

No. 0158664

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—  
NOT FOR INTERNATIONAL MAIL  
(See Reverse)

SENT TO		Mr. K. D. Fetrow	
STREET AND NO.			
P.O., STATE AND ZIP CODE			
POSTAGE		\$	
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE	¢	
	SPECIAL DELIVERY	¢	
	RESTRICTED DELIVERY	¢	
	OPTIONAL SERVICES	SHOW TO WHOM AND DATE DELIVERED	¢
		SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
		SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE	SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢	
TOTAL POSTAGE AND FEES		\$	
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PS Form 3800, Apr. 1976

PS Form 3811, July 1983

SEF. Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1.  Show to whom, date and address of delivery.

2.  Restricted Delivery.

3. Article Addressed to:  
Mr. K. D. Fetrow  
Mobil Chemical Company  
P. O. Box 311  
Nichols, FL 33863

4. Type of Service:	Article Number
<input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail	0158664

Always obtain signature of addressee or agent and **DATE DELIVERED.**

5. Signature - Addressee  
X

6. Signature - Agent  
X *R. Polite*

7. Date of Delivery  
2-25-85

8. Addressee's Address (ONLY if requested and fee paid)

DOMESTIC RETURN RECEIPT

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

February 19, 1985

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

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

Dear Mr. Fetrow:

Enclosed is Permit Number AC 53-090634 dated February 18, 1985, to Mobil Chemical Company issued pursuant to Section 403, Florida Statutes.

Acceptance of this permit constitutes notice and agreement that the department will periodically review this permit for compliance, including site inspections where applicable, and may initiate enforcement actions for violation of the conditions and requirements thereof.

Sincerely,

C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

CHF/pa

Enclosure

cc: James T. Wilburn  
Bill Thomas  
John Koogler  
Paul Swartz

Final Determination

Mobil Chemical Company  
Nichols, Polk County, Florida

No. 4 Rock Dryer  
Permit Number AC 53-090634

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

February 15, 1985

Final Determination  
Mobil Chemical Company  
AC 53-090634

Mobil's permit application to modify the operation of the No. 4 phosphate rock dryer has been reviewed by the department. Public notice of the department's intent to issue was published in the Polk County Democrat on January 7, 1985.

Copies of the Preliminary Determination and Technical Evaluation have been available for public inspection at the department's Southwest District office in Tampa and the Bureau of Air Quality Management office in Tallahassee.

Comments (Attachment J) were received from Mr. K. T. Matthews with Mobil Chemical Company, Nichols, Polk County, Florida, on January 7, 1985. As a result of the comments received and discussion between Mr. Willard Hanks and Mobil staff by telephone, the bureau agrees with certain revisions to the "Specific Conditions" and they shall read (Note: Attachment J will explain the revamping of three of the specific permit conditions):

Specific Conditions:

- No. 6: Nitrogen oxide emissions, as determined by EPA Reference Method 7 described in 40 CFR 60, Appendix A, shall not exceed 34.4 lb/hr and 0.37 lb/million Btu. Routine tests for nitrogen oxides will not be required if the initial test shows compliance with this specific condition.
- No. 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 determined during performance testing to achieve the allowable SO<sub>2</sub> emission limit. Alternatively, during fuel oil firing, the SO<sub>2</sub> content of the dryer flue gases will be measured with a continuous SO<sub>2</sub> monitor/recorder. This instrument, if used, and its operation will comply with the applicable provision of 40 CFR 60.13. Records will be maintained and available for inspection for a period of at least two years.
- No. 13: Before this construction permit expires, the applicant shall test the emissions from the dryer scrubber, while it is operating at 90-100 percent of the maximum phosphate rock feed rate, and burning No. 6 fuel oil with approximately 2.5 percent sulfur for:

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

Approved compliance stack testing of emissions must be conducted within approximately 10 percent of the permitted capacity. A compliance test submitted at operating levels less than 90 percent of permitted capacities will automatically constitute an amended permit at the lesser rate plus 10 percent until another test (showing compliance) at 90 percent of a higher capacity is submitted. Failure to submit the production rate of operation at conditions during testing which do not reflect actual operating conditions may invalidate the data (Chapter 403.161(1)(c), Florida Statutes).

Attachments to be Incorporated are:

- J. K. T. Matthews letter dated January 4, 1985.
- K. Thomas W. Devine letter dated March 20, 1980 and PSD-FL-042 Final Determination, 1979.

The final action by the Department shall be to issue the permit with the changes noted above.

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 operation 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.

OEL  
Occupational  
Exposure  
level

30 mg/m<sup>3</sup>

Proposed 30 → 0.3 mg/m<sup>3</sup>  
(NOT 3!)

PERMITTEE:  
Mobil Chemical Company

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

**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.

PERMITTEE:  
Mobil Chemical Company

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

**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.



PERMITTEE:  
Mobil Chemical Company

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

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.

PERMITTEE:  
Mobil Chemical Company

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

**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.

PERMITTEE:  
Mobil Chemical Company

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

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 EPA Reference Method 7 described in 40 CFR 60, Appendix A, shall not exceed 34.4 lb/hr and 0.37 lb/million Btu. Routine tests for nitrogen oxides will not be required if the initial test shows compliance with this specific condition.
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<sub>2</sub> emission limit. Alternatively, during fuel oil firing, the SO<sub>2</sub> content of the dryer flue gases will be measured with a continuous SO<sub>2</sub> monitor/recorder. This instrument, if used, and its operation will comply with the applicable provision 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.

PERMITTEE:  
Mobil Chemical Company

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

**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 of the maximum phosphate rock feed rate, and burning No. 6 fuel oil with approximately 2.5 percent sulfur for:

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

Approved compliance stack testing of emissions must be conducted within approximately 10 percent of the permitted capacity. A compliance test submitted at operating levels less than 90 percent of permitted capacities will automatically constitute an amended permit at the lesser rate plus 10 percent until another test (showing compliance) at 90 percent of a higher capacity is submitted. Failure to submit the production rate of operation at conditions during testing which do not reflect actual operating conditions may invalidate the data (Chapter 403.161(1)(c), Florida Statutes).

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 18<sup>th</sup> day of Feb, 19 85

STATE OF FLORIDA DEPARTMENT OF  
ENVIRONMENTAL REGULATION

  
for VICTORIA J. TSCHINKEL, Secretary

\_\_\_ pages attached

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:

<u>Pollutant</u>	<u>Increase (TPY)</u>	<u>Rate* (TPY)</u>
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 affected 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 needed. The proposed NO<sub>x</sub> 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 or 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

C. H. Fancy, Deputy Bureau Chief

Date: 2/18/85

Approved by:

Victoria J. Tschinkel

Victoria J. Tschinkel, Secretary

Date: 18 Feb 85



ATTACHMENT K



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET  
ATLANTA, GEORGIA 30308

RECEIVED  
MAR 24 1980  
R. E. S.  
FLA. OPERATIONS

MAR 20 1980

Handwritten: P. F. CASH  
R. L. RHODES  
W. L. LAUFERMAN  
C. H. FUSCH  
G. D. GUTENBERG

REF: 4AH-AP

Mr. R. E. Schultz  
Manager, Operations (Florida)  
Phosphorous Division  
Mobil Chemical Company  
P. O. Box 311  
Nichols, Florida 33863

Dear Mr. Schultz:

Review of your October 21, 1979 application to construct a surge capacity phosphate rock dryer (PSD-FL-042) near Nichols, Florida 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 January 12, 1980. Only two comments were received; both were from your company. In response to these comments: 1) the maximum capacity was increased from 250 to 475 tons per hour, 2) the allowable emissions of particulate per ton of rock processed was reduced from 0.06 to 0.052 pounds per ton, and 3) the maximum allowable hourly rate of particulate emissions was increased from 15.4 to 24.9 pounds per hour. EPA has waived further public review of these changes on the basis that maximum ground level impacts from the source remain insignificant. Authority to Construct a Stationary Source is hereby issued for the facility described above, subject to the conditions in the enclosed Final Determination. This Authority to Construct is based solely on the requirements of 40 CFR 52.21, the Federal regulations governing significant deterioration of air quality. It does not apply to NPDES or other permits issued by this agency or permits issued by other agencies. Information regarding EPA permitting requirements can be provided if you contact Mr. Joe Franzmathes, Director, Office of Program Integration and Operations, at (404) 881-3476. Additionally, construction covered by this Authority to Construct must be initiated within 18 months from the receipt of this letter.

The United States Court of Appeals for the D. C. Circuit issued a ruling (December 14, 1979) in the case of Alabama Power Co. vs. Douglas H. Costle (78-1006 and consolidated cases) which has significant impact on the EPA prevention of significant deterioration (PSD) program and permits issued thereunder. The ruling will require modification of the PSD regulations and could affect permits issued under the existing program. You are hereby advised that this permit may be subject to reevaluation.

Please be advised that a violation of any condition issued as part of this approval, as well as any construction which proceeds in material variance with information submitted in your application will be subject to enforcement action.

Authority to Construct will take effect on the date of this letter. The complete analysis which justifies this approval has been fully documented for future reference, if necessary. Any questions concerning this approval may be directed to Kent Williams, Chief, New Source Review Section (404/881-4552).

Sincerely yours,

  
Thomas W. Devine  
Director  
Air and Hazardous Materials Division

Enclosure

cc: S. Smallwood  
Florida Department of Environmental Regulation

## Final Determination

I. Applicant

Mobil Chemical Company  
Minerals Group  
P. O. Box 311  
Nichols, Florida 33863

II. Location

The proposed modification is to Mobil's phosphate processing plant located near Nichols, Florida. The proposed modification will be located at a latitude of 27° 53' 44" north and 82° 01' 55" west; the UTM coordinates are east 17-398290 and north 17-3084290.

III. Source Description

Mobil Chemical plans to modify the Nichols phosphate rock processing plant by adding a phosphate rock dryer with a design maximum throughput of 475 tons per hour of phosphate rock (nominal capacity 250 T/hr). The new dryer will be limited to 4000 hours of operation per year, and will be fired with No. 6 fuel oil (2.5% sulfur) or natural gas at a maximum rate of 94 million Btus per hour. Emissions of particulate (TSP) and sulfur dioxide (SO<sub>2</sub>) will be controlled with the use of a venturi scrubber and a caustic scrubber operating in series.

The dryer is being added solely to handle high, short term, dryer demand and the overall capacity of the mining/rock processing complex will not change. This statement is based on the fact that plant capacity is limited by mining operations and not by rock drying capacity. Because total yearly production will not increase, total yearly emissions of fugitive (TSP) and other pollutants from plant equipment other than the dryer will not increase. Hourly emissions from some facilities may increase due to increased short term dryer capacity; however, these increases will not exceed the limits of current state operating permits. Thus, no facilities other than the new rock dryer are involved in this modification.

IV. Source Impact Analysis

The proposed modification has the potential to emit greater than 100 tons per year of TSP and sulfur dioxide (SO<sub>2</sub>) as can be seen in Table I, and the modification will impact areas currently achieving National Ambient Air Quality Standards (NAAQS). Therefore, the proposed modification must undergo preconstruction review under the Federal Prevention of Significant Deterioration (PSD)

of Air Quality regulations (40 CFR 52.21). Full PSD review includes an analysis of the following points:

- a) Best Available Control Technology (BACT);
- b) Increment Impact;
- c) National Ambient Air Quality Standards (NAAQS) Impact;
- d) Class I Area Impact;
- e) Growth Impact; and
- f) Soils, Vegetation and Visibility Impacts.

However, allowable emissions of TSP and SO<sub>2</sub> do not exceed 50 tons per year, 1000 pounds per day or 100 pounds per hour as appropriate, and because of this, the proposed modification is exempt from most of these analyses and from any ambient air monitoring requirements. PSD review for this source is limited to insuring that no Class I area or area where the increment is known to be violated is impacted and determining that the new facilities meet all emission limitations and standards of performance under the State Implementation Plan and Code of Federal Regulations Title 40 Parts 60 and 61.

It should also be noted that the proposed modification is about 30 kilometers from a TSP non-attainment area in Hillsborough County. If the proposed modification impacted this area, it would be subject to offset and LAER requirements; however, as is shown in the subsequent air impact analysis section, this non-attainment area is not impacted and LAER and offset requirements are not required.

#### Class I Area Impact

The Class I area closest to the proposed modification is the Chassahowitzka National Wildlife Refuge which is located at a distance of about 130 kilometers from the Nichol's plant site. In most cases, air dispersion modeling is not necessary to estimate impacts on Class I areas at a distance greater than 100 kilometers. However, in this case, an analysis was performed for the dual purpose of demonstrating no Class I area impacts and no impact on the TSP non-attainment area located about 30 kilometers east of the plant.

The modeling analysis used EPA approved models: CRSTER for 3-hour and 24-hour averages and AQDM for the annual averages. Meteorological parameters used in the analysis were 1973 data from the Tampa area.

The results of this analysis are shown in Table II. Review of the results shows the source to have maximum ground level concentrations which are lower than the significance levels outlined in the Preamble to the PSD Regulations (40 CFR 52.21). These maximum concentrations occur at receptors located in the vicinity of the plant. The minor or "insignificant" maximum impacts from this source can be expected at a distance of over 100 kilometers. On the basis of these results, the proposed modification is determined not to significantly impact the non-attainment area in Hillsborough County or any Class I area.

#### State and Federal Emission Standards

The proposed modification is required to comply with all applicable emission and performance standards of the SIP and Federal Regulations 40 CFR 60 and 61. There are no specific emission limitations applicable to this modification in the SIP. The particulate emission limits proposed in the application will comply with the Florida process weight table emission limit requirements. Further, the applicant has obtained a state permit for construction of this new source which included a Florida State BACT review. Therefore, the proposed modification is in compliance with all SIP requirements.

As for federal emission standards applicable to this phosphate rock dryer, no such standards exist at this time. There is, however, a new source performance standard under development for phosphate rock processing plants which was proposed in the Federal Register on September 21, 1978, and which will likely affect this dryer. Since the standard is not yet promulgated, it cannot be considered in this Preliminary Determination. However, if the promulgated standard affects sources commencing construction since the time of proposal, the dryer will be required to meet the NSPS in addition to the requirements of the Final Determination regardless of whether or not promulgation follows permit issuance.

#### V. Conclusions

EPA proposes a Final Determination of approval with conditions for the construction of the rock dryer proposed in Mobil Chemical Company's application received by EPA on September 26, 1979. The basis for this determination is information contained in the application. The conditions set forth in the permit are as follow:

1. Construction of the dryer will be in accordance with the specifications, capacities, etc. contained in the application. This specifically includes a maximum hourly dryer feed rate of 475 tons (dry basis) and a maximum heat input of 94 million Btu's per hour (natural gas or No. 6 oil with maximum 2.5% sulfur). An hourly or continuous record of dryer feed will be maintained to determine compliance with this requirement.
2. The dryer will not operate more than 4000 hours in any 365 day period (one year). Records of the operating hours will be maintained. Such records shall include a log indicating cumulative hours of operation for each 365 day operating period and a statement signed by the unit operator of the time and date of each unit start-up and each unit shutdown. Log entries of unit startups shall be made not later than the time combustion commences in the dryer firebox, and log entries of unit shutdowns shall not be made prior to the time combustion in the dryer firebox ceases. Also, these times, by definition, determine the operating hours of the unit.
3. The dryer stack will not emit greater than the following emission limits (as stated in the application):
  - TSP - 0.52 pounds per ton of phosphate rock fed to the dryer (dry basis) and 24.0 pounds per hour.
  - SO<sub>2</sub> - 19.4 pounds per hour.
4. Compliance with the emission limits stated in condition 3 will be determined by performance tests. The dryer will be operated within 10 percent of the maximum rated capacity during the performance tests. Performance tests will be conducted in accordance with standard EPA methods, the applicable provisions of 40 CFR 60.8 and the following minimum sampling times and volumes:

<u>Pollutants</u>	<u>Test Method</u>	<u>Sample Period</u>	<u>Sample Volume</u>
TSP	Method 5	60 minutes (1 sample/run)	30 DSCF
SO <sub>2</sub>	Method 6	20 minutes (2 samples/run)	0.71 DSCF

5. Performance tests consistent with Condition 4 will be performed each time fuel conversion from natural gas to fuel oil occurs.
6. Continuous compliance with the SO<sub>2</sub> and TSP allowable emission rates will be demonstrated through continuous monitoring and recording of 1) the pressure drop across the scrubber, 2) the pressure of the scrubber liquid entering the venturi throat (or alternatively, the liquid flow in mass of liquid per volume air flow through scrubber), and 3) the SO<sub>2</sub> content of the flue gases (or alternatively, the pH of the liquor exiting the scrubber). The continuous SO<sub>2</sub> monitor and its operation (if used) will comply with the applicable provisions of 40 CFR 60.13. Each other monitored system parameter (pressure drop, pressure or flow, and pH), will be maintained at or above the "minimum value" required for meeting the allowable emission rates as determined by performance tests conducted according to the provisions of condition 4. System operation with parameters below these "minimum values" will constitute "excess emissions".
7. The applicant will meet the requirements and specifications of the attached General Conditions.



## GENERAL CONDITIONS

1. The permittee shall notify the permitting authority in writing of the beginning of construction of the permitted source within 30 days of such action and the estimated date of start-up of operation.
2. The permittee shall notify the permitting authority in writing of the actual start-up of the permitted source within 30 days of such action and the estimated date of demonstration of compliance as required in the specific conditions.
3. Each emission point for which an emission test method is established in this permit shall be tested in order to determine compliance with the emission limitations contained herein within sixty (60) days of achieving the maximum production rate, but in no event later than 180 days after initial start-up of the permitted source. The permittee shall notify the permitting authority of the scheduled date of compliance testing at least thirty (30) days in advance of such test. Compliance test results shall be submitted to the permitting authority within forty-five (45) days after the complete testing. The permittee shall provide (1) sampling ports adequate for test methods applicable to such facility, (2) safe sampling platforms, (3) safe access to sampling platforms, and (4) utilities for sampling and testing equipment.
4. The permittee shall retain records of all information resulting from monitoring activities and information indicating operating parameters as specified in the specific conditions of this permit for a minimum of two (2) years from the date of recording.
5. If, for any reason, the permittee does not comply with or will not be able to comply with the emission limitations specified in this permit, the permittee shall provide the permitting authority with the following information in writing within five (5) days of such conditions:
  - (a) description of noncomplying emission(s),
  - (b) cause of noncompliance,
  - (c) anticipated time the noncompliance is expected to continue or, if corrected, the duration of the period of noncompliance,
  - (d) steps taken by the permittee to reduce and eliminate the noncomplying emission,and
  - (e) steps taken by the permittee to prevent recurrence of the noncomplying emission.

Failure to provide the above information when appropriate shall constitute a violation of the terms and conditions of this permit. Submittal of this report does not constitute a waiver of the emission limitations contained within this permit.

6. Any change in the information submitted in the application regarding facility emissions or changes in the quantity or quality of materials processed that will result in new or increased emissions must be reported to the permitting authority. If appropriate, modifications to the permit may then be made by the permitting authority to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause violation of the emission limitations specified herein.
7. In the event of any change in control or ownership of the source described in the permit, the permittee shall notify the succeeding owner of the existence of this permit by letter and forward a copy of such letter to the permitting authority.
8. The permittee shall allow representatives of the State environmental control agency or representatives of the Environmental Protection Agency, upon the presentation of credentials:
  - (a) to enter upon the permittee's premises, or other premises under the control of the permittee, where an air pollutant source is located or in which any records are required to be kept under the terms and conditions of the permit;
  - (b) to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit, or the Act;
  - (c) to inspect at reasonable times any monitoring equipment or monitoring method required in this permit;
  - (d) to sample at reasonable times any emission of pollutants;and
  - (e) to perform at reasonable times an operation and maintenance inspection of the permitted source.
9. All correspondence required to be submitted by this permit to the permitting agency shall be mailed to the:

Chief, Air Facilities Branch  
Air and Hazardous Materials Division  
U.S. Environmental Protection Agency  
Region IV  
345 Courtland Street  
Atlanta, Georgia 30308
10. The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

The emission of any pollutant more frequently or at a level in excess of that authorized by this permit shall constitute a violation of the terms and conditions of this permit.

TABLE I  
EMISSIONS SUMMARY

	<u>TSP</u>	<u>SO<sub>2</sub></u>	<u>NO<sub>x</sub></u>	<u>CO</u>	<u>HC</u>	<u>F</u>
Potential Emissions <sup>a</sup> (tons/year)	5400	520	76	0.2	4	Negligible
Allowable Emissions <sup>a</sup> Tons Per Year	49.8	39	b	b	b	b
Pounds Per Day	598	466	b	b	b	b
Pounds Per Hour	24.9 <sup>c</sup>	19.4	b	b	b	b

- a. All emissions are calculated at maximum hourly capacity and assuming a maximum of 4000 hours of operation per year as required in this permit.
- b. Potential emissions of this pollutant do not exceed 100 tons per year so that PSD review for these pollutants does not apply.
- c. No hourly increment level has been established for TSP; thus, the hourly emission rate does not affect PSD applicability.

TABLE II

	Maximum Impact ( $\mu\text{g}/\text{m}^3$ )	Defined Significance Levels ( $\mu\text{g}/\text{m}^3$ )
Annual Geometric Mean Concentration	TSP - 0.3 <sup>a</sup> SO <sub>2</sub> - 0.2	1 1
24-Hour Average Concentration	TSP - 4.3 <sup>a</sup> SO <sub>2</sub> - 3.7	5 5
3-Hour Average Concentration	TSP - N/A SO <sub>2</sub> - 12.2	N/A 25

<sup>a</sup> Modeling results in application adjusted for increase in allowable TSP emissions rate (24.9 lb/hr) over modeled emission rate (15.4 lb/hr).

DER

FEB 18 1985

State of Florida  
DEPARTMENT OF ENVIRONMENTAL REGULATION

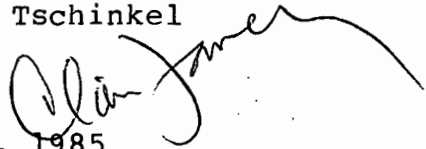
BAQM

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee		
To: _____	Loctn.: _____	
From: _____	Loctn.: _____	
Reply Optional [ ]	Reply Required [ ]	Info. Only [ ]
Date Due: _____	Date Due: _____	

TO: Victoria J. Tschinkel

FROM: Clair Fancy



DATE: February 15, 1985

RECEIVED

FEB 15 1985

SUBJ: Approval of Attached Air Construction Permit and BACT Determination Office of the Secretary

Attached for your approval and signature is one Air Construction Permit and a BACT Determination for Mobil Chemical Company. This is a permit to modify the operation of the No. 4 phosphate rock dryer at the applicant's existing facility in Nichols, Polk County, Florida.

Day 90, after which the permit would be issued by default, is February 19, 1985.

The Bureau recommends your approval and signature.

CF/pa

Attachments

Check Sheet

Company Name: MOBIL CHEMICAL Co.

Permit Number: AC 53-090634

PSD Number: \_\_\_\_\_

Permit Engineer: \_\_\_\_\_

**Application:**

- Initial Application
- Incompleteness Letters
- Responses
- Waiver of Department Action
- Department Response
- Other

**Cross References:**

- 7053-175816
- 7053-106060
- 

**Intent:**

- Intent to Issue
- Notice of Intent to Issue
- Technical Evaluation
- BACT Determination
- Unsigned Permit

Correspondence with:

- EPA
- Park Services
- Other
- Proof of Publication
  - Petitions - (Related to extensions, hearings, etc.)
  - Waiver of Department Action
  - Other

**Final Determination:**

- Final Determination
- Signed Permit
- BACT Determination
- Other

**Post Permit Correspondence:**

- Extensions/Amendments/Modifications
- Other

**SENDER:** Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.  
 Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1.  Show to whom delivered, date, and addressee's address. (Extra charge)      2.  Restricted Delivery (Extra charge)

3. Article Addressed to: <i>m. R. E. Schulz</i> <i>Mobile Mining Minerals Co.</i> <i>P.O. Box 311</i> <i>Nichols, FL 33863</i>	4. Article Number <i>P 407 852 925</i> Type of Service: <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Addressee <i>X</i>	8. Addressee's Address (ONLY if requested and fee paid)
6. Signature — Agent <i>xx Cyronne Mabley</i>	
7. Date of Delivery <i>1-17-91</i>	

PS Form 3811, Apr. 1989

\*U.S.G.P.O. 1989-238-815

DOMESTIC RETURN RECEIPT

P 407 852 925  
**RECEIPT FOR CERTIFIED MAIL**  
 NO INSURANCE COVERAGE PROVIDED  
 NOT FOR INTERNATIONAL MAIL  
 (See Reverse)

\*U.S.G.P.O. 1985-234-555

Sent to		<i>R. E. Schulz</i>
Street and No.		<i>Mobile M i m. Co.</i>
P.O., State and Zip Code		<i>Nichols, FL</i>
Postage		\$
Certified Fee		
Special Delivery Fee		
Restricted Delivery Fee		
Return Receipt showing to whom and Date Delivered		
Return Receipt showing to whom, Date, and Address of Delivery		
TOTAL Postage and Fees		\$
Postmark or Date		<i>1-15-91</i>
		<i>AC 53-090634</i>
		<i>PSD-FI-042</i>

PS Form 3800, June 1985



File

# Florida Department of Environmental Regulation

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

~~Bob Martinez, Governor~~

~~Dick Iwan Human, Secretary~~

~~John Shewer, Assistant Secretary~~

Lawton Chiles, Governor

Carol M. Browner, Secretary

January 10, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. R. E. Schulz, Manager of Manufacturing  
Mobile Mining & Minerals Company  
Post Office Box 311  
Nichols, Florida 33863

Dear Mr. Schulz:

Re: Amendment of Permit No. AC 53-090634 (PSD-FL-042)

The Department has reviewed Dr. John Koogler's June 8, 1990, letter which, in part, requested that Mobile Mining & Minerals Company be allowed to monitor scrubber liquid flow instead of pressure and phosphate rock product rate instead of feed rate as specified in 40 CFR 60, Subpart NN-Standards of Performance for Phosphate Rock Plants, for the No. 4 phosphate rock dryer at your Nichols, Polk County, Florida facility.

The Department finds this request acceptable, with conditions, and amends the referenced permits as follows:

FROM:

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.

TO:

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, except for the monitoring requirements (40 CFR 60.403).

a. The following parameters shall be monitored continuously:

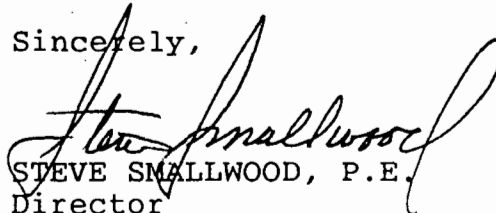
1. Pressure drop across the venturi scrubber.
2. Scrubbers liquid flow from the common recirculation tank to the scrubbers can be substituted for scrubber pressure measurements. Makeup water flow rates do not have to be measured or monitored.



3. pH of the scrubbing liquid from the venturi scrubber and adsorber scrubber in the common recirculation tank at a single representative point whose location is approved by DER when the dryer is fired with No. 6 fuel oil.
- b. Measurement of the phosphate rock product rate and, with a moisture analysis of feed and product, adjusting it to the equivalent phosphate rock feed rate, may be substituted for direct monitoring of the phosphate rock feed rate (40 CFR 60.403(d) and 60.404(c)),
- c. Hourly average readings of the venturi scrubber pressure drop and liquid flow rate that are less than 90 percent of the average hourly levels maintained during the most recent performance test shall be reported each calendar quarter (40 CFR 60.403(f)).

A copy of this letter must be filed with the referenced permit and shall become a condition of that permit.

Sincerely,



STEVE SMALLWOOD, P.E.  
Director  
Division of Air Resources  
Management

SS/WH/plm

Attachment: Koogler letter dated June 8, 1990  
EPA letter dated November 28, 1990

c: Bill Thomas, SW District  
Paul Reinermaun, EPA

cc: Mr. Clair H. Fancy, P.E., Chief  
Bureau of Environmental Regulation  
Division of Air Resources Management  
Florida Department of Environmental  
Regulation  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

*M. Hanks*



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.  
ATLANTA, GEORGIA 30365

NOV 28 1990

4APT-AE

Mr. James L. McDonald  
Air Permitting Engineer  
Florida Department of Environmental  
Regulation  
Southwest District  
4520 Oak Fair Boulevard  
Tampa, Florida 33610-7347

RECEIVED

DEC 03 1990

DER-BAQM

Dear Mr. McDonald:

As requested in your October 16, 1990, letter to Paul Reinermann of my staff, we approve the proposed monitoring requirements for the two scrubbers on the No. 4 phosphate rock dryer at Mobile Mining & Minerals in Polk County, Florida. Their proposed monitoring requirements were in response to my August 22, 1990, letter to Clair Fancy which stated that both scrubbers on the No. 4 phosphate rock dryer should comply with the monitoring requirements of 40 C.F.R. Part 60, Subpart NN.

The main deviation from the monitoring requirements in Subpart NN is the monitoring of the absorber scrubber pressure drop. As discussed with Mr. Reinermann on September 17, 1990, the venturi scrubber of the two scrubber system is dedicated to particulate removal and the absorber has very little, if any, particulate removal. In addition, the absorber was only installed to reduce SO<sub>2</sub> emissions when the No. 4 phosphate rock dryer is firing fuel oil. The pressure drop across the absorber is not indicative of its operation whereas the scrubbing liquid flowrate is. Therefore, the recording of the absorber scrubbing liquid flowrate is required and the recording of the absorber pressure drop is not.

If you have any questions regarding this letter, please contact Mr. Paul Reinermann at 404/347-2904.

Sincerely yours,

A handwritten signature in cursive script that reads "Jewell A. Harper".

Jewell A. Harper, Chief  
Air Enforcement Branch  
Air, Pesticides and Toxics  
Management Division



**KOOGLER & ASSOCIATES**  
 ENVIRONMENTAL SERVICES  
 4014 NW THIRTEENTH STREET  
 GAINESVILLE, FLORIDA 32609  
 904/377-5822 • FAX 377-7158

KA 282-88-01

June 8, 1990

*Lein*  
 D. E. R.

JUN 11 1990

SOUTHWEST DISTRICT  
 TAMPA

Mr. J. Harry Kerns  
 District Air Engineer  
 Florida Department of  
 Environmental Regulation  
 Southwest District Office  
 4520 Oak Fair Blvd.  
 Tampa, FL 33610-7347

Subject: Mobil Mining and Minerals Company  
 Polk County, Florida  
 Permit A053-175816

Dear Mr. Kerns:

On February 2, 1990, Mobil Mining and Minerals Company (Mobil) applied to the Department for the renewal of air operating permit No. A053-106060 for the No. 4 phosphate rock dryer located at the Mobil facility in Nichols, Florida. In the application for renewal, Mobil requested several changes in the permit in order to eliminate ambiguities and to better reflect actual operating practices of the dryer. Your office responded to Mobil by letter dated March 2, 1990, requesting that additional information be provided by June 15, 1990. A response from Mobil by that date would provide your staff with adequate time to prepare the renewed operating permit prior to the August 29, 1990, expiration of Permit No. A053-106060.

The information requested in the Department's letter of March 2, 1990, is provided in the following sections:

1. In accordance with Rule 17-2.700(2) (a)3., F.A.C., submit the test results of a compliance test which demonstrates this source is in compliance with Specific Condition No. 2.d. of permit A053-106060.

Nitrogen oxides emission measurements conducted on the No. 4 rock dryer on June 5, 1985, demonstrated compliance with the emission limiting standards of construction permit AC53-090634. These measurements were

made to satisfy a one-time measurement requirement imposed by the Department during the permitting process (See Attachment 1 for excerpts from the Final Determination for Permit AC53-090634 dated February 15, 1985). Based upon the attached correspondence and the final wording of Specific Condition No. 6 of AC53-090634, which states:

.... Routine tests for nitrogen oxides will not be required if the initial test shows compliance with this specific condition,

it is Mobil's understanding that NOx compliance testing is not required unless specifically requested by the Department for a legitimate reason.

2. **Submit a fuel analysis of the No. 6 fuel oil used during the September 21, 1989 compliance test to document compliance with Specific Condition No. 10 of permit A053-106060.**

A sulfur analysis of the No. 6 fuel oil used during both the September 21, 1989, compliance test and the April 14, 1990, compliance test are included as Attachment 2. The analyses of both fuels show that the sulfur contents of both fuels were less than 2.5 percent.

3. **Does the scrubber also control emissions from the product belt and 2 belt to belt transfer points? If yes, submit a diagram showing these pick-up points.**

The attached diagram (Attachment 3) shows the fugitive dust control system associated with the No. 4 rock dryer and the connection of this system to the Ducon scrubber system.



4. Explain the methods and/or procedures which are implemented so the dryer's operators know if excess emissions or improper operating conditions occur regarding 40 CFR 60.403(e) and (f).

40CFR60.403(e) states:

For purposes of reports required under Section 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 of any phosphate rock dryer, calciner, or grinder subject to Paragraph (a) of this section exceeds the applicable opacity limit.

Mobil controls particulate matter emissions from the No. 4 dryer with a venturi scrubber and therefore is not required to continuously monitor the opacity of emissions by virtue of Rule 40CFR60.403(c) which states:

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 [the paragraph requiring the installation of a continuous opacity monitor], 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 .... (2) A monitoring device for the continuous measurement of the scrubbing liquor supply pressure to the control device ....

To comply with 40CFR60.403(c), Mobil has installed, calibrated, maintained, and operated a monitoring device that continuously measures the pressure loss of the gas stream across the venturi scrubber controlling particulate matter emissions from the No. 4 rock dryer in accordance with 40CFR60.403(c)1 and has installed, calibrated, maintained,

and operated a monitoring device that continuously measures the scrubbing liquor flow rate to the venturi scrubber in lieu of monitoring the scrubbing liquor supply pressure as required by Rule 40CFR60.403(c)2.

Mobil maintains the pressure drop across the venturi scrubber and the venturi scrubber liquor flow rate at levels that are 90 percent or greater than the average levels maintained during the most recent performance test under which the dryer demonstrated compliance. This is the procedure used by Mobil for demonstrating compliance with 40CFR60.403(e).

Rule 40CFR60.403(f) requires operators of facilities that are subject to the rule to:

... 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 ....

During the normal operation of the No. 4 rock dryer, the Mobil operators maintain both the venturi scrubber pressure drop and the venturi scrubber liquor flow rate at levels that are 90 percent or greater than levels maintained during the most recent compliance test. Both the venturi scrubber pressure drop and liquor flow rate are continuously monitored and recorded. These records are periodically reviewed by Mobil's staff, and the hourly average pressure drops and liquid flow rates are compared with levels maintained during the most recent compliance test. Measurements

that are less than 90 percent of the pressure drop and scrubber liquor flow rate levels maintained during the most recent compliance test are noted and reported to the Department quarterly along with an explanation for the occurrence.

5. Is it correct you are proposing the following to be continuously measured and recorded:

Dryer fired on natural gas

- A. Venturi Scrubber - liquid flow rate (gpm)
- B. Venturi Scrubber - pressure loss of gas stream (inches of water)
- C. Absorber Scrubber - liquid flow rate (gpm)

Dryer fired on No. 6 fuel oil

- A. Venturi Scrubber - liquid flow rate (gpm)
- B. Venturi Scrubber - pressure loss of gas stream (inches of water)
- C. Absorber Scrubber - liquid flow rate (gpm)
- D. Venturi and Absorber Scrubber - pH of each scrubbing liquid measured near the point in the tank where the liquid discharge enters the tank.

When the No. 4 rock dryer is fired on natural gas, the three measurements that you have listed will be made and continuously recorded.

When the No. 4 rock dryer is fired on No. 6 fuel oil, the measurements that you have defined by statements A, B, and C will be continuously made and recorded.

Regarding Statement D, the scrubbing liquor recirculated through the venturi scrubber and absorber scrubber will be from a common recirculation



tank. The existing recirculation tank that was partitioned with one section for the venturi scrubber recirculating system, and the second section for the absorber scrubber recirculating system has been modified by cutting a 9 inch by 12 inch opening in the partitioning wall near the surface of the scrubbing liquor and a second 12 inch by 12 inch opening two inches above the bottom of the partitioning wall and at the opposite end of the wall from the 9 inch by 12 inch opening. These openings will allow adequate cross-circulation to assure a uniform scrubbing liquor pH throughout the tank. As a result, the pH of the scrubbing liquor will be measured at a single point where the scrubbing liquor from the absorber scrubber reenters the recirculation tank (as is the current practice).

6. When No. 6 fuel oil is used in the dryer, is sodium hydroxide the scrubbing liquid for the venturi and absorber scrubbers? If no, explain.

The pH of the scrubber liquor supplied from a common recirculation tank to both scrubbers is adjusted with a sodium hydroxide solution. If this solution is not available, the dryer will operate only on natural gas.

7. The Department does not agree with your proposal to use the daily average when determining compliance/reporting with 40 CFR 60.403(f). Therefore, the Department intends to propose the following criteria:

- A. Liquid flow rates to the venturi scrubber shall not be less than the average value maintained during the last compliance test.
- B. Pressure loss of the gas stream through the venturi scrubber shall not be less than the average value maintained during the last compliance test.



- C. The pH of the venturi scrubber and absorber scrubber liquid discharged to the recirculation tank (when applicable) shall not be less than the average pH value during the last compliance test.

40CFR60.403(f) does not address the measurement of scrubber liquor pH; this is a requirement of the Department. Furthermore, the rule requires that the owner or operator report only:

... measurement results that are less than 90 percent of the average levels maintained during the most recent performance test ....

As a result of Department requirements and Federal New Source Performance Standard requirements, Mobil suggests the following criteria; with all references to measured values being hourly average values.

- A. The hourly average scrubbing liquor flow rate to the venturi scrubber shall not be less than 90 percent of the average value maintained during the last compliance test in which the dryer demonstrated compliance with the conditions of this permit.
- B. The hourly average pressure loss of the gas stream through the venturi scrubber shall not be less than 90 percent of the average value maintained during the last compliance test in which the dryer demonstrated compliance with the emission limiting standards of this permit.

C. The hourly average pH of the venturi scrubber/absorber scrubber liquor as discharged to the scrubbing liquor recirculation tank shall not be less than 90 percent of the average pH value maintained during the most recent compliance test in which the dryer demonstrated compliance with the emission limiting standards of this permit. This rule shall apply only when the dryer is fired with No. 6 fuel oil.

8. Explain how the service water (gpm) is included in the flow rate measurements of the venturi scrubber and absorber scrubber values recorded.

Scrubbing is accomplished by a recirculating scrubber liquor flow rate of 1300 gallons per minute (design) to the venturi scrubber and 1160 gallons per minute (design) to the absorber scrubber. In addition to the recirculated scrubber liquor, 50 gallons per minute of fresh water can be introduced to the inlet of the venturi if the temperature at this point exceeds a pre-set limit and 200 gallons per minute (design) of fresh water are added (for cleaning purposes) to the first and last stage of the absorber scrubber. The 200 gallon per minute of fresh water fluctuates to balance scrubber liquor losses resulting from blow-down and evaporation and to maintain a constant scrubber liquor level in the recirculation tank.

As long as the recirculating scrubber liquor flow rates to the venturi and



absorber scrubbers are maintained near 1300 and 1160 gallons per minute, respectively, and as long as enough fresh water is supplied to maintain a constant liquid level in the recirculation tank, proper scrubber performance is assured.

In specific response to the Department's question, the make-up water (service water) is supplied at a rate necessary to maintain a constant liquid level in the scrubber liquor recirculation tank. This rate is not measured, but is controlled by a liquid level controller on the recirculation tank. Flow rates to the venturi and absorber scrubbers are measured as described in response to the Department's question No. 10.

9. During the September 21, 1989 compliance test the report states 17-20 inches as the scrubber change in pressure. Is this the change in pressure for the venturi scrubber? If no, explain.

The pressure drop that is currently measured and recorded is the pressure drop across only the venturi scrubber.

10. During the September 21, 1989 compliance test the report states 1240-1320 gpm as the scrubber water flow. Is this the flow rate of the venturi scrubber or absorber scrubber? What is the flow rate of the other scrubber? Since this test was conducted on fuel oil, should the reference to scrubber water be scrubber caustic solution or scrubber liquid?

The scrubber liquor flow rate reported in the September 21, 1989, test report is the scrubber liquor flow rate to the venturi scrubber. This



flow rate measurement is made in the line supplying recirculated scrubbing liquor to the scrubber. As addressed in response to the Department's Question No. 8, make-up water (service water) is not supplied to the venturi scrubber except to cool the scrubber under emergency circumstances. Hence, the flow rate measured in the recirculating scrubber liquor line is the total liquor flow to the venturi scrubber.

The scrubbing liquor flow rate to the absorber scrubber is 1160 gallons (design) per minute. There is a flow switch in the line providing recirculated scrubber liquor to the absorber scrubber. The flow switch is Magnetrol Model F1000-X2-MPG-S13. This flow switch will shut off the entire dryer system if the liquor flow rate through the switch decreases by more than 120 gallons per minute; or approximately 10 percent of the 1160 gallons per minute design flow rate to the absorber scrubber. Additionally, a flow meter has been placed in the line supplying recirculated scrubbing liquor to the absorber scrubber. This flow meter provides a measure of the scrubbing liquor flow rate with units in gallons per minute. This flow rate is continuously measured and recorded.

In the September 21, 1989, test report, reference is made to a scrubber water flow rate of 1240-1320 gallons per minute. The pH of the water was adjusted with sodium hydroxide solution to maintain the pH in the range of 7.2 to 8.3. As the pH of the scrubber water was adjusted, the water could correctly be referred to as scrubber caustic solution, scrubber liquid, scrubber liquor, scrubber water, etc.



11. Since the September 21, 1989 compliance test was conducted at a wet input rate of 407 TPH and a dry output rate of 381.7 TPH, the Department would stipulate in a renewed permit (condition as Specific Condition No. 4 in permit A053-106060) the permitted capacity is a wet input rate of 407 TPH. If the compliance test requested in No. 1 above also demonstrates compliance with the remaining limitations, a renewed permit could be issued at the higher rate if the test was conducted at the higher rate and did not exceed a wet input rate of 475 TPH.

As the September 21, 1989, compliance test was conducted at a wet rock feed rate of 407 tons per hour, it is suggested that the renewal permit be issued for a wet rock feed rate of 450 tons per hour; or a rate 10 percent greater than the feed rate at the time of the compliance test. This is suggested as Department rules require compliance tests to be conducted at a rate that is within 10 percent of the permitted rate and 407 tons per hour is within 10 percent of 450 tons per hour.

I trust the information provide herein will adequately respond to the questions raised in your letter of March 2, 1990. If there are any questions regarding this information or if additional information is required, please do not hesitate to contact me.

Very truly yours,

KOGLER & ASSOCIATES

  
John B. Koogler, Ph.D., P.E.

JBK:wa  
Enc.

cc: Mr. K Matthews  
Mr. W. M. Fraser





State of Florida  
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To: _____	Location: _____
To: _____	Location: _____
To: _____	Location: _____
From: _____	Date: _____

# Interoffice Memorandum

TO: Steve Smallwood  
 FROM: Clair Fancy *CF*  
 DATE: January 10, 1990  
 SUBJ: Amendment of Construction Permit No. 53-090634  
 (PSD-FL-042)

Attached for your approval and signature is a letter that will amend the referenced construction permit for a phosphate rock dryer belonging to Mobile Mining and Minerals Company in Nichols, Polk County, Florida. The amendment authorizes the monitoring of alternate parameters to those specified in the new source performance standards.

The amendment has been discussed with EPA (Paul Reinermann). The request is not controversial.

I recommend your approval and signature.

CF/WH/plm

Attachment

*OK  
BA*

*Clair -  
Re looked 3 c.  
Is that correct?  
JHS*

*OK  
Thank you.  
1-15-90*

*OK  
Revised*





# Florida Department of Environmental Regulation

Southwest District • 4520 Oak Fair Boulevard • Tampa, Florida 33610-7347 • 813-623-5561

Bob Martinez, Governor

Dale Twachtman, Secretary

John Shearer, Assistant Secretary

Dr. Richard Garrity, Deputy Assistant Secretary

October 16, 1990

Mr. Paul Reineremann  
Air Enforcement Branch  
U.S. Environmental Protection Agency  
Region IV  
345 Courtland Street  
Atlanta, GA 30308

RECEIVED

OCT 18 1990

DER-BAQM

Dear Mr. Reineremann:

Re: Polk County - AP

A053-175816

This letter is in summary of our telephone discussion on September 17, 1990 and a letter from Ms. Jewell Harper of your office regarding Mobil Mining & Minerals Company's No. 4 phosphate rock dryer's measurement/monitoring requirements.

## Summary

1. You stated during the telephone discussion that measuring/monitoring the pressure drop across the absorber scrubber is not necessary.
- 2. Measuring/monitoring the pressure drop across only the venturi scrubber is necessary.
3. Measuring/monitoring the water flow rate to the venturi scrubber and absorber scrubber from the common recirculation tank is necessary. Make-up water flow rates are not necessary to be measured/monitored.
4. When the dryer is fired on No. 6 fuel oil, the pH of the scrubbing liquid from the venturi scrubber and absorber scrubber shall be measured/monitored at a single point in the common recirculation tank near where the liquid discharge from the two scrubbers enters the tank.

Therefore, I request your comments and/or approval of the items listed above and in the attached letter dated September 26, 1990 from Mobil Mining & Minerals Company's consultant, Dr. John Koogler. A reply by November 9, 1990 would be appreciated.



DEPARTMENT OF ENVIRONMENTAL REGULATION

**ROUTING AND  
TRANSMITTAL SLIP**

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)

*Mr. Willard Hanks*

Initial

Date

2.

*DARM - BAR*

Initial

Date

3.

*DER, Tallahassee*

Initial

Date

4.

*Twin Towers*

Initial

Date

REMARKS:

*FYI*

INFORMATION

Review & Return

Review & File

Initial & Forward

DISPOSITION

Review & Respond

Prepare Response

For My Signature

For Your Signature

Let's Discuss

Set Up Meeting

Investigate & Report

Initial & Forward

Distribute

Concurrence

For Processing

Initial & Return

FROM:

*Jim McDonald*

DATE

*10-16-90*

PHONE

*510 552-7612*

*ext 421*

Mr. Paul Reinermann  
Atlanta, GA

Page Two

If you need additional information or have any questions,  
please do not hesitate to call me at (813) 623-5561,  
extension 421.

Sincerely,

*James L. McDonald*

James L. McDonald  
Air Permitting Engineer

JLM/js

Attachment

cc: Willard Hanks, DER-Tallahassee  
John B. Koogler, Ph.D., P.E.  
K. Matthews, Mobil Mining & Minerals Company



**KOGLER & ASSOCIATES**

ENVIRONMENTAL SERVICES

4014 NW THIRTEENTH STREET  
GAINESVILLE, FLORIDA 32609  
904/377-5822 • FAX 377-7158

KA 282-88-01

September 26, 1990

Mr. Jim McDonald  
Florida Department of  
Environmental Regulation  
Southwest District Office  
4520 Oak Fair Blvd.  
Tampa, FL 33610-7347

Subject: Mobil Mining & Minerals  
No. 4 Rock Dryer  
Monitoring Requirement for Makeup  
Water to Scrubber System

Dear Mr. McDonald:

Confirming our discussion during the meeting in your office on September 17, 1990, I would like to set forth the reasoning behind Mobil's opposition to continuously monitor the flow of scrubber makeup water to the No. 4 phosphate rock dryer operated by the company at Nichols, Florida. I will also summarize, for the record, the monitoring that Mobil is doing and the assurances that this monitoring and other dryer system safeguards provide that the dryer scrubber system will operate continuously as intended. I have attached a simplified drawing showing the scrubber system for the No. 4 dryer and the scrubber liquor and makeup water flows to the system.

Basically, the scrubber system consists of a venturi scrubber designed primarily to control particulate matter emissions as required by 40CFR60, Subpart NN, and an absorber scrubber designed to control sulfur dioxide emissions as required by an emission limiting standard imposed by the Florida Department of Environmental Regulation. The venturi scrubber is a conventional venturi scrubber designed by Ducon. The absorber scrubber was also designed by Ducon and consists of four sets of chevron-type plates designed to provide a large wetted surface area for sulfur dioxide absorption. The scrubbing liquor provided to both the venturi scrubber and absorber scrubber is pumped from a common recirculation tank. Caustic is added to the recirculation tank to maintain the pH in the range of 7.0; the pH necessary for sulfur dioxide absorption. It should be noted that caustic addition is required only when the dryer is being fired with No. 6 fuel oil. The dryer is usually fired with natural gas.

The scrubbing liquor is pumped at the rate of approximately 1300 gallons per minute to the venturi scrubber and at a rate of approximately 1160 gallons per minute to the absorber scrubber. The recirculated scrubbing liquor to the absorber scrubber is sprayed onto the second and third set of absorber plates.

During the normal operation of the scrubber system, water is lost by evaporation to the stack gas and through a blowdown stream. A certain amount of water is continually wasted (the blowdown) to prevent the buildup of solids in the scrubbing liquor recirculation tank. The loss of scrubber water is made up by adding fresh water at a rate of up to 250 gallons per minute. Under normal operating conditions, the fresh makeup water is supplied at a rate of approximately 150 gallons a minute as sprays to the first and fourth set of plates in the absorber scrubber. The primary purpose of supplying the fresh makeup water through the scrubber, as described by Ducon, is for cleaning purposes.

If the liquid level in the scrubbing liquor recirculation tank drops below a preset point, a liquid level controller opens a valve that allows fresh makeup water to be added directly to the recirculation tank. It is estimated that the fresh makeup water flow rate to the recirculation tank will be approximately 170 gallons a minute. The flow to the recirculation tank will reduce the makeup water flow rate through the absorber scrubber to approximately 80 gallons per minute as the maximum makeup water flow rate is limited to 250 gallons per minute.

It should be noted that 50 gallons per minute of fresh makeup water can be added as an emergency coolant to the venturi scrubber. The addition of cooling water is not expected to occur frequently, but when it does, it would also exert some influence (reduction) on the makeup water flow rate of 150 gallons a minute to the absorber scrubber.

Mobil is concerned about monitoring the makeup water flow rate to the absorber scrubber and trying to maintain a flow rate that is 90 percent or more of the flow rate maintained during the most recent compliance test. The concern comes from the fact that the makeup water flow rate to the absorber scrubber will fluctuate from approximately 80 gallons per minute to 150 gallons per minute depending upon whether or not makeup water is being added directly into the scrubbing liquor recirculation tank.

Mobil currently monitors, on a continuous basis, all of the scrubber water supplied to the venturi scrubber (with the exception of the 50 gallons per minute of fresh water that can be supplied on a emergency basis for

cooling). The monitoring of this scrubbing liquor flow plus the continuous monitoring of the pressure drop across the scrubber satisfies all the monitoring requirements of 40CFR60, Subpart NN for the venturi scrubber.

The specific question that Mobil has is related to monitoring requirements for makeup scrubbing water to the absorber scrubber. As mentioned previously, the absorber scrubber is designed to remove sulfur dioxide from the gas stream to satisfy an FDER imposed emission limit when the dryer is fired with No. 6 fuel oil. The sulfur dioxide is removed primarily by the recirculated scrubbing liquor that contains caustic for pH control. The flow of the recirculated scrubbing liquor is continuously monitored (at 1160 gallons per minute, design rate) by Mobil. Mobil questions the necessity of continuously monitoring the flow of fresh makeup water that is added through the absorber scrubber. This flow ranges from approximately 80 gallons per minute when fresh makeup water is being added directly to the recirculation tank to approximately 150 gallons per minute when makeup water is added only through the absorber scrubber.

Mobil is of the opinion that the fresh makeup water will have little if any effect on removing sulfur dioxide from the gas stream (as evidenced by the effectiveness of fresh water scrubbers for sulfur dioxide control in other installations). Mobil further feels that neither the fresh water addition to the absorber scrubber nor the entire absorber scrubber, for that matter, has any significant effect on particulate matter removal. As stated previously, the fresh makeup water is added through the absorber scrubber primarily to provide a cleaning action within the scrubber.

Since the fresh makeup water contributes only a small fraction of total scrubbing liquor flow (six percent of the flow to the entire scrubber system and 11 percent of the flow to the absorber scrubber) and because the fresh makeup water serves no significant purpose in either particulate matter removal or sulfur dioxide removal, Mobil is of the opinion that it should not be necessary to continuously monitor this flow. In addition to the fact that the fresh makeup water serves no significant purpose in particulate matter or sulfur dioxide removal, the flow rate of this water to the absorber scrubber varies significantly (from approximately 80 gallons per minute to 150 gallons per minute). The fluctuation in flow rate would make it extremely difficult to establish a baseline flow during compliance testing and to assure that the flow during the normal operation of the dryer was maintained at or above 90 percent of the baseline flow.

Mobil is of the opinion that as long as adequate fresh makeup water is added to maintain the proper level in the scrubbing liquor recirculation tank, further monitoring of the makeup water flow should not be required. It should also be pointed out that if the level in the scrubbing liquor recirculation tank drops below a preset level because adequate fresh makeup water is not supplied, the entire No. 4 dryer and scrubbing system will automatically shutdown. This safeguard provides assurance that makeup water will be supplied to the system as intended.

I would also like to confirm, for the record, my understanding of the agreement we reached on September 17, 1990, regarding the necessity to monitor pressure drop across the absorber scrubber following our conference call to Paul Reinermann of EPA IV, Atlanta. It is my understanding that Mobil will not be required to monitor or report the pressure drop across the absorber scrubber as this scrubber operates on the principle of providing a large wetted surface area (a function of water flow) for sulfur dioxide absorption; not on the principle of providing energy (a function of pressure drop) for contaminant removal. Another factor entering into this decision is the difficulty in establishing a baseline pressure drop and maintaining the operating pressure drop at 90 percent or more of the baseline.

I appreciate your review and consideration of this matter. If there are any questions regarding the information contained herein, or if additional information is required, please do not hesitate to contact me.

Very truly yours,

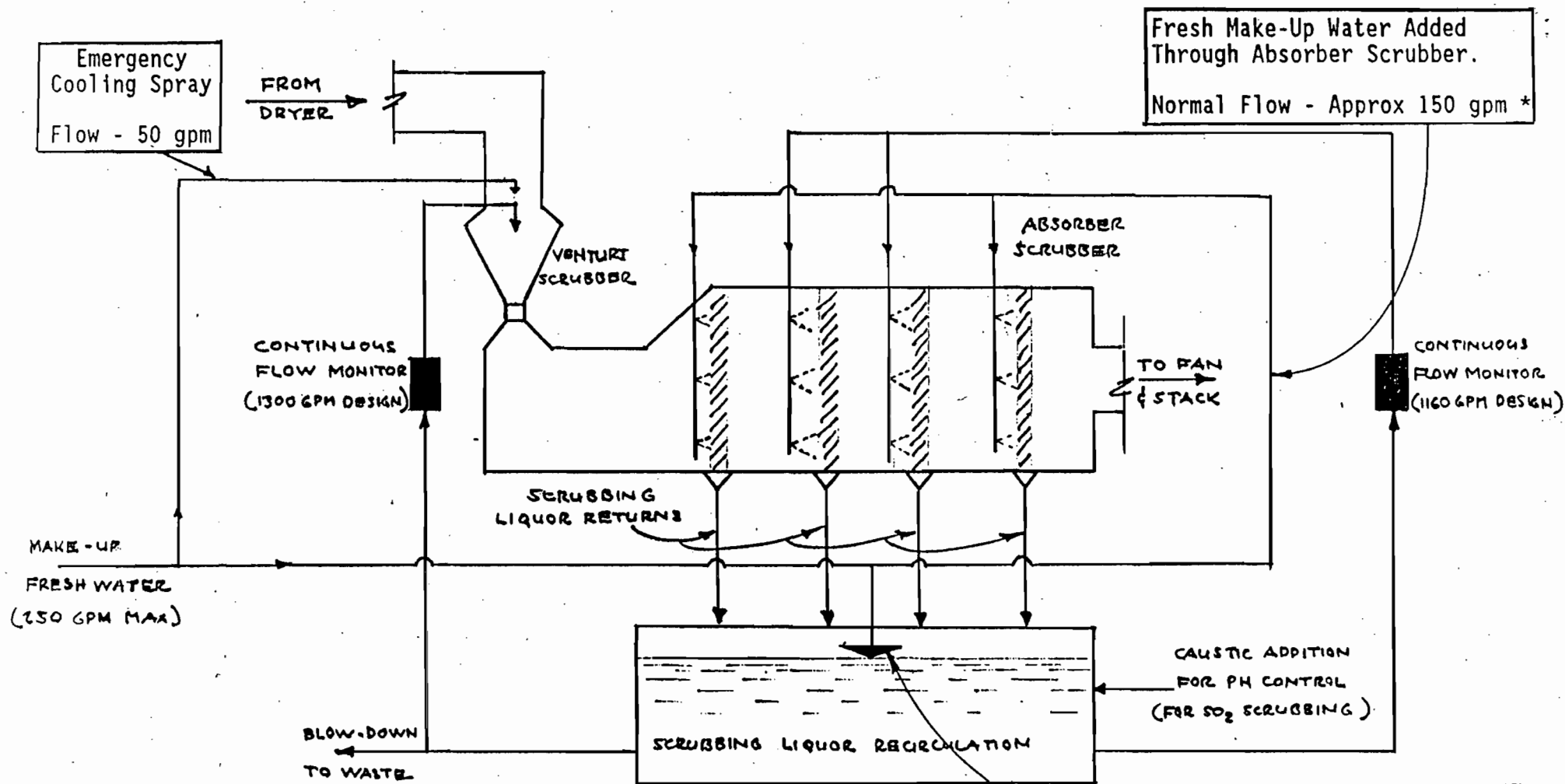
KOGLER & ASSOCIATES

  
John B. Koogler, Ph.D., P.E.

JBK:wa

cc: Mr. K Matthews





\* Fresh Make-Up Water flow directly to scrubber is estimated to be 150 gpm when make-up water is added only through absorber scrubber. When level controller to recirculation tank demands water, the flow directly to the tank is estimated to be 170 gpm and the flow to the scrubber is estimated to be 80 gpm (250 gpm, total).

NO. 4 PHOSPHATE ROCK DRYER  
SCRUBBER SYSTEM

MOBIL MINING AND MINERALS COMPANY  
POLK COUNTY, FLORIDA



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.  
ATLANTA, GEORGIA 30365

RECEIVED  
AUG 28 1990  
DER-BAQM

4APT-AEB

Mr. Clair H. Fancy, P.E., Chief  
Bureau of Air Regulation  
Division of Air Resources Management  
Florida Department of Environmental  
Regulation  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

As requested in your July 27, 1990, letter, we have reviewed the alternative monitoring requirements proposed by Mobile Mining and Minerals (Mobile) for the scrubbing system on the No. 4 phosphate rock dryer which is subject to 40 C.F.R. Part 60, Subpart NN. Mobile proposes to monitor the phosphate rock production rate instead of the phosphate rock feed rate and the scrubber liquid flowrate instead of the scrubber liquid pressure.

We concur with your analysis that the alternative monitoring requirements should be granted; however, we do not believe that all of the monitoring requirements for the No. 4 phosphate rock dryer have been adequately addressed. The emissions from the No. 4 phosphate rock dryer are controlled by two scrubbers in series, a venturi scrubber and an absorber scrubber. Therefore, Mobile should be required to monitor the pressure drop and the scrubber liquid flowrate of both scrubbers.

We realize that the absorber scrubber is used primarily to control SO<sub>2</sub> emissions. However, particulate testing is performed after this scrubber, and this scrubber does control some particulate emissions. Therefore, the absorber scrubber should be included in the monitoring requirements.

If you have any questions regarding this letter, please contact Mr. Paul Reinermann at 404/347-2904.

Sincerely,

*Jewell A. Harper*  
Jewell A. Harper, Chief  
Air Enforcement Branch  
Air, Pesticides and Toxics  
Management Division

C: Jim Mc Donald

*Patty -*

*8/28*

*I don't recall this and am not sure who it should go to. If not a permit, then goes to Pennington.*

*9-20-90*

*Clair*

*Suzanne*





# Florida Department of Environmental Regulation

Southwest District • 4520 Oak Fair Boulevard • Tampa, Florida 33610-7347 • 813-623-5561

Bob Martinez, Governor

Dale Twachtmann, Secretary

John Shearer, Assistant Secretary

Dr. Richard Garrity, Deputy Assistant Secretary

July 10, 1990

Mr. R. E. Schulz  
Manager of Manufacturing  
Mobil Mining & Minerals Company  
Post Office Box 311  
Nichols, FL 33863

Dear Mr. Schulz:

Re: Polk County - AP  
AO53-175816

On June 11, 1990, we received your response concerning the application to renew permit AO53-106060 for the No. 4 rock dryer at your Nichols facility. In order to continue processing the application, the Department will need the test results of a compliance test which demonstrates this source is in compliance with Specific Condition No. 2.d. of permit AO53-106060. This request was Item No. 1 of our letter dated March 2, 1990 and was further discussed with your consultant, Dr. John B. Koogler. Pursuant to Rule 17-4.070(1), F.A.C., submit the test results by September 1, 1990 or state the date the source was shut down so the Department may issue an operating permit requiring this test within 30 days of start-up.

Please be aware, a copy of your renewal application w/attachments and the response dated June 8, 1990 are being sent to our Tallahassee office to amend and/or modify permit AC53-90634 (if applicable). If applicable, the requested amendments and/or modifications would have to be properly made to the construction permit before this District office could address the requested changes in an operating permit.

If you have any questions, please call Mr. Jim McDonald of my staff at (813) 623-5561 extension 421.

Sincerely,

*J. Harry Kerns*  
J. Harry Kerns, P.E.  
District Air Engineer

JHK/jmq

cc: John B. Koogler, Ph.D., P.E.  
Barry Andrews, P.E. - DER, Tallahassee ✓

Department of Environmental Regulation  
**Routing and Transmittal Slip**

To: (Name, Office, Location)

1. Barry Andrews, P.E.
2. DER - Tallahassee
3. Division of Air Resource Management
4. JUL 13 1990

RECEIVED

JUL 13 1990

DER BAQM

Remarks:

Barry - Willard worked on the AC

Mobil wants to ~~do~~

1. measure moisture in + out plus the product weight instead of the wet feed rate as required by ~~the~~ 40 CFR 60.403 Subpart NN
2. Show compliance with 40 CFR 60.403(G) by an hourly average
3. ~~Delete~~ Specific Condition No. 12, d. of permit AC53-90634. 7/13/90

From

Jim McDonald

Date

7-10-90

Phone



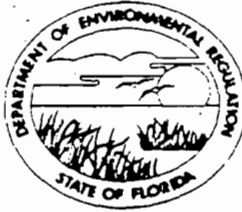
**ATTACHMENT 1**

AC: KTM

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

February 19, 1985

ROUTE	NO.
WEB	
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FLORIDA DEPARTMENTS	
FEB 25 1985	
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RETURN TO	

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

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

Dear Mr. Fetrow:

Enclosed is Permit Number AC 53-090634 dated February 18, 1985, to Mobil Chemical Company issued pursuant to Section 403, Florida Statutes.

Acceptance of this permit constitutes notice and agreement that the department will periodically review this permit for compliance, including site inspections where applicable, and may initiate enforcement actions for violation of the conditions and requirements thereof.

Sincerely,

C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

CHF/pa

Enclosure

cc: James T. Wilburn  
Bill Thomas  
John Koogler  
Paul Swartz

Final Determination

Mobil Chemical Company  
Nichols, Polk County, Florida

No. 4 Rock Dryer  
Permit Number AC 53-090634

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

February 15, 1985.

Final Determination  
Mobil Chemical Company  
AC 53-090634

Mobil's permit application to modify the operation of the No. 4 phosphate rock dryer has been reviewed by the department. Public notice of the department's intent to issue was published in the Polk County Democrat on January 7, 1985.

Copies of the Preliminary Determination and Technical Evaluation have been available for public inspection at the department's Southwest District office in Tampa and the Bureau of Air Quality Management office in Tallahassee.

Comments (Attachment J) were received from Mr. K. T. Matthews with Mobil Chemical Company, Nichols, Polk County, Florida, on January 7, 1985. As a result of the comments received and discussion between Mr. Willard Hanks and Mobil staff by telephone, the bureau agrees with certain revisions to the "Specific Conditions" and they shall read (Note: Attachment J will explain the revamping of three of the specific permit conditions):

Specific Conditions:

- No. 6: Nitrogen oxide emissions, as determined by EPA Reference Method 7 described in 40 CFR 60, Appendix A, shall not exceed 34.4 lb/hr and 0.37 lb/million Btu. Routine tests for nitrogen oxides will not be required if the initial test shows compliance with this specific condition.
- No. 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 determined during performance testing to achieve the allowable SO<sub>2</sub> emission limit. Alternatively, during fuel oil firing, the SO<sub>2</sub> content of the dryer flue gases will be measured with a continuous SO<sub>2</sub> monitor/recorder. This instrument, if used, and its operation will comply with the applicable provision of 40 CFR 60.13. Records will be maintained and available for inspection for a period of at least two years.
- No. 13: Before this construction permit expires, the applicant shall test the emissions from the dryer scrubber, while it is operating at 90-100 percent of the maximum phosphate rock feed rate, and burning No. 6 fuel oil with approximately 2.5 percent sulfur for:

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

Approved compliance stack testing of emissions must be conducted within approximately 10 percent of the permitted capacity. A compliance test submitted at operating levels less than 90 percent of permitted capacities will automatically constitute an amended permit at the lesser rate plus 10 percent until another test (showing compliance) at 90 percent of a higher capacity is submitted. Failure to submit the production rate of operation at conditions during testing which do not reflect actual operating conditions may invalidate the data (Chapter 403.161(1)(c), Florida Statutes).

Attachments to be Incorporated are:

- J. K. T. Matthews letter dated January 4, 1985.
- K. Thomas W. Devine letter dated March 20, 1980 and PSD-FL-042 Final Determination, 1979.

The final action by the Department shall be to issue the permit with the changes noted above.

ATTACHMENT J



# Mobil Chemical Company

PHOSPHORUS DIVISION

P.O. BOX 111  
NICHOLS, FLORIDA 33863  
TELEPHONE 813-425-3011

January 4, 1985

Mr. C. H. Fancy  
Deputy Chief  
Bureau of Air Quality Management  
Fla. Dept. of Environmental Regulation  
2600 Blair Stone Road  
Tallahassee, FL 32301

Subject: Mobil Chemical Company  
No. 4 Phosphate Rock Dryer  
Proposed Permit AC53-090634

Dear Mr. Fancy:

Dr. John B. Koogler of Sholtes & Koogler, Environmental Consultants and I have discussed two of the specific permit conditions of the subject permit with Mr. Willard Hanks of your staff and, by this letter, are requesting a modification to one of the specific conditions and a clarification on the other.

The specific condition for which we are requesting a modification is specific condition No. 10. This condition reads, in part "Further, during fuel oil firing the SO<sub>2</sub> content of the dryer flue gases will be measured with a continuous SO<sub>2</sub> monitor/recorder." In discussing this condition with Mr. Hanks, Mr. Hanks stated that this condition was incorporated in the subject permit strictly to make the subject permit consistent with the Federal Permit (PSD-FL-042) under which the No. 4 rock dryer was originally permitted.

In specific condition No. 6 of the Preliminary Determination for PSD-FL-042, it was specifically stated that continuous compliance with the SO<sub>2</sub> emission rate would be demonstrated through continuous monitoring of the sulfur dioxide content of the flue gas. In the Final Determination issued under PSD-FL-042 and transmitted to Mobil under cover letter dated March 20, 1980, and signed by Thomas W. Devine, Air and Hazardous Materials Division, U.S. Environmental Protection Agency, Region IV, Atlanta, Georgia, specific condition No. 6 was modified to read, in part "Continuous compliance with SO<sub>2</sub> and TSP allowable emission rates will be demonstrated through continuous monitoring and recording of . . . (3) the SO<sub>2</sub> content of the flue gases (or alternatively, the pH of the liquor exiting the scrubber)." Mobil Chemical Company elected

Mr. C. H. Fancy  
January 4, 1985  
Page 2

to monitor the pH of the scrubbing liquor and has consistently operated in compliance with this alternative monitoring requirement of the Federal Permit. A copy of the Final Determination for PSD-FL-042 is attached hereto for your files.

In view of the alternative monitoring requirement allowed under the Federal Permit issued for the No. 4 dryer, and the fact that Mobil has elected to use the alternative method of demonstrating compliance with the sulfur dioxide emission limit, Mobil is hereby requesting that the same alternative be incorporated into Permit AC53-090634. It is suggested that specific condition No. 10 of the subject permit read:

"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 determined during performance testing to achieve the allowable SO<sub>2</sub> emission limit. Alternatively, during fuel oil firing the SO<sub>2</sub> content of the dryer flue gases will be measured with a continuous SO<sub>2</sub> monitor/recorder. This instrument, if used, and its operation will comply with the applicable provision of 40 CFR 60.13. Records will be maintained and available for inspection for a period of at least two years."

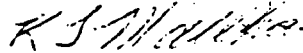
The specific condition for which we request clarification is specific condition No. 13. This condition states that: "Before this construction permit expires, the applicant shall test the emissions from the dryer scrubber . . . for: . . . c. nitrogen oxides . . ." Mobil understands that since the increased hours of operation addressed in the subject permit necessitated a PSD review for nitrogen oxides, there is a requirement to demonstrate compliance with the nitrogen oxides emission rate imposed as a permit condition. It is Mobil's understanding, based on discussions with your staff, that the requirement for nitrogen oxides emission measurements will be a one-time requirement to demonstrate compliance with the conditions of the construction permit and that emission measurements for nitrogen oxides will not be a requirement of the operating permit that will be issued for the No. 4 rock dryer. Mobil requests confirmation on this condition.

Mr. C. H. Fancy  
January 4, 1985  
Page 3

Regarding emission measurements on the No. 4 rock dryer, there have been discussions between the Central Air Permitting Section of FDER and the Southwest District Office of FDER (Tampa) regarding the conditions under which the No. 4 dryer will be tested. One alternative discussed was to require that the dryer operate at 90-100 percent of the maximum phosphate rock feed rate during emission tests while the other alternative requires that the dryer operate at 90-100 percent of the maximum heat input rate. Mobil's initial reaction to these alternatives is that either alternative is acceptable by itself but that both conditions imposed simultaneously would result in an operating condition that would be virtually impossible to meet. Hence, the requirement that the dryer operate at 90-100 percent of the maximum rock heat rate and 90-100 percent of the maximum heat input rate during emission tests is an unacceptable test condition.

We have appreciated the opportunity to discuss these matters with your staff and appreciate your consideration of the request made herein.

Sincerely,



K. T. Matthews  
Sr. Environmental Engineer

jm  
Attach.

cc: Dr. J. B. Koogler, Sholtes & Koogler  
B. Thomas, DER (Tampa)

ATTACHMENT 2



INTERNATIONAL PETROLEUM CORPORATION

May 21, 1990.

Mr. W. M. Frasier, Manager - Preparation and Shipping  
Nichols Preparation Plant  
Mobil Chemical Company  
P. O. Box 311  
Nichols, Florida 33863

Dear Mr. Frasier:

The attached letter from International Environmental Services shows the sulfur analysis of the fuel shipped to the Mobil Nichols Mine during the indicated periods.

I am also enclosing some copies of the delivery tickets that accompany each load. You will note that each ticket indicates the API gravity and a maximum sulfur content of 2.5%. The sulfur content of the fuel shipped to the Nichols Mine does not exceed 2.5% sulfur and the results shown by the International Environmental Services analysis are typical.

The BTU content of the fuel during September exceeded 6,308,000/barrel and during March exceeded 6,326,000/barrel.

If you need any additional information, please contact me.

Sincerely,

Don Van Sickle  
Director of Marketing

DVS:pw  
Attach (3)





INTERNATIONAL ENVIRONMENTAL  
SERVICES, INC.

May 21, 1990

Mr. Don Van Sickle  
International Petroleum Corporation  
105 South Alexander Street  
Plant City, Florida 33564

RE: SULFUR ANALYSIS

Dear Mr. Van Sickle:

Analytical results for the sulfur analysis performed on product shipped to Mobile Mining & Minerals on 9/21/89 was 2.21% and on 3/14/90 was 2.34%. These analyses were performed by the Certified Laboratory of International Environmental Services.

If you need further information, please call at 754-2373.

Sincerely,

Andrew R. Tintle  
Operations Manager

BEST AVAILABLE COPY

DELIVERY TICKET



I. P. C.



INTERNATIONAL PETROLEUM CORPORATION

105 S. ALEXANDER ST.

PLANT CITY, FL 33566

1-800-282-9585

CUSTOMER ORDER NO. \_\_\_\_\_ PO# ~~N651378~~ *N66645D*

DATE 03-~~07~~<sup>12</sup>-90 COLLECT  CHARGE

NAME Mobil Chemical

ADDRESS Nichols, FL

QUANTITY	UNIT	DESCRIPTION
<i>6508</i>	Gals	#6 RESID Fuel
		2.5 Sulfur Max
		API 12.0
		Combustible Liquid #199

RECEIVED BY

PC- 13054

*T# 25/11 Larry*  
*[Signature]*

Any claim not presented in writing within 10 days from the date hereof is expressly waived. All deliveries are "AS IS" without liability for direct, indirect, incidental or consequential damages resulting from any defect or deficiency in the oil.

BEST AVAILABLE COPY

DELIVERY TICKET



# I. P. C.



INTERNATIONAL PETROLEUM CORPORATION

105 S. ALEXANDER ST.  
PLANT CITY, FL 33566  
1-800-282-9585

CUSTOMER ORDER NO. \_\_\_\_\_ PO# N666450  
~~N661370~~

DATE 03-12-90 COLLECT  CHARGE

NAME Mobil Chemical

ADDRESS Nichols, FL

REC 10: 09

REC 2: 22

QUANTITY	UNIT	DESCRIPTION
<u>6481</u>	Gals	#6 RESID Fuel
		2.5 Sulfur Max
		API 12.0
		Combustible Liquid #1993

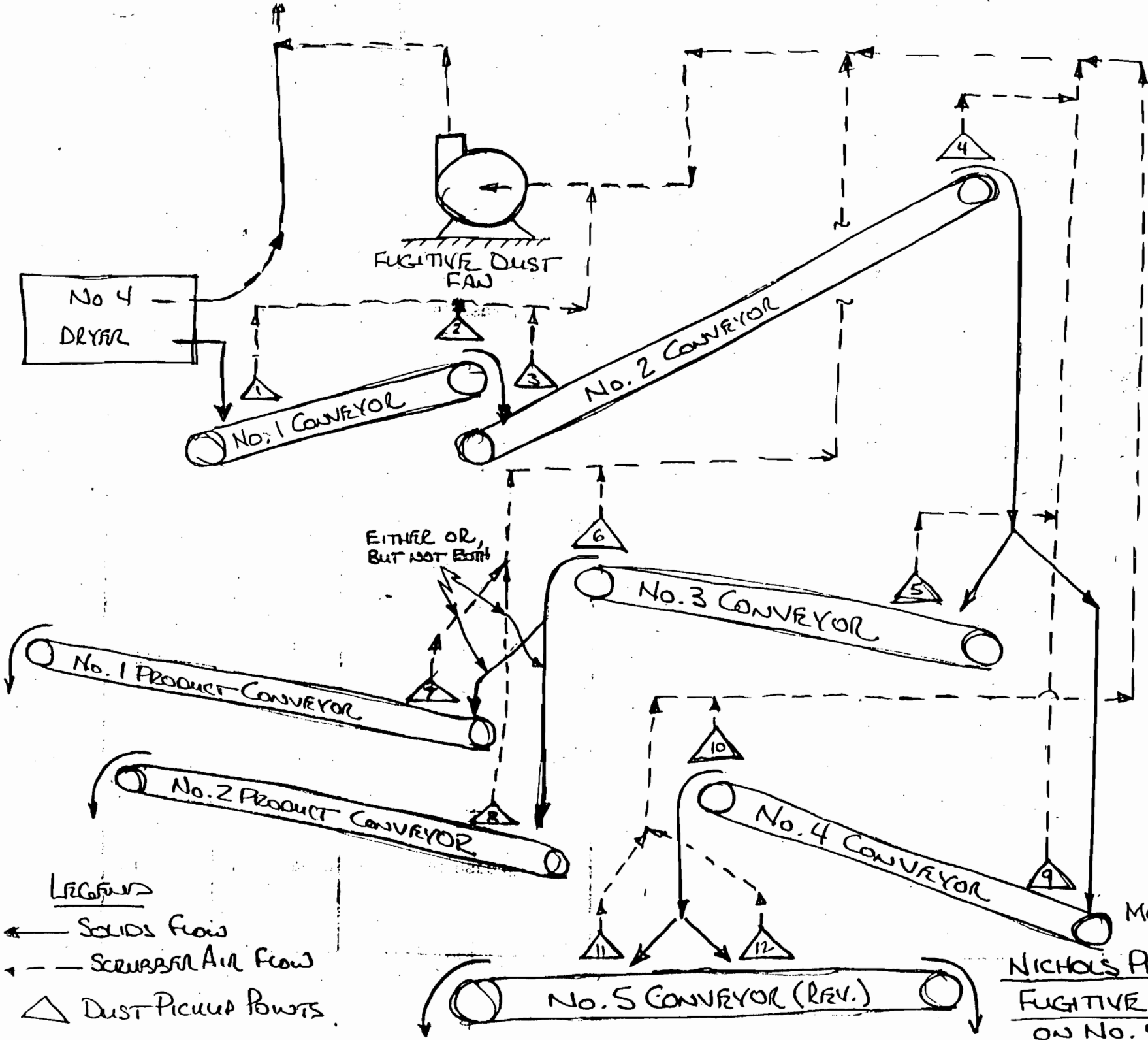
RECEIVED BY Steve  
PC-13055 #15/10

Any claim not presented in writing within 10 days from the date hereof is expressly waived. All deliveries are "AS IS" without liability for direct, indirect, incidental or consequential damages resulting from any defect or deficiency in the oil.



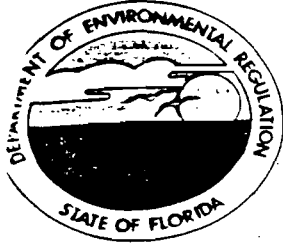
**ATTACHMENT 3**

5/28/90  
HFW



LEGEND  
← SOLIDS Flow  
- - - SCRUBBER AIR Flow  
△ DUST PICKUP POINTS

MOBIL MINING  
& MINERALS  
NICHOLS PREPARATION  
FUGITIVE DUST SYSTEM  
ON No. 4 DRYER



# Florida Department of Environmental Regulation

Southwest District • 4520 Oak Fair Boulevard • Tampa, Florida 33610-7347 • 813-623-5561

Bob Martinez, Governor

Dale Twachtmann, Secretary

John Shearer, Assistant Secretary

Dr. Richard Garrity, Deputy Assistant Secretary

March 2, 1990

Mr. R.E. Schulz  
Manager of Manufacturing  
Mobil Mining & Minerals Company  
Post Office Box 311  
Nichols, FL 33863

Dear Mr. Schulz:

RE: Polk County - AP  
A053-175816

On February 2, 1990, we received your air pollution application to renew permit A053-106060 for the No. 4 rock dryer at your Nichols facility. In order to continue processing the application, the Department will need the following additional information pursuant to Rule 17-4.070(1), F.A.C.:

1. In accordance with Rule 17-2.700(2)(a)3., F.A.C., submit the test results of a compliance test which demonstrates this source is in compliance with Specific Condition No. 2.d. of permit A053-106060.
2. Submit a fuel analysis of the No. 6 fuel oil used during the September 21, 1989 compliance test to document compliance with Specific Condition No. 10 of permit A053-106060.
3. Does the scrubber also control emissions from the product belt and 2 belt to belt transfer points? If yes, submit a diagram showing these pick-up points.
4. Explain the methods and/or procedures which are implemented so the dryer's operators know if excess emissions or improper operating conditions occur regarding 40 CFR 60.403(e) and (f).

5. Is it correct you are proposing the following to be continuously measured and recorded:

Dryer fired on natural gas

- A. Venturi Scrubber - liquid flow rate (gpm)
- B. Venturi Scrubber - pressure loss of gas stream (inches of water)
- C. Absorber Scrubber - liquid flow rate (gpm)

Dryer fired on No. 6 fuel oil

- A. Venturi Scrubber - liquid flow rate (gpm)
- B. Venturi Scrubber - pressure loss of gas stream (inches of water)
- C. Absorber Scrubber - liquid flow rate (gpm)
- D. Venturi and Absorber Scrubber - pH of each scrubbing liquid measured near the point in the tank where the liquid discharge enters the tank.

6. When No. 6 fuel oil is used in the dryer, is sodium hydroxide the scrubbing liquid for the venturi and absorber scrubbers? If no, explain.

7. The Department does not agree with your proposal to use the daily average when determining compliance/reporting with 40 CFR 60.403(f). Therefore, the Department intends to propose the following criteria:

- A. Liquid flow rates to the venturi scrubber shall not be less than the average value maintained during the last compliance test.
- B. Pressure loss of the gas stream through the venturi scrubber shall not be less than the average value maintained during the last compliance test.
- C. The pH of the venturi scrubber and absorber scrubber liquid discharged to the recirculation tank (when applicable) shall not be less than the average pH value during the last compliance test.

8. Explain how the service water (gpm) is included in the flow rate measurements of the venturi scrubber and absorber scrubber values recorded.

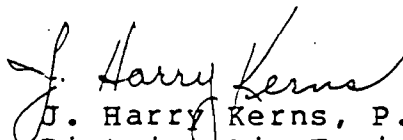
Mr. R.E. Schulz  
Nichols, FL

Page Three

9. During the September 21, 1989 compliance test the report states 17-20 inches as the scrubber change in pressure. Is this the change in pressure for the venturi scrubber? If no, explain.
10. During the September 21, 1989 compliance test the report states 1240-1320 gpm as the scrubber water flow. Is this the flow rate of the venturi scrubber or absorber scrubber? What is the flow rate of the other scrubber? Since this test was conducted on fuel oil, should the reference to scrubber water be scrubber caustic solution or scrubber liquid?
11. Since the September 21, 1989 compliance test was conducted at a wet input rate of 407 TPH and a dry output rate of 381.7 TPH, the Department would stipulate in a renewed permit (conditioned as Specific Condition No. 4 in permit AO53-106060) the permitted capacity is a wet input rate of 407 TPH. If the compliance test requested in No. 1 above also demonstrates compliance with the remaining limitations, a renewed permit could be issued at the higher rate if the test was conducted at the higher rate and did not exceed a wet input rate of 475 TPH.

Upon receipt of the information requested above, processing of your application will continue. Your response should be received by June 15, 1990 and if you have any questions, please call Mr. Jim McDonald of my staff at (813) 623-5561, extension 421.

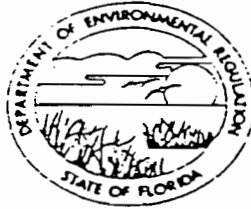
Sincerely,

  
J. Harry Kerns, P.E.  
District Air Engineer

JHK/jms

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

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION



A053-175816

APPLICATION FOR RENEWAL OF  
PERMIT TO OPERATE AIR POLLUTION SOURCE(S)

If major alterations have occurred, the applicant should complete the Standard Air Permit Application Form.

Source Type: Phosphate Rock Dryer Renewal of DER Permit No. A053-106060  
Company Name: Mobil Mining & Minerals 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 Phosphate Rock Dryer with Venturi Scrubber and Absorber Scrubber

Source Location: Street: Nichols Road and Anderson Road City: Nichols  
UTM: East 17-398.290 km North 3084.920 km  
Latitude: 2 7° 5 3' 1 2"N. Longitude: 8 2° 0 1' 6 0"W.

1. Attach a check made payable to the Department of Environmental Regulation in accordance with operation permit fee schedule set forth in Florida Administrative Code Rule 17-4.05. \$1500.00, payable to the Florida Department of Environmental Regulation.
2. Have there been any alterations to the plant since last permitted?  Yes  No  
If minor alterations have occurred, describe on a separate sheet and attach.
3. Attach the last compliance test report required per permit conditions if not submitted previously. Previously submitted.
4. Have previous permit conditions been adhered to?  Yes  No If no, explain on a separate sheet and attach. See Attachments 1 and 2.
5. Has there been any malfunction of the pollution control equipment during tenure of current permit?  Yes  No If yes, and not previously reported, give brief details and what action was taken on a separate sheet and attach. See Attachment 1.
6. Has the pollution control equipment been maintained to preserve the collection efficiency last permitted by the Department?  Yes  No
7. Has the annual operating report for the last calendar year been submitted?  Yes  No If no, please attach.

B. Please provide the following information if applicable:

A. Raw Materials and Chemical Used in Your Process:

Description	Contaminant		Maximum Utilization
	Type	Wt	Rate lbs/hr
Phosphate Rock (Pebble and Concentrate)	Particulate Matter	Varies	475 TPH (Wet Rock) 950,000

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

C. 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

D. Normal Equipment Operating Time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;  
 hrs/yr (power plants only) \_\_\_\_\_ ; if seasonal, describe \_\_\_\_\_  
Time will not exceed 8000 hours/year.

The undersigned owner or authorized representative\*\*\* of Mobil Mining & Minerals Company is fully aware that the statements made in this application for a renewal of a permit to operate an air pollution source are true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to maintain and operate the pollution source and pollution control facilities in such a manner as to comply with the provisions of Chapter 403, Florida Statutes, and all the rules and regulations of the Department. He also understands that a permit, if granted by the Department, will be non-transferable and he will promptly notify the Department upon sale or legal transfer of the permitted facility.

\*During actual time of operation.

\*\*Units: Natural Gas-MMCF/hr;  
 Fuel Oils-barrels/hr; Coal-lbs/hr.

\*\*\*Attach letter of authorization if not previously submitted

R. E. Schulz  
 Signature, Owner or Authorized Representative  
 (Notarization is mandatory)  
 R. E. Schulz, Manager of Manufacturing  
 \_\_\_\_\_  
 Typed Name and Title  
 P.O. Box 311, State Road 676  
 \_\_\_\_\_  
 Address  
 Nichols FL 33863  
 \_\_\_\_\_  
 City State Zip  
 1/29/90 (813) 425-6261  
 \_\_\_\_\_  
 Date Telephone No.

Professional Engineer in Florida (as required by Subsection 17-4.05(3),FAC)

This is to certify that the engineering features of this air pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgement, that 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 the 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 \_\_\_\_\_

Date: 1/30/90 Telephone No. (904) 377-5822

John B. Koogler, Ph.D., P.E.

Name

Koogler & Associates, Environmental Services

Company Name

4014 N.W. 13th Street, Gainesville, Florida 32609

Mailing Address

Florida Registration No. 12925

Affix Seal Here



## ATTACHMENT 1

### Question 4.

Warning Notice AP-88-05 was issued by the Southwest District office of FDER on March 22, 1989, addressing the period November 11, 1987 through June 27, 1988. During this period, a compliance test (conducted on June 14, 1988) showed excessive sulfur dioxide and particulate matter emissions from the rock dryer. All tests subsequent to June 27, 1988 have indicated compliance well within the permitted limits for sulfur dioxide and particulate matter emissions. All reporting and recording requirements are also being met. Negotiations were held between FDER and Mobil and, as a result, the issues of Warning Notice AP-88-05 were resolved and a settlement was reached.

### Question 5.

The June 14, 1988 compliance test indicated malfunctions of the scrubber systems, as addressed in Warning Notice AP-88-05. Corrections were made to the scrubber systems and on June 27, 1988, another test demonstrated compliance with the emission limits of the permit.

SUGGESTED CHANGES TO OPERATING PERMIT  
FOR NO. 4 ROCK DRYER  
EXISTING PERMIT A053-106060

MOBIL MINING & MINERALS  
NICHOLS, FLORIDA

The No. 4 phosphate rock dryer operated by Mobil Mining & Minerals at Nichols, Florida is currently permitted by the Florida Department of Environmental Regulation under permit A053-106060. This permit was issued on September 9, 1985 and expires on August 29, 1990. The following changes are suggested in the permit to eliminate ambiguities and to reflect actual operating conditions of the dryer. The proposed changes in no way change the basic conditions or the intent of the air construction permit (AC53-90634) which established the dryer operating conditions. Neither do the suggested changes contradict the Federal New Source Performance Standards for Phosphate Rock Plants.

The suggested changes to the dryer operating permit are listed below:

Page 1 of 8 -- General Dryer Description

For the operation of a phosphate rock dryer designated as dryer No. 4 with a design wet rock input rate of 475 TPH. This rotary dryer with concurrent flow is fired on No. 6 fuel oil or natural gas. The exhaust gases pass through dry cyclone, a Ducon Venturi Scrubber, and then a Ducon ~~packed bed~~ absorber scrubber before discharge to the atmosphere.

*attached notes*

## Rationale

The Ducon absorber scrubber is a cross-flow scrubber that was designed and installed for the control of sulfur dioxide emissions. The scrubber has always been a cross-flow scrubber and is referred to by Mobil as an absorber scrubber. The terminology "packed-bed" was an incorrect designation used in the original construction permit application and has followed through in all permits issued to date.

### Page 5 of 8 -- Specific Condition No. 1

The phosphate rock dryer shall meet all applicable requirements of 40CFR60, Subpart NN - Standards of Performance for Phosphate Plants, adopted by reference in Section 17-2.660, F.A.C., with the exception of 40CFR60.403(d), or the requirements of the permit, whichever is most restrictive. Instead of monitoring phosphate rock feed during periods of compliance testing as required by 40CFR60.403(d), the permittee shall maintain and operate a device which measures phosphate rock output from the dryer. The moisture content of the feed rock and dry rock shall be measured once each day when the dryer is operating and a moisture correction shall be made to determine the wet rock feed rate to the dryer.

### Rationale

This change is suggested as Mobil has always measured the dry rock output of the dryer rather than the wet rock feed rate to the dryer. By continuing to measure the dry rock output rate from the dryer, the moisture content of the dry rock and the moisture content of the feed rock, the wet rock feed rate, required by 40CFR60.403(d) for compliance test purposes, can be determined. The suggested changes are consistent with conditions in Permit A029-85104 issued to Amax Chemical Corporation for a phosphate rock dryer (a dryer now owned by Mobil). Furthermore, the suggested change does not contradict the requirement of 40CFR60.403(d); it provides an alternative that is more practical for Mobil's operation.

### Page 5 of 8 --Specific Condition No. 2.a.

Particulate matter emissions shall not exceed 0.052 lb./ton of wet feed and 24.7 lb./hr.

### Rationale

The particulate matter emissions limit for phosphate rock dryers specified in 40CFR60, Subpart NN and by the BACT determination referenced in Specific Condition No. 2, are both based on a wet rock feed rate. The suggested change merely clarifies that the particulate matter emission limit of 0.052 pounds per ton is based on a ton of wet

feed.

Page 6 of 8 -- Specific Condition No. 3

The requirement of conducting emission measurements for fluorides should be eliminated. The indication in Permit A053-106060 that fluoride emission measurements are required is a typographical error. Fluoride emission measurements were never intended for this rock dryer.

Page 6 of 8 -- New Specific Condition No. 4

It is the intent of the permittee to operate the No. 4 rock dryer with natural gas as a fuel. During such periods of operation, the permittee shall be relieved from operating controls and maintaining records required by this permit that relate to the operation of the dryer when No. 6 oil is used as a fuel. Should the permittee switch dryer fuel to No. 6 oil, the Department shall be notified prior to such switch-over and all controls and records required by this permit and related to the use of No. 6 oil as dryer fuel shall be operated and maintained. One of the two annual compliance tests, required by Specific Condition No. 3 of this permit, shall be conducted while the dryer is fired with No. 6 fuel oil if No. 6 fuel oil is used as dryer fuel for more than ten (10) days per year.

*any 12 month period*  
400 hours during any 12 month period  
200 hours during any 6 month period  
100 hours during any 3 month period

Rationale

The intent of this new specific condition is to set forth Mobil's intent to use natural gas as a fuel for the No. 4 rock dryer whenever natural gas is available. The condition also clarifies that several of the specific conditions of the permit are related to the use of No. 6 fuel oil as a fuel and that these conditions are not applicable when natural gas is used as a fuel.

Page 6 - 8 -- Specific Conditions 4 - 15

Renumber existing Specific Condition No. 4 through existing Specific Condition No. 15 as Specific Condition No. 5 through Specific Condition No. 16.

Rationale

The specific conditions are renumbered to account for the addition of new Specific Condition No. 4.

Page 6 of 8 -- Specific Condition No. 5 (existing Specific Condition No. 4)

The permitted capacity of this ~~source~~ dryer is ~~350~~ 385 tons of dry phosphate rock product per hour based on 110% of the rate at which the June 5, 1985, stack test was conducted. ....

Rationale

The dry phosphate rock production rate during the June 5, 1985, test was 350 tons per hour. Department rules require that a source must operate within 10 percent of the permitted production rate during a compliance test. Hence, the currently permitted dry phosphate rock product rate for the dryer should be 110 percent of 350 tons per hour or 385 tons per hour of dry phosphate rock.

no such rule  
11-1-89

Mobil requests that the remainder of Specific Condition No. 4 of Permit A053-106060 remain unchanged. The other parts of this condition allow Mobil to increase the rock feed rate of the dryer up to 475 tons per hour if compliance testing demonstrates that all of the permit conditions are met at the higher throughput rate.

Page 7 of 8 -- Specific Condition No. 12 (existing Specific Condition No. 11)

Strike existing Specific Condition No. 11 in its entirety, renumber as Specific Condition No. 12, and replace with:

The permittee shall monitor and record operating parameters for the venturi scrubber as required in 40CFR60.403(c) except that a monitoring device for the continuous measurement of the scrubbing liquor flow rate to the venturi scrubber shall be maintained and operated instead of the scrubbing liquor pressure measuring device required by 40CFR60.403(c)2. The venturi scrubber operating parameters monitored and recorded shall

include the pressure loss of the gas stream through the venturi scrubber in inches of water and the flow rate of the venturi scrubbing liquor in gallons per minute. The daily average value of the pressure loss of the gas stream through the venturi scrubber and the daily average value of the venturi scrubbing liquor flow rate shall be maintained at levels that are greater than or equal to 90 percent of the average levels maintained during the most recent compliance test in which the dryer demonstrated compliance with the emission limiting standards of this permit. Records will be maintained and available for inspection for a period of at least two years as required by 40CFR60.7(d).

#### Rationale

The Ducon venturi scrubber associated with the No. 4 rock dryer was designed, installed, and is maintained to control particulate matter emissions from the dryer. The particulate matter controlled by the venturi scrubber is subject to Federal New Source Performance Standards codified as 40CFR60, Subpart NN - Standards of Performance for Phosphate Rock Plants (60.400 through 60.403). The subject New Source Performance Standards require only that the pressure loss of the gas stream through the scrubber and the scrubber liquor supply pressure be monitored (40CFR60.403(c)). Mobil has always monitored the flow rate of the scrubbing liquor to the venturi scrubber. With scrubbing liquor supplied pressure monitoring, obstructions in the supply line could reduce the scrubbing liquor flow rate but the supply pump would



maintain pressure on the line. Furthermore, the atomization of water in the venturi scrubber is a function of the gas flow rate through the venturi section of the scrubber and not a function of the scrubber liquor supply pressure. In view of these considerations, Mobil suggests that the monitoring and recording of the scrubbing liquor flow rate be substituted for the monitoring and recording of the scrubber liquor supply pressure.

Mobil is also suggesting that the requirement to monitor the pH of the venturi scrubbing liquor be eliminated as the venturi scrubber is not designed to remove sulfur dioxide from the gas stream. This matter is addressed further in response to existing Specific Condition No. 12.

Mobil agrees with the requirement to monitor and record the pressure loss of the gas stream through the <sup>venturi</sup> scrubber.

The requirement to maintain the pressure drop of the gas stream and the scrubber liquor flow rate at levels equal to greater than 90 percent of the average levels maintained during compliance testing is consistent with the requirements of 40CFR60.403(f) and the requirement to maintain operating records for a period of at least two years is consistent with the requirements of 40CFR60.7(d).

Existing Specific Condition No. 12 is to be deleted in its entirety, replaced with the following, and renumbered as Specific Condition No. 13.

During fuel oil firing of the dryer, the pH and the flow rate of the scrubbing liquor recirculating through the absorber scrubber shall be monitored and recorded and shall be maintained at daily average levels that are greater than or equal to 90 percent of the average levels maintained during the most recent compliance test in which the dryer demonstrated compliance with the emission limiting standards of this permit. The pH of the scrubbing liquor recirculating through the absorber scrubber shall be measured in the scrubber water recirculation tank near the point in the tank where the scrubbing liquor discharged from the absorber scrubber enters the tank. Records of absorber scrubber operations shall be maintained and available for inspection for a period of at least two years.

Rationale

The absorber scrubber (or the cross-flow scrubber) associated with the No. 4 rock dryer was designed, installed and is operated to control sulfur dioxide emissions from the dryer. The important operating parameters of the scrubber are the pH of the scrubbing liquor and the flow rate of the scrubbing liquor. As a result, Mobil suggests that

these two parameters be monitored and recorded.

The pressure drop of the gas stream across the absorber scrubber is not a measure of scrubber performance. The scrubber performance depends upon gas to liquid contact for performance and not gas stream pressure loss. The gas to liquid contact required in the scrubber is assured by the presence of a large wetted surface area and not by the atomization of scrubbing liquor through high pressure nozzles. As the supply pressure of the scrubber liquor and gas stream pressure drop are not measures of the scrubber performance, Mobil requests that the requirement to measure the pressure drop of the gas stream across the absorber scrubber and the pressure of the absorber scrubbing liquor supply be eliminated.

The suggestion to measure the pH of the absorber scrubbing liquor in the scrubber water recirculation tank at the point where the scrubbing liquor is discharged into the recirculation tank is consistent with the requirement of the existing permit. It should be pointed out that with modifications that have been made to the scrubber water recirculation tank, the tank is essentially a common recirculation vessel for both the venturi scrubber and the absorber scrubber. Mobil will maintain openings in the partition that existed between the two sections of the tank to provide assurance that the tank will remain a common recirculation vessel for the two scrubbers.

The requirement to maintain the average pH and the average absorber

scrubber liquor flow rate at levels that are greater than or equal to 90 percent of the average levels maintained during compliance testing is consistent with requirements of New Source Performance Standards applicable to the venturi scrubber. Also, the maintenance of the operating records for the absorber scrubber for a period of two years is consistent with the New Source Performance Standards requirements for the venturi scrubber. These conditions are suggested to maintain a consistency in the operating and record keeping requirements of the two scrubbers.

Page 7 of 8 -- Specific Condition No. 14 (existing Specific Condition No. 13)

The Permittee shall report each calendar quarter all daily average measurements ~~results~~ required under 40CFR60.403(c) that are less than 90 percent of the average levels maintained during the most recent performance test conducted under 40CFR60.8 in which the Permittee demonstrated compliance with the emission standard.

#### Rationale

This modification is recommended to clarify reporting requirements and to eliminate the ambiguity that exists in the present permit.

file Com

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

July 25, 1985

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. K. T. Matthews  
Senior Environmental Engineer  
Mobil Chemical Company  
Post Office Box 311  
Nichols, Florida 33863

Re: Modification of Conditions  
No. 4 Rock Dryer - Permit No. AC 53-090634

The department is in receipt of your June 28, 1985, letter requesting that permit to construct No. AC 53-090634 be extended to allow the district time to process the application for the permit to operate.

This request is acceptable and the construction permit is modified as noted below:

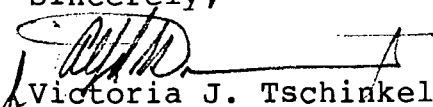
Expiration Date

From: July 31, 1985  
To: November 1, 1985

Attachments to be Incorporated

3. Mobil Chemical Company's Letter dated June 28, 1985

A copy of this letter must be attached to the referenced construction permit and shall become a part of that permit.

Sincerely,  
  
Victoria J. Tschinkel  
Secretary

CHF/WH/p

Attachment: Mobil Chemical Company's letter dated  
June 28, 1985

cc: Bill Thomas

State of Florida  
DEPARTMENT OF ENVIRONMENTAL REGULATION  
**INTEROFFICE MEMORANDUM**

For Routing To District Offices And/Or To Other Than The Addressee		
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
From: _____	Date: _____	
Reply Optional [ ]	Reply Required [ ]	Info. Only [ ]
Date Due: _____	Date Due: _____	

DER  
JUL 10 1985  
BAQM

TO: Clair Fancy  
FROM: Bill Thomas *[Signature]*  
DATE: July 3, 1985  
SUBJECT: Mobil Mining and Minerals Company  
#4 Rock Dryer - Permit AC53-90634

I recommend that the above subject permit be extended as requested by Mobil in the attached communique.

WCT/scm

DEPARTMENT OF ENVIRONMENTAL REGULATION

**ROUTING AND TRANSMITTAL SLIP**

ACTION NO  
ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)	Initial
<i>Clair Vance</i>	Date
2.	Initial
<i>DER (Jolly)</i>	Date
3.	Initial
	Date
4.	Initial
<i>7/11 Bill Thomas</i>	Date

REMARKS: *please handle*

*Willard —*  
*Did you process this?*

*NO, Lillian processed this one - 7/17/83*

*Bill Thomas, Tracy says Congress has requested use of recycle oil in drugs. memo coming up to BACR*

INFORMATION	
<input type="checkbox"/>	Review & Return
<input type="checkbox"/>	Review & File
<input type="checkbox"/>	Initial & Forward
DISPOSITION	
<input type="checkbox"/>	Review & Respond
<input type="checkbox"/>	Prepare Response
<input type="checkbox"/>	For My Signature
<input type="checkbox"/>	For Your Signature
<input type="checkbox"/>	Let's Discuss
<input type="checkbox"/>	Set Up Meeting
<input type="checkbox"/>	Investigate & Report
<input type="checkbox"/>	Initial & Forward
<input type="checkbox"/>	Distribute
<input type="checkbox"/>	Concurrence
<input type="checkbox"/>	For Processing
<input type="checkbox"/>	Initial & Return

FROM: *Bill Monaghan*

DATE *7/8/83*  
PHONE

# Mobil Chemical Company

PHOSPHORUS DIVISION

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

October 12, 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

PER  
OCT 15, 1984  
MAG

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.



Mr. Clair H. Fancy  
October 12, 1984

-2-

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 475 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?

Mr. Clair H. Fancy  
October 12, 1984

-3-

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 produced 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.
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.

limit  
to  
Current  
production  
limit

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 <sup>the</sup> 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 I  
 SUMMARY OF ACTUAL EMISSION RATES  
 AND SULFUR DIOXIDE REMOVAL EFFICIENCIES  
 NO. 4 DRYER

MOBIL CHEMICAL COMPANY  
 NICHOLS, FLORIDA

Date	Fuel	Production Rate (Tph)	EMISSION RATE (LB/HR)					
			Particulate Matter		Sulfur Dioxide			
			Actual	Allowable <sup>(1)</sup>	Actual	Allowable <sup>(2)</sup>	Potential <sup>(3)</sup>	Removal
5/84	Gas	235	7.94	12.22	----	----	----	----
9/83	Gas	282	5.61	14.65	----	----	----	----
6/83	(500 gal/hr) Oil	270	8.25	14.04	----	----	----	----
		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

$$\frac{400 \text{ gal}}{\text{hr}} \times \frac{8 \text{ lb}}{\text{gal}} \times \frac{2.5 \text{ \% S}}{100 \text{ \% oil}} = \frac{2450 \text{ lb S}_2}{\text{hr}} = 160 \frac{\text{lb}}{\text{hr}}$$

TABLE II

SUMMARY OF PERMIT CONDITIONS FOR  
MOBIL CHEMICAL COMPANY SOURCESMOBIL CHEMICAL COMPANY  
NICHOLS, FLORIDA

Source	Permit	Operating Time (hr/yr)	Maximum Production Rate		Part. Matter Emission Limit (lb/hr)
			(tph)	(tpy)	
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	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

$$2,000,000 \frac{\text{t}}{\text{yr}} \times 0.052 \frac{\#}{\text{t}} \frac{1}{2000 \#} = 52 \text{ tpy PM}_{10}$$

limit should  
be in permit



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.

NEED POLICY  
Actual emissions are 1.  
less permitted emissions.  
If emission increase  
[Request E - actual]  
Can source be subject to  
PSD?

Want mobil balance on plot to see if add good handled within permitted limits.  
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.

Adding Co. to provide reported efficiency. It may not be necessary.

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? *needed to write permit*

Co. implied no change 3. in permitted hr/ emissions of other source by phone. We ask do emission increase. Again, actual vs permitted. If Permitted-out > sign., is PSD triggered?

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?

If E increase, what is ambient air impact? Alt. or permitted emission? No change in permitted emission.

Mr. K. D. Fetrow  
Page Two  
August 23, 1984

NSPS is 0.06#/T 4.  
feed wet. Trying to  
get Co to Clarify 0.052V  
feed a probably dry

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.

Clarify capacity of  
dryer. Either no in  
letter or apply wrong.

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.

Trying to determine  
how much rock to be  
handled by pit annually  
and if increase is temp  
or permanent.

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

NO<sub>x</sub> emission factor  
of N in oil. Question  
of although I don't  
expect to regulate N  
in fuel

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 varies from UTM: East 17-898.29 of 10/13/79.

If temp increase  
in E, what is  
impact. Need Clarif.  
on what prod will be,  
more prod, (temp/permanent),  
and impact of temp increase  
above permitted.

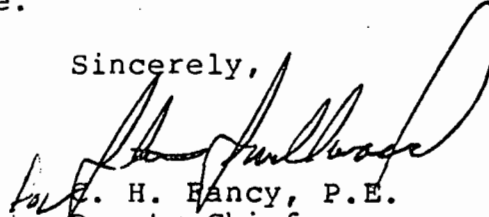
There is several  
Application different.  
Which correct?

Mr. K. D. Fetrow  
Page Three  
August 23, 1984

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

↑  
Some calc.  
wrong

Sincerely,

  
G. H. Hancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

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

9/4/84 phone conversation

K upset

thinks we are stalling

say all info we need in applic. (or something like that)  
John Koogler to contact us on matter.

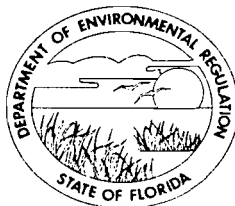


STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHWEST DISTRICT

7601 HIGHWAY 301 NORTH  
TAMPA, FLORIDA 33610



BOB GRAHAM  
GOVERNOR

VICTORIA J. TSCHINKEL  
SECRETARY

DR. RICHARD D. GARRITY  
DISTRICT MANAGER

DER

July 15, 1985

JUL 18 1985

Mr. K. T. Matthews  
Sr. Environmental Engineer  
Mobil Chemical Company  
Post Office Box 311  
Nichols, Florida 33863

BAQM

Re: Polk County - AP  
Mobil Chemical Company  
A053-106060

Dear Mr. Matthews:

The Department received your letter of June 25, 1985 with a Certificate of Completion of Construction for No. 4 Rock Dryer on June 25, 1985. In this letter, the Company requested a modification of Specific Conditions No. 5 and 6 of the construction permit AC53-90634.

Regarding the request to modify Specific Condition No. 5 to require sulfur dioxide emission testing only if the No. 4 Rock Dryer operated more than 30 days per year on a fuel other than natural gas, the Department will waive the sulfur dioxide testing requirement if a fuel other than natural gas is burned no more than ten (10) days per year.

Regarding the request to modify Specific Condition No. 9 to allow the dryer to be fired on fuels other than No. 6 fuel oil and natural gas as stipulated in the permit, we have requested and obtained guidance from the Bureau of Air Quality Management. They have recommended that Mobil apply for a modification of the construction permit on the appropriate application forms to the Central Air Permitting Section of the Bureau of Air Quality Management. Included with this submittal should be the supporting data on each fuel proposed (fuel analysis, emission estimates, feed rates, design heat input rates, etc.). Data on the proposed coal handling system should also be included.

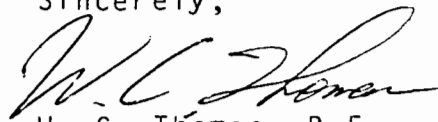
Mr. K. T. Matthews  
Nichols, Florida

Page Two  
July 15, 1985

We plan to process Mobil's request for an operating permit to burn natural gas and virgin No. 6 fuel oil. A check for \$250.00 was received with the Certificate of Completion of Construction. Section 17-4.05(4)(a)b., Florida Administrative Code requires a \$500.00 processing fee be submitted. Therefore, a check for an additional \$250.00 is required.

If you have any questions concerning this matter, please call Jim Estler at (813) 985-7402.

Sincerely,



W. C. Thomas, P.E.  
District Air Engineer

JWE/js

cc: Clair Fancy

DEPARTMENT OF ENVIRONMENTAL REGULATION

**ROUTING AND TRANSMITTAL SLIP**

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)

*Clair Fancy*

Initial

Date

2.

*Tally*

Initial

Date

3.

*8:11 Dams 7/25*

Initial

Date

4.

*Clair*

Initial

Date

REMARKS:

*Clair Willard FYE  
has a copy*

*8-6-85*

*NO ACTION TAKEN  
ON this. Waiting for  
applic. mentioned in  
letter.*

*lma*

*Bill Thomas*

FROM:

*Tpa*

INFORMATION

Review & Return

Review & File

Initial & Forward

DISPOSITION

Review & Respond

Prepare Response

For My Signature

For Your Signature

Let's Discuss

Set Up Meeting

Investigate & Report

Initial & Forward

Distribute

Concurrence

For Processing

Initial & Return

DATE

PHONE

# Mobil Chemical Company

DER  
JUL 10 1985  
BAQM

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

June 28, 1985

Mr. W. C. Thomas  
Florida Department of Environmental Regulation  
Southwest District  
7601 Highway 301 North  
Tampa, FL 33610-9544

D. E. R.

JUL 1 1985

SOUTH WEST DISTRICT  
TAMPA

Dear Bill:

Re: Mobil Mining and Minerals Company  
#4 Rock Dryer - Permit AC53-090634

Construction permit AC-53-090634 will expire July 31, 1985. Mobil submitted the operation permit application, along with the compliance test, for the above construction permit June 26, 1985.

Mobil is requesting a ninety-day extension from July 31, 1985 be granted for the construction permit AC53-090634. The ninety-day extension would allow additional time for processing the operation permit application.

If you have any questions, please advise.

Sincerely,



K T. Matthews  
Sr. Environmental Engineer

ec  
1198e



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET  
ATLANTA, GEORGIA 30365

JAN 16 1985

DER

JAN 22 1985

BAQM

REF: 4AW-AM

Mr. C. H. Fancy, P.E.,  
Deputy Chief  
Bureau of Air Quality Management  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32301

RE: Mobil Chemical Company, PSD-FL-102

Dear Mr. Fancy:

This is to acknowledge receipt of your December 14, 1984, PSD preliminary determination for the increase in hours of operation for a phosphate rock dryer located at the above referenced company's facility in Nichols, Florida. We have decided that this determination will not be subject to review under the Region IV Overview of State Programs policy.

Please submit copies of the final determination and permits when they are issued.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "James T. Wilburn".

James T. Wilburn, Chief  
Air Management Branch  
Air, Pesticides, and Toxics  
Management Division

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee		
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
To: _____	Loctn.: _____	
From: _____	Date: _____	
Reply Optional [ ]	Reply Required [ ]	Info. Only [ ]
Date Due: _____	Date Due: _____	

TO: Clair Fancy  
FROM: Bill Thomas *WLT*  
DATE: January 15, 1985  
SUBJECT: Preliminary Determination,  
Mobile Chemical No. 4 Dryer  
AC53-090634

Reference is made to Mobil's application, pages 4 and 5, and DER's incompleteness letter, item 4. Mobile did not supply the requested moisture content of feed and product rock. If we assume 12% and 2% moisture and Mobil's indicated rock loss, about 55 TPH of water is evaporated. Using Mobil's maximum fuel input number,  $93.75 \times 10^6$  BTU per hour, about 850 BTU per pound of water evaporated is computed. Obviously, this is not a reasonable number and Mobil's data is in error or I have misinterpreted somewhere. Reference attachment I, table 1, date 6/83; the same computation yields about 1250 BTU per pound of water evaporated, also a low number. Mobil's data does not mesh properly.

Add to Specific Condition No. 13: A compliance test submitted at operating levels less than 90% of permitted capacities will automatically constitute an amended permit at the lesser rate plus 10% until another test (showing compliance) at 90% of a higher capacity is submitted. Failure to submit the input rates or operation at conditions during testing which do not reflect actual operating conditions may invalidate the data (Chapter 403.161(1)(c), Florida Statutes).

Add Condition: The wet rock feed scales shall be maintained within an accuracy of +5% of the mass feed rate. Records of periodic calibration test shall be maintained for 3 years and made available to DER on request.

DER  
JAN 18 1985  
BAQM

# Mobil Chemical Company

DER

JAN 14 1985

PHOSPHORUS DIVISION

BAQM

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

January 9, 1985

Mr. C. H. Fancy  
Bureau of Air Quality Management  
Fla. Dept. of Environmental Regulation  
2600 Blair Stone Road  
Tallahassee, FL 32301

Re: Mobil Chemical Co.  
No. 4 Phosphate Rock Dryer  
Proposed Permit AC53-090634  
Affidavit of Publication

Dear Mr. Fancy:

Attached is the affidavit of publication in the Polk County Democrat legal ad section. The Notice for No. 4 Phosphate Rock Dryer was published January 7, 1985.

If you have any questions, please advise.

Sincerely,



K T. Matthews  
Sr. Environmental Engineer

jm  
Attach.

**AFFIDAVIT OF PUBLICATION**  
**The Polk County Democrat**  
 Published Semi-Weekly  
 Bartow, Polk County, Florida

Case No. \_\_\_\_\_

STATE OF FLORIDA }  
 COUNTY OF POLK } ss.

Before the undersigned authority personally appeared \_\_\_\_\_

Louanna K. Locke, who on oath says that he is  
Head Bookkeeper of The Polk County Democrat, a newspaper pub-  
 lished at Bartow, in Polk County, Florida; that the attached copy of  
 advertisement, being a Notice of Proposed Agency Action  
 in the matter of Mobil Chemical Company

in the \_\_\_\_\_ Court, was published in said newspaper  
 in the issues of Jan. 7, 1985

Affiant further says that The Polk County Democrat is a newspaper published  
 at Bartow, in said Polk County, Florida, and that said newspaper has heretofore been  
 continuously published in said Polk County, Florida, each Monday and Thursday, and  
 has been entered as second class matter at the post office in Bartow, in said Polk  
 County, Florida, for a period of one year next preceding the first publication of the  
 attached copy of advertisement; and affiant further says that he has neither paid  
 nor promised any person, firm, or corporation any discount, rebate, commission, or  
 refund for the purpose of securing this advertisement for publication in said news-  
 paper.

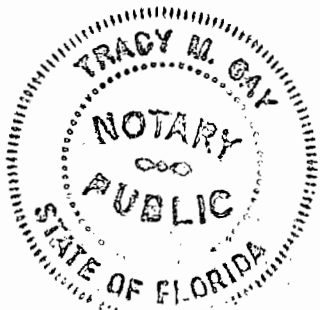
Signed Louanna K. Locke

Sworn to and subscribed before me this 8th day of  
January, 1985.

Nacy M. Day  
 Notary Public

My Commission Expires:

Notary Public, State of Florida at Large  
 My Commission Expires Nov. 18, 1988



**State of Florida Department of  
 Environmental Regulation  
 Notice of Proposed Agency  
 Action on Permit Application**

The Department gives notice of its intent to issue a permit to the Mobil Chemical Company. The permit will allow increased operating time of the existing No. 4 rotary phosphate rock dryer. The dryer is in the rock processing facility located near the intersection of Nichols Road and Anderson Road in Nichols, Polk County, Florida.

A determination of best available control technology (BACT) was required.

Emissions of air pollutants, in tons per year, will increase by the following amounts:

PM	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC
49.8	38.8	68.7	6.2	1.2

Persons whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this preliminary statement. Therefore, persons who may not object to the proposed agency action may wish to intervene in the proceeding. A petition of intervention must be filed pursuant to Model Rule 28-5.207 at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administrative, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida, 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any such person has to request a hearing under Section 120.57, Florida Statutes.

The application, technical evaluation, and Department's intent for the proposed project are available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at the following locations:

Dept. of Environmental Regulation  
 Southwest District  
 17601 Highway 301 North  
 Tampa, Florida 33610

Dept. of Environmental Regulation  
 Bureau of Air Quality Management  
 2600 Blair Stone Road  
 Tallahassee, Florida 32301

Any person may send written comments on the proposed action to Mr. Clair Fancy at the Department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the Department's final determination.  
 Jan. 7, 1985-020



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

January 7, 1985

Mr. Glen A. Carowan, Jr.  
Refuge Manager  
Chassahowitzka National  
Weldlife Refuge  
Route 2, Box 44  
Homosassa, Florida 32646

Dear Mr. Carowan:

RE: Preliminary Determination - Mobil Chemical Company  
No. 4 Rock Dryer

I wish to bring to your attention that Mobil Chemical Company proposes to modify its existing facilities in Polk County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

Please also be aware that the attached Public Notice announcing the preliminary determination, the availability of pertinent information for public scrutiny and the opportunity for public comment will be published in the near future in a newspaper of general circulation in Polk County. This notice has been mailed to you for your information and in accordance with regulatory requirements. You need take no action unless you wish to comment on the proposed construction. If you have any questions, please feel free to call Mr. Bill Thomas or myself at (904)488-1344.

Sincerely,

C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

CHF/pa

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

January 7, 1985

Mr. James Duane  
Executive Director  
Central Florida Regional  
Planning Council  
Post Office Drawer 2089  
Bartow, Florida 33830

Dear Mr. Duane:

RE: Preliminary Determination - Mobil Chemical Company  
No. 4 Rock Dryer

I wish to bring to your attention that Mobil Chemical Company proposes to modify its existing facilities in Polk County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

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Sincerely,

C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

CHF/pa  
Enclosure

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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2600 BLAIR STONE ROAD  
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM  
GOVERNOR

VICTORIA J. TSCHINKEL  
SECRETARY

January 7, 1985

Mr. Ron Fahs  
State A-95 Coordinator  
Florida State Planning and  
Development Clearinghouse  
Office of Planning and Budget  
The Capitol  
Tallahassee, Florida 32301

Dear Mr. Fahs:

RE: Preliminary Determination - Mobil Chemical Company  
No. 4 Rock Dryer

I wish to bring to your attention that Mobil Chemical Company proposes to modify its existing facilities in Polk County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

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C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

CHF/pa

STATE OF FLORIDA

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



BOB GRAHAM  
GOVERNOR

VICTORIA J. TSCHINKEL  
SECRETARY

January 7, 1985

Polk County Commissioners  
Post Office Box 60  
Bartow, Florida 33830

Dear Commissioners:

RE: Preliminary Determination - Mobil Chemical Company  
No. 4 Rock Dryer

I wish to bring to your attention that Mobil Chemical Company proposes to modify its existing facilities in Polk County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

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Sincerely,

C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

CHF/pa  
Enclosure

# Mobil Chemical Company

PHOSPHORUS DIVISION

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

January 4, 1985

Mr. C. H. Fancy  
Deputy Chief  
Bureau of Air Quality Management  
Fla. Dept. of Environmental Regulation  
2600 Blair Stone Road  
Tallahassee, FL 32301

Subject: Mobil Chemical Company  
No. 4 Phosphate Rock Dryer  
Proposed Permit AC53-090634

DER  
JAN 7 1985  
BAQM

Dear Mr. Fancy:

Dr. John B. Koogler of Sholtes & Koogler, Environmental Consultants and I have discussed two of the specific permit conditions of the subject permit with Mr. Willard Hanks of your staff and, by this letter, are requesting a modification to one of the specific conditions and a clarification on the other.

The specific condition for which we are requesting a modification is specific condition No. 10. This condition reads, in part "Further, during fuel oil firing the SO<sub>2</sub> content of the dryer flue gases will be measured with a continuous SO<sub>2</sub> monitor/recorder." In discussing this condition with Mr. Hanks, Mr. Hanks stated that this condition was incorporated in the subject permit strictly to make the subject permit consistent with the Federal Permit (PSD-FL-042) under which the No. 4 rock dryer was originally permitted.

In specific condition No. 6 of the Preliminary Determination for PSD-FL-042, it was specifically stated that continuous compliance with the SO<sub>2</sub> emission rate would be demonstrated through continuous monitoring of the sulfur dioxide content of the flue gas. In the Final Determination issued under PSD-FL-042 and transmitted to Mobil under cover letter dated March 20, 1980, and signed by Thomas W. Devine, Air and Hazardous Materials Division, U.S. Environmental Protection Agency, Region IV, Atlanta, Georgia, specific condition No. 6 was modified to read, in part "Continuous compliance with SO<sub>2</sub> and TSP allowable emission rates will be demonstrated through continuous monitoring and recording of . . . (3) the SO<sub>2</sub> content of the flue gases (or alternatively, the pH of the liquor exiting the scrubber)." Mobil Chemical Company elected

Mr. C. H. Fancy  
January 4, 1985  
Page 2

to monitor the pH of the scrubbing liquor and has consistently operated in compliance with this alternative monitoring requirement of the Federal Permit. A copy of the Final Determination for PSD-FL-042 is attached hereto for your files.

In view of the alternative monitoring requirement allowed under the Federal Permit issued for the No. 4 dryer, and the fact that Mobil has elected to use the alternative method of demonstrating compliance with the sulfur dioxide emission limit, Mobil is hereby requesting that the same alternative be incorporated into Permit AC53-090634. It is suggested that specific condition No. 10 of the subject permit read:

"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 determined during performance testing to achieve the allowable SO<sub>2</sub> emission limit. Alternatively, during fuel oil firing the SO<sub>2</sub> content of the dryer flue gases will be measured with a continuous SO<sub>2</sub> monitor/recorder. This instrument, if used, and its operation will comply with the applicable provision of 40 CFR 60.13. Records will be maintained and available for inspection for a period of at least two years."

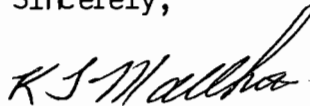
The specific condition for which we request clarification is specific condition No. 13. This condition states that: "Before this construction permit expires, the applicant shall test the emissions from the dryer scrubber . . . for: . . . c. nitrogen oxides . . ." Mobil understands that since the increased hours of operation addressed in the subject permit necessitated a PSD review for nitrogen oxides, there is a requirement to demonstrate compliance with the nitrogen oxides emission rate imposed as a permit condition. It is Mobil's understanding, based on discussions with your staff, that the requirement for nitrogen oxides emission measurements will be a one-time requirement to demonstrate compliance with the conditions of the construction permit and that emission measurements for nitrogen oxides will not be a requirement of the operating permit that will be issued for the No. 4 rock dryer. Mobil requests confirmation on this condition.

Mr. C. H. Fancy  
January 4, 1985  
Page 3

Regarding emission measurements on the No. 4 rock dryer, there have been discussions between the Central Air Permitting Section of FDER and the Southwest District Office of FDER (Tampa) regarding the conditions under which the No. 4 dryer will be tested. One alternative discussed was to require that the dryer operate at 90-100 percent of the maximum phosphate rock feed rate during emission tests while the other alternative requires that the dryer operate at 90-100 percent of the maximum heat input rate. Mobil's initial reaction to these alternatives is that either alternative is acceptable by itself but that both conditions imposed simultaneously would result in an operating condition that would be virtually impossible to meet. Hence, the requirement that the dryer operate at 90-100 percent of the maximum rock heat rate and 90-100 percent of the maximum heat input rate during emission tests is an unacceptable test condition.

We have appreciated the opportunity to discuss these matters with your staff and appreciate your consideration of the request made herein.

Sincerely,



K T. Matthews  
Sr. Environmental Engineer

jm  
Attach.

cc: Dr. J. B. Koogler, Sholtes & Koogler  
B. Thomas, DER (Tampa)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET  
ATLANTA, GEORGIA 30308

RECEIVED  
MAR 24 1980  
R. E. S.  
FLA. OPERATIONS

MAR 20 1980

*RM*  
Xcc: P. F. CASH  
R. L. RHODES  
W. L. LAUFERMAN  
C. H. FUTCH  
G. D. GUTENBERG

REF: 4AH-AP

Mr. R. E. Schultz  
Manager, Operations (Florida)  
Phosphorous Division  
Mobil Chemical Company  
P. O. Box 311  
Nichols, Florida 33863

Dear Mr. Schultz:

Review of your October 21, 1979 application to construct a surge capacity phosphate rock dryer (PSD-FL-042) near Nichols, Florida 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 January 12, 1980. Only two comments were received; both were from your company. In response to these comments: 1) the maximum capacity was increased from 250 to 475 tons per hour, 2) the allowable emissions of particulate per ton of rock processed was reduced from 0.06 to 0.052 pounds per ton, and 3) the maximum allowable hourly rate of particulate emissions was increased from 15.4 to 24.9 pounds per hour. EPA has waived further public review of these changes on the basis that maximum ground level impacts from the source remain insignificant. Authority to Construct a Stationary Source is hereby issued for the facility described above, subject to the conditions in the enclosed Final Determination. This Authority to Construct is based solely on the requirements of 40 CFR 52.21, the Federal regulations governing significant deterioration of air quality. It does not apply to NPDES or other permits issued by this agency or permits issued by other agencies. Information regarding EPA permitting requirements can be provided if you contact Mr. Joe Franzmathes, Director, Office of Program Integration and Operations, at (404) 881-3476. Additionally, construction covered by this Authority to Construct must be initiated within 18 months from the receipt of this letter.

The United States Court of Appeals for the D. C. Circuit issued a ruling (December 14, 1979) in the case of Alabama Power Co. vs. Douglas H. Costle (78-1006 and consolidated cases) which has significant impact on the EPA prevention of significant deterioration (PSD) program and permits issued thereunder. The ruling will require modification of the PSD regulations and could affect permits issued under the existing program. You are hereby advised that this permit may be subject to reevaluation.


Mobil 6-1000



Please be advised that a violation of any condition issued as part of this approval, as well as any construction which proceeds in material variance with information submitted in your application will be subject to enforcement action.

Authority to Construct will take effect on the date of this letter. The complete analysis which justifies this approval has been fully documented for future reference, if necessary. Any questions concerning this approval may be directed to Kent Williams, Chief, New Source Review Section (404/881-4552).

Sincerely yours,



Thomas W. Devine  
Director  
Air and Hazardous Materials Division

Enclosure

cc: S. Smallwood  
Florida Department of Environmental Regulation

## Final Determination

I. Applicant

Mobil Chemical Company  
Minerals Group  
P. O. Box 311  
Nichols, Florida 33863

II. Location

The proposed modification is to Mobil's phosphate processing plant located near Nichols, Florida. The proposed modification will be located at a latitude of 27° 53' 44" north and 82° 01' 55" west; the UTM coordinates are east 17-398290 and north 17-3084290.

III. Source Description

Mobil Chemical plans to modify the Nichols phosphate rock processing plant by adding a phosphate rock dryer with a design maximum throughput of 475 tons per hour of phosphate rock (nominal capacity 250 T/hr). The new dryer will be limited to 4000 hours of operation per year, and will be fired with No. 6 fuel oil (2.5% sulfur) or natural gas at a maximum rate of 94 million Btus per hour. Emissions of particulate (TSP) and sulfur dioxide (SO<sub>2</sub>) will be controlled with the use of a venturi scrubber and a caustic scrubber operating in series.

The dryer is being added solely to handle high, short term, dryer demand and the overall capacity of the mining/rock processing complex will not change. This statement is based on the fact that plant capacity is limited by mining operations and not by rock drying capacity. Because total yearly production will not increase, total yearly emissions of fugitive (TSP) and other pollutants from plant equipment other than the dryer will not increase. Hourly emissions from some facilities may increase due to increased short term dryer capacity; however, these increases will not exceed the limits of current state operating permits. Thus, no facilities other than the new rock dryer are involved in this modification.

IV. Source Impact Analysis

The proposed modification has the potential to emit greater than 100 tons per year of TSP and sulfur dioxide (SO<sub>2</sub>) as can be seen in Table I, and the modification will impact areas currently achieving National Ambient Air Quality Standards (NAAQS). Therefore, the proposed modification must undergo preconstruction review under the Federal Prevention of Significant Deterioration (PSD)

of Air Quality regulations (40 CFR 52.21). Full PSD review includes an analysis of the following points:

- a) Best Available Control Technology (BACT);
- b) Increment Impact;
- c) National Ambient Air Quality Standards (NAAQS) Impact;
- d) Class I Area Impact;
- e) Growth Impact; and
- f) Soils, Vegetation and Visibility Impacts.

However, allowable emissions of TSP and SO<sub>2</sub> do not exceed 50 tons per year, 1000 pounds per day or 100 pounds per hour as appropriate, and because of this, the proposed modification is exempt from most of these analyses and from any ambient air monitoring requirements. PSD review for this source is limited to insuring that no Class I area or area where the increment is known to be violated is impacted and determining that the new facilities meet all emission limitations and standards of performance under the State Implementation Plan and Code of Federal Regulations Title 40 Parts 60 and 61.

It should also be noted that the proposed modification is about 30 kilometers from a TSP non-attainment area in Hillsborough County. If the proposed modification impacted this area, it would be subject to offset and LAER requirements; however, as is shown in the subsequent air impact analysis section, this non-attainment area is not impacted and LAER and offset requirements are not required.

#### Class I Area Impact

The Class I area closest to the proposed modification is the Chassahowitzka National Wildlife Refuge which is located at a distance of about 130 kilometers from the Nichol's plant site. In most cases, air dispersion modeling is not necessary to estimate impacts on Class I areas at a distance greater than 100 kilometers. However, in this case, an analysis was performed for the dual purpose of demonstrating no Class I area impacts and no impact on the TSP non-attainment area located about 30 kilometers east of the plant.

The modeling analysis used EPA approved models: CRSTER for 3-hour and 24-hour averages and AQDM for the annual averages. Meteorological parameters used in the analysis were 1973 data from the Tampa area.

The results of this analysis are shown in Table II. Review of the results shows the source to have maximum ground level concentrations which are lower than the significance levels outlined in the Preamble to the PSD Regulations (40 CFR 52.21). These maximum concentrations occur at receptors located in the vicinity of the plant. The minor or "insignificant" maximum impacts from this source can be expected at a distance of over 100 kilometers. On the basis of these results, the proposed modification is determined not to significantly impact the non-attainment area in Hillsborough County or any Class I area.

#### State and Federal Emission Standards

The proposed modification is required to comply with all applicable emission and performance standards of the SIP and Federal Regulations 40 CFR 60 and 61. There are no specific emission limitations applicable to this modification in the SIP. The particulate emission limits proposed in the application will comply with the Florida process weight table emission limit requirements. Further, the applicant has obtained a state permit for construction of this new source which included a Florida State BACT review. Therefore, the proposed modification is in compliance with all SIP requirements.

As for federal emission standards applicable to this phosphate rock dryer, no such standards exist at this time. There is, however, a new source performance standard under development for phosphate rock processing plants which was proposed in the Federal Register on September 21, 1978, and which will likely affect this dryer. Since the standard is not yet promulgated, it cannot be considered in this Preliminary Determination. However, if the promulgated standard affects sources commencing construction since the time of proposal, the dryer will be required to meet the NSPS in addition to the requirements of the Final Determination regardless of whether or not promulgation follows permit issuance.

#### V. Conclusions

EPA proposes a Final Determination of approval with conditions for the construction of the rock dryer proposed in Mobil Chemical Company's application received by EPA on September 26, 1979. The basis for this determination is information contained in the application. The conditions set forth in the permit are as follow:

1. Construction of the dryer will be in accordance with the specifications, capacities, etc. contained in the application. This specifically includes a maximum hourly dryer feed rate of 475 tons (dry basis) and a maximum heat input of 94 million Btu's per hour (natural gas or No. 6 oil with maximum 2.5% sulfur). An hourly or continuous record of dryer feed will be maintained to determine compliance with this requirement.
2. The dryer will not operate more than 4000 hours in any 365 day period (one year). Records of the operating hours will be maintained. Such records shall include a log indicating cumulative hours of operation for each 365 day operating period and a statement signed by the unit operator of the time and date of each unit start-up and each unit shutdown. Log entries of unit startups shall be made not later than the time combustion commences in the dryer firebox, and log entries of unit shutdowns shall not be made prior to the time combustion in the dryer firebox ceases. Also, these times, by definition, determine the operating hours of the unit.
3. The dryer stack will not emit greater than the following emission limits (as stated in the application):
  - TSP - 0.52 pounds per ton of phosphate rock fed to the dryer (dry basis) and 24.0 pounds per hour.
  - SO<sub>2</sub> - 19.4 pounds per hour.
4. Compliance with the emission limits stated in condition 3 will be determined by performance tests. The dryer will be operated within 10 percent of the maximum rated capacity during the performance tests. Performance tests will be conducted in accordance with standard EPA methods, the applicable provisions of 40 CFR 60.8 and the following minimum sampling times and volumes:

<u>Pollutants</u>	<u>Test Method</u>	<u>Sample Period</u>	<u>Sample Volume</u>
TSP	Method 5	60 minutes (1 sample/run)	30 DSCF
SO <sub>2</sub>	Method 6	20 minutes (2 samples/run)	0.71 DSCF

5. Performance tests consistent with Condition 4 will be performed each time fuel conversion from natural gas to fuel oil occurs.
6. Continuous compliance with the SO<sub>2</sub> and TSP allowable emission rates will be demonstrated through continuous monitoring and recording of 1) the pressure drop across the scrubber, 2) the pressure of the scrubber liquid entering the venturi throat (or alternatively, the liquid flow in mass of liquid per volume air flow through scrubber), and 3) the SO<sub>2</sub> content of the flue gases (or alternatively, the pH of the liquor exiting the scrubber). The continuous SO<sub>2</sub> monitor and its operation (if used) will comply with the applicable provisions of 40 CFR 60.13. Each other monitored system parameter (pressure drop, pressure or flow, and pH), will be maintained at or above the "minimum value" required for meeting the allowable emission rates as determined by performance tests conducted according to the provisions of condition 4. System operation with parameters below these "minimum values" will constitute "excess emissions".
7. The applicant will meet the requirements and specifications of the attached General Conditions.

## GENERAL CONDITIONS

1. The permittee shall notify the permitting authority in writing of the beginning of construction of the permitted source within 30 days of such action and the estimated date of start-up of operation.
2. The permittee shall notify the permitting authority in writing of the actual start-up of the permitted source within 30 days of such action and the estimated date of demonstration of compliance as required in the specific conditions.
3. Each emission point for which an emission test method is established in this permit shall be tested in order to determine compliance with the emission limitations contained herein within sixty (60) days of achieving the maximum production rate, but in no event later than 180 days after initial start-up of the permitted source. The permittee shall notify the permitting authority of the scheduled date of compliance testing at least thirty (30) days in advance of such test. Compliance test results shall be submitted to the permitting authority within forty-five (45) days after the complete testing. The permittee shall provide (1) sampling ports adequate for test methods applicable to such facility, (2) safe sampling platforms, (3) safe access to sampling platforms, and (4) utilities for sampling and testing equipment.
4. The permittee shall retain records of all information resulting from monitoring activities and information indicating operating parameters as specified in the specific conditions of this permit for a minimum of two (2) years from the date of recording.
5. If, for any reason, the permittee does not comply with or will not be able to comply with the emission limitations specified in this permit, the permittee shall provide the permitting authority with the following information in writing within five (5) days of such conditions:
  - (a) description of noncomplying emission(s),
  - (b) cause of noncompliance,
  - (c) anticipated time the noncompliance is expected to continue or, if corrected, the duration of the period of noncompliance,
  - (d) steps taken by the permittee to reduce and eliminate the noncomplying emission,and
  - (e) steps taken by the permittee to prevent recurrence of the noncomplying emission.

Failure to provide the above information when appropriate shall constitute a violation of the terms and conditions of this permit. Submittal of this report does not constitute a waiver of the emission limitations contained within this permit.

6. Any change in the information submitted in the application regarding facility emissions or changes in the quantity or quality of materials processed that will result in new or increased emissions must be reported to the permitting authority. If appropriate, modifications to the permit may then be made by the permitting authority to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause violation of the emission limitations specified herein.
7. In the event of any change in control or ownership of the source described in the permit, the permittee shall notify the succeeding owner of the existence of this permit by letter and forward a copy of such letter to the permitting authority.
8. The permittee shall allow representatives of the State environmental control agency or representatives of the Environmental Protection Agency, upon the presentation of credentials:
  - (a) to enter upon the permittee's premises, or other premises under the control of the permittee, where an air pollutant source is located or in which any records are required to be kept under the terms and conditions of the permit;
  - (b) to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit, or the Act;
  - (c) to inspect at reasonable times any monitoring equipment or monitoring method required in this permit;
  - (d) to sample at reasonable times any emission of pollutants;and
  - (e) to perform at reasonable times an operation and maintenance inspection of the permitted source.
9. All correspondence required to be submitted by this permit to the permitting agency shall be mailed to the:

Chief, Air Facilities Branch  
Air and Hazardous Materials Division  
U.S. Environmental Protection Agency  
Region IV  
345 Courtland Street  
Atlanta, Georgia 30308
10. The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

The emission of any pollutant more frequently or at a level in excess of that authorized by this permit shall constitute a violation of the terms and conditions of this permit.



TABLE I  
EMISSIONS SUMMARY

	<u>TSP</u>	<u>SO<sub>2</sub></u>	<u>NO<sub>x</sub></u>	<u>CO</u>	<u>HC</u>	<u>F</u>
Potential Emissions <sup>a</sup> (tons/year)	5400	520	76	0.2	4	Negligible
Allowable Emissions <sup>a</sup> Tons Per Year	49.8	39	b	b	b	b
Pounds Per Day	598	466	b	b	b	b
Pounds Per Hour	24.9 <sup>C</sup>	19.4	b	b	b	b

- a. All emissions are calculated at maximum hourly capacity and assuming a maximum of 4000 hours of operation per year as required in this permit.
- b. Potential emissions of this pollutant do not exceed 100 tons per year so that PSD review for these pollutants does not apply.
- c. No hourly increment level has been established for TSP; thus, the hourly emission rate does not affect PSD applicability.

TABLE II

	Maximum Impact ( $\mu\text{g}/\text{m}^3$ )	Defined Significance Levels ( $\mu\text{g}/\text{m}^3$ )
Annual Geometric Mean Concentration	TSP - 0.3 <sup>a</sup> SO <sub>2</sub> - 0.2	1 1
24-Hour Average Concentration	TSP - 4.3 <sup>a</sup> SO <sub>2</sub> - 3.7	5 5
3-Hour Average Concentration	TSP - N/A SO <sub>2</sub> - 12.2	N/A 25

<sup>a</sup> Modeling results in application adjusted for increase in allowable TSP emissions rate (24.9 lb/hr) over modeled emission rate (15.4 lb/hr).

P16 7682468

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—  
NOT FOR INTERNATIONAL MAIL  
(See Reverse)

SENT TO	
K. D. Fetrow	
STREET AND NO.	
P.O. Box 311	
P.O. STATE AND ZIP CODE	
Nichols, FL 33863	
POSTAGE	\$
CONSULT POSTMASTER FOR FEES	
CERTIFIED FEE	c
OPTIONAL SERVICES	
SPECIAL DELIVERY	c
RESTRICTED DELIVERY	c
RETURN RECEIPT SERVICE	
SHOW TO WHOM AND DATE DELIVERED	c
SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	c
SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	c
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	c
TOTAL POSTAGE AND FEES	\$
POSTMARK OR DATE	

PS Form 3811, Jan. 1978

① SENDER: Complete items 1, 2, and 3. Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)  
 Show to whom and date delivered..... c  
 Show to whom, date and address of delivery..... c  
 RESTRICTED DELIVERY  
 Show to whom and date delivered..... c  
 RESTRICTED DELIVERY.  
 Show to whom, date, and address of delivery. \$ \_\_\_\_  
 (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:  
 K. D. Fetrow  
 P.O. Box 311  
 Nichols, FL 33863

3. ARTICLE DESCRIPTION:  

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	P16 7682468	

 (Always obtain signature of addressee or agent)

I have received the article described above.  
 SIGNATURE  Addressee  Authorized agent  
*R. Palite*

4. DATE OF DELIVERY  
 12-17-84

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: \_\_\_\_\_ CLERK'S INITIALS \_\_\_\_\_

**NICHOLS POSTMARK**  
 DEC 17 1984  
 USPO

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

December 14, 1984

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

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

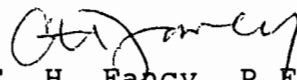
Dear Mr. Fetrow:

Attached is one copy of the Technical Evaluation and Preliminary Determination for the proposed modification for the No. 4 phosphate rock dryer located at your Nichols, Polk County, plant.

Before final action can be taken on our recommendations, you are required by Florida Administrative Code Rule 17-103.150 to publish the attached Notice of Proposed Agency Action in the legal advertising section of a newspaper of general circulation in Polk County no later than fourteen days after receipt of this letter. The department must be provided with proof of publication within seven days of the date the notice is published. Failure to publish the notice may be grounds for denial of the permit.

Please submit, in writing, any comments which you wish to have considered concerning the department's proposed action to Mr. Bill Thomas of the Bureau of Air Quality Management.

Sincerely,

  
C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

CHF/rw

cc: James T. Wilburn ✓  
Bill Thomas ✓  
John Koogler ✓  
Paul Swartz ✓

Attachments

William Fack ✓  
Reedley File

State of Florida  
Department of Environmental Regulation  
Notice of Proposed Agency Action  
on Permit Application

The Department gives notice of its intent to issue a permit to the Mobil Chemical Company. The permit will allow increased operating time of the existing No. 4 rotary phosphate rock dryer. The dryer is in the rock processing facility located near the intersection of Nichols Road and Anderson Road in Nichols, Polk County, Florida.

A determination of best available control technology (BACT) was required.

Emissions of air pollutants, in tons per year, will increase by the following amounts:

<u>PM</u>	<u>SO<sub>2</sub></u>	<u>NOx</u>	<u>CO</u>	<u>VOC</u>
49.8	38.8	68.7	6.2	1.2

Persons whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this preliminary statement. Therefore, persons who may not object to the proposed agency action may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207 at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administrative, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee,

Florida, 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application, technical evaluation, and Department's intent for the proposed project are available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at the following locations:

Dept. of Environmental Regulation  
Southwest District  
7601 Highway 301 North  
Tampa, Florida 33610

Dept. of Environmental  
Regulation  
Bureau of Air Quality  
Management  
2600 Blair Stone Road  
Tallahassee, Florida 32301

Any person may send written comments on the proposed action to Mr. Clair Fancy at the Department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the Department's final determination.

RULES OF THE ADMINISTRATIVE COMMISSION  
MODEL RULES OF PROCEDURE  
CHAPTER 28-5  
DECISIONS DETERMINING SUBSTANTIAL INTERESTS

28-5.15 Requests for Formal and Informal Proceedings

- (1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.
- (2) All petitions filed under these rules should contain:
  - (a) The name and address of each agency affected and each agency's file or identification number, if known;
  - (b) The name and address of the petitioner or petitioners;
  - (c) All disputed issues of material fact. If there are none, the petition must so indicate;
  - (d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;
  - (e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;
  - (f) A demand for the relief to which the petitioner deems himself entitled; and
  - (g) Such other information which the petitioner contends is material.

BEFORE THE STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of an )  
Application for Permit by )  
Mobil Chemical Company ) DER File No. AC 53-090634  
P. O. Box 311 )  
Nichols, Florida 33863 )  
)  
)

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its Intent to Issue, and proposed order of issuance for, a permit pursuant to Chapter 403, Florida Statutes, for the proposed project as detailed in the application specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Mobil Chemical Company, applied on July 30, 1984, to the Department of Environmental Regulation for a permit to modify the operation of the No. 4 phosphate rock dryer. The information supplied by Mr. K. T. Matthews in his October 12, 1984, letter (received on October 15) completed the application so that it could be processed by the department. Information submitted by the company shows the operation of the dryer can be modified and the emissions will comply with all federal and state air pollution control regulations.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes and Florida Administrative Code Rules 17-2 and 17-4. The project is not exempt from permitting procedures. The applicant was officially notified by the Department that an air construction permit was required for the proposed work.

This intent to issue shall be placed before the Secretary for final action unless an appropriate petition for a hearing pursuant to the provisions of Section 120.57, Florida Statutes, is filed within fourteen (14) days from receipt of this letter or



publication of the public notice (copy attached) required pursuant to Rule 17-103.150, Florida Administrative Code, whichever occurs first. The petition must comply with the requirements of Section 17-103.155 and Rule 28-5.201, Florida Administrative Code (copy attached) and be filed pursuant to Rule 17-103.155(1) in the Office of General Counsel of the Department of Environmental Regulation at 2600 Blair Stone Road, Tallahassee, Florida 32301.

Petitions which are not filed in accordance with the above provisions are subject to dismissal by the Department. In the event a formal hearing is conducted pursuant to Section 120.57(1), all parties shall have opportunity to respond, to present evidence and argument on all issues involved, to conduct cross-examination of witness and submit rebuttal evidence, to submit proposed findings of facts and orders, to file exception to any order or hearing officer's recommended order, and to be represented by counsel. If an informal hearing is requested, the agency, in accordance with its rules of procedure, will provide affected persons or parties or their counsel an opportunity, at a convenient time and place, to present to the agency or hearing officer, written or oral evidence in opposition to the agency's action or refusal to act, or a written statement challenging the grounds upon which the agency has chosen to justify its action or inaction, pursuant to Section 120.57(2), Florida Statutes.


If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the proposed agency action. Therefore, persons who may not wish to file a petition, may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207 at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of

Administrative Hearings, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301.

Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

Executed the 14 day of DECEMBER, 1984, in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL REGULATION

  
\_\_\_\_\_  
C. H. Fancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

Copies furnished to:

James T. Wilburn  
John Koogler  
Bill Thomas

Preliminary Determination  
and  
Technical Evaluation

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

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## 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<sub>x</sub>).

### 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<sub>2</sub>) emissions by 38.8 TPY, and nitrogen oxide (NO<sub>x</sub>) emissions by 68.7 TPY. The increased emission rates of PM and NO<sub>x</sub> 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:

- o An analysis of existing air quality;
- o A PSD increment analysis (for PM only);
- o An ambient air quality standards (AAQS) analysis;
- o An analysis of impacts on soils, vegetation, visibility, and growth-related air quality impacts, and;
- o 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  $0.3 \text{ ug/m}^3$ , which is less than the significant impact level of  $1 \text{ ug/m}^3$ . 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  $\text{NO}_x$ , 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 facilities 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 <sup>3</sup> )		Increased Impact (ug/m <sup>3</sup> )	Significant Impact (ug/m <sup>3</sup> )	Allowed PSD Increment (ug/m <sup>3</sup> )	AAQS (ug/m <sup>3</sup> )
	Permitted	Proposed				
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 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 operation 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.

**PERMITTEE:**  
Mobil Chemical Company

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

**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.



PERMITTEE:  
Mobil Chemical Company

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

**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.

PERMITTEE:  
Mobil Chemical Company

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

**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.

PERMITTEE:  
Mobil Chemical Company

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

**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.

PERMITTEE:  
Mobil Chemical Company

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

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<sub>2</sub> emission limit. Further, during fuel oil firing the SO<sub>2</sub> content of the dryer flue gases will be measured with a continuous SO<sub>2</sub> 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.

PERMITTEE:  
Mobil Chemical Company

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

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:

<u>Pollutant</u>	<u>Increase (TPY)</u>	<u>Rate* (TPY)</u>
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<sub>x</sub> 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

**Subpart NN—Standards of Performance for Phosphate Rock Plants** <sup>146</sup>

**§ 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) "Calclner" 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  $\pm 250$  pascals ( $\pm 1$  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  $\pm 5$  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  $\pm 5$  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:

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

where, E = Emissions of particulates in kg/Mg of phosphate rock feed.

Cs = Concentration of particulates in mg/dscm as measured by Method 5.

Qs = Volumetric flow rate in dscm/hr as determined by Method 2.

10<sup>-6</sup> = 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. 7414j))

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

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

# Mobil Chemical Company

PHOSPHORUS DIVISION

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

October 12, 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

DER  
OCT 15 1984  
BAQM

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.

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.

Mr. Clair H. Fancy  
October 12, 1984

-2-

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

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 475 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.

Mr. Clair H. Fancy  
October 12, 1984

-3-

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

MOBIL CHEMICAL COMPANY  
 NICHOLS, FLORIDA

Date	Fuel	Production Rate (Tph)	EMISSION RATE (LB/HR)					
			Particulate Matter		Sulfur Dioxide			
			Actual	Allowable <sup>(1)</sup>	Actual	Allowable <sup>(2)</sup>	Potential <sup>(3)</sup>	Removal
5/84	Gas	235	7.94	12.22	----	----	----	----
9/83	Gas	282	5.61	14.65	----	----	----	----
6/83	(500 gal/hr) Oil	270 247	8.25 ----	14.04 ----	---- 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

TABLE II

SUMMARY OF PERMIT CONDITIONS FOR  
MOBIL CHEMICAL COMPANY SOURCESMOBIL CHEMICAL COMPANY  
NICHOLS, FLORIDA

Source	Permit	Operating Time (hr/yr)	Maximum Production Rate		Part. Matter Emission Limit (lb/hr)
			(tph)	(tpy)	
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	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

## AIR POLLUTANT EMISSION RATE CALCULATIONS

### SURGE DRYER MOBILE CHEMICAL COMPANY

#### STACK PARAMETERS

STACK HT. (FE.)	-	85 ft
STACK DIA (Ft.)	-	7.5 ft.
STACK GAS VEL (Ft/sec)	-	32.8 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

$$\begin{aligned}
 \text{PM} &= [475 \text{ ton/hr} \times 0.052 \text{ lb/ton}] \\
 &= \overset{24.7}{24.9} \text{ lb/hr} - \text{permitted \& proposed} \\
 &\quad \times 4000 \text{ hr/yr} / 2000 \text{ lb/ton} \\
 &= \overset{49.4}{49.8} \text{ ton/yr} - \text{permitted} \\
 &\quad \times 8000 \text{ hr/yr} / 2000 \\
 &= \overset{98.8}{99.6} \text{ ton/yr} - \text{proposed}
 \end{aligned}$$

SULFUR DIOXIDE @ 157(2.5) lb SO<sub>2</sub>/1000 gal (AP-42, Supp 13)

$$\begin{aligned}
 \text{SO}_2 &= 625 \text{ gal/hr} / 1000 \times 157(2.5) \text{ lb/1000 gal} \times (1 - 0.92) \text{ sorption} \\
 &= \overset{14.6}{19.4} \text{ lb/hr} - \text{permitted \& proposed} \\
 &\quad \times 4000 / 2000 \\
 &= \overset{39.2}{38.8} \text{ ton/yr} - \text{permitted} \\
 &\quad \times 8000 / 2000 \\
 &= \overset{78.4}{77.6} \text{ ton/yr} - \text{proposed}
 \end{aligned}$$

No. 0156549

**RECEIPT FOR CERTIFIED MAIL**  
 NO INSURANCE COVERAGE PROVIDED—  
 NOT FOR INTERNATIONAL MAIL  
 (See Reverse)

SENT TO		Mr. K. D. Fetrow	
STREET AND NO.			
P.G., STATE AND ZIP CODE			
POSTAGE		\$	
CONSULT POSTMASTER FOR FEES	CERTIFIED FEE	¢	
	SPECIAL DELIVERY	¢	
	RESTRICTED DELIVERY	¢	
	OPTIONAL SERVICES: RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED	¢
		SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
		SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY		¢	
TOTAL POSTAGE AND FEES		\$	
POSTMARK OR DATE		8/23/84	

PS Form 3800, Apr. 1976

PS Form 3811, Jan 1979

**SENDER:** Complete items 1, 2, and 3. Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)  
 Show to whom and date delivered.....¢  
 Show to whom, date and address of delivery.....¢  
 RESTRICTED DELIVERY  
 Show to whom and date delivered.....¢  
 RESTRICTED DELIVERY.  
 Show to whom, date, and address of delivery.\$\_\_\_\_  
 (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:  
 Mr. K. D. Fetrow  
 P. O. Box 311  
 Nichols, FL 33863

3. ARTICLE DESCRIPTION:  
 REGISTERED NO. CERTIFIED NO. INSURED NO.  
 \_\_\_\_\_ 0156549 \_\_\_\_\_  
 (Always obtain signature of addressee or agent)

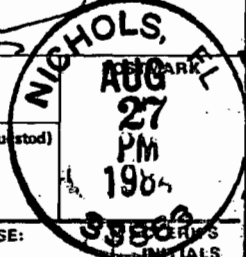
I have received the article described above.  
 SIGNATURE  Addressee  Authorized agent  
*John R. Has*

4. DATE OF DELIVERY  
 \_\_\_\_\_

5. ADDRESS (Complete only if requested)  
 \_\_\_\_\_

6. UNABLE TO DELIVER BECAUSE:  
 \_\_\_\_\_  
 INITIALS  
*AR*

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL



☆SPO : 1979-300-459

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.

*Material balance to see if addition of production is handled within permitted production rates.*

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.

*Show documentation of efficiency, the compliance test may not be necessary.*

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? (*Permit Rule Questions*)

*No change in other equipment? Significant impact*

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? *Annual*

Mr. K. D. Fetrow  
Page Two  
August 23, 1984

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 varies from UTM: East 17-898.29 of 10/13/79.

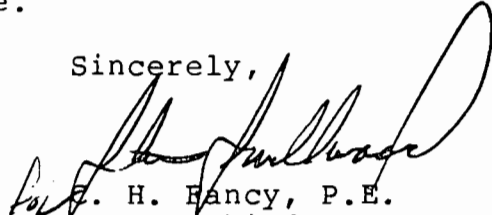
*Rock production.*

*As to supplier*

Mr. K. D. Fetrow  
Page Three  
August 23, 1984

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

Sincerely,



E. H. Hancy, P.E.  
Deputy Chief  
Bureau of Air Quality  
Management

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

09/2002/mcc

DRAFT BACT  
FOR REVIEW/COMMENTS  
CONTENTS SUBJECT TO CHANGE**B**est Available Control Technology (BACT) Determination

Mobil Chemical Company

Polk County

The applicant has requested an increase in the annual operating hours of their 250 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 is 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 an pollutants as follows:

<u>Pollutant</u>	<u>Increase (TPY)</u>	<u>Rate* (TPY)</u>
Particulate Matter	49.8	25
Nitrogen Oxides	68.7	40
Sulfur Dioxide	<del>38.3</del> 38.8	40
Carbon Monoxide	6.3 6.2	100
VOC	1.3 1.2	40

\* Table 500-2 Regulated Air Pollutants - Significant Emission Rates.

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DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP		ACTION NO	
		ACTION DUE DATE	
1. TO: (NAME, OFFICE, LOCATION)		Initial	
	TERESA H	Date	
2.		Initial	
	William Jack	Date	
3.		Initial	
		Date	
4.		Initial	
		Date	
REMARKS:  <p>VERY PRELIMINARY</p> <p>—</p> <p>PLEASE COMMENT</p> <p>WHEN YOU GET</p> <p>ALL INFORMATION</p> <p>NEEDED</p>		INFORMATION	
		Review & Return	
		Review & File	
		Initial & Forward	
		DISPOSITION	
		Review & Respond	
		Prepare Response	
		For My Signature	
		For Your Signature	
		Let's Discuss	
		Set Up Meeting	
		Investigate & Report	
		Initial & Forward	
		Distribute	
Concurrence			
For Processing			
Initial & Return			
FROM:		DATE 8-6-84	
Ed P		PHONE	

DRAFT BACT'  
FOR REVIEW/COMMENTS  
CONTENTS SUBJECT TO CHANGE

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 a nonattainment area for the pollutant particulate matter. ?

BACT Determination Requested by the Applicant:

The particulate emission limit is 0.052 pounds per ton of rock input. *wet or dry?* 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 New Source Review Section, Air Modeling Section and the Southwest District Office.

DRAFT BACT  
FOR REVIEW COMMENTS  
CONSIDERED SUBJECT TO CHANGE

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

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 September 21, 1979. The proposed NSPS was the basis for the December 13, 1979 department BACT determined for this source. The NSPS was

4.228  
2.11?

Permit Cond  
not listed?

Permit Cond

Permit Cond

1979

DRAFT BACT  
FOR REVIEW COMMENTS  
COMMENTS SUBJECT TO CHANGE

promulgated on April 16, 1982.'

The proposed increase in the hours of operation is not considered a modification of 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 <sup>CP</sup>formation of nitrogen oxides and that add-on controls are not feasible at the present time. The proposed NOx limit of 0.37 pounds per million Btu heat input is judged to represent BACT.

115

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 <sup>been completed</sup> ~~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 Mobile 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: \_\_\_\_\_

MOBIL CHEMICAL COMPANY  
PHOSPHORUS DIVISION  
MANAGERS ACCOUNT  
STATE ROAD 676  
NICHOLS, FL 33863

6522

MAY 30, 19 84

63-122/631

PAY TO THE  
ORDER OF

FLORIDA DEPARTMENT OF REGULATION

\$ \*500.00

FIVE HUNDRED AND NO/100

DOLLARS



FLAGSHIP BANK  
OF POLK COUNTY  
MULBERRY OFFICE  
MULBERRY, FLORIDA 33860

FOR PERMIT - NO 4 SURGE DRYER

*C. W. Addeff*

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

NO 76038

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from

*Mobil Chemical Company*

Date

*July 30, 1984*

Address

*P.O. Box 311 Nichols Florida 33863*

Dollars \$

*500.00*

Applicant Name & Address

*Same as above*

Source of Revenue

Revenue Code

*001031*

Application Number

*AC 53-090634*

By

*Patricia D. Adams*

# Mobil Chemical Company

PHOSPHORUS DIVISION

DER

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

JUL 30 1984

July 20, 1984

BAQM

**D. E. R.**

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

JUL 25 1984

SOUTH WEST DISTRICT  
TAMPA

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 Construction 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.

Mr. Clair Fancy  
July 20, 1984  
Page 2

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 million 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,



K. T. Matthews  
Sr. Environmental Engineer

jm  
Attach.



C 53-090634  
(15)

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  New<sup>1</sup>  Existing<sup>1</sup>  
APPLICATION TYPE:  Construction  Operation  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 27° 53' 12" N Longitude 82° 02' 00" 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 control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted 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 have been ~~designed~~ examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

<sup>1</sup> 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*  
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<sub>2</sub> 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<sub>2</sub> 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 A053-48389 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 Deterioration" (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 justifi-  
cation for any answer of "No" that might be considered questionable.

$$\text{Proposed emission} = \overset{\text{PM}}{475 \frac{\text{TDAS}}{\text{hr}}} \times \frac{8000 \text{ hr}}{\text{yr}} \times \frac{.052 \frac{\text{lb}}{\text{T}}}{2000 \frac{\text{lb}}{\text{T}}} = 98.8 \text{ TPY}$$

$$\text{actual E} = \frac{250}{475} \times \frac{98.8}{2} =$$

$$\frac{26}{52} \text{ TPY}$$

72.8

$$\text{INCREASE} = \frac{72.8}{98.8} \text{ TPY}$$

**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 (Pebble & Concentrate)	Part. Matter	Var..	950,000*	M
*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)**

- Total Process Input Rate (lbs/hr): 950,000 (dry weight) 475 (dry)
- 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 <sup>1</sup>		Allowed Emission Rate per Rule 17-2	Allowable Emission <sup>3</sup> lbs/hr	Potential Emission <sup>4</sup>		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
Part. Matter	24.9 <sup>4</sup>	99.6 <sup>4</sup>	BACT	24.9	2727	10,908	H
SO <sub>2</sub>	19.4	77.6	BACT	19.4	245	981	H
NO <sub>x</sub>	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

<sup>1</sup>See Section V, Item 2.

<sup>2</sup>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)

<sup>3</sup>Calculated from operating rate and applicable standard.

<sup>4</sup>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 <sub>2</sub>	92.0	SO <sub>2</sub>	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<sup>3</sup>/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 Rates: 140,000 ACFM 90,900 DSCFM Gas Exit Temperature: 150 °F.  
 Water Vapor Contents: 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) <sup>3</sup>	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: \_\_\_\_\_ ft. Stack Diameter: \_\_\_\_\_ Stack Temp. \_\_\_\_\_

Gas Flow Rates: \_\_\_\_\_ 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 devices:  Cyclone  Wet Scrubber  Afterburner

Other (specify) \_\_\_\_\_

Brief description of operating characteristics of control devices: \_\_\_\_\_

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

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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).

$$\begin{aligned} \text{P.M.} &= 90,900 \text{ ft}^3/\text{min} \times 60 \text{ min/hr} \times (3.5/7000) \text{ lb/ft}^3 \\ &= 2727.0 \text{ lb/hr} \\ &= \times 8000/2000 \\ &= 10,908 \text{ tons/year} \end{aligned}$$

*NSPS < 0.06 lb/ton efficiency = [ 2727.0 / 2727.0 ] x 100 = 99%*

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

$$\begin{aligned} \text{P.M.} &= 475 \text{ tons/hr} \times 0.052 \text{ lb/ton} \\ &= 24.9 \text{ lb/hr} \quad 24.7 \\ &\quad \times 8000/2000 \\ &= 99.6 \text{ tons/year} \quad 98.8 \end{aligned}$$

*(.052 lb per ton of dry product) NSPS 0.06 lb per ton of feed.*

*whichever is less restrictive*

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 *(fuel oil category)*

$$\begin{aligned} \text{SO}_2 &= 625 \text{ gal/hr} \times 157 (2.5) \text{ lb SO}_2/1000 \text{ gal} \\ &= 245.3 \text{ lb/hr} \\ &\quad \times 8000/2000 \\ &= 981.25 \text{ tons/year} \end{aligned}$$

Controlled - based on 92 percent control efficiency

$$\begin{aligned} \text{SO}_2 &= 245.3 (1-0.92) \\ &= 19.6 \text{ lb/hr} \\ &\quad \times 8000/2000 \\ &= 78.6 \text{ tons/year} \\ &\quad \text{98.5 tons/yr} \end{aligned}$$

Nitrogen Oxides

Uncontrolled and Controlled - based on AP-42, Supplement 13

$$\begin{aligned} \text{NO}_x &= 625 \text{ gal/hr} \times 55 \text{ lb}/1000 \text{ gal} \\ &= 34.4 \text{ lb/hr} \\ &\quad \times 8000/2000 \\ &= 137.5 \text{ tons/year} \end{aligned}$$

Carbon Monoxide

Uncontrolled and Controlled - based on AP-42, Supplement 13

$$\begin{aligned} \text{CO} &= 625 \text{ gal/hr} \times 5 \text{ lb}/1000 \text{ gal} \\ &= 3.1 \text{ lb/hr} \\ &\quad \times 8000/2000 \\ &= 12.5 \text{ tons/year} \end{aligned}$$

Volatile Organic Compounds

Uncontrolled and Controlled - based on AP-42, Supplement 13

$$\begin{aligned} \text{VOC} &= 625 \text{ gal/hr} \times 1 \text{ lb}/1000 \text{ gal} \\ &= 0.6 \text{ lb/hr} \\ &\quad \times 8000/2000 \\ &= 2.5 \text{ tons/year} \end{aligned}$$

5. Control Efficiency

Particulate Matter

$$\begin{aligned} E_p &= (2727 - 24.9) \times 100 / 2727 \\ &= 99.1\% \end{aligned}$$

Sulfur Dioxide

$$E_s = 92\% \text{ by design}$$

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?

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  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 <sup>6</sup> 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

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:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

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:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

<sup>1</sup>Explain method of determining efficiency.

<sup>2</sup>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 Devices:

b. Operating Principles:

c. Efficiency:<sup>1</sup>

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2a</sup>

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 Devices:

b. Operating Principles:

c. Efficiency:<sup>1</sup>

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:<sup>2</sup>

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:<sup>1</sup>

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:<sup>2</sup>

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

<sup>1</sup>Explain method of determining efficiency.

<sup>2</sup>Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Managers:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

Contaminant

Rate or Concentration


(8) Process Rate:<sup>1</sup>

b. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Managers:

(6) Telephone No.:

(7) Emissions:<sup>1</sup>

Contaminant

Rate or Concentration


(8) Process Rate:<sup>1</sup>

10. Reason for selection and description of systems:

<sup>1</sup>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<sub>2</sub>\* \_\_\_\_\_ 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 <sub>2</sub>	_____ 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.

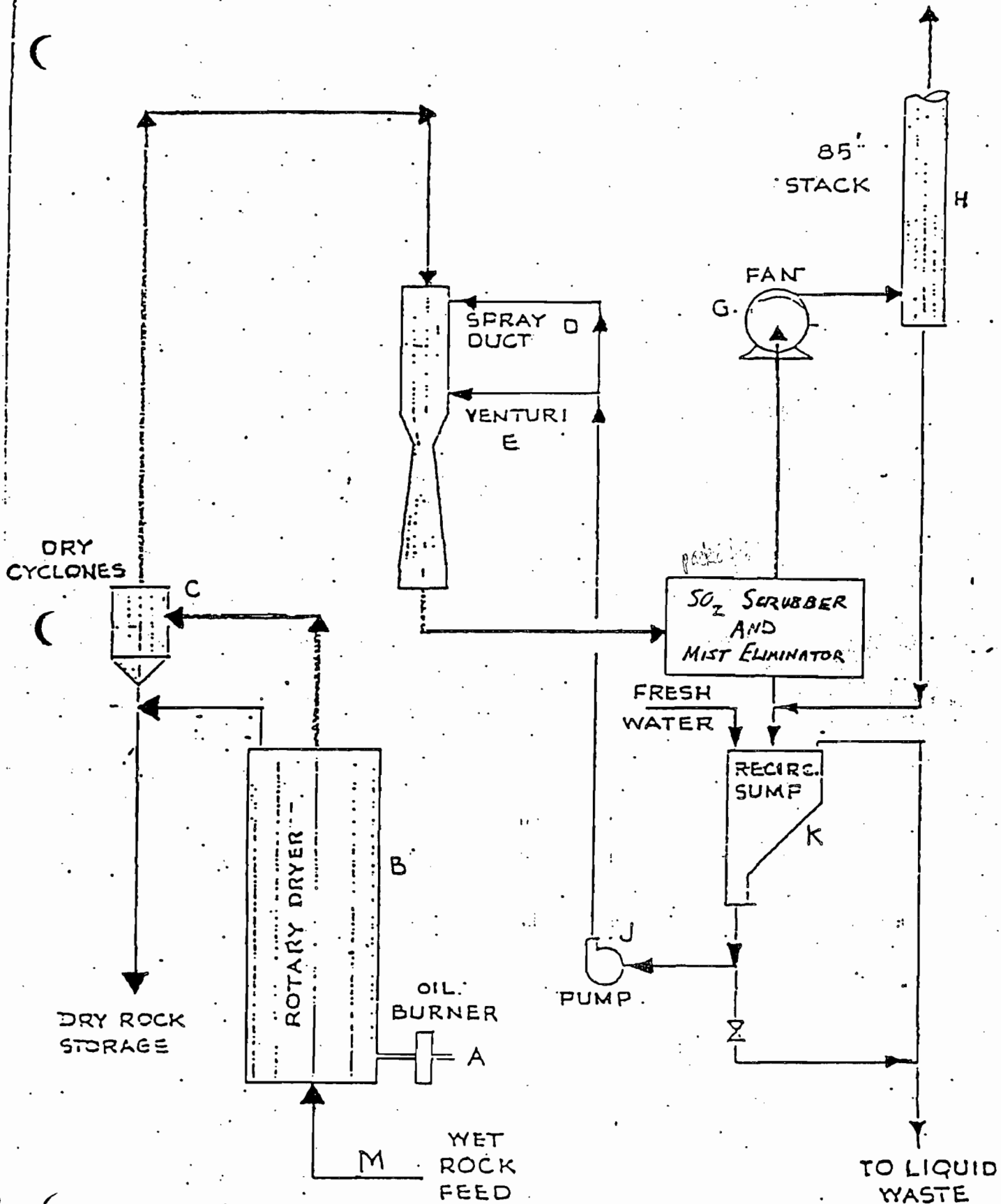
F. Attach all other information supportive to the PSD review.

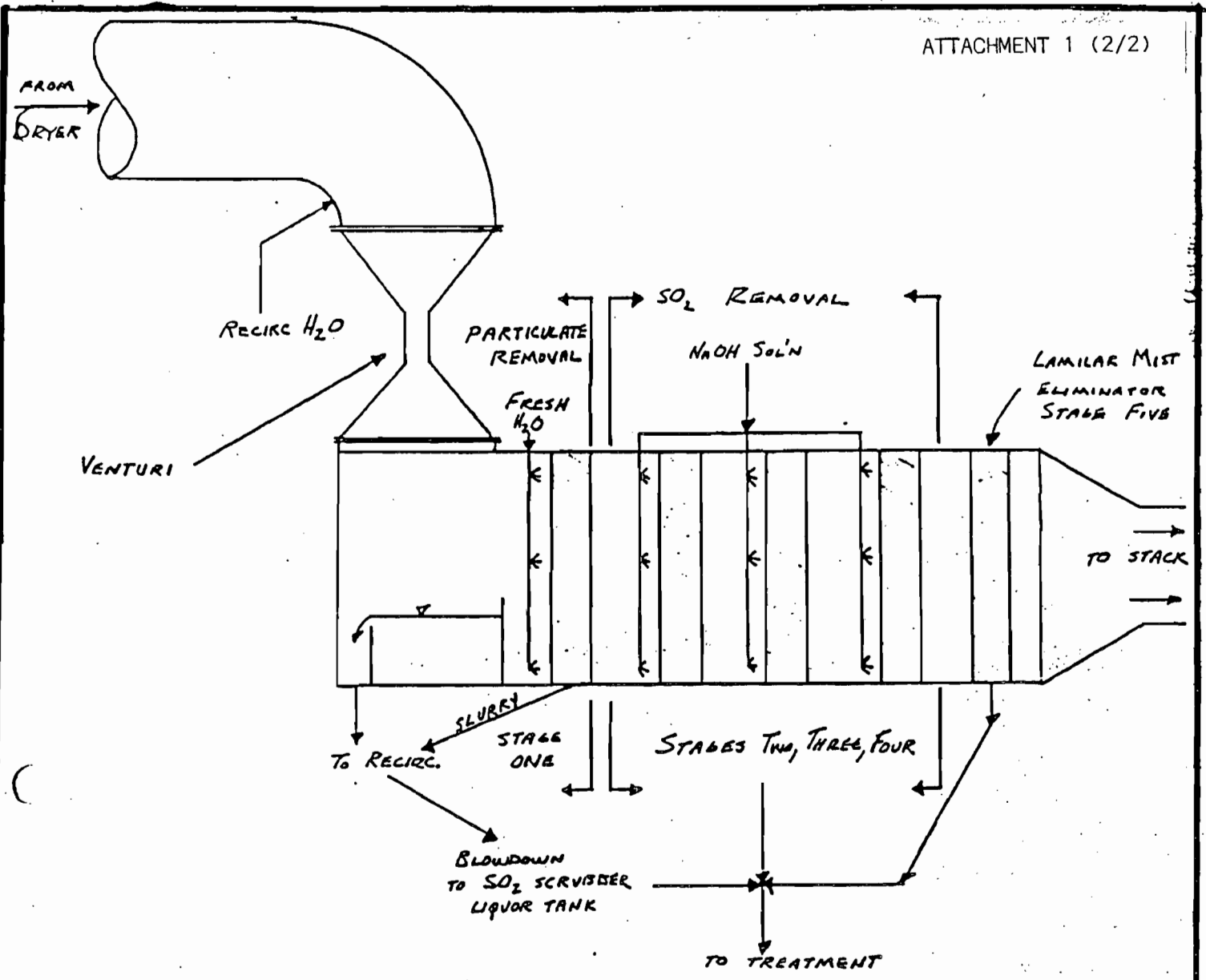
G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

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.

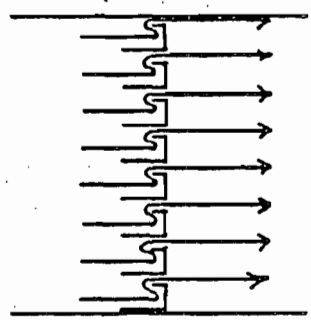


SCRUBBED GASES  
TO. ATMOSPHERE





AIR FLOW IN LAMILAR SECTIONS



No SCALE

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

Date	9/12/99
D	
T	
C	
A	

SURGE DRYER  
 SCRUBBER SYSTEM  
 SCHEMATIC

XNM
EWR
AFE



CALCINE  
SCRUBBER  
FURNACE  
A053-4546  
A053-4539

CALCINE KILN

BOILER  
HOUSE

A053-4544  
A053-4545  
GRINDING  
PLANT

No. 3 DRYER  
SCRUBBER

A053-4543

SCALE

DRY ROCK STORAGE  
FUGITIVE DUST SCRUBBER

DRY ROCK LOADOUT  
SCRUBBER

A053-15465

DRY STORAGE

A043-19426

DRY ROCK LOADOUT

WELD  
SHOP

No. 1 DRYER  
SCRUBBER

No. 2 DRYER  
SCRUBBER

A053-4532

A04533

DRY  
MILL

SURGE DRYER  
SCRUBBER

A053-48389

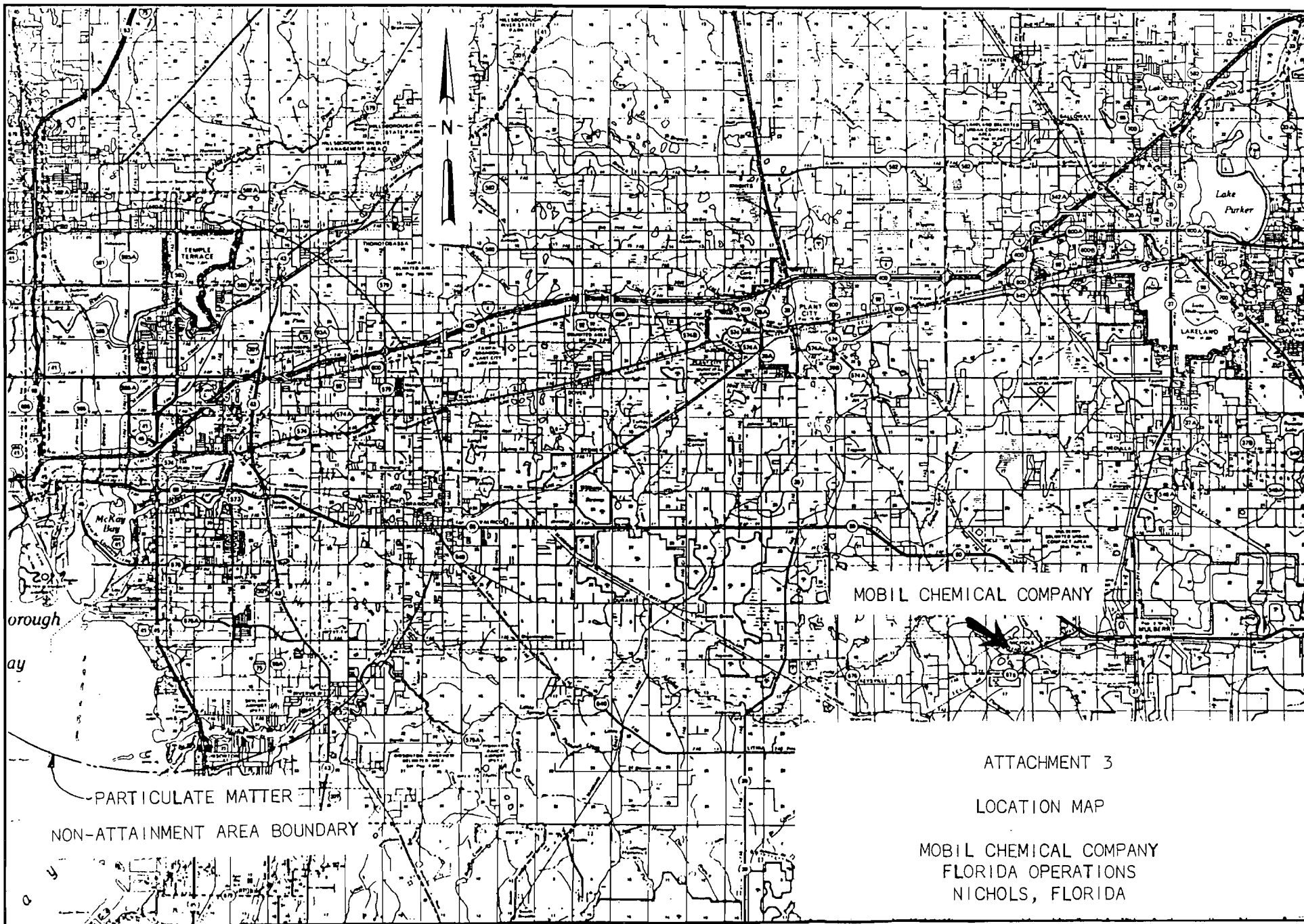
No. 4 DRYER  
(SURGE DRYER)

MOBIL CHEMICAL COMPANY  
Phosphorus Division, Minerals Group

Florida Operations

Nichols, Fla.

ATTACHMENT 2



orough  
ay

MOBIL CHEMICAL COMPANY

PARTICULATE MATTER  
NON-ATTAINMENT AREA BOUNDARY

ATTACHMENT 3  
LOCATION MAP

MOBIL CHEMICAL COMPANY  
FLORIDA OPERATIONS  
NICHOLS, FLORIDA

# 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  
13<sup>th</sup> day of September, 1983.



A handwritten signature in cursive script, appearing to read "George Firestone".

George Firestone  
Secretary of State

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 DEZ  
Vice President W. A. BORK

Attest:

G. G. Garney  
Assistant Secretary  
G. G. GARNEY

Witnesses:

Fred Tyson  
FRED TYSON  
Harold Gordon  
HAROLD GORDON

APPLICATION FOR PSD APPROVAL

NO. 4 PHOSPHATE ROCK DRYER

MOBIL CHEMICAL COMPANY  
FLORIDA OPERATIONS  
NICHOLS, FLORIDA

JULY 1984

SHOLTES & KOOGLER  
ENVIRONMENTAL CONSULTANTS  
1213 N.W. 6TH STREET  
GAINESVILLE, FLORIDA 32601  
(904) 377-5822



DEPARTMENT OF ENVIRONMENTAL REGULATION

<b>ROUTING AND TRANSMITTAL SLIP</b> CENTRAL AIR PERMITTING	ACTION NO
	ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)	INITIAL
ADAMS      AMODIO      FANCY      GEORGE	DATE
2.	INITIAL
HANKS      HERON      HOLLADAY      KING	DATE
3.	INITIAL
MITCHELL, Becky      MITCHELL, Bruce	DATE
4.	INITIAL
PALAGYI      POWELL      ROGERS      SVEC      THOMAS	DATE

REMARKS: 1-2-85.

Lillian,

① Mobil called and said:  
Continuous emission monitoring for SO<sub>2</sub> was an alternative in the final determination (AL 53-24802) for PSD-PL-042. I said we would change to read similar to EPA final determination.

② District wants to refine compliance test conditions, I told them to send memo and we would change.

③ We may get other consent from Mobil before our final determination.

INFORMATION
REVIEW & RETURN
REVIEW & FILE
INITIAL & FORWARD
DISPOSITION
REVIEW & RESPOND
PREPARE RESPONSE
FOR MY SIGNATURE
FOR YOUR SIGNATURE
LET'S DISCUSS
SET UP MEETING
INVESTIGATE & REPORT
INITIAL & FORWARD
DISTRIBUTE
CONCURRENCE
FOR PROCESSING
INITIAL & RETURN

FROM: Willard	DATE
	PHONE

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## 1.0 INTRODUCTION

The Mobil Chemical Company operates a phosphate rock mining and processing facility near Nichols, Florida in western Polk County. At the Nichols facility, phosphate rock which is mined and beneficiated at existing Mobile mines in the Polk County area, is dried, ground and/or calcined prior to shipment to off-site users. This application for PSD approval addresses a requested increase in the annual operating time of one of the existing phosphate rock dryers at the Mobil Chemical Nichols facility.

Presently, Mobil operates three rock dryers at the Nichols site. Each of the three dryers has an average production rate of 250 tons per hour. Two of the dryers are permitted to operate 8000 hours per year each while the third, referred to as Dryer No. 4 or the surge dryer, is permitted to operate 4000 hours per year. This application addresses increasing the permitted annual operating time of Dryer No. 4 from 4000 hours per year to 8000 hours per year. This dryer is presently operating under the State of Florida Air Pollution Source Operating Permit A053-48389 issued on October 22, 1981 and expiring October 15, 1986. The dryer was initially permitted on March 20, 1980 under approval granted following federal PSD review (PSD-FL-042) and under state construction permit AC 53-24802 (issued in February 1980). In these permits, the dryer is permitted for a maximum hourly dryer input rate of 475 tons per hour. Federal PSD approval was based on operating at this maximum rate for 4000 hours per year.

The existing Mobil facility is a major emitting facility. Therefore, an increase in the emission rate of any criteria pollutant brought about by the increased hours of operation of Dryer No. 4 that is in excess of the de minimus emission rate increases defined in State and Federal PSD regulations, will trigger a PSD review for the proposed project. Emission rate increases resulting from the additional 4000 hours per year of operation were determined to be: particulate matter - 49.8 tons per year, sulfur dioxide - 38.8 tons per year, nitrogen oxides - 68.7 tons per year, carbon monoxide - 6.2 tons per year, and volatile organic compounds - 1.2 tons per year. As a result of these emission rate increases, the modification is subject to a PSD review for particulate matter and nitrogen oxides.

In reviewing this PSD application, it should be recognized that there will be no increase in hourly emission rates for any air pollutant nor will there be an increase in the hourly production rate of the dryer. The only operating parameters that will be affected are the annual hours of operation of the dryer and the annual emission rates of air pollutants from the dryer.

Mobil is submitting the information in this document as an application for PSD review and approval. The material in the application includes a description of the affected facility and a description of the proposed modification, a review of Best Available Control Technology

(BACT) for particulate matter and nitrogen oxides, an air quality review and a review of the secondary impacts of emissions resulting from the proposed project.

## 2.0 PLANT DESCRIPTION

The Florida Operations of the Mobil Chemical Company Minerals Group produces phosphate rock. Wet rock produced at Mobil's two existing mines is shipped by rail to the Nichols plant where the rock is dried, ground and/or calcined. Elemental phosphorous was produced at the Nichols plant until August 1978 when the phosphorous plant was permanently shut down. The plant is located approximately 5.5 kilometers west of Mulberry, Florida at UTM coordinates 398.5 east and 3085.2 north (Zone 17). The location of the site is shown in Figure 2-1.

The rock that is shipped from mines consist of pebble and concentrate. Pebble rock is a coarser material that results from screening and, as a result, contains some residual clay and other fines. Concentrate, on the other hand, is recovered during the flotation process in the beneficiation plant and therefore has a lower content of surficial clay. As a result, the dust content of pebble rock is greater than that of concentrate. The phosphate rock that Mobil provides to customers is usually a dried blend of pebble and concentrate.

The rock is dried at the Nichols plant in three existing dryers. Dryer No. 1 is approximately 29 years old, Dryer No. 2 is approximately 19 years old and Dryer No. 4, which is the subject of this PSD application, is approximately four years old. Dryer No. 4 was permitted in February 1980 under state Permit AC53-24802 and in

March 1980 under federal PSD approval (PSD-FL-042). All three dryers are rotary dryers with average drying capacities of 250 tons per hour each. The dryers are all fired with No. 6 fuel oil with a maximum sulfur content of 2.5 percent sulfur or with natural gas. The heat input rate to each dryer, when operating at maximum capacity of 475 tons per hour, is 93.75 million BTU per hour.

The reason for increasing the hours of operation of the Dryer No. 4 is two-fold. First, having the opportunity to operate the newer dryer for 8000 hours per year will provide Mobil with greater flexibility in establishing dryer operating schedules. This flexibility, in turn, will take some of the load off of the older and less efficient dryers.

Secondly, although Mobil's long-term rock production rate is not expected to increase above the current 5 million ton per year, there will be a short-term production rate increase during the next few years. The production at the Mobil Ft. Meade mine is expected to decrease within the next year or so. A replacement mine, the South Ft. Meade Mine, is expected to start-up during this same period of time. During the transition period, there will be an overlap in production lasting approximately two years. During the transition period, the total rock production from the three mines will be close to six million tons per year. At the end of the transition period, it is expected that Mobil's rock production will return to the present five million tons per year rate.

The three dryers, operating as presently permitted, can operate a total of 20,000 hours per year and dry five million tons per year of rock. During the transition period, when six million tons of rock are produced, 24,000 hours per year of dryer operating time will be required. During the transition period therefore, an additional 4000 hours per year of dryer operating time will be required to dry the additional one million tons per year of rock produced. This 4000 hours will be provided by the increased hours of operation requested for Dryer No. 4.

#### 2.1 Dryer No. 4 Description

Dryer No. 4 operated by Mobil is a rotary dryer with concurrent flow. The dryer is fired with No. 6 fuel or natural gas. The maximum hourly feed rate to the dryer is 475 tons per hour (PSD-FL-042) with a heat input rate of 94 million BTU per hour. The annual average production rate of the dryer is 250 tons per hour.

The gas stream exhausted from the dryer passes through dry cyclones where the coarse particulate matter is removed and combined with the dry rock. Gases discharged from the cyclones pass through a Ducon venturi scrubber for particulate matter control and then through a Ducon packed-bed scrubber for sulfur dioxide control. The gases discharged from the packed-bed scrubber are discharged to the atmosphere through a stack which discharges at 85 feet above grade.



The existing particulate matter emission rate from Dryer No. 4 is limited by PSD approval (PSD-FL-042) to 0.052 pounds per ton of phosphate rock fed to the dryer and to 24.9 pounds per hour. Sulfur dioxide emissions are limited to 19.4 pounds per hour and visible emissions are limited to five percent opacity. The permitted annual emission rates of particulate matter and sulfur dioxide, based on 4000 operating hours per year at a rock feed rate of 475 tons per hour, are 49.8 and 38.8 tons per year, respectively (PSD-FL-042). It has been demonstrated by emission measurements that the dryer can operate in compliance with these emission limits. The visible emissions associated with this mass emission rate have been demonstrated to be of less than five percent opacity.

The sulfur dioxide emissions from the dryer result from the combustion of a maximum of 625 gallons per hour of No. 6 fuel oil with a 2.5 percent sulfur content. The sulfur dioxide that has been generated by the combustion of this fuel oil is controlled with a packed-bed Ducon scrubber recirculating a scrubbing liquor consisting of a caustic soda solution. The sulfur dioxide control efficiency achieved by this scrubber is 92 percent; resulting in a permitted sulfur dioxide emission rate of not more than 19.4 pounds per hour or 38.8 tons per year (4000 hours).

The emission rates of other air pollutants are not limited by present permit conditions. Existing emission rates for criteria pollutants have been calculated however.

Nitrogen oxides emissions from the dryer were calculated using an emission factor of 55 pounds of nitrogen oxides per 1,000 gallons of fuel consumed. This emission factor was derived from the EPA emission factor document AP-42, Supplement 13, Section 1.3. Based upon this emission factor and the consumption of 625 gallons of fuel oil per hour, a nitrogen oxides emission rate of 34.4 pounds per hour was calculated. Under presently permitted operating conditions, this results in an annual nitrogen oxides emission rate of 68.7 tons per year.

Carbon monoxide emissions, under presently permitted operating conditions, were calculated using an emission factor of five pounds per 1000 gallons of fuel consumed (EPA AP-42, Supplement 13, Section 1.3). This is considered to be a conservatively high emission factor since the excess air in industrial boilers, for which the emission factor was developed, is much lower than the excess air in the rotary rock dryer. The mass carbon monoxide emission rate calculated with this factor (for presently permitted operating conditions) is 3.1 pounds per hour or 6.3 tons per year.

Volatile organic compounds (VOC) emissions were calculated to be 0.6 pounds per hour and 1.3 tons per year under presently permitted operating conditions.

All fugitive particulate matter emission sources associated with the dryer are minimized by the engineering design of the dryer system, by maintenance of the system and by general housekeeping practices.

The emission rates from Dryer No. 4, under presently permitted conditions, are documented in Appendix A and summarized in Table 2-1. A schematic diagram of the air pollution control system associated with the dryer is also included in Appendix A.

## 2.2 Description of Proposed Modification

The modification requested by this PSD application is an increase in the annual hours of operation of Dryer No. 4 from the presently permitted 4000 hours per year to a proposed operating time of 8000 hours per year. The maximum hourly rock input rate to the dryer of 475 tons per hour will not be affected by this modification nor will any of the short-term air pollutant emission rates.

The increase in annual operating time will result in a two-fold increase in the annual dryer production rate; from one million tons of dry rock per year to two million tons of dry rock per year, and a two-fold increase in the annual emission rate of all pollutants

presently emitted from the dryer. This includes particulate matter, sulfur dioxide, nitrogen oxides, carbon monoxide and volatile organic compounds. The annual particulate matter emission rate will increase from 49.8 tons per year to 99.6 tons per year; a 49.8 ton per year increase based on a maximum hourly production rate of 475 tons per hour. Nitrogen oxides emissions will increase from 68.8 tons per year to 137.5 tons per year; a 68.7 ton per year increase. The emission rate increases of sulfur dioxide, carbon monoxide and volatile organic compounds have been determined not to be significant (see Appendix A and Table 2-1). There are no fluoride emissions associated with the operation of the rock dryer.

### 2.3 Good Engineering Practice Stack Height

The existing stack height for the surge dryer is 85 feet. This stack height was evaluated by EPA and FDER during the review of the construction permit application for Dryer No. 4 in 1980 and was found to satisfy the Good Engineering Practice Stack Height criteria. The stack height will not be modified as a result of the proposed modification nor will the heights of adjacent structures. Therefore, it can be concluded that the dryer stack height still satisfies the Good Engineering Practice Stack Height criteria.

TABLE 2-1

SUMMARY OF PERMITTED AND PROPOSED EMISSION RATES  
 DRYER NO. 4

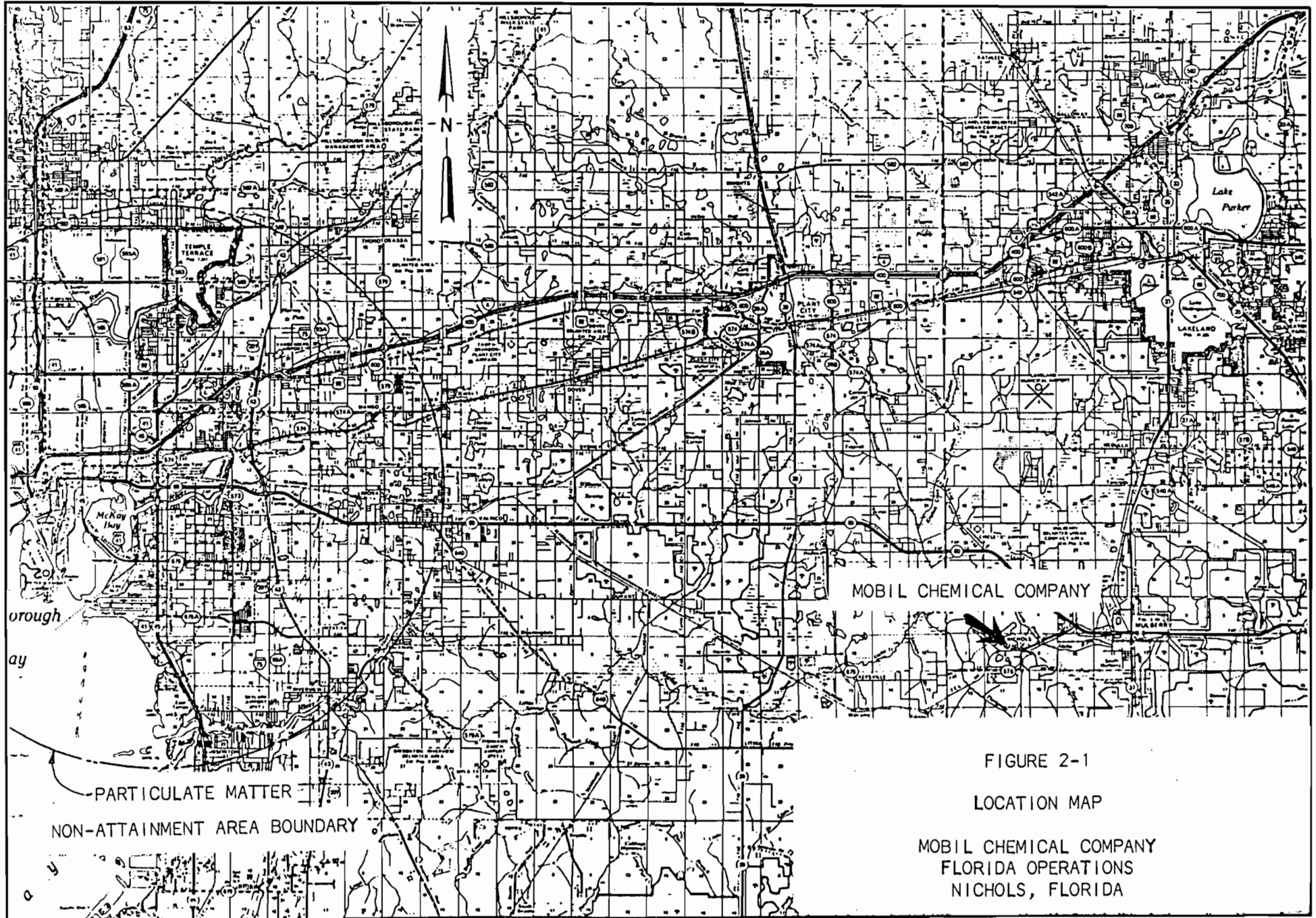
MOBIL CHEMICAL COMPANY  
 NICHOLS, FLORIDA

	Pollutant									
	Hourly Emission Rate (lb/hr)					Annual Emission Rate (tons/year)				
	PM	SO <sub>2</sub>	NOx	CO	VOC	PM	SO <sub>2</sub>	NOx	CO	VOC
Permitted <sup>(1)</sup>	24.0	19.4	34.4	3.1	0.6	49.8	38.8	68.8	6.3	1.3
Proposed <sup>(2)</sup>	24.0	19.4	34.4	3.1	0.6	99.6	77.6	137.5	12.5	2.5
Increase	0	0	0	0	0	49.8	38.8	68.7	6.2	1.2
De minimus Increase <sup>(2)</sup>	NA	NA	NA	NA	NA	25	40	40	100	40

(1) Permitted by state and federal permit conditions or the emission rate resulting from Dryer No. 4 operating at permitted rate if emission limit is not specifically established.

(2) Calculation of proposed emission rates detailed in Appendix A.

(3) De minimus emission rate increases defined in 17-2.500 Table 2, FAC.



### 3.0 BEST AVAILABLE CONTROL TECHNOLOGY

Best Available Control Technology (BACT) is required to control pollutants emitted from major sources or from major modifications to air pollution sources if the increase(s) in the emission rate(s) exceed the de minimus emission rate increases defined in state and federal PSD regulations. The de minimus emission rate increases for particulate matter and nitrogen oxides will be exceeded by the proposed increase in annual operating time of Dryer No. 4. BACT therefore must be reviewed for particulate matter and nitrogen oxides.

The hourly particulate matter emission rate from the rock dryer will remain unchanged since only the annual operating time of the dryer will be affected. Hence, only the annual particulate matter emission rate will change. Particulate matter emissions from the rock dryer are presently controlled with a Ducon venturi scrubber to a rate equivalent to 0.052 pounds per ton of rock feed. This corresponds to a maximum particulate matter concentration in the stack gas of 0.021 grains per actual cubic foot and is more stringent than federal New Source Performance Standards for phosphate rock dryers (0.06 pounds per ton of feed).

EPA reviewed the background information used in developing the New Source Performance Standards for phosphate rock dryers in the document, Phosphate Rock Plants-Background Information for Promulgated Standards, USEPA, EPA-450/3-79-017b, April 1982. In this document,

EPA justified the proposed standards as being achievable by using cost effective control technology. Mobil is presently achieving a more stringent emission standard and the achievement of an even more stringent standard, using EPA's criteria, would no longer be cost effective.

Furthermore, the control system that Mobil presently employs on the Dryer No. 4 is a venturi scrubber/packed-bed scrubber system that is designed to control both particulate matter and sulfur dioxide emissions. To maintain the integrity of this system if a more stringent particulate matter emission rate was imposed, Mobil would be limited in control alternatives to a similar type scrubber arrangement; one probably incorporating a venturi scrubber with a higher energy requirement. EPA, in establishing New Source Performance Standards for rock dryers, determined that the costs associated with the higher energy requirements were not justified by the associated incremental reduction in particulate matter emissions.

Nitrogen oxides emissions from rock dryers can reasonably be controlled only by modifications to the combustion process. Many of the techniques used for nitrogen oxides control in the combustion processes associated with boiler operations are not applicable to phosphate rock dryers since the purposes for heat generation in the two sources is quite different. In a boiler, the objective is to transfer the maximum amount of heat of combustion directly to water



for steam generation. This process is most efficient when combustion air is minimized; thus resulting in a greater amount of available heat since the requirements for air heating are minimized.

With a rock dryer, the objective is to transfer the heat combustion to air which in turn is used to evaporate moisture from phosphate rock. By the nature of the operation, the excess air in a rotary rock dryer is considerably greater than the excess air in a boiler. As a result of the greater amount of excess air, the flame temperature in a rock dryer is reduced; achieving the same result that would be achieved by staged combustion in the low-NO<sub>x</sub> burners used in boilers.

There is no practical means of modifying the burner in Dryer No. 4 to achieve even lower NO<sub>x</sub> emissions and techniques such as flue gas recirculation and varying under-fired and over-fired air are not applicable. Control alternatives such as add-on air pollution control equipment for nitrogen oxides control are not feasible from either the stand-points of cost or system reliability.

For Best Available Control Technology, Mobil is proposing an emission limit of 0.052 pounds of particulate matter per ton of rock fed to the dryer, a standard more stringent than federal New Source Performance Standards for phosphate rock dryers. For nitrogen oxides, Mobil is proposing an emission limit of 0.37 pounds of nitrogen oxides per million BTU heat input. This is the emission limit presently achieved

by the dryer and the only limit that can be achieved without the use of add-on nitrogen oxides control equipment; equipment which is not cost effective. These emission limits will result in maximum hourly emission rates for particulate matter and nitrogen oxides of 24.9 pounds per hour and 34.4 pounds per hour, respectively. The annual emission rates of these two pollutants, under proposed operating conditions, will be 99.6 tons per year for particulate matter and 137.5 tons per year for nitrogen oxides.

## 4.0 AIR QUALITY IMPACT ANALYSIS

### 4.1 Introduction

An air quality review was performed to evaluate the impact of increased particulate matter and nitrogen oxides emissions from Dryer No. 4 on ambient air quality. Since the maximum hourly and daily particulate matter and nitrogen oxides emission rates from the dryer will remain unchanged, short-term air quality modeling was not conducted for either particulate matter or nitrogen oxides. Air quality modeling was conducted only to evaluate the long-term, or annual, impacts of the annual emission rate increases.

The air quality modeling was conducted in accordance with guidelines established by EPA (Guidelines for Air Quality Models, March 1978). The modeling was conducted with the Industrial Source Complex Short-Term (ISC-ST) Air Quality Model. The meteorological data used with the model were Tampa data representing the period 1970-1974.

### 4.2 Particulate Matter and Nitrogen Oxides Modeling

A preliminary air quality review was conducted to determine the magnitude and location of the maximum impacts of the increased particulate matter and nitrogen oxides emissions. The analysis was conducted using emissions that represented a 475 tons per hour rock feed rate to the dryer. The analysis demonstrated that the annual impact of particulate matter emissions from the surge dryer, while operating under presently permitted conditions, is 0.2 micrograms per

cubic meter and while operating under proposed conditions (8,000 hours per year), 0.6 micrograms per cubic meter. The increase in the annual particulate matter levels resulting from the increased hours of operation of the dryer is only 0.3 micrograms per cubic meter; an impact which is not significant.

The maximum 24-hour impact of particulate matter emissions from the rock dryer is 7.5 micrograms per cubic meter; an impact which is less than the 10 microgram per cubic meter de minimus impact level established by state and federal regulations. This exempts the modification proposed by Mobil from the requirement for air quality monitoring.

The preliminary modeling review further demonstrated that the annual impact of nitrogen oxides emissions from the dryer, while operating at presently permitted conditions, is 0.43 micrograms per cubic meter. When operating at 8,000 hours annually, the maximum annual nitrogen oxides impact will be 0.86 micrograms per cubic meter. The resulting maximum annual increase in the nitrogen oxides level will be 0.4 micrograms per cubic meter; an impact that is well below the de minimus impact level of 14 micrograms per cubic meter, annual average, defined by state and federal regulations for nitrogen oxides. Since the de minimus impact level is not exceeded for nitrogen oxides, the modification is also exempt from the requirement for air quality monitoring for nitrogen oxides.

The preliminary modeling showed that the maximum annual average impact of particulate matter would increase by only 0.3 micrograms per cubic meter and the annual average impact of nitrogen oxides would increase by only 0.4 micrograms per cubic meter. Both of these impacts are less than significant and because of this, no further air quality modeling was conducted.

The computer output of the air quality modeling from which the information in this Section was derived is included in Appendix B of this application. A summary of the modeling results is presented in Table 4-1.

#### **4.3 Impact on Class I Areas and Non-Attainment Areas**

It has been established by air quality modeling that the impacts of increased particulate matter and nitrogen oxides emissions from Dryer No. 4 at the Mobil facility are not significant at any point. As a result of this, the proposed increase in the permitted hours of rock dryer operation will not result in a significant impact on Class I PSD areas or Non-Attainment areas within the State of Florida.

TABLE 4-1

SUMMARY OF AIR QUALITY MODELING RESULTS<sup>(1)</sup>  
DRYER NO. 4MOBIL CHEMICAL COMPANY  
NICHOLS, FLORIDA

Pollutant	Ambient Impact ( $\mu\text{g}/\text{m}^3$ )							
	Permitted <sup>(2)</sup>	Proposed <sup>(3)</sup>	Increased Impact	De minimus <sup>(4)</sup> Impact	Significant <sup>(5)</sup> Impact	Class II PSD Increment	Class I PSD Increment	Ambient Air Quality Standard
Particulate Matter								
24-Hour	7.52	7.52	0	10	5	37	10	150
Annual	0.31	0.61	0.30	NA	1	19	5	60
Nitrogen Oxides								
Annual	0.43	0.86	0.43	14	1	NA	NA	100

- (1) Air quality modeling results are included in Appendix B.  
(2) Impact with Dryer No. 4 operating at permitted rate of 250 tons/hour for 4000 hours/year.  
(3) Impact with Dryer No. 4 operating at proposed rate of 250 tons/hour for 8000 hours/year.  
(4) De minimus impact defined in Chapter 17-2.500 Table 3, FAC.  
(5) Significant impact level defined in Chapter 17-2.100 (150).

## 5.0 IMPACT ON SOILS, VEGETATION AND VISIBILITY

A qualitative evaluation of the impacts of the proposed modification on soils, vegetation and visibility in the area has been prepared.

The land use in the area surrounding the Mobil facility is dedicated to agriculture and phosphate rock mining. The town of Mulberry is approximately 5.5 kilometers east of the facility.

The proposed increase in the annual operating time of Dryer No. 4 will have no effect on hourly emission rates of any pollutant emitted by the rock dryer. As a result of this, there will be no change in the short-term impact of any pollutant emitted from the dryer and hence no change in the short-term impacts on soils, vegetation and visibility in the area.

Air quality modeling has demonstrated that the impacts of increased particulate matter and nitrogen oxides emissions for the annual period will not be significant at any point. Hence, the long-term impacts of air pollutant emissions are not expected to have an impact on soils, vegetation and visibility.

APPENDIX A  
EMISSION RATE CALCULATIONS



# AIR POLLUTANT EMISSION RATE CALCULATIONS

## SURGE DRYER MOBILE CHEMICAL COMPANY

### STACK PARAMETERS

STACK HT. (FE.) - 85 ft  
STACK DIA (FE.) - 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

$$\begin{aligned} \text{PM} &= [475 \text{ ton/hr} \times 0.052 \text{ lb/ton}] \\ &= 24.9 \text{ lb/hr} - \text{permitted \& proposed} \\ &\quad \times 4000 \text{ hr/yr} / 2000 \text{ lb/ton} \\ &= 49.8 \text{ ton/yr} - \text{permitted} \\ &\quad \times 8000 \text{ hr/yr} / 2000 \\ &= 99.6 \text{ ton/yr} - \text{proposed} \end{aligned}$$

SULFUR DIOXIDE @ 157(2.5) lb SO<sub>2</sub>/100 gal (AP-42, Supp 13)

$$\begin{aligned} \text{SO}_2 &= 625 \text{ gal/hr} / 1000 \times 157(2.5) \text{ lb/100 gal} \times (1 - 0.92) \text{ sorption} \\ &= 19.4 \text{ lb/hr} - \text{permitted \& proposed} \\ &\quad \times 4000 / 2000 \\ &= 38.8 \text{ ton/yr} - \text{permitted} \\ &\quad \times 8000 / 2000 \\ &= 77.6 \text{ ton/yr} - \text{proposed} \end{aligned}$$

NITROGEN OXIDES @ 55 lb/1000 gal (AP-42, Supp 13)

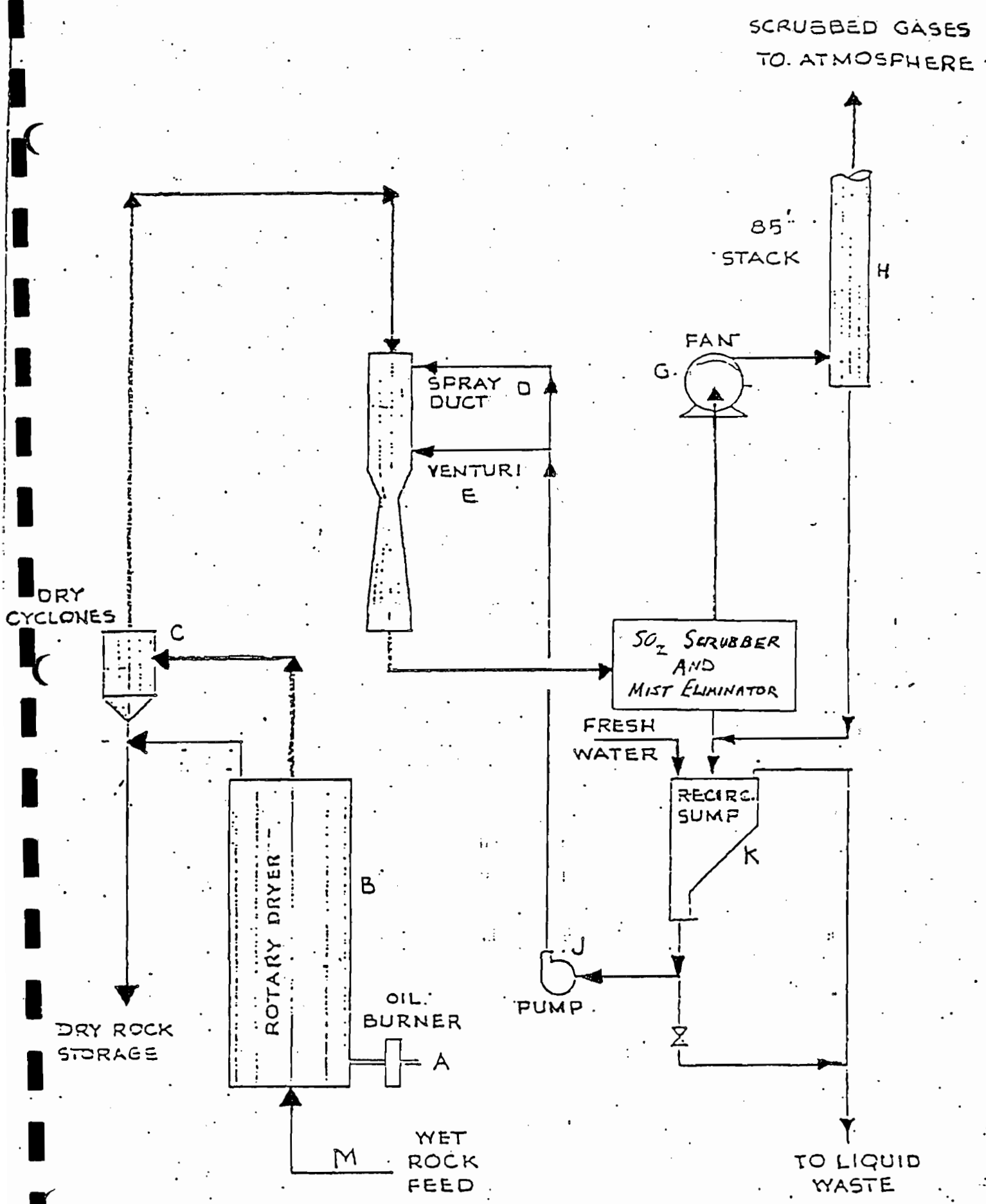
$$\begin{aligned} \text{NO}_x &= 625 \text{ gal/hr} / 1000 \times 55 \text{ lb} / 1000 \text{ gal} \\ &= 34.4 \text{ lb/hr} - \text{present operating conditions} \\ &\quad \& \text{ proposed} \\ &\quad \times 4000 / 2000 \\ &= 68.8 \text{ ton/yr} - \text{permitted operating conditions} \\ &\quad \times 8000 / 2000 \\ &= 137.5 \text{ ton/yr} - \text{proposed} \end{aligned}$$

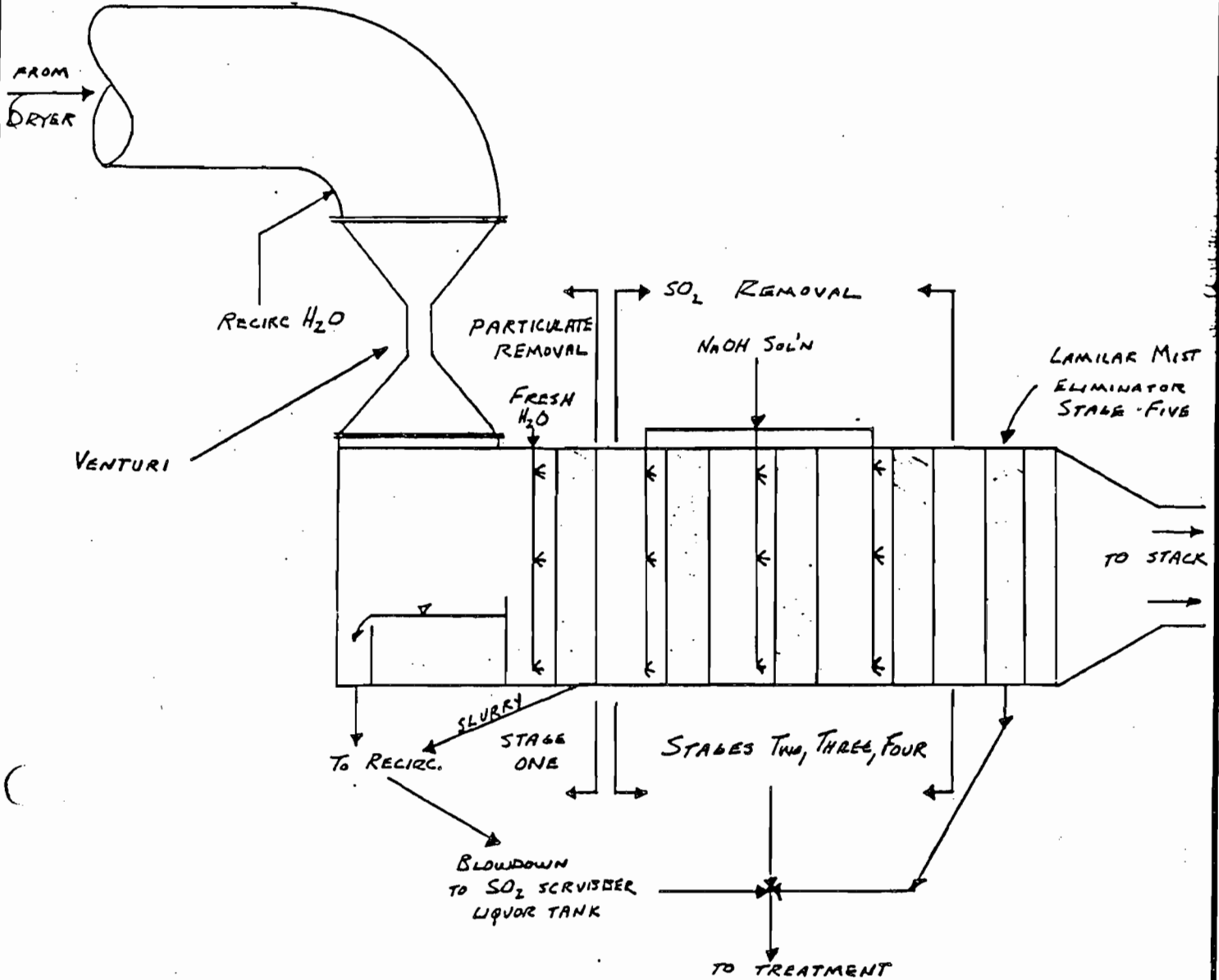
CARBON MONOXIDE @ 5 lb/1000 gal (AP-42, Supp 13)

$$\begin{aligned} \text{CO} &= 625 \text{ gal/hr} / 1000 \times 5 \text{ lb} / 1000 \text{ gal} \\ &= 3.1 \text{ lb/hr} - \text{present operating conditions} \\ &\quad \& \text{ proposed} \\ &\quad \times 4000 / 2000 \\ &= 6.3 \text{ ton/yr} - \text{present operating conditions} \\ &\quad \times 8000 / 2000 \\ &= 12.5 \text{ ton/yr} - \text{proposed} \end{aligned}$$

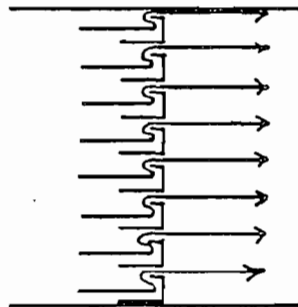
VOC @ 1.0 lb/1000 gal (AP-42, Supp 13)

$$\begin{aligned} \text{VOC} &= 625 \text{ gal/hr} / 1000 \times 1.0 \text{ lb} / 1000 \text{ gal} \\ &= 0.6 \text{ lb/hr} - \text{present operating conditions} \\ &\quad \& \text{ proposed} \\ &\quad \times 4000 / 2000 \\ &= 1.3 \text{ tons/yr} - \text{present operating conditions} \\ &\quad \times 8000 / 2000 \\ &= 2.5 \text{ ton/yr} - \text{proposed} \end{aligned}$$





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

	JNM
EWR	
AFE	

APPENDIX B  
AIR QUALITY MODELING RESULTS



RING DISTANCES(KM)= 0.60 0.80 1.00 1.25 1.50

STACK # 1--SURGE DRYER

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG.K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	1.9000	25.90	2.29	16.10	339.00	66.31

= 15.0 lb/hr

PM = 24.9 lb/hr

NO<sub>x</sub> = 34.4 lb/hr

MAXIMUM MEAN CONC= 3.0760E-07 DIRECTION= 9 DISTANCE= 0.8 KM

YEAR= 70

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	1.12689E-07	1.26270E-07	1.26226E-07	1.14963E-07	1.03699E-07
2	1.40157E-07	1.58237E-07	1.56018E-07	1.39485E-07	1.23244E-07
3	1.28711E-07	1.41473E-07	1.38720E-07	1.24672E-07	1.11220E-07
4	9.67105E-08	1.02718E-07	9.89839E-08	8.85020E-08	7.93368E-08
5	1.05045E-07	1.11595E-07	1.06842E-07	9.45500E-08	8.37350E-08
6	1.29592E-07	1.34119E-07	1.24105E-07	1.06218E-07	9.11674E-08
7	1.52821E-07	1.54506E-07	1.40006E-07	1.17318E-07	9.87525E-08
8	2.07444E-07	2.11955E-07	1.92331E-07	1.60137E-07	1.33317E-07
9	2.78204E-07	3.07603E-07	2.97464E-07	2.61664E-07	2.28133E-07
10	1.67905E-07	1.81115E-07	1.73161E-07	1.51174E-07	1.31203E-07
11	8.12868E-08	9.47407E-08	9.71221E-08	8.97929E-08	8.19534E-08
12	6.55748E-08	8.67399E-08	9.60339E-08	9.33034E-08	8.79064E-08
13	6.31722E-08	9.15339E-08	1.05815E-07	1.05538E-07	1.01233E-07
14	6.07511E-08	8.94562E-08	1.04470E-07	1.04730E-07	1.00665E-07
15	6.28587E-08	8.60426E-08	9.60042E-08	9.34768E-08	8.82976E-08
16	5.80481E-08	7.99328E-08	8.91631E-08	8.67007E-08	8.17982E-08
17	4.57664E-08	6.13388E-08	6.76171E-08	6.56718E-08	6.20821E-08
18	4.49011E-08	6.28173E-08	7.19605E-08	7.24908E-08	7.08065E-08
19	3.57276E-08	4.80737E-08	5.35554E-08	5.25035E-08	4.98242E-08
20	4.02998E-08	5.47660E-08	6.23162E-08	6.24092E-08	6.03313E-08
21	5.40111E-08	7.34193E-08	8.43066E-08	8.50008E-08	8.23802E-08
22	5.88099E-08	7.99948E-08	9.14666E-08	9.17036E-08	8.85516E-08
23	6.97082E-08	9.49864E-08	1.07255E-07	1.06943E-07	1.03240E-07
24	8.81108E-08	1.19255E-07	1.35347E-07	1.36626E-07	1.34142E-07
25	9.57893E-08	1.26025E-07	1.37938E-07	1.35002E-07	1.29940E-07
26	1.15504E-07	1.49361E-07	1.61978E-07	1.56892E-07	1.49138E-07
27	1.60667E-07	2.16014E-07	2.42743E-07	2.41702E-07	2.34611E-07
28	1.53090E-07	2.00280E-07	2.18938E-07	2.12420E-07	2.01795E-07
29	1.44287E-07	1.76118E-07	1.84238E-07	1.73425E-07	1.60971E-07
30	1.62097E-07	1.96514E-07	2.04941E-07	1.93152E-07	1.79671E-07
31	1.40976E-07	1.61675E-07	1.61793E-07	1.47814E-07	1.34315E-07
32	1.28885E-07	1.51083E-07	1.53822E-07	1.42007E-07	1.29623E-07
33	1.23253E-07	1.48999E-07	1.54998E-07	1.45310E-07	1.34061E-07
34	1.03753E-07	1.19450E-07	1.19384E-07	1.08363E-07	9.74701E-08
35	7.31673E-08	7.92656E-08	7.73019E-08	6.93407E-08	6.19929E-08
36	9.42472E-08	1.05777E-07	1.06344E-07	9.78188E-08	8.91720E-08

PM

$$\text{Present} = (3.076 \text{ E-}07) \left( \frac{24.9}{15.0} \right) \text{ lb/L} \times \left( \frac{4000}{8760} \right) \text{ hr/yr} = 0.23 \text{ ug/m}^3$$

$$\text{Proposed} = \text{present} \times 2 = 0.45 \text{ ug/m}^3$$

NO<sub>x</sub>

$$\text{Present} = 0.3076 \left( \frac{34.4}{15.0} \right) \times \left( \frac{4000}{8760} \right) = 0.32 \text{ ug/m}^3$$

$$\text{Proposed} = \text{present} \times 2 = 0.64 \text{ ug/m}^3$$



YEARLY MAXIMUM 24-HOUR CONC= 3.7340E-06 DIRECTION= 25 DISTANCE= 1.0 KM DAY=290

YEAR= 70

## HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	1.9545E-06 (203)	1.7934E-06 (203)	1.4762E-06 (203)	1.4675E-06 ( 87)	1.3765E-06 ( 87)
2	1.9399E-06 ( 91)	2.3253E-06 ( 80)	2.4410E-06 ( 80)	2.2441E-06 ( 80)	2.0007E-06 ( 80)
3	1.7805E-06 ( 91)	1.5300E-06 (116)	1.5110E-06 ( 79)	1.5551E-06 (221)	1.6011E-06 (221)
4	1.1113E-06 (196)	1.0652E-06 (116)	1.2510E-06 (223)	1.4776E-06 (223)	1.5590E-06 (223)
5	1.4009E-06 (117)	1.8094E-06 (222)	2.2697E-06 (222)	2.2941E-06 (222)	2.1610E-06 (222)
6	2.5762E-06 (186)	2.4642E-06 (186)	2.1650E-06 (186)	1.7656E-06 (186)	1.4504E-06 (186)
7	2.1386E-06 (119)	1.6517E-06 (119)	1.6621E-06 (177)	1.5281E-06 (177)	1.3592E-06 (177)
8	1.9399E-06 ( 99)	2.4896E-06 (178)	2.8056E-06 (178)	2.6740E-06 (178)	2.4407E-06 (178)
9	2.7837E-06 (187)	2.7108E-06 (187)	2.3636E-06 (158)	1.9800E-06 (158)	1.6490E-06 (158)
10	2.1282E-06 (187)	2.0358E-06 (187)	1.7345E-06 (187)	1.3724E-06 (187)	1.1155E-06 ( 42)
11	1.2613E-06 (184)	1.2521E-06 ( 48)	1.4647E-06 ( 48)	1.4101E-06 ( 48)	1.2887E-06 ( 48)
12	1.7544E-06 (184)	1.5298E-06 (184)	1.9745E-06 ( 73)	2.0831E-06 ( 73)	2.0182E-06 ( 73)
13	1.2513E-06 ( 72)	2.5950E-06 ( 72)	3.4444E-06 ( 72)	3.6218E-06 ( 72)	3.5248E-06 ( 72)
14	9.9779E-07 (217)	1.1337E-06 ( 34)	1.3704E-06 ( 34)	1.4712E-06 ( 7)	1.4895E-06 ( 7)
15	1.7018E-06 (160)	1.7902E-06 (160)	1.6140E-06 (160)	1.5472E-06 ( 7)	1.5493E-06 ( 7)
16	1.3771E-06 (171)	1.6929E-06 (171)	2.1173E-06 (319)	2.2521E-06 (319)	2.2049E-06 (319)
17	9.2764E-07 (126)	8.7879E-07 (126)	9.8881E-07 (319)	1.0545E-06 (319)	1.0311E-06 (319)
18	9.7503E-07 ( 21)	1.3169E-06 ( 21)	1.4259E-06 ( 21)	1.3680E-06 ( 21)	1.2777E-06 ( 21)
19	9.1257E-07 (304)	1.0044E-06 (304)	9.4163E-07 (304)	9.6640E-07 ( 3)	9.8275E-07 (320)
20	9.0285E-07 ( 52)	1.0085E-06 ( 52)	9.2229E-07 ( 52)	9.6596E-07 (308)	9.9408E-07 ( 3)
21	1.3309E-06 (182)	1.2040E-06 ( 58)	1.1347E-06 ( 58)	1.2048E-06 ( 37)	1.2251E-06 ( 37)
22	9.1131E-07 (182)	1.5082E-06 ( 37)	2.1675E-06 ( 37)	2.3901E-06 ( 37)	2.3907E-06 ( 37)
23	1.0443E-06 (274)	1.4508E-06 (273)	1.9398E-06 (272)	2.0271E-06 (272)	2.0209E-06 ( 38)
24	1.9176E-06 (277)	1.8607E-06 (277)	2.3404E-06 (272)	2.3881E-06 (272)	2.2657E-06 (272)
25	1.7985E-06 (290)	3.1530E-06 (290)	3.7340E-06 (290)	3.6655E-06 (290)	3.4318E-06 (290)
26	1.6227E-06 (269)	1.8279E-06 (269)	1.7980E-06 (269)	1.8005E-06 ( 14)	1.6897E-06 ( 14)
27	2.4938E-06 (120)	2.5262E-06 (120)	2.6761E-06 (280)	2.7611E-06 (280)	2.6668E-06 (280)
28	2.0500E-06 (243)	2.1675E-06 (270)	2.3292E-06 (270)	2.1344E-06 (270)	1.9942E-06 (144)
29	1.9772E-06 (243)	2.0427E-06 (266)	2.1229E-06 (152)	2.0520E-06 (152)	1.9378E-06 (152)
30	2.5598E-06 (205)	2.7378E-06 (205)	2.5221E-06 (205)	2.1092E-06 (205)	1.8684E-06 (292)
31	1.4182E-06 (106)	1.4523E-06 (282)	1.3371E-06 (282)	1.2022E-06 (293)	1.1873E-06 (293)
32	1.7765E-06 (154)	1.7198E-06 (154)	1.6987E-06 ( 62)	1.5865E-06 ( 62)	1.4361E-06 ( 62)
33	1.6171E-06 (195)	1.3128E-06 (195)	1.2881E-06 (203)	1.4808E-06 (203)	1.5205E-06 (203)
34	1.8252E-06 (213)	1.9742E-06 (213)	2.0247E-06 ( 33)	2.0104E-06 ( 33)	1.8762E-06 ( 33)
35	1.3000E-06 (213)	1.1709E-06 (213)	9.9890E-07 (213)	9.7768E-07 (365)	9.9034E-07 ( 85)
36	1.4151E-06 (127)	1.1682E-06 (127)	1.0900E-06 (236)	1.0059E-06 (363)	9.4153E-07 (363)

PLANT NAME: MOBIL CHEM CO.

POLLUTANT: PART

EMISSION UNITS: GM/SEC

AIR QUALITY UNITS: GM/M\*\*3

YEARLY SECOND MAXIMUM 24-HOUR CONC= 2.6669E-06 DIRECTION= 27 DISTANCE= 1.0 KM DAY=138

YEAR= 70

SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	1.2172E-06 ( 91)	1.2270E-06 ( 87)	1.4749E-06 ( 87)	1.3832E-06 ( 80)	1.3009E-06 ( 80)
2	1.8478E-06 ( 80)	1.8072E-06 ( 91)	1.6741E-06 ( 88)	1.6503E-06 ( 88)	1.5368E-06 ( 88)
3	1.6264E-06 (116)	1.5023E-06 ( 91)	1.3818E-06 (221)	1.4361E-06 ( 79)	1.5213E-06 (224)
4	1.0675E-06 (116)	1.0118E-06 ( 91)	1.1938E-06 (222)	1.4238E-06 (222)	1.4974E-06 (222)
5	1.0753E-06 (196)	1.5559E-06 (223)	2.0039E-06 (223)	2.1247E-06 (223)	2.0923E-06 (223)
6	1.3178E-06 (119)	1.1829E-06 (223)	1.3208E-06 (223)	1.2586E-06 (223)	1.1462E-06 (223)
7	1.5873E-06 (161)	1.5480E-06 (177)	1.2160E-06 (119)	1.0934E-06 (298)	9.9371E-07 (298)
8	1.8856E-06 (198)	1.7548E-06 (198)	1.5782E-06 (198)	1.3324E-06 (198)	1.1143E-06 (198)
9	2.5105E-06 (190)	2.5515E-06 (158)	2.3530E-06 (187)	1.9025E-06 (187)	1.5688E-06 (187)
10	1.6891E-06 (199)	1.5693E-06 (199)	1.4312E-06 (146)	1.2402E-06 ( 42)	1.0958E-06 (187)
11	1.0925E-06 (156)	1.1164E-06 (183)	1.1877E-06 (183)	1.1097E-06 (183)	1.0052E-06 (183)
12	1.5174E-06 (174)	1.4946E-06 (174)	1.6385E-06 ( 68)	1.6205E-06 ( 68)	1.5133E-06 ( 68)
13	1.2416E-06 (156)	1.3766E-06 (156)	1.6849E-06 ( 81)	1.8587E-06 ( 81)	1.8560E-06 ( 81)
14	8.7732E-07 (200)	1.0319E-06 (217)	1.3408E-06 ( 7)	1.3400E-06 ( 34)	1.2350E-06 ( 34)
15	1.0738E-06 (217)	1.2342E-06 (217)	1.4319E-06 ( 7)	1.3224E-06 (160)	1.1827E-06 ( 57)
16	1.0681E-06 (160)	1.5563E-06 (319)	1.6770E-06 (171)	1.4649E-06 (171)	1.2536E-06 (171)
17	6.9938E-07 ( 97)	7.9865E-07 (321)	8.7612E-07 (327)	8.4396E-07 (328)	8.4217E-07 ( 1)
18	8.6404E-07 (126)	9.4172E-07 (209)	1.2110E-06 (209)	1.2353E-06 (209)	1.1725E-06 (209)
19	5.3276E-07 (299)	7.8521E-07 ( 3)	9.3590E-07 ( 3)	9.6520E-07 (320)	9.4126E-07 ( 3)
20	7.6485E-07 (304)	8.9045E-07 (304)	9.0579E-07 (308)	9.5355E-07 ( 3)	9.5218E-07 (308)
21	9.8152E-07 ( 58)	1.0636E-06 (182)	1.0927E-06 ( 51)	1.0954E-06 ( 51)	1.0360E-06 ( 51)
22	8.6790E-07 (244)	9.7152E-07 (125)	1.1704E-06 (125)	1.2227E-06 ( 38)	1.2215E-06 (125)
23	8.8680E-07 (277)	1.4337E-06 (272)	1.8636E-06 ( 38)	2.0193E-06 ( 38)	1.9496E-06 (272)
24	1.5484E-06 (182)	1.8139E-06 (272)	1.8976E-06 (273)	2.0302E-06 (273)	2.0139E-06 (273)
25	1.5386E-06 (181)	1.7708E-06 (181)	1.7268E-06 (181)	1.5661E-06 (181)	1.4345E-06 (181)
26	1.5614E-06 (120)	1.6057E-06 (120)	1.7859E-06 ( 14)	1.6174E-06 (269)	1.4572E-06 (269)
27	1.9841E-06 (138)	2.5223E-06 (138)	2.6669E-06 (138)	2.4690E-06 (138)	2.2220E-06 (138)
28	1.8236E-06 (138)	2.0000E-06 (138)	2.0534E-06 (140)	1.9293E-06 (140)	1.8882E-06 (270)
29	1.8420E-06 (266)	1.9657E-06 (152)	1.9463E-06 (266)	1.6930E-06 (266)	1.4778E-06 (266)
30	1.6096E-06 (252)	1.7273E-06 (153)	2.0262E-06 (153)	1.9905E-06 (153)	1.8521E-06 (153)
31	1.3207E-06 (252)	1.4364E-06 (252)	1.3357E-06 (252)	1.1377E-06 (252)	9.7621E-07 (252)
32	1.6052E-06 (195)	1.5974E-06 ( 62)	1.4570E-06 (154)	1.3747E-06 (203)	1.2772E-06 (203)
33	1.4157E-06 (107)	1.2538E-06 (154)	1.2148E-06 ( 32)	1.2862E-06 ( 85)	1.2670E-06 ( 85)
34	1.3942E-06 (194)	1.6506E-06 ( 33)	1.9255E-06 (213)	1.7066E-06 (213)	1.4988E-06 (213)
35	8.7406E-07 (215)	6.9867E-07 (215)	9.1018E-07 (365)	9.1099E-07 ( 85)	9.5643E-07 (365)
36	1.3039E-06 (231)	1.1594E-06 (208)	1.0697E-06 ( 89)	1.0001E-06 ( 89)	9.3609E-07 ( 89)

$$PM = 2.6669 \times 24.9 / 15.0 = 4.43 \mu g / m^3$$

$$NO_x = 2.6669 \times 34.4 / 15.0 = 6.12 \mu g / m^3$$



RING DISTANCES(KM)= 0.60 0.80 1.00 1.25 1.50

STACK # 1--SURGE DRYER

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG.K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	1.9000 = 15.0 lb/hr	25.90	2.29	16.10	339.00	66.31

P.M = 24.9 lb/hr  
NO<sub>x</sub> = 34.4 lb/hr

MAXIMUM MEAN CONC= 4.0949E-07 DIRECTION= 9 DISTANCE= 0.8 KM

YEAR= 71

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	1.08190E-07	1.33659E-07	1.40088E-07	1.30787E-07	1.19342E-07
2	1.38113E-07	1.64218E-07	1.65776E-07	1.49601E-07	1.32816E-07
3	1.26621E-07	1.39016E-07	1.34294E-07	1.18470E-07	1.03835E-07
4	1.20907E-07	1.22917E-07	1.12160E-07	9.45530E-08	8.01203E-08
5	1.30927E-07	1.33092E-07	1.22158E-07	1.04042E-07	8.94134E-08
6	1.34111E-07	1.37662E-07	1.29844E-07	1.14033E-07	1.00829E-07
7	1.61101E-07	1.62372E-07	1.47304E-07	1.23396E-07	1.03656E-07
8	2.40179E-07	2.44627E-07	2.21693E-07	1.84633E-07	1.53996E-07
9	3.71985E-07	<u>4.09491E-07</u>	3.94477E-07	3.45177E-07	2.99532E-07
10	2.74669E-07	2.95878E-07	2.80296E-07	2.41037E-07	2.06030E-07
11	1.34790E-07	1.46137E-07	1.40840E-07	1.23385E-07	1.07511E-07
12	9.01247E-08	1.12054E-07	1.18481E-07	1.11263E-07	1.02240E-07
13	6.91425E-08	8.79324E-08	9.35191E-08	8.81341E-08	8.15303E-08
14	6.60669E-08	8.71375E-08	9.48112E-08	9.11274E-08	8.56406E-08
15	6.79013E-08	9.31869E-08	1.04835E-07	1.02981E-07	9.80559E-08
16	6.68930E-08	8.80313E-08	9.62836E-08	9.30049E-08	8.76016E-08
17	5.00213E-08	6.64183E-08	7.24619E-08	6.95112E-08	6.45639E-08
18	4.26834E-08	6.08341E-08	7.05869E-08	7.16607E-08	7.01308E-08
19	3.06948E-08	4.24763E-08	4.83112E-08	4.82982E-08	4.68172E-08
20	3.32063E-08	4.58696E-08	5.20245E-08	5.16574E-08	4.95858E-08
21	5.63368E-08	7.83339E-08	8.87507E-08	8.82959E-08	8.52224E-08
22	6.56036E-08	8.74419E-08	9.63295E-08	9.36188E-08	8.86693E-08
23	8.52191E-08	1.14818E-07	1.29874E-07	1.29686E-07	1.25918E-07
24	9.17286E-08	1.21346E-07	1.35873E-07	1.35099E-07	1.30919E-07
25	7.69871E-08	1.04388E-07	1.16405E-07	1.14547E-07	1.09819E-07
26	8.79477E-08	1.18365E-07	1.31910E-07	1.30427E-07	1.25698E-07
27	1.19535E-07	1.53647E-07	1.67437E-07	1.63784E-07	1.57057E-07
28	1.09960E-07	1.32669E-07	1.39196E-07	1.33149E-07	1.26321E-07
29	1.01538E-07	1.22233E-07	1.27899E-07	1.21931E-07	1.15328E-07
30	1.13488E-07	1.44398E-07	1.56023E-07	1.52980E-07	1.48057E-07
31	9.69223E-08	1.21587E-07	1.27434E-07	1.20052E-07	1.11401E-07
32	9.80909E-08	1.20890E-07	1.25912E-07	1.18265E-07	1.09354E-07
33	1.35659E-07	1.68409E-07	1.76818E-07	1.67130E-07	1.55496E-07
34	1.02028E-07	1.19741E-07	1.22315E-07	1.13768E-07	1.04831E-07
35	6.62880E-08	7.51938E-08	7.59180E-08	7.03079E-08	6.48428E-08
36	8.19679E-08	1.04168E-07	1.13237E-07	1.09851E-07	1.03945E-07

PM

Present =  $0.4095 \times 24.9 / 15.0 \times 4000 / 8760 = 0.31 \mu\text{g}/\text{m}^3$   
 Proposed = Present  $\times 2 = 0.61 \mu\text{g}/\text{m}^3$

NOx

Present =  $0.4095 \times 34.4 / 15.0 \times 4000 / 8760 = 0.43 \mu\text{g}/\text{m}^3$   
 Proposed = Present  $\times 2 = 0.86 \mu\text{g}/\text{m}^3$

PLANT NAME: MOBIL CHEM CO.

POLLUTANT: PART

EMISSION UNITS: GM/SEC

AIR QUALITY UNITS: GM/M\*\*3

YEARLY MAXIMUM 24-HOUR CONC= 3.7157E-06 DIRECTION= 9 DISTANCE= 0.8 KM DAY=167

YEAR= 71

## HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	1.4641E-06 (113)	1.6294E-06 (113)	1.5896E-06 (113)	1.4220E-06 ( 56)	1.3570E-06 ( 56)
2	2.2684E-06 (113)	2.6470E-06 ( 61)	2.8167E-06 ( 61)	2.5688E-06 ( 61)	2.2690E-06 ( 61)
3	1.7614E-06 (331)	1.8309E-06 (331)	1.6024E-06 (331)	1.2765E-06 (331)	1.0099E-06 (331)
4	1.4014E-06 (205)	1.4414E-06 (205)	1.2662E-06 (205)	1.0121E-06 (205)	8.9724E-07 (116)
5	1.0793E-06 (120)	1.2314E-06 (205)	1.1835E-06 (205)	1.0870E-06 (112)	1.0516E-06 (112)
6	1.2840E-06 (114)	2.0569E-06 (114)	2.2963E-06 (114)	2.1443E-06 (114)	1.9193E-06 (114)
7	1.4431E-06 (118)	1.5574E-06 (118)	1.5509E-06 (118)	1.4377E-06 (114)	1.3024E-06 (114)
8	1.5485E-06 (256)	1.7946E-06 (256)	1.7380E-06 (256)	1.5022E-06 (256)	1.2758E-06 (256)
9	3.2253E-06 (167)	3.7157E-06 (167)	3.6712E-06 (167)	3.2644E-06 (167)	2.8767E-06 (167)
10	2.5457E-06 (168)	2.4760E-06 (168)	2.2878E-06 (172)	2.2571E-06 (172)	2.1531E-06 (172)
11	1.4704E-06 (197)	1.3753E-06 (173)	1.5689E-06 ( 96)	1.5241E-06 ( 96)	1.4057E-06 ( 96)
12	1.5691E-06 (198)	1.8394E-06 (123)	1.9162E-06 (123)	1.7913E-06 (123)	1.6581E-06 (123)
13	1.3599E-06 (198)	1.4148E-06 (141)	1.5878E-06 ( 79)	1.5310E-06 ( 79)	1.4086E-06 ( 79)
14	1.3991E-06 (104)	1.2277E-06 (104)	1.3646E-06 ( 66)	1.3206E-06 ( 66)	1.2192E-06 ( 66)
15	1.8740E-06 (222)	1.7790E-06 (121)	1.7995E-06 (121)	1.6132E-06 (121)	1.4697E-06 ( 40)
16	1.6397E-06 (121)	1.8335E-06 (121)	1.8162E-06 (121)	1.6091E-06 (121)	1.4179E-06 ( 89)
17	8.2598E-07 (169)	8.9752E-07 (208)	9.4575E-07 ( 67)	9.3181E-07 (226)	9.1903E-07 (226)
18	1.1236E-06 (221)	1.1622E-06 (221)	1.0668E-06 (226)	1.3445E-06 (226)	1.4867E-06 (226)
19	9.7438E-07 (221)	1.0380E-06 ( 20)	1.3344E-06 ( 20)	1.3857E-06 ( 20)	1.3403E-06 ( 20)
20	5.6088E-07 (311)	7.7815E-07 (301)	9.2202E-07 (301)	8.9473E-07 (301)	8.2158E-07 (301)
21	1.0856E-06 (311)	1.4938E-06 (329)	1.7612E-06 (329)	1.7926E-06 (308)	1.7456E-06 (308)
22	1.3126E-06 (142)	1.2512E-06 (272)	1.4781E-06 (292)	1.5476E-06 (292)	1.5095E-06 (292)
23	1.8648E-06 (270)	2.1499E-06 (270)	2.2581E-06 (292)	2.3065E-06 (292)	2.2016E-06 (292)
24	1.7473E-06 (156)	1.7080E-06 (271)	1.6689E-06 (271)	1.6053E-06 (359)	1.6705E-06 (359)
25	1.4154E-06 (156)	1.5781E-06 (267)	1.5825E-06 (267)	1.4187E-06 (267)	1.2790E-06 (335)
26	1.2474E-06 (190)	1.5353E-06 (154)	1.7316E-06 ( 94)	1.9079E-06 ( 94)	1.9067E-06 ( 94)
27	2.2928E-06 (190)	2.1525E-06 (190)	1.9173E-06 (265)	1.8178E-06 (265)	1.7133E-06 (265)
28	1.7451E-06 (101)	1.7687E-06 (101)	1.6091E-06 (101)	1.3408E-06 (101)	1.2543E-06 (327)
29	1.4925E-06 (143)	1.9006E-06 (143)	1.9466E-06 (143)	1.7635E-06 (143)	1.5718E-06 (143)
30	1.9018E-06 (138)	1.8959E-06 (138)	1.7226E-06 (138)	1.7175E-06 (353)	1.7558E-06 (353)
31	1.0604E-06 (143)	1.1126E-06 (144)	1.2928E-06 (242)	1.2858E-06 (242)	1.2193E-06 (242)
32	1.4864E-06 (230)	1.4135E-06 (230)	1.2115E-06 (230)	9.6209E-07 (230)	8.6404E-07 ( 35)
33	1.5345E-06 ( 91)	1.5484E-06 (185)	1.6846E-06 (185)	1.6823E-06 (227)	1.6556E-06 (227)
34	1.8072E-06 (187)	1.7133E-06 (187)	1.4290E-06 (187)	1.3239E-06 (227)	1.3539E-06 (227)
35	1.2670E-06 (260)	9.8876E-07 (211)	7.4431E-07 (211)	6.8865E-07 ( 53)	6.4120E-07 ( 58)
36	1.4702E-06 (229)	1.2366E-06 (229)	1.1057E-06 ( 58)	1.1370E-06 ( 9)	1.2447E-06 (228)

YEARLY SECOND MAXIMUM 24-HOUR CONC= 3.2295E-06 DIRECTION= 9 DISTANCE= 1.0 KM DAY=166

YEAR= 71

## SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	1.1178E-06 (229)	1.4104E-06 ( 62)	1.4575E-06 ( 62)	1.4093E-06 (113)	1.2507E-06 ( 38)
2	1.8400E-06 ( 61)	2.4472E-06 (113)	2.2843E-06 (113)	1.9349E-06 (113)	1.6788E-06 (228)
3	1.4090E-06 (205)	1.3005E-06 (205)	1.1626E-06 (228)	1.0214E-06 (354)	9.0361E-07 (287)
4	1.3022E-06 (120)	1.1908E-06 (120)	1.0012E-06 (120)	9.3161E-07 (116)	8.0085E-07 (205)
5	1.0567E-06 (219)	1.1421E-06 (120)	1.0689E-06 (112)	1.0147E-06 (205)	8.4062E-07 (205)
6	1.2615E-06 (118)	1.6183E-06 (118)	1.7839E-06 (118)	1.7393E-06 (118)	1.6613E-06 (118)
7	1.2940E-06 (207)	1.3923E-06 (114)	1.5301E-06 (114)	1.3888E-06 (118)	1.2261E-06 (118)
8	1.4768E-06 (257)	1.5230E-06 (257)	1.3792E-06 (257)	1.3027E-06 (174)	1.2113E-06 (174)
9	2.5200E-06 (128)	2.8408E-06 (166)	3.2295E-06 (166)	3.0872E-06 (166)	2.8269E-06 (166)
10	2.0990E-06 (220)	2.1521E-06 (165)	2.1831E-06 (168)	1.8586E-06 (165)	1.6373E-06 (195)
11	1.3876E-06 (220)	1.3498E-06 (220)	1.4565E-06 ( 44)	1.3724E-06 ( 44)	1.2360E-06 ( 44)
12	1.5205E-06 (123)	1.4862E-06 (150)	1.6872E-06 ( 44)	1.6684E-06 ( 44)	1.5590E-06 ( 44)
13	1.3527E-06 (141)	1.3878E-06 ( 79)	1.3139E-06 (141)	1.1184E-06 ( 97)	9.7748E-07 ( 97)
14	1.1496E-06 (222)	1.1848E-06 ( 66)	1.2629E-06 ( 63)	1.2117E-06 ( 63)	1.1126E-06 ( 63)
15	1.5061E-06 (121)	1.6943E-06 (222)	1.4464E-06 ( 40)	1.5012E-06 ( 40)	1.4179E-06 (121)
16	1.2811E-06 ( 89)	1.6487E-06 ( 89)	1.7266E-06 ( 89)	1.5813E-06 ( 89)	1.4034E-06 (121)
17	8.0868E-07 (208)	8.0007E-07 (169)	8.7827E-07 (226)	9.3031E-07 ( 67)	8.6024E-07 ( 67)
18	1.0794E-06 (124)	9.8833E-07 (124)	1.0209E-06 (221)	9.0559E-07 ( 71)	9.3235E-07 ( 71)
19	7.9594E-07 (124)	9.6158E-07 (221)	8.3325E-07 ( 67)	8.8383E-07 ( 67)	8.8423E-07 ( 67)
20	4.7801E-07 (261)	6.7831E-07 ( 41)	7.6875E-07 ( 41)	7.4288E-07 ( 41)	6.8940E-07 ( 41)
21	1.0132E-06 (329)	1.2440E-06 (308)	1.6962E-06 (308)	1.7903E-06 (329)	1.7342E-06 (329)
22	1.0337E-06 (272)	1.2422E-06 (142)	1.3965E-06 (356)	1.4195E-06 (356)	1.3728E-06 (356)
23	1.3599E-06 (272)	1.7549E-06 (292)	2.2098E-06 (270)	2.1220E-06 (270)	2.0543E-06 (270)
24	1.4300E-06 (271)	1.6810E-06 (156)	1.4902E-06 (359)	1.4435E-06 (271)	1.4330E-06 (293)
25	1.3619E-06 (267)	1.4334E-06 (156)	1.3185E-06 (156)	1.2369E-06 (335)	1.2522E-06 (267)
26	1.2411E-06 (267)	1.4952E-06 (153)	1.5924E-06 (154)	1.5989E-06 ( 33)	1.6047E-06 ( 33)
27	1.9886E-06 (101)	1.9536E-06 (101)	1.8161E-06 (190)	1.4768E-06 (101)	1.4665E-06 ( 49)
28	1.7022E-06 (231)	1.4116E-06 (231)	1.3441E-06 (327)	1.3247E-06 (327)	1.1171E-06 ( 94)
29	1.4745E-06 (231)	1.4862E-06 (214)	1.4061E-06 (214)	1.4768E-06 (281)	1.4499E-06 (281)
30	1.1774E-06 (210)	1.3085E-06 (210)	1.5259E-06 (353)	1.4524E-06 (138)	1.4436E-06 (143)
31	9.6691E-07 (243)	1.0691E-06 (242)	1.0875E-06 (144)	1.0183E-06 (188)	1.0282E-06 (209)
32	9.9904E-07 (218)	1.0314E-06 (243)	9.6027E-07 (243)	8.9971E-07 ( 35)	8.0085E-07 (340)
33	1.4472E-06 (144)	1.5430E-06 ( 91)	1.5631E-06 (332)	1.6150E-06 (185)	1.4989E-06 (185)
34	1.2580E-06 (144)	1.1471E-06 (259)	1.1838E-06 (227)	1.1031E-06 (187)	8.5961E-07 (187)
35	1.2562E-06 (211)	9.6406E-07 (260)	7.3774E-07 ( 53)	5.9072E-07 ( 58)	6.1347E-07 ( 53)
36	1.2358E-06 (260)	1.0310E-06 (282)	9.9967E-07 ( 9)	1.1361E-06 (228)	1.1553E-06 ( 9)

$$PM = 3.2295 \times 24.9 / 15.0 = 5.37 \mu g / m^3$$

$$NO_2 = 3.2295 \times 34.4 / 15.0 = 7.41 \mu g / m^3$$





RING DISTANCES(KM)= 0.60 0.80 1.00 1.25 1.50

STACK # 1—SURGE DRYER

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG.K)	VOLUMETRIC FLOW (M <sup>3</sup> /SEC)
1	ALL	1.9000	25.90	2.29	16.10	339.00	66.31

= 15.0 lb/hr

PM=24.9 lb/hr

NO<sub>x</sub>=34.4 lb/hr

MAXIMUM MEAN CONC= 3.7095E-07 DIRECTION= 9 DISTANCE= 0.8 KM

YEAR= 72

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	9.70269E-08	1.13148E-07	1.14160E-07	1.04046E-07	9.35647E-08
2	1.24002E-07	1.47617E-07	1.50506E-07	1.38071E-07	1.24410E-07
3	1.18896E-07	1.32773E-07	1.29610E-07	1.15297E-07	1.01812E-07
4	1.07613E-07	1.09056E-07	1.00718E-07	8.66246E-08	7.52732E-08
5	1.27713E-07	1.27861E-07	1.16522E-07	9.91947E-08	8.55808E-08
6	1.47515E-07	1.50062E-07	1.37884E-07	1.17419E-07	1.00436E-07
7	1.65623E-07	1.66977E-07	1.53621E-07	1.30984E-07	1.12361E-07
8	2.32615E-07	2.39068E-07	2.21291E-07	1.88269E-07	1.60439E-07
9	3.29131E-07	3.70946E-07	3.63373E-07	3.21084E-07	2.80437E-07
10	2.25356E-07	2.49958E-07	2.42394E-07	2.12664E-07	1.85003E-07
11	1.07450E-07	1.27852E-07	1.32319E-07	1.22528E-07	1.11432E-07
12	6.77683E-08	8.37023E-08	8.85238E-08	8.33982E-08	7.69883E-08
13	6.49622E-08	8.50255E-08	9.30563E-08	9.03938E-08	8.57996E-08
14	5.35342E-08	7.60909E-08	8.78628E-08	8.79504E-08	8.49417E-08
15	4.90732E-08	7.46393E-08	8.89885E-08	9.03555E-08	8.76686E-08
16	4.79802E-08	6.81540E-08	7.76414E-08	7.64255E-08	7.22777E-08
17	4.93671E-08	6.80826E-08	7.53896E-08	7.25902E-08	6.74775E-08
18	4.83369E-08	6.75723E-08	7.74513E-08	7.73962E-08	7.43733E-08
19	4.19650E-08	5.46759E-08	6.06597E-08	5.94250E-08	5.63328E-08
20	4.30289E-08	5.33178E-08	5.68730E-08	5.45876E-08	5.15591E-08
21	6.19157E-08	7.82269E-08	8.47059E-08	8.20860E-08	7.77085E-08
22	8.75408E-08	1.14189E-07	1.24529E-07	1.19997E-07	1.12525E-07
23	1.07246E-07	1.46513E-07	1.64828E-07	1.62290E-07	1.55084E-07
24	1.15705E-07	1.57695E-07	1.77379E-07	1.75339E-07	1.68348E-07
25	1.22978E-07	1.58969E-07	1.73576E-07	1.69949E-07	1.63384E-07
26	1.39130E-07	1.75207E-07	1.88872E-07	1.83703E-07	1.76354E-07
27	1.68424E-07	2.25758E-07	2.50510E-07	2.46874E-07	2.38130E-07
28	1.43595E-07	1.89183E-07	2.04810E-07	1.96576E-07	1.84593E-07
29	1.13962E-07	1.43324E-07	1.50251E-07	1.41487E-07	1.31497E-07
30	1.02323E-07	1.28102E-07	1.34035E-07	1.26281E-07	1.17185E-07
31	9.35275E-08	1.14658E-07	1.19256E-07	1.12140E-07	1.04232E-07
32	8.68231E-08	1.07320E-07	1.12967E-07	1.06305E-07	9.78906E-08
33	8.99654E-08	1.12442E-07	1.18405E-07	1.11610E-07	1.03176E-07
34	6.78106E-08	8.76969E-08	9.45522E-08	9.03265E-08	8.37006E-08
35	4.99205E-08	6.18453E-08	6.52765E-08	6.20130E-08	5.77960E-08
36	7.68902E-08	9.55736E-08	1.00765E-07	9.49271E-08	8.75511E-08

PM

$$\text{Present} = 0.3709 \times 24.9 / 15.0 \times 4000 / 8760 = 0.27 \text{ mg/m}^3$$

$$\text{Proposed} = \text{Present} \times 2 = 0.55 \text{ mg/m}^3$$

NOx

$$\text{Present} = 0.3709 \times 34.4 / 15.0 \times 4000 / 8760 = 0.39 \text{ mg/m}^3$$

$$\text{Proposed} = \text{Present} \times 2 = 0.78 \text{ mg/m}^3$$

YEARLY MAXIMUM 24-HOUR CONC= 4.7326E-06 DIRECTION= 9 DISTANCE= 1.0 KM DAY=173

YEAR= 72

## HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	1.7943E-06 (113)	1.6702E-06 (113)	1.5547E-06 (171)	1.3521E-06 (330)	1.2793E-06 (330)
2	1.7023E-06 ( 55)	1.8962E-06 ( 55)	1.7951E-06 ( 55)	1.5425E-06 ( 55)	1.3078E-06 ( 55)
3	1.7468E-06 (135)	2.0531E-06 ( 76)	2.5130E-06 ( 76)	2.4869E-06 ( 76)	2.3142E-06 ( 76)
4	1.3414E-06 (135)	1.2592E-06 (135)	1.0792E-06 (135)	8.6734E-07 (269)	8.4530E-07 (125)
5	1.7590E-06 (211)	1.5730E-06 (211)	1.2853E-06 (211)	1.1370E-06 (172)	1.0179E-06 (172)
6	1.5439E-06 (261)	1.3937E-06 (261)	1.3908E-06 ( 85)	1.2247E-06 ( 85)	1.1037E-06 (107)
7	1.6046E-06 (309)	1.5704E-06 (316)	1.6493E-06 (172)	1.5181E-06 (172)	1.3473E-06 (172)
8	2.1405E-06 (219)	2.8205E-06 (177)	3.3650E-06 (177)	3.2890E-06 (177)	3.0435E-06 (177)
9	2.6749E-06 (180)	4.1091E-06 (173)	4.7326E-06 (173)	4.5311E-06 (173)	4.1333E-06 (173)
10	2.5276E-06 (183)	2.4595E-06 (181)	2.2911E-06 (178)	2.2179E-06 (178)	2.0495E-06 (178)
11	1.5680E-06 (222)	1.7252E-06 (143)	1.7049E-06 (143)	1.7087E-06 ( 44)	1.6043E-06 ( 44)
12	1.0878E-06 (143)	1.1945E-06 (143)	1.2018E-06 (143)	1.0951E-06 (143)	9.8596E-07 (143)
13	1.7334E-06 (146)	1.7773E-06 ( 50)	1.7944E-06 ( 50)	1.5886E-06 ( 50)	1.3777E-06 ( 50)
14	9.8673E-07 (146)	1.2498E-06 (281)	1.3939E-06 (281)	1.3121E-06 (281)	1.1848E-06 (281)
15	9.1124E-07 (146)	1.7701E-06 ( 50)	2.2710E-06 ( 50)	2.3103E-06 ( 50)	2.1883E-06 ( 50)
16	1.0959E-06 (263)	1.0757E-06 (125)	1.2367E-06 ( 51)	1.2441E-06 ( 51)	1.1781E-06 ( 51)
17	1.4022E-06 (263)	1.2798E-06 (263)	1.5207E-06 ( 6)	1.5892E-06 ( 6)	1.5292E-06 ( 6)
18	8.9633E-07 (326)	1.3079E-06 (326)	1.5348E-06 (326)	1.5751E-06 (326)	1.5348E-06 (326)
19	8.2026E-07 (189)	1.1606E-06 ( 35)	1.6542E-06 ( 35)	1.7959E-06 ( 35)	1.7764E-06 ( 35)
20	1.0960E-06 (252)	1.0158E-06 (336)	1.0196E-06 (336)	9.0095E-07 (336)	8.3475E-07 ( 40)
21	1.5438E-06 (252)	1.3773E-06 (252)	1.2091E-06 ( 16)	1.2403E-06 ( 16)	1.1785E-06 ( 16)
22	1.4362E-06 (122)	1.6663E-06 ( 69)	2.0442E-06 ( 69)	2.0194E-06 ( 69)	1.8745E-06 ( 69)
23	1.4049E-06 (117)	1.9463E-06 (117)	2.3367E-06 ( 69)	2.2957E-06 ( 69)	2.1224E-06 ( 69)
24	1.6423E-06 (117)	2.2067E-06 (294)	2.4012E-06 (294)	2.2770E-06 ( 42)	2.1715E-06 ( 42)
25	1.6184E-06 (157)	1.7387E-06 (100)	2.1046E-06 (100)	2.0561E-06 (100)	1.8923E-06 (100)
26	1.9943E-06 (265)	2.0196E-06 (265)	2.0887E-06 (284)	1.9146E-06 (284)	1.7129E-06 (284)
27	1.9569E-06 (254)	2.3032E-06 (254)	2.6319E-06 (169)	2.5092E-06 (169)	2.3557E-06 (306)
28	1.7441E-06 (133)	2.6487E-06 (133)	3.0948E-06 (133)	3.0527E-06 (133)	2.8675E-06 (133)
29	1.6844E-06 (101)	2.0094E-06 (101)	2.2293E-06 (119)	2.0961E-06 (119)	1.8893E-06 (119)
30	1.1472E-06 (165)	1.3197E-06 (347)	1.3614E-06 (347)	1.2629E-06 (347)	1.1539E-06 (347)
31	1.2643E-06 (318)	1.5547E-06 (318)	1.5362E-06 (318)	1.3412E-06 (318)	1.1410E-06 (318)
32	1.4402E-06 ( 61)	1.5735E-06 ( 61)	1.4960E-06 ( 61)	1.3072E-06 (318)	1.1997E-06 (318)
33	1.3746E-06 ( 1)	1.5852E-06 (171)	1.8498E-06 (301)	1.9138E-06 (301)	1.8432E-06 (301)
34	9.0390E-07 (211)	1.0886E-06 (210)	1.0711E-06 (210)	1.1225E-06 (236)	1.1384E-06 (236)
35	7.9638E-07 (213)	7.6671E-07 (319)	9.1661E-07 ( 90)	9.1781E-07 ( 90)	8.5689E-07 ( 90)
36	1.3460E-06 (171)	1.6731E-06 (171)	1.6715E-06 (171)	1.4698E-06 (171)	1.4796E-06 ( 14)

PLANT NAME: MOBIL CHEM CO.

POLLUTANT: PART

EMISSION UNITS: GM/SEC

AIR QUALITY UNITS: GM/M<sup>3</sup>

YEARLY SECOND MAXIMUM 24-HOUR CONC= 4.5317E-06 DIRECTION= 9 DISTANCE= 1.0 KM DAY=174

YEAR= 72

## SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	1.4349E-06 (171)	1.6436E-06 (171)	1.4245E-06 (113)	1.3129E-06 (171)	1.1005E-06 (171)
2	1.5212E-06 ( 57)	1.6411E-06 ( 57)	1.5143E-06 ( 57)	1.2681E-06 (355)	1.1820E-06 ( 89)
3	1.5526E-06 (105)	1.6491E-06 (129)	1.7673E-06 (129)	1.6484E-06 (129)	1.4874E-06 (129)
4	1.1133E-06 (269)	1.1953E-06 (269)	1.0693E-06 (269)	8.5610E-07 (135)	7.0411E-07 (172)
5	1.5898E-06 (261)	1.3383E-06 (261)	1.2141E-06 (172)	9.8017E-07 (211)	7.7926E-07 ( 98)
6	1.5090E-06 (211)	1.3868E-06 ( 85)	1.3165E-06 (107)	1.2104E-06 (107)	1.0544E-06 ( 85)
7	1.5878E-06 (298)	1.5169E-06 (172)	1.4826E-06 (316)	1.2843E-06 (130)	1.1587E-06 (130)
8	1.8590E-06 ( 99)	2.1016E-06 (219)	1.9390E-06 ( 99)	1.7794E-06 (172)	1.6155E-06 (172)
9	2.6417E-06 (242)	3.7927E-06 (175)	4.5317E-06 (174)	4.4238E-06 (174)	4.0809E-06 (174)
10	2.4235E-06 (181)	2.3793E-06 (183)	2.2091E-06 (181)	1.9031E-06 (174)	1.6713E-06 (174)
11	1.5127E-06 (143)	1.3631E-06 ( 44)	1.7041E-06 ( 44)	1.5210E-06 (143)	1.3506E-06 (143)
12	1.0316E-06 (146)	1.0726E-06 (146)	9.9588E-07 (146)	9.2041E-07 ( 77)	9.0758E-07 (142)
13	1.3679E-06 ( 50)	1.5273E-06 (146)	1.3111E-06 ( 44)	1.3404E-06 ( 44)	1.2745E-06 ( 44)
14	9.6028E-07 (145)	1.2079E-06 (145)	1.2493E-06 (145)	1.1729E-06 (280)	1.0808E-06 (280)
15	8.6114E-07 (145)	1.1195E-06 (145)	1.1273E-06 (145)	1.0098E-06 (325)	1.0825E-06 ( 6)
16	8.9610E-07 (125)	1.0242E-06 (263)	1.0629E-06 (125)	1.0675E-06 ( 6)	1.0759E-06 ( 6)
17	6.9285E-07 (260)	1.1260E-06 ( 6)	1.4159E-06 (326)	1.5464E-06 (326)	1.5289E-06 (326)
18	7.7997E-07 (263)	9.9661E-07 ( 35)	1.2682E-06 ( 35)	1.3488E-06 (328)	1.4575E-06 (328)
19	7.7797E-07 (252)	8.1374E-07 (351)	9.2888E-07 (351)	1.0048E-06 ( 16)	9.9061E-07 ( 16)
20	1.0140E-06 (189)	8.7336E-07 (252)	8.1216E-07 ( 40)	8.6089E-07 ( 40)	7.7222E-07 (336)
21	1.0672E-06 (189)	9.3157E-07 (256)	1.1053E-06 (252)	1.1014E-06 ( 92)	1.0671E-06 ( 92)
22	1.2058E-06 (191)	1.5820E-06 (122)	1.5700E-06 ( 66)	1.6435E-06 ( 66)	1.5820E-06 ( 66)
23	1.1650E-06 (158)	1.9184E-06 ( 69)	2.2106E-06 (117)	2.1494E-06 (117)	2.0034E-06 (117)
24	1.4478E-06 (294)	1.8600E-06 (117)	2.2375E-06 ( 42)	2.2071E-06 (294)	1.9560E-06 (294)
25	1.4501E-06 (156)	1.7177E-06 (156)	1.8014E-06 (156)	1.6944E-06 (156)	1.5795E-06 (156)
26	1.7087E-06 (257)	1.9829E-06 (284)	1.8277E-06 (265)	1.6842E-06 (203)	1.5582E-06 (203)
27	1.4436E-06 (247)	2.3015E-06 (169)	2.4698E-06 (170)	2.4247E-06 (306)	2.2824E-06 (169)
28	1.6089E-06 (168)	2.1208E-06 (168)	2.4443E-06 (121)	2.4909E-06 (121)	2.4073E-06 (121)
29	1.3629E-06 (127)	2.0013E-06 (119)	2.0390E-06 (101)	1.8529E-06 (101)	1.6537E-06 (101)
30	1.0840E-06 (347)	1.2731E-06 (202)	1.3296E-06 (202)	1.1986E-06 (202)	1.1319E-06 (324)
31	1.2383E-06 (196)	1.3159E-06 (269)	1.2660E-06 (269)	1.0909E-06 (269)	9.2606E-07 (269)
32	1.2601E-06 (307)	1.3465E-06 (364)	1.3488E-06 (318)	1.2923E-06 ( 61)	1.1710E-06 (301)
33	1.1807E-06 ( 12)	1.4934E-06 ( 1)	1.6827E-06 (134)	1.6509E-06 (134)	1.5350E-06 (134)
34	9.0117E-07 (210)	9.0516E-07 (211)	1.0187E-06 (236)	9.3717E-07 (210)	9.1758E-07 ( 22)
35	6.3794E-07 (211)	7.2098E-07 ( 90)	7.8153E-07 (319)	7.0787E-07 (319)	6.6224E-07 ( 14)
36	1.0427E-06 (113)	1.0993E-06 ( 91)	1.3702E-06 (301)	1.4138E-06 ( 14)	1.3161E-06 (301)

$$PM = 4.5317 \times 24.9 / 15.0 = 7.52 \text{ } \mu\text{g}/\text{m}^3$$

$$NO_x = 4.5317 \times 34.4 / 15.0 = 10.39 \text{ } \mu\text{g}/\text{m}^3$$



RING DISTANCES(KM)= 0.60 0.80 1.00 1.25 1.50

STACK # 1—SURGE DRYER

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG.K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	1.9000	25.90	2.29	16.10	339.00	66.31

= 15.0 lb/hr

PH = 24.9 lb/hr

NO<sub>x</sub> = 34.4 lb/hr

MAXIMUM MEAN CONC= 2.5974E-07 DIRECTION= 9 DISTANCE= 0.8 KM

YEAR= 73

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	9.96531E-08	1.17784E-07	1.20899E-07	1.11408E-07	1.00884E-07
2	9.75109E-08	1.12337E-07	1.14707E-07	1.05889E-07	9.61096E-08
3	1.00991E-07	1.06792E-07	1.02636E-07	9.10056E-08	8.05308E-08
4	1.01337E-07	1.05391E-07	9.94273E-08	8.69140E-08	7.61747E-08
5	1.14939E-07	1.15436E-07	1.05234E-07	8.93234E-08	7.64803E-08
6	1.54802E-07	1.54829E-07	1.40545E-07	1.18656E-07	1.00900E-07
7	1.87483E-07	1.88245E-07	1.71461E-07	1.45101E-07	1.23898E-07
8	2.03965E-07	2.03247E-07	1.82972E-07	1.52155E-07	1.27169E-07
9	2.42663E-07	2.59735E-07	2.46214E-07	2.13450E-07	1.84591E-07
10	1.75133E-07	1.99726E-07	1.98078E-07	1.76767E-07	1.55782E-07
11	1.13293E-07	1.40255E-07	1.45955E-07	1.34496E-07	1.21398E-07
12	7.54176E-08	9.94301E-08	1.08265E-07	1.03913E-07	9.76202E-08
13	5.57705E-08	8.08756E-08	9.30007E-08	9.25419E-08	8.91777E-08
14	5.45570E-08	8.00202E-08	9.34227E-08	9.37634E-08	9.06273E-08
15	4.80167E-08	6.81822E-08	7.86237E-08	7.81112E-08	7.45587E-08
16	4.04002E-08	5.31521E-08	5.89699E-08	5.80332E-08	5.57708E-08
17	4.36974E-08	5.79833E-08	6.45398E-08	6.34510E-08	6.05897E-08
18	4.57823E-08	5.84882E-08	6.36248E-08	6.22596E-08	5.97515E-08
19	4.57820E-08	5.88868E-08	6.49487E-08	6.37899E-08	6.09488E-08
20	5.85657E-08	7.62579E-08	8.52148E-08	8.44475E-08	8.11927E-08
21	7.54052E-08	9.77765E-08	1.08814E-07	1.07769E-07	1.03908E-07
22	7.91634E-08	1.04821E-07	1.16201E-07	1.13729E-07	1.08251E-07
23	8.84252E-08	1.16174E-07	1.27071E-07	1.23140E-07	1.16484E-07
24	1.19411E-07	1.52097E-07	1.64197E-07	1.59154E-07	1.51657E-07
25	1.44295E-07	1.83171E-07	1.96538E-07	1.89933E-07	1.80548E-07
26	1.20824E-07	1.52483E-07	1.62488E-07	1.55641E-07	1.46580E-07
27	1.24195E-07	1.69152E-07	1.89298E-07	1.87227E-07	1.80583E-07
28	1.22554E-07	1.62740E-07	1.78128E-07	1.71657E-07	1.61270E-07
29	1.13716E-07	1.51163E-07	1.66838E-07	1.62309E-07	1.53599E-07
30	1.24836E-07	1.67350E-07	1.85138E-07	1.80496E-07	1.71165E-07
31	1.26430E-07	1.60840E-07	1.72309E-07	1.64233E-07	1.53249E-07
32	1.37611E-07	1.70016E-07	1.79325E-07	1.68826E-07	1.55602E-07
33	1.38938E-07	1.64403E-07	1.68258E-07	1.54449E-07	1.39370E-07
34	1.13880E-07	1.29809E-07	1.30483E-07	1.19210E-07	1.07967E-07
35	8.65166E-08	1.01014E-07	1.04023E-07	9.72620E-08	8.98472E-08
36	9.67673E-08	1.15900E-07	1.21292E-07	1.14050E-07	1.05247E-07

PM

Present =  $0.257735 \times 24.9 / 15.0 \times 4000 / 8760 = 0.19 \text{ } \mu\text{g}/\text{m}^3$   
 Proposed = Present  $\times 2 = 0.39 \text{ } \mu\text{g}/\text{m}^3$

NOx

Present =  $0.257735 \times 34.4 / 15.0 \times 4000 / 8760 = 0.27 \text{ } \mu\text{g}/\text{m}^3$   
 Proposed = Present  $\times 2 = 0.54 \text{ } \mu\text{g}/\text{m}^3$

YEARLY MAXIMUM 24-HOUR CONC= 3.0567E-06 DIRECTION= 9 DISTANCE= 0.6 KM DAY=180

YEAR= 73

## HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	1.8767E-06 (146)	2.0447E-06 (148)	2.0887E-06 (148)	1.8805E-06 (148)	1.6637E-06 (148)
2	1.5864E-06 (147)	1.5531E-06 (147)	1.6476E-06 (148)	1.6627E-06 (148)	1.5786E-06 (148)
3	1.5534E-06 (151)	1.5958E-06 (115)	1.5989E-06 (115)	1.4143E-06 (115)	1.2263E-06 (115)
4	9.8394E-07 (115)	1.1544E-06 (194)	1.1364E-06 (194)	1.0336E-06 (178)	1.0537E-06 (178)
5	1.6611E-06 (192)	1.4812E-06 (256)	1.2196E-06 (256)	9.4112E-07 (117)	8.8685E-07 (117)
6	1.8797E-06 (209)	2.0351E-06 (144)	2.1160E-06 (144)	1.9480E-06 (144)	1.7529E-06 (144)
7	2.0930E-06 (209)	1.9404E-06 (209)	1.8373E-06 (140)	1.6278E-06 (140)	1.4180E-06 (140)
8	1.8929E-06 (187)	1.9336E-06 (253)	1.7194E-06 (253)	1.3924E-06 (253)	1.1261E-06 (253)
9	3.0567E-06 (180)	2.9481E-06 (180)	2.5481E-06 (180)	2.0321E-06 (180)	1.6335E-06 (180)
10	1.8302E-06 (180)	2.0527E-06 (168)	2.1744E-06 (168)	2.0050E-06 (168)	1.7998E-06 (168)
11	1.4578E-06 ( 85)	2.1425E-06 ( 85)	2.3303E-06 ( 85)	2.1514E-06 ( 85)	1.9155E-06 ( 85)
12	1.1946E-06 (100)	1.9287E-06 ( 76)	2.2168E-06 ( 76)	2.1332E-06 ( 76)	1.9750E-06 ( 76)
13	1.1019E-06 (103)	1.6019E-06 ( 29)	2.0804E-06 ( 29)	2.1239E-06 ( 29)	2.0127E-06 ( 29)
14	1.5555E-06 (175)	1.7550E-06 (175)	1.7665E-06 (175)	1.7087E-06 (351)	1.6464E-06 (351)
15	1.2907E-06 (118)	1.2041E-06 (118)	1.3049E-06 ( 77)	1.2475E-06 ( 77)	1.1381E-06 ( 77)
16	9.6154E-07 ( 95)	1.0755E-06 ( 95)	1.0874E-06 ( 95)	1.0018E-06 ( 95)	9.1399E-07 ( 95)
17	9.2614E-07 (190)	9.5689E-07 (190)	1.3467E-06 ( 12)	1.4944E-06 ( 12)	1.4921E-06 ( 12)
18	8.8904E-07 (297)	1.0659E-06 (298)	1.0980E-06 (298)	1.0125E-06 (298)	9.6766E-07 ( 42)
19	9.0276E-07 (305)	1.1526E-06 (136)	1.3989E-06 (136)	1.3785E-06 (136)	1.2799E-06 (136)
20	1.3472E-06 (233)	1.2964E-06 (305)	1.5747E-06 (341)	1.7961E-06 (341)	1.8360E-06 (341)
21	1.6217E-06 (233)	1.3103E-06 (183)	1.3715E-06 ( 50)	1.6508E-06 ( 50)	1.7778E-06 ( 50)
22	1.5532E-06 (233)	1.6465E-06 (292)	2.0981E-06 (292)	2.1244E-06 (292)	2.0084E-06 (292)
23	1.3287E-06 (221)	1.8684E-06 (291)	2.2625E-06 (291)	2.2185E-06 (291)	2.0499E-06 (291)
24	1.6036E-06 (240)	1.7413E-06 (240)	1.7430E-06 (240)	1.6400E-06 (240)	1.5503E-06 (240)
25	2.3134E-06 (240)	2.2001E-06 (240)	2.1953E-06 (321)	2.0481E-06 (321)	1.8584E-06 (321)
26	1.7852E-06 (229)	1.9581E-06 ( 82)	1.9499E-06 ( 82)	1.7256E-06 ( 82)	1.4877E-06 ( 82)
27	1.5143E-06 (158)	1.9257E-06 ( 60)	2.1662E-06 ( 60)	2.0492E-06 ( 60)	1.8495E-06 ( 60)
28	1.6022E-06 (105)	2.0597E-06 (105)	2.3363E-06 (155)	2.2416E-06 (155)	2.0689E-06 (155)
29	1.6079E-06 (239)	1.5215E-06 (110)	1.5658E-06 (110)	1.5490E-06 (358)	1.5746E-06 (358)
30	1.7732E-06 (121)	1.8276E-06 (121)	1.6839E-06 ( 32)	1.7789E-06 ( 32)	1.7268E-06 ( 32)
31	1.5517E-06 (171)	1.4629E-06 (171)	1.4547E-06 (324)	1.5629E-06 ( 88)	1.5429E-06 ( 88)
32	2.0958E-06 (127)	1.9778E-06 (127)	2.2372E-06 ( 90)	2.2833E-06 ( 90)	2.1610E-06 ( 90)
33	1.8158E-06 (202)	1.5354E-06 (217)	1.4196E-06 ( 70)	1.3738E-06 (328)	1.2883E-06 (328)
34	1.4993E-06 (202)	1.5478E-06 (211)	1.4363E-06 (211)	1.5402E-06 (339)	1.6014E-06 (339)
35	1.4688E-06 ( 40)	2.0687E-06 ( 40)	2.2389E-06 ( 40)	2.0926E-06 ( 40)	1.8859E-06 ( 40)
36	1.4983E-06 (146)	1.4710E-06 ( 73)	1.4712E-06 (304)	1.4998E-06 (304)	1.4306E-06 (304)



YEARLY SECOND MAXIMUM 24-HOUR CONC= 2.1737E-06 DIRECTION= 28 DISTANCE= 1.0 KM DAY=105

YEAR= 73

SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	1.6621E-06 (148)	1.9780E-06 (146)	1.8471E-06 (146)	1.5719E-06 (146)	1.3319E-06 (146)
2	1.3442E-06 (151)	1.3529E-06 (148)	1.3923E-06 (147)	1.2329E-06 (146)	1.2578E-06 (146)
3	1.3206E-06 (115)	1.2618E-06 (214)	1.2751E-06 (128)	1.1626E-06 (128)	1.0320E-06 (128)
4	9.5341E-07 (123)	9.7796E-07 (115)	9.3039E-07 (178)	9.8849E-07 (194)	9.1008E-07 (145)
5	1.6400E-06 (256)	1.3011E-06 (192)	1.1088E-06 (309)	9.3658E-07 (256)	7.2634E-07 (256)
6	1.8669E-06 (186)	1.8746E-06 (209)	1.7129E-06 (186)	1.4377E-06 (186)	1.2006E-06 (186)
7	1.8624E-06 (144)	1.9075E-06 (144)	1.8218E-06 (144)	1.6051E-06 (144)	1.4078E-06 (144)
8	1.8861E-06 (253)	1.7266E-06 (187)	1.4910E-06 (187)	1.2061E-06 (187)	9.9174E-07 (187)
9	1.9235E-06 (187)	1.9870E-06 (187)	1.8491E-06 (253)	1.7048E-06 (253)	1.5276E-06 (253)
10	1.7548E-06 (196)	1.7813E-06 (180)	1.7818E-06 (197)	1.6613E-06 (197)	1.5083E-06 (141)
11	1.4196E-06 (174)	1.5807E-06 (174)	1.8685E-06 ( 76)	1.8225E-06 ( 76)	1.6793E-06 ( 76)
12	1.1804E-06 (124)	1.2617E-06 (124)	1.2891E-06 (117)	1.2655E-06 (117)	1.2069E-06 (174)
13	8.6303E-07 (100)	1.5798E-06 ( 41)	1.9094E-06 ( 41)	1.8722E-06 ( 41)	1.7312E-06 ( 41)
14	1.0346E-06 (118)	1.2163E-06 (351)	1.6377E-06 (351)	1.6165E-06 (175)	1.4690E-06 (175)
15	7.7272E-07 ( 58)	1.1427E-06 ( 77)	1.2506E-06 ( 58)	1.1877E-06 ( 58)	1.0925E-06 (350)
16	8.8147E-07 (182)	9.5210E-07 (182)	8.3207E-07 (182)	8.0407E-07 (342)	8.4601E-07 (342)
17	8.0750E-07 ( 95)	9.5646E-07 (188)	1.0643E-06 (342)	1.2679E-06 (342)	1.3337E-06 (342)
18	8.8511E-07 (188)	1.0339E-06 (188)	9.7457E-07 ( 42)	1.0043E-06 ( 42)	9.1790E-07 (298)
19	7.7041E-07 (268)	1.0402E-06 (305)	9.9370E-07 (305)	9.1660E-07 (341)	9.3192E-07 (341)
20	1.1049E-06 (305)	1.0152E-06 (341)	1.2601E-06 (305)	1.0976E-06 ( 24)	1.1907E-06 ( 24)
21	1.5977E-06 (183)	1.2973E-06 (305)	1.2761E-06 (305)	1.2839E-06 (340)	1.3029E-06 (340)
22	1.2029E-06 (221)	1.5262E-06 (293)	1.7535E-06 (293)	1.6668E-06 (293)	1.5097E-06 (293)
23	1.0125E-06 (291)	1.3135E-06 ( 16)	1.4773E-06 (315)	1.5580E-06 (315)	1.5275E-06 (315)
24	1.5416E-06 (183)	1.7312E-06 (310)	1.7047E-06 (310)	1.5661E-06 (291)	1.4355E-06 (158)
25	1.6162E-06 (321)	2.0907E-06 (321)	1.8637E-06 (240)	1.4607E-06 (240)	1.3234E-06 (280)
26	1.7107E-06 (240)	1.8704E-06 (229)	1.6516E-06 (336)	1.4167E-06 (154)	1.2786E-06 (154)
27	1.3294E-06 (287)	1.7542E-06 (155)	2.0419E-06 (155)	1.9527E-06 (155)	1.7748E-06 (155)
28	1.5141E-06 (158)	2.0492E-06 (155)	2.1737E-06 (105)	2.0180E-06 (105)	1.8373E-06 (105)
29	1.3416E-06 (249)	1.4450E-06 (126)	1.4344E-06 (105)	1.4799E-06 (105)	1.4579E-06 (105)
30	1.4079E-06 (244)	1.6027E-06 (244)	1.6455E-06 (121)	1.3681E-06 (121)	1.4099E-06 (359)
31	1.3125E-06 (127)	1.2753E-06 (127)	1.4431E-06 ( 88)	1.4874E-06 (324)	1.4197E-06 (324)
32	1.8002E-06 (157)	1.7159E-06 ( 90)	1.6964E-06 ( 21)	1.8148E-06 ( 88)	1.8251E-06 ( 88)
33	1.6814E-06 (217)	1.5238E-06 (202)	1.3876E-06 (328)	1.3270E-06 ( 89)	1.2488E-06 ( 89)
34	1.3938E-06 (211)	1.3243E-06 (202)	1.3515E-06 (339)	1.2007E-06 (211)	9.9276E-07 (211)
35	1.2655E-06 (211)	1.3245E-06 (211)	1.7068E-06 ( 93)	1.7698E-06 ( 93)	1.6951E-06 ( 93)
36	1.4868E-06 (148)	1.3293E-06 (146)	1.3588E-06 ( 73)	1.1580E-06 ( 75)	1.1069E-06 ( 79)

$$PM = 2.1737 \times 24.9 / 15.0 = 3.61 \mu g/m^3$$

$$NO_x = 2.1737 \times 34.4 / 15.0 = 4.99 \mu g/m^3$$



RING DISTANCES(KM)= 0.60 0.80 1.00 1.25 1.50

STACK # 1--SURGE DRYER

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG.K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	1.9000	25.90	2.29	16.10	339.00	66.31

= 15.0 lb/hr

P.N. = 24.9 lb/hr

NO<sub>x</sub> = 34.4 lb/hr

MAXIMUM MEAN CONC= 3.2876E-07 DIRECTION= 9 DISTANCE= 0.8 KM

YEAR= 74

ANNUAL MEAN CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	1.00869E-07	1.18440E-07	1.21065E-07	1.11570E-07	1.01166E-07
2	1.07787E-07	1.26723E-07	1.28342E-07	1.16908E-07	1.04854E-07
3	9.74341E-08	1.08710E-07	1.06981E-07	9.57924E-08	8.49748E-08
4	1.06867E-07	1.11562E-07	1.05011E-07	9.13716E-08	7.95383E-08
5	1.37508E-07	1.37730E-07	1.23669E-07	1.03020E-07	8.65957E-08
6	1.75388E-07	1.79054E-07	1.63953E-07	1.38619E-07	1.17645E-07
7	1.98318E-07	2.02198E-07	1.84657E-07	1.55288E-07	1.30764E-07
8	2.31955E-07	2.39200E-07	2.19694E-07	1.85151E-07	1.56168E-07
9	2.99587E-07	3.28756E-07	3.15002E-07	2.74273E-07	2.37197E-07
10	2.23834E-07	2.49462E-07	2.42230E-07	2.12815E-07	1.85348E-07
11	1.23238E-07	1.41598E-07	1.41645E-07	1.28007E-07	1.14250E-07
12	7.27785E-08	8.91611E-08	9.34439E-08	8.75646E-08	8.04921E-08
13	4.64571E-08	6.38774E-08	7.26650E-08	7.22616E-08	6.97162E-08
14	4.41678E-08	6.99489E-08	8.49020E-08	8.69992E-08	8.48739E-08
15	4.94647E-08	7.26366E-08	8.38583E-08	8.31897E-08	7.95806E-08
16	5.51728E-08	7.66067E-08	8.61688E-08	8.39768E-08	7.91363E-08
17	4.61859E-08	6.30953E-08	7.16967E-08	7.14084E-08	6.89998E-08
18	4.83753E-08	6.70835E-08	7.66435E-08	7.70405E-08	7.50479E-08
19	4.51728E-08	5.75607E-08	6.21270E-08	5.97784E-08	5.62185E-08
20	6.63145E-08	8.54846E-08	9.34023E-08	9.09249E-08	8.62461E-08
21	9.52815E-08	1.22493E-07	1.32870E-07	1.28371E-07	1.20909E-07
22	1.02604E-07	1.31968E-07	1.43864E-07	1.39884E-07	1.33103E-07
23	1.05826E-07	1.32608E-07	1.41279E-07	1.34543E-07	1.25916E-07
24	1.27187E-07	1.56695E-07	1.66023E-07	1.59407E-07	1.51302E-07
25	1.30661E-07	1.60049E-07	1.70427E-07	1.65566E-07	1.59580E-07
26	1.14210E-07	1.28722E-07	1.30266E-07	1.22162E-07	1.15164E-07
27	1.42882E-07	1.70297E-07	1.78241E-07	1.71019E-07	1.63297E-07
28	1.35902E-07	1.65287E-07	1.74903E-07	1.68746E-07	1.61476E-07
29	1.09959E-07	1.30052E-07	1.34935E-07	1.27667E-07	1.19995E-07
30	1.11156E-07	1.28352E-07	1.31414E-07	1.24027E-07	1.16793E-07
31	1.37495E-07	1.56564E-07	1.57913E-07	1.45832E-07	1.33628E-07
32	1.46252E-07	1.61582E-07	1.59505E-07	1.45113E-07	1.31782E-07
33	1.40263E-07	1.61354E-07	1.62761E-07	1.49156E-07	1.35373E-07
34	1.08852E-07	1.26720E-07	1.30134E-07	1.21519E-07	1.12435E-07
35	8.58269E-08	9.52313E-08	9.39420E-08	8.52410E-08	7.73239E-08
36	8.94229E-08	1.04423E-07	1.06336E-07	9.79019E-08	8.87973E-08

PH

$$\text{Present} = 0.328756 \times 24.9 / 15.0 \times 4000 / 8760 = 0.24 \text{ } \mu\text{g}/\text{m}^3$$

$$\text{Proposed} = \text{Present} \times 2 = 0.49 \text{ } \mu\text{g}/\text{m}^3$$

NOx

$$\text{Present} = 0.328756 \times 34.4 / 15.0 \times 4000 / 8760 = 0.34 \text{ } \mu\text{g}/\text{m}^3$$

$$\text{Proposed} = \text{Present} \times 2 = 0.69 \text{ } \mu\text{g}/\text{m}^3$$

YEARLY MAXIMUM 24-HOUR CONC= 2.8495E-06 DIRECTION= 9 DISTANCE= 0.6 KM DAY=230

YEAR= 74

## HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	1.6761E-06 ( 84)	1.7626E-06 ( 98)	1.7101E-06 ( 98)	1.5964E-06 (354)	1.5778E-06 (354)
2	1.3240E-06 ( 91)	1.4838E-06 ( 91)	1.6130E-06 ( 38)	1.6248E-06 ( 38)	1.5304E-06 ( 38)
3	1.1309E-06 (207)	1.0765E-06 ( 80)	1.3105E-06 ( 80)	1.3114E-06 ( 80)	1.2342E-06 ( 80)
4	1.1799E-06 ( 90)	1.2041E-06 ( 90)	1.3678E-06 ( 80)	1.3807E-06 ( 80)	1.3314E-06 ( 80)
5	1.4485E-06 (158)	1.3765E-06 (157)	1.1695E-06 (157)	9.6988E-07 ( 88)	9.2749E-07 ( 88)
6	1.4419E-06 (129)	1.3729E-06 (146)	1.5598E-06 ( 88)	1.5390E-06 ( 88)	1.4365E-06 ( 88)
7	1.7331E-06 (190)	1.8443E-06 ( 88)	2.1783E-06 ( 88)	2.1036E-06 ( 88)	1.9242E-06 ( 88)
8	1.7046E-06 (148)	1.5262E-06 (145)	1.3256E-06 (145)	1.0632E-06 (145)	9.5952E-07 ( 87)
9	2.8495E-06 (230)	2.7556E-06 (230)	2.4364E-06 (230)	2.3427E-06 ( 71)	2.1485E-06 ( 71)
10	2.3107E-06 (192)	2.3877E-06 (192)	2.2235E-06 (192)	1.8897E-06 (192)	1.6085E-06 (192)
11	1.9512E-06 (167)	1.8004E-06 (167)	1.7724E-06 (193)	1.8032E-06 (193)	1.7120E-06 (193)
12	1.4924E-06 (167)	1.8610E-06 (335)	2.1860E-06 (335)	2.1136E-06 (335)	1.9399E-06 (335)
13	8.3527E-07 (167)	1.0882E-06 (335)	1.2624E-06 (335)	1.2150E-06 ( 39)	1.1905E-06 (337)
14	9.7830E-07 ( 99)	1.1420E-06 ( 40)	1.5419E-06 ( 40)	1.6178E-06 ( 40)	1.5641E-06 ( 40)
15	1.1100E-06 ( 96)	1.5559E-06 ( 96)	1.7061E-06 ( 96)	1.6236E-06 ( 40)	1.6023E-06 ( 40)
16	1.0536E-06 (291)	1.5243E-06 (316)	1.7380E-06 (316)	1.6465E-06 (316)	1.4889E-06 (316)
17	7.4641E-07 (338)	7.9221E-07 (338)	1.0101E-06 (280)	1.1173E-06 (280)	1.2043E-06 (350)
18	1.2186E-06 (311)	1.2688E-06 (280)	1.7877E-06 (280)	1.9296E-06 (280)	1.9013E-06 (280)
19	1.1020E-06 (311)	1.3747E-06 (311)	1.4859E-06 (311)	1.4081E-06 (311)	1.2884E-06 (311)
20	1.3957E-06 (282)	1.5769E-06 (279)	1.7657E-06 (279)	1.6501E-06 (279)	1.4771E-06 (279)
21	1.3507E-06 (264)	2.0902E-06 (279)	2.4333E-06 (279)	2.3707E-06 (279)	2.2188E-06 (279)
22	1.3103E-06 (265)	1.9706E-06 (266)	2.2673E-06 (266)	2.2374E-06 (274)	2.0931E-06 (274)
23	1.4476E-06 (298)	1.6427E-06 (298)	1.5961E-06 (266)	1.6231E-06 (295)	1.6041E-06 (295)
24	2.6731E-06 (286)	2.8180E-06 (284)	2.7415E-06 (284)	2.4134E-06 (284)	2.0913E-06 (284)
25	1.7298E-06 (307)	1.8946E-06 (307)	2.0187E-06 (285)	1.9353E-06 (285)	1.7987E-06 (285)
26	1.7767E-06 (110)	1.5746E-06 (305)	1.3387E-06 (115)	1.2842E-06 (115)	1.1792E-06 (115)
27	1.7769E-06 (116)	1.6931E-06 (333)	1.9393E-06 (333)	1.9091E-06 (333)	1.7987E-06 (333)
28	1.4573E-06 (101)	2.0293E-06 (101)	2.2144E-06 (101)	2.0744E-06 (101)	1.8748E-06 (101)
29	1.3443E-06 (301)	1.7913E-06 (140)	2.0567E-06 (140)	1.9846E-06 (140)	1.8291E-06 (140)
30	1.2234E-06 (240)	1.1896E-06 ( 67)	1.1448E-06 (301)	1.1454E-06 (334)	1.1810E-06 (334)
31	1.8899E-06 (216)	1.9584E-06 (216)	1.8217E-06 (215)	1.5802E-06 (215)	1.3797E-06 (134)
32	1.4646E-06 ( 65)	1.5728E-06 ( 65)	1.4012E-06 ( 65)	1.3153E-06 (142)	1.2353E-06 (142)
33	1.6379E-06 (159)	1.5217E-06 (159)	1.4645E-06 (131)	1.3732E-06 (131)	1.2555E-06 ( 94)
34	2.1910E-06 (159)	1.8743E-06 (159)	1.5084E-06 (131)	1.3842E-06 (131)	1.2309E-06 (131)
35	1.3651E-06 (242)	1.4819E-06 (212)	1.4516E-06 (212)	1.2525E-06 (212)	1.0794E-06 (175)
36	1.3343E-06 (175)	2.0736E-06 (175)	2.2900E-06 (175)	2.1298E-06 (175)	1.9037E-06 (175)

YEARLY SECOND MAXIMUM 24-HOUR CONC= 2.7312E-06 DIRECTION= 24 DISTANCE= 0.8 KM DAY=286

YEAR= 74

## SECOND HIGHEST 24-HOUR CONCENTRATION AT EACH RECEPTOR

RANGE	0.6 KM	0.8 KM	1.0 KM	1.3 KM	1.5 KM
DIR					
1	1.6087E-06 ( 98)	1.7203E-06 ( 84)	1.5695E-06 ( 84)	1.4899E-06 ( 98)	1.2815E-06 ( 98)
2	1.3121E-06 (207)	1.4559E-06 ( 94)	1.4330E-06 ( 91)	1.2937E-06 (131)	1.1520E-06 (131)
3	9.5197E-07 (103)	9.1202E-07 (103)	1.0314E-06 ( 93)	1.0961E-06 ( 83)	1.1043E-06 ( 83)
4	1.0738E-06 (130)	1.1544E-06 ( 80)	1.0830E-06 ( 90)	9.0331E-07 ( 90)	7.4331E-07 ( 90)
5	1.4105E-06 (157)	1.1525E-06 (158)	9.6031E-07 ( 88)	9.2314E-07 (157)	7.3920E-07 (157)
6	1.4183E-06 (158)	1.3448E-06 (209)	1.4507E-06 (209)	1.3504E-06 (209)	1.2178E-06 (270)
7	1.5634E-06 (146)	1.5671E-06 (190)	1.3058E-06 (190)	1.0512E-06 (147)	9.9867E-07 (147)
8	1.5774E-06 (145)	1.4955E-06 (148)	1.2780E-06 (315)	1.0293E-06 ( 87)	9.1920E-07 (147)
9	2.6688E-06 (231)	2.5500E-06 (231)	2.4289E-06 ( 71)	2.1813E-06 (192)	1.9513E-06 (192)
10	1.9973E-06 (173)	1.8711E-06 (173)	1.6655E-06 (202)	1.4819E-06 (202)	1.3507E-06 (202)
11	1.5245E-06 (192)	1.4562E-06 (192)	1.4913E-06 (167)	1.1931E-06 ( 72)	1.1243E-06 (335)
12	1.2227E-06 (200)	1.5155E-06 (167)	1.4164E-06 (167)	1.2263E-06 (167)	1.0499E-06 (167)
13	6.3722E-07 (335)	9.7333E-07 (167)	1.1823E-06 ( 39)	1.2027E-06 (335)	1.1565E-06 ( 39)
14	6.0212E-07 ( 56)	1.1369E-06 ( 56)	1.4007E-06 ( 56)	1.4034E-06 ( 56)	1.3294E-06 ( 56)
15	6.7012E-07 ( 99)	1.1051E-06 ( 40)	1.5198E-06 ( 40)	1.5976E-06 ( 96)	1.4407E-06 ( 96)
16	9.2048E-07 (316)	1.1542E-06 (291)	1.3303E-06 (326)	1.3191E-06 (326)	1.2307E-06 (326)
17	7.3812E-07 (234)	7.6348E-07 ( 35)	9.4643E-07 ( 35)	1.0763E-06 (350)	1.1119E-06 (280)
18	8.7237E-07 (332)	1.2605E-06 (311)	1.5039E-06 (279)	1.4966E-06 (279)	1.4151E-06 (279)
19	8.2119E-07 (332)	8.9678E-07 (332)	1.0950E-06 ( 57)	1.2132E-06 ( 57)	1.2135E-06 ( 57)
20	1.1106E-06 (281)	1.4105E-06 (282)	1.2780E-06 ( 57)	1.3905E-06 ( 57)	1.3752E-06 ( 57)
21	1.2330E-06 (279)	1.3684E-06 (263)	1.7078E-06 (274)	1.7738E-06 (274)	1.7068E-06 (274)
22	1.2828E-06 (266)	1.8854E-06 (274)	2.2604E-06 (274)	2.1958E-06 (266)	2.0289E-06 (266)
23	1.4274E-06 (286)	1.4127E-06 (286)	1.5052E-06 (295)	1.6133E-06 (266)	1.5201E-06 (266)
24	2.4256E-06 (284)	2.7312E-06 (286)	2.4436E-06 (286)	2.0104E-06 (286)	1.6637E-06 (286)
25	1.6888E-06 (305)	1.8234E-06 (285)	1.7557E-06 (307)	1.4869E-06 (194)	1.3254E-06 ( 73)
26	1.7343E-06 (305)	1.5077E-06 (110)	1.3101E-06 (138)	1.0749E-06 (306)	9.3430E-07 (306)
27	1.6836E-06 (110)	1.6910E-06 (171)	1.8619E-06 (140)	1.7653E-06 (140)	1.5926E-06 (140)
28	1.3317E-06 (116)	1.7924E-06 (140)	2.0711E-06 (140)	1.9879E-06 (140)	1.8156E-06 (140)
29	1.2267E-06 (118)	1.4603E-06 (301)	1.4929E-06 ( 74)	1.5083E-06 ( 74)	1.4783E-06 (357)
30	1.1938E-06 (237)	1.1663E-06 (301)	1.1166E-06 (139)	1.0556E-06 (139)	1.0032E-06 (139)
31	1.8353E-06 (136)	1.9173E-06 (219)	1.7926E-06 (216)	1.5575E-06 (219)	1.3621E-06 (219)
32	1.2710E-06 ( 63)	1.2433E-06 ( 63)	1.3348E-06 (142)	1.1333E-06 ( 65)	1.0584E-06 (102)
33	1.2296E-06 ( 63)	1.3306E-06 (131)	1.3667E-06 ( 94)	1.3453E-06 ( 94)	1.2381E-06 (131)
34	1.2996E-06 (236)	1.4214E-06 (131)	1.4934E-06 (159)	1.1247E-06 (159)	1.1056E-06 ( 84)
35	1.1814E-06 (212)	1.1682E-06 (242)	1.0707E-06 (175)	1.1082E-06 (175)	1.0529E-06 (212)
36	1.1653E-06 (242)	1.0998E-06 ( 33)	1.3237E-06 (341)	1.5511E-06 (341)	1.6127E-06 (341)

$$PM = 2.7312 \times 24.9 / 15.0 = 4.53 \mu\text{g}/\text{m}^3$$

$$NO_x = 2.7312 \times 34.4 / 15.0 = 6.26 \mu\text{g}/\text{m}^3$$