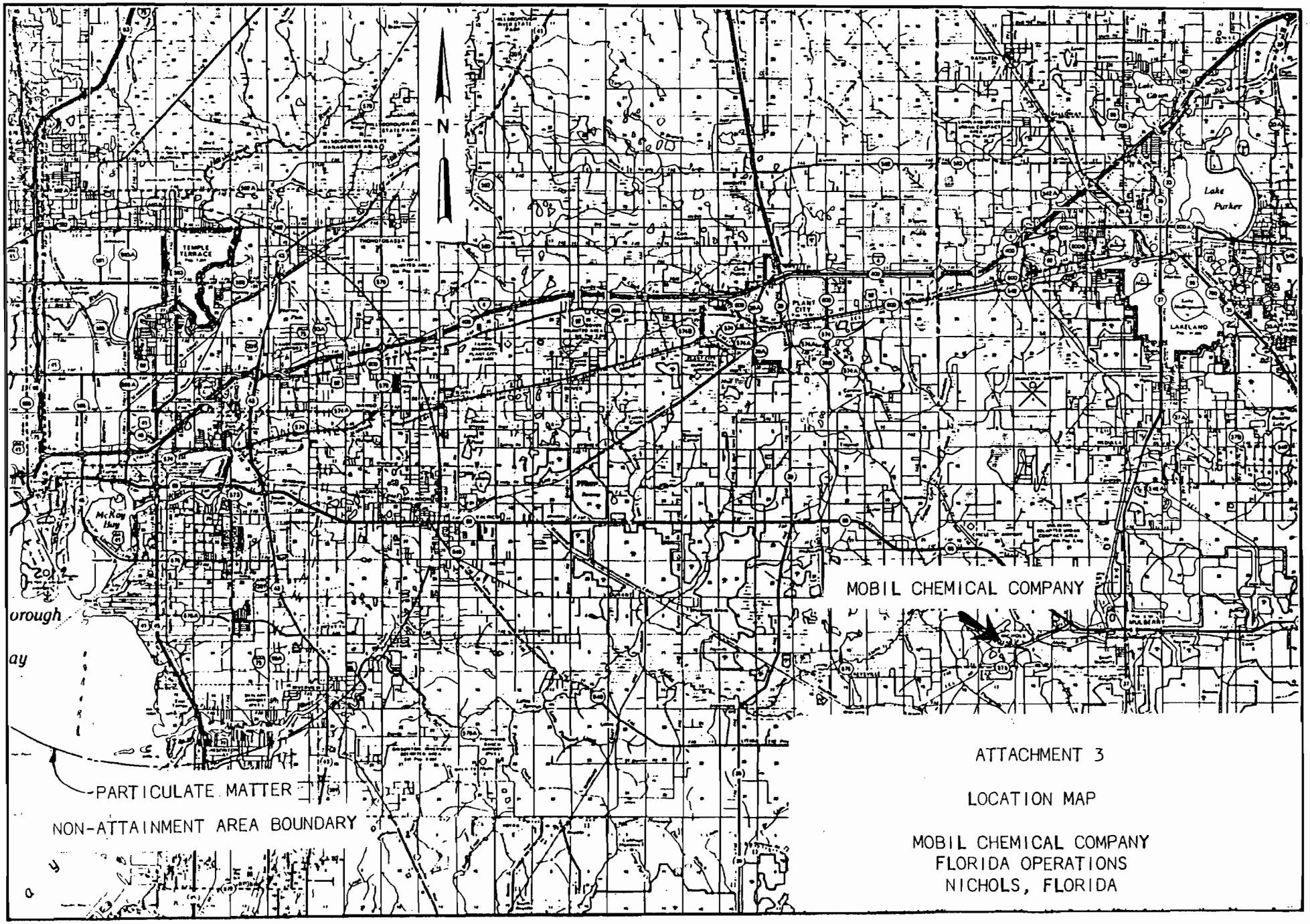
MOBIL CHEMICAL COMPANY Phosphorus Division, Minerals Group Florida Operations Nichols, Fla.	Date 9/12/79 D T C A	SURGE DRYER SCRUBBER SYSTEM SCHEMATIC	EWR AFE



MOBIL CHEMICAL COMPANY
Phosphorus Division, Minerals Group
Florida Operations Nichols, Fla.

ATTACHMENT 2

Best Available Copy



SHOLTES & KOOGLER

State of Florida

Department of State

I certify from the records of this office that MOBIL CHEMICAL CORPORATION, is a corporation organized under the laws of the State of Delaware, and is authorized to transact business within the State of Florida, qualified on March 7, 1966.

The charter number for this corporation is 819418.

I further certify that said corporation has filed all annual reports and paid all annual report filing fees due this office through December 31, 1983, and its status is active.

Given under my hand and the Great Seal of the State of Florida, at Tallahassee, the Capital, this the 13th day of September, 1983.

George Firstone
Secretary of State

CER-101

MOC P/A NO. 1528

POWER OF ATTORNEY

Know all men by these presents: That MOBIL OIL CORPORATION, a corporation organized and existing under the laws of the State of New York, and having an address at Post Office Box 311, Nichols, Florida 33863, hereinafter called the "COMPANY", does hereby confirm that K. D. FETROW is an authorized representative of said COMPANY, and otherwise is the COMPANY'S true and lawful attorney in fact and representative for it, and in its name, place and stead is authorized to do any and all acts and things necessary, in the name of the COMPANY, or in the name of its MOBIL CHEMICAL COMPANY operating division, to prepare and file applications, requests or other documents required or appropriate to obtain permits, authorizations, approvals, licenses, or other instruments with any federal, state or other department, bureau, office, agency, authority, or unit thereof, required for or incidental to the COMPANY'S present or future phosphate mines and related facilities, located in Polk or Hardee Counties, Florida, and to procure any such permit, authorization, approval, license, or other instrument from any such governmental or other agency or authority.

HEREBY GIVING AND GRANTING unto said attorney in fact full power and authority to do and perform all and every act or thing necessary or incidental to the proper exercise of the powers herein specified, as fully to all intents and purposes that the COMPANY or its officers or directors might or could do if personally present, and hereby ratifying and confirming all actions by said attorney as described above.

This Power of Attorney shall remain in effect until revoked in writing by the COMPANY.

IN WITNESS WHEREOF, the COMPANY has caused this instrument to be executed by a duly authorized officer and its corporate seal to be hereunto affixed and attested by an Assistant Secretary in the presence of the undersigned witnesses, this 7th day of January, 1982.

MOBIL OIL CORPORATION

By: W A Bork DEL
Vice President W. A. BORK

Attest:

Assistant Secretary
G. G. GARNEY

Witnesses:

ED TYSON

HAROLD GORDON

ATTACHMENT D

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

PERMITTEE:
Mobil Chemical Company
P. O. Box 311
Nichols, Florida 33863

Permit Number:AC 53-090634
Expiration Date: July 31, 1985
County: Polk
Latitude/Longitude: 27° 53' 12"N/
82° 02' 00"W/
Project: Rock Dryer No. 4

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4, and 40 CFR 52.21. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

Increase hours of operation from 4000 to 8000 hours per year for the existing 475 TPH (max.) No. 4 rock dryer. The No. 4 dryer is a rotary dryer with concurrent flow and fired with No. 6 fuel oil or natural gas. The exhaust gases pass through dry cyclones, a Ducon venturi scrubber, and then a Ducon packed-bed scrubber before discharge to the atmosphere.

The facility is located near the intersection of Nichols Road and Anderson Road, Nichols, Polk County, Florida. The UTM coordinates of the site are 17-398.29 East and 3084.92 North.

The construction and opertion of the No. 4 dryer shall be in accordance with the application for permit to construct, submitted by Mr. K.D. Fetrow on July 12, 1984, and the additional information provided in Mr. K.T. Matthew's October 12, 1984 letter, except for the changes listed in the specific conditions.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, unless specifically authorized by an order from the department.

GENERAL CONDITIONS:

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

GENERAL CONDITIONS:

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

(x) Determination of Best Available Control Technology (BACT)
(x) Determination of Prevention of Significant Deterioration (PSD)
(x) Compliance with New Source Performance Standards.

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

GENERAL CONDITIONS:

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

15. When requested by the department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

1. This permit replaces state permit No. AC 53-24802 as it applies to the No. 4 phosphate rock dryer.

2. The phosphate rock dryer shall meet all applicable requirements of 40 CFR 60, Subpart NN - Standards of Performance for Phosphate Rock Plants, or the requirements in the permit, whichever is most restrictive.

3. Phosphate rock feed to the dryer shall not exceed 475 TPH.

SPECIFIC CONDITIONS:

4. Particulate matter emissions from the dryer, as determined by the test methods and procedures described in 40 CFR 60.404, shall not exceed 0.052 lb/ton feed and 24.7 lb/hr. Visible emissions shall not exceed 10 percent opacity, as determined by reference method 9 described in 40 CFR 60, Appendix A.

5. Sulfur dioxide emissions, as determined by reference method 6 in 40 CFR 60, Appendix A, shall not exceed 19.4 lb/hr.

6. Nitrogen oxide emissions, as determined by reference method 7 described in 40 CFR 60, Appendix A, shall not exceed 34.4 lb/hr and 0.37 lb/million BTU.

7. Heat input to the dryer shall not exceed 94 million BTU/hr.

8. The dryer is allowed to operate 8000 hours per year.

9. Sulfur content of the fuel shall not exceed 2.5 percent by weight. Any oil burned in this dryer shall be "new". The "new" oil means an oil which has been refined from crude oil and has not been used, and which may or may not contain additives.

10. During fuel oil firing of the dryer, the pH of the liquor exiting the caustic scrubber will be monitored and maintained at a level greater than or equal to the pH level determined during performance testing to achieve the allowable SO_2 emission limit. Further, during fuel oil firing the SO_2 content of the dryer flue gases will be measured with a continuous SO_2 monitor/recorder. This instrument and its operation will comply with the applicable provisions of 40 CFR 60.13. Records will be maintained and available for inspection for a period of at least two years.

11. Stack test facilities on the scrubbers shall meet the minimum specifications in Chapter 17-2.700(4), FAC.

12. The applicant shall monitor the scrubber operations as required in 40 CFR 60.403(c) and shall maintain a log on the dryer scrubber showing, for each day the dryer operates, the following:

    a. Pressure drop of the gas in inches of water;
    b. Flow rate of the scrubber water in GPM;
    c. pH of the scrubber water; and
    d. Pressure of the scrubber water.

SPECIFIC CONDITIONS:

13. Before this construction permit expires, the applicant shall test the emissions from the dryer scrubber while it is operating at 90-100 percent capacity, processing the maximum amount of pebble rock normally contained in the feed, and burning No. 6 fuel oil with approximately 2.5 percent sulfur for:

    a. Particulate Matter
    b. Sulfur Dioxide
    c. Nitrogen Oxides
    d. Opacity

14. The applicant will demonstrate compliance with the conditions of this construction permit and submit a complete application for an operating permit to the Southwest District prior to 90 days before the expiration date of this permit. The applicant may continue to operate in compliance with all terms of this construction permit until its expiration or until issuance of an operation permit.

15. Upon obtaining an operating permit, the applicant will be required to submit annual reports on the actual operation of the facility. These reports will include, as a minimum: type and quality of phosphate rock processed; total hours of operation of the dryer, and emission test reports for particulate matter and visible emissions.

PERMITTEE:
Mobil Chemical Company

Permit Number: AC 53-090634
Expiration Date: July 31, 1985

SPECIFIC CONDITIONS:

16. The applicant will be required to do annual compliance tests for particulate matter and opacity.

Issued this_____day of_____, 19__

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION

_____
VICTORIA J. TSCHINKEL, Secretary

____ pages attached

ATTACHMENT E

Best Available Control Technology (BACT) Determination
Mobil Chemical Company
Polk County

The applicant has requested an increase in the annual operating hours of their 475 ton per hour No. 4 rotary phosphate rock dryer. This dryer is one of three in operation at the Nichols plant. Operation of No. 4 dryer has been subject to the conditions of state permit AC 53-24802 and the federal permit PSD-FL-042. The applicant requests to increase the annual 4000 hour permit limitation to 8000 hours.

The two-fold increase in hours of operation of No. 4 dryer will increase the annual emission of air pollutants as follows:

Pollutant	Increase (TPY)	Rate* (TPY)
Particulate Matter	49.8	25
Nitrogen Oxides	68.7	40
Sulfur Dioxide	38.8	40
Carbon Monoxide	6.2	100
VOC	1.2	40

* Table 500-2 Regulated Air Pollutants - Significant Emission Rates, tons per year.

Rule 17-2.500(5) requires a Best Available Control Technology (BACT) review for all regulated pollutants emitted in an amount equal to or greater than the significant emission rates listed in Table 500-2. The effected pollutants in this case are particulates and nitrogen oxides. The source is located in an area designated as unclassified for the pollutant particulate matter and in the area of influence of the Hillsborough County particulate matter nonattainment area. The area is classified attainment for the other criteria pollutants.

BACT Determination Requested by the Applicant:

The particulate emission limit is 0.052 pounds per ton of rock input. The nitrogen oxides emission limit is 0.37 pounds per million Btu heat input.

Date of Receipt of a BACT Application:

July 30, 1984

Date of Publication in the Florida Administrative Weekly:

August 10, 1984

Review Group Members:

The determination was based upon comments received from the Stationary Source Control Section, Air Modeling and Data Analysis Section and the Southwest District Office.

BACT Determined by DER:

Pollutant	Emission Limit No. 4 Dryer
Particulates	0.052 pounds per ton of phosphate rock feed
Nitrogen Oxides	0.37 pounds per million Btu heat input
Visible Emissions	Maximum 10 percent opacity

Any oil burned in the dryer will be "new". The "new" oil means an oil which has been refined from crude oil and has not been used, and which may or may not contained additives.

Compliance with the particulate and opacity limits will be in accordance with Subsection 60.404, New Source Performance Standard (NSPS) - Subpart NN.

Compliance with the nitrogen oxides emission limit will be in accordance with 40 CFR 60, Appendix A, Method 7.

Continuous monitoring devices will be installed as required in the NSPS - Subsection 60.403(c).

BACT Determination Rationale:

The New Source Performance Standard (NSPS), 40 CFR 60.400, Subpart NN- Phosphate Rock Plants was proposed on September 21, 1979. The proposed NSPS was the basis for the December 13, 1979, department BACT determined for this source. The NSPS was promulgated on April 16, 1982.

The proposed increase in the hours of operation is not considered a modification, 40 CFR 60.14(e)(3), which would subject this source to the NSPS. This source, however, was constructed after the applicability date of September 21, 1979, and is therefore subject to the provisions of the NSPS- Subpart NN.

Particulate emissions from No. 4 phosphate rock dryer are not to exceed 0.052 pounds per ton of rock feed, a limit more stringent than the NSPS standard of 0.06. This level of control is judged to represent BACT.

Particulate emissions will be controlled with a venturi scrubber/packed-bed scrubber system. The monitoring provisions

of the NSPS Subsection 60.403(c) applies to this type of emission control system. A monitoring device for the continuous measurement of the pressure loss of the gas stream through the scrubber and the scrubbing liquid supply pressure is judged to represent BACT.

The department agrees that the combustion parameters in a phosphate rock dryer tends to minimize the formation of nitrogen oxides and that add-on controls are not feasible at the present time. The proposed NO_x limit of 0.37 pounds per million Btu heat input is judged to represent BACT.

The opacity limit determined as BACT is equal to the NSPS opacity standard.

The air quality impact of the proposed emissions has been analyzed. Atmospheric dispersion modeling has been completed and used in conjunction with an analysis of existing air quality to determine maximum ground-level ambient concentrations of the pollutants subject to BACT. Based on these analyses, the department has reasonable assurance that the proposed sources at the Mobil Chemical Company, Nichols Plant, subject to the these BACT emission limitations, will not cause or contribute to a violation of any PSD increment of ambient air quality standard.

Details of the Analysis May be Obtained by Contacting:

Ed Palagyi
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Recommended by:

_____

C. H. Fancy, Deputy Bureau Chief

Date: _____

Approved by:

_____

Victoria J. Tschinkel, Secretary

Date: _____

ATTACHMENT F

NSPS

Subpart NN—Standards of Performance for Phosphate Rock Plants [146]

§ 60.400 Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to the following affected facilities used in phosphate rock plants which have a maximum plant production capacity greater than 3.6 megagrams per hour (4 tons/hr): dryers, calciners, grinders, and ground rock handling and storage facilities, except those facilities producing or preparing phosphate rock solely for consumption in elemental phosphorus production.

(b) Any facility under paragraph (a) of this section which commences construction, modification, or reconstruction after September 21, 1979, is subject to the requirements of this part.

§ 60.401 Definitions.

(a) "Phosphate rock plant" means any plant which produces or prepares phosphate rock product by any or all of the following processes: Mining, beneficiation, crushing, screening, cleaning, drying, calcining, and grinding.

(b) "Phosphate rock feed" means all material entering the process unit including, moisture and extraneous material as well as the following ore minerals: Fluorapatite, hydroxylapatite, chlorapatite, and carbonateapatite.

(c) "Dryer" means a unit in which the moisture content of phosphate rock is reduced by contact with a heated gas stream.

(d) "Calciner" means a unit in which the moisture and organic matter of phosphate rock is reduced within a combustion chamber.

(e) "Grinder" means a unit which is used to pulverize dry phosphate rock to the final product size used in the manufacture of phosphate fertilizer and does not include crushing devices used in mining.

(f) "Ground phosphate rock handling and storage system" means a system which is used for the conveyance and storage of ground phosphate rock from grinders at phosphate rock plants.

(g) "Beneficiation" means the process of washing the rock to remove impurities or to separate size fractions.

§ 60.402 Standard for particulate matter.

(a) On and after the date on which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere:

(1) From any phosphate rock dryer any gases which:

(i) Contain particulate matter in excess of 0.030 kilogram per megagram of phosphate rock feed (0.06 lb/ton), or

(ii) Exhibit greater than 10-percent opacity.

(2) From any phosphate rock calciner processing unbeneficiated rock or blends of beneficiated and unbeneficiated rock, any gases which:

(i) Contains particulate matter in excess of 0.12 kilogram per megagram of phosphate rock feed (0.23 lb/ton), or

(ii) Exhibit greater than 10-percent opacity.

(3) From any phosphate rock calciner processing beneficiated rock any gases which:

(i) Contain particulate matter in excess of 0.055 kilogram per megagram of phosphate rock feed (0.11 lb/ton), or

(ii) Exhibit greater than 10-percent opacity.

(4) From any phosphate rock grinder any gases which:

(i) Contain particulate matter in excess of 0.006 kilogram per megagram of phosphate rock feed (0.012 lb/ton), or

(ii) Exhibit greater than zero-percent opacity.

(5) From any ground phosphate rock handling and storage system any gases which exhibit greater than zero-percent opacity.

§ 60.403 Monitoring of emissions and operations.

(a) Any owner or operator subject to the provisions of this subpart shall install, calibrate, maintain, and operate a continuous monitoring system, except as provided in paragraphs (b) and (c) of this section, to monitor and record the opacity of the gases discharged into the atmosphere from any phosphate rock dryer, calciner, or grinder. The span of this system shall be set at 40-percent opacity.

(b) For ground phosphate rock storage and handling systems, continuous monitoring systems for measuring opacity are not required.

(c) The owner or operator of any affected phosphate rock facility using a wet scrubbing emission control device shall not be subject to the requirements in paragraph (a) of this section, but shall install, calibrate, maintain, and operate the following continuous monitoring devices:

(1) A monitoring device for the continuous measurement of the pressure loss of the gas stream through the scrubber. The monitoring device must be certified by the manufacturer to be accurate within ±250 pascals (±1 inch water) gauge pressure.

(2) A monitoring device for the continuous measurement of the scrubbing liquid supply pressure to the control device. The monitoring device must be accurate within ±5 percent of design scrubbing liquid supply pressure.

(d) For the purpose of conducting a performance test under § 60.8, the owner or operator of any phosphate rock plant subject to the provisions of this subpart shall install, calibrate, maintain, and operate a device for measuring the phosphate rock feed to any affected dryer, calciner, or grinder. The measuring device used must be accurate to within ±5 percent of the mass rate over its operating range.

(e) For the purpose of reports required under § 60.7(c), periods of excess emissions that shall be reported are defined as all 6-minute periods during which the average opacity of the plume from any phosphate rock dryer, calciner, or grinder subject to paragraph (a) of this section exceeds the applicable opacity limit.

(f) Any owner or operator subject to the requirements under paragraph (c) of this section shall report for each calendar quarter all measurement results that are less than 90 percent of the average levels maintained during the most recent performance test conducted under § 60.8 in which the affected facility demonstrated compliance with the standard under § 60.402.

(Sec. 114, Clean Air Act as amended (42 U.S.C. 7414))

§ 60.404 Test methods and procedures.

(a) Reference methods in Appendix A of this part, except as provided under § 60.8(b), shall be used to determine compliance with § 60.402 as follows:

(1) Method 5 for the measurement of particulate matter and associated moisture content.

(2) Method 1 for sample and velocity traverses.

(3) Method 2 for velocity and volumetric flow rates.

(4) Method 3 for gas analysis, and

(5) Method 9 for the measurement of the opacity of emissions.

(b) For Method 5, the sampling time for each run shall be at least 60 minutes and have a minimum sampled volume of 0.84 dscm (30 dscf). However, shorter sampling times and smaller sample volumes, when necessitated by process variables or other factors, may be approved by the Administrator.

(c) For each run, the average phosphate rock feed rate in megagrams per hour shall be determined using a device meeting the requirements of § 60.403(d).

(d) For each run, emissions expressed in kilograms per megagram of phosphate

rock feed shall be determined using the following equation:

$$E = \frac{(C_s Q_s)10^{-6}}{M}$$

where, E = Emissions of particulates in kg/Mg of phosphate rock feed.
C_s = Concentration of particulates in mg/dscm as measured by Method 5.
Q_s = Volumetric flow rate in dscm/hr as determined by Method 2.
10^{-6} = Conversion factor for milligrams to kilograms.
M = Average phosphate rock feed rate in mg/hr.

Note.—The reporting and recordkeeping requirements in this section are not subject to Section 3507 of the Paperwork Reduction Act of 1980, 44 U.S.C. 3507, because these requirements are expected to apply to fewer than 10 persons by 1985.

(Sec. 114, Clean Air Act, as amended, (42 U.S.C. 7414))

Proposed/effective
44 FR 54970, 9/21/79

Promulgated
47 FR 16582, 4/16/82 (146)

ATTACHMENT G

Certified Mail #P675 903 823
Return Receipt Requested

Mobil Chemical Company

PHOSPHORUS DIVISION

P.O. BOX 311
NICHOLS, FLORIDA 33863
TELEPHONE (813) 425-3011

DER

JUL 30 1984

BAQM

July 20, 1984

D. E. R.

JUL 25 1984

SOUTH WEST DISTRICT
TAMPA

Mr. Clair Fancy
Fla. Dept. of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

Dear Mr. Fancy:

Re: Polk County - AP
Mobil Chemical Co., Fla. Operations
Modification to Phosphate Rock
Dryer No. 4 - Permit Conditions

Enclosed are four (4) copies each of an application for PSD review and approval, and an FDER construction permit application for increasing the hours of operation of the No. 4 phosphate rock dryer located at the Mobil Chemical Co. Nichols Plant in Polk County.

The No. 4 phosphate rock dryer is a 450 tons per hour maximum rotary dryer that was permitted by Mobil in 1980. The dryer is fired with either natural gas or No. 6 fuel oil containing a maximum of 2.5 percent sulfur. The dryer is presently permitted to operate 4000 hours per year, producing one million tons of dry rock.

It is Mobil's intention to increase the annual operating time of the No. 4 dryer to 8000 per year. This increase in annual operating time will in no way affect the rated production capacity of the dryer or short-term air pollutant emission rates. Only annual emission rates of air pollutants generated by the dryer will be increased.

In preparing the application for the proposed modification, permitted emission rates of all criteria pollutants were used as baseline emission rates since these emission rates were established by Contruction Permit AC53-24802 in February 1980; a permit that was issued after PSD review. The permitted emission rates were used as baseline emission rates rather than those determined from measured emission rates and actual dryer operating time.

A second matter which should be brought to your attention, a matter which is addressed in detail in the PSD application, is a temporary increase in dry rock production expected by Mobil. The increase in rock production will occur during approximately a two-year period of time when the Mobil Ft. Meade Mine is being phased out and the Mobil South Ft. Meade Mine is being started up. During this transition period, rock production will increase from five million tons per year to approximately six milion tons per year.

The impact of air pollutant emissions from the No. 4 rock dryer resulting from this increased production are addressed in the attached permit applications. Temporary particulate matter emissions from dry rock storage silos and dry rock load-out facilities are not addressed in the application, however, because of the temporary nature of the emissions and the exemption provided such emissions by Section 17-2.500(3)(c) of the Florida Administrative Code.

The remainder of the information included in the permit applications is quite routine. It includes a description of the effected dryer, a discussion of the modification in dryer operating time, a review of Best Available Control Technology, Air Quality review, and a review of Secondary Impacts of increased emissions.

If there are any questions regarding the information contained in the applications, or if additional information is necessary, please do not hesitate to contact us.

Sincerely,

KT Matthews

K T. Matthews
Sr. Envionmental Engineer

jm
Attach.

ATTACHMENT H

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

August 23, 1984

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. K. D. Fetrow
Manager of Manufacturing
Mobil Chemical Company
P. O. Box 311
Nichols, Florida 33863

Dear Mr. Fetrow:

Re: Mobil Chemical Company, Phosphate Rock Dryer #4
Application for PSD Approval; Request for additional information AC 53-090634

The department has initially reviewed your application for PSD approval and has determined that additional information is needed to complete this review. Please respond to the following questions and comments as soon as possible so that our review may be completed.

1. Please supply actual emission data (as defined in 17-2.100(2)) for dryer #4 (i.e. performance test results). Include a summary of the actual emission data for particulate matter and sulfur dioxide for the #4 dryer. Supply information on the permitted limits of the other dryers and kiln at this site; this should include the permitted emission limits and the production rate limits.

2. Please supply compliance test data results to confirm efficiency rating of the Ducon venturi scrubber and the Ducon packed-bed scrubber. What is the pressure drop and other parameters for the scrubbers-during normal operations?

3. Where is the grinding operation located? What are the estimated emission increases of the grinder, silos, and materials handling equipment for the increase in hours of operation being requested. What ambient air impact, is there from this auxiliary equipment's production increase?

4. In your application, particulate emission limitations of both 0.052 and 0.06 pounds per ton of feed are referred to. Please clarify the 0.052 lb/ton of feed (basis) versus the NSPS of 0.06 lb/ton of feed. What is the percent moisture in the feed and product?

5. What is the actual and maximum rating of production for dryer #4? Letter to C. H. Fancy from K. T. Matthews (7/20/84) states a 450 ton/hr maximum and other sources state a 475 ton/hr maximum.

6. Please supply additional information for mine production projections. List dates for phasing out the Ft. Meade mine and starting up the South Ft. Meade mine. What is the actual annual production at the sites? Will the 6 million tons of rock production be the permanent or temporary production rate? Will Mobil Chemical receive rock from any other sources besides the two mines Ft. Meade/South Ft. Meade.

7. For background information on calculations of emission rates, what is the nitrogen content (weight%) for fuel oil #6 (max. - average content).

8. Provide information on any resultant increases in emissions from the production increases addressed in this application. The temporary emissions exemption of 17-2.500(3)(c) cited may alter the review but does not exempt temporary and resultant emissions increases from consideration.

9. The application omits the latitude/longitude; therefore, please confirm that the latitude is 27° 53' 12" and the longitude is 82° 02' 00". The UTM: East 17-398.29 for this 7/25/84 application varys from UTM: East 17-898.29 of 10/13/79.

10. The application's calculation results need checking for emission rates in the areas of particulate matter and sulfur dioxide.

Sincerely,

for A. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Manageament

cc: J. B. Koogler, P.E.
K. T. Matthews
Dan Williams

ATTACHMENT I

Certified Mail #P 631 971 534
Return Receipt Requested

Mobil Chemical Company

PHOSPHORUS DIVISION

P.O. BOX 311
NICHOLS, FLORIDA 33863
TELEPHONE (813) 425-3011

October 12, 1984

OCT 15, 1984

Mr. Clair Fancy
Deputy Chief/Bureau of Air Quality
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

Subject: Mobil Chemical Company
Phosphate Rock Dryer No. 4
Permit A053-090634

Dear Mr. Fancy:

In response to your letter of August 23, 1984, the Mobil Chemical Company is providing the following information to complete the Application for Air Pollution Source Construction Permit A053-090634. The information provided herein uses the same enumeration system as your August 23, 1984 letter.

1. Actual particulate matter and sulfur dioxide emission data for the No. 4 rock dryer are provided in Table 1. These data were collected during routine emission compliance tests during the period October 1982 through May 1984. The emission data show that the No. 4 dryer is in compliance with both particulate matter and sulfur dioxide emission limiting standards for the source.

   In preparing the application for the subject permit, Mobil proceeded on the premise that permitted emissions for the No. 4 dryer could be used to represent actual emissions since the No. 4 dryer was originally permitted under a Federal PSD review (PSD-FL-042). This being the case, the actual emission data provided in Table I should be used for background information only.

   No, should be actual emissions

   The permitted emission and production limits of other sources at the Mobil Chemical Company operations are summarized in Table II. It will be noted that under present permit conditions, Mobil has the permitted capacity to dry 7.8 million tons per year of rock in Dryers No. 1 and No. 2. It should be further noted that the maximum rock drying capacity of the Nichols facility is limited by the dry rock storage permit. The amount of dry rock processed through the four grinders will not be affected by the requested increase in hours of operation of the No. 4 dryer since only a small fraction out of the total dry rock throughput is ground.

2. The sulfur dioxide absorption data for the scrubber system on the No. 4 dryer is presented in Table I. The data presented in this Table demonstrate that the sulfur dioxide scrubbing efficiency for the system exceeds the 92 percent specified in the permit for the source.

The operating parameters of the venturi scrubber are:

Water Flow Rate 1400 gpm

Scrubber Pressure Drop 19.5 - 20.0 MAKE PERMIT CONDITION

Scrubber Water pH 7.8 - 8.5

The operating parameters of the pack-bed scrubber are:

Water Flow Rate 1000 recycle plus - 150 fresh water makeup

Scrubber Water pH 7.8 - 8.5

3. The rock grinders operated by Mobil Chemical Company are located at the Nichols Preparation facility; the same location as the No. 4 rock dryer. There will be no increased emissions from the grinders, the dry rock storage silos or the dry rock load-out system as the result of the requested increased hours of operation of the No. 4 dryer. In reviewing the operations of the Nichols facility, it was determined that the dried rock production, including the rock that is ground, is limited by the market for these products and not permitted operating limits at the Nichols facility. The request for an increase in the annual hours of operation for the No. 4 dryer is made to allow Mobil greater flexibility in the use of the three existing rock dryers.

4. The permitted particulate matter emission limit for the No. 4 dryer is 0.052 pounds per ton of feed. This emission limit is set forth in PSD approval PSD-FL-042.

5. The maximum permitted production rate for the No. 4 rock dryer is [redacted] tons per hour as stated in the permit application for the dryer.

6. Mobil cannot provide a definitive operation schedule for their mining because of uncertainties in the marketplace. Furthermore, the output of the mines has no affect on the dry rock production at the Nichols facility. Dry rock production, as stated previously, is a function of the market for the dry rock products and not total rock production. Presently, dry rock production at the Nichols facility is limited to the permitted throughput capacity of the dry rock storage.

What is this limit?

If, as stated in the permit application for the No. 4 rock dryer, the wet rock production from the Mobil Ft. Meade and South Ft. Meade mines temporarily increases during some period in time, the additional rock pro- duced will be stored as wet rock and will have no impact on particulate matter emissions from any of the Mobil operations.

7. For background information, the nitrogen content of the No. 6 fuel oil used by Mobil averages 0.35 percent. The range in the nitrogen content of the fuels is from 0.04 percent to 0.58 percent.

8. As stated previously, the dry rock production capacity at the Nichols facility will not increase as a result of the increased hours of operation requested for the No. 4 dryer. The dry rock throughput is a function of market demand and not dryer capacity. The increased hours of operation requested for the No. 4 dryer will allow Mobil to use the three existing rock dryers (including the No. 4 dryer) with greater flexibility than under existing permit conditions.

limit to Current production limit

9. Mobil confirms that the latitude and longitude and the UTM coordinates stated in Paragraph 9 of your letter of August 23, 1984 are correct.

10. The calculations contained on Page 1 of Appendix A of the permit application for the No. 4 rock dryer have been corrected. The slight errors in these calculations have no affect on the permit conditions requested for the No. 4 dryer.

If there are any questions regarding the data provided herein, or if additional information is required to complete the review of the construction permit application for the No. 4 rock dryer, please do not hesitate to contact us.

Very truly yours,

K T. Matthews
Sr. Environmental Engineer

jm
Attach.

cc: J. B. Koogler, Ph.D., P.E.

TABLE 1

SUMMARY OF ACTUAL EMISSION RATES
AND SULFUR DIOXIDE REMOVAL EFFICIENCIES
NO. 4 DRYER

MOBIL CHEMICAL COMPANY
NICHOLS, FLORIDA

			EMISSION RATE (LB/HR)					
			Particulate Matter		Sulfur Dioxide			
Date	Fuel	Production Rate (Tph)	Actual	Allowable[1]	Actual	Allowable[2]	Potential[3]	Removal
5/84	Gas	235	7.94	12.22	----	----	----	----
9/83	Gas	282	5.61	14.65	----	----	----	----
6/83	(500 gal/hr)	270	8.25	14.04	----	----	----	----
	Oil	247	----	----	6.92	16.00	200.0	96.5%
10/82	(400 gal/hr)	210	----	----	0.30	12.80	160.0	99.0+%

(1) @ 0.052 lb/ton of feed

(2) @ 92% Sorption

(3) based on 2.5% sulfur oil

$$\frac{400\ \text{gal}}{\text{hr}} \cdot \frac{8\ \text{lb}}{\text{gal}} \cdot \frac{2.5\ \#S}{100\ \#\ \text{oil}} \cdot \frac{2\ \#SO_2}{\#S} = 160\ \frac{\text{lb}}{\text{hr}}$$

TABLE II

SUMMARY OF PERMIT CONDITIONS FOR
MOBIL CHEMICAL COMPANY SOURCES

MOBIL CHEMICAL COMPANY
NICHOLS, FLORIDA

Source	Permit	Operating Time (hr/yr)	Maximum Production Rate (tph)	Maximum Production Rate (tpy)	Part. Matter Emission Limit (lb/hr)
Calciner	A053-57099	8760	58	508,000	32.4
#1 Dryer	A053-57101	8760	450	3,942,000*	38.1
#2 Dryer	A053-57092	8760	450	3,942,000*	38.1
#4 Dryer	A053-48389	4000	475	1,900,000**	28.5
Dry Rock Storage	A053-57102	8760	500	4,380,000 limit should be in permit	40.0
#1 & #2 Grinder	A053-57104	8760	48	420,000	28.0
#3 & #4 Grinder	A053-57103	8760	58	508,000	28.0
Rail Load-out	A053-57100	8760	1500	13,140,000	33.0
Truck Loadout Baghouse	A053-57364	8736	180	1,572,000	1.7 (VE compliance 5%)
Two Fluid Bed Calciner Phosphate Rock Coolers	A053-71363	8760	58	508,000	12.0
Calciner Rock Storage Bin Baghouse	A053-78932	8760	58	508,000	0.41 (VE Compliance 10%)

* Normal annual production average 250 tph or 2,000,000 tpy

**Normal annual production average 250 tph or 2,000,000 tpy

$2{,}000{,}000 \frac{T}{yr} \times .052 \frac{\#}{T} \frac{T}{2000\ \#} = 52$ TPY PM ACT

Air Pollutant Emission Rate Calculations

Surge Dryer
Mobile Chemical Company

Stack Parameters

Stack Ht. (Ft.)	-	85 ft
Stack Dia (Ft.)	-	7.5 ft.
Stack Gas Vel (Ft/sec)	-	52.8 fps
Stack Gas Temp. (°F)	-	150°F
Stack Gas Moist. (%)	-	25 %
Stack Gas Flow (Acfm)	-	140,000 Acfm

Dryer Operating Parameters

Production Rate	-	475 ton/hr (max); 250 ton/hr (nominal)
Hours of Operation		
Permitted	-	4000 hr/yr
Proposed	-	8000 hr/yr
Dryer Loss	-	2.5 %
Fuel Use	-	625 gal/hr #6 fuel oil @ 2.5% S & 150,000 BTU/gal. or natural gas

Emission Rates

Particulate Matter @ 0.052 lb/ton of feed

PM = [475 ton/hr x 0.052 lb/ton
= ~~24.9~~ 24.7 lb/hr - permitted & proposed

x 4000 hr/yr / 2000 lb/ton
= ~~49.8~~ 49.4 ton/yr - permitted

x 8000 hr/yr / 2000
= ~~99.6~~ 98.9 ton/yr - proposed

Sulfur Dioxide @ 157(2.5) lb SO_2/1000 gal (AP-42, Supp 13)

SO_2 = 625 gal/hr / 1000 x 157(2.5) lb/1000 gal x (1 - 0.92) sorption
= ~~19.4~~ 19.6 lb/hr - permitted & proposed

x 4000 / 2000
= ~~38.8~~ 39.2 ton/yr - permitted

x 8000 / 2000

Found –

FMC Corp /

4 Paint spray