

P 274 010 391

RECEIPT FOR CERTIFIED MAIL

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

PS Form 3800, June 1985

* U.S.G.P.O. 1985-480-794

Sent to	Mr. William R. Boakes, Fla.
Street and No.	P.O. Box 447
P.O. State and ZIP Code	Lakeland, FL 33802
Postage	S
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	S
Postmark or Date	Mailed: 5-23-89 Permit: AC 53-158856

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: Mr. William R. Boakes, Vice Pres. Sikes Corporation Florida Tile Division P. O. Box 447 Lakeland, FL 33802	4. Article Number P 274 010 391 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 <u>DATE DELIVERED</u> .
5. Signature - Address X	8. Addressee's Address (ONLY if requested and fee paid)
6. Signature - Agent X ROSE HOWARD	
7. Date of Delivery 5-25-89	

PS Form 3811, Mar. 1988

* U.S.G.P.O. 1988-212-865

DOMESTIC RETURN RECEIPT



Florida Department of Environmental Regulation

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

Bob Martinez, Governor

Dale Twachtmann, Secretary

John Shearer, Assistant Secretary

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

Mr. William R. Boakes, Vice President
Sikes Corporation
Florida Tile Division
Post Office Box 447
Lakeland, Florida 33802

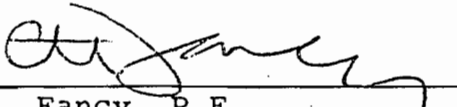
May 22, 1989

Enclosed is construction permit No. AC 53-158856 for Sikes Corporation to construct a body preparation plant at their ceramic tile manufacturing facility located at 1 Sikes Boulevard, Lakeland, Polk County, Florida. This permit is issued pursuant to Section 403, Florida Statutes.

Any party to this permit has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this permit is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION


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

Copy furnished to:

B. Thomas, SW District
R. Kemp, Lake Eng., Inc.

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on May 23, 1989.

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to
§120.52(9), Florida Statutes, with
the designated Department Clerk,
receipt of which is hereby
acknowledged.

Martha J. Wise May 23, 1989
Clerk Date

Final Determination

Sikes Corporation
Florida Tile Division
Lakeland, Polk County, Florida

Body Preparation Plant
Permit No. AC 53-158856

Department of Environmental Regulation
Division of Air Resources Management
Bureau of Air Quality Management
Central Air Permitting

May 19, 1989

Final Determination

The Technical Evaluation and Preliminary Determination for the permit to construct a body preparation plant at Sikes Corporation's ceramic manufacturing plant in Lakeland, Polk County, Florida was distributed on April 18, 1989. The Notice of Proposed Agency Action was published in The Ledger on April 28, 1989. Copies of the evaluation were available for public review at the Department's offices in Tampa and Tallahassee and the Lakeland Public Library.

No comments were submitted on the Department's proposed action. The final action of the Department will be to issue construction permit No. AC 53-158856 as proposed in the Technical Evaluation and Preliminary Determination.



Florida Department of Environmental Regulation

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

Bob Martinez, Governor

Dale Twachtmann, Secretary

John Shearer, Assistant Secretary

PERMITTEE:

Sikes Corporation
Florida Tile Division
P. O. Box 447
Lakeland, Florida 33802

Permit Number: AC 53-158856
Expiration Date: Oct. 31, 1989
County: Polk
Latitude/Longitude: 28°02'45"N
81°57'45"W
Project: Body Preparation Plant

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

Construct a 7.7 TPH body preparation plant consisting of raw material storage (6 storage tanks with filters for clay, talc, silica, calcium metasilicate, and whiting), 2 ball mills, 4 SLIP (liquified ceramic body mix) vessels, 2 header tanks, 3 SLIP pump tanks, 1 spray dryer controlled by a multiclone and a venturi scrubber, 6 prill storage tanks with filters, 2 blungers along with a rework SLIP storage tank to reclaim scrap, associated pneumatic or belt conveyor systems, a central vacuum system containing a baghouse with 51 ft² of filter, a material handling dust ventilation baghouse with 3,296 ft² of filter, and other associated equipment. The plant will be located at the permittee's existing facility at 1 Sikes Boulevard, Lakeland, Polk County, Florida. The UTM coordinates of this plant are Zone 17, 405.2 km E and 3,102.4 km N.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments:

Application

Lake Engineering letter of January 10, 1989.
Lake Engineering memo of February 10, 1989.

PERMITTEE:
Sikes Corporation
Fla. Tile Division

Permit No. AC 53-158856
Expiration Date: Oct. 31, 1989

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:
Sikes Corporation
Fla. Tile Division

Permit No. AC 53-158856
Expiration Date: Oct. 31, 1989

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 non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

PERMITTEE:
Sikes Corporation
Fla. Tile Division

Permit No. AC 53-158856
Expiration Date: Oct. 31, 1989

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:

- () Determination of Best Available Control Technology (BACT)
- () Determination of Prevention of Significant Deterioration (PSD)
- () 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:
Sikes Corporation
Fla. Tile Division

Permit No. AC 53-158856
Expiration Date: Oct. 31, 1989

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. Prill production by the body preparation plant shall not exceed 7.7 TPH.
2. Only natural gas fuel shall be used in the hot air generator. Maximum allowable heat input is 19.9 MMBtu/hr. Approximately 20,000 CFH of natural gas will produce the maximum allowable heat input.
3. The body preparation plant shall not operate more than 5,880 hrs/yr.

PERMITTEE:
Sikes Corporation
Fla. Tile Division

Permit No. AC 53-158856
Expiration Date: Oct. 31, 1989

SPECIFIC CONDITIONS:

4. The permittee shall maintain a log of this operation that will allow the Department to determine compliance with Specific Conditions Nos. 1, 2, and 3.

5. All reasonable precautions shall be taken to minimize the generation of unconfined emission of particulate matter in accordance with the provisions in F.A.C. Rule 17-2.610(3). These provisions are applicable to any source including, but not limited to, vehicular movement, transportation of materials, construction, demolition or wrecking, or industrial related activities such as loading, unloading, storing, handling, and processing of materials. Reasonable precautions shall include, but are not limited to, wetting or cleaning of areas generating unconfined emissions.

6. Pursuant to F.A.C. Rule 17-2.620(2), the permittee shall not allow the discharge of air pollutants which cause or contribute to an objectionable odor.

7. Particulate matter emissions from the venturi scrubber serving the spray dryer shall not exceed 3.6 lbs/hr (10.5 TPY) and 20% opacity. This source shall be equipped with stack sampling facilities required by F.A.C. Rule 17-2.700(4). The gas pressure drop and scrubber water pressure shall be recorded as part of any compliance test.

8. Particulate matter emissions from the material handling dust ventilation baghouse shall not exceed 1.7 lbs/hr (5.0 TPY) or 5% opacity.

9. Particulate matter emissions from the central vacuum system baghouse shall not exceed 0.04 lbs/hr (0.10 TPY) or 5% opacity.

10. There shall be no visible emissions from the filters and process equipment in this plant (raw material storage tanks, ball mills, blunger hopper, and prill storage tanks).

11. Compliance with the emission limits listed in Specific Conditions Nos. 7, 8, 9, and 10 shall be determined by the Methods 5 and 9 test procedures specified in F.A.C. Rule 17-2.700, (May 30, 1988) while the plant is operating at its permitted capacity.

12. The Department's Southwest District office in Tampa shall be notified at least 15 days prior to any compliance tests.

13. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the BAQM prior to 60 days before the expiration of the permit (F.A.C. 17-4.090).

PERMITTEE:
Sikes Corporation
Fla. Tile Division

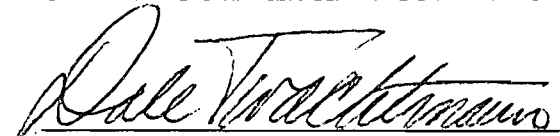
Permit No. AC 53-158856
Expiration Date: Oct. 31, 1989

SPECIFIC CONDITIONS:

14. An application for an operation permit must be submitted to the Southwest District office at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever occurs first. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. 17-4.220).

Issued this 19 day
of May, 1989

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION


Dale Twachtmann, Secretary



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: Dale Twachtmann

FROM: Steve Smallwood 

DATE: May 19, 1989

SUBJ: Approval of Construction Permit No. AC 53-158856
Sikes Corporation

RECEIVED
MAY 18 1989

Office of the Secretary

Attached for your approval and signature is a permit prepared by Central Air Permitting for the above mentioned company to construct a body preparation plant at their Lakeland, Polk County, Florida ceramic tile manufacturing facility.

No comments were received during the public notice period.

Day 90, after which this permit will be issued by default, is June 15, 1989.

I recommend your approval and signature.

SS/WH/s

→ P 5/20

Check Sheet

Company Name: *Fl. Tile Div of Sikes Co*
Permit Number: *AC 53-158856*
PSD Number:
County:
Permit Engineer:
Others involved:

Application:

- Initial Application
- Incompleteness Letters
- Responses
- Final Application (if applicable)
- Waiver of Department Action
- Department Response
- Other

Intent:

- Intent to Issue
- Notice to Public
- Technical Evaluation
- BACT Determination
- Unsigned Permit
- Correspondence with:
 - EPA
 - Park Services
 - County
 - Other
- Proof of Publication
- Petitions - (Related to extensions, hearings, etc.)
- Other

Final Determination:

- Final Determination
- Signed Permit
- BACT Determination
- Other

Post Permit Correspondence:

- Extensions
- Amendments/Modifications
- Response from EPA
- Response from County
- Response from Park Services
- Other

In the folder labeled as follows there are documents, listed below, which were not reproduced in this electronic file. That folder can be found in the supplementary documents file drawer. Folders in that drawer are arranged alphabetically, then by permit number.

Folder Name: Florida Tile Division of Sikes Corporation

Permit(s) Numbered:

AC 53 -158856

Documents:

<u>Period during which document was received</u>	<u>Detailed Description</u>
--	-----------------------------

Application 27 Dec 1988	1. 24"×36" Blueprint (4 Sheets): FLORIDA TILE LAKELAND PLANT RENOVATION PHASE A (Drawing Number : FL TILE PH A)
----------------------------	---

RECEIVED

florida tile



DIVISION OF SIKES CORPORATION

DEC 21 1989

DER-BAQM

December 19, 1989

Mr. Bill Thomas
Florida Department of Environmental Regulation
Southwest District
4520 Oak Fair Boulevard
Tampa, FL 33610-7347

Dear Mr. Thomas:

Enclosed for your review is a copy of the Emission Testing Report for the new **body preparation area** at our Lakeland, Florida facility. The testing was completed according to Permit Number **AC53-158856**.

Enclosed is a Certificate of Completion of Construction for this source. A check in the amount of \$1,500.00 is enclosed to cover the fees for the operation permit.

The scrubber pump curve and operating data are being submitted in lieu of scrubber water pressure data. (See Appendix E of test report.) We believe that the pump curve data is more appropriate for regulatory verification by field inspectors.

If you have any questions or need additional information, please contact Mr. Randal Reynolds, Lake Engineering, Atlanta, GA (404) 257-9634.

Sincerely,

Sharon Bolling

Sharon Bolling
Environmentalist
Engineering and Development

kg

Enclosures

cc: **Mr. Willard Hanks**(w/enclosures)
FDER, Tallahassee, Florida



STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

AIR POLLUTION SOURCES
CERTIFICATE OF COMPLETION OF CONSTRUCTION*

PERMIT NO. AC-53-158856 DATE: December 19, 1989
Company Name: Florida Tile Div./Sikes Corp. County: Polk
Source Identification(s): Body Preparation Plant

Actual costs of serving pollution control purpose: \$ _____

Operating Rates: 7.7 tph Design Capacity: 7.7 tph

Expected Normal 7.7 tph During Compliance Test 8.1 tph

Date of Compliance Test: November 14, 1989 (Attach detailed test report)

Test Results:	Pollutant	Average Actual Discharge	Average Allowed Discharge
	Particulated	2.52	3.6

Date plant placed in operation: October 1989

This is to certify that, with the exception of deviations noted**, the construction of the project has been completed in accordance with the application to construct and Construction Permit No. AC53-158856 dated May 23, 1989

A. Applicant:
William R. Boakes

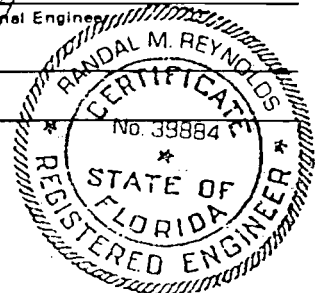
Name of Person Signing (Type) _____ Signature of Owner or Authorized Representative and Title
Vice President, Engineering & Development
Date: _____ Telephone: 813-687-7171

B. Professional Engineer:
Randal M. Reynolds, P.E.

Name of Person Signing (Type) _____ Signature of Professional Engineer
Lake Engineering, Inc. Florida Registration No. 38884

Company Name _____ Date: 12/14/89
6000 Lake Forrest Drive, Suite 350
Atlanta, Georgia 30328 (Seal)

_____ (Seal)
Mailing Address
(404) 257-9634
Telephone Number



*This form, satisfactorily completed, submitted in conjunction with an existing application to construct permit and payment of application processing fee will be accepted in lieu of an application to operate.

**As built, if not built as indicated include process flow sketch, plot plan sketch, and updates of applicable pages of application form.

PARTICULATE EMISSION TESTING
FOR
FLORIDA TILE CORPORATION
LAKELAND, FLORIDA
NOVEMBER 14, 1989

Submitted By:

AIR SYSTEMS TESTING, INC.
P.O. Box 6278
Marietta, GA 30065
(404) 426-0447



BRUCE LAWRIE

TABLE OF CONTENTS

	<u>Page No.</u>
Introduction	1
Summary of Test Results	2-3
E.P.A. Test Procedures	4-5
Sampling Procedures	6-7
Laboratory Procedures	8-9

APPENDICIES

Laboratory Results	A
Field Data Sheets & Calculations	B
Schematic of Sampling Location	C
Test Equipment & Calibration Data	D
Process Data	E
Visual Emissions Data	F

INTRODUCTION

On Tuesday, November 14, 1989, Air Systems Testing, Inc. (AST), of Marietta, Georgia, performed compliance particulate and opacity emission testing on the spray dryer exhaust at the Florida Tile Corporation plant located in Lakeland, Florida. The testing was performed to determine if the particulate and opacity emission levels were within the allowable rate defined by the Florida Department of Environmental Regulation. AST field test personnel were Bruce Lawrie and Dwight Honea.

AST would like to thank Mr. Bill Boakes and his associates at Florida Tile Corporation, and Mr. Randall Reynolds with Lake Engineering, Inc., for their assistance and cooperation throughout the testing program. Florida Department of Environmental Regulation personnel were advised of the testing schedule, but declined to send an observer.

SUMMARY OF TEST RESULTS

The summary of the results of the testing can be found below and on the following page. Below is shown the results of each test repetition and the average of the three tests. The results are shown in pounds per hour of particulate emissions.

<u>Test No.</u>	<u>Particulate Emission Rate (pounds/hour)</u>	<u>Allowable Emission Rate (pounds/hour)</u>	<u>Process Rate (tons/hour)</u>
1	3.21	3.60	8.1
2	2.21	3.60	8.1
3	2.14	3.60	8.1
Average	2.52	3.60	8.1

Thus, from the above table, the spray dryer exhaust at the Florida Tile Corporation plant located in Lakeland, Florida, is within allowable emission rates for particulate emissions.

Opacity readings were taken during the particulate testing by Mr. Dwight Honea. All readings were zero percent opacity.

SUMMARY OF TEST RESULTS
Spray Dryer Exhaust

	Test #1	Test #2	Test #3
Volume @ Meter (Vm):	40.693	40.228	40.063
Sqrt Delta P:	0.773	0.773	0.766
Sampling Time (min):	60	60	60
Barometric Pressure (Pb):	29.90	29.90	29.90
Delta H (H):	1.63	1.57	1.56
Volume in Impingers (mls):	263.0	258.0	255.0
Stack Pressure (Ps):	29.90	29.90	29.90
Stack Temperature (Ts):	608	607	607
Meter Coefficient (Y):	1.031	1.031	1.031
Pitot Coefficient (Cp):	0.84	0.84	0.84
Meter Temperature (Tm):	542	547	551
Area Stack (As):	9.17	9.17	9.17
Area Nozzle (An):	0.000341	0.000341	0.000341
Percent CO2 (%):	1.0	1.0	1.0
Percent O2 (%):	20.0	20.0	19.0
Percent N2 (%):	79.0	79.0	80.0
Milligrams:	55.7	37.6	36.3
Molecular Weight Dry (Md):	28.96	28.96	28.92
Volume Water (Vwstd):	12.38	12.14	12.00
Volume Gas Sampled (Vmstd):	40.991	40.146	39.690
Wet Fraction (Bws):	0.232	0.232	0.232
Molecular Weight Wet (Ms):	26.42	26.41	26.38
Volume Gas Sampled (Vma):	61.498	60.154	59.467
Stack Gas Velocity, (Vs):	48.70	48.66	48.25
Volumetric Flowrate (Qs):	17,860	17,869	17,719
Volumetric Flowrate (Qa):	26,796	26,775	26,548
Grainloading, gr/dscf (cs):	0.0210	0.0145	0.0141
Grainloading, gr/ACF (csi):	0.0140	0.0096	0.0094
Emission Rate, Pounds/Hour:	3.21	2.21	2.14
Allowable Rate, Pounds/Hour:	3.60	3.60	3.60
Percent Isokinetic Sampling:	102.9	100.8	100.5

E.P.A. TEST PROCEDURES

The testing procedures followed were according to Methods 1, 2, 3, and 5, for location of sampling points; measuring of stack gas velocity and volumetric flow rate; determination of CO_2 , O_2 , and dry molecular weight; and determination of particulate matter concentrations. These methods can be found in the *Code of Federal Regulations*, Title 40, Parts 53-60, revised as of July 1, 1989.

Method 1, determination of number and location of sampling points, was used to calculate the location of the twelve points used on each traverse.

EPA Method 2 was used to calculate the stack gas velocity and volumetric flow rate. The S-type pitot tube on the pitot-probe assembly was fabricated according to design criteria in Method 2 that allows a pitot coefficient of 0.84 to be used in the calculations. Stack gas temperatures used in the velocity calculations were obtained with a type "K" thermocouple and Omega digital thermometer. Leak checks were performed on the pitot-manometer assembly after each test and showed no leak.

Method 3 was used to determine dry molecular weight, including CO_2 and O_2 concentrations. Grab samples of the stack gas were analyzed during each test using a fyrite analyzer.

Method 5, Determination of Particulate Matter from Stationary Sources, was used to determine particulate emission concentrations. The sampling train consisted of a calibrated nozzle, union, 316 seamless stainless steel liner heated with 50 feet of 0.4 ohms per foot nichrome wire, glass fiber filter and filter holder, four impingers, umbilical cord, pump, and control console. Filter box, impinger outlet, and dry gas meter temperatures were monitored throughout the test with bimetallic thermometers. The dry gas meter in the control console was calibrated against a Rockwell S-415 test meter that had been standardized with a Rockwell #1464 Bell Prover. The S-415 meter had a calibration coefficient (Y) of 0.999.

Sampling Procedures

The sampling area for the testing was located on the roof of the spray dryer building, next to the spray dryer exhaust stack. The filter/impinger box rested on the roof while the probe traversed the stack. A schematic of process equipment and sampling location can be found in Appendix C.

Prior to each test, the sampling train was assembled for testing. 100 milliliters (ml) of distilled water was placed in each of the first two impingers, the third impinger was left empty, and 200.0 grams (g) of silica gel was placed in impinger number 4. The probe was secured in the sampling box, the filter holder assembly was installed, and the system was ready for pre-test leak checks.

After each test, leak checks were performed on the sampling train and each side of the pitot tubes. In each of the test repetitions, all leak checks were within the allowable limitations. Next, the train was disassembled. The filter holder was removed and sealed to prevent loss of particulate matter. The probe and nozzle were cleaned with reagent grade acetone, with all sample exposed surfaces brushed and rinsed at least six times to insure all particulate matter was removed. This rinse was saved in a 500 ml polyethylene bottle. Next, the contents of the first three impingers were measured with a graduated cylinder, and the silica gel was returned to its container and sealed.

Laboratory Procedures

The following procedures were followed for each repetition:

Container No. 1

A pre-numbered 81.5 millimeter glass fiber filter was desiccated for a minimum of 24 hours and weighted to a constant weight and transferred to this container. Before the test, the filter was placed in a filter holder. After the test, the filter was carefully removed from the filter holder and returned to the container.

Container No. 2

All sample exposed surfaces between the nozzle and the filter were washed with reagent grade acetone, including brushing and rinsing at least six times, until no particulate matter remained. The brushes were also rinsed with the acetone to remove any particulate adhering to them.

Container No. 3

200.0 grams of indicating, 6-16 mesh silica gel was weighed and sealed in this container. Before the test, it was added to impinger number four. After the test, it was returned to the container and sealed.

The following procedures were followed for each sample:

Container No. 1

The filter was desiccated for at least 24 hours and weighed to a constant weight. Note: Before each weighing, the SP 180 electronic analytical balance was calibrated internally with a 100 gram class S weight.

Container No. 2

The contents of this container were transferred to a tared beaker. The volume of the rinse was recorded and the contents evaporated. When the beaker was dry, it was desiccated and weighed to a constant weight.

Container No. 3

The silica gel was weighed to the nearest 0.5 gram.

APPENDIX A
LABORATORY RESULTS

PARTICULATE LABORATORY DATA SHEET

Test No.: 1 Source: SPRAY DRYER
Acetone Blank: Volume: 225 ml. Net Wt.: 0.0000 g.
Acetone Density: 0.786 g/ml. Residue: 0 g/ml.

Filter

Filter No.: 408
Final Weight: 0.3718 g. 0.3715 g. AVG: 0.3717 g.
Tare Weight: 0.3412 g. 0.3408 g. AVG: 0.3410 g.
Net Weight: AVG: 0.0307 g.

Probe Wash

Probe Wash Beaker No.: 5 Volume: 225 ml.
Final Weight: 129.3620 g. 129.3615 g. AVG: 129.3618 g.
Tare Weight: 129.3370 g. 129.3365 g. AVG: 129.3368 g.
Net Weight: AVG: 0.0250 g.

Less Acetone Blank Residue: 0 g.

TOTAL PARTICULATE MATTER COLLECTED: 0.0557 g.

PARTICULATE LABORATORY DATA SHEET

Test No.: 2 Source: SPRAY DRYER
Acetone Blank: Volume: 225 ml. Net Wt.: 0.0000 g.
Acetone Density: 0.786 g/ml. Residue: 0 g/ml.

Filter

Filter No.: 409
Final Weight: 0.3665 g. 0.3662 g. AVG: 0.3664 g.
Tare Weight: 0.3423 g. 0.3419 g. AVG: 0.3421 g.
Net Weight: AVG: 0.0243 g.

Probe Wash

Probe Wash Beaker No.: 2 Volume: 250 ml.
Final Weight: 127.7172 g. 127.7170 g. AVG: 127.7171 g.
Tare Weight: 127.7040 g. 127.7035 g. AVG: 127.7038 g.
Net Weight: AVG: 0.0133 g.

Less Acetone Blank Residue: 0 g.

TOTAL PARTICULATE MATTER COLLECTED: 0.0376 g.

PARTICULATE LABORATORY DATA SHEET

Test No.: 3 Source: SPRAY DRYER
Acetone Blank: Volume: 225 ml. Net Wt.: 0.0000 g.
Acetone Density: 0.786 g/ml. Residue: 0 g/ml.

Filter

Filter No.: 410
Final Weight: 0.3711 g. 0.3705 g. AVG: 0.3708 g.
Tare Weight: 0.3416 g. 0.3416 g. AVG: 0.3416 g.
Net Weight: AVG: 0.0292 g.

Probe Wash

Probe Wash Beaker No.: 23 Volume: 225 ml.
Final Weight: 130.1478 g. 130.1477 g. AVG: 130.1478 g.
Tare Weight: 130.1409 g. 130.1404 g. AVG: 130.1407 g.
Net Weight: AVG: 0.0071 g.

Less Acetone Blank Residue: 0 g.

TOTAL PARTICULATE MATTER COLLECTED: 0.0363 g.

CHAIN OF CUSTODY FORM

Plant: FLORIDA TILE Source: SPRAY DRYER
Date Sampled: 11/14/89 Run No.: 1-3

SAMPLE RECOVERY

Container No.	Description (if filter, give filter No.)
<u>As marked</u>	<u>FILTER #'S 408, 409, 410</u>
<u>As marked</u>	<u>PROBE WASH TESTS 1, 2, & 3</u>
<u>As marked</u>	<u>Acetone blank</u>
_____	_____

Person Engaged in Sample Recovery:

Signature & Title: JOB Lami
Recovery Location: FLR TILE
Date & Time of Recovery: After each test

Sample Recipient, upon Recovery, if not Recovery person:

Signature: _____
Date & Time of Receipt: _____
Sample Storage: _____

Laboratory Person Receiving Sample:

Signature & Title: JOB Lami
Date & Time of Receipt: 11/15/89 A.M.
Sample Storage: LAB

APPENDIX B
FIELD DATA SHEETS & CALCULATIONS

PARTICULATE TEST FIELD DATA

Company: FLU TILE Source: SPRAY DRYER Test No.: 1
 Date: 11/14/89 Test Team: LAWRIE/HOWER
 Nozzle Diameter: 0.250 in. Nozzle Area (Sq.Ft.): 0.000341
 Console No.: 1 Meter Calibration: 1.031 $K_m = 0.699$
 Stack Diameter: 41 in. Stack Area: 9.17 $m^2 = 0.699$ Sq. Ft.
 Assumed Moisture: 20 % Stack Static Pressure: 0 " w.c.
 Stack Temperature: ~150 oF Meter Temperature: ~85 oF
 Pressures: Barometric: 29.90 in. Hg. Stack: 29.90 in. Hg.
 Probe No.: 4' #1 Filter/Impinger Box No.: 1 Cp = 0.84
~~Orsat~~ Fyrite: % CO2 = 1 %O2 = 20 %N2 = 79
 Molecular Weight of Gas: Dry: _____ Wet: _____
 K Factor: 2.7 Minutes/Point: 2.5
 Time Start: 9:34 AM Time End: 10:36 AM
E.S.T.

Point	Meter Volume	ΔP	ΔH		TEMPERATURES					Vacuum
			Desire	Actual	Stack	Box	Imp	Meter In	Meter Out	
1	124.003	0.52	1.40	1.40	149	240	48	77	77	4
2	125.59	0.57	1.55	1.55	149	230	50	81	77	5
3	127.20	0.57	1.55	1.55	149	245	50	83	78	5
4	128.81	0.59	1.60	1.60	149	235	52	84	78	5
5	130.47	0.60	1.60	1.60	149	245	53	85	78	5
6	132.17	0.62	1.65	1.65	149	260	55	85	79	5
7	133.82	0.65	1.75	1.75	149	255	56	87	79	5
8	135.63	0.62	1.70	1.70	149	240	57	87	79	5
9	137.36	0.62	1.70	1.70	147	235	48	87	79	5
10	139.08	0.56	1.85	1.55	147	255	46	88	80	5
11	140.77	0.50	1.40	1.40	145	250	50	88	80	4
12	142.33	0.42	1.20	1.20	143	240	53	88	80	4
STOP - CHANGE PORTS										
1	143.792	0.65	1.75	1.75	149	235	56	82	80	5
2	145.59	0.70	1.85	1.85	149	245	56	84	80	5
3	147.39	0.73	1.90	1.90	150	235	56	85	80	6
4	149.21	0.75	1.95	1.95	150	225	57	86	80	6
5	151.05	0.73	1.95	1.95	150	225	57	86	80	6
6	152.90	0.70	1.90	1.90	150	245	58	87	80	5
7	154.74	0.60	1.65	1.65	150	250	59	87	81	5
8	156.45	0.58	1.60	1.60	148	245	57	86	80	5
9	158.12	0.56	1.55	1.55	148	230	53	86	80	5
10	159.78	0.55	1.55	1.55	147	230	53	86	81	5
11	161.42	0.53	1.50	1.50	147	240	54	87	81	5
12	163.07	0.50	1.40	1.40	143	250	55	87	81	5
END	164.676									

Comments: 0.250, 0.250, 0.251, 0.250
 Post test leak check 0.010 CFM @ 6 " Hg.

Pitots: OK

~~Method 3 grain @ _____ Hg: _____~~

Moisture
 Imp 1-3: 251
 S. Gel: 120
 Total: 263.0

PARTICULATE TEST FIELD DATA

Company: FLA TILE Source: SPRAY DRYER Test No.: 2
 Date: 11/14/89 Test Team: LAWRIE/NONEN
 Nozzle Diameter: 0.250 in. Nozzle Area (Sq. Ft.): 0.00341
 Console No.: 1 Meter Calibration: 1.031 $K_m =$ 0.699
 Stack Diameter: 41 in. Stack Area: 9.17 Sq. Ft.
 Assumed Moisture: 23 % Stack Static Pressure: 0 " w.c.
 Stack Temperature: ~150 of Meter Temperature: ~85 of
 Pressures: Barometric: 29.90 in. Hg. Stack: 29.90 in. Hg.
 Probe No.: 4' #1 Filter/Impinger Box No.: 1 Cp = 0.84
~~Coal~~ Fyrite: % CO2 = 1 %O2 = 20 %N2 = 79
 Molecular Weight of Gas: Dry: _____ Wet: _____
 K Factor: 2.6 Minutes/Point: 2.5
 Time Start: 10:56 AM Time End: 11:58

TEMPERATURES

Point	Meter Volume	ΔP	ΔH		Stack	Box	Imp	Meter		Vacuum
			Desire	Actual				In	Out	
1	145.070	0.68	1.75	1.75	148	250	64	81	81	5
2	166.85	0.71	1.80	1.80	149	235	58	84	81	5
3	168.66	0.74	1.90	1.90	149	225	53	86	81	5
4	170.50	0.74	1.90	1.90	148	230	45	87	82	5
5	172.34	0.73	1.90	1.90	148	250	50	88	82	5
6	174.18	0.70	1.75	1.75	149	220	52	89	83	5
7	175.98	0.60	1.55	1.55	148	255	53	89	83	4
8	177.66	0.58	1.50	1.50	148	245	54	90	83	4
9	179.31	0.57	1.50	1.50	147	235	55	90	83	4
10	180.93	0.55	1.45	1.45	146	240	56	89	83	4
11	182.55	0.50	1.35	1.35	146	255	57	89	83	4
12	184.10	0.47	1.30	1.30	145	265	58	90	83	4
STOP-CHANGE PARTS										
1	185.638	0.55	1.45	1.45	148	260	59	87	84	4
2	187.25	0.57	1.50	1.50	148	270	60	90	84	4
3	188.88	0.58	1.50	1.50	148	270	58	90	84	4
4	190.52	0.60	1.55	1.55	148	265	59	92	85	4
5	192.20	0.60	1.55	1.55	148	270	61	93	85	4
6	193.89	0.63	1.65	1.65	148	250	60	93	85	5
7	195.59	0.64	1.65	1.65	148	240	60	94	85	5
8	197.29	0.63	1.65	1.65	148	245	61	95	86	5
9	198.99	0.61	1.60	1.60	148	260	62	95	86	5
10	200.70	0.51	1.40	1.40	146	255	62	95	87	4
11	202.30	0.51	1.40	1.40	145	250	62	94	87	4
12	203.86	0.40	1.20	1.20	145	235	62	94	87	4
END	205.298									

Comments: Post test leak check 0.005 CFM @ 6 " Hg.

Pitots: OK

XXXXXXXXXXXXXXXXXXXX

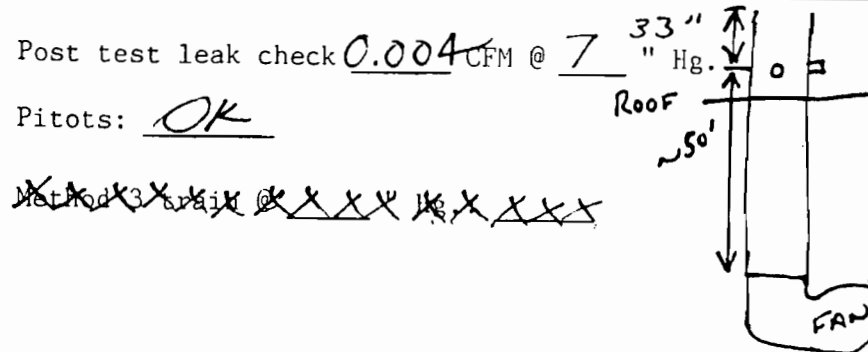
Moisture
 Imp 1-3: 248
 S. Gel: 10.0
 Total: 258.0

PARTICULATE TEST FIELD DATA

Company: FLA TILE Source: SPRAY DRYER Test No.: 3
 Date: 11/14/89 Test Team: LOWRIE/HONER
 Nozzle Diameter: 0.250 in. Nozzle Area (Sq. Ft.): 0.000341
 Console No.: 1 Meter Calibration: 1.031 $K_m =$ 0.699
 Stack Diameter: 41 in. Stack Area: 9.17 Sq. Ft.
 Assumed Moisture: 23 % Stack Static Pressure: 0 " w.c.
 Stack Temperature: ~150 OF Meter Temperature: ~90 OF
 Pressures: Barometric: 29.90 in. Hg. Stack: 29.90 in. Hg.
 Probe No.: 4' #1 Filter/Impinger Box No.: 1 $C_p =$ _____
 Orsat/Fyrite: % CO2 = 1 %O2 = 19 %N2 = 80
 Molecular Weight of Gas: Dry: _____ Wet: _____
 K Factor: 2.6 Minutes/Point: 2.5
 Time Start: 12:13 pm Time End: 1:15 pm

Point	Meter Volume	ΔP	ΔH		TEMPERATURES					Vacuum
			Desire	Actual	Stack	Box	Imp	Meter In	Meter Out	
1	205.448	0.50	1.35	1.35	148	250	73	86	86	4
2	207.05	0.53	1.45	1.45	149	235	58	88	87	4
3	208.66	0.55	1.50	1.50	148	225	57	90	87	4
4	210.25	0.58	1.55	1.55	148	240	59	92	87	4
5	211.91	0.60	1.60	1.60	148	250	60	93	87	4
6	213.60	0.63	1.65	1.65	148	255	59	94	87	4
7	215.33	0.64	1.65	1.65	148	245	58	95	87	4
8	217.04	0.63	1.65	1.65	148	240	57	96	88	4
9	218.76	0.62	1.65	1.65	147	250	57	96	88	4
10	220.48	0.53	1.40	1.40	146	265	57	96	88	4
11	222.05	0.47	1.30	1.30	145	255	58	96	88	4
12	223.59	0.45	1.25	1.25	145	245	59	96	88	4
STOP CHANGE PORTS										
1	225.058	0.67	1.70	1.70	148	245	60	92	88	5
2	226.79	0.70	1.80	1.80	148	250	62	94	89	5
3	228.58	0.73	1.85	1.85	148	250	52	96	89	6
4	230.40	0.74	1.90	1.90	148	240	45	98	89	6
5	232.24	0.71	1.85	1.85	148	230	52	98	90	6
6	234.12	0.68	1.85	1.85	148	240	56	97	90	6
7	235.97	0.58	1.55	1.55	148	245	58	96	90	5
8	237.67	0.58	1.50	1.50	147	235	58	95	90	5
9	239.33	0.56	1.45	1.45	147	230	58	94	89	5
10	240.95	0.54	1.40	1.40	145	245	58	94	89	4
11	242.55	0.50	1.30	1.30	144	255	58	94	88	4
12	244.06	0.44	1.15	1.15	144	240	59	93	88	4
ENN	245.511									

Comments:



Moisture
 Imp 1-3: 243
 S. Gel: 12.0
 Total: 255.0

Particulate Emission Test Calculations

Company: Florida Tile Source: Spray Dryer Test No.: 1
 Date: November 14, 1989 Test Team: Bruce Lawrie / Dwight Honea
 Nozzle Diameter: 0.250 in. Nozzle Area (Sq.Ft.): 0.000341
 Console No.: 1 Meter Calibration: 1.031 Km: 0.699
 Stack Diameter: 41 in. Stack Area: 9.17 Sq.Ft.
 Stack Moisture: 23.2% Stack Static Pressure: 0.0 " w.c.
 Stack Temperature: 148 oF Meter Temperature: 82 oF
 Pressures: Barometric: 29.90 in. Hg. Stack: 29.90 in. Hg.
 Probe No.: 4' #1 Filter/Impinger Box No.: 1 Cp = 0.84
 Orsat/Fyrite: % CO2 = 1.0 %O2 = 20.0 %N2 = 79.0
 Molecular Weight of Gas: Dry: 28.96 Wet: 26.42
 K Factor: 2.5 Minutes/Point: 2.5 Number of Points: 24
 Mls: 263.0 Milligrams: 55.7

Vm	√P	Sqrt √P	√H	Ts	Tm	Tm	I*
124.003	0.52	0.721	1.40	149	77	77	104.2
125.59	0.57	0.755	1.55	149	81	77	100.7
127.20	0.57	0.755	1.55	149	83	78	100.4
128.81	0.59	0.768	1.60	149	84	78	101.7
130.47	0.60	0.775	1.60	149	85	78	103.1
132.17	0.62	0.787	1.65	149	85	79	102.0
133.88	0.65	0.806	1.75	149	87	79	101.8
135.63	0.62	0.787	1.70	149	87	79	103.0
137.36	0.62	0.787	1.70	147	87	79	102.2
139.08	0.56	0.748	1.55	147	88	80	105.5
140.77	0.50	0.707	1.40	145	88	80	102.8
142.33	0.42	0.648	1.20	143	88	80	104.9
143.792	0.65	0.806	1.75	149	82	80	104.9
145.59	0.70	0.837	1.85	149	84	80	101.1
147.39	0.73	0.854	1.90	150	85	80	100.1
149.21	0.75	0.866	1.95	150	86	80	99.7
151.05	0.73	0.854	1.95	150	86	80	101.6
152.90	0.70	0.837	1.90	150	87	80	103.1
154.74	0.60	0.775	1.65	150	87	81	103.4
156.45	0.58	0.762	1.60	148	86	80	102.7
158.12	0.56	0.748	1.55	148	86	80	103.9
159.78	0.55	0.742	1.55	147	86	81	103.4
161.42	0.53	0.728	1.50	147	87	81	105.8
163.07	0.50	0.707	1.40	143	87	81	107.0
164.696	Final						

AVERAGES

40.693	0.773	1.63	148	82	102.4
			608 oR	542	

*I = Point by Point Isokinetics

Particulate Emission Test Calculations

Company: Florida Tile Source: Spray Dryer Test No.: 2
 Date: November 14, 1989 Test Team: Bruce Lawrie / Dwight Honea
 Nozzle Diameter: 0.250 in. Nozzle Area (Sq.Ft.): 0.000341
 Console No.: 1 Meter Calibration: 1.031 Km: 0.699
 Stack Diameter: 41 in. Stack Area: 9.17 Sq.Ft.
 Stack Moisture: 23.2% Stack Static Pressure: 0.0 " w.c.
 Stack Temperature: 147 oF Meter Temperature: 87 oF
 Pressures: Barometric: 29.90 in. Hg. Stack: 29.90 in. Hg.
 Probe No.: 4' #1 Filter/Impinger Box No.: 1 Cp = 0.84
 Orsat/Fyrite: % CO2 = 1.0 %O2 = 20.0 %N2 = 79.0
 Molecular Weight of Gas: Dry: 28.96 Wet: 26.42
 K Factor: 2.6 Minutes/Point: 2.5 Number of Points: 24
 Mls: 258.0 Milligrams: 37.6

Vm	√P	Sqrt √P	√H	Ts	Tm	Tm	I*
165.070	0.68	0.825	1.75	148	81	81	101.5
166.85	0.71	0.843	1.80	149	84	81	100.8
168.66	0.74	0.860	1.90	149	86	81	100.2
170.50	0.74	0.860	1.90	148	87	82	100.0
172.34	0.74	0.860	1.90	148	88	82	99.9
174.18	0.70	0.837	1.75	149	89	83	100.3
175.98	0.60	0.775	1.55	148	89	83	101.0
177.66	0.58	0.762	1.50	148	90	83	100.8
179.31	0.57	0.755	1.50	147	90	83	99.7
180.93	0.56	0.745	1.45	146	89	83	101.1
182.55	0.50	0.707	1.35	146	89	83	101.8
184.10	0.47	0.686	1.30	145	90	83	104.0
185.638	0.55	0.742	1.45	148	87	84	101.3
187.25	0.57	0.755	1.50	148	90	84	100.3
188.88	0.58	0.762	1.50	148	90	84	100.1
190.52	0.60	0.775	1.55	148	92	85	100.5
192.20	0.60	0.775	1.55	148	93	85	101.0
193.89	0.63	0.794	1.65	148	93	85	99.2
195.59	0.64	0.800	1.65	148	94	85	98.3
197.29	0.63	0.794	1.65	148	95	86	98.9
198.99	0.61	0.781	1.60	148	95	86	101.1
200.70	0.51	0.714	1.40	146	95	87	103.2
202.30	0.51	0.714	1.40	145	94	87	100.6
203.86	0.40	0.632	1.20	145	94	87	104.6
205.298	Final						

AVERAGES

40.228	0.773	1.57	147	87	100.5
			607 oR	547	

*I = Point by Point Isokinetics

Particulate Emission Test Calculations

Company: Florida Tile Source: Spray Dryer Test No.: 3
 Date: November 14, 1989 Test Team: Bruce Lawrie / Dwight Honea
 Nozzle Diameter: 0.250 in. Nozzle Area (Sq.Ft.): 0.000341
 Console No.: 1 Meter Calibration: 1.031 Km: 0.699
 Stack Diameter: 41 in. Stack Area: 9.17 Sq.Ft.
 Stack Moisture: 23.2% Stack Static Pressure: 0.0 " w.c.
 Stack Temperature: 147 oF Meter Temperature: 91 oF
 Pressures: Barometric: 29.90 in. Hg. Stack: 29.90 in. Hg.
 Probe No.: 4' #1 Filter/Impinger Box No.: 1 Cp = 0.84
 Orsat/Fyrite: % CO2 = 1.0 %O2 = 19.0 %N2 = 80.0
 Molecular Weight of Gas: Dry: 28.92 Wet: 26.39
 K Factor: 2.6 Minutes/Point: 2.5 Number of Points: 24
 Mls: 255.0 Milligrams: 36.3

Vm	\sqrt{P}	Sqrt \sqrt{P}	\sqrt{H}	Ts	Tm	Tm	I*
205.448	0.50	0.707	1.35	148	86	86	105.4
207.05	0.53	0.728	1.45	149	88	87	102.7
208.66	0.55	0.742	1.50	148	90	87	99.3
210.25	0.58	0.762	1.55	148	92	87	100.8
211.91	0.60	0.775	1.60	148	93	87	100.8
213.60	0.63	0.794	1.65	148	94	87	100.6
215.33	0.64	0.800	1.65	148	95	87	98.6
217.04	0.63	0.794	1.65	148	96	88	99.8
218.76	0.62	0.787	1.65	147	96	88	100.5
220.48	0.53	0.728	1.40	146	96	88	99.1
222.05	0.47	0.686	1.30	145	96	88	103.1
223.59	0.45	0.671	1.25	145	96	88	100.4
225.058	0.67	0.819	1.70	148	92	88	97.8
226.79	0.70	0.837	1.80	148	94	89	98.6
228.58	0.73	0.854	1.85	148	96	89	98.0
230.40	0.74	0.860	1.90	148	98	89	98.3
232.24	0.71	0.843	1.85	148	98	90	102.4
234.12	0.68	0.825	1.85	148	97	90	103.1
235.97	0.58	0.762	1.55	148	96	90	102.6
237.67	0.58	0.762	1.50	147	95	90	100.1
239.33	0.56	0.748	1.45	147	94	89	99.6
240.95	0.54	0.735	1.40	145	94	89	100.0
242.55	0.50	0.707	1.35	144	94	88	98.1
244.06	0.44	0.666	1.15	144	93	88	100.1
245.511	Final						

AVERAGES

40.063	0.766	1.56	147	91	100.6
			607 oR	551	

*I = Point by Point Isokinetics

TEST CALCULATIONS

I. Determination of Moisture in Stack Gases

- a. Volume of Water Vapor Collected (Cubic Feet):

$$V_{wstd} = 0.04707 * (V_{lc})$$

- b. Dry Gas Volume Through Meter (Cubic Feet):

$$V_{mstd} = 17.64 * V_m * Y * [(P_{bar} + (H/13.6)) / T_m]$$

- c. Moisture Content: (Bws)

$$Bws = V_{wstd} / [V_{wstd} + V_{mstd}]$$

- d. Wet Molecular Weight: (Ms)

$$M_s = [M_d * (1 - Bws)] + [18.0 * Bws]$$

II. Actual Stack Gas Volume Sampled (Cubic Feet):

$$V_{ma} = [V_{mstd} * T_s * P_{std}] / [(1 - Bws) * T_{std} * P_s]$$

III. Determination of Stack Gas Velocity & Volumetric Flow Rate

- a. Stack Gas Velocity (Feet per Second):

$$V_s = K_p * C_p * (\bar{P}) * [\text{SQRT} (T_s / (P_s * M_s))]$$

- b. Stack Volumetric Flow Rate (Cubic Feet per Minute):

1. Dry Standard Conditions (Qs)

$$Q_s = 60 * (1 - Bws) * V_s * A_s * (T_{std}/T_s) * (P_s/P_{std})$$

2. Actual Conditions (Qa)

$$Q_a = V_s * A_s * 60$$

IV. Determination of Particulate Concentration (Grainloading)

a. Dry Standard Conditions: (cs)

$$cs = 0.01543 * (Mn / Vmstd)$$

b. Actual Conditions: (csl)

$$csl = 0.01543 * (Mn / Vma)$$

V. Emission Rate (Pounds per Hour)

$$E = 60 * Qs * cs / 7000$$

VII. Determination of Acceptability of Sampling Results: (I)

$$I = \frac{Ts * ((0.00267 * Vlc) + ((Vm*Y/Tm)*(Pbar+(H/13.6))))}{0.599 * \theta * Vs * Ps * An}$$

NOMENCLATURE

As	Cross-sectional area of stack, square feet
An	Cross-sectional area of nozzle, square feet
ACF	Actual cubic feet of gas at stack conditions
ACFM	Actual cubic feet of gas per minute at stack conditions
Bws	Proportion by volume of water vapor in gas stream
cs	Particulate concentration in stack gas, gr/dscf
csl	Particulate concentration in stack gas, gr/ACF
Cp	Pitot tube coefficient
delta H	Pressure drop across orifice meter, inches water
dp	Nozzle diameter, inches
delta P	Velocity head of stack gas, inches water
dscf	Cubic feet of dry gas corrected to standard conditions
E	Particulate emission rate, pounds/hour
Kp	Constant (85.49)
Mn	Total particulate matter collected, mg
I	Percent of isokinetic sampling
Pbar	Barometric pressure, inches mercury
Pm	Barometric pressure of dry gas meter, in. mercury
Ps	Absolute stack gas pressure, inches mercury
Pstd	Barometric pressure, standard conditions, 29.92 "Hg
Qa	Volumetric flow rate, actual conditions, ACF/min
Qs	Volumetric flow rate, dry standard conditions, dscf/min
Tm	Absolute average dry gas meter temperature, degree R
Ts	Absolute average stack gas temperature, degree R
Tstd	Absolute temperature at standard conditions, 528 R

e Total sampling time, minutes

Vlc Total volume collected in impingers and silica gel, ml

Vm Volume of gas sampled through gas meter, cubic feet

Vma Stack gas volume sampled, ACF

Vmstd Volume of gas sampled through gas meter, cubic feet

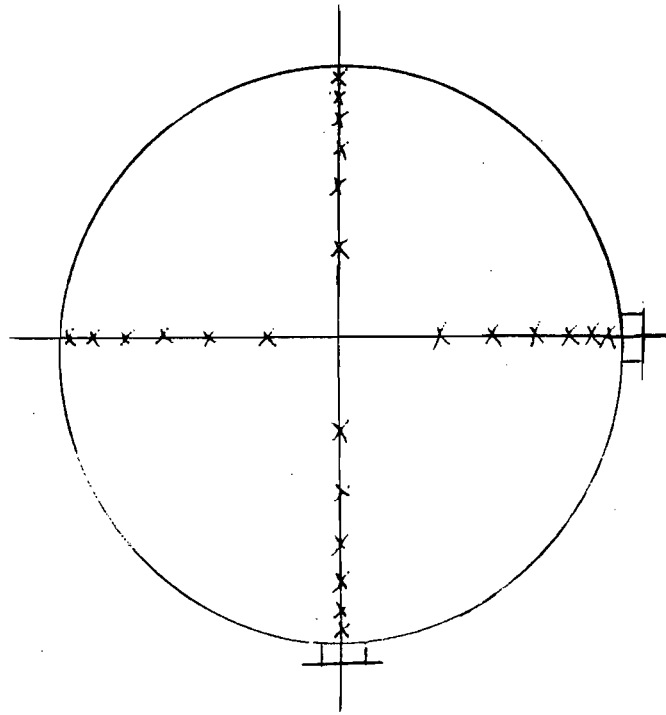
Vs Average stack gas velocity, feet/sec

Vwstd Volume of water vapor in gas sampled, standard cubic feet

Y Dry gas meter calibration factor

APPENDIX C
SCHEMATIC OF SAMPLING LOCATION

Sampling Point Location
for
Spray Dryer Exhaust Stack



41 inch Diameter Stack

Sampling Point	Distance From Stack Wall (Inches)
1	0.9 *
2	2.7
3	4.8
4	7.3
5	10.3
6	14.6
7	26.4
8	30.8
9	33.7
10	36.2
11	38.3
12	40.1 *

* Note: Points
1 & 12 Relocated
to 1.0" From
Stack Wall.

APPENDIX D
TEST EQUIPMENT & CALIBRATION DATA

including a support bracket. A cyclone eliminator and filter bypass are also available depending on sampling methods and conditions. An adjustable thermostat maintains a constant temperature with the compartment heavily insulated to reduce heat loss. A circulating fan minimizes thermal gradients and a hinged door provides easy access to the sampling train components.

A detachable ice bath compartment (or impinger module) contains the system's impingers and bubblers. This interchangeable module is insulated and watertight with a safety overflow feature and a convenient drain plug. The ice bath can accommodate a maximum of six impinger-bubbler units.

A slip-fit connection permits the two sample case modules to be joined or separated quickly and easily.

Umbilical Cord

The RAC umbilical is an integrated multiconductor assembly containing both pneumatic and electrical conductors. It connects the sample-collecting case to the meter control case and conveys the main sample stream as well as the pitot tube stack velocity signals to the manometers. This cord is supplied in modular 25', 50', 75', 100', 200' and 300' lengths, and permits operating distances up to 300' (maximum) between the sampling case and control console without encountering a prohibitive pressure drop.

In addition, the RAC umbilical cord provides for a two-way intercom system when the control console is remote from the sampling site. Communications are accomplished by connecting sound-powered handsets (optional P/N 997525) to leads in the cord.

• operation

Prior to actual stack sampling, a pre-survey is made of the specific installation to obtain necessary data on temperature, moisture content, and density of the gas stream to be sampled. Barometric pressure is taken at the sampling site, and the static pressure of the stack is obtained. Appropriate sample ports and suitable safe staging also are essential for the pre-survey.

To set up for sampling in the normal horizontal configuration, the monorail suspension-guidance assembly is attached to the stack at the access port by means of three bolts through its T-shaped endplate. The heated compartment is connected to the monorail, and a pitobe of desired length is inserted

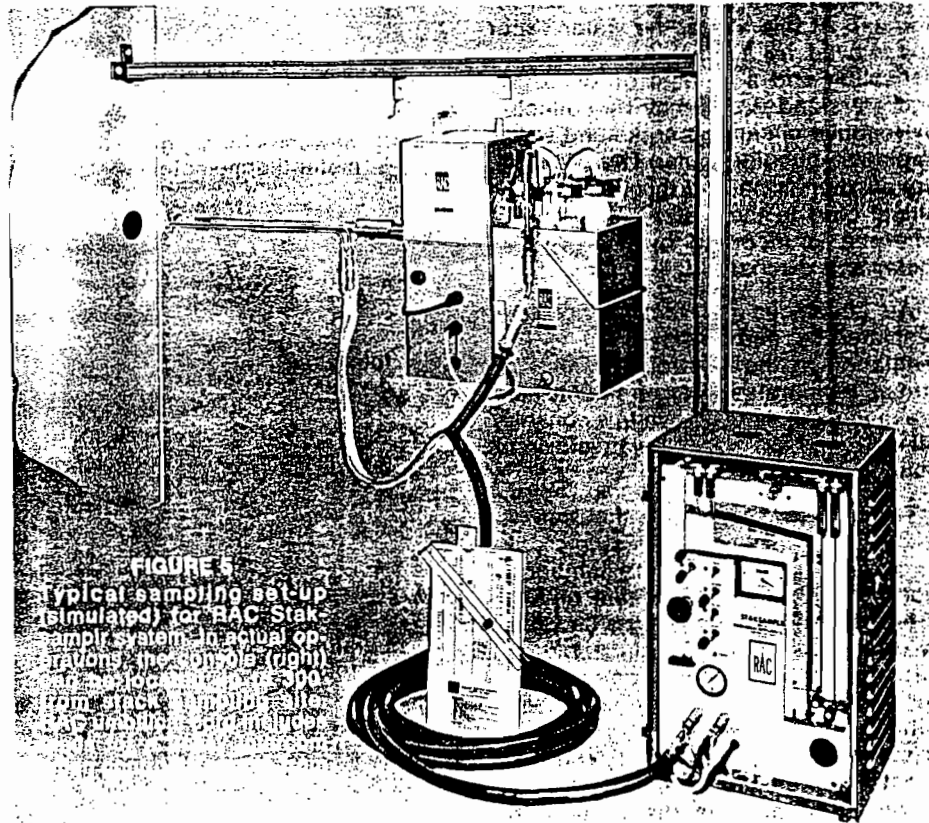


FIGURE 5
Typical sampling setup (simulated) for RAC Stack-sampler system. In actual operation, the sample case (left) and the control console (right) are connected by the umbilical cord.

into the pitobe holder and connected to the sampling train's preassembled cyclone, flask, and filter. The ice bath compartment containing the preassembled glassware then is attached to the heated compartment, and the filter is connected to the first impinger unit.

The sample case and pitobe then are connected to the meter control case by the umbilical cord. For convenience, the control unit can be placed in any remote location up to 300' from the sampling site.

The monorail securely supports the sampling components, permitting the pitobe to be inserted and withdrawn easily to make velocity and sample traverses for isokinetic sampling.

If a series of samples is taken with one set-up, the heated compartment of the two-piece sample case remains attached to the monorail when the impinger modules and pitobes are interchanged.

During sampling operations, the system's vacuum pump draws a stack gas sample into the heated probe through the nozzle (proper size selected by nomograph calculations). The gas then enters the heated compartment of the modular sample case, where the cyclone and filter remove entrained particulate matter. It then is drawn into the 500 ml impinger-bubbler units, which are positioned in an ice bath (and may

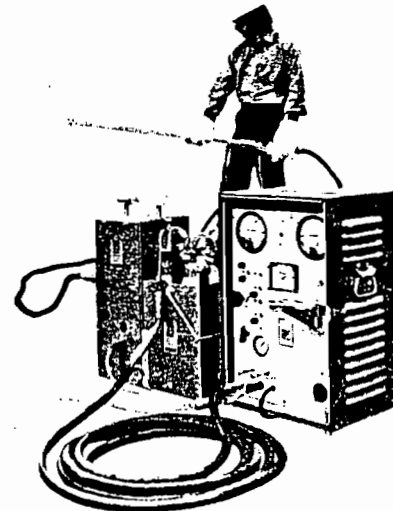


FIGURE 6

For sampling in constricted areas, RAC offers flexible, heated sampling lines that permit distances up to 20' between sample case & pitobe with no loss in sampling efficiency. A variable voltage device controls temp in flexible line and prevents burn-out of integral heating wires.

Best Available Copy

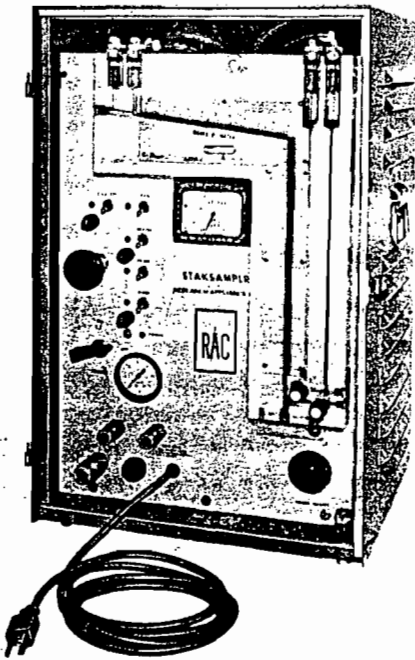


FIGURE 2

Standard Meter Control Case with dual-column inclined-vertical manometer for measuring pressure differentials across sampling orifice (ΔH) and pitot (ΔP) with $\pm 1\%$ accuracy.

• design

Available as a complete system, RAC Staksamplr is comprised of four major subsystems: ① a **pitobe assembly** (combination of a heated, lined, stainless steel probe and a detachable pitot tube); ② an **operating/control console**; ③ a lightweight, modular, **two-piece sample case**; and ④ an integrated, modular **umbilical cord** that connects the sample case and pitobe to the control console. All subsystems are furnished assembled.

To facilitate on-site calculations, a **nomograph** is available with each system. A **monorail suspension-guidance assembly** for the sample case and pitobe also can be furnished as a standard accessory.

Pitobes

RAC pitobes are furnished with three interchangeable sampling nozzles ($\frac{1}{4}$ ", $\frac{3}{8}$ " and $\frac{1}{2}$ " ID), ball-joint connections, and quick-disconnect couplings. They are available in 3', 5' and 10' effective lengths. The 3' and 5' standard units can be supplied with stainless steel or Pyrex® glass-lined probes; the standard 10' unit has a stainless steel lined probe.

Glass-lined probes can be used for stack temperatures up to 800°F. For higher temperatures, stainless steel or special liners (optional) — or the RAC water-cooled pitobes (optional) — can be used. In addition, the pitot tube can

be detached from the probe for quick, easy replacement. It also can be used separate from the probe for *traversing* prior to setting the Staksamplr in position.

Control Console

STANDARD MODEL

The Standard Master Control Console (Meter Control Case) for the RAC Staksamplr contains the system's vacuum pump, inclined-vertical dual-column manometer, totalizing dry gas meter, thermometers, valves, and operating switches in a sturdy, louvered, steel cabinet with a hinged, removable access door. Clear plastic viewports on top of cabinet permit visual readings of two dial-type thermometers located in the inlet and outlet ports of the dry gas meter. This meter measures the volume of air drawn through the system during a sampling period and provides a digital readout of the total volume.

When the system is operating, the dual-column manometer is used to selectively monitor the pressure differentials across the sampling orifice (ΔH) and the pitot tube (ΔP). The manometer's vertical scale ranges from 1.1 to 10" water (0.1" minor division) and the inclined scale from 0 to 1.0" water (0.01" minor division). Full scale accuracy is $\pm 1\%$.

LCD MODEL

Staksamplr LCD is a Lightweight, Compact, Digital stack sampling system that supplies a meter control console equipped with a liquid crystal display (LCD) temperature indicator for Type K Chromel-Alumel thermocouple sensors.

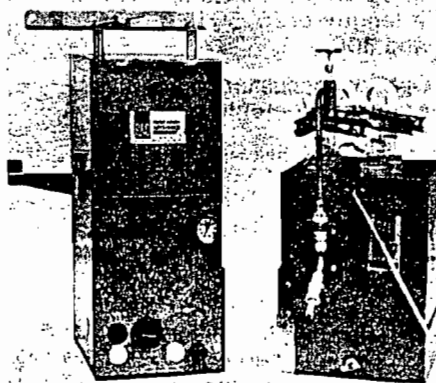


FIGURE 4

Two-module sample case with glassware installed. Door on thermostat-controlled heated compartment provides quicker access to particulate-collecting components. Modules are easily joined or separated by a slip-fit connection.

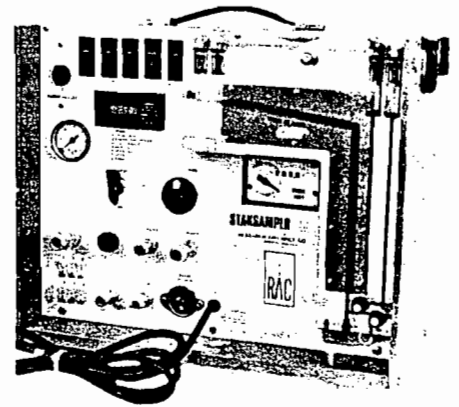


FIGURE 3

LCD Meter Console with liquid crystal display temperature indicator for Type K thermocouple sensors. Circuit breaker switches and external rotary vane pump are standard.

The LCD Meter Console contains the same basic components as the Standard Meter Control Case with the added features of a digital temperature readout indicator, temperature-indicating thermocouples rather than dial thermometers, circuit breaker switches instead of fuses, and an external high capacity rotary vane vacuum pump.

The external pump adds to the compactness of the unit, reduces noise and vibration during sampling periods, and is easily accessible for all service and maintenance work.

The LCD temperature indicator provides accurate digital readings for a minimum 6 different points in the sampling system. Individual temperature readings can easily be obtained for the (1) stack gas, (2) probe liner, (3) sample case heated compartment, (4) outlet of the last impinger, (5) dry gas meter inlet, and (6) dry gas meter outlet. The liquid crystal display readout is equipped with a thermostatically controlled heater to prevent sluggish response in cold weather and a field-selectable slide switch for conversion to either Fahrenheit or Celsius temperature scales. The digital display is easily removed through the front of the console for fast servicing and maintenance and provides glare-free readings even in direct sunlight.

Sample Collecting Case

The RAC Modular Sample Case is a two-module configuration that features a lightweight aluminum construction as well as optimum ease and flexibility of operation. This case contains the system's standard all-glass sampling train (or optional stainless steel impingers-bubblers, P/N 201093-201092), and supports the pitobe in both the normal horizontal and vertical optional (P/N 201015) mounting positions.

A separate **heated compartment** contains the sampling train's particulate-collecting cyclone, flask, and filter,

• options & accessories

Digital Temperature Display

Staksamplr LCD is a complete stack sampling system which provides accurate digital temperature readouts for 6 different points in the system. Thermocouples replace dial thermometers and are used to obtain temperature readings (1) in the stack, (2) at the probe liner, (3) in sample case heated compartment, (4) at outlet of last impinger, (5) at dry gas meter inlet, and (6) at dry gas meter outlet. The meter control case is equipped with a liquid crystal display (LCD) temperature indicator and external pump and is compatible with all existing RAC Staksamplrs.

Large Filter Holders

When a high volume of particulate matter is encountered, interchangeable 3" (80 mm, P/N 201012) and 4" (110mm, P/N 201013) glass units can be substituted for 2.5" (64mm, P/N 997065) particle filter in sample case heated compartment. All sizes of RAC filter holders are equipped with a fritted glass disc to support the filter media.

Water-Jacketed Pitobes

These jacketed units use circulating water to withstand stack temps over 800°F; available in 3', 5' & 10' effective lengths.

Stainless Steel Impingers-Bubblers

For applications in which breakage of glassware is a common problem, RAC offers optional stainless steel impingers (P/N 201093) & bubbler units (P/N 201092) with ball-joint connections. These unbreakable all-metal units are interchangeable with the std glassware.

Sectionalized Pitot Tube

Three modular sections provide an S-type pitot with effective lengths of 10' & 15'

Digital Pocket Pyrometer

Pocket-sized, battery powered thermocouple pyrometer provides stable, accurate temperature readings. Type K thermocouple (supplied separately) attaches to pitobe and provides temperatures over a range of 50° to 1900°F (P/N 992726) or 10° to 1100°C (P/N 992726-1).

Slide Rule Nomograph

Performs presampling and during-sampling isokinetic calculations easily and accurately; handy, standard, slide rule body; very accurate and versatile, no assumptions are necessary; calculates nozzle diameter and isokinetic sampling rate (P/N 201014); optional slide rule

(P/N 201127) available if meter moisture content is greater than 2.5% and/c dry molecular weight is not 29 ± 1 .

Special Probe Liners

In addition to the standard Pyrex glass and Type 304 stainless steel liners furnished as standard with RAC probes, optional liners made of Teflon, Type 316 stainless steel, quartz, and Inconel also are available on special order. These liners are furnished in standard lengths of 3', 5' or 10' (except for Pyrex glass and quartz) and special lengths can be supplied to order.

Flexible Sampling Lines

For sampling operations in confined or physically restricted areas, RAC offers flexible, heated, sample-collecting lines that allow the pitobe to be separated from the sample case by distances up to 20' with no loss in sampling efficiency. Available in 5', 10', 15' & 20' lengths, these flexible lines can be used for gas streams with temps up to 300°F (max), and have std ball-joint connections at both ends. A variable voltage device controls temp range in the sample line and prevents burn-out of integral heating wires. Pitot extension lines may be required.

Stack Interface

This instrument adapts the Staksamplr control console for use with the RAC Stack Gas Train sample case, which uses midget (30 ml) impingers for sampling moisture (EPA Method 4) and SO₂ (EPA Method 6) in stacks or ducts; has flowmeter to monitor the low flow rates required, drying tube & connections for sampling pitot & electrical lines (P/N 997503).

Andersen In-Stack Fractionating Sampler

Precision, multi-stage, stainless steel unit collects & automatically classifies particles into 8 sizes (ranging from +20.0 microns down to 0.36 microns dia) according to their aerodynamic characteristics; isokinetic techniques can be used for sampling in stacks with velocities from 100 to 12,000 fpm & temps to 1500°F; adapts to all RAC pitobes (P/N 201037).

Gas Stream Hygrometer

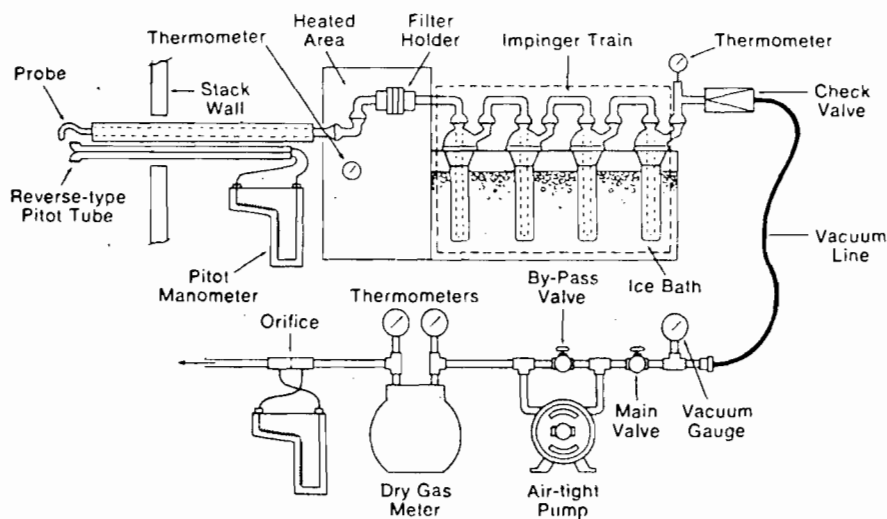
Uses matched (0–220°F) wet-bulb and dry-bulb thermometers to measure percent of water vapor in stack gas streams with temps below 212°F; stainless steel construction (P/N 997517).

Alundum Thimble Filter (in-stack)

Uses 45 x 127mm Alundum (ceramic) thimble of coarse porosity for dry collection of particles entrained in gas streams with temps to 1500°F; glass-fiber and

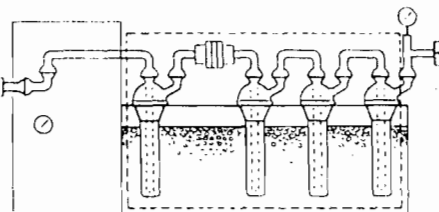
RAC Staksamplr Schematic of EPA Particulate Sampling Train (Method 5)

Same basic configuration used to sample Beryllium & Mercury Vapor (Federal Register, Vol. 36, Nos. 234 [Be, Hg] & 247)



Configuration of Sample Case for sampling SO₂, SO₃, & H₂SO₄ MIST (Method 8)

Heated area is by-passed; particulate filter positioned between 1st & 2nd impingers; all other components same as for particulate sampling. (Federal Register, Vol. 36, No. 247)



AST Meter/Orifice Calibration

Console No.: 1

Calibration Date: January 30, 1989

Time (min)	H	cm	Gas Volume Calibration Meter		Gas Volume Dry Gas Meter		Tcm	T1	T2
			Initial	Final	Initial	Final			
17.00	0.5	0.0	678.202	684.857	71.070	77.607	61	63 71	60 61
15.00	1.0	0.0	684.857	693.037	77.607	85.553	61	70 76	61 63
12.00	1.5	0.0	693.292	701.480	85.906	93.950	61	74 79	63 64
10.00	2.0	0.0	701.480	709.267	93.950	101.649	61	76 80	64 66
7.00	2.5	0.0	709.267	715.378	101.649	107.646	62	79 81	66 66

Pb = 29.00

H = 0.5	MCF =	1.022	Qm =	0.391	Km =	0.701
H = 1.0	MCF =	1.040	Qm =	0.545	Km =	0.691
H = 1.5	MCF =	1.032	Qm =	0.683	Km =	0.706
H = 2.0	MCF =	1.027	Qm =	0.781	Km =	0.699
H = 2.5	MCF =	1.034	Qm =	0.874	Km =	0.699
AVERAGES:	MCF =	1.031	Qm =	0.655	Km =	0.699

CALCULATIONS

$$MCF = \frac{(Cm \text{ Final} - Cm \text{ Initial}) (Tdgm) (Pcm)}{(DGM \text{ Final} - DGM \text{ Initial}) (Tcm) (Pdgm)}$$

$$Qm = \frac{DGM \text{ Volume}}{\text{Time}} \times \frac{(T2 \text{ Avg.} + 460)}{(T1+T2 \text{ Avg.} + 460)} \times (MCF)$$

$$Km = (Qm) [\text{Sqrt} (Pm * Mm / Tm / H)]$$

AST, Inc.
 Post Test Meter Calibration
 Console #1

H	cm	V1cm	V2cm	V1dgm	V2dgm	Tcm	T1	T2
1.0	0.0	47.277	52.507	903.939	909.100	65	68 76	62 64
1.0	0.0	52.507	57.960	909.100	914.500	65	74 80	63 65
1.0	0.0	57.960	65.702	914.500	922.202	65	77 83	64 66
Pb =	29.10							

MCF = 1.016
 MCF = 1.018
 MCF = 1.017

Average MCF = 1.017

Calibrated by: JBLami

Date: 12/6/89

AST, Inc.
Post Test Meter Calibration
Console #1

\hat{H}	\hat{cm}	V1cm	V2cm	V1dgm	V2dgm	Tcm	T1	T2
2.0	0.0	65.702	74.871	922.202	931.329	65	80 86	66 68
2.0	0.0	74.871	83.005	931.329	939.454	65	82 86	68 69
2.0	0.0	83.005	94.952	939.454	951.416	65	83 86	69 70

Pb = 29.10

MCF = 1.019
MCF = 1.017
MCF = 1.016

Average MCF = 1.017

Calibrated by:

JBL

Date:

12/6/89

THERMOCOUPLE/THERMOMETER CALIBRATIONS

<u>Device</u>	<u>Reading (oF)</u>	<u>ASTM Reference Thermometer (oF)</u>
<u>METER INLET</u>	<u>34° / 210°</u>	<u>33° / 210°</u>
<u>METER OUTLET</u>	<u>34° / 210°</u>	<u>33° / 210°</u>
<u>BOX HEAT</u>	<u>220°</u>	<u>225°</u>
<u>IMP OUTLET</u>	<u>32° / 69°</u>	<u>33° / 70°</u>
<u>3' #1 STACK T/C</u>	<u>34° / 211°</u>	<u>33° / 210°</u>
<u>5' #1 STACK T/C</u>	<u>34° / 210°</u>	<u>33° / 210°</u>
<u>7' #1 STACK T/C</u>	<u>33° / 212°</u>	<u>33° / 210°</u>
<u>4' #1 STACK T/C</u>	<u>34° / 210°</u>	<u>33° / 210°</u>

STACK T/C CALIBRATIONS PERFORMED WITH OMEGA DIGITAL THERMOMETER.

DATE: 11/12/89

BY: JBS [Signature]

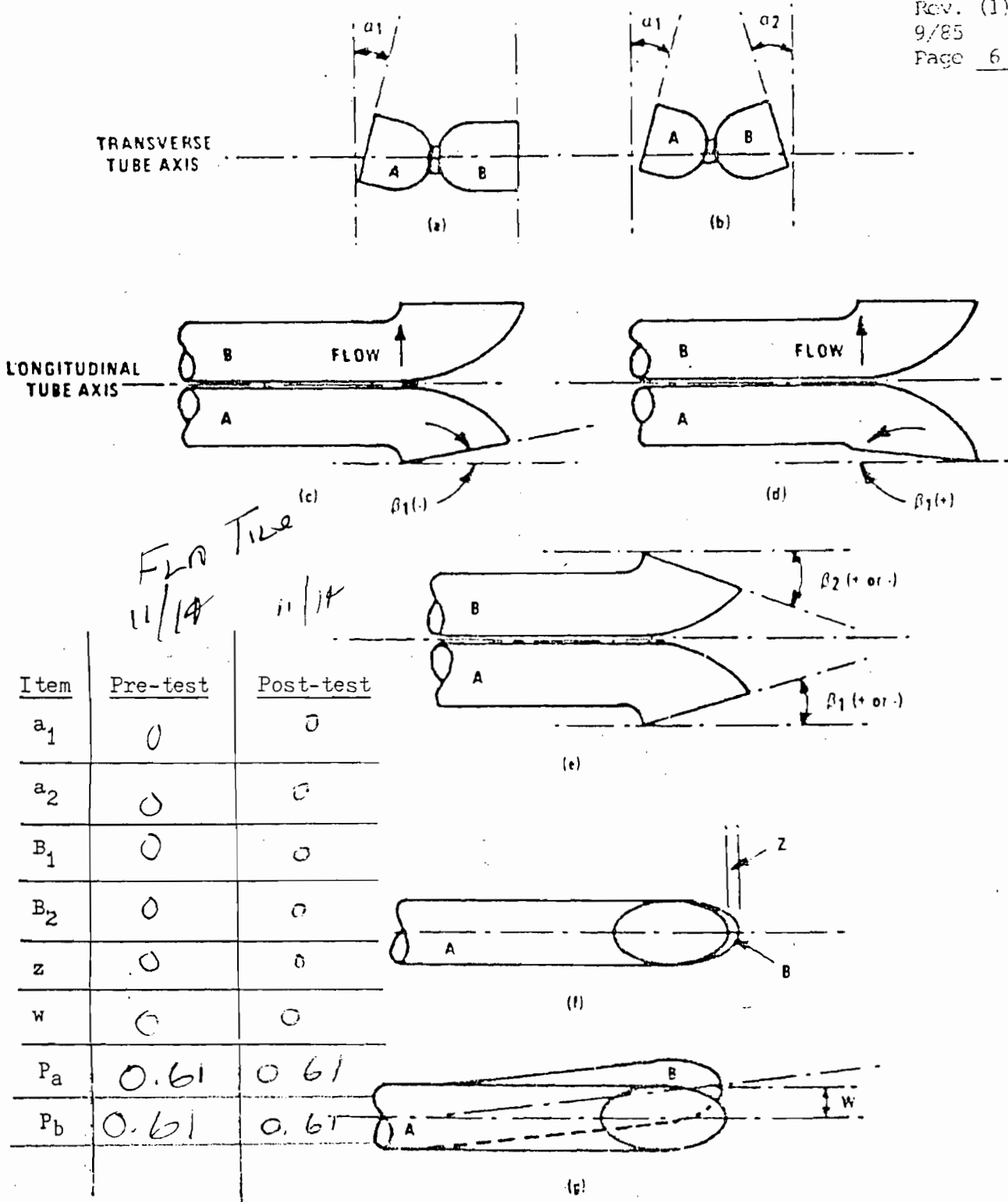
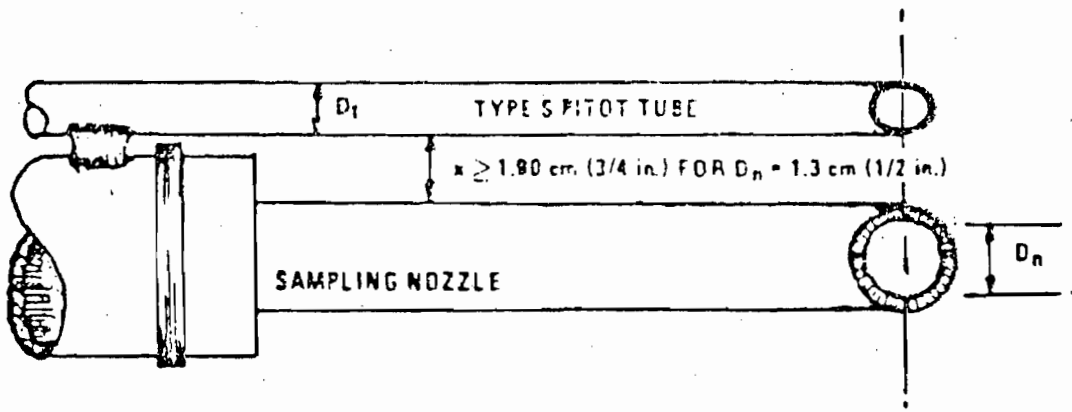
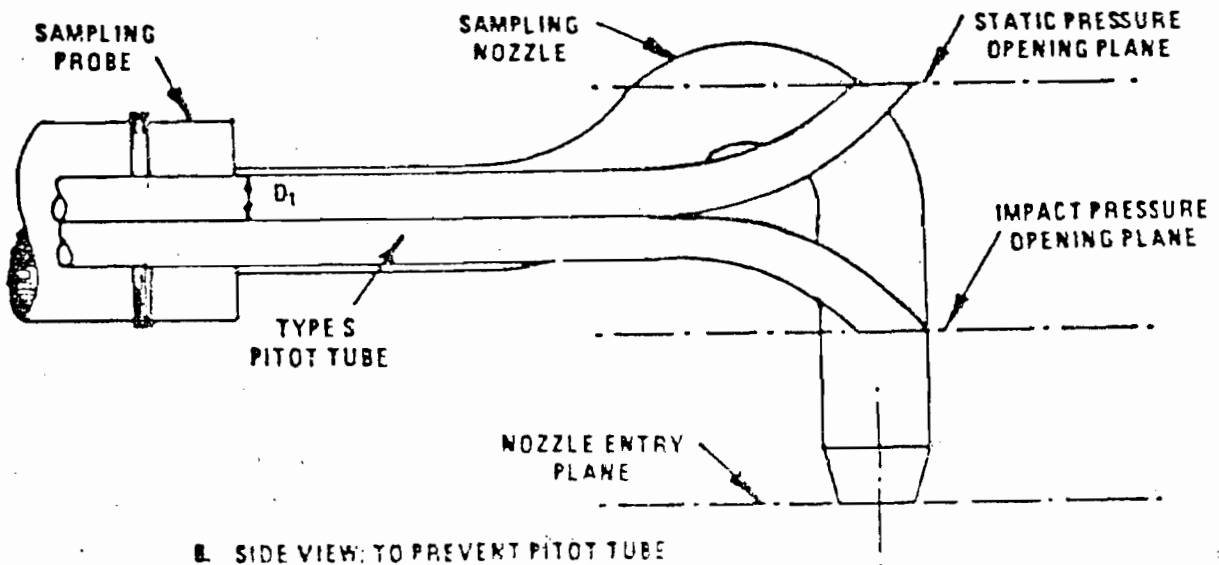


Figure 2-3. Types of face opening misalignment that can result from field use or improper construction of Type S pitot tubes. These will not affect the baseline value of $\bar{C}_p(s)$ so long as a_1 and $a_2 < 10^\circ$, β_1 and $\beta_2 < 5^\circ$, $z < 0.32$ cm (1/8 in.) and $w < 0.08$ cm (1/32 in.) (citation 11 in Section 6).

- POINTS:
- 1) 1.0
 - 2) 2.7
 - 3) 4.0
 - 4) 7.3
 - 5) 10.3
 - 6) 14.6
 - 7) 26.4
 - 8) 30.8
 - 9) 33.7
 - 10) 36.2
 - 11) 38.3
 - 12) 40.0



A. BOTTOM VIEW; SHOWING MINIMUM PITOT-NOZZLE SEPARATION.



B. SIDE VIEW: TO PREVENT PITOT TUBE FROM INTERFERING WITH GAS FLOW STREAMLINES APPROACHING THE NOZZLE, THE IMPACT PRESSURE OPENING PLANE OF THE PITOT TUBE SHALL BE EVEN WITH OR ABOVE THE NOZZLE ENTRY PLANE.

Figure 2-6. Proper pitot tube - sampling nozzle configuration to prevent aerodynamic interference; buttonhook - type nozzle; centers of nozzle and pitot opening aligned; D_t between 0.48 and 0.95 cm (3/16 and 3/8 in.).

Measurement	Pre-test	Post-test
D_t	$3/8$	$3/8$
D_n	0.250	—
x	0.9	0.9

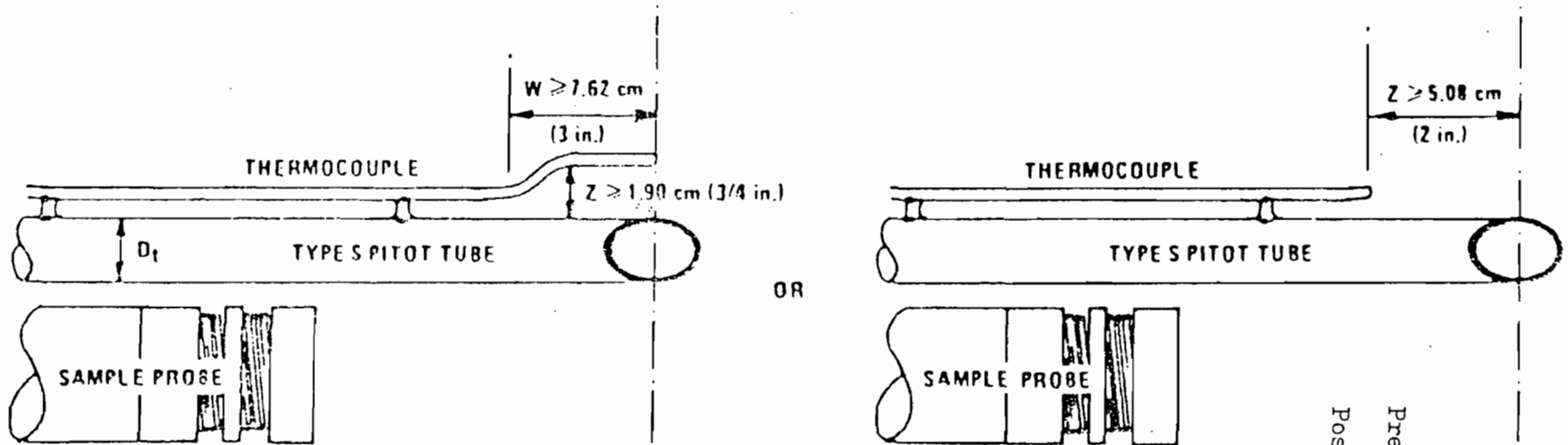


Figure 2-7. Proper thermocouple placement to prevent interference; D_t between 0.48 and 0.95 cm (3/16 and 3/8 in.).

Pre-test "Z" = 2.0
 Post-test "Z" = 2.0

APPENDIX E
PROCESS DATA



October 27, 1989

Mr. Ramanathan K. Iyer
Air Permitting Engineer
Florida Department of
Environmental Regulation
4520 Oak Fair Boulevard
Tampa, Florida 33610-7347

RE: Florida Tile Division/Sikes Corporation
Stack Test for Spray Dryer

Dear Rama:

This letter will serve as notification that compliance emission testing will be performed on the spray dryer according to the terms and conditions of Permit No. AC53-158856, issued May 22, 1989. The compliance tests will be performed on Tuesday, November 14, 1989.

If you have any questions, please contact me at your convenience.

Sincerely,

LAKE ENGINEERING, INC.

A handwritten signature in cursive script that reads 'Randal M. Reynolds'.

Randal M. Reynolds, P.E.
Project Manager

✓ RMR:kdf

cc: Mr. Bill Boakes, Florida Tile
Mr. Willard Hanks, FDER

328.2.3

Lake Engineering Inc.

CLIENT FLORIDA FIRE FL
PROJECT SPRAY DRIVER TESTS
DETAIL actin data

JOB NO. _____
DATE CHECKED _____
CHECKED BY _____

COMPUTED BY LAKE
DATE 11/14
PAGE NO. 3 of 3

Process weight check

90 lbs in 30 sec. = 270 lbs/min
= 8.1 tph

$\frac{8.1 - 7.7}{7.7} = 105\%$ of permitted capacity

scrubber/pump data

recycle
John Carlos needs to get a new data sheet for

03 R A-T

03 R A-T

7.5 h

3450 ft

pump discharge press. = 7 to 8 bar
scrubber flow 45 m³/hr. 0.75 m³/min

$\frac{0.75 \text{ m}^3}{\text{min}} \times \frac{1000 \text{ L}}{\text{m}^3} = 750 \text{ L/min}$

$\frac{45 \text{ m}^3}{\text{hr}} \times \frac{35.31 \text{ ft}^3}{\text{m}^3} \times \frac{\text{hr}}{60 \text{ min}} \times \frac{7.48 \text{ gal}}{\text{ft}^3} = 198 \text{ gpm}$

$\frac{60,000 \text{ gal}}{\text{hr}} \times \frac{35.31 \text{ ft}^3}{\text{m}^3} \times \frac{\text{hr}}{60 \text{ min}} = 35,310 \text{ CFM}$

CLIENT FLORIDA TILE - FL JOB NO. _____ COMPUTED BY Kirk
 PROJECT SPRAY DRYER TESTS DATE CHECKED _____ DATE 11/11/89
 Lake Engineering Inc. DETAIL CONTROL ROOM DATA SHEET CHECKED BY _____ PAGE NO. 1 of 1

Measurement Points

Outlet temp - Air stream as it leaves the spray dryer and enters the cyclone collectors

Outlet pressure - Neg. pressure as air leaves the spray dryer and enters cyclone collectors
 Vacuum mm CA

Pressure drop - Drop across scrubber and eliminators and some duct work

Time	(°C)	mm CA	ΔP (in H ₂ O)
9:45 am	98.6	28	(Not ready)
10 am	98.7	29	(not ready)
10:30 am	98.0	29	(not ready)
11:00 am	96.2	28	(not ready)
11:30 am	95.5	28	7
12:00 N	96.6	28	7
12:30 pm	95.7	29	7
1:00 pm	94.7	29	7
1:20 pm	95.0	29	7

Tests completed

9:30 am 1:20 pm Tank No. 5 12' air space



VENTURI - SCRUBBER TYPE VS 500

Technical features:

- dust air inlet	:	60,000 m ³ /h
- air temperature	:	90°C
- max air temperature	:	180°C
- type of dust to treat	:	ceramic dust
- dust contents in air inlet	:	150 ÷ 400 mg/m ³
- scrubber loss of head	:	200 mm. H ₂ O
- nozzle water delivery	:	45 m ³ /h
- evaporated water q.ty	:	0,4 m ³ /h
- discharged water q.ty	:	0,4 m ³ /h
- addition of water	:	0,8 m ³ /h
- pump installed power	:	7,5 Hp.

S C R U B B E R T Y P E V S

In the Scrubber Venturi type, the combined action of the nebulized water with the convergent-divergent pipe, besides to favour an intimate blending of the gaseous and liquid phases, remarkably will make easier (an account of the elevated turbulence) the transportation of the material from the gas to the liquid.

The presence of nebulized water will cause the weight down of the powders causing the deposition in the below collector.

The air, before exit, will be forced to pass through a stainless steel drop separator that will provide to catch the trailed drops.

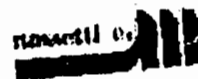
In the tank collector below the scrubber, a first settling will provide to the clarification of the suspension that can be recycled by the centrifugal pump.

Periodic dischargings of the settling and fillings up of clean water will provide to maintain in the suitable limits the content of substances in suspension of the recycled suspension.



O.M.S.
Officine Meccaniche S.p.A.

SEDE LEGALE E AMMINISTRAZIONE
VIA BRADINI, 66
40138 VERRETTO DI SERRANO (MO)
SOCIETA' A R.S.P.A. - I. 280.000.000
C.C.I.A.A. FIORENTINA 0878/00079
SARTANA VIA PIETROTTI 10
TELEFONO (059) 31.50.02
FAX (059) 34.34.34
TELEX (31) 508 171
TRIBUNALE D. MO 00899
C.O.A.A. MO 01/045
4103002



No. Rif. MR. BOMI

Vs. Rif.

Fiorenza, il 16. 11. '89

Oggetto: REF. SPRAY DRYER SD 6000

MESSRS.
FLORIDA TILE

ATT. MR. AL BURGESS (AND MR. ASCARI - O.M.S. FIRM)

ENCLOSED WE SEND YOU THE TECHNICAL DATA
AND OPERATING CURVES REF. TO THE SCRUBBER
SERVICE PUMP TYPE D3R-A

NOTE THE OPERATING CURVES ARE THE SAME AT 2800 RPM
(50 Hz) AND AT 3400 RPM (60 Hz), SINCE ARE
INSTALLED IMPELLERS WITH DIFFERENT
DIAMETER.

BEST REGARDS

O.M.S. BOMI

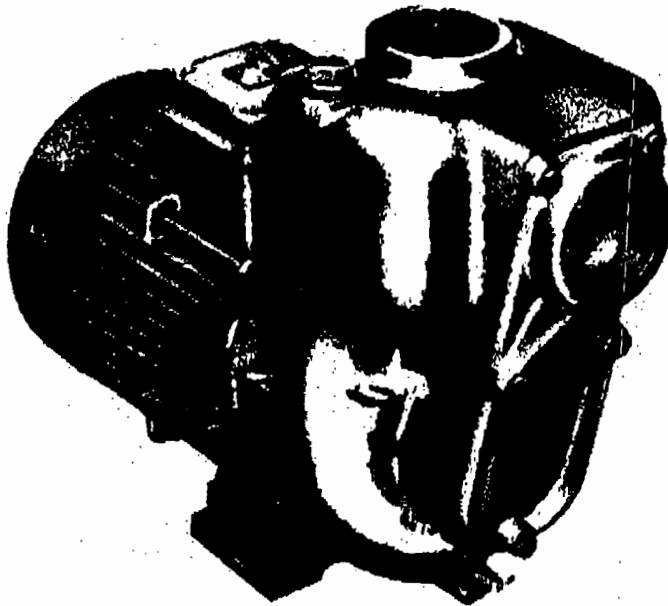
TRASMESSO A MEZZO TELEFAX

DATA

ATT. MR.

OGGETTO:

elettropompe autoadescenti
self-priming electric pumps
électropompes autoamorçantes

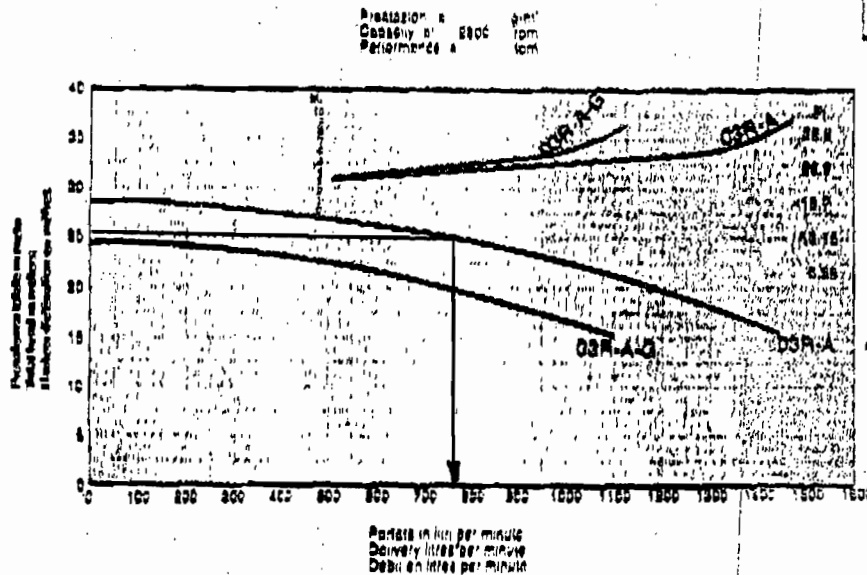


Corpo pompa e supporto in ghisa, girante aperta in ghisa, albero in acciaio inossidabile, tenuta meccanica.
Per alimentazione trifase 380/660 V-50 Hz la protezione va prevista dall'utente con salvamotore opportunamente tarato.
Altre tensioni e frequenze a richiesta.
Servizio continuo.
Motore tipo chiuso a ventilazione forzata.

Cast iron frame and stand, impeller in cast iron, stainless steel shaft, seal.
With three-phase 380/660 V-50 Hz input, protection to be carried out by the user with motor protector suitably adjusted.
Other tensions and frequencies on request.
Non-stop operation.
Forced ventilation enclosed type motor.

Corps de la pompe et support en fonte, impulseur en fonte, arbre en acier inoxydable, dispositif d'étanchéité mécanique.
Pour alimentation triphasée 380/660 V-50 Hz, l'utilisateur a la possibilité d'étalonner lui-même le dispositif de protection du moteur.
Autres tensions et fréquences sur demande.
Service continu.
Moteur de type fermé à ventilation forcée.

Curve di funzionamento 2800 giri/1'
Operating curves 2800 RPM - Courbes de fonctionnement 2800 t/1'



Caratteristiche di funzionamento 2800 giri/1'
Operating data at 2800 RPM - Caractéristiques de fonctionnement 2800 t/1'

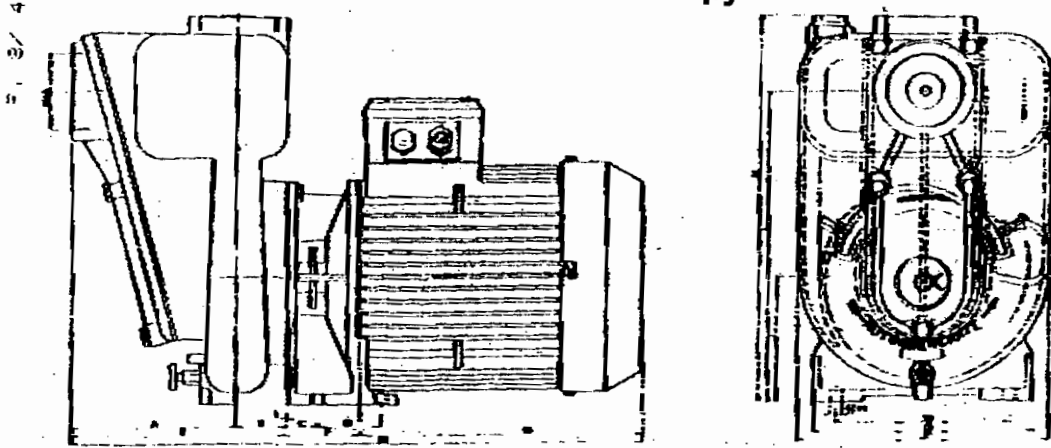
	Tipo pompa Pump type Type pompe	Codice pompa Pump code Code pompe	CV HP	Tensioni Tension Tension	Q (l/m ³) H (m.)		
Trifase three phase Trifasée	O 3 R - A	23335.00	7.3	380/660 V 50 Hz	380	1200	1450
	O 3 R - A/G	23334.00	5.5	380/660 V 50 Hz	300	800	1100

Aspirazione massima: 7 m
Prestazioni rilevate con un'aspirazione di 4 m e $\gamma = 1 \text{ kg/dm}^3$

Max. suction: mts 7
Performances obtained with 4 mts. height suction and $\gamma = 1 \text{ kg/cm}^3$

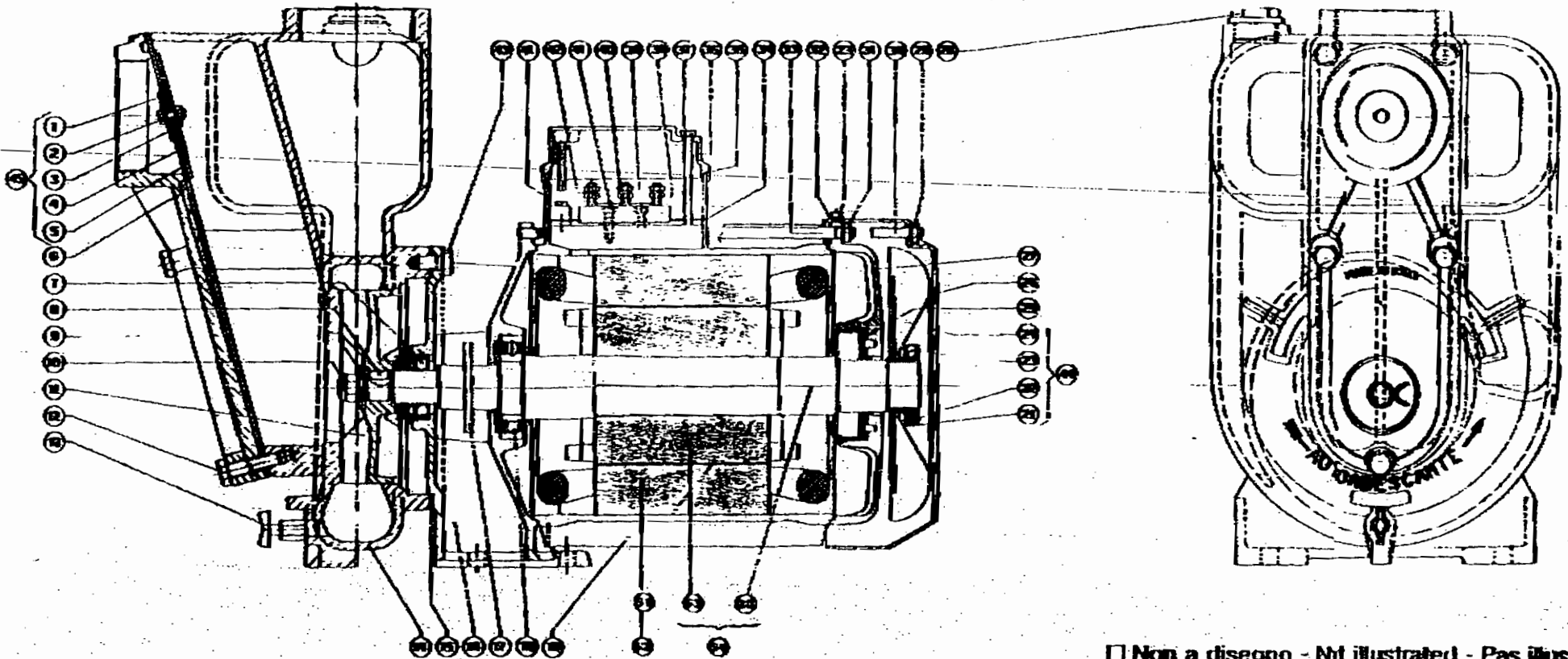
Max. en aspiration: 7 m
Performances remarquées avec une aspiration de 4

Best Available Copy



Tipo pompa Pump type Type pompe	DNA	DNM	KG	A	B	C	D	E	F
O3 RA	3"	3"	75	185.5	54.5	33	70	240	81
O3 R-AG	3"	3"	74.5	185.5	54.5	33	70	240	83
Tipo pompa Pump type Type pompe	G	H	I	L	M	N	O	P	
O3 RA	330	651	140	350	435	190	240	274	
O3 R-AG	275	598	140	350	435	190	240	274	

Sezione della pompa con le parti di ricambio - Pump cross section and spare parts list - Section de la pompe avec les pièces détachées



□ Non a disegno - Not illustrated - Pas illustré

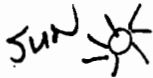
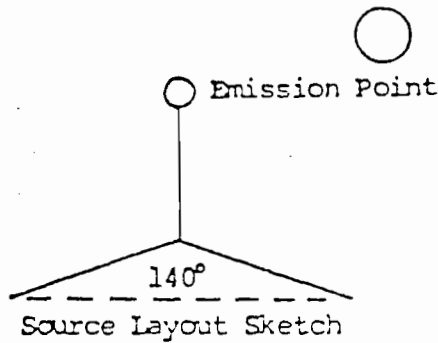
BEST AVAILABLE COPY

1	Rosetta - Washer - Rondelle	21000.13	21000.13
2	Vite - Screw - Vis	21000.28	21000.28
3	Dado - Nut - Ecrou	21000.30	21000.30
4	Contrappeso - Counterweight - Contre poids	23000.15	23000.15
5	Guarnizione - Gasket - Joint	23000.05	23000.05
6	Coperchio - Cover - Couvercle	23000.04	23000.04
7	Tenuta meccanica - Mechanical seal - Joint mecanique	01500.22	01500.22
8	Chiavetta - Key - Clavette	02812.44	02812.44
9	Rondella - Washer - Rondelle	23300.17	23300.17
10	Dado autobloccante - Self-locking nut - Ecrou autobloc.	23300.32	23300.32
11	Girante - Impeller - Turbine	23335.99	23334.99
12	Vite - Screw - Vis	01300.43	01300.43
13	Rubinetto - Cock - Robinet	23000.24	23000.24
14	Corpo pompa - Pump casing - Corps pompe	23000.02	23000.02
15	Guarnizione - Gasket - Joint	01500.06	01500.06
16	Support - Bracket - Support	02812.01	02832.01
17	Anello paraspruzzi - Water ring seal - Bague d'etanchéité eau	24000.30	24000.30
18	Cuscinetto - Bearing - Coussinet	02812.05	12160.20
19	Carcassa - Frame - Armature	H5758.02	G5558.02
20	Albero - Shaft - Arbre	02812.10	02832.10
21	Stringiventola - Tightening clamp - Collier de serrage	H5758.47	G5558.47
22	Dado - Nut - Ecrou	H5758.20	H5758.20
23	Vite - Screw - Vis	00063.28	00063.28
24	Ventola - Fan - Ventilateur	H5758.03	G5558.03
25	Molla compensazione - Spring - Ressort	H5758.08	G5558.08
26	Carter copriventola - Cover - Couvercle	H5758.01	G5558.01
27	Scudo posteriore - Rear cover - Couvercle ar	H5758.04	G5558.04
28	Tappo - Plug - Bouchon	21000.25	21000.25
29	Dado - Nut - Ecrou	-	G5558.16
30	Tirante - Tie rod - Tirant	-	G5558.09
31	Dado - Nut - Screw	01150.38	G5558.16
32	Rosetta - Washer - Rondelle	H5758.30	-
33	Tirante - Tie rod - Tirant	H5758.09	-
34	Guarnizione - Gasket - Joint	H5758.05	G5558.06
35	Guarnizione - Gasket - Joint	H5758.06	-
36	Copribasetta - Cover - Couvercle	H5758.26	G5558.26
37	Vite - Screw - Vis	H5758.28	G5558.28
38	Basetta - Base - Base	H5758.15	H5758.15
39	Alzabasetta - Intermediate base - Base intermédiaire	H5758.27	-
40	Dado - Nut - Ecrou	21000.30	21000.30
41	Vite - Screw - Vis	H5758.24	-
42	Occhio capocorda - Eyelet - Boucle	H5758.48	H5758.48
43	Vite - Screw - Vis	23000.23	23000.23
44	Ventola completa - Fan - Ventilateur	H5758.97	G5558.97
45	Guarnizione coperchio completa - Cover gaskets - Joint pour couvercle	23000.97	23000.97
<input type="checkbox"/> 46	Passacavo completo - Fair lead - Guide cable	H5758.22	G5558.22
<input type="checkbox"/> 47	Tappo per basetta - Plug base - Bouchon pour base	H5758.23	-
<input type="checkbox"/> 48	Vite massa - Screw - Vis	H5758.65	G5558.65
<input type="checkbox"/> 49	Rosetta massa - Washer - Rondelle	H5758.17	G5558.17
<input type="checkbox"/> 50	Dado massa - Nut - Ecrou	21000.20	E5308.44
51	Statore - Stator - Stator	H5758.07	G5558.07
52	Statore avvolto - Winded stator - Stator bobine	S5758.00	S5558.00
53	Rotore - Rotor - Rotor	H5758.25	G5558.25
54	Albero e rotore - Shaft and rotor - Arbre et rotor	R5758.00	R5558.00

APPENDIX F
VISUAL EMISSIONS DATA

VISIBLE EMISSIONS OBSERVATION FORM

Client: FLA TILE Source: SPRAY DRYER
 Control Device: Scrubber Test Personnel: HONEN
 Date: 11/14/80 Run #: 1 Clock Time: 10:35
 Height Of Discharge Pt. 75 Distance to Source: 30'



Ambient Temp. 75
 Wind Speed 10-15
 Wind Direction E
 Sky Color CLEAR
 Plume Background SKY
 Condensed H₂O in Plume YES
 Detached Attached

Comments: _____

Signature: [Handwritten Signature]

Certification Date: _____

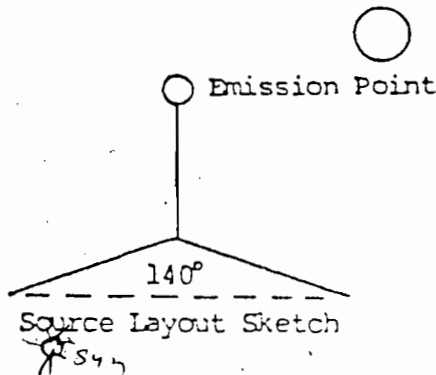
sec					sec				
min	0	15	30	45	min	0	15	30	45
0	○	○	○	○	30	○	○	○	○
1	○	○	○	○	31	○	○	○	○
2	○	○	○	○	32	○	○	○	○
3	○	○	○	○	33	○	○	○	○
4	○	○	○	○	34	○	○	○	○
5	○	○	○	○	35	○	○	○	○
6	○	○	○	○	36	○	○	○	○
7	○	○	○	○	37	○	○	○	○
8	○	○	○	○	38	○	○	○	○
9	○	○	○	○	39	○	○	○	○
10	○	○	○	○	40	○	○	○	○
11	○	○	○	○	41	○	○	○	○
12	○	○	○	○	42	○	○	○	○
13	○	○	○	○	43	○	○	○	○
14	○	○	○	○	44	○	○	○	○
15	○	○	○	○	45	○	○	○	○
16	○	○	○	○	46	○	○	○	○
17	○	○	○	○	47	○	○	○	○
18	○	○	○	○	48	○	○	○	○
19	○	○	○	○	49	○	○	○	○
20	○	○	○	○	50	○	○	○	○
21	○	○	○	○	51	○	○	○	○
22	○	○	○	○	52	○	○	○	○
23	○	○	○	○	53	○	○	○	○
24	○	○	○	○	54	○	○	○	○
25	○	○	○	○	55	○	○	○	○
26	○	○	○	○	56	○	○	○	○
27	○	○	○	○	57	○	○	○	○
28	○	○	○	○	58	○	○	○	○
29	○	○	○	○	59	○	○	○	○

Total minutes observed: (60)

Minutes exceeding ___% opacity ___

VISIBLE EMISSIONS OBSERVATION FORM

Client: FLA. Tile Source: Spray Dryer
 Control Device: Scubber Test Personnel: Honer
 Date: 11-14-89 Run #: 2 Clock Time: 11:00
 Height Of Discharge Pt. 25 Distance to Source: 30



Ambient Temp. 780
 Wind Speed 10-15
 Wind Direction E
 Sky Color Clear
 Plume Background sky
 Condensed H₂O in Plume yes
 Detached _____ Attached ✓

Comments: _____

Signature: _____

Certification Date: _____

sec					sec				
min	0	15	30	45	min	0	15	30	45
0	○	○	○	○	30	○	○	○	○
1	○	○	○	○	31	○	○	○	○
2	○	○	○	○	32	○	○	○	○
3	○	○	○	○	33	○	○	○	○
4	○	○	○	○	34	○	○	○	○
5	○	○	○	○	35	○	○	○	○
6	○	○	○	○	36	○	○	○	○
7	○	○	○	○	37	○	○	○	○
8	○	○	○	○	38	○	○	○	○
9	○	○	○	○	39	○	○	○	○
10	○	○	○	○	40	○	○	○	○
11	○	○	○	○	41	○	○	○	○
12	○	○	○	○	42	○	○	○	○
13	○	○	○	○	43	○	○	○	○
14	○	○	○	○	44	○	○	○	○
15	○	○	○	○	45	○	○	○	○
16	○	○	○	○	46	○	○	○	○
17	○	○	○	○	47	○	○	○	○
18	○	○	○	○	48	○	○	○	○
19	○	○	○	○	49	○	○	○	○
20	○	○	○	○	50	○	○	○	○
21	○	○	○	○	51	○	○	○	○
22	○	○	○	○	52	○	○	○	○
23	○	○	○	○	53	○	○	○	○
24	○	○	○	○	54	○	○	○	○
25	○	○	○	○	55	○	○	○	○
26	○	○	○	○	56	○	○	○	○
27	○	○	○	○	57	○	○	○	○
28	○	○	○	○	58	○	○	○	○
29	○	○	○	○	59	○	○	○	○

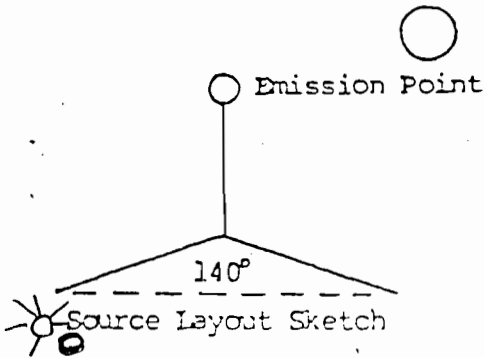
Total minutes observed: 60

Minutes exceeding ___% opacity ___

(S)

VISIBLE EMISSIONS OBSERVATION FORM

Client: Fla Tile Source: Spray Dryer
 Control Device: scrubber Test Personnel: Honer
 Date: 11-14-89 Run #: 3 Clock Time: 12:15
 Height Of Discharge Pt. 75 Distance to Source: 30



Ambient Temp. 40°
 Wind Speed 10
 Wind Direction E
 Sky Color Clear
 Plume Background sky
 Condensed H₂O in Plume yes
 Detached Attached yes

Comments: _____

Signature: [Signature]
 Certification Date: _____

min	sec				min	sec			
	0	15	30	45		0	15	30	45
0	0	0	0	0	30	0	0	0	0
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0

Total minutes observed: _____

Minutes exceeding _____ % opacity _____

Georgia Department of Natural Resources

205 Butler Street, S.E., Floyd Towers East, Atlanta, Georgia 30334

J. Leonard Ledbetter, Commissioner
Harold F. Reheis, Assistant Director
Environmental Protection Division

September 27, 1989

Dwight Honea
Air Systems Testing, Inc.
P.O. Box 6278
Marietta, GA 30065

Dear Mr. Honea:

Please be advised that you have successfully completed the field certification training of the Georgia Visible Emissions Evaluation Certification Course conducted at the Atlanta Civic Center parking lot on September 13-14, 1989.

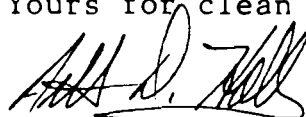
Your plume evaluations were within the specifications of Federal Reference Method "9" which qualified you as a Visible Emissions Evaluator. Your average error on black and white smoke did not exceed 7.5% opacity and you incurred no single error exceeding 15% opacity during your qualifying run.

This letter serves as your official notice of certification which is valid for six months from the date you qualified (September 14, 1989), subject to the following visual restriction: Rx Glasses.

If you desire a copy of your original qualifying "field test form" or if we may be of any further assistance, feel free to contact our office.

It is our hope that the end result of your participation in this course will help in promoting cleaner and healthier air.

Yours for clean air,



Arthur D. Hollis
Environmental Specialist
Air Protection Branch
Planning & Technical Support
Program

ADH:cl

file copy



DIVISION OF SIKES CORPORATION

RECEIVED

MAY 4 1989

DER-BAQM

May 2, 1989

Mr. C. H. Fancy
Deputy Chief
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Reference: DER File No. AC-53-158856

Dear Mr. Fancy:

Please find enclosed the required affidavit requested in your letter dated April 18, 1989.

Sincerely,

A. H. Burgess kw

A. H. Burgess
Project Engineer
Development & Engineering

kw

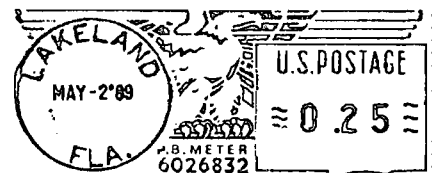
Enclosure

cc: Mr. Bill Thomas
A. Hanks

florida tile



DIVISION OF SIKES CORPORATION
FLORIDA TILE • P. O. BOX 447 • LAKELAND, FLORIDA 33802



Mr. C. H. Fancy
Deputy Chief
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, FL 32399-2400



AFFIDAVIT OF PUBLICATION

THE LEDGER
Lakeland, Polk County, Florida

Case No

MAY 4 1989

Attach Notice Here

STATE OF FLORIDA)
COUNTY OF POLK)

DER - BAQM

Before the undersigned authority personally appeared Stephen DeWitt, who on oath says that he is Controller of The Ledger, a daily newspaper published at Lakeland in Polk County, Florida; that the attached copy of advertisement, being a

Notice of Intent

.....
.....

in the matter of

Issue of Permit

.....
.....

in the

Court, was published in said newspaper in the issues of

April 28; 1989

Affiant further says that said The Ledger is a newspaper published at Lakeland, in said Polk County, Florida, and that the said newspaper has heretofore been continuously published in said Polk County, Florida, daily, and has been entered as second class matter at the postoffice in Lakeland, 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 the said newspaper.

Signed Stephen P. DeWitt
Controller

Sworn to and subscribed before me this 2nd

day of May A.D. 1989



Cheryl Webb
Notary Public

NOTARY PUBLIC, STATE OF FLORIDA.
MY COMMISSION EXPIRES: JUNE 25, 1991.
BONDED THRU. NOTARY PUBLIC UNDERWRITERS.

State of Florida
Department of Environmental Regulation
Notice of Intent to Issue

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to the Florida Tile Division of Sikes Corporation, P.O. Box 447, Lakeland, Florida, which will allow them to construct a body preparation plant at their ceramic tile manufacturing facility located at 1 Sikes Blvd., Lakeland, Polk County, Florida. The plant will increase particulate matter emissions from the facility by 16.1 TPY. A determination of Best Available Control Technology (BACT) was not required. The Department is issuing this intent to issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person 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 contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition 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.

The Petition shall contain the following information:

- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by petitioner, if any;
- (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and
- (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

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 Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 285.207, F.A.C.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dept. of Environmental Regulation
Southwest District Office
4520 Live Oak Fair Blvd.
Tampa, Florida 33610-7347

Lakeland Public Library
100 Lake Morton Drive
Lakeland, Florida 33802

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 14 days of the publication of this notice will be considered in the Department's final determination.

J959 - 428; 1989



Florida Department of Environmental Regulation

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

Bob Martinez, Governor

Dale Twachtmann, Secretary

John Shearer, Assistant Secretary

April 18, 1989

Lakeland Public Library
100 Lake Morton Drive
Lakeland, Florida 33802

RE: Sikes Corporation, Florida Tile Division
Air Construction Permit Application

The Bureau of Air Quality Management needs to make the enclosed information available for public inspection pursuant to Chapter 17-2, Florida Administrative Code. A notice directing people to the library will be published in a local newspaper in the near future. The information should be available upon request for a period of at least 14 days from the notice date.

We appreciate your help in providing this valuable public service, and your assistance does not necessarily constitute an endorsement of the project. Should you have any questions, please call me at (904)488-1344.

Sincerely,

Patricia G. Adams

Patricia G. Adams
Planner
Bureau of Air Quality
Management

/pa

Enclosure

P 274 010 406
RECEIPT FOR CERTIFIED MAIL
 NO INSURANCE COVERAGE PROVIDED
 NOT FOR INTERNATIONAL MAIL
 (See Reverse)

Sent to Mr. William R. Boakes, Sikes Corp.
Street and No. P. O. Box 447
P.O. State and ZIP Code Lakeland, FL 33802
Postage S
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 S
Postmark or Date Mailed: 4-18-89 Permit: AC 53-158856

* U.S.G.P.O. 1985-480-794 PS Form 3800, June 1985

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: Mr. William R. Boakes, Vice Pres. Sikes Corporation Florida Tile Division P. O. Box 447 Lakeland, FL 33802	4. Article Number P 274 010 406 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 - Address X	8. Addressee's Address (ONLY if requested and fee paid)
6. Signature - Agent X <i>Rose Howard</i>	
7. Date of Delivery <i>4-20-89</i>	

PS Form 3811, Mar. 1988 * U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEIPT



Florida Department of Environmental Regulation

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

Bob Martinez, Governor

Dale Twachtman, Secretary

John Shearer, Assistant Secretary

April 18, 1989

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

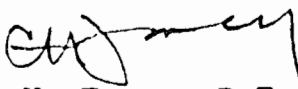
Mr. William R. Boakes, Vice President
Sikes Corporation
Florida Tile Division
P. O. Box 447
Lakeland, Florida 33802

Dear Mr. Boakes:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit for the construction of a body preparation plant at your ceramic tile manufacturing facility in Lakeland, Florida.

Please submit any written comments 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/ks

Attachments

cc: B. Thomas, SW District
R. Reynolds, P.E.

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

Sikes Corporation
Florida Tile Division
P. O. Box 447
Lakeland, Florida 33802

DER File No. AC 53-158856

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit (copy attached) 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, Florida Tile Division of Sikes Corporation, applied on December 27, 1988, to the Department of Environmental Regulation for a permit to construct a body preparation plant at their ceramic tile manufacturing facility located at 1 Sikes Blvd., Lakeland, Polk County, Florida.

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 Department has determined that an air construction permit is required for the proposed work.

Pursuant to Section 403.815, F.S. and DER Rule 17-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit. The notice shall be published one time only within 30 days, in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to the Department, at the address specified within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person 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 contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition 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.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

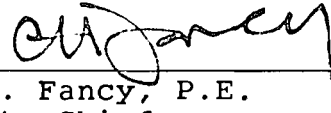
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

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 notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the applicant have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office in General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such

person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed 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:

B. Thomas, SW District
R. Reynolds, P.E.

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF INTENT TO ISSUE and all copies were mailed before the close of business on 4-18-89.

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to
§120.52(9), Florida Statutes, with
the designated Department Clerk,
receipt of which is hereby
acknowledged.

Mattha J. Wise 4-18-89
Clerk Date

State of Florida
Department of Environmental Regulation
Notice of Intent to Issue

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to the Florida Tile Division of Sikes Corporation, P. O. Box 447, Lakeland, Florida, which will allow them to construct a body preparation plant at their ceramic tile manufacturing facility located at 1 Sikes Blvd., Lakeland, Polk County, Florida. The plant will increase particulate matter emissions from the facility by 16.1 TPY. A determination of Best Available Control Technology (BACT) was not required. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person 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 contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition 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.

The Petition shall contain the following information;

- (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
- (b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
- (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
- (d) A statement of the material facts disputed by Petitioner, if any;
- (e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
- (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and
- (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

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 Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dept. of Environmental Regulation
Southwest District Office
4520 Live Oak Fair Blvd.
Tampa, Florida 33610-7347

Lakeland Public Library
100 Lake Morton Drive
Lakeland, Florida 33802

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 14 days of the publication of this notice will be considered in the Department's final determination.

Technical Evaluation
and
Preliminary Determination

Sikes Corporation
Florida Tile Division
Lakeland, Polk County, Florida

Body Preparation Plant
File No. AC 53-158856

Department Environmental Regulation
Division of Air Resources Management
Bureau of Air Quality Management
Central Air Permitting

April 18, 1989

I. General Information

A. Applicant

Sikes Corporation
Florida Tile Division
Post Office Box 447
Lakeland, Florida 33802

B. Request

On December 27, 1988, Mr. William R. Boakes, Vice President of Sikes Corporation, submitted an application for a permit to construct a body preparation plant at their existing tile manufacturing facility (SIC 3253). The application was considered complete on February 16, 1989, when additional information on the project was received by the Department.

C. Project and Location

Sikes Corporation proposes to construct a new body preparation plant at their existing tile manufacturing facility that is located at 1 Sikes Boulevard, Lakeland, Polk County, Florida. The UTM coordinates of this plant are Zone 17, 405.2 km E and 3,102.4 km N.

The proposed body preparation plant includes raw material handling, ball mills, blungers, SLIP (liquified ceramic body mix) handling, spray dryer, prill storage, and associated cyclones, scrubber, baghouses, and auxiliary equipment. The plant is used to convert minerals to prills which are used to manufacture ceramic products.

D. Process and Emissions

The materials used to manufacture ceramic tiles (clay, talc, silica, calcium metasilicate, and whiting) are brought into the plant in railroad cars and pneumatically unloaded and stored in 6 raw material storage tanks. Each storage tank is equipped with a Griffin Environmental Company Model JV-54-9X pulse-jet type filter to handle 1927 ACFM of air. The unloading operation takes up to 80 hrs/wk.

A mixture of the raw material (15,434 lbs/hr) is transferred by either a belt conveyor or pneumatic transfer system to the two ball mills where 6,366 lbs/hr of water is added to form SLIP (liquified ceramic body mix). The hopper for the ball mills has a small filter on it that vents indoors to control fugitive emissions.

The SLIP from the ball mills, along with plant scrap and reworked SLIP, is processed in two blungers and then sent to SLIP storage. The hopper for the blungers has small filters on it that vent indoors to control fugitive emissions.

From storage, the SLIP is pumped to a spray dryer that uses hot air produced from a natural gas fired generator (19.84 MMBtu/hr) to produce prills. The prills are sent to six storage tanks. Each storage tank has a small filter on it that vents indoors to control fugitive emissions.

Hot gases (41,059 dscfm) from the spray dryer pass through a multiclone and then to a venturi scrubber. After being cleaned in the scrubber, the air is discharged to the atmosphere. The dust collected by the multiclone is recycled to the process.

A 20,000 CFM baghouse with 3,296 ft² of filter has collection points located throughout the building to control fugitive emissions from the conveyors used that transfer the prills from the dryer to the prill storage tanks.

A 160 CFM central vacuum system with 51 ft² of filter collects air from pick-up points throughout the building to capture unconfined emissions.

Only particulate matter and the products of combustion of the natural gas fuel used in the hot air generator, which are considered insignificant for this operation, are discharged from the body preparation plant. Fluoride emissions from the dryer will not be significant. The particulate matter that is discharged from the control equipment is estimated to be less than 51% PM₁₀.

A summary of the particulate matter emissions, based on the proposed 5,880 hrs/yr operation, is shown below.

Source	PM Emissions		
	lbs/hr	TPY PM	TPY PM ₁₀
Central Vacuum System Baghouse	0.04	0.10	0.07
Venturi Scrubber for Spray Dryer	3.58	10.53	5.83
Material Handling Baghouse	1.71	5.03	3.33
Storage Silo Filters	0.21	0.41	
Indoor Vents (blungers, ball mills, prill storage tanks)	trace	trace	
Total	5.54	16.07	9.23

II. Rule Applicability

The proposed project, construction of a new body preparation plant located at a tile manufacturing facility (SIC 3253), is

subject to preconstruction review under the provisions of Chapter 403, Florida Statutes, and Chapter 17-2, Florida Administrative Code.

The plant is in an area designated attainment for all criteria pollutants (17-2.420).

The plant is being built at a major facility whose allowable particulate matter (PM) emissions exceed 100 TPY (17-2.100). Tile manufacturing plants are not on the list of major facility categories, Table 500-1. The increase in emissions from the proposed project are less than the significant emissions rates listed in Table 500-2.

The project is subject to F.A.C. 17-2.520, Sources Not Subject to Prevention of Significant Deterioration or Nonattainment Requirements. The allowable emissions will be set at the rates requested by the applicant. Higher emissions could subject this project to different regulations.

III. Technical Evaluation

The pneumatic unloading of the raw materials used to manufacture the ceramic tile has the potential to emit particulate matter from the six raw material storage tanks. These potential emissions are controlled by filters mounted on each tank. The filters used are Griffin Environmental Company Model JV-54-9X pulse-jet type units containing 468 ft² of polyester filter. The filters are estimated to be 99.6% efficient and will reduce potential particulate matter emissions to 0.21 lbs/hr.

The transfer of the raw materials from the storage tanks to the ball mills along with the return of the scrap to the hopper for the blungers has the potential to emit particulate matter. The potential emissions from the ball mills and the blunger hopper are controlled by small filters on this equipment that discharged indoors. These filters will be expected to have no visible emissions.

Water is added to the raw materials and scrap in the ball mills and blungers. The wet material (SLIP) will not have the potential to emit particulate. All equipment handling SLIP is expected to have no visible emissions.

Drying the SLIP in the spray dryer has the potential to emit particulate matter and the product of combustion from burning natural gas in the hot air generator. Particulate matter is controlled by multiclones and a venturi scrubber system estimated

to be 99.5% efficient. Maximum particulate matter emissions will be 3.58 lbs/hr. The products of combustion of the natural gas are insignificant and no air pollution controls are being required for them.

The transfer of the prills from the dryer to the prill storage tanks and the return of the dust collected by the multiclone to the process has the potential to emit particulate matter. The emissions from the conveyors are collected and treated by a 99.6% efficient material handling baghouse. This unit has 3,296 ft² of filter to treat 20,000 CFM of air. Maximum emissions from the material handling baghouse are estimated to be 1.71 lbs/hr. Each prill storage tank is equipped with a filter that discharges indoors. These filters are expected to have no visible emissions.

The plant also has a central vacuum system which collects indoor air from around the process and storage equipment. This unit has 51 ft² of filter to treat 160 CFM of air. Maximum emissions from the central vacuum system are estimated to be 0.04 lbs/hr.

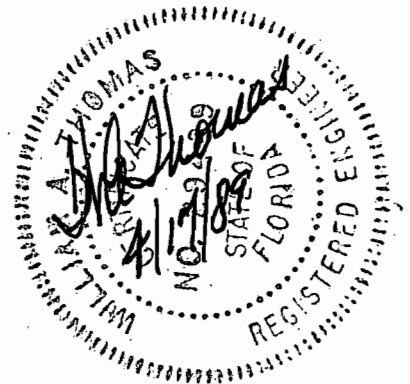
The prills from the storage tanks are sent to other process equipment (presses and kilns) to manufacture ceramic tile. This equipment is covered by other Department permits and not addressed in this determination.

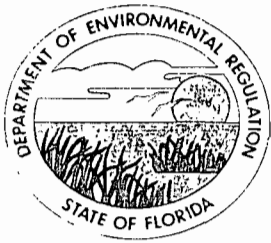
IV. Air Quality Analysis

Based on screening modeling, the Department has reasonable assurance that the impact from the particulate matter emissions by the new body preparation plant will not exceed the allowable increment or cause a violation of the ambient air quality standards.

V. Conclusion

Based on the information provided by Florida Tile, the Department has reasonable assurance that the proposed body preparation area as described in this evaluation and subject to the conditions proposed herein, will not cause or contribute to a violation of any ambient air quality standard or PSD increment, or violate any other technical provision of Chapter 17-2 of the Florida Administrative Code.





Florida Department of Environmental Regulation

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

Bob Martinez, Governor

Dale Twachtman, Secretary

John Shearer, Assistant Secretary

PERMITTEE:

Sikes Corporation
Florida Tile Division
P. O. Box 447
Lakeland, Florida 33802

Permit Number: AC 53-158856
Expiration Date: Oct. 31, 1989
County: Polk
Latitude/Longitude: 28°02'45"N
81°57'45"W
Project: Body Preparation Plant

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

Construct a 7.7 TPH body preparation plant consisting of raw material storage (6 storage tanks with filters for clay, talc, silica, calcium metasilicate, and whiting), 2 ball mills, 4 SLIP (liquified ceramic body mix) vessels, 2 header tanks, 3 SLIP pump tanks, 1 spray dryer controlled by a multiclone and a venturi scrubber, 6 prill storage tanks with filters, 2 blungers along with a rework SLIP storage tank to reclaim scrap, associated pneumatic or belt conveyor systems, a central vacuum system containing a baghouse with 51 ft² of filter, a material handling dust ventilation baghouse with 3,296 ft² of filter, and other associated equipment. The plant will be located at the permittee's existing facility at 1 Sikes Boulevard, Lakeland, Polk County, Florida. The UTM coordinates of this plant are Zone 17, 405.2 km E and 3,102.4 km N.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments:

Application

Lake Engineering letter of January 10, 1989.

Lake Engineering memo of February 10, 1989.

PERMITTEE:
Sikes Corporation
Fla. Tile Division

Permit No. AC 53-158856
Expiration Date: Oct. 31, 1989

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:
Sikes Corporation
Fla. Tile Division

Permit No. AC 53-158856
Expiration Date: Oct. 31, 1989

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 non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

PERMITTEE:
Sikes Corporation
Fla. Tile Division

Permit No. AC 53-158856
Expiration Date: Oct. 31, 1989

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:

- () Determination of Best Available Control Technology (BACT)
- () Determination of Prevention of Significant Deterioration (PSD)
- () 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:
Sikes Corporation
Fla. Tile Division

Permit No. AC 53-158856
Expiration Date: Oct. 31, 1989

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. Prill production by the body preparation plant shall not exceed 7.7 TPH.
2. Only natural gas fuel shall be used in the hot air generator. Maximum allowable heat input is 19.9 MMBtu/hr. Approximately 20,000 CFH of natural gas will produce the maximum allowable heat input.
3. The body preparation plant shall not operate more than 5,880 hrs/yr.

PERMITTEE:
Sikes Corporation
Fla. Tile Division

Permit No. AC 53-158856
Expiration Date: Oct. 31, 1989

SPECIFIC CONDITIONS:

4. The permittee shall maintain a log of this operation that will allow the Department to determine compliance with Specific Conditions Nos. 1, 2, and 3.

5. All reasonable precautions shall be taken to minimize the generation of unconfined emission of particulate matter in accordance with the provisions in F.A.C. Rule 17-2.610(3). These provisions are applicable to any source including, but not limited to, vehicular movement, transportation of materials, construction, demolition or wrecking, or industrial related activities such as loading, unloading, storing, handling, and processing of materials. Reasonable precautions shall include, but are not limited to, wetting or cleaning of areas generating unconfined emissions.

6. Pursuant to F.A.C. Rule 17-2.620(2), the permittee shall not allow the discharge of air pollutants which cause or contribute to an objectionable odor.

7. Particulate matter emissions from the venturi scrubber serving the spray dryer shall not exceed 3.6 lbs/hr (10.5 TPY) and 20% opacity. This source shall be equipped with stack sampling facilities required by F.A.C. Rule 17-2.700(4). The gas pressure drop and scrubber water pressure shall be recorded as part of any compliance test.

8. Particulate matter emissions from the material handling dust ventilation baghouse shall not exceed 1.7 lbs/hr (5.0 TPY) or 5% opacity.

9. Particulate matter emissions from the central vacuum system baghouse shall not exceed 0.04 lbs/hr (0.10 TPY) or 5% opacity.

10. There shall be no visible emissions from the filters and process equipment in this plant (raw material storage tanks, ball mills, blunger hopper, and prill storage tanks).

11. Compliance with the emission limits listed in Specific Conditions Nos. 7, 8, 9, and 10 shall be determined by the Methods 5 and 9 test procedures specified in F.A.C. Rule 17-2.700, (May 30, 1988) while the plant is operating at its permitted capacity.

12. The Department's Southwest District office in Tampa shall be notified at least 15 days prior to any compliance tests.

13. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the BAQM prior to 60 days before the expiration of the permit (F.A.C. 17-4.090).

PERMITTEE:
Sikes Corporation
Fla. Tile Division

Permit No. AC 53-158856
Expiration Date: Oct. 31, 1989

SPECIFIC CONDITIONS:

14. An application for an operation permit must be submitted to the Southwest District office at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever occurs first. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. 17-4.220).

Issued this _____ day
of _____, 1989

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Dale Twachtmann, Secretary

ATTACHMENTS

Available Upon Request

7 Body Preparation Plant

Florida Title
Permitted Emission
2/21/89
Revision

*** TITLE OF SOURCE & 3 ***

*** TEST OF MPTPLU ***

>>>INPUT PARAMETERS<<<

OPTIONS

IF = 1, USE OPTION
IF = 0, IGNORE OPTION
IOPT(1) = 0 (GRAD PLUME RISE)
IOPT(2) = 0 (STACK DOWNWASH)
IOPT(3) = 0 (BUOY. INDUCED DISP.)
IOPT(4) = 1 (EXTRAPOLATED WIND)

METEOROLOGY

AMBIENT AIR TEMPERATURE = 293.00 (K)
MIXING HEIGHT = 2000.00 (M)
ANEMOMETER HEIGHT = 10.00 (M)
WIND EXTRAPOLATION EXPONENTS = A: .10, B: .15, C: .20
D: .25, E: .30, F: .30

RECEPTOR HEIGHT = .00 (M)

SOURCE

EMISSION RATE = 5.04E-03 (G/SEC)
STACK HEIGHT = 3.05 (M)
EXIT TEMP. = 294.11 (K)
EXIT VELOCITY = 16.55 (M/SEC)
STACK DIAM. = .08 (M)
VOLUME FLOW = 7.55E-02 (M**3/SEC)

>>>CALCULATED PARAMETERS<<<

VOLUMETRIC FLOW = 7.55E-02 (M**3/SEC)
BUOYANCY FLUX PARAMETER = .00 (M**4/SEC**3)

*** MAXIMUM CONCENTRATION FOR SOURCE & 3 ***

**** STACK TOP WINDS EXTRAPOLATED FROM 10.0 METERS ****

*** WIND SPEED AT 10.0 METER HEIGHT IS GIVEN HERE ***

STABILITY	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
6	1.00	1.8427E+01	.236	6.9

**** CORRESPONDING SPATIAL DISTRIBUTION ****

DISTANCE (KM)	CONCENTRATION (UG/M**3)
.1	3.0865E+00
.2	1.7715E+01
.3	1.7204E+01
.5	1.0870E+01
.7	7.0356E+00
1.0	4.2932E+00
1.5	2.4104E+00
2.0	1.5820E+00
3.0	8.9452E-01
5.0	4.5064E-01
7.0	2.8652E-01
10.0	1.8036E-01
15.0	1.0554E-01

Tile firm slapped with DER fine

TAMPA

DER staff report

THE OWNER OF A Lakeland ceramic tile manufacturing facility has paid the Florida Department of Environmental Regulation a \$7,500 settlement to resolve alleged violations of state and federal hazardous waste regulations.

The Department alleged that Sikes Corporation, through its Florida Tile division, stored hazardous waste in containers for more than 90 days without a permit, had improperly labeled two containers of hazardous waste, and had operated a hazardous waste surface impoundment without a DER permit.

In addition to paying the financial settlement, Sikes agreed to submit by Jan. 30, 1989 a closure plan for the surface impoundment and a stormwater management plan for the facility. The plans will be implemented upon Departmental approval. ■

20.0	7.5368E-02
30.0	4.6285E-02
50.0	2.5795E-02

** OVERALL MAXIMUM CONCENTRATION IS FOUND IN SOURCE & 2 ***

*** WIND SPEED AT 10.0 METER HEIGHT IS GIVEN HERE ***

STABILITY	WIND SPEED (M/SEC)	MAX CONC (UG/CU M)	DIST OF MAX (KM)	PLUME HT (M)
6	1.00	3.7436E+01	1.200	24.5

- (1) THE DISTANCE TO THE POINT OF MAXIMUM CONCENTRATION IS SO GREAT THAT THE SAME STABILITY IS NOT LIKELY TO PERSIST LONG ENOUGH FOR THE PLUME TO TRAVEL THIS FAR.
- (2) THE PLUME IS CALCULATED TO BE AT A HEIGHT WHERE CARE SHOULD BE USED IN INTERPRETING THE COMPUTATION.
- (3) NO COMPUTATION WAS ATTEMPTED FOR THIS HEIGHT AS THE POINT OF MAXIMUM CONCENTRATION IS GREATER THAN 50 KILOMETERS FROM THE SOURCE.

*** SPATIAL DISTRIBUTION OF WORST CONDITIONS ***
(CUMULATED FOR THE LAST 3 SOURCE(S))

DISTANCE (KM)	MAX CONC (UG/M**3)	STABILITY	WIND (M/S)
.1	2.9429E+01	3	10.00
.2	2.6959E+01	4	7.00
.3	2.4870E+01	4	5.00
.5	2.8887E+01	5	2.00
.7	3.1304E+01	6	1.00
1.0	4.0436E+01	6	1.00
1.5	3.8245E+01	6	1.00
2.0	3.2145E+01	6	1.00
3.0	2.2778E+01	6	1.00
5.0	1.4349E+01	6	1.00
7.0	1.0633E+01	6	1.00
10.0	7.7170E+00	6	1.00
15.0	5.2855E+00	6	1.00
20.0	4.0153E+00	6	1.00
30.0	2.6936E+00	6	1.00
50.0	1.6211E+00	6	1.00

Stop - Program terminated.

$$\text{Max 24 hr impact} = 40.4 \times 0.4 = 16.2 \text{ ug/m}^3$$

M E M O R A N D U M

To: Mr. Willard Hanks
Florida DER, Tallahassee

From: Russell S. Kemp *RSK*
Lake Engineering, Inc.

Date: 2/10/89

Re: Florida Tile/ Sikes Corp. Lakeland - Body Prep Area

RECEIVED

FEB 16 1989

DER-BAQM

The following description of the bin vent filters to be used on the raw material storage silos should complete the above mentioned application and allow you to proceed with your review.

Six bin vent filters will be utilized; one for each storage silo. They are to be of a pulse-jet type made by Griffin Environmental Company, model JV-54-9X. These units have 54 polyester bags and 468 square feet of cloth area. Dust blown off the bags during cleaning will simply fall back into the silo and require no additional handling. The units are sized to emit 1927 ACFM each.

Product unloading is accomplished pneumatically from rail cars, typically involving one silo at a time. Unloading operations are scheduled to proceed in this manner 40 hours per week. In order to maximize the company's flexibility, however, we request that unloading operations be allowed up to 80 hours per week and will estimate emissions on that basis.

It is assumed that the inlet grain loading to the collectors during the unloading operation is 3 gr/dscf. Assuming a collection efficiency of 99.6% for these pulse jet units, we have an exit loading of gr/dscf. Using the above operating schedule and flowrate we predict total annual emissions of 0.4/TPY. This insignificant amount will not cause the body prep project to trigger any more complex federal or state reviews.

Should you require any additional information, please let us know.

PM
Atlanta, GA

file copy

LAKE ENGINEERING, INC.

6000 LAKE FORREST DRIVE
SUITE 350
ATLANTA, GEORGIA 30328

January 20, 1989

RECEIVED

JAN 23 1989

DER-BAQM

Mr. Clair Fancy
Deputy Chief
DER BAQM
2600 Blairstone Rd.
Tallahassee, FL 32399-2400

RE: Florida Tile Division of Sikes Corporation
Air permit application for new tile body preparation area
Mr. Willard Hanks, Review Engineer

Dear Mr. Fancy:

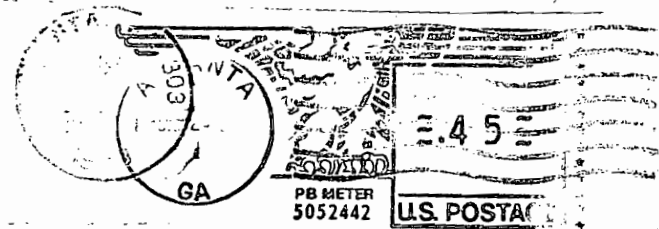
On behalf of the Florida Tile Division of Sikes Corporation (Florida Tile), we would like to present the following supplemental information to the company's recent air permit application. Much of this information is in response to questions raised orally by Mr. Willard Hanks of your office in a phone conversation on the 12th of January. We hope that this additional data will prove useful to your reviewing staff.

Construction Time: The company is confident that a three to four month construction schedule will be sufficient. Writing the construction permit such that it expires at least six months from the date of issue should provide enough leeway in the event of unforeseen supplier or contractor delays.

Operating Schedule: The company will accept permit language limiting operation of the new body preparation area to the 5,880 hours per year as estimated in the permit application.

Emission Rate Limits: The company recognizes that limiting emissions from this process area using the Process Weight Rate formulas could necessitate a PSD review for this application. In order to avoid the excessive time and expense required for such a review, the company will accept lower permit limits. In the application total emissions from the body preparation area are estimated at 12.53 tons-per-year (TPY). After adding a 25% tolerance for future wear, tear and aging of equipment, the company proposes that emissions from the entire body preparation area be limited to 15.66 TPY. This figure is less than the 25 TPY level triggering PSD review requirements. In recognition of the more stringent nature of these limits, the company asks that the permit language present this as an aggregate limit, or bubble, for the entire body preparation area comprised of three individual point sources.

LAKE ENGINEERING AND DEVELOPMENT, INC.
6000 LAKE FORREST DRIVE
SUITE 350
ATLANTA, GEORGIA 30328



Mr. Clair Fancy
Deputy Chief
DER BAQM
2600 Blairstone Road
Tallahassee, FL 32399-2400



Mr. Clair Fancy
January 20, 1989
Page Two

"Vansil" Composition: Vansil is a trade name for calcium metasilicate used in the tile body formulation. The material may also be referred to as the mineral wollastonite (CAS Reg. No. 13983-17-0). This substance presents no unique hazards beyond that of any other mineral nuisance dust. An MSDS sheet for this material is enclosed.

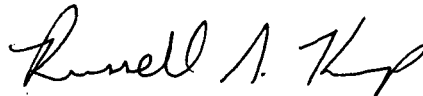
Spray Dryer Control Device Efficiencies: The control efficiency estimates presented in the permit application are believed to be accurate. The cyclones to be employed are of the latest high efficiency design. It should be emphasized that six of these units will be utilized in parallel to form a "multiclone" of very high efficiency. The estimated scrubber efficiency of 75 percent reflects the effectiveness of the scrubber following high efficiency cyclones to remove small particulates not collected.

Emission Rate Estimates: The emission rate estimates presented in the application package are believed to be accurate to the extent possible at this stage of the project. While the various exit grain loadings may vary somewhat from rule-of-thumb norms, it is felt that our approach has yielded reasonable estimates. In any event, the company expects to be able to meet the 15.66 TPY proposed emission limit.

Please let us know if there is any further information we can provide to expedite the review of this application. The company is most anxious to proceed with this project and asks that the Department complete its review as soon as possible. We are, of course, available to answer any additional questions that may arise during this process.

Sincerely,

LAKE ENGINEERING, INC.



Russell S. Kemp
Project Engineer

RSK:mhm

Enclosures

cc: Mr. William R. Boakes
Florida Tile

328.2.3

*copied: Mr. Hank
B. Thomas, SW Dist,
CAF/BT*

R. T. VANDERBILT COMPANY, INC.
Industrial Minerals and Chemicals
30 Winfield Street
Norwalk, CT 06855
(203) 853-1400 TWX 710-468-2940

* MATERIAL *
* SAFETY *
* DATA SHEET *

Customer Info:

Page 1 of 3

Sikes Corp.
Florida Tile Division
P.O. Box 81
U.S. Highway 127 North
Lawrenceburg, KY 40342

Date: 05/19/86 Revised: 01/20/86 Supersedes: 06/29/84

I. PRODUCT IDENTIFICATION

G00080

Trade Name: VANSIL* W-10, VANSIL* W-20, VANSIL* W-30

Chemical Name: Calcium silicate mineral (calcium metasilicate)

Synonyms: Wollastonite, CAS Reg. No. 13983-17-0

Hazardous Ingredients/OSHA: Wollastonite (mineral nuisance dust)

Hazard: Inhalation (nuisance dust)

Carcinogenic Ingredients/OSHA/NTP/IARC: None

II. WARNING STATEMENTS

Prolonged inhalation of excessive dust may affect pulmonary function.

III. PHYSICAL AND CHEMICAL DATA

Appearance and Odor: White powder

Vapor Pressure: N/A

Density Mg/cu m: 2.9

Vapor Density: N/A

Solubility in Water: None

Percent Volatiles: None

Boiling Point: N/A

Evaporation Rate: N/A

(* - Registered in U.S. Patent and Trademark Office)

IV. FIRE PROTECTION

Nonflammable

V. REACTIVITY DATA

Non-reactive

VI. HEALTH HAZARD DATA

Exposure Limits:

Calcium silicate is classified as a nuisance dust by the American Conference of Governmental Industrial Hygienists.

PEL OSHA: Calcium silicate (total) 15 mg/cu m 8 hr. TWA
Calcium silicate (resp.) 5 mg/cu m 8 hr. TWA

TLV ACGIH: Calcium silicate (total) 10 mg/cu m 8 hr. TWA
Calcium silicate (resp.) 5 mg/cu m 8 hr. TWA

VII. PHYSIOLOGICAL EFFECTS SUMMARY

In a NIOSH medical survey of wollastonite workers "no definite association of wollastonite exposure and excess morbidity could be demonstrated". From an update of this study it was concluded that prolonged exposure to excessive wollastonite dust may affect pulmonary function. Because of the shape of individual wollastonite particles, minor skin irritation may result from prolonged physical contact with the product.

VIII. PRECAUTIONS FOR SAFE HANDLING

Avoid breathing dust. Use dust mask if TLV or PEL for airborne dust is exceeded. See OSHA 29 CFR 1000.34

IX. PROTECTION AND CONTROL MEASURES

Protective Equipment:

Use of gloves and/or barrier cream is recommended for skin protection

Respiratory Protection:

Dust masks. See OSHA 29 CFR 1000.134

Ventilation:

Use local exhaust ventilation as primary dust control method

X. EMERGENCY AND FIRST AID PROCEDURES

Not expected to be a problem. No special requirements.

XI. SPILL AND DISPOSAL PROCEDURES

Not a RCRA hazardous waste. Use vacuum to clean up spillage. Dispose of according to State and local regulations.

For Additional Information Contact:

Environmental Affairs
R. T. VANDERBILT CO., INC.
30 Winfield Street
P.O. Box 5150
Norwalk, CT 06856
Tel. No.: (203) 853-1400

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

Nº 130596

RECEIPT FOR APPLICATION FEES AND MISCELLANEOUS REVENUE

Received from Sikes Corp. Date 12/27/88

Address P.O. Box 447, Lakeland 33802 Dollars \$ 200.00

Applicant Name & Address same

Source of Revenue Stationary Industrial

Revenue Code 1031 Application Number AC 53-158856

CK 010219

By Donna Jordan
IE

BEST AVAILABLE COPY

APPLICATION TRACKING SYSTEM DEVELOPED BY DER 12/30/88

PPL NO:158856
 APPL RECVD:12/27/88 TYPE CODE:AC SUBCODE:1E LAST UPDATE:12/30/88
 DER OFFICE RECVD:IPA DER OFFICE TRANSFER TO: APPLICATION COMPLETE: / /
 DER PROCESSOR: THOMAS *Thomas*
 APPL STATUS:AC DATE:12/27/88 (ACTIVE/DENIED/WITHDRAWN/EXEMPT/ISSUED/GENERAL)
 RELIEF: (SSAC/EXEMPTIONS/VARIANCE)
 (Y/N) N MANUAL TRACKING DISTRICT:40 COUNTY:58
 (Y/N) DNR REVIEW REQD? LAT/LONG:28.02.45/81.37.45
 (Y/N) N PUBLIC NOTICE REQD? BASIN-SEGMENT: .
 (Y/N) N GOV BODY LOCAL APPROVAL REQD? COE #:
 (Y/N) Y LETTER OF INTENT REQD? (1/ISSUE 0/DENY) ALT#:

PROJECT SOURCE NAME:STATIONARY INDUSTRIAL
 STREET:1 SIKES BLVD. CITY:LAKELAND
 STATE:FL ZIP: PHONE:
 APPLICATION NAME:SIKES CORP.
 STREET:POST OFFICE BOX 447 CITY:LAKELAND
 STATE:FL ZIP:33802 PHONE:813-667-7171
 AGENT NAME:LAKE ENGINEERING, INC.
 STREET:6000 LAKE FOREST DR ST-150 CITY:ATLANTA
 STATE:GA ZIP:30328 PHONE:404-257-7634

FEE #1 DATE PAID:12/27/88 AMOUNT PAID:80200 RECEIPT NUMBER:00130596

DATE APPLICANT INFORMED OF NEED FOR PUBLIC NOTICE - - - - - / /
 DATE DER SENT DNR APPLICATION/SENT DNR INTENT - - - - - / /
 DATE DER REQ. COMMENTS FROM GOV. BODY FOR LOCAL APP. - - - - - / /
 DATE #1 ADDITIONAL INFO REQ--REC FROM APPLICANT - - - - - / /
 DATE #2 ADDITIONAL INFO REQ--REC FROM APPLICANT - - - - - / /
 DATE #3 ADDITIONAL INFO REQ--REC FROM APPLICANT - - - - - / /
 DATE #4 ADDITIONAL INFO REQ--REC FROM APPLICANT - - - - - / /
 DATE #5 ADDITIONAL INFO REQ--REC FROM APPLICANT - - - - - / /
 DATE #6 ADDITIONAL INFO REQ--REC FROM APPLICANT - - - - - / /
 DATE GOVERNING BODY REQUESTED SURVEY RESULTS/REPORTS - - - - - / /
 DATE FIELD REPORT WAS REQ--REC - - - - - / /
 DATE DNR REVIEW WAS COMPLETED - - - - - / /
 DATE APPLICATION WAS COMPLETE - - - - - / /
 DATE GOVERNING BODY PROVIDED COMMENTS OR OBJECTIONS - - - - - / /
 DATE NOTICE OF INTENT WAS SENT--REC TO APPLICANT - - - - - / /
 DATE PUBLIC NOTICE WAS SENT TO APPLICANT - - - - - / /
 DATE PROOF OF PUBLICATION OF PUBLIC NOTICE RECEIVED - - - - - / /
 WAIVER DATE BEGIN--END (DAY 90) - - - - - / /

COMMENTS:

Best Available Copy

LAKE ENGINEERING, INC.

6000 LAKE FORREST DRIVE
SUITE 350
ATLANTA, GEORGIA 30328

December 16, 1988

Mr. Rama Iyer
Air Permitting Engineer
Florida Department of Environmental Regulation
4520 Oak Fair Boulevard
Tampa, Florida 33610-7347

Re: Florida Tile/Division of Sikes Corporation

Dear Rama:

Enclosed is an application for a permit to construct a new body preparation area at Florida Tile's Lakeland facility. In accordance with our recent discussions, the entire addition is considered a single process unit in the application with a single bulk process weight rate. The flow diagram and equipment layout accompanying the application are coded to match identifying numbers assigned to various pieces of air pollution control equipment on the forms. We feel that the interrelationships between the process equipment and the control equipment are such that treating the entire expansion under a single permit is the most logical approach. We have made every effort to make this submittal complete and thorough enough to facilitate your review.

As I mentioned last month, Florida Tile is planning a number of equipment changes in the coming three years. In order to insure that the net emissions increases from these modifications remain below the federal significance limits, I will be preparing a plan and schedule soon after the holidays. This plan will outline the proposed additions and removal of equipment along with the timing for planned permit closeouts. Such a schedule should prove useful to us both in optimizing the permitting strategy for the future.


If we can be of any assistance during your review of this application, please feel free call me or Randy Reynolds. **D. E. R.**

Happy holidays.

Sincerely,

DEC 27 1988

LAKE ENGINEERING, INC. SOUTH WEST DISTRICT
TAMPA

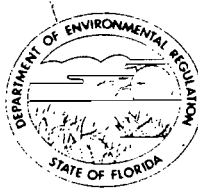

Russell S. Kemp
Project Engineer

RSK:mhm

cc: Mr. Bill Boakes

328.2

AC 53-158856



STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
APPLICATION TO OPERATE/CONSTRUCT
AIR POLLUTION SOURCES

SOURCE TYPE: Stationary industrial [] New¹ [] Existing¹
APPLICATION TYPE: [] Construction [] Operation [] Modification
COMPANY NAME: Florida Tile Division/Sikes Corporation COUNTY: Polk
Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Body preparation area including raw material handling, ball mills, blungers, slip handling, spray dryer, prill handling and associated cyclones, scrubber & baghouses.
SOURCE LOCATION: Street 1 Sikes Blvd. City Lakeland
UTM: East 405,200 North 3,102,400
Latitude 28 ° 02 ' 45 " N Longitude 81 ° 57 ' 45 " W
APPLICANT NAME AND TITLE: William R. Boakes, Vice President
APPLICANT ADDRESS: P.O. Box 447, Lakeland, FL 33802

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Florida Tile Division/Sikes Corporation
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.

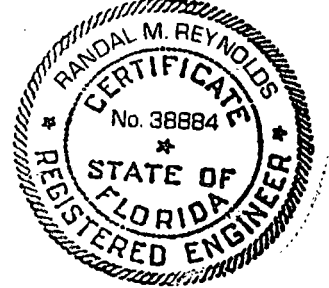
*Attach letter of authorization **DEC 27 1988**
Signed: William R. Boakes
William R. Boakes
Name and Title (Please Type)
Vice President, Development & Engineering
Date: 12/21/88 Telephone No. 813/687-7171

**SOUTH WEST DISTRICT
TAMPA**

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 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. ~~XXX HAS REVIEWED THAT THE UNDERSIGNED WILL COMPLY WITH ALL APPLICABLE STATUTES, 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.~~

Signed: Randal M. Reynolds
Randal M. Reynolds, P.E.
Name (Please Type)
Lake Engineering, Inc.
Company Name (Please Type)
6000 Lake Forrest Dr., Suite 350
Atlanta, GA 30328
Mailing Address (Please Type)
Date: _____ Telephone No. (404) 257-9634



Florida Registration No. 38884

¹See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

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.

See attached sheet

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

Start of Construction January, 1989 Completion of Construction March 1989

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.)

Spray dryer exhaust cyclones and scrubber \$52,000

Material handling dust ventilation baghouse \$105,000

Central vacuum system and baghouse \$40,000

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

Not applicable

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? Yes X No

F. Normal equipment operating time: hrs/day 24 ; days/wk 5 ; wks/yr 49 ; if power plant, hrs/yr ; if seasonal, describe: (N/A)

G. 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? | <u>No</u> |
| a. If yes, has "offset" been applied? | <u>N/A</u> |
| b. If yes, has "Lowest Achievable Emission Rate" been applied? | <u>N/A</u> |
| c. If yes, list non-attainment pollutants. | |
| <u>N/A</u> | |
| 2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. | <u>No</u> |
| 3. Does the State "Prevention of Significant Deterioration" (PSD) requirements apply to this source? If yes, see Sections VI and VII. | <u>No</u> |
| 4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? | <u>No</u> |
| 5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? | <u>No</u> |

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

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

A. Raw Materials and Chemicals Used in your Process, if applicable: Total Raw Material Input to Body Prep. operation

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Clay	Particulate	(unknown)	7,600	
Talc	Particulate	(unknown)	5,417	
Silica	Particulate	(unknown)	1,150	(1) Inputs into process
Vansil	Particulate	(unknown)	350	
Whiting	Particulate	(unknown)	917	
Water	None		6,366	(2)

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

1. Total Process Input Rate (lbs/hr): 21,800 Total Input to Body Prep Operation*

2. Product Weight (lbs/hr): 15,434 Total Prills output from Body Prep Operation

* water added and removed as an intermediate step.

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission ¹		Allowed Emission ² Rate per Ch. 17-2, F.A.C. Aggregate	Allowable ³ Emission lbs/hr Aggregate	Potential Emission ⁴		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Particulate	2.86	8.41	3.59 p ^{0.62}	15.79	572	1,682	S1
Particulate	1.37	4.03			343	1,008	S2
Particulate	0.03	0.09			6.86	20.2	S3

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

Control device details attached

Flow Diagram	Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles ⁵ Size Collected (in microns)	Basis for Efficiency (Sec. V, It ⁵)
C1	High efficiency spray dryer cyclone	Particulate	98	40 to 100	N/A
C2	Spray dryer venturi scrubber	Particulate	75	10 to 100	N/A
C3	Material handling baghouse	Particulate	99.6	10 to 100	MFR. Data
C4	Central vacuum baghouse	Particulate	99.6	10 to 100	MFR. Data

¹See Section V, Item 2.

²Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 0.1 pounds per million BTU heat input)

³Calculated from operating rate and applicable standard

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

⁵If Applicable

E. Fuels Utilized by spray dryer

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Natural gas	0.0198	0.02	19.84

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis: N/A

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating. Annual Average _____ Maximum _____

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

Collected dust recycled to process

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

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

Gas Flow Rate: _____ ACFM Gas Exit Temperature: _____ °F.

Water Vapor Content: _____ % Velocity: _____ FPS

SECTION IV: INCINERATOR INFORMATION N/A

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste _____

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

Approximate Number of Hours of Operation per day _____ days/week _____

Manufacturer _____

Date Constructed _____ Model No. _____

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

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

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

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

Type of pollution control device: Cyclone Wet Scrubber Afterburner Other (specify) _____

Brief description of operating characteristics of control devices: _____

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

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight – show derivation.
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, 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 8½" 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 8½" 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 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. 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 N/A

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
_____	_____
_____	_____
_____	_____

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
_____	_____
_____	_____
_____	_____

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

- 1. Control Device/System:
- 2. Operating Principles:
- 3. Efficiency: *
- 4. Capital Costs:
- 5. Useful Life:
- 6. Operating Costs:
- 7. Energy:
- 8. Maintenance Cost:
- 9. Emissions:

Contaminant	Rate or Concentration
_____	_____
_____	_____
_____	_____

*Explain method of determining D 3 above.

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*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy*:
- 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*:
- d. Capital Cost:
- e. Useful Life:
- f. Operating Cost:
- g. Energy**:
- h. Maintenance Costs:
- 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:

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power – KWH design rate.

3.

- a. Control Device:
- b. Operating Principles:

- c. Efficiency*:
- d. Capital Cost:
- e. Life:
- f. Operating Cost:
- g. Energy:
- h. Maintenance Cost:

*Explain method of determining efficiency above.

- i. Availability of construction materials and process chemicals:
- j. Applicability to manufacturing processes:
- k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

- a. Control Device
- b. Operating Principles:
- c. Efficiency*:
- d. Capital Cost:
- e. Life:
- f. Operating Cost:
- g. Energy:
- 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*:
- 3. Capital Cost:
- 4. Life:
- 5. Operating Cost:
- 6. Energy:
- 7. Maintenance Cost:
- 8. Manufacturer:
- 9. Other locations where employed on similar processes:

a.

- (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:
- (5) Environmental Manager:
- (6) Telephone No.:

*Explain method of determining efficiency above.

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

b.

- (1) Company:
- (2) Mailing Address:
- (3) City:
- (4) State:

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

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration
<hr/>	<hr/>
<hr/>	<hr/>
<hr/>	<hr/>

(8) Process Rate*:

10. Reason for selection and description of systems:

*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

N/A

A. Company Monitored Data

1. _____ no sites _____ TSP _____ () SO₂* _____ 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.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? _____ Yes _____ No

b) Was instrumentation calibrated in accordance with Department procedures? _____ Yes _____ No _____ Unknown

B. Meteorological Data Used for Air Quality Modeling

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

2. Surface data obtained from (location) _____

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

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

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

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

D. Applicants Maximum Allowable Emission Data

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

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description on 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.

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

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.

SECTION II A.

This project is the first of several in a general program of upgrading the production equipment at the Lakeland facility. The new body preparation area, covered under this application, will employ a spray dryer for prill production. This approach to body preparation generates much less dust than the existing plant systems and will result in a much clearer work environment. In addition, this new area will have an integrally designed material handling dust collection system and a central vacuum system for cleanup. The spray dryer itself is fitted with a state-of-the-art cyclone and venturi scrubber system which will provide extremely effective control of particulate emissions.

This project will be in full compliance with all applicable pollution control regulations and represents a significant improvement over the existing process equipment.

SECTION III H.

STACK GEOMETRY AND FLOW CHARACTERISTICS

Diagram Code	Stack Description	Height Ft.	Flow ACFM	Diameter Ft.	Temperature °F	Moisture %	Velocity FPS
S1	Spray dryer exhaust	88	49,460	3.45	176	18	88.2
S2	Material handling baghouse	20	20,000	2.67	AMB.	AMB.	59.5
S3	Central vacuum system	10	160	0.25	AMB.	AMB.	54.3

FLORIDA TILE/DIVISION SIKES CORP.

SECTION V: SUPPLEMENTAL REQUIREMENTS

1. Process Weight Rates:

Total inputs of Clay, Talc, Silica, Vansil and Whiting are based on company projections of consumption:

Clay	7600 lbs/hr
Talc	5417 lbs/hr
Silica	1150 lbs/hr
Vansil	350 lbs/hr
Whiting	917 lbs/hr

Water is added at 6366 lbs/hr to produce the slip which forms the input to the spray dryer. The spray dryer capacity is 6000 l/hr or:

$$\frac{6000 \text{ l}}{\text{hr}} \times \frac{1 \text{ gal}}{3.785 \text{ l}} \times \frac{13.76}{\text{gal}} = 21,800 \text{ lb/hr}$$

The spray dryer removes most of the water to produce the prills used in the tile pressing operation. Product output from the body preparation area is therefore:

$$21,800 - 6366 = 15,434 \text{ lb/hr prills}$$

2 & 3. Emission Estimates and Potential Discharge:

Spray Dryer - The spray dryer will exhaust 65,000 m³/hr (41,059 dscfm) at a manufacturer's guaranteed loading of 20 mg/m³ (0.0081 gr/dscf) or less through stack S1. Maximum emissions are therefore:

$$\frac{0.0081 \text{ gr}}{\text{dscf}} \times \frac{41,059 \text{ dscf}}{\text{min}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{1 \text{ lb}}{7000 \text{ gr}} = 2.86 \text{ lb/hr}$$

The spray dryer's emissions are controlled by a high efficiency cyclone set (C1) operating at an estimated 98% collection efficiency followed by a venturi scrubber (C2) operating at an estimated 75% efficiency. Overall system collection efficiency is therefore:

$$[0.98 + (0.75)(0.02)] \times 100 = 99.5\%$$

The spray dryer has a potential to emit

$$2.86/0.005 = 572 \text{ lb/hr} \Rightarrow 1,682 \text{ T/yr.}$$

if operated with no control.

Material Handling Baghouse - The material handling baghouse (C3) will exhaust 20,000 dscfm to the atmosphere through stack S2. The grain loading at the collector inlet is estimate as 2 gr/dscf. Maximum uncontrolled emissions are therefore,

$$\frac{20,000 \text{ dscf}}{\text{min}} \times \frac{2 \text{ gr}}{\text{dscf}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{1 \text{ lb}}{7000 \text{ gr}} = 343 \text{ lb/hr}$$

and maximum controlled emissions from the 99.6% efficient baghouse will be

$$343 (1 - 0.996) = 1.37 \text{ lb/hr}$$

Central Vacuum System - The central vacuum system (C4) will exhaust approximately 160 dscfm through stack S3. The grain loading at the collector inlet is again assumed to be 5 gr/dscf. Maximum uncontrolled emissions are therefore,

$$\frac{160 \text{ dscf}}{\text{min}} \times \frac{5 \text{ gr}}{\text{dscf}} \times \frac{60 \text{ min}}{\text{hr}} \times \frac{1 \text{ lb}}{7000 \text{ gr}} = 6.86 \text{ lb/hr}$$

and maximum controlled emissions from the 99.6% efficient collector will be

$$6.86 (1 - 0.996) = 0.03 \text{ lb/hr.}$$

4. Control System Details:

C1 & C2 spray dryer cyclones and venturi scrubber - see attached drawings OMS 51-1614 and 051.

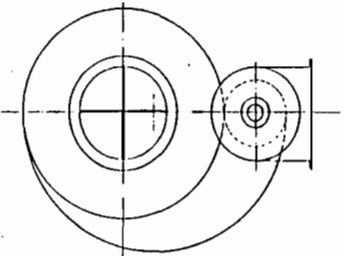
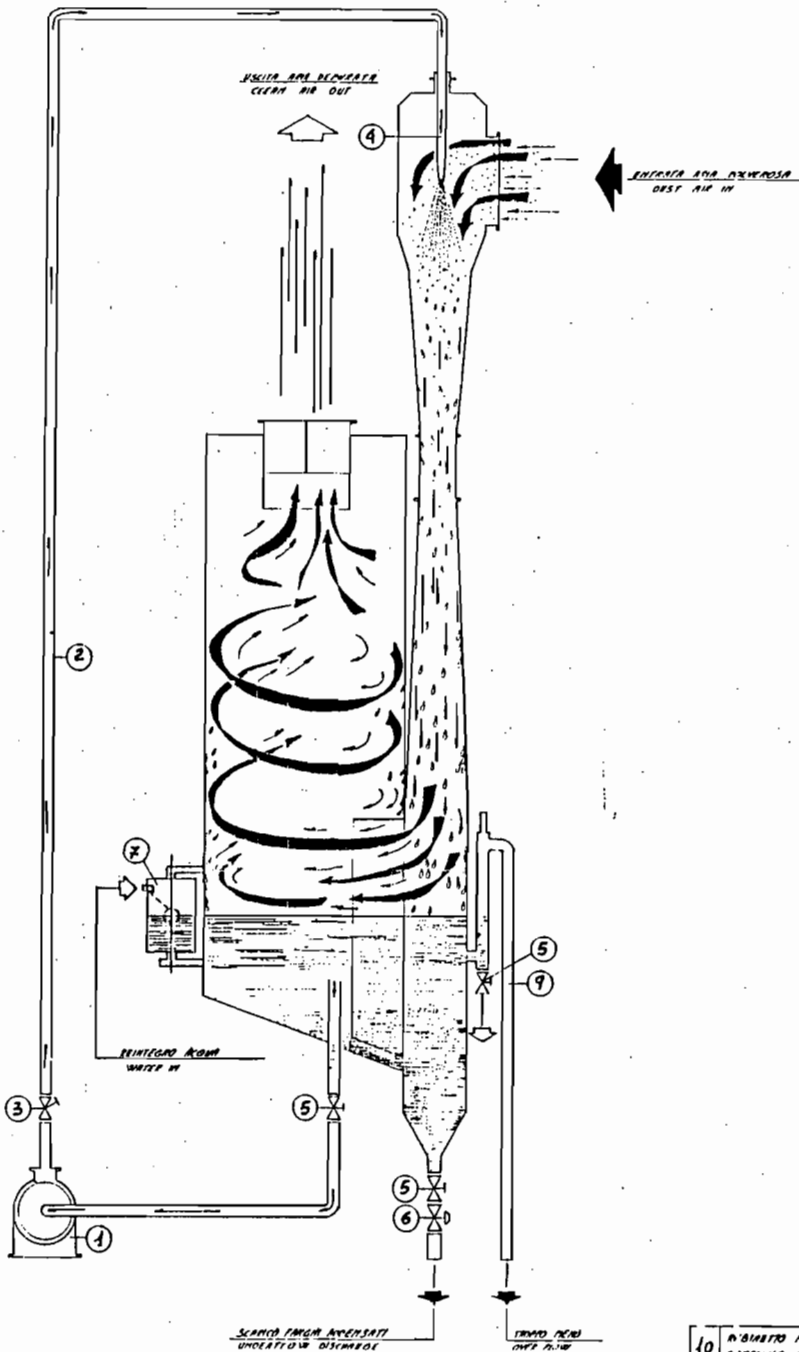
C3 Material Handling Baghouse: capacity: 20,000 CFM
 cloth area: 3,296 ft²
 air to cloth ratio: 5.83/1
 number of bags: 256
 length of bags: 10 feet

C4 Central Vacuum System Baghouse: capacity: 160 CFM
 cloth area: 51 ft²
 air to cloth ratio: 3.14/1
 number of bags: 7
 length of bags: 58 inches

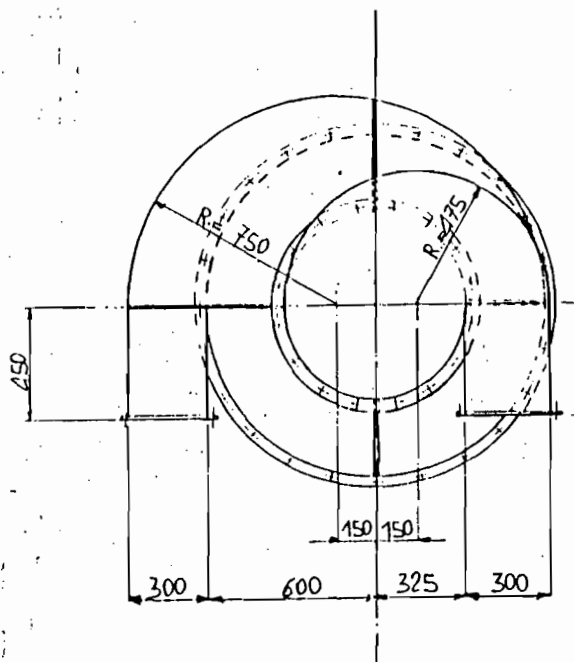
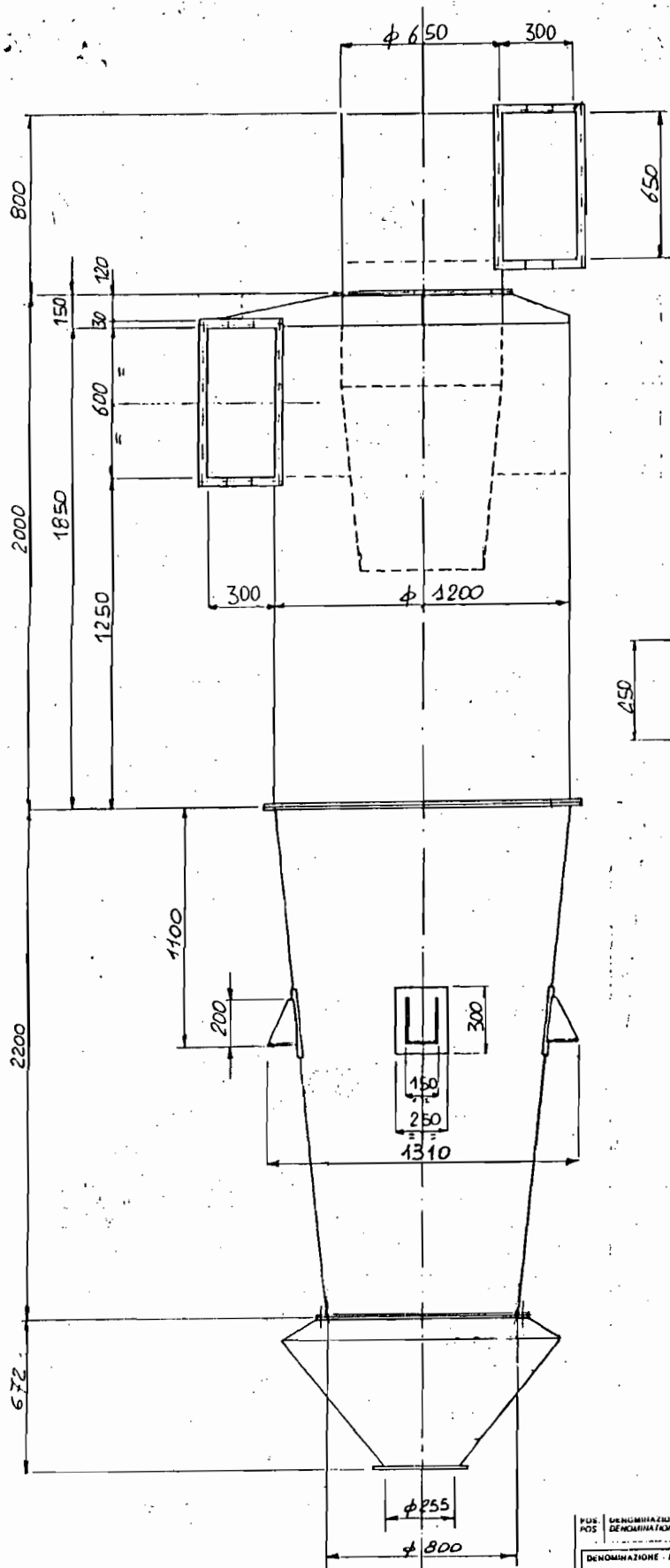
6. Flow Diagram - attached

7. Plot Plan - available in D.E. R. files from previous submittals.

8. Facility Equipment Layout - attached



10	AVVITTO PERLIEVI SPINNING COCK
9	SCARICO TRUCCO PER DISCHARGE OFF T.M.
8	REGOLATORE DI LIVELLO LEVEL INSTRUMENT
7	CORPO REGOLATORE DI LIVELLO BODY LEVEL REGULATOR
6	ELETTROVALVOLA DI SCARICO AVVERTITO ELECTRO-VALVE FOR UNDER FLOW DISCHARGE
5	VALVOLA MANUALE DI ESCUSIONE MANUALLY STOP COCK VALVE
4	NOZZOLA DI SPRUZZO NOZZLE SPRAYING
3	VALVOLA MANUALE DI RICICLO ACQUA MANUALLY REGULATOR VALVE
2	TRUCCO RICICLO ACQUA WATER RECYCLE HOLE
1	ELETTROFORNIA CENTRIFUGA CENTRIFUGAL PUMP
POS.	DE NOMINAZIONE DENOMINATION
DENOMINAZIONE / DENOMINATION SEPIRETTA DI PULVIZZAMENTO SPARITORE BRANDO VENTURI SCARICATA LBY-OUT	
N° CLIENTE / CUSTOMER N° _____	
O.M.S. Officine Meccaniche S.p.A. VIA E. BENEDETTI 51/53 - 11042 PORTO FERRARESE (ITALY) TEL. (049) 84.91.18 - TELESEMPRE 049.84.1	DATA 1-07-88 FIRMATA _____ VERIFICATA _____
N° PROGETTO _____ N° DIMENSIONI _____ N° TIPO _____	N° CLIENTE _____ N° DIMENSIONI _____ N° TIPO _____



QTY / QUANTITÀ	MATERIAL / MATERIALE	IMP / N° / TYPE / DI
DENOMINAZIONE / DENOMINATION		
CYCLONE A.R.E. $\phi 1200$		
RIF. CLIENTE / CUSTOMER REF		
SCALE / SCALA	1:20	NUMERO / N° / ALFAB. CIP. /
DATA / DATE	21-12-87	51
OPERAZIONE / OPERATION	Boia	
CONTROLLO / CONTROL		
MATERIALE / MATERIAL	AISI 430	PESO / WEIGHT
		Kg 650~
		QUANTITÀ / QUANTITY
		3Dx