● **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. Carl W. Zielke
V.P. & Division Director
R. R. Donalley & Sons Company
3100 S. Ridgewood Ave.
South Daytona, FL 32119-3548

4. Article Number
P 407 852 629

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X Linda Haus

7. Date of Delivery
3-19-91

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

PS Form **3811**, Apr. 1989 ★U.S.G.P.O. 1989-238-815 **DOMESTIC RETURN RECEIPT**

P 407 852 629

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

Sent to Mr. Carl W. Zielke, R.R. Donnelley	
Street and No. 3100 S. Ridgewood Ave.	
P.O., State and ZIP Code S. Daytona, FL 32119-3548	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 3-18-91 Permit: AC 64-188871	

PS Form 3800, June 1985 ☆U.S.G.P.O. 1989-234-555

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor — Carol M. Browner, Secretary

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

Mr. Carl W. Zielke
V.P. & Division Director
R. R. Donnelley & Sons Company
3100 S. Ridgewood Ave.
South Daytona, Florida 32119-3548

March 18, 1991

Enclosed is construction permit AC 64-188871 for three new heatset web offset presses (Nos. SDM-001, 001 & 003), with dryers and enclosures, and a by-products pneumatic paper conveying system, with cyclones (3) and baghouse control systems (closed loop). The new presses will share a TEC Systems, Inc. KATEC thermal afterburner system.

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 Appeals. 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.
Chief
Bureau of Air Regulation

Copy furnished to:

C. Collins, Central District
T. W. Davis, P.E., ES&E
M. Horne, RRD&S

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 buisness on 3-18-91.

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.

Lyn Dober
Clerk

3-18-91
Date

Final Determination

R. R. Donnelley & Sons Company
Broward County
South Daytona, Florida

Construction Permit
AC 64-188871

Department of Environmental Regulation
Division of Air Resources Management
Bureau of Air Regulation

March 8, 1991

Final Determination
R. R. Donnelley & Sons Company

The Technical Evaluation and Preliminary Determination for the permit to construct/install three new heatset web offset presses (Nos. SDM-001, 002 & 003), with dryers and enclosures, and a by-products pneumatic paper conveying system, with cyclones (3) and baghouse control systems, was distributed on February 2, 1990. The Notice of Intent to Issue was published in The News-Journal of Daytona Beach on February 14, 1991. Copies of the evaluation were available for public inspection at the Department's Central District office and Bureau of Air Regulation office.

Comments were received during the Public Notice period on the Department's Intent to Issue the permits from Mr. Mark A. Horne in a letter received via FAX on February 14, 1991. The Department will respond to each comment in the order presented, but will not restate the comment.

1. Specific Condition No. A.2.

   Response: None required.

2. Specific Condition No. A.3.

   Response: As long as the facility is using high molecular weight alcohol substitutes, the Department accepts the request and the initial and annual capture efficiency demonstrations will not be required. When and if the facility desires to revert to using IPA or similar organic solvents, an initial and subsequent capture efficiency demonstrations will be required in accordance with the proposed Specific Condition. Therefore, the following will be added to the Specific Condition:

   New and an addition: However, the requirements of this condition are not applicable as long as high molecular weight alcohol substitutes are being used.

3. Specific Condition No.A.4.

   Response: This request is denied. However, the process to have the request evaluated for consideration and approval is described in F.A.C. Rule 17-2.700(3), Exceptions and Approval of Alternate Procedures and Requirements.

4. Specific Conditions No.A.5.

   Response: See response to No. 3 above.

5. Specific Conditions Nos. B.1. and B.2.

   Response: The request is acceptable since the baghouse control system is a closed loop system. However, since the "excess emission" standard, "circumvention" standard, and the "plant operation-problems" standard are already applicable and imposed in the proposed Specific Condition C.4. then the entire proposed Section B of the Specific Conditions will be deleted. Consequently and for continuity, proposed Section "C. General will be labeled "B. General" of the Specific Conditions.

Attachments to be Incorporated:

6. Mr. Mark A. Horne's letter without attachments received February 14, 1991, via FAX.

7. Mr. Mark A. Horne's letter with attachments received February 15, 1991.

The final action of the Department will be to issue the construction permit, No. AC 64-188871, as drafted and with the above revisions and changes incorporated.

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

PERMITTEE:
R. R. Donnelley & Sons Company
3100 S. Ridgewood Avenue
South Daytona, Florida 32119-3548

Permit Number: AC 64-188871
Expiration Date: April 30, 1992
County: Broward
Latitude/Longitude: 29°09'00"N 80°59'15"W
Project: Construction of Presses Nos. SDM-001, 002 & 003, and a By-Products Pneumatic Paper Conveying System

This permit is issued under the provisions of Chapter 403, Florida Statutes, Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and 40 CFR (July, 1989 version). The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the construction of three new presses (Nos. SDM-001, 002 & 003), with dryers and enclosures, and an associated and shared TEC Systems, Inc. KATEC thermal afterburner; also, the minimum VOC capture (dryer enclosures, etc.) efficiencies are 80% (ink VOCs), 90% (alcohol substitute) and 37.5% (cleaning solvent), and destruction (afterburner) efficiency is 95.0%. The project also includes the construction of a by-products pneumatic paper conveying system, with associated cyclones (3) and baghouse control systems. The VOC content of the inks will be 38% or less by weight. The project will occur at the applicant's existing facility. The UTM coordinates are Zone 17, 500.4 km East and 3224.6 km North.

The Source Industrial Code is:
- o 2752 Lithographic Commercial Printing Facility

The Source Classification Code is:
- o 4-05-004-11 Lithographic Tons Solvent in Ink

The sources 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 are listed below:

1. Application to Construct Air Pollution Sources, DER Form 17-1.202(1) received November 2, 1990.
2. Mr. Mark Horne's letter with enclosures received December 7, 1990.
3. Mr. Bruce P. Miller's letter with enclosure ("Guidelines for Developing a State Protocol for the Measurement of Capture Efficiency) dated May 15, 1990.
4. Interoffice Memorandum dated January 28, 1991, from Mr. Bruce Mitchell.
5. Technical Evaluation and Preliminary Determination dated February 7, 1991.
6. Mr. Mark A. Horne's letter without attachments received February 14, 1991.
7. Mr. Mark A. Horne's letter with attachments received February 15, 1991.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

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. Neither 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 is not 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, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; 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.

6. The permittee shall 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 and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

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

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

c. Sample or monitor 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 provide the Department with the following information:

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

b. the period of noncompliance, including 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.

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 for 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 involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

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 17-4.120 and 17-30.300, F.A.C., 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 or a copy thereof shall be kept at the work site of the permitted activity.

13. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold 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) required by the permit, copies of all reports required by this permit, and

GENERAL CONDITIONS:

records of all data used to complete the application for this permit. These materials shall be retained 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 dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

14. 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 corrected promptly.

SPECIFIC CONDITIONS:

A. <u>SDM-001, 002 & 003: Presses</u>

1. Continuous operation is permitted (i.e., 8760 hrs/yr).

2. Total VOC emissions from presses Nos. SDM-001, 002 & 003, shall not exceed 19.35 lbs/hr (84.8 TPY), which is based on minimum capture (dryer enclosures, etc.) efficiencies of 80% (inks), 90% (alcohol substitute) and 37.5% (cleaning solvent), and destruction (afterburner) efficiency of 95.0% pursuant to F.A.C. Rule 17-2.620(1). Total allowable VOC emissions from the KATEC thermal afterburner shall not exceed 14.35 lbs/hr (62.9 TPY).

3. The initial and annual demonstration of the capture efficiency of each dryer enclosure shall be conducted using the U.S. EPA's "Guidelines for Developing a State Protocol for the Measurement of Capture Efficiency" (attached). The permittee shall notify the Department's Central District in writing of the protocol that will be used for the capture efficiency demonstration at least 60 days prior to compliance testing. However, the requirements of this condition are not applicable as long as high molecular weight alcohol substitutes are being used.

4. Initial and annual compliance tests for the actual destruction efficiency (comparison of the inlet and outlet concentrations) of the KATEC thermal afterburner shall be conducted using EPA Method 25A, pursuant to F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A (July, 1989 version). Other test methods may be used as long as prior Department approval has been granted in writing.

5. The KATEC thermal afterburner is subject to the visible emissions standard of "less than 20% opacity" pursuant to F.A.C. Rule 17-2.610(2). Initial and annual compliance tests shall be conducted using EPA Method 9 pursuant to F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A (July, 1989 version).

B. General

1. The Department's Central District shall be notified in writing at least 15 days prior to conducting compliance tests pursuant to F.A.C. Rule 17-2.700(2).

2. Test reports shall be submitted to the Department's Central District no later than 45 days after the last sampling run of each test is completed pursuant to F.A.C. Rule 17-2.700(7).

3. This project is subject to all applicable provisions of F.A.C. Chapters 17-2 and 17-4 and 40 CFR (July, 1989 version).

4. The sources are subject to the applicable provisions of F.A.C. Rules 17-2.240: Circumvention; 17-2.250: Excess Emissions; and, 17-4.130: Plant Operation-Problems.

5. Objectionable odors shall not be allowed off plant property pursuant to F.A.C. Rule 17-2.620(2).

6. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation prior to 60 days before the expiration of the permit (F.A.C. Rule 17-4.090).

7. An application for an operation permit must be submitted to the Department's Central District office at least 90 days prior to the expiration date of this construction permit. 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. Rules 17-4.055 and 17-4.220).

Issued this 15th day
of March, 1991

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

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

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

Interoffice Memorandum

TO: Steve Smallwood

FROM: Clair Fancy

DATE: March 8, 1991

SUBJ: Approval of Construction Permit AC 64-188871
R. R. Donnelley & Sons Company

Attached for your approval and signature is a permit prepared by the Bureau of Air Regulation for the above mentioned company to construct/install three new heatset web offset presses (SDM-001, 002, & 003), with dryers and enclosures, and a by-products pneumatic paper conveying system, with cyclones (3) and baghouse control systems. The new presses will share a TEC Systems, Inc. KATEC afterburner system. Also, the baghouse control system is a closed loop system. The facility will be located in South Daytona, Broward County, Florida.

Comments were received during the public notice period and were addressed in the Final Determination.

Day 90, after which this permit will be issued by default, is March 27, 1991.

I recommend your approval and signature.

CF/BM/t

attachments

Check Sheet

Company Name: R. R. Donnelley & Sons Company
Permit Number: AC 04-188871
PSD Number:
Permit Engineer:

Application:

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

Cross References:
- ☐
- ☐
- ☐

Intent:

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

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

Final Determination:

- ☑ Final Determination
- ☑ Signed Permit
- ☑ BACT or LAER Determination
  - ☐ Other

Post Permit Correspondence:

- ☑ Extensions/Amendments/Modifications
- ☐ Other

RR DONNELLEY & SONS COMPANY
South Daytona Division

3100 South Ridgewood Avenue
South Daytona, Florida 32119
Telephone (904) 322-2300
Fax (904) 322-2330

Mark C. Koenig
Vice President/Division Director

November 18, 1997

Mr. Alan Zahm, P.E.
Department of Air Resources Management
Florida Department of Environmental Protection
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

RE: Title V Draft Permit No. 1270088-001-AV

Dear Mr. Zahm:

Thank you for taking the time this morning to discuss the comments we submitted last week on the initial Title V Air Operation Permit, Draft Permit No. 1270088-001-AV, and your proposed revisions to the permit. We appreciate your prompt review of our comments and your willingness to incorporate the requested changes. Per our discussion, you have agreed to make most of the changes requested in our comments, but have not yet agreed to change the permit term (currently set at four years from date of permit issuance) or to modify Condition 13, which establishes compliance testing conditions.

Based on our very serious concerns regarding the language currently contained in Condition 13, we are requesting that the Florida DEP delay issuance of a proposed permit for our facility until such time as we have an opportunity to provide additional information to the agency and review with you our basis for requesting revision of this condition. We intend to document the historical basis for our proposed revisions to this condition, including previous DEP revisions to construction and operating permits for the presses in question; provide reasons as to why the draft permit language is unnecessary for this operation; describe the impracticability of performing tests as specified in the draft permit; and document the significant business impact of such a condition. This topic has been the subject of numerous discussions with DEP staff, beginning in late 1992, and we have successfully reached agreement with the agency on the appropriate requirements for conducting compliance tests. We anticipate submitting documentation supporting our requested change in the permit language within the next two weeks.

Once you have received our follow-up documentation and have had a chance to review it, we would like to take the opportunity to once again discuss this issue with you before a proposed permit is issued. In the meantime, if you have any questions or require additional information, please contact Mr. Warren Whitehead of my staff at 904-320-2670.

Sincerely,

Mark Koenig

Mark Koenig
Vice President, Division Director

BCC: Warren Whitehead
Gary Franz (DG-1)
Dale Kalina (DG-1)
Monica Roth (77-9)
Kate Delahunt

Post-it™ brand fax transmittal memo 7671 | # of pages ▸

To Al Linero Teresa	From Al Zahm
Co. DEP-Air	Co.
Dept. DARM	Phone #
Fax #	Fax # 897-5963

I N T E R O F F I C E M E M O R A N D U M

Date: 17-Feb-1993 11:19 EST
From: William Leffler TAL
LEFFLER_W
Dept: Air Resources Managemen
Tel No: 904/488-1344 657 6667(
SUNCOM: 278-1344

TO: Charles Collins ORL (COLLINS_C)
TO: Alan Zahm ORL (ZAHM_A)

Subject: RR Donnelley & Sons South Daytona AC 64-188871

Some observations on the draft permits sent by Mark Horne on February 9, 1993:

As to the amended construction permit:

The language "afterburner" is consistently showing up in spite of our insistence that this unit is an exhaust gas incinerator. While a semantic difference on the surface, it is necessary that the permit refer to an incinerator and to the incinerator rule. ok

Specific condition 3:
Rewrite to indicate the exception from the compliance tests applies when the permitee switches to low volatility alcohol ink and surface coating solvents as a substitute for the high VOC White Oil solvents in ink and thinners. ✓

Specific condition 7:
We discussed a low temperature shutdown point as well as the rolling average. I think that this value was 1320 degrees. Is the three hour rolling average a sufficient safeguard? where did the three hour figure come from? ?

Specific Condition 9:
Insert "including all inks, thinners, surface coatings, solvents and cleaning compounds" following "(VOC)". ✓

Specific condition 14:
We are back at the ambiguity of what constitutes the highest production rate possible. While we agree that a sustained and simultaneous 8 hour run of all three presses, is an unreasonable expectation, I want to see testing done under maximum performance rather than "representative" performance. pending

A second letter, dated February 10 submitted comments on the draft operating permit.

The draft Operation Permit needs to be titled so as to indicate the inclusion of the exhaust gas incineration system. The title given by Donnelley is vague. The second paragraph ought to include: "exhaust gas incinerator provided by" ahead of TEC Systems, Inc. It may also be appropriate to note that the facility may change over to non VOC inks following the sentence that limits VOC to 38% by weight.

Operating condition paragraph 2:
Needs to be specific as to ink and solvent rates. I really hate to keep flipping back and forth between construction and operating permits.

Operating Permit Emission Limits and Compliance Testing Para 7:
Call the KATEC unit an incinerator. O.K

Operation Permit Emission Limits & etc paragraph 10:
again call the KAYTEC unit an incinerator, and reference the ASP rule rather than the vague "approval in writing.

Operating Permit Emission Limit & etc paragraph 11:
add:"inks, thinners, surface coatings, solvents and cleaning compounds following (VOC at the beginning of the second line.

Operating Permit Emission Limits & etc paragraph 12:
What of the minimum incineration temperature and how did we arrive at a three hour average? ?

For faster presser running

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

February 10, 1993

Mr. Alan D. Zahm, P.E.
Supervisor, Permitting
Air Resources Management, Central District
Florida Department of Environmental Regulation
3319 Maguire Boulevard
Orlando, Florida 32803-3767

Subject: R.R. Donnelley & Sons Company South Daytona Division
Operation Permit (Construction Permit No. AC 64-188871)

Dear Mr. Zahm:

As you requested in our telephone conversation yesterday, please find enclosed as Attachment A our comments on the draft Operation Permit for our South Daytona Manufacturing Division. Attachment A reflects our understanding of the conditions in the draft Operation Permit as it appeared when photocopied by Mr. Dirk Hiler at your Central District office on February 2, 1993. Attachment A further depicts the changes to the draft Operation Permit that we request be made prior to its issuance. Deletions are depicted as strike-throughs, additions are underlined and bolded.

These changes are requested to more accurately reflect the Specific Conditions contained in the amended Construction Permit, as well as the understanding and agreements between the Division of Air Resources Management and R.R. Donnelley. Please let me know, prior to the issuance of the Operation Permit, if you do not agree to these changes. If there are any questions, please call me at (708) 719-6755.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

Mark A Horne

Mark A. Horne
Environmental Engineer

MAH:mh
FDER7
cc: C. Collins, FDER
C. Fancy, FDER
M. Harley, FDER
W. Leffler, FDER
B. Mitchell, FDER
J. Turner, FDER
G. Bender
H. Britton
D. Hiler
D. Kalina
L. Laya
C. Zielke

RECEIVED
FEB 15 1993
Division of Air
Resources Management

ATTACHMENT A

Florida Department of Environmental Regulation
Draft Operation Permit

Permittee: R.R. Donnelley & Sons Company
3100 S. Ridgewood Avenue
South Daytona, FL 32119-3548

Project: Presses No. SDM-001, 002 & 003, and a By-Products Pneumatic Paper Conveying System

This permit is issued under the provisions of Chapter(s) 403, Florida Statutes and Florida Administrative Code Rule(s) 17-2. 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:

The permittee shall operate presses No. SDM-001, 002, and 003 with dryers, enclosures, and a shared TEC Systems, Inc. KATEC thermal afterburner. The project also includes the operation of a by-products pneumatic paper conveying system, with three cyclones and baghouse control systems. The VOC content of the inks will be 38% or less by weight. Press SDM-001 includes a coating unit manufactured by Epic Products International Model SSDT. The facility also includes a magazine poly-bagging operation utilizing heat sealing.

The Source Industrial Code is:

- 2752 Lithographic Commercial Printing Facility

The Source Classification Code is:

- 4-05-004-11 Lithographic Tons Solvent in Ink

These sources are located at 3100 S. Ridgewood Ave. in South Daytona, Volusia County, Florida.

GENERAL CONDITIONS:

1. Objectionable odors shall not be allowed off plant property pursuant to Rule 17-296.320(2) F.A.C.

2. This permit does not preclude compliance with any applicable local permitting requirements and regulations.

SPECIFIC CONDITIONS:

OPERATING CONDITIONS

1. This source is permitted to operate continuously **(i.e. 8760 hours/yr)**.

2. The permitted materials **input rates** are as stated in the **construction permit** application. ~~The permitted ink application rate is 500 lbs/hour.~~

3. The sources are subject to the applicable provisions of F.A.C. Rules 17-210.650, Circumvention; 17-210.700, Excess Emissions; and 17-4.130, Plant Operation-Problems.

4. Permittee shall maintain an overtemperature alarm and automatic press shutdown system. The overtemperature limit shall be set to alarm at 1450°F with the presses to be shut down automatically one hour following the alarm if the overtemperature condition is not corrected. The high temperature limit shall be set at 1500°F, triggering an immediate shutdown of the presses.

5. The Permittee shall maintain a 180 minute combustion temperature rolling average of at least 1,350°F at the control point of the afterburner whenever any or all of the press systems (SDM-001, SDM-002, and SDM-003) are in operation.

6. The Permittee shall calibrate, maintain, and operate a device that continuously measures and records the combustion temperature at the control point of the afterburner.

EMISSION LIMITS & COMPLIANCE TESTING

7. Total VOC emissions from presses Nos. SDM-001, 002, and 003 shall not exceed 19.35 lbs/hr (84.8 TPY), which is based on minimum capture (dryer enclosures, etc.) efficiencies of 80% (inks), 90% (alcohol substitute) and 37.5% (cleaning solvent), and destruction (afteburner) efficiency of 95.0% pursuant to F.A.C. Rule 17-296.320(1). Total allowable VOC emissions from the KATEC thermal afterburner shall not exceed 14.35 lbs/hr (62.9 TPY).

8. Pursuant to F.A.C. Rule 17-296.401(1)(a), there shall be no visible emissions (5% opacity) from the afterburner except that visible emissions not exceeding 20% opacity shall be allowed for up to three minutes in any hour. The compliance test shall be conducted using DER Method 9 pursuant to F.A.C. Rule 17-297.420.

9. The demonstration of the capture efficiency of each dryer enclosure shall be conducted at least 90 days prior to permit expiration date using the U.S.EPA's VOC Capture Efficiency Test Procedure pursuant to F.A.C. Rule 17-297.450. The permittee shall notify the Department's Central District compliance section in writing of the protocol that will be used for the capture efficiency demonstration at least 60 days prior to compliance testing. However, the requirements of this condition are not applicable as long as low volatility alcohol substitutes are being used, such as ethylene glycol and ethylene glycol n-butyl ether (butyl cellosolve).

10. The compliance test for the actual destruction efficiency (comparison of the inlet and outlet concentrations) of the KATEC thermal afterburner shall be conducted at least 90 days prior to the permit expiration date using EPA Method 25A, pursuant to F.A.C. Rule 17-297 and 40 CFR 60, Appendix A (July, 1989 version). Other test methods may be used as long as prior Department approval has been granted in writing.

11. The Permittee shall maintain a log of the quantity of volatile organic compounds (VOC) used on a monthly basis. The reference method for determining the VOC content of each material shall be EPA Method 24 (Note: vendor specifications, data sheets, etc. are acceptable).

12. Pursuant to F.A.C. Rule 17-210.700 the Permittee shall submit a quarterly report containing the cause and corrective action to the Department's Central District compliance section when:

    - Any press system was operating and the **180 minute** rolling average **of the thermal oxidizer combustion chamber** temperature was less than 1350°F**, or**

    - The KATEC thermal oxidizer's VOC input rate exceeded its maximum manufacture's design capacity and the temperature exceeded 1500°F.

13. Pursuant to F.A.C. Rule 17-4.160(14), the Permittee shall retain all monitoring records related to the requirements of this permit at the facility for three (3) years.

14. The Permittee shall conduct EPA 25A and DER Method 9 testing to demonstrate compliance with the applicable VOC and visible emission standards, respectively, at least 90 days prior to permit expiration date and whenever required by the Department pursuant to F.A.C. Rule 17-297.340(1)(c).

15. Compliance tests shall be conducted with the facility operating at the normal production rate, not to exceed the permitted limit.

16. The air compliance section of this office shall be notified at least fifteen (15) days in advance of the compliance test so that we can witness ~~them~~ **the test** (Rule 17-297.340(1)(i), F.A.C.).

17. The required test report shall be filed with this office as soon as practical but no later than 45 days after the last sampling run of each test is completed (Rule 17-297.570(2), F.A.C.).

18. Each calendar year on or before March 1, **the permittee shall** submit for each source, an Annual Operations Report DER Form 17-210.900(4) for the preceding calendar year.

EXPIRATION DATE

19. An operation permit renewal must be submitted at least 60 days prior to the expiration date of this permit (Rule 17-4.090, F.A.C.).

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

February 9, 1993

Mr. Alan D. Zahm, P.E.
Supervisor, Permitting
Air Resources Management, Central District
Florida Department of Environmental Regulation
3319 Maguire Boulevard
Orlando, Florida 32803-3767

Subject: R.R. Donnelley & Sons Company South Daytona Division
Operation Permit (Construction Permit No. AC 64-188871)

Dear Mr. Zahm:

As discussed in our February 5, 1993 telephone conversation with Mr. John Turner of your office, we request that the conditions in the proposed Operation Permit for our South Daytona Manufacturing Division be changed to mirror those in the current Construction Permit. A compilation of the Specific Conditions (Section A) in the Construction Permit, as amended, is included as Attachment A.

As you know, we have held extensive discussions with and have provided detailed documentation to the FDER Division of Air Resources Management describing our operations and demonstrating the performance of our emissions control system. On December 10, 1992, we met with Messrs. Clair Fancy, Michael Harley and William Leffler in Tallahassee to resolve the issue of the VOC transfer rate limitation that was to be imposed upon our facility. As a result of that meeting, an additional Specific Condition (A.6) was agreed upon which requires the installation of an automatic warning and press shutdown system, the purpose of which is to limit our VOC transfer rate to that which is described in our Construction Permit Application. A warning alarm will be triggered if the maximum permitted VOC input rate is approached, and the presses will be automatically shut down if this rate is exceeded, thereby creating an automatic and verifiable cap on our operations. Please refer to the letter amending the Construction Permit, from Mr. Clair Fancy to Mr. Carl Zielke, dated December 24, 1992, as well as the background letters referenced therein.

The Specific Conditions contained in the amended Construction Permit are designed to ensure compliance with FDER requirements, and reflect the understanding and agreements between the Division of Air Resources Management and R.R. Donnelley. It seems clear that the Specific Conditions in the Operation Permit should be the same as, or at least consistent with, the Specific Conditions in the Construction Permit (Rule 17-2.210(1) and (2)(a); see also Rule 17-2.500(6)). To the extent that the Construction Permit conditions are complete, there should be no need to change them. Any changes will necessitate further review by all parties and will further delay the issuance of the Operation Permit.

Please call me at (708) 719-6755 if there are any questions.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

Mark A Horne

Mark A. Horne
Environmental Engineer

MAH:mh
FDER6

cc: C. Collins, FDER
C. Fancy, FDER
M. Harley, FDER
W. Leffler, FDER
B. Mitchell, FDER
J. Turner, FDER
G. Bender
H. Britton
D. Hiler
D. Kalina
L. Laya
C. Zielke

ATTACHMENT A

SPECIFIC CONDITIONS:

A. SDM-001, 002, 003: Presses

1. Continuous operation is permitted (i.e., 8760 hrs/yr).

2. Total VOC emissions from presses Nos. SDM-001, 002, & 003, shall not exceed 19.35 lbs/hr (84.8 TPY), which is based on minimum capture (dryer enclosures, etc.) efficiencies of 80% (inks), 90% (alcohol substitute) and 37.5% (cleaning solvent), and destruction (afterburner) efficiency of 95% pursuant to F.A.C. Rule 17-296.320(1). Total allowable VOC emissions from the KATEC thermal afterburner shall not exceed 14.35 lbs/hr (62.9 TPY).

3. The initial and subsequent demonstrations of the capture efficiency of each dryer enclosure shall be conducted using the U.S. EPA's VOC Capture Efficiency Test Procedure pursuant to F.A.C. Rule 17-297.450. The Permittee shall notify the Department's Central District in writing of the protocol that will be used for the capture efficiency demonstration at least 60 days prior to compliance testing. However, the requirements of this condition are not applicable as long as low volatility alcohol substitutes are being used, such as ethylene glycol and ethylene glycol n-butyl ether (butyl cellosolve).

4. The initial and subsequent compliance tests for the actual destruction efficiency (comparison of the inlet and outlet concentrations) of the KATEC thermal afterburner shall be conducted using EPA Method 25A, pursuant to F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A (July, 1989 version). Other test methods may be used as long as prior Department approval has been granted in writing.

5. Pursuant to F.A.C. Rule 17-296.401(1)(a), there shall be no visible emissions (5% opacity) from the afterburner except that visible emissions not exceeding 20% opacity shall be allowed for up to three minutes in any hour. Initial and subsequent compliance tests shall be conducted using DER Method 9 pursuant to F.A.C. Rule 17-297.420.

6. Permittee shall install an overtemperature alarm and automatic press shutdown system. The overtemperature limit shall be set to alarm at 1450^{o}F, with the presses to be shut down automatically one hour following the alarm if the overtemperature condition is not corrected. The high temperature limit shall be set at 1500^{o}F, triggering an immediate shutdown of the presses.

7. The Permittee shall maintain a rolling 3-hour average combustion chamber temperature of at least 1350^{o}F at the control point of the afterburner whenever any or all of the press systems (SDM-001, SDM-002, and SDM-003) are in operation. For the purposes of this permit, an hour shall be each period of sixty consecutive minutes.

SPECIFIC CONDITIONS: (Continued)

8. The Permittee shall install, calibrate, maintain, and operate a device that continuously measures and records the combustion temperature at the control point of the afterburner.

9. The Permittee shall maintain a log of the quantity of volatile organic compounds (VOC) used on a monthly basis. The reference method for determining the VOC content of each material shall be EPA Method 24 (Note: vendor specifications, data sheets, etc. are acceptable).

10. Pursuant to F.A.C. Rule 17-210.700, the Permittee shall submit a full written quarterly report to the Department's Central District when:

    - o one or more press systems were operating and the rolling 3-hour average temperature was less than 1,350^{o}F, the cause of the low temperature, and the corrective actions taken; or,

    - o the KATEC thermal oxidizer's VOC input rate exceeded its maximum manufacturer's design capacity and the temperature exceeded 1500^{o}F; and, the corrective actions taken.

11. Pursuant to F.A.C. Rule 17-4.160(14), the Permittee shall retain all monitoring records related to the requirements of construction permit, No. AC 64-188871, and shall retain the records at the facility for a period of three (3) years.

12. Permittee shall conduct EPA 25A and DER Method 9 testing to demonstrate compliance with the applicable VOC and visible emission standards, respectively, prior to obtaining an operation permit and with each subsequent renewal of an operation permit; and, as may be ordered by the Department pursuant to F.A.C. Rule 17-297.340(1)(c).

13. Pursuant to F.A.C. Rule 17-297.570(2), the Permittee shall submit the EPA Method 25A and DER Method 9 test reports to the Department's Central District Office no later than 45 days after the last sampling run of each test is completed.

14. Compliance tests shall be conducted with the facility operating at the highest production rates possible, under conditions that are representative of the performance and operational rates of the facility, and within its permitted limit.

P 062 921 953

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to	Carl Zielke
Street and No.	RR Donnelley & Sons
P.O., State and ZIP Code	Daytona, FL
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date	1-13-93

AC 64-188871

PS Form 3800, June 1991

PS Form 3811, July 1983 447-845

SENDER: Complete items 1, 2, 3 and 4.

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

1. ☐ Show to whom, date and address of delivery.
2. ☐ Restricted Delivery.

3. Article Addressed to:
CARL W. Zielke, VP + DD
RR Donnelley & Sons Co
3100 S Ridgewood Ave
S. Daytona, FL 32119-3548

4. Type of Service:	Article Number
☐ Registered ☐ Insured ☑ Certified ☐ COD ☐ Express Mail	P 062 921 953

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X C. Payne

7. Date of Delivery
1-20-93

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

DOMESTIC RETURN RECEIPT

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

January 14, 1993

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Carl W. Zielke
V.P. & Division Director
R. R. Donnelley & Sons Co.
3100 S. Ridgewood Ave.
South Daytona, Florida 32119-3548

Dear Mr. Zielke:

Re: Amendment to Construction Permit No. AC 64-188871

The Department has reviewed the comments made in Mr. Mark Horne's letter with enclosure received on January 11, 1993. Based on the comments, the following shall be changed and/or added:

A. AC 64-188871: SPECIFIC CONDITIONS

a. No. A.3.:

FROM: The initial and subsequent demonstration of the capture efficiency of each dryer enclosure shall be conducted using the U.S. EPA's VOC Capture Efficiency Test Procedure pursuant to F.A.C. Rule 17-297.450. The permittee shall notify the Department's Central District in writing of the protocol that will be used for the capture efficiency demonstration at least 60 days prior to compliance testing. However, the requirements of this condition are not applicable as long as high molecular weight alcohol substitutes are being used.

TO: The initial and subsequent demonstrations of the capture efficiency of each dryer enclosure shall be conducted using the U.S. EPA's VOC Capture Efficiency Test Procedure pursuant to F.A.C. Rule 17-297.450. The permittee shall notify the Department's Central District in writing of the protocol that will be used for the capture efficiency demonstration at least 60 days prior to compliance testing. However, the requirements of this condition are not applicable as long as low volatility alcohol substitutes are being used, such as ethylene glycol and ethylene glycol n-butyl ether (butyl cellosolve).

b. No. A.7.:

FROM: The Permittee shall maintain a rolling 3-hour average combustion temperature of 1,350°F at the point of incineration in the afterburner whenever any or all of the press systems (SDM-001, SDM-002, and SDM-003) are in operation. For the purposes of this permit, an hour shall be each period of sixty consecutive minutes.

TO: The Permittee shall maintain a rolling 3-hour average combustion temperature of at least 1,350°F at the control point of the afterburner whenever any or all of the press systems (SDM-001, SDM-002, and SDM-003) are in operation. For the purposes of this permit, an hour shall be each period of sixty consecutive minutes.

c. No. A.8.:

FROM: The permittee shall install, calibrate, maintain, and operate a device that continuously measures and records the combustion temperature at the point of incineration in the afterburner.

TO: The permittee shall install, calibrate, maintain, and operate a device that continuously measures and records the combustion temperature at the control point of the afterburner.

c. No. A.10.:

FROM: Pursuant to F.A.C. Rule 17-210.700, the Permittee shall submit a full written quarterly report to the the Department's Central District when:

- o one or more press systems were operating and the rolling 3-hour average temperature was less than 1,350°F, the cause of the low temperature, and the corrective actions taken; and,
- o the KATEC thermal oxidizer's VOC input rate exceeded its maximum manufacturer's design capacity and the temperature exceeded 1500°F; and, the corrective actions taken.

TO: Pursuant to F.A.C. Rule 17-210.700, the Permittee shall submit a full written quarterly report to the the Department's Central District when:

- o one or more press systems were operating and the rolling 3-hour average temperature was less than 1,350°F, the cause of the low temperature, and the corrective actions taken; or,

- o the KATEC thermal oxidizer's VOC input rate exceeded its maximum manufacturer's design capacity and the temperature exceeded 1500°F; and, the corrective actions taken.

B. Attachment to be Incorporated:

o Mr. Mark Horne's letter with enclosure received January 11, 1993.

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 (F.S.). 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 amendment 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, F.S.

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 Amendment File Number(s) 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 request/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 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.

This letter amendment must be attached to the construction permit, No. AC 64-188871, and shall become a part of the permit.

Sincerely,

Howard L. Rhodes

Howard L. Rhodes
Director
Division of Air Resources
Management

HLR/RBM/rbm

Attachment

cc: C. Collins, CD
D. Beason, Esq., DER
M. Horne, RRD&SC

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

January 8, 1993

Mr. Clair H. Fancy, P.E.
Chief, Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Reference: Letter from Mr. Howard L. Rhodes to Mr. Carl W. Zielke, dated December 24, 1992 - Amendment to Construction Permit No. AC 64-188871

Dear Mr. Fancy:

As discussed with Mr. Bruce Mitchell of your office, we request that the permit conditions contained in the above referenced letter be amended as described below. Please note that deletions are depicted as strike-throughs, while additions are underlined and bolded. The purpose of these amendments is to reflect the current language of Specific Condition A.3 (as amended June 4, 1991), and to improve the clarity of Specific Conditions A.7, A.8, and A.10. The requested amendments are as follows:

A. AC 64-188871: SPECIFIC CONDITIONS

a. No. A.3.:

The initial and subsequent demonstrations of the capture efficiency of each dryer enclosure shall be conducted using the U.S. EPA's VOC Capture Efficiency Test Procedure pursuant to F.A.C. Rule 17-297.450. The permittee shall notify the Department's Central District in writing of the protocol that will be used for the capture efficiency demonstration at least 60 days prior to compliance testing. However, the requirements of this condition are not applicable as long as ~~high molecular weight~~ **low volatility** alcohol substitutes are being used**, such as ethylene glycol and ethylene glycol n-butyl ether (butyl cellosolve)**.

e. No. A.7.:

The Permittee shall maintain a rolling 3-hour average combustion temperature of **at least** 1,350°F at the **control** point of ~~incineration in~~ the afterburner whenever any or all of the press systems (SDM-001, SDM-002 and SDM-003) are in operation. For the purposes of this permit, an hour shall be each period of sixty consecutive minutes.

f. No. A.8.:

The permittee shall install, calibrate, maintain, and operate a device that continuously measures and records the combustion temperature at the **control** point of ~~incineration in~~ the afterburner.

h. No. A.10.:

Pursuant to F.A.C. Rule 17-210.700, the Permittee shall submit a full written quarterly report to the Department's Central District when:

- o one or more press systems were operating and the rolling 3-hour average temperature was less than 1,350°F, the cause of the low temperature, and the corrective actions taken; ~~and~~ **or**,
- o the KATEC thermal oxidizer's VOC input rate exceeded its maximum manufacturer's design capacity and the temperature exceeded 1500°F; and, the corrective actions taken.

If there are any questions, please call me at (708) 719-6755.

Sincerely,

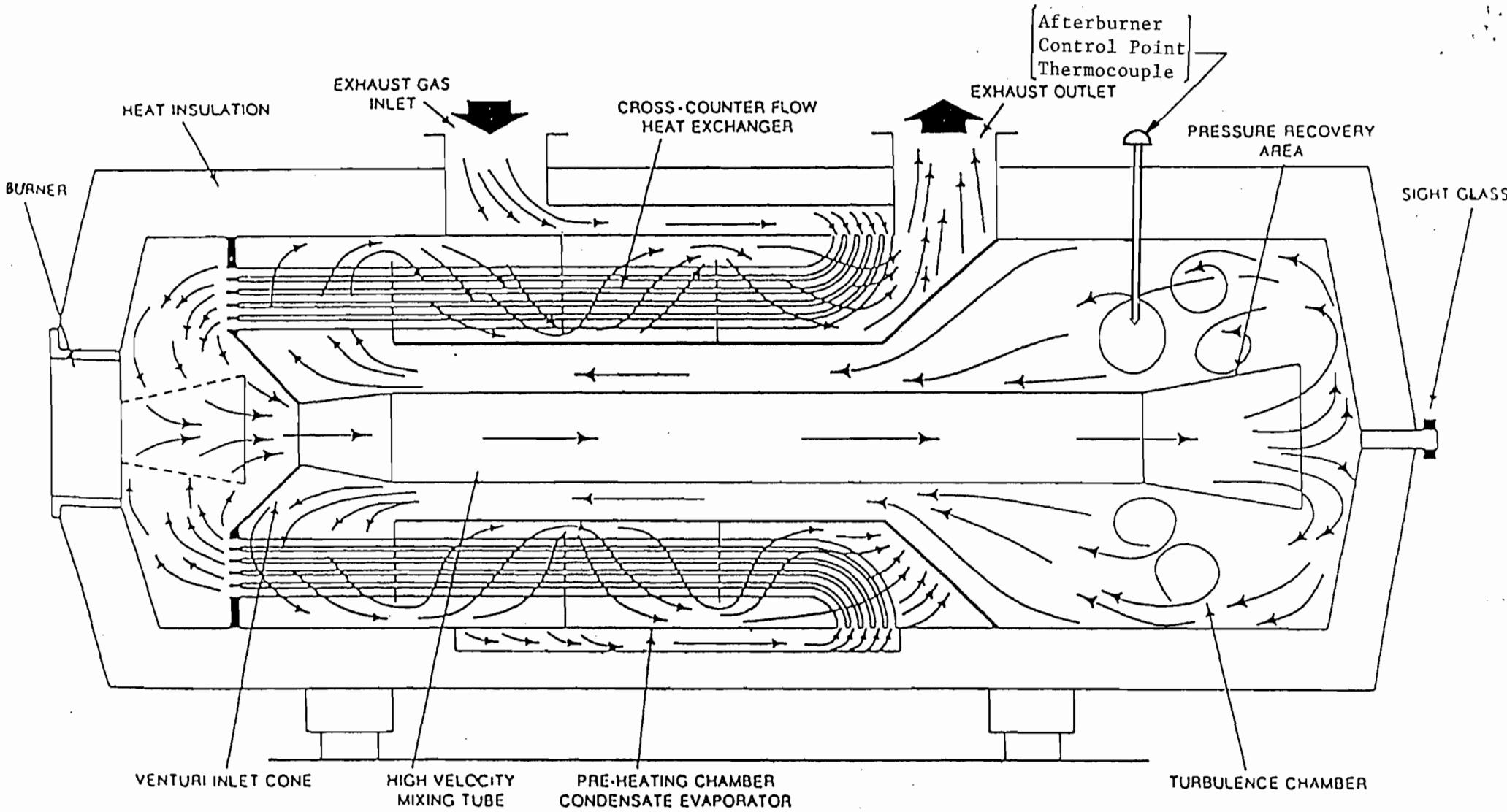
R.R. DONNELLEY & SONS COMPANY

Mark A Horne

Mark A. Horne
Environmental Engineer

MAH:mh
FDER5

cc: C. Collins, FDER
B. Mitchell, FDER
G. Bender
H. Britton
D. Hiler
C. Zielke



Recuperative-Type Thermal Afterburner

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: Howard L. Rhodes

FROM: Clair Fancy CHY

DATE: January 11, 1993

SUBJ: Approval of an Amendment to a Construction Permit
AC 64-188871
R.R. Donnelley & Sons Company

Attached for your approval and signature is an amendment to a construction permit prepared by the Bureau of Air Regulation for the above referenced company. The purpose of the amendment is to finalize language and improve clarity of some Specific Conditions.

R.R. Donnelley & Sons Company is a minor VOC emitting facility, consisting of three new printing presses, whose exhaust will be controlled using a thermal afterburner system. The facility is located at 3100 S. Ridgewood Ave., South Daytona, Volusia County, Florida.

I recommend your approval and signature.

HLR/BM/rbm

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

January 8, 1993

RECEIVED
JAN 11 1993
Division of Air
Resources Management

Mr. Clair H. Fancy, P.E.
Chief, Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Reference: Letter from Mr. Howard L. Rhodes to Mr. Carl W. Zielke, dated December 24, 1992 - Amendment to Construction Permit No. AC 64-188871

Dear Mr. Fancy:

As discussed with Mr. Bruce Mitchell of your office, we request that the permit conditions contained in the above referenced letter be amended as described below. Please note that deletions are depicted as strike-throughs, while additions are underlined and bolded. The purpose of these amendments is to reflect the current language of Specific Condition A.3 (as amended June 4, 1991), and to improve the clarity of Specific Conditions A.7, A.8, and A.10. The requested amendments are as follows:

A. AC 64-188871: SPECIFIC CONDITIONS

a. No. A.3.:

The initial and subsequent demonstrations of the capture efficiency of each dryer enclosure shall be conducted using the U.S. EPA's VOC Capture Efficiency Test Procedure pursuant to F.A.C. Rule 17-297.450. The permittee shall notify the Department's Central District in writing of the protocol that will be used for the capture efficiency demonstration at least 60 days prior to compliance testing. However, the requirements of this condition are not applicable as long as ~~high molecular weight~~ **low volatility** alcohol substitutes are being used**, such as ethylene glycol and ethylene glycol n-butyl ether (butyl cellosolve)**.

e. No. A.7.:

The Permittee shall maintain a rolling 3-hour average combustion temperature of **at least** 1,350°F at the **control** point of ~~incineration in~~ the afterburner whenever any or all of the press systems (SDM-001, SDM-002 and SDM-003) are in operation. For the purposes of this permit, an hour shall be each period of sixty consecutive minutes.

f. No. A.8.:

The permittee shall install, calibrate, maintain, and operate a device that continuously measures and records the combustion temperature at the **control** point of ~~incineration in~~ the afterburner.

h. No. A.10.:

Pursuant to F.A.C. Rule 17-210.700, the Permittee shall submit a full written quarterly report to the Department's Central District when:

- one or more press systems were operating and the rolling 3-hour average temperature was less than 1,350°F, the cause of the low temperature, and the corrective actions taken; ~~and~~ **or**,
- the KATEC thermal oxidizer's VOC input rate exceeded its maximum manufacturer's design capacity and the temperature exceeded 1500°F; and, the corrective actions taken.

If there are any questions, please call me at (708) 719-6755.

Sincerely,

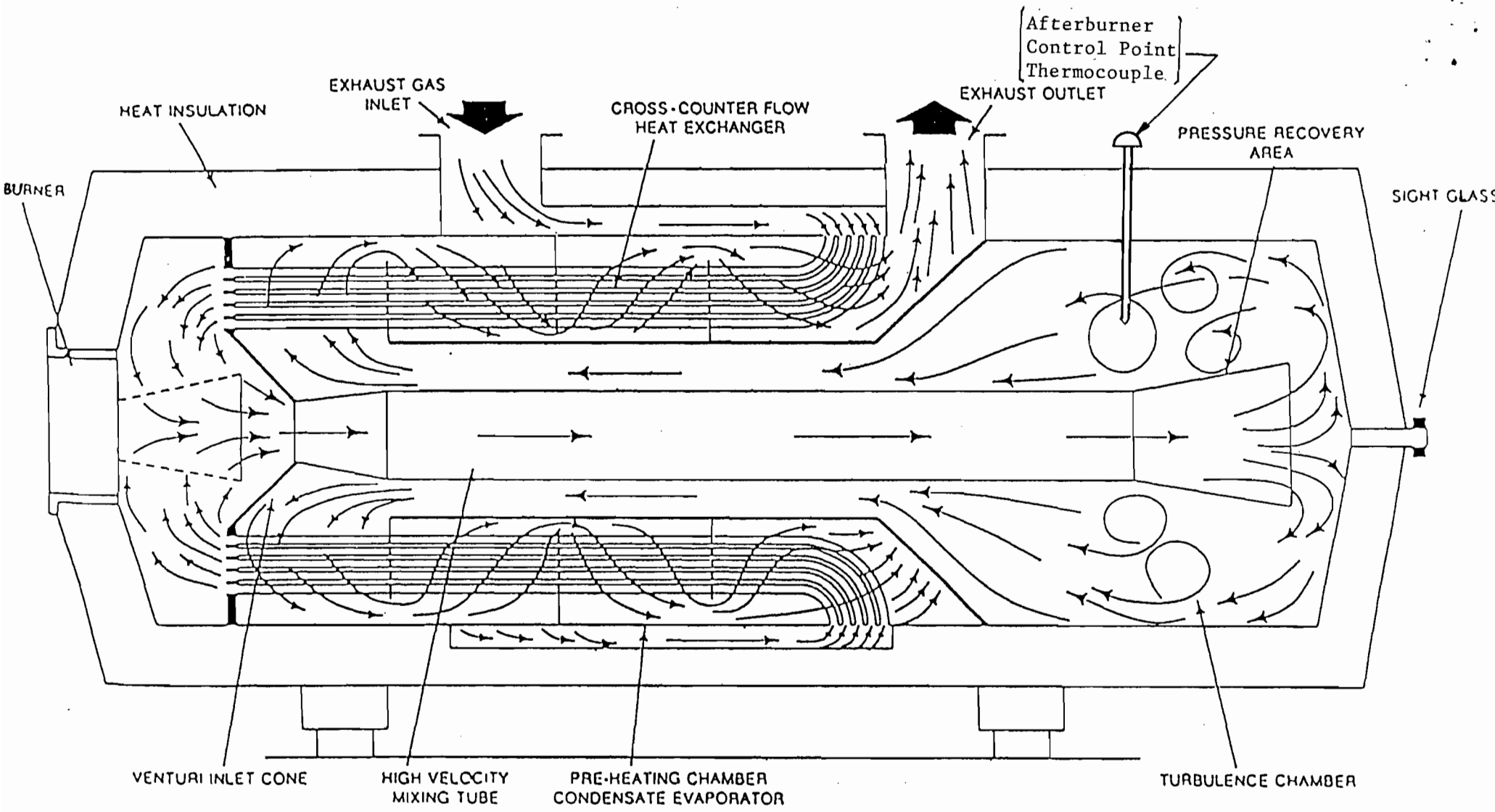
R.R. DONNELLEY & SONS COMPANY

Mark A Horne

Mark A. Horne
Environmental Engineer

MAH:mh
FDER5

cc: C. Collins, FDER
B. Mitchell, FDER
G. Bender
H. Britton
D. Hiler
C. Zielke



Recuperative-Type Thermal Afterburner

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

I, also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr, Carl W. Zielke
V. P. & Division Director
R. R. Donnelley & Sons Co.
3100 S. Ridgewood Ave.
South Daytona, FL 32119-3548

4a. Article Number
P 062 922 019

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
12-28-92

5. Signature (Addressee)

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

6. Signature (Agent)
C. Payne

PS Form **3811**, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

P 062 922 019

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to: Mr. Carl W. Zielke, R. R. Donnelley & Sons	
Street and No.: 3100 S. Ridgewood Ave.	
P.O., State and ZIP Code: S. Daytona, FL 32119-3548	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date: Mailed: 12-24-92 Permit: AC 64-188871	

PS Form **3800**, June 1991

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

December 24, 1992

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Carl W. Zielke
V.P. & Division Director
R. R. Donnelley & Sons Co.
3100 S. Ridgewood Ave.
South Daytona, Florida 32119-3548

Dear Mr. Zielke:

Re: Amendment to Construction Permit No. AC 64-188871

The Department has reviewed the letters from Mr. Gerald J. Bender and you dated December 11 and 16, respectively; also included, a facsimile received December 23 from Mr. Mark Horne. Based on these documents and discussions with Messers. Horne and Bender, the following shall be changed and/or incorporated:

A. AC 64-188871: SPECIFIC CONDITIONS

a. No. A.3.:

FROM: The initial and annual demonstration of the capture efficiency of each dryer enclosure shall be conducted using the U.S. EPA's "Guidelines for Developing a State Protocol for the Measurement of Capture Efficiency" (attached). The permittee shall notify the Department's Central District in writing of the protocol that will be used for the capture efficiency demonstration at least 60 days prior to compliance testing. However, the requirements of this condition are not applicable as long as high molecular weight alcohol substitutes are being used.

TO: The initial and subsequent demonstrations of the capture efficiency of each dryer enclosure shall be conducted using the U.S. EPA's VOC Capture Efficiency Test Procedure pursuant to F.A.C. Rule 17-297.450. The permittee shall notify the Department's Central District in writing of the protocol that will be used for the capture efficiency demonstration at least 60 days prior to compliance testing. However, the requirements of this condition are not applicable as long as high molecular weight alcohol substitutes are being used.

b. No. A.4.:

FROM: Initial and annual compliance tests for the actual destruction efficiency (comparison of the inlet and outlet concentrations) of the KATEC thermal afterburner shall be conducted using EPA Method 25A, pursuant to F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A (July, 1989 version). Other test methods may be used as long as prior Department approval has been granted in writing.

TO: The initial and subsequent compliance tests for the actual destruction efficiency (comparison of the inlet and outlet concentrations) of the KATEC thermal afterburner shall be conducted using EPA Method 25A, pursuant to F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A (July, 1989 version). Other test methods may be used as long as prior Department approval has been granted in writing.

c. No. A.5.:

FROM: The KATEC thermal afterburner is subject to the visible emissions standard of "less than 20% opacity" pursuant to F.A.C. Rule 17-2.610(2). Initial and annual compliance tests shall be conducted using EPA Method 9 pursuant to F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A (July, 1989 version).

TO: Pursuant to F.A.C. Rule 17-296.401(1)(a), there shall be no visible emissions (5% opacity) from the afterburner except that visible emissions not exceeding 20% opacity shall be allowed for up to three minutes in any hour. Initial and subsequent compliance tests shall be conducted using DER Method 9 pursuant to F.A.C. Rule 17-297.420.

d. No. A.6.: (new)

Permittee shall install an overtemperature alarm and automatic press shutdown system. The overtemperature limit shall be set to alarm at 1450°F, with the presses to be shut down automatically one hour following the alarm if the overtemperature condition is not corrected. The high temperature limit shall be set at 1500°F, triggering an immediate shutdown of the presses.

e. No. A.7.: (new)

The Permittee shall maintain a rolling 3-hour average combustion temperature of 1,350°F at the point of incineration in the afterburner whenever any or all of the press systems (SDM-001,

SDM-002 and SDM-003) are in operation. For the purposes of this permit, an hour shall be each period of sixty consecutive minutes.

f. No. A.8.: (new)

The Permittee shall install, calibrate, maintain, and operate a device that continuously measures and records the combustion temperature at the point of incineration in the afterburner.

g. No. A.9.: (new)

The Permittee shall maintain a log of the quantity of volatile organic compounds (VOC) used on a monthly basis. The reference method for determining the VOC content of each material shall be EPA Method 24 (Note: vendor specifications, data sheets, etc. are acceptable).

h. No. A.10.: (new)

Pursuant to F.A.C. Rule 17-210.700, the Permittee shall submit a full written quarterly report to the the Department's Central District when:

- o one or more press systems were operating and the rolling 3-hour average temperature was less than 1,350°F, the cause of the low temperature, and the corrective actions taken; and,

- o the KATEC thermal oxidizer's VOC input rate exceeded its maximum manufacturer's design capacity and the temperature exceeded 1500°F; and, the corrective actions taken.

i. No. A.11.: (new)

Pursuant to F.A.C. Rule 17-4.160(14), the Permittee shall retain all monitoring records related to the requirements of construction permit, No. AC 64-188871, and shall retain the records at the facility for a period of three (3) years.

j. No. A.12.: (new)

Permittee shall conduct EPA 25A and DER Method 9 testing to demonstrate compliance with the applicable VOC and visible emission standards, respectively, prior to obtaining an operation permit and with each subsequent renewal of an operation permit; and, as may be ordered by the Department pursuant to F.A.C. Rule 17-297.340(1)(c).

k. No. A.13.: (new)

Pursuant to F.A.C. Rule 17-297.570(2), the Permittee shall submit the EPA Method 25A and DER Method 9 test reports to the Department's Central District office no later than 45 days after the last sampling run of each test is completed.

l. No. A.14.: (new)

Compliance tests shall be conducted with the facility operating at the highest production rates possible, under conditions that are representative of the performance and operational rates of the facility, and within its permitted limit.

B. Attachments to be Incorporated
- o Mr. Gerald J. Bender's letter received December 15, 1992.
- o Mr. Carl W. Zielke's letter received December 18, 1992.
- o Mr. Mark Horne's FAX received December 23, 1992.

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 (F.S.). 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 amendment 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, F.S.

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 Amendment File Number(s) 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 request/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 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, Florida Administrative Code.

This letter amendment must be attached to the construction permit, No. AC 64-188871, and shall become a part of the permit.

Sincerely,

for Howard L. Rhodes
Director
Division of Air Resources
Management

HLR/RBM/rbm

Attachments

cc: C. Collins, CD
D. Beason, Esq., DER
M. Horne, RRD&SC

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

December 11, 1992

Mr. Clair H. Fancy, P.E.
Chief, Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Ref: 1. R.R. Donnelley & Sons Company South Daytona Manufacturing Division - Construction Permit No. AC 64-188871

2. FDER & R.R. Donnelley & Sons Co. Meeting - December 10, 1992

Dear Mr. Fancy:

As we agreed during yesterday's meeting at your office in Tallahassee:

1. Presses SDM-001, SDM-002 and SDM-003 at our South Daytona Division will not be operated at rates exceeding those specified in the construction permit application, dated November 1, 1990. Verification of this limitation shall be provided by the addition of Specific Condition A.6 to the above referenced construction permit as follows:

   A.6. The permittee shall install an over temperature alarm and automatic press shutdown system to ensure that the KATEC thermal oxidizer is not operated at a VOC input rate which exceeds its maximum manufacturer's design capacity. The over temperature limit shall be set to alarm at 1450°F, with the presses to be shut down automatically one hour following the alarm if the over temperature condition is not corrected. A second high temperature limit shall be set at 1500°F, triggering an immediate shutdown of the presses.

2. An annual compliance test of the thermal oxidizer VOC destruction efficiency is not required. This provision in the above referenced construction permit will be deleted. A compliance test will be performed under normal operational conditions following the installation of the new press (SDM-004) next year, and prior to the renewal of the operation permit every 5 years.

3. Our request for an Alternate Surrogate Procedure (FAC 17-2.700(3)) for compliance demonstration is hereby withdrawn.

We appreciated the opportunity to meet with you and your staff members yesterday. If there are any questions please call me at (708)719-6705 or Mark Horne at (708)719-6755.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

Gerald J. Bender
Vice President Environmental Affairs

GJB:mh
FDER1

cc: C. Collins, FDER
M. Harley, FDER
W. Leffler, FDER
H. Britton
D. Hiler
M. Horne
C. Zielke

The Lakeside Press

R·R·DONNELLEY & SONS COMPANY

SOUTH DAYTONA MANUFACTURING DIVISION
3100 SOUTH RIDGEWOOD AVENUE
SOUTH DAYTONA, FLORIDA 32119
904-322-2300

CARL ZIELKE
VICE PRESIDENT
DIVISION DIRECTOR

December 16, 1992

Mr. A. Alexander, P.E.
Central District Director
Florida Department Of Environmental Regulation
3319 Maguire Boulevard
Orlando, FL 32803-3767

References: 1. R.R. Donnelley & Sons Company South Daytona Division, Construction Permit No. AC 64-188871
2. Resolution Meeting-FDER and R.R. Donnelley & Sons Co., December 10, 1992, Tallahassee, Florida
3. Your Certified Letter, Dated December 10, 1992

Dear Mr. Alexander:

Your above referenced letter states that the compliance test conducted at our facility on September 16, 1992, was unacceptable. Please be informed that as a result of the resolution meeting held with the Bureau of Air Regulation in Tallahassee on December 10, 1992, the aforementioned test has been accepted by the FDER as demonstrating compliance with the conditions and requirements of the above referenced construction permit over the full operating range of the equipment, as described in our construction permit application. We understand that the Bureau of Air Regulation in Tallahassee will be contacting you to resolve this issue, and that another compliance test is not required.

We look forward to receiving our operation permit in the near future. Should you or your staff have any further questions, please call me at 904/322-2320 or Mr. Gerald Bender ad 708/719-6705.

Sincerely,
R.R. DONNELLEY & SONS CO.

Carl W. Zielke
Vice President &
Division Director

RECEIVED
DEC 18 1992
Division of Air
Resources Management

CWZ:bw

cc: C. Fancy, FDER
M. Harley, FDER
W. Leffler, FDER
G. Bender
H. Britton
D. Hiler
M. Horne

THE LAKESIDE PRESS
R.R. DONNELLEY & SONS COMPANY
Environmental Affairs Department
750 WARRENVILLE ROAD
LISLE, ILLINOIS U.S.A. 60532-4345

FAX PROBLEMS
(708)719-6691

FROM FAX NO.
(708)719-6711

TELEFAX TRANSMISSION

DATE: 12.23.92

FAX NO.: 9-1-904-922-6979

TO: Bruce Mitchell

FROM: Mark Horne TELEPHONE: (708) 719-6755

SUBJECT: _____

NUMBER OF PAGES (INCLUDING THIS PAGE): 2

MESSAGE:

Bruce,

As discussed.

Mark

Suggested Re-Wording of Draft Condition II-9

9. Compliance testing shall be conducted with the facility operating at the highest production rates possible, under conditions that are representative of the performance and operational rates of the facility, and within its permitted limit.

STATE OF FLORIDA
DEPT. OF ENVIRONMENTAL REGULATION
2600 BLAIR STONE ROAD TALLAHASSEE, FLORIDA 32399

INTER OFFICE MEMORANDUM

TO : Clair Fancy

FROM : WILLIAM LEFFLER PE 488-1344

DATE : December 15, 1992

RE : RR Donnelley/ Lakeside Press

It appears that during our "resolution conference" with Donnelley last Friday, and quite beyond our knowledge, Alex Alexander issued a letter disapproving Donnelley's incinerator test.

I am still very comfortable with our decision that the test information furnished as a result of the September 16 teat when considered with the manufacturers type trials of the incinerator demonstrate a very high probability that the entire system will operate within the applicable regulatory limits (as opposed to the more stringent permit limits). The "type tests" on the "afterburner indicate 99+% efficiency with similar inlet hydrocarbon concentration (2250 ppm) and similar retention time (.70 seconds).

I see this case as a matter of determining "what constitutes a test demonstrating reasonable assurance that the system will operate within the law" as opposed to a "low-tech" "show me" test. It is my opinion that the combination of the low statistical probability of the high inlet hydrocarbon concentrations and the manufacturer's tests on the similar afterburner at various inlet VOC concentrations, I can conclude with a reasonable degree of scientific certainty that the emissions at operating maximum operating conditions will not exceed the permitted 19.35 lb/hour (84.8 TPY) and the combustion efficiency will be greater than 90% as required by 17-210.400 and 17-212.400.

The applicants teat information indicated that the incidence of a 3 press - 3 hour simultaneous run was perhaps once every 2.5 weeks (or so). Because of the low statistical probability of all three presses printing high ink density print jobs in long simultaneous runs, the test that was submitted probably represents a run wherein the high concentrations are 80 to 90 percent of the highest long run concentrations. Short term higher concentrations up to the design 2250 ppm would seemingly have to come from extremely rare printjobs or perhaps from solvent spills. If we were to require additional information of the applicant it would be a formal statistical analysis of print runs and ink consumption. I do not feel this would be meaningful in view of the level of exhaust hydrocarbons produced during

the test run (1650 ppm). A statistical analysis on the basis of a years operation and ink consumption per week would be more meaningful if we were to become experts on this narrow aspect of the printing industry.

The applicant also requested an asp to test for emissions and combustion efficiency every five years. we decided that this is reasonable as is the use of method 25a which gives a very "conservative" VOC determination because it includes various methane series hydrocarbons which are not methane reactive. I do not see that an ASP is appropriate when the operating certificate has not yet been issued. it would be appropriate to include these matters in the operating permit when issued.

I am concerned with stepping over the district's boundary and overruling Alex Alexander's discretion. How do we resolve this?

DRAFT

December 15, 1992

Mr. A. Alexander, P.E.
Central District Director
Florida Department of Environmental Regulation
3319 Maguire Boulevard
Orlando, Florida 32803-3767

References: 1. R.R. Donnelley & Sons Company South Daytona Division, Construction Permit No. AC 64-188871
2. Resolution Meeting - FDER and R.R. Donnelley & Sons Co., December 10, 1992, Tallahassee, Florida
3. Your Certified Letter, Dated December 10, 1992

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We look forward to receiving our operation permit in the near future. Should you or your staff have any further questions, please call me at (904) 322-2320 or Mr. Gerald Bender at (708) 719-6705.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

DRAFT

Carl W. Zielke
Vice President & Division Director

CWZ:mh
FDER2
cc: C. Fancy, FDER
M. Harley, FDER
W. Leffler, FDER
G. Bender
H. Britton
D. Hiler
M. Horne

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

December 11, 1992

Mr. Clair H. Fancy, P.E.
Chief, Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Ref: 1. R.R. Donnelley & Sons Company South Daytona Manufacturing Division - Construction Permit No. AC 64-188871

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Dear Mr. Fancy:

As we agreed during yesterday's meeting at your office in Tallahassee:

1. Presses SDM-001, SDM-002 and SDM-003 at our South Daytona Division will not be operated at rates exceeding those specified in the construction permit application, dated November 1, 1990. Verification of this limitation shall be provided by the addition of Specific Condition A.6 to the above referenced construction permit as follows:

   A.6. The permittee shall install an over temperature alarm and automatic press shutdown system to ensure that the KATEC thermal oxidizer is not operated at a VOC input rate which exceeds its maximum manufacturer's design capacity. The over temperature limit shall be set to alarm at 1450°F, with the presses to be shut down automatically one hour following the alarm if the over temperature condition is not corrected. A second high temperature limit shall be set at 1500°F, triggering an immediate shutdown of the presses.

2. An annual compliance test of the thermal oxidizer VOC destruction efficiency is not required. This provision in the above referenced construction permit will be deleted. A compliance test will be performed under normal operational conditions following the installation of the new press (SDM-004) next year, and prior to the renewal of the operation permit every 5 years.

3. Our request for an Alternate Surrogate Procedure (FAC 17-2.700(3)) for compliance demonstration is hereby withdrawn.

We appreciated the opportunity to meet with you and your staff members yesterday. If there are any questions please call me at (708)719-6705 or Mark Horne at (708)719-6755.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

Gerald J. Bender
Vice President Environmental Affairs

GJB:mh
FDER1

cc: C. Collins, FDER
M. Harley, FDER
W. Leffler, FDER
H. Britton
D. Hiler
M. Horne
C. Zielke

THE LAKESIDE PRESS
R.R. DONNELLEY & SONS COMPANY
Environmental Affairs Department
750 WARRENVILLE ROAD
LISLE, ILLINOIS U.S.A. 60532-4345

FAX PROBLEMS
(708)719-6691

FROM FAX NO.
(708)719-6711

TELEFAX TRANSMISSION

DATE: 12/8/92

FAX NO.: 9-1-904-922-6979

TO: Bill Leffler

FROM: Mark Horne TELEPHONE: (708) 719-6755

SUBJECT: TEC Systems & RRD Variable VOC Loading Tests

NUMBER OF PAGES (INCLUDING THIS PAGE): 6

MESSAGE:

Bill,

Thanks for the map. See you Thurs. @ 1:30 p.m.

Mark

TEC SYSTEMS
Quality Products Today...
With Tomorrow's Technologies

TEC SYSTEMS
W. R. Grace & Co. - Conn.
830 Prosper Road, P.O. Box 30
De Pere, Wisconsin 54115-0030

(414) 336-5715
TELEFAX (414) 336-3404

December 4, 1992

Mr. Gerald J. Bender
Vice-President Environmental Affairs
R.R. Donnelley & Sons Co.
750 Warrenville Road
Lisle, IL 60532-1358

Subject: KATEC® Clean-up at Various Hydrocarbon Concentrations

Reference: TEC Report Dated February 27, 1992
R.R.D. Report Dated August 24, 1992

Dear Mr. Bender:

You have inquired as to the availability of theoretical information and empirical data describing the VOC control performance of KATEC thermal oxidizers. Specifically, you were interested in data relating output concentrations to input loadings over the design range of the equipment.

Theoretically, in the presence of a large and relatively constant excess concentration of oxygen, the outlet hydrocarbon concentration should be directly proportional to the inlet concentration of hydrocarbon for a given temperature and residence time. Thus, the conversion or clean-up efficiency should remains constant as the hydrocarbon concentration is increased or decreased.

Empirical corroboration of the relatively constant clean-up is presented in the TEC report dated February 27, 1992, based on test results obtained at TEC on February 25, 1992. The unit tested at TEC is similar to a KATEC except that the heat exchanger is separate from the combustion chamber. The design residence time is 0.7 seconds. This unit was designed for 7000 scfm, but hydrocarbon clean-up at 10,000 scfm was the same.

Note that the VOC destruction efficiency remained at 99.98%, regardless of whether the system was at average (850 ppm C_3) or heavy (1950 ppm C_3) VOC loadings. This is typical of all of our thermal oxidizers. As inlet VOC concentrations increase, outlet concentrations remain essentially flat or actually decrease. Note that this is what was observed during the August, 1992, performance test on the KATEC 2000 Series thermal oxidizer at your Crawfordsville, Indiana plant.

In the KATEC oxidizer on a heatset dryer, a large excess of oxygen is always present because the dryer/oxidizer system operates at a typical design maximum loading of about 2300 ppmv C_3. Stoichiometric oxygen/hydrocarbon mixtures are near 42,000 ppmv C_3.

As discussed with Mark Horne of your staff, the design maximum VOC loading for your South Daytona system is approximately 2250 ppm C_3 at full rated flow. At this concentration, an automatic warning and shutdown of the printing lines will occur in order to prevent an over-temperature condition in the oxidizer.

Please let me know if there are any questions.

Sincerely,

TEC SYSTEMS,
W.R. Grace & Co.-Conn.

Richard Carman

Richard A. Carman
Senior Research Associate

RAC.vsd

cc: D.L. Hansen, Engineering
R.S. Potter, Engineering
R.J. Schwartz, Engineering
J.A. Kudronowicz, Sales/Marketing
G.L. Brown, R&D
G.R. Newkirk, Sales
Mr. Mark Horne, R.R. Donnelley & Sons

Cote FILE

07758

The Lakeside Press

R R DONNELLEY & SONS COMPANY

Inter-Office Correspondence

TO: D. Kalina LOCATION: L-2 DATE: 08-24-92

FROM: C. Baskin, D. Cote, T. Ogawa LOCATION: L-2

SUBJECT: **The Effect of VOC Loading on the Outlet Concentrations and Destruction Efficiencies of a Thermal Afterburner**

INTRODUCTION

The objectives of this test on August 5, 1992 and subject of this report were to determine the effect of VOC loading on the outlet concentrations and destruction efficiencies of a thermal afterburner. A solvent spraying device, simulating a running press , was used to vary the inlet concentrations. The test was run on a TEC/KATEC thermal afterburner in the Crawfordsville Mfg. Division of R.R. Donnelley & Sons Company in Crawfordsville, Indiana. This afterburner controls dryer emissions from one heatset web offset printing press, CTM 262.

DETAILS

The TEC/KATEC thermal afterburner was a model # 2-046 with a 4600 SCFM capacity. The press was a four unit, 61" wide, Mitsubishi BT-S press equipped with one TEC CP-311 dryer.

The CTM 262 dryer was heated to a 330F set point. The test was run without a web. The afterburner was tested at a 1350F and a 1400F combustion chamber control temperature. The measured flowrate was 4450 SCFM.

Heated Magie Bros. 470 oil was sprayed through the paper screen access door located on CTM262's dryer exhaust duct. The spray nozzle assembly was Spraying System's #N23(air atomizing type). It incorporated air cap #125340 and fluid cap #60100. Total hydrocarbons into the afterburner were varied from 400ppmC3 to 2200ppmC3. At approx. 2200 ppmC3 the afterburner went overtemp. At this condition, the fresh air intake damper went wide open, letting in cool ambient air, resulting in a low duct pressure warning/shutdown mode. Testing was discontinued at this point.

The following parameters were monitored as the inlet concentrations (i.e. oil flowrate) were slowly stepped up: total hydrocarbons(THC) into and out of the A/B, the A/B fan frequency, the A/B control temperature and pressure, the duct fire, the A/B gas usage, and the oil temperature. Further details can be found in APPENDIX II(Test Equipment & Procedures)

VOC Loading Test(08-05-92)
P2

RESULTS

All data collected during the test can be found in APPENDIX I(Raw Data). The pertinent results are listed below.

CONCENTRATIONS @ 1350F Control Temp.			CONCENTRATIONS @ 1400 F Control Temp			FLOW-RATE
Total Hydro-carbons into A/B [ppmC3]	Total Hydro-carbons out of A/B [ppmC3]	Total Hydro-carbon Cleanup Eff. [%]	Total Hydro-carbons into A/B [ppmC3]	Total Hydro-carbons out of A/B [ppmC3]	Total Hydro-carbon Cleanup Eff. [%]	[SCFM]
550	13	97.6	400	5	98.8	4,450
800	10	98.8	800	4	99.5	4,450
1250	8	99.4	1200	4	99.7	4,450
1600	7	99.6	1600	4	99.8	4,450
1700	6	99.6	-	-	-	4,450
1900	7	99.6	-	-	-	4,450
2000	7	99.7	-	-	-	4,450
2100	6	99.7	2200	4	99.8	4,450
550 to 2100ppmC3	8ppmC3 ave	99.3%	400 to 2200ppmC3	4ppmC3 ave	99.5%	4,450 SCFM

DISCUSSION

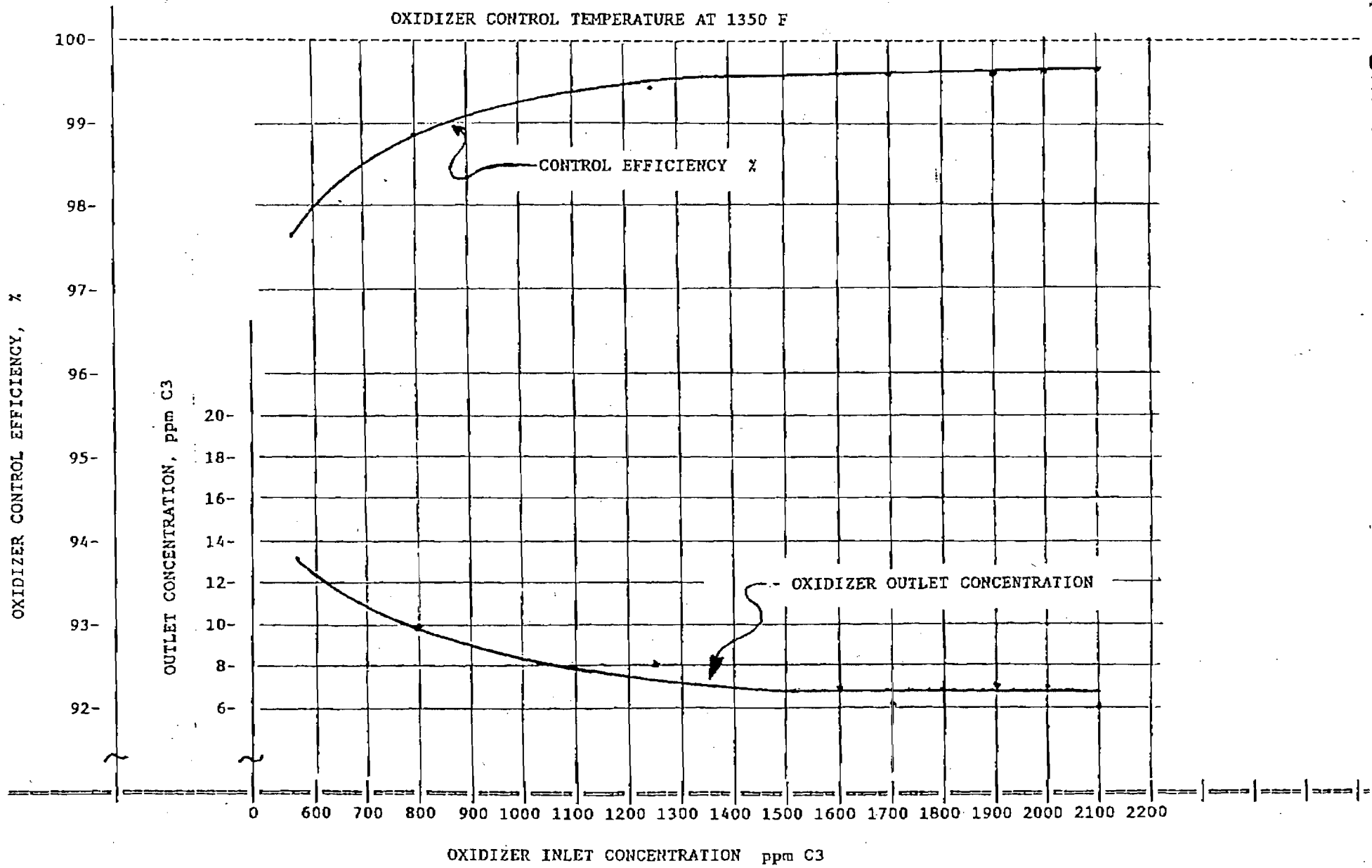
The thermal A/B outlet concentrations and destruction efficiencies remained relatively constant at 1350F and 1400F as inlet concentrations were varied from 400 to 2200 ppmC3. Testing was conducted at full flow. These results support our contention that emission reduction testing at less than full loading of a thermal afterburner will provide representative data on system performance.

cc: G. Bender, B. Voliva

262SPRAY
TO/to

THERMAL OXIDIZER VOC LOADING TEST 8/05/92

R.R. DONNELLEY & SONS CO. CRAWFORDSVILLE MANUFACTURING DIVISION



The Lakeside Press

R·R·DONNELLEY & SONS COMPANY

SOUTH DAYTONA MANUFACTURING DIVISION
3100 SOUTH RIDGEWOOD AVENUE
SOUTH DAYTONA, FLORIDA 32119
904-322-2300

CARL ZIELKE
VICE PRESIDENT
DIVISION DIRECTOR

December 16, 1992

Mr. A. Alexander, P.E.
Central District Director
Florida Department Of Environmental Regulation
3319 Maguire Boulevard
Orlando, FL 32803-3767

References: 1. R.R. Donnelley & Sons Company South Daytona Division, Construction Permit No. AC 64-188871
2. Resolution Meeting-FDER and R.R. Donnelley & Sons Co., December 10, 1992, Tallahassee, Florida
3. Your Certified Letter, Dated December 10, 1992

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We look forward to receiving our operation permit in the near future. Should you or your staff have any further questions, please call me at 904/322-2320 or Mr. Gerald Bender ad 708/719-6705.

Sincerely,
R.R. DONNELLEY & SONS CO.

Carl W. Zielke
Vice President &
Division Director

CWZ:bw

cc: C. Fancy, FDER
M. Harley, FDER
W. Leffler, FDER
G. Bender
H. Britton
D. Hiler
M. Horne

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

November 24, 1992

Mr. Clair H. Fancy, P.E.
Chief, Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: December 10, 1992 Meeting in Tallahassee

Dear Mr. Fancy:

Confirming our telephone conversation today, Gerald Bender, Harold Britton and I plan to meet with you, Michael Harley and Howard Rhodes in Tallahassee on December 10, 1992 at 3:30 p.m. The purpose of the meeting is to discuss the FDER's permitting policies relative to the proposed alternate compliance procedure and the operation permit for our South Daytona Manufacturing Division.

Specifically at issue is the VOC transfer rate limitation the FDER intends to impose in the operation permit. Since we have submitted test results and technical data to the FDER which demonstrate that our facility is in full compliance with the requirements of the construction permit under worst case operational conditions, we maintain that the imposition of such a limitation is unnecessary and not warranted. We want to discuss this issue and come to an agreement which resolves the current impasse.

We look forward to meeting with you on December 10. Please call me at (708) 719-6755 if there are any questions.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

Mark A. Horne

Mark A. Horne
Environmental Engineer

MAH:mh
ASP8
cc: M. Harley, FDER
H. Rhodes, FDER
J. Turner, FDER
A. Zahm, FDER
G. Bender
H. Britton
C. Zielke

THE LAKESIDE PRESS
R.R. DONNELLEY & SONS COMPANY
Environmental Affairs Department
750 WARRENVILLE ROAD
LISLE, ILLINOIS U.S.A. 60532-4345

FAX PROBLEMS
(708)719-6691

FROM FAX NO.
(708)719-6711

TELEFAX TRANSMISSION

DATE: 11/2/92

FAX NO.: 9-1-904-922-6979

TO: Michael Harley

FROM: Mark Horne TELEPHONE: (708) 719-6755

SUBJECT: Letter Attached

NUMBER OF PAGES (INCLUDING THIS PAGE): 3

MESSAGE:

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

November 2, 1992

Mr. Michael D. Harley, P.E.
Administrator, Emissions Monitoring Section
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Ref: Letter from Carl Zielke to Michael Harley, September 30, 1992

Dear Mr. Harley:

At the request of Carl Zielke, and as a follow-up to his letter referenced above, you and I have tried to make arrangements for a meeting in Tallahassee to discuss the FDER's permitting policies relative to the proposed alternate compliance procedure and the operation permit for our South Daytona Manufacturing Division. At issue is the VOC transfer rate limitation the FDER intends to impose in the operation permit. We have yet to determine a meeting date.

Subsequently, on October 20, 1992, I discussed the status of the operation permit with John Turner and Alan Zahm of the FDER's Central District office in Orlando. Alan stated that, in accordance with FDER policy, it is their intent to impose an operating rate limitation in the operation permit consistent with the rate demonstrated during the compliance test, if that rate was less than 90% of the maximum rate shown in the construction permit. We have submitted compliance test results and technical data to the FDER which demonstrates that our facility is in full compliance with the conditions and requirements of the construction permit under worst case operational conditions. Therefore, we continue to maintain that the imposition of such a limitation is unnecessary and not warranted.

To resolve this issue, we request a meeting in Tallahassee with you, your Bureau Chief and Division Director at your earliest convenience.

R·R DONNELLEY & SONS COMPANY

Gerald Bender, Vice President Environmental Affairs, Harold Britton, our environmental counsel, and I will plan to attend the meeting. We suggest meeting dates of November 5, 12 or 19, 1992. Please call me as soon as you can at (708) 719-6755 to make arrangements and set a date.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

Mark A. Horne

Mark A. Horne
Environmental Engineer

MAH:mh
ASP7

cc: C. Fancy, FDER
H. Rhodes, FDER
J. Turner, FDER
A. Zahm, FDER
G. Bender
H. Britton
C. Zielke

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

November 2, 1992

Mr. Michael D. Harley, P.E.
Administrator, Emissions Monitoring Section
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

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Sincerely,

R.R. DONNELLEY & SONS COMPANY

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Environmental Engineer

MAH:mh
ASP7

cc: C. Fancy, FDER
H. Rhodes, FDER
J. Turner, FDER
A. Zahm, FDER
G. Bender
H. Britton
C. Zielke

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

July 21, 1992

Mr. Michael D. Harley, P.E.
Senior Compliance Engineer
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: R.R. Donnelley & Sons Company South Daytona Division
Request for Alternate Procedure (Permit No. AC 64-188871)
Comments on Draft Order (ASP-91-K-01)

Dear Mr. Harley:

As we discussed, please find enclosed our comments on the subject draft Order for an alternate compliance demonstration procedure. Our comments are structured in the same format as the draft Order to facilitate referencing. Included as the final attachment (Attachment D) is a re-draft of the Order reflecting our comments. After you have had a chance to review our comments, we would be willing to schedule a meeting to discuss these issues in more detail. If there are any questions or you wish to set up a meeting, please call me at (708) 719-6755.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

Mark A. Horne
Environmental Engineer

MH:mh
ASP3
cc: G. Bender
H. Britton
D. Cote
D. Hiler
D. Kalina
L. Laya
J. Pennington, FDER
C. Zielke

Comments on Draft Order (ASP-91-K-01) for Alternate Compliance Procedure
R.R. Donnelley & Sons Company South Daytona Division
Construction Permit No. AC 64-188871

FINDINGS OF FACT

1. As correctly described, R.R. Donnelley & Sons Company (the Petitioner) has requested that the annual compliance test requirement (thermal afterburner VOC destruction efficiency and exhaust opacity) be replaced by an alternate compliance procedure that requires the afterburner combustion chamber temperature be maintained at a minimum 1350°F, and that this temperature be continuously monitored and recorded.

   Continuous monitoring of the combustion chamber temperature is specified by EPA as a method of ensuring that control devices are operating properly. In explaining their requirements for continuously monitoring the combustion chamber temperature of afterburners controlling heatset web offset printing operations, EPA has stated (55 FR at 26829):

   > "USEPA believes that the monitoring requirements are feasible and necessary to ensure that controls maintain their intended level of operation.... The subject printing plants...should have continuous monitors to ensure that their control equipment is operating properly."

   Clearly the EPA understands that the combustion chamber temperature of an afterburner is a direct indicator of its VOC destruction performance and that, as we have petitioned, the monitoring and recording of this temperature provides a continuous surrogate demonstration of proper control performance and compliance. We agree, and continue to contend, that this level of demonstration is far preferable to, and more meaningful than, an annual 3 hour compliance test.

2. Comments are the same as in Item 1 above.

3. No comment necessary.

4. A distinction must be made between an incinerator, which is a device for the burning of wastes (as defined under F.A.C. Rule 17-2.100), and an afterburner, which is an add-on pollution control device designed to control the air emissions from a source. EPA defines these terms as follows (40 CFR 52.741(a)(3)):

   Afterburner means a control device in which materials in gaseous effluent are combusted.

   Control Device means equipment (such as an afterburner or adsorber) used to remove or prevent the emission of air pollutants from a contaminated exhaust stream.

Incinerator means a combustion apparatus in which refuse is burned.

The EPA has made a clear distinction between afterburners (thermal and catalytic oxidizers) as pollution control devices and incinerators as devices for the burning of refuse. We request that the FDER also make this important distinction.

5. It is inappropriate to use manufacturer's advertising literature as an authoritative reference for equipment specifications. Although the TEC Systems, Inc. advertising literature supplied to the FDER does use the term "incinerator" to describe the apparatus, these devices are not intended for refuse burning and therefore should not be categorized as incinerators for regulatory purposes. The TEC Systems, Inc. KATEC Model 2-174 thermal afterburner (or thermal oxidizer) is a pollution control device, not a waste or refuse incinerator.

6. No comment necessary.

7. We agree that the compliance test conducted on October 2, 1991 (test report dated November 1, 1991) at our South Daytona facility clearly demonstrates that the thermal afterburner is capable of properly controlling the emissions from our heatset web offset press dryers, and that there are no visible emissions from the control device. However, we do not agree that our thermal afterburner is an incinerator, therefore F.A.C. Rule 17-2.600(1)(a) should not apply to this control device.

8. We agree that the blend of fuel and air is sufficient to achieve complete combustion of the VOCs entering the control device. In fact, at the maximum 355 lb/hr three-press VOC transfer rate (as shown in our construction permit application), the air:fuel ratio is still more than 18 times above that required for stoichiometric conditions (Attachment A). A VOC input rate above this limit would cause an immediate and automatic shutdown of the presses due to an unacceptable temperature rise at the heat exchanger (Attachment B). Therefore, the air:fuel ratio will always be more than 18 times greater than stoichiometric.

   We disagree with the statement that the compliance demonstration test followed by operation of the afterburner at a minimum 1350^{o}F does not preclude conditions resulting in incomplete combustion and associated visible emissions. The key parameters necessary to ensure complete combustion **(Residence Time, Combustion Chamber Temperature, and Turbulence)** will be at their worst case during the compliance test. Therefore the VOC destruction efficiency of the afterburner during the compliance test will be representative of the minimum VOC destruction efficiency during normal operation. A discussion of these combustion parameters follows:

Residence Time - The afterburner control system will be compliance tested at the maximum nominal air flow rate of 17,400 scfm (3 presses @ 5,800 scfm each), resulting in a minimum residence time of 0.71 seconds in the combustion chamber. At lower air flow rates, the residence time will be increased, thereby increasing the VOC destruction efficiency of the afterburner. Therefore, based on retention time, the VOC destruction efficiency of the afterburner during the full load compliance test will be representative of the minimum VOC destruction efficiency during continuous operation.

Combustion Chamber Temperature - The afterburner combustion chamber temperature will be set at 1350°F during the compliance test, and will be maintained at or above 1350°F thereafter whenever any of the presses are in operation. Therefore, based on temperature, the VOC destruction efficiency of the afterburner during the compliance test will be representative of the minimum VOC destruction efficiency during normal operation. Multiple (6) thermocouples are installed in the combustion chamber to ensure that the control temperature is always maintained. In addition, the control temperature will be continuously monitored and recorded to provide documented confirmation of this parameter.

Turbulence - The afterburner has been designed to create an air flow pattern which ensures good mixing and complete oxidation throughout the combustion chamber. This parameter is based on the physical configuration of the afterburner. Of course, the turbulence is somewhat greater at higher air flow rates than at lower air flow rates; however, the configuration of the system is such that good mixing and complete oxidation is ensured for all situations, including the lowest single press flow rate as was demonstrated during the initial compliance test.

In summary:

a. The air:fuel ratio will always be more than an order of magnitude above stoichiometric.

b. The residence time cannot be reduced below that demonstrated at maximum volumetric flow rate.

c. Temperature will be set at the 1350°F minimum and will be continuously maintained, monitored and recorded.

d. The configuration of the combustion chamber ensures good turbulence and mixing at all exhaust flow rates.

Since the key parameters will be at their worst case during the compliance demonstration, and the combustion chamber temperature will be continuously maintained, monitored and recorded, we contend that the compliance test and ensuing temperature monitoring ensures continued compliance with permit conditions and emission standards.

9. The lowest destruction efficiency observed during the October 2, 1991, compliance test was 99.5%, well above the required level of 95%. Determination of the destruction efficiency under the worst case situation of three presses operating simultaneously will be conducted this fall following the start-up of the third press. We are confident that this worst case control efficiency will again be well above 95%.

10. Comment same as Item 9.

CONCLUSIONS OF LAW

1. No comment necessary.

2. We do not dispute the Department's right to require quantitative measurement of VOCs and visible emissions pursuant to F.A.C. Rule 17-2.700(2)(b). However, as stated in the rule, this requirement should be imposed only if, after investigation, it is believed that any applicable emission standard or permit condition is being violated. As was clearly demonstrated during the October 2, 1991, compliance test, our facility is well within compliance of the control efficiency requirements, the mass emission limits, and the visibility limits specified in the construction permit. Future tests following the start-up of the third press will again demonstrate compliance with all permit conditions and emission standards. Therefore, the FDER should have no reason to believe that a violation exists.

3. We agree with this statement. The purpose of the proposed surrogate compliance demonstration method is to provide assurance **on a continuous basis** that the afterburner is being properly maintained and operated, and that the permit conditions and emission standards are being met.

4. We agree with this requirement.

5. For the previously stated reasons (Items 4 and 5 - Findings of Fact), we do not agree with the FDER's conclusion that our thermal afterburner is an incinerator, therefore our control system should not be subject to conditions that are applicable to incinerators.

6. Maintaining the minimum combustion chamber temperature demonstrated during the compliance test does provide a sufficient basis to ensure that the afterburner is being properly operated in order to minimize emissions and comply with applicable emission limits. Please refer again to the EPA position on continuous monitors (Item 1 - Findings of Fact), and to our comments in Item 8 - Findings of Fact.

7. The purpose of our request for an alternate compliance demonstration procedure is to obtain an order from the FDER that specifies continuous monitoring and recordkeeping of the afterburner temperature in lieu of the annual testing requirement, pursuant to F.A.C. Rule 17-2.700(3).

8. We agree to maintain all monitoring records for three years.

ORDER

1. The completion and start up of SDM-003 is scheduled for later this year. We agree to comply with all permit conditions and applicable provisions of the Florida Administrative Code, as well as the terms of an acceptable alternate compliance procedure, regardless of whether one, two or three presses are operating. But we again maintain that the visible emissions standard of F.A.C. Rule 17-2.600(1)(a) does not apply to our pollution control device, for it is not an incinerator.

2. We agree to the 1,350°F temperature requirement as part of an acceptable alternate compliance procedure, however we reiterate that the provisions of F.A.C. Rule 17-2.600(1)(a) do not apply.

3. No comment necessary.

4. Maintaining a daily log of **hourly** ink consumption is unreasonably burdensome, unwarranted and functionally impractical. Due to the nature of the materials, a minimum time frame of one month is necessary to obtain data that is accurate and useful. In addition, there is no such recordkeeping requirement in our construction permit, and we contend that such a requirement is not warranted for this alternate procedure. Finally, as stated in the preamble of the Chicago FIP, EPA concurs that **daily** recordkeeping is not necessary to demonstrate compliance (55 FR at 26829):

> "USEPA agrees that the daily VOM content of each coating and ink is not necessary for printing lines complying solely by the use of add-on control. The recordkeeping requirements specified in 52.741(h)(4)(iv)(B)(1) of the proposed rules have, therefore, been deleted."

We agree with EPA that **daily,** let alone **hourly,** records are unnecessary to demonstrate compliance with applicable emission limitations. We would be willing to maintain quarterly ink consumption records prorated to hourly consumption rates, if the FDER deems it to be necessary.

5. We request that this requirement be changed to require notification to the FDER of any periods of noncompliance, in lieu of the submittal of quarterly reports of the temperature monitoring data to the agency. Of course, all monitoring records would be maintained for a period of 3 years and would be available for FDER inspection.

6. We agree to perform all required and applicable compliance tests at the start up of SDM-003 under full load conditions (all three presses operating simultaneously), as described in the compliance test plan submitted May 21, 1991 and approved by the FDER on September 16, 1991. However, since, by nature, our operations do not generate any visible emissions, we request that any requirement for EPA (or DER) Method 9 visible emissions testing may be fulfilled by a State of Florida licensed Professional Engineer's certification that there are no visible emissions (zero percent opacity) during the compliance test periods. If any visible emissions are observed, an EPA (or DER) Method 9 test shall then be performed.

7. The construction permit for presses SDM-001, -002 and -003 contains no such provisions for compliance demonstration, nor does the approved compliance test plan. We previously had reached agreement with the FDER on an achievable and representative compliance test plan, and contend that the imposition of these new requirements is unreasonable and unwarranted. Operating all three presses simultaneously for three one-hour periods at 90 - 100% of their maximum VOC transfer rates is functionally impracticable and unnecessary. The reasons for this are as follows:

   A. The mechanical and operational complexities of these types of heatset web offset printing presses is such that frequent start-ups and shut-downs are typical. A recent analysis of multiple press operations at the South Daytona Division shows that the probability of achieving one hour of simultaneous 3-press operation is 0.0315 (Attachment C). Therefore, on average, it will require **2.4 weeks** @ 8 hrs/day, 5 days/wk to perform a compliance test consisting of three 60-minute test periods during which all three presses are continuously operating, as required under this provision of the draft order.

      Achieving and maintaining full and simultaneous operation of all three presses at steady state conditions for a shorter period of time (as agreed to in the compliance test plan) will provide data that is fully representative of the control system performance. The continuous and instantaneous response of EPA Method 25A will provide a complete rigorous characterization of the performance of the control system under all steady state and transient conditions, including the numerous start-ups and shut-downs that typify this type of printing operation. There is no benefit gained from requiring a continuous 60 minute test period at full load conditions when a complete characterization is achievable in smaller time

segments. As we explained under Item 8 - Findings of Fact, the functional simplicity of this type of thermal afterburner pollution control system is such that there is no variability in its performance as long as the combustion chamber temperature is maintained, which it will be. The combustion chamber temperature will be continuously monitored and recorded to provide documented confirmation of this.

B. While the construction permit application specifies the maximum VOC transfer rates that the presses could potentially achieve, the operation of **any** press (let alone all three simultaneously) at or near the maximum rate is rare and not sustainable. Our construction permit application specifies a maximum potential ink consumption rate of 280 lbs/hr/press. However, normal usage rates range between 125 and 150 lbs/hr/press. Attempting to operate the presses at 90 - 100% of their maximum VOC transfer rate would dramatically lower the probability of sustained press operation, thus lengthening the expected test period well beyond the 2.4 weeks that was previously described. The alternative, limiting press operations to a rate less than the maximum potential, would impose unacceptable and unwarranted production constraints on our facility, as there may be brief periods during which these production rates are required.

It is unnecessary to operate the three presses at 90 - 100% of the maximum VOC transfer rate in order to demonstrate the worst case scenario for destruction efficiency. As was described in our May 27, 1992, letter to the FDER, the worst case situation for determining afterburner control efficiency is at maximum volumetric flow rate (minimum residence time), and **lowest** VOC input concentration. Regardless of input loadings, the outlet concentration of the afterburner remains essentially constant, varying only from about 1 to 4 ppm as propane. The higher the inlet concentration, the higher the control efficiency; conversely, the lower the inlet concentration, the lower the control efficiency. Therefore, it is most difficult to demonstrate a high control efficiency at the lowest VOC inlet concentrations. To determine the maximum potential VOC mass emission rate, one need only extrapolate to the worst case emissions based on the measured control efficiency and the maximum potential VOC input rate.

8. Based on the comments in Item 7 above, and on the potential for the imposition of unreasonable operational constraints, this condition is not acceptable. The compliance test will properly demonstrate that all three presses can be operated simultaneously well within the limits of the construction permit and all applicable emission standards.

9. This provision implies that our facility is not in compliance unless there is a written finding issued by the FDER to the contrary. We object to this. We request that this provision be re-written to obviate the annual test requirement unless the District Director has reason to believe that our facility is in a situation of noncompliance, and a written request for a compliance test is then issued accordingly.

10. We agree to conduct a compliance test prior to each renewal of the operating permit, but we object to the test conditions specified in Item 7 for the reasons stated above.

11. The purpose of our request for an alternate compliance demonstration procedure is to obtain an order from the FDER that specifies continuous monitoring and recordkeeping of the afterburner temperature in lieu of an annual testing requirement, pursuant to F.A.C. Rule 17-2.700(3). We request that this provision be replaced by a requirement for initial testing upon completion of construction and prior to each operating permit renewal, at the test conditions previously agreed to in our compliance test plan.

12. The reference in this provision to F.A.C. Rule 17-2.700(8) appears to be in error. We believe the reference should be to F.A.C. Rule 17-2.700(7). We agree to comply with all test report requirements of F.A.C. Rule 17-2.700(7), as we did for the initial compliance test conducted last fall.

13. We agree to maintain all monitoring records for three years.

ATTACHMENT A

INK OIL (VOC) CHARACTERISTICS

The R.R. Donnelley & Sons Company South Daytona Division uses heatset web offset inks containing Magie oils (typical MSDS attached) which are saturated alkanes having an approximate molecular weight range of 198 - 207 lb/lb-mole.

Choosing a molecular weight of 205 lb/lb-mole, Magie oil can be represented, on average, as having the following molecular formula:

$$C_{14.5}H_{31}$$

STOICHIOMETRIC REQUIREMENTS

The stoichiometric oxidation equation for this oil molecule is as follows:

$$4\ C_{14.5}H_{31} + 89\ O_2 \longrightarrow 58\ CO_2 + 62\ H_2O$$

At sea level, dry air contains 20.95% O_2 by volume, so there is approximately 1 volume of O_2 in every 4.78 volumes of air. Therefore, 425 (= 89 x 4.78) volumes of air will provide the necessary amount of oxygen for complete oxidation of four volumes of Magie oil. The same stoichiometric equation is now written using air in place of oxygen:

$$4\ C_{14.5}H_{31} + 425\ Air \longrightarrow 58\ CO_2 + 62\ H_2O$$

The air to fuel ratio (A:F) for stoichiometric oxidation is:

$$A:F\ (volume\ basis) = (425 / 4) = 106 : 1$$

Therefore, each volume of Magie oil requires 106 volumes of air for stoichiometric oxidation.

AFTERBURNER A:F AT MAXIMUM VOC INPUT RATE

As shown in the construction permit application, the maximum 3-press VOC transfer rate is 355 lbs/hr, of which 286 lbs/hr is input to the afterburner. Using the same molecular weight as above (90% of the VOC stream is Magie oil) along with the maximum VOC input rate and corresponding air flow rate, the maximum VOC concentration in the dryer exhausts to the afterburner is calculated as follows:

Parameters:

Maximum VOC loading rate = 286 lbs/hr
Maximum afterburner air flow rate = 17,400 scfm
Molar volume @ 68°F = 385 ft^3/lb-mole
Molecular Weight of ink oil = 205 lbs/lb-mole

Maximum VOC Concentration to Afterburner:

$$\frac{286 \text{ lbs}}{\text{hr}} \times \frac{\text{lb-mole}}{205 \text{ lbs}} \times \frac{385 \text{ ft}^3}{\text{lb-mole}} \times \frac{\text{min}}{17400 \text{ ft}^3} \times \frac{\text{hr}}{60 \text{ min}} \times \frac{10^6}{10^6} = 514 \text{ ppm } C_{14.5}$$

Therefore the A:F at 514 ppm Magie oil is:

$$\text{A:F} = \frac{(1{,}000{,}000 - 514)}{514} = 1945 : 1$$

The ratio of the A:F at maximum VOC loading relative to stoichiometric is:

$$\frac{\text{A:F @ Max VOC Loading}}{\text{A:F @ Stoichiometric}} = \frac{1945}{106} = \underline{18.35}$$

Therefore, even at the maximum VOC loading rate, the A:F is more than 18 times greater than stoichiometric. The air to fuel ratio in the afterburner will always be far greater (by more than an order of magnitude) than stoichiometric.

SP3AA

MATERIAL SAFETY DATA SHEET

Magie Bros. Oil Company
A DIVISION OF PENNZOIL PRODUCTS COMPANY

I PRODUCT IDENTIFICATION

Manufacturer's Name	MAGIE BROTHERS OIL COMPANY
Address	9101 FULLERTON AVENUE P.O. BOX 1089 FRANKLIN PARK, ILLINOIS 60131-1089
Emergency Telephone No.	(713) 236-6070
Trade Name	MAGIESOL® 47 OIL
Synonyms	TECHNICAL WHITE OILS

CAS Number: 8042-47-5
MSDS Code: 000079

HMIS Hazard Identification

Degree of Hazard	Hazard Ratings
Health: 0	0 - Least
Fire: 1	1 - Slight
Reactivity: 0	2 - Moderate
	3 - High
	4 - Extreme

II INGREDIENTS

COMPONENT NAME CAS NUMBER	HAZARDOUS IN BLEND	PERCENTAGE MIN	PERCENTAGE MAX	COMPONENT EXPOSURE LIMITS	UNITS
TECHNICAL WHITE OILS 8042-47-5	NO		100.00	OSHA PEL ACGIH TLV	NO LIMIT NO LIMIT

BY: ENVIRONMENTAL SAFETY & HEALTH
(713) 546-6227

EFFECTIVE DATE: MARCH 18, 1992

DISCLAIMER OF WARRANTY:

THE INFORMATION CONTAINED HEREIN IS BASED UPON DATA AVAILABLE TO US, AND REFLECTS OUR BEST PROFESSIONAL JUDGEMENT. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY USE, OR ANY OTHER WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF SUCH DATA, THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, OR THAT ANY SUCH USE DOES NOT INFRINGE ANY PATENT. SINCE THE INFORMATION CONTAINED HEREIN MAY BE APPLIED UNDER CONDITIONS OF USE BEYOND OUR CONTROL AND WITH WHICH WE MAY BE UNFAMILIAR, WE DO NOT ASSUME ANY RESPONSIBILITY FOR THE RESULTS OF SUCH APPLICATION. THIS INFORMATION IS FURNISHED UPON THE CONDITION THAT THE PERSON RECEIVING IT SHALL MAKE HIS OWN DETERMINATION OF THE SUITABILITY OF THE MATERIAL FOR HIS PARTICULAR PURPOSE.

REQUIRED UNDER USDL SAFETY AND HEALTH REGULATIONS FOR SHIP REPAIRING, SHIPBUILDING, AND SHIPBREAKING (29 CFR 1915, 1916, 1917).

IV. EMERGENCY & FIRST AID PROCEDURES

EYE CONTACT	IMMEDIATELY FLUSH EYES WITH LARGE AMOUNTS OF WATER AND CONTINUE FLUSHING UNTIL IRRITATION SUBSIDES. IF MATERIAL IS HOT, TREAT FOR THERMAL BURNS AND TAKE VICTIM TO HOSPITAL IMMEDIATELY.
SKIN CONTACT	REMOVE CONTAMINATED CLOTHING. IF MATERIAL IS HOT, SUBMERGE INJURED AREA IN COLD WATER. IF VICTIM IS SEVERELY BURNED, REMOVE TO A HOSPITAL IMMEDIATELY.
INHALATION	THIS MATERIAL HAS A LOW VAPOR PRESSURE AND IS NOT EXPECTED TO PRESENT AN INHALATION EXPOSURE AT AMBIENT CONDITIONS.
INGESTION	DO NOT INDUCE VOMITING. DO NOT INDUCE VOMITING DUE TO ASPIRATION HAZARD. IF VOMITING OCCURS LOWER HEAD BELOW KNEES TO AVOID ASPIRATION. SEEK IMMEDIATE MEDICAL ATTENTION.

VI FIRE PROTECTION INFORMATION

FLASH POINT	215 F	TEST METHOD	PMCC
AUTOIGNITION TEMPERATURE	428 F	TEST METHOD	ASTM E-659
FLAMMABLE LIMITS IN AIR % BY VOL	LOWER 1.1	UPPER	6.0

EXTINGUISHING MEDIA	USE DRY CHEMICAL, FOAM, OR CARBON DIOXIDE.
SPECIAL FIRE FIGHTING PROCEDURES	WATER MAY BE INEFFECTIVE BUT CAN BE USED TO COOL CONTAINERS EXPOSED TO HEAT OR FLAME. CAUTION SHOULD BE EXERCISED WHEN USING WATER OR FOAM AS FROTHING MAY OCCUR, ESPECIALLY IF SPRAYED INTO CONTAINERS OF HOT, BURNING LIQUID.
UNUSUAL FIRE AND EXPLOSIVE CONDITIONS	DENSE SMOKE MAY BE GENERATED WHILE BURNING. CARBON MONOXIDE, CARBON DIOXIDE, AND OTHER OXIDES MAY BE GENERATED AS PRODUCTS OF COMBUSTION.

VII REACTIVITY DATA

STABILITY (THERMAL, LIGHT, ETC.)	STABLE	CONDITIONS TO AVOID	NONE
HAZARDOUS POLYMERIZATION	WILL NOT OCCUR	CONDITIONS TO AVOID	NONE
INCOMPATIBILITY MATERIALS TO AVOID	MAY REACT WITH STRONG OXIDIZING AGENTS.		
HAZARDOUS DECOMPOSITION PRODUCTS	NONE		

ATTACHMENT B

AFTERBURNER HEAT EXCHANGER OVERTEMPERATURE PROTECTION

To prevent damage to its heat exchanger, the TEC Systems KATEC Model 2-174 thermal afterburner is equipped with a high temperature limit cutoff. Under normal operating conditions, the presses are automatically and immediately shut down if a 250°F temperature rise is experienced in the afterburner resulting from the fuel value of the VOC input. This effectively limits the maximum VOC (Magie oil) concentration in the press dryer exhaust as follows:

Parameters:
- Maximum Temperature Increase = 250°F
- Specific Heat of Air @ 1400°F = 0.25 BTU/lb°F
- Molecular Weight of Dry Air = 28.9 lb/lb-mole
- Water Vapor Content of Exhaust = 2% by volume
- Specific Heat of Water Vapor @ 1400°F = 0.53 BTU/lb°F
- Molecular Weight of Water = 18 lb/lb-mole
- Molecular Weight of Magie Oil ($C_{14.5}$) = 205 lb/lb-mole
- Net Heat Value of Magie Oil = 17,850 BTU/lb

Specific Heat of Air Containing 2% Water Vapor:

$$(0.98 \times 0.25 \text{ BTU/lb}^{\circ}\text{F}) + (0.02 \times 0.53 \text{ BTU/lb}^{\circ}\text{F}) = 0.26 \text{ BTU/lb}^{\circ}\text{F}$$

Molecular Weight of Air Containing 2% Water Vapor:

$$(0.98 \times 28.9 \text{ lb/lb-mole}) + (0.02 \times 18 \text{ lb/lb-mole}) = 28.7 \text{ lb/lb-mole}$$

VOC Concentration at Which Presses and Afterburner Automatically Shut Down:

$$\frac{250^{\circ}\text{F}}{1} \times \frac{0.26 \text{ BTU}}{\text{lb}^{\circ}\text{F}} \times \frac{\text{lb}}{17850 \text{ BTU}} \times \frac{\text{lb-mole}}{205 \text{ lbs}} \times \frac{28.7 \text{ lb}}{\text{lb-mole}} \times \frac{10^6}{10^6} = 510 \text{ ppm } C_{14.5}$$

Note that the concentration at which the temperature limiting control automatically shuts the presses down (510 ppm $C_{14.5}$) directly coincides with the maximum permitted VOC input concentration (514 ppm $C_{14.5}$) calculated in Attachment A.

ATTACHMENT C

Analysis of South Daytona Division Press Operations Data

The following probabilities are based on a recent analysis of press operations logs at the R.R. Donnelley & Sons Company South Daytona Division:

The probability that, for any given hour, SDM-001 will operate for 60 continuous minutes, P(1) = 0.2788.

The probability that, for any given hour, SDM-002 will operate for 60 continuous minutes, P(2) = 0.3558.

Based on the probabilities of SDM-001 and SDM-002, the projected probability that, for any given hour, SDM-003 will operate for 60 continuous minutes, P(3) = 0.3173.

Therefore the probability that, for any given hour, all three presses will operate for 60 consecutive minutes is:

$$P(1,2,3) = (0.2788)(0.3558)(0.3173) = \mathbf{0.0315}$$

Based on the above probability of P(1,2,3), the time required for all three presses to operate simultaneously for three 60-minute periods will be:

$$\frac{3 \text{ hours}}{0.0315} \times \frac{\text{day}}{8 \text{ hours}} \times \frac{\text{week}}{5 \text{ days}} = \mathbf{2.38 \text{ weeks}}$$

It should be noted that the above projection is considerably optimistic. Comparing actual numbers of 60 minute time periods during which both SDM-001 and SDM-002 were operating showed there were approximately 7.4 hours of simultaneous two-press operation for every 100 hours. Based on the above statistical probabilities, we would predict 9.9 hours out of every 100 hours, thus overestimating simultaneous two-press operations by more than 33%.

In addition, presses SDM-001 and SDM-002 and their crews have had nearly a year's operating experience to improve their operational reliability. Conversely, press SDM-003 will have been started up just prior to the compliance test. Therefore, SDM-003 and its crews will have had relatively little experience, thus its operational reliability will be far lower, making the operational probability projected above optimistic at best.

ATTACHMENT D

ORDER

Having considered Petitioner's written request and supporting documentation, it is hereby ordered that:

1. Until the construction of heatset web offset press system SDM-003 is complete, Petitioner shall be allowed to demonstrate that heatset web offset press systems SDM-001 and SDM-002 are in compliance with the applicable limitations for volatile organic compounds by continuously monitoring and recording the combustion temperature at the point of oxidation in the afterburner.

2. Petitioner shall maintain a rolling 3-hour average combustion temperature of 1,350^{o}F at the point of oxidation in the afterburner whenever any or all of the press systems (SDM-001 and SDM-002) are in operation. Visible emissions from the afterburner shall not exceed 5% opacity (no visible emissions) except that visible emissions not exceeding 20% opacity shall be allowed for up to three minutes in any hour.

3. Petitioner shall install, calibrate, maintain, and operate a device that continuously indicates and records the combustion temperature at the point of oxidation in the afterburner. The monitoring device shall have an accuracy of plus or minus 5.5^{o}F.

4. Petitioner shall also maintain a log of the quantities of volatile organic compounds that are used by each press system. EPA Method 24 or manufacturer's information shall be used to determine the VOC content of each material used by the press systems.

5. Petitioner shall submit a report within 60 days of an occurrence to the District Director for the Department's Central District identifying all periods when one or more presses were in operation and the rolling 3-hour average temperature at the point of oxidation was less than 1350 degrees Fahrenheit. For purposes of this Order, an hour shall be each period of 60 consecutive minutes.

6. Upon completion of construction of heatset web offset press system SDM-003, Petitioner shall conduct EPA Method 25A and DER Method 9 emission tests in order to demonstrate compliance with all of the requirements of air construction permit number AC 64-188871. Upon demonstration of compliance with all three heatset web offset presses (SDM-001, -002, -003) in operation, the requirements of this Order shall be extended to include SDM-003.

7. Heatset web offset presses SDM-001, SDM-002, and SDM-003, shall be operated at the maximum practicably achievable volatile organic compound transfer rate during the EPA Method 25A and DER Method 9 compliance tests. The combined duration of the EPA Method 25A compliance test runs for volatile organic compound emissions and destruction efficiency shall neither be less than three hours nor more than eight hours and shall include at least one period of 15 minutes or more of continuous three press operation.

8. In the event that the press operation rates during the compliance tests do not achieve at least 90% of those specified in construction permit number AC 64-188871, compliance with the construction permit conditions shall be based on the destruction efficiency of the thermal afterburner measured during the compliance test and the calculated maximum VOC mass emission rate, the latter to be determined using the measured thermal afterburner destruction efficiency in conjunction with the maximum permitted VOC transfer rate.

9. In the case of a written finding of noncompliance by the District Director, Petitioner shall demonstrate compliance with construction permit number AC 64-188871 by conducting annual EPA Method 25A and DER Method 9 compliance tests.

10. Petitioner shall conduct an EPA Method 25A and DER Method 9 compliance test prior to each operation permit renewal at the conditions specified in item 7 of this Order.

11. If required by item 9 of this Order, Petitioner shall conduct the annual EPA Method 25A and DER Method 9 compliance tests within 90 days of receipt of written notification, and during the corresponding quarter of each federal fiscal year (October 1 - September 30) thereafter. Heatset web offset press systems SDM-001, SDM-002, and SDM-003 shall be operated at the conditions specified in item 7 of this Order during the compliance tests.

12. Pursuant to all requirements of Rule 17-2.700(7), F.A.C., Petitioner shall submit any required EPA Method 25A and DER Method 9 test reports to the District Manager for the Department's Central District office within 45 days of completion of the test.

13. Pursuant to Rule 17-4.160(14), F.A.C., Petitioner shall retain all monitoring records related to the requirements of construction permit number AC 64-188871 and this Order at the facility for a period of three (3) years.

14. Whenever an EPA (or DER) Method 9 test is required, a Florida licensed Professional Engineer's certification that there are no visible emissions (zero percent opacity) during the compliance test periods can fulfill this requirement. If any visible emissions (greater than zero percent opacity) are observed by the Professional Engineer, the Petitioner shall conduct an EPA (or DER) Method 9 test at the conditions specified in item 7 of this Order.

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. Carl W. Zielke
V. P. & Division Director
R. R. Donnelley & Sons Co.
3100 S. Ridgewood Ave
S. Daytona, FL 32119

4. Article Number
P 832 538 955

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X

6. Signature — Agent
X

7. Date of Delivery
9-20-91

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

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

P 832 538 955

Certified Mail Receipt
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to: Carl Zielke	
Street & No. R.R. Donnelley & Sons	
P.O. State & ZIP Code S. Daytona, FL	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date 9-16-91	AC 64-188871

PS Form **3800**, June 1990

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

September 13, 1991

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Carl W. Zielke
V.P. & Division Director
R. R. Donnelley & Sons Company
3100 South Ridgewood Avenue
South Daytona, Florida 32119

Dear Mr. Zielke:

Re: Expiration Date Extension for Construction Permit
AC 64-188871

The Department has reviewed the above request contained in your letter received August 26, 1991. The request is acceptable and the following will be changed and added:

1. Expiration Date

From: April 30, 1992
To: December 31, 1992

2. Attachment to be Incorporated

o Mr. Carl W. Zielke's letter received August 26, 1991.

This letter must be attached to the construction permit, No. AC 64-188871, and shall become a part of the permit.

Sincerely,

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

SS/BM/rbm

Attachment

cc: C. Collins, C District
T. W. Davis, P.E., ES&E
M. Horne, RRD&S

Attachment

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee

To: _____ Location: _____

To: _____ Location: _____

To: _____ Location: _____

From: _____ Date: _____

Interoffice Memorandum

TO: Steve Smallwood

FROM: Clair Fancy

DATE: September 12, 1991

SUBJ: Construction Permit Expiration Date Extension
R. R. Donnelley & Sons Company
AC 64-188871

For your approval and signature is a letter containing an amendment that was prepared by the Bureau of Air Regulation to extend the expiration date of the above referenced construction permit. The facility is located in South Daytona, Volusia County, Florida. There is no controversy associated with this action.

I recommend your approval and signature.

Attachment

SS/BM/rbm

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY
SOUTH DAYTONA MANUFACTURING DIVISION
3100 SOUTH RIDGEWOOD AVENUE
SOUTH DAYTONA, FLORIDA 32119
904-322-2300

August 23, 1991

Mr. Clair H. Fancy, Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: R.R. Donnelley & Sons Company South Daytona Division
Request to Extend Construction Permit No. AC 64-188871

Dear Mr. Fancy:

Current economic conditions have necessitated a delay in the start-up of the third press (No. SDM-003) at our South Daytona plant until the second or third quarter of 1992. As a result, we request that the date of expiration of the subject permit be extended from April 30, 1992 to December 31, 1992 to allow for the start-up and subsequent compliance testing of this press and its associated pollution control equipment.

We believe this request to be timely and sufficient pursuant to F.A.C. Rule 17-4.090(1). Our check in the amount of $250.00 is enclosed to cover the processing fee. If there are any questions, please call me at (904) 322-2320 or Dirk Hiler at (904) 322-2387.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

Carl Zielke

Carl W. Zielke
Vice President & Division Director

CZ:mh
REQEXT
cc: G. Bender
H. Britton
C. Collins, FDER
D. Cote
D. Hiler
M. Horne
D. Kalina
B. Mitchell, FDER
J. Turner, FDER
A. Zahm, FDER

00103

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY
SOUTH DAYTONA MANUFACTURING DIVISION
3100 SOUTH RIDGEWOOD AVENUE
SOUTH DAYTONA, FLORIDA 32119
904-322-2300

August 23, 1991

Mr. Charles Collins
Program Administrator, Air Section
Florida Department of Environmental Regulation
Central District
3319 Maguire Boulevard
Orlando, Florida 32803-3767

Subject: R.R. Donnelley & Sons Company South Daytona Division
Compliance Test Notification (Constr. Permit No. AC64-188871)

Dear Mr. Collins:

The compliance test of the thermal afterburner control system at the R.R. Donnelley & Sons Company South Daytona Division is scheduled to be performed on October 2, 1991. The test will commence at 9:00 AM EST at the above address, and will be conducted according to the Compliance Test Plan submitted to you on May 21, 1991. This letter serves to fulfill the notification requirements of F.A.C. Rule 17-2.700(2)(a)(9).

The thermal afterburner control system will be tested with Press Nos. SDM-001 and SDM-002 fully operational and on-line. Press No. SDM-003 will be in place, but will not be started up and put into production until the second or third quarter of 1992. A compliance test with all three presses operating will be conducted at that time.

If there are any questions, please call me, the on-site coordinator of the test, at (904) 322-2387, or Mark Horne at (708) 719-6755.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

Dirk Hiler
Engineering Team Leader

DH:mh
TESTNOTIF
cc: G. Bender
H. Britton
D. Cote
C. Fancy, FDER
M. Horne
D. Kalina
G. Kuberski, FDER
B. Mitchell, FDER
J. Pennington, FDER
J. Turner, FDER
A. Zahm, FDER
C. Zielke

BOATMEN'S BANK OF ROLLA

The Lakeside Press

AUGUST 23, 1991 01339

R·R·DONNELLEY & SONS COMPANY

80-289
815

1339 South Daytona Manufacturing Division
3100 S. Ridgewood Ave.
South Daytona, FL 32119

$250.00

PAY TO THE ORDER OF TWO HUNDRED FIFTY ********** 00/100 DOLLARS

FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION
2600 BLAIR STONE ROAD
TALLAHASSEE, FL 32399-2400

ACCOUNTS
PAYABLE

R. R. DONNELLEY & SONS COMPANY

[redacted]

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY
750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

August 23, 1991

Mr. Clair H. Fancy, Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Subject: R.R. Donnelley & Sons Company South Daytona Division
Request for Alternate Surrogate Procedure
Construction Permit No. AC 64-188871

Dear Mr. Fancy:

The subject construction permit requires initial and annual (F.A.C. Rule 17-2.700(2)(a)(4)) compliance testing of the thermal afterburner VOC destruction efficiency and exhaust opacity. We request replacement of this annual test requirement with an alternate surrogate procedure (F.A.C. Rule 17-2.700(3)) that will provide continuous surrogate demonstration of compliance with these parameters.

Current Requirements for Compliance Demonstration

Specific Conditions A(2), A(4) and A(5) of the subject permit require initial and annual compliance tests to demonstrate that the VOC destruction efficiency of the thermal afterburner is 95% or greater, and that the opacity of the afterburner exhaust is below 20%.

We agree that an initial demonstration of afterburner destruction efficiency is warranted. However, annual compliance testing thereafter is overly burdensome and provides little benefit in terms of continued demonstration of compliance. A 3 hour "snapshot" each year says little about the other 8,757 potential hours of operation. Also, at the minimum VOC destruction efficiency requirement of 95% and the maximum potential VOC input rate to the afterburner (from all three presses, as shown in the construction permit application), the concentration of VOCs in the afterburner exhaust will not exceed 26 ppm (as ink oil). Obviously, at or below this concentration, there will be no visible emissions. The opacity of the exhaust will always be well below the 20% limitation. Therefore the requirement of opacity compliance demonstration is redundant since demonstration of efficient VOC destruction ensures there will be no visible emissions.

At our afterburner combustion chamber operating temperature of 1350°F, the VOC destruction efficiency is well above the required 95% and there are no visible emissions. This will be formally demonstrated during the compliance test that is scheduled for October 2, 1991.

It should be noted that the performance of a thermal afterburner does not degrade in time as might occur with a catalytic afterburner due to the poisoning or masking of its catalyst. As long as the combustion chamber temperature of a thermal unit is maintained, the resultant high VOC destruction efficiency and low exhaust opacity are assured. Therefore, the temperature of a thermal afterburner combustion chamber temperature is a direct indicator of its VOC destruction performance.

Proposed Alternate Surrogate Procedure

In lieu of the requirement of annual compliance tests for afterburner VOC destruction efficiency and exhaust opacity, we propose to provide continuous surrogate demonstration of these parameters as follows:

1. The thermal afterburner combustion chamber temperature will be maintained at or above 1350°F whenever any of the presses are in operation.

2. The thermal afterburner combustion chamber temperature will be continuously monitored and recorded.

3. Strip chart records of the combustion chamber temperature will be maintained for 2 years and will be available for Agency inspection.

Following the performance of the scheduled compliance test, we request that the requirement for annual compliance testing of the afterburner destruction efficiency and exhaust opacity be replaced with the three requirements proposed above. This proposed alternate procedure will provide continuous surrogate demonstration of compliance with the permit requirements for destruction efficiency and opacity.

If there are any questions, please call me at (708) 719-6755 or Dirk Hiler at (904) 322-2387.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

Mark A. Horne

Mark A. Horne
Environmental Engineer

MH:mh
ASP1
cc: G. Bender
H. Britton
C. Collins, FDER
D. Cote
D. Hiler
D. Kalina
G. Kuberski, FDER
B. Mitchell, FDER
J. Pennington, FDER
J. Turner, FDER
A. Zahm, FDER
C. Zielke

PN
8-23-91
Daytona Beach, FL

The Lakeside Press

RECEIVED

AUG 26 1991

Division of Air
Resources Management

R.R. DONNELLEY & SONS COMPANY

SOUTH DAYTONA MANUFACTURING DIVISION
3100 SOUTH RIDGEWOOD AVENUE
SOUTH DAYTONA, FLORIDA 32119
904-322-2300

August 23, 1991

Mr. Charles Collins
Program Administrator, Air Section
Florida Department of Environmental Regulation
Central District
3319 Maguire Boulevard
Orlando, Florida 32803-3767

Subject: R.R. Donnelley & Sons Company South Daytona Division
Compliance Test Notification (Constr. Permit No. AC64-188871)

Dear Mr. Collins:

The compliance test of the thermal afterburner control system at the R.R. Donnelley & Sons Company South Daytona Division is scheduled to be performed on October 2, 1991. The test will commence at 9:00 AM EST at the above address, and will be conducted according to the Compliance Test Plan submitted to you on May 21, 1991. This letter serves to fulfill the notification requirements of F.A.C. Rule 17-2.700(2)(a)(9).

The thermal afterburner control system will be tested with Press Nos. SDM-001 and SDM-002 fully operational and on-line. Press No. SDM-003 will be in place, but will not be started up and put into production until the second or third quarter of 1992. A compliance test with all three presses operating will be conducted at that time.

If there are any questions, please call me, the on-site coordinator of the test, at (904) 322-2387, or Mark Horne at (708) 719-6755.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

Dirk Hiler
Engineering Team Leader

DH:mh
TESTNOTIF
cc: G. Bender
H. Britton
D. Cote
C. Fancy, FDER
M. Horne
D. Kalina
G. Kuberski, FDER
B. Mitchell, FDER
J. Pennington, FDER
J. Turner, FDER
A. Zahm, FDER
C. Zielke

Fed. Ex. # 0730617134 (6-7-91)

The Lakeside Press

R·R·DONNELLEY & SONS COMPANY

SOUTH DAYTONA MANUFACTURING DIVISION
3100 SOUTH RIDGEWOOD AVENUE
SOUTH DAYTONA, FLORIDA 32119
904-322-2300

Sent to Central District for processing 6-12-91

June 7, 1991

RECEIVED

JUN 10 1991

Division of Air Resources Management

Mr. Clair H. Fancy, Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: R.R. Donnelley & Sons Company South Daytona Division
Modification to Construction Permit No. AC 64-188871

Dear Mr. Fancy:

Please find attached an application to modify the subject construction permit to include an Epic Products International Model SSDT Overcoater unit on Press SDM-001 at our printing facility in South Daytona, Florida. The use of this coater will allow the printing of magazine covers, and will result in a slight net reduction in the potential to emit VOCs from Press SDM-001 whenever the coater is in operation. Since there will be no increase in the potential to emit from the press, we request the subject construction permit be modified to include the coater unit, and that the emissions limitation in the permit remain unchanged.

There are two factors which reduce the potential to emit VOCs when using the coater. First, the planned coating is water-based and contains only 1% VOC. Second, when utilizing the coater, only one web can be run on the press since the coated web must be sent through the second dryer in order to dry the overcoat. The result is a net reduction in the potential to emit VOCs when coating relative to normal double web printing. Based on the projected 250 hours annual operation of the coating unit, the potential of Press SDM-001 to emit VOCs will be reduced by 0.35 tons/year with the use of the coater. The maximum potential VOC emissions will occur when the press is run in the normal two web configuration without the coater, as currently permitted.

Since the maximum potential VOC emissions occur in the press configuration that is already permitted, we request that the emissions limitation in the above subject permit remain unchanged, and that the permit be modified to reflect the addition of the coater unit.

FEDERAL EXPRESS

[redacted]

QUESTIONS? CALL 800-238-5355 TOLL FREE.

0730617134

AIRBILL
PACKAGE TRACKING NUMBER 0730617134

[redacted]

Date 6/7/91

RECIPIENT'S COPY

From (Your Name) Please Print: Dirk Hiler	Your Phone Number (Very Important): 904-322-2300
Company: R R DONNELLEY & SONS	Department/Floor No.
Street Address: 3100 SOUTH RIDGEWOOD AVENUE	
City: SOUTH DAYTONA BEACH	State: FL
ZIP Required: 32119	

2 To (Recipient's Name) Please Print: Bruce Mitchell	Recipient's Phone Number (Very Important): ( )
Company: Bureau of Air Regulation	Department/Floor No.
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): FL Dept of Environmental Regula[tion]	
City: 2600 Blair Stone Rd. Tallahassee	State: Fl
ZIP Required: 32399-240[0]	

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.): 0617-60-25-0200-4600

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address
City | State | ZIP Required

3 PAYMENT 1 ☐ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☑ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☐ Cash/Check [redacted]

4 **SERVICES** (Check only one box)

Priority Overnight (Delivery by next business morning†)
- 11 ☐ YOUR PACKAGING
- 16 ☐ FEDEX LETTER *
- 12 ☐ FEDEX PAK *
- 13 ☐ FEDEX BOX
- 14 ☐ FEDEX TUBE

Standard Overnight (Delivery by next business afternoon†)
- 51 ☐ YOUR PACKAGING
- 56 ☑ FEDEX LETTER *
- 52 ☐ FEDEX PAK *
- 53 ☐ FEDEX BOX
- 54 ☐ FEDEX TUBE

Economy Two-Day (Delivery by second business day†)
- 30 ☐ ECONOMY

Government Overnight (Restricted to authorized users only)
- 46 ☐ GOVT LETTER
- 41 ☐ GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
- 70 ☐ OVERNIGHT FREIGHT ** (Confirmed reservation required)
- 80 ☐ TWO-DAY FREIGHT **

† Delivery commitment may be later in some areas.
*Declared Value Limit $100.
**Call for delivery schedule.

DELIVERY AND SPECIAL HANDLING (Check services required)
- 1 ☐ HOLD FOR PICK-UP (Fill in Box H)
- 2 ☑ DELIVER WEEKDAY
- 3 ☐ DELIVER SATURDAY (Extra charge) (Not available to all locations)
- 4 ☐ DANGEROUS GOODS (Extra charge)
- 5 ☐
- 6 ☐ DRY ICE ______ Lbs.
- 7 ☐ OTHER SPECIAL SERVICE ______
- 8 ☐
- 9 ☐ SATURDAY PICK-UP (Extra charge)
- 10 ☐
- 11 ☐ DESCRIPTION
- 12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

PACKAGES	WEIGHT In Pounds Only
Total	Total

[redacted]

DIM SHIPMENT (Chargeable Weight) ☐ ______ lbs.

Received At: 1 ☐ Regular Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

FedEx Emp. No.

Emp. No.	Date
☐ Cash Received	
☐ Return Shipment	
☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold	
Street Address	
City State Zip	
Received By: X	
Date/Time Received	FedEx Employee Number

5 Release Signature:

Date/Time

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 1/91
PART #137204 FXEM 4/91
FORMAT #068

068

Included with this application are Attachment A which contains supporting figures and diagrams, and Attachment B which contains the original request to amend the construction permit. The MSDS for the planned coating material is included in Attachment B.

Our check in the amount of $1,000.00 is enclosed to cover the application fee. Please note that the installation of the coater unit on Press SDM-001 is scheduled to begin August 1, 1991 and be completed by August 10, 1991. Given our tight time constraints, your prompt attention to this request is appreciated. If there are any questions, please call me at (904) 322-2320 or Mark Horne at (708) 719-6755.

Sincerely,
R.R. DONNELLEY & SONS COMPANY

Carl W. Zielke

Carl W. Zielke
Vice-President & Division Director

CZ:mh
DAYPERM3

cc: G. Bender
H. Britton
D. Cote
D. Hiler
M. Horne
D. Kalina
B. Mitchell, FDER

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. Carle W Zielke
V.P. & Division Director
R.R. Donnelley & Sons Co.
3100 S. Ridgewood Ave
S. Daytona, FL 32119-3548

4. Article Number
P 832 539 791

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X

6. Signature — Agent
X

7. Date of Delivery
6/12/91

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

PS Form 3811, Apr. 1989 U.S.G.P.O. 1989-238-815 **DOMESTIC RETURN RECEIPT**

P 832 539 791

Certified Mail Receipt

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to: Carle Zielke	
Street & No.: R.R. Donnelley & Sons	
P.O., State & ZIP Code: S. Daytona FL	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	$
Postmark or Date 6-10-91	

AC 64-188871

PS Form 3800, June 1990

File Copy

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

June 4, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Carle W. Zielke
V.P. & Division Director
R. R. Donnelley & Sons Company
3100 S. Ridgewood Avenue
South Daytona, Florida 32119-3548

Dear Mr. Zielke:

Re: Amendment to Construction Permit AC 64-188871

The Department has reviewed Mr. Mark A. Horne's letter received April 22, 1991, requesting an amendment to the above referenced construction permit for the purpose to better define an operating parameter in Specific Condition No. A.3. The Department has no objection to the request and the following will be changed and added:

Specific Condition No. A.3.:

FROM:

The initial and annual demonstration of the capture efficiency of each dryer enclosure shall be conducted using the U.S. EPA's "Guidelines for Developing a State Protocol for the Measurement of Capture Efficiency" (attached). The permittee shall notify the Department's Central District in writing of the protocol that will be used for the capture efficiency demonstration at least 60 days prior to compliance testing. However, the requirements of this condition are not applicable as long as high molecular weight alcohol substitutes are being used.

TO:

The initial and annual demonstration of the capture efficiency of each dryer enclosure shall be conducted using the U.S. EPA's "Guidelines for Developing a State Protocol for the Measurement of Capture Efficiency" (attached). The permittee shall notify the Department's Central District in writing of the protocol that will be used for the capture efficiency demonstration at least 60 days prior to compliance testing. However, the requirements of this

condition are not applicable as long as low volatility alcohol substitutes are being used, such as ethylene glycol and ethylene glycol n-butyl ether (butyl cellulosive).

Attachment to be Incorporated:

8. Mr. Mark A. Horne's letter received April 22, 1991.

This letter must be attached to your air construction permit, No. AC 64-188871, and shall become a part of the permit.

Sincerely,

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

SS/CHF/bm

c: C. Collins, Central Dist.
T. W. Davis, P.E., ES&E
M. Horne, RRD&S
Ready File } 6-10-91 KT
Bmc

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

Interoffice Memorandum

TO: Steve Smallwood

FROM: Clair Fancy

DATE: June 4, 1991

SUBJ: Amendment to Construction Permit AC 64-188871
R. R. Donnelley & Sons Company

Attached for your approval and signature is a letter that will amend the above referenced construction permit issued to R. R. Donnelley & Sons Company. There is no controversy regarding this action.

I recommend your approval and signature.

CF/BM/rbm

CHF / OK 6-6-91

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

April 19, 1991

Mr. Clair H. Fancy, Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Subject: R.R. Donnelley & Sons Company South Daytona Division
Construction Permit No. AC 64-188871, March 18, 1991

Dear Mr. Fancy:

We have reviewed the subject Construction Permit for our new printing facility in South Daytona, Florida. To better define the key parameter (volatility) in Specific Condition No. A3, we request the final sentence of this condition be changed as follows:

FROM: "However, the requirements of this condition are not applicable as long as high molecular weight alcohol substitutes are being used."

TO: "However, the requirements of this condition are not applicable as long as low volatility alcohol substitutes are being used, such as ethylene glycol and ethylene glycol n-butyl ether (butyl cellosolve)."

The alternative wording suggested above is specific to the principal characteristic to be regulated, that of volatility. It also specifies the usage of the lower volatility fountain solution constituents that were declared in our construction permit application.

If there are any questions, please call me at (708)719-6755.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

Mark Horne

Mark A. Horne
Environmental Engineer

MH:mh
DAYPERM
cc: G. Bender
H. Britton
D. Hiler
D. Kalina
C. Zielke
Mr. Bruce Mitchell, FDER

Attachment 8

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

April 19, 1991

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

Subject: R.R. Donnelley & Sons Company South Daytona Division
Construction Permit No. AC 64-188871, March 18, 1991

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TO: "However, the requirements of this condition are not applicable as long as low volatility alcohol substitutes are being used, such as ethylene glycol and ethylene glycol n-butyl ether (butyl cellosolve)."

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If there are any questions, please call me at (708)719-6755.

Sincerely,

R.R. DONNELLEY & SONS COMPANY

Mark Horne

Mark A. Horne
Environmental Engineer

MH:mh
DAYPERM
cc: G. Bender
H. Britton
D. Hiler
D. Kalina
C. Zielke
Mr. Bruce Mitchell, FDER

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Coater Unit on Press SDM-001 [X] New[1] [ ] Existing[1]

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

COMPANY NAME: R.R. Donnelley & Sons Company COUNTY: Volusia

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Press No. SDM-001

SOURCE LOCATION: Street 3100 S. Ridgewood Ave. City South Daytona

UTM: East 500400 North 3224600

Latitude 29 ° 09 ' 00 "N Longitude 80 ° 59 ' 15 "W

APPLICANT NAME AND TITLE: Mr. Carl Zielke, Vice President and Division Director

APPLICANT ADDRESS: 3100 S. Ridgewood Ave., South Daytona, FL 32119-3548

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of R.R. Donnelley & Sons Co.

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

*Attach letter of authorization

Signed: Carl W. Zielke (wet)

Carl W. Zielke, Vice President & Division Director
Name and Title (Please Type)

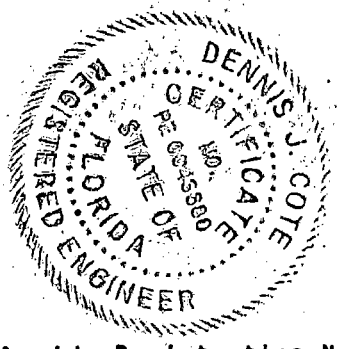
Date: 6/7/91 Telephone No. 904-322-2320

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

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

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



Signed Dennis J. Cote P.E.

Dennis J. Cote

Name (Please Type)

R.R. Donnelley & Sons Company

Company Name (Please Type)

750 Warrenville Rd., Lisle, IL 60532

Mailing Address (Please Type)

Florida Registration No. 43680 Date: June 6, 1991 Telephone No. 708-719-6694

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.

This application is for a modification to construction permit No. AC64-188871, to include a coater unit. The coater will immediately precede the upper dryer on Press No. SDM-001. The exhaust from this dryer is directed through the existing thermal afterburner for the control of VOC emissions and to ensure full compliance with emissions limitations.

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

Start of Construction 8/1/91 Completion of Construction 8/10/91

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.)

The pollution control equipment (thermal afterburner) is already in place.

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

Permit No. AC64-188871

Issued: March 18, 1991

Expires: April 30, 1992

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

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

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

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

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

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

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

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. No

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. No

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No

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

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

   a. If yes, for what pollutants? _____

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

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

* The use of the coater reduces the potential VOC emissions from Press SDM-001. As the number of coater operating hours increases, the potential to emit VOCs from the press decreases. Annual operation of the coater is projected to be 250 hours. Maximum VOC emissions from Press SDM-001 occurs at zero hours coater operation. Please refer to the cover letter and Attachment B.

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Paper	N/A	N/A	8092	Input to Press
Coating	VOC	1	304	Input to Coater

Each pound of wet coating applied leaves approximately 0.4 lb. of dry coating on the paper.

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

1. Total Process Input Rate (lbs/hr): 8396

2. Product Weight (lbs/hr): 8214

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

VOC Capture = 90% VOC Destruction = 95% Annual Operating Hours = 250

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
VOC	0.14	0.02	17-2.620(1)	N/A	2.74	0.34	Afterburner
VOC	0.30	0.04	17-2.620(1)	N/A	0.30	0.04	Fugitives

[1]See Section V, Item 2.

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

[3]Calculated from operating rate and applicable standard.

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

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
TEC/KATEC 2-174	VOC	≥ 95%		*
* Afterburner specifications detailed		in Application	for Construction Permit	
No. AC64-188871.				

E. Fuels N/A

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

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

Fuel Analysis:

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.

Waste paper will be recycled. Waste coating will be solidified and landfilled.

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

Stack Height: 50 ft. Stack Diameter: 3.33 ft.

Gas Flow Rate: 36,000 ACFM 17,400 DSCFM Gas Exit Temperature: 600 °F.

Water Vapor Content: 3% v/v % Velocity: 69 FPS

SECTION IV: INCINERATOR INFORMATION

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

Description of Waste _____

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

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

Manufacturer _____

Date Constructed _____ Model No. _____

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

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

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

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

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

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

_____

_____

_____

_____

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

_____

_____

_____

_____

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

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

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

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

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

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

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

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

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

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

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

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

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

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

[ ] Yes [X] No

Contaminant	Rate or Concentration

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

[ ] Yes [X] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration
Although BACT is not required for this installation, the level of containment	
and control that we will be employing for this installation constitutes the	
equivalent of what would be considered BACT.	

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

Recuperative Thermal Afterburner

1. Control Device/System: TEC/KATEC 2-174
2. Operating Principles: Thermal Oxidation
3. Efficiency:* ≥ 90% (per RM 25A)
4. Capital Costs: $800,000.00

*Explain method of determining

5. Useful Life: 10-15 yrs.

6. Operating Costs: $14/hr.

7. Energy: 200 KWH, 2MMBTU/HR NG

8. Maintenance Cost: $10,000/yr.

9. Emissions:

Contaminant	Rate or Concentration
VOC	Less than 5 ppm C_3

10. Stack Parameters

a. Height: 50 ft. ft.

b. Diameter: 3.33 ft.

c. Flow Rate: 36,000 ACFM

d. Temperature: 600 °F.

e. Velocity: 69 FPS

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

1. Please refer to original application for Permit No. AC64-188871.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

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

j. Applicability to manufacturing processes:

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

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

F. Describe the control technology selected: Please refer to original application for permit No. AC64-188871.

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

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

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

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

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION N/A

A. Company Monitored Data

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

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

Other data recorded _____

Attach all data or statistical summaries to this application.

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

2. Instrumentation, Field and Laboratory

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

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

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

2. Surface data obtained from (location)_____

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

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

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

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

D. Applicants Maximum Allowable Emission Data

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

E. Emission Data Used in Modeling

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

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

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

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

ATTACHMENT A

Figures and Diagrams

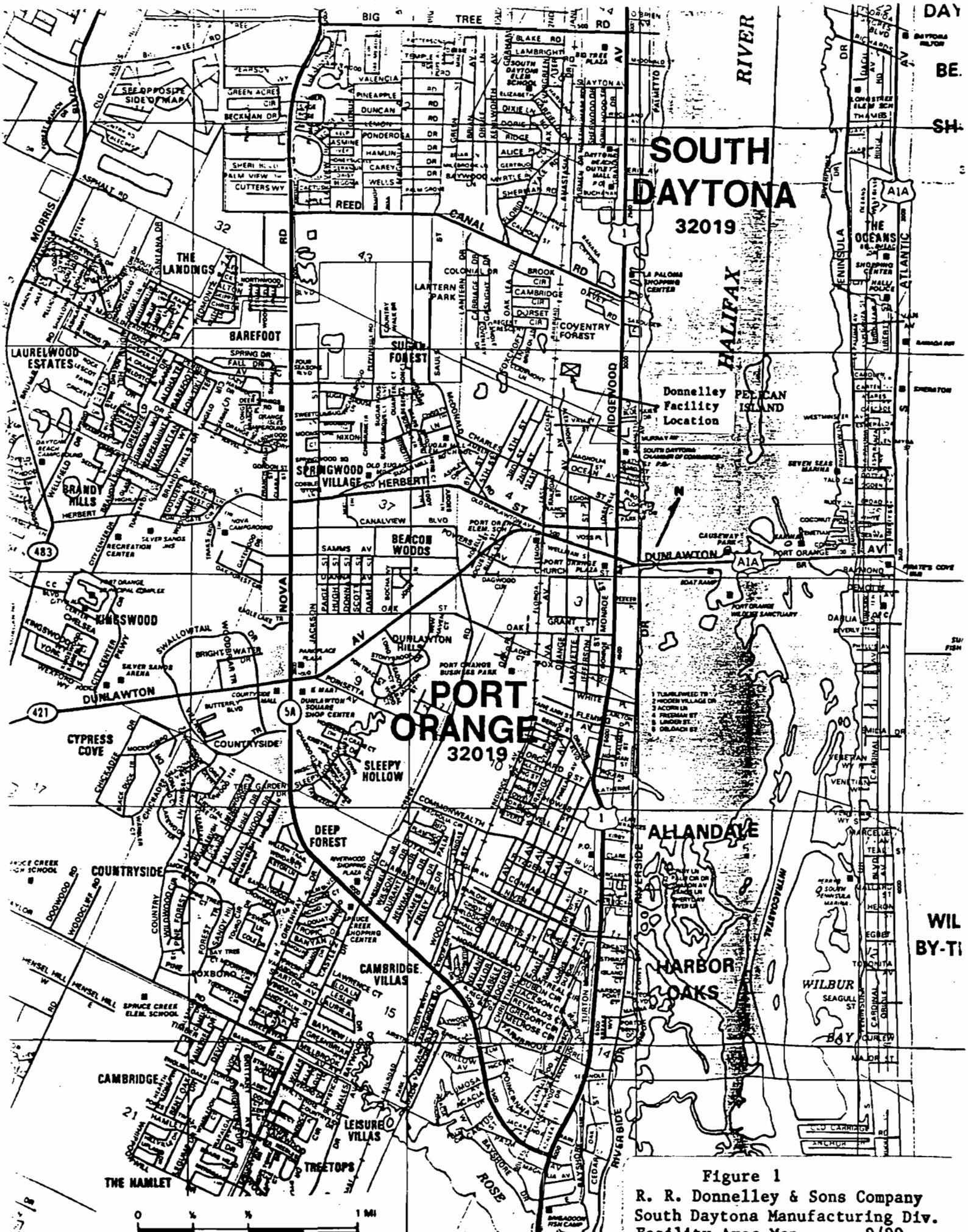


Figure 1
R. R. Donnelley & Sons Company
South Daytona Manufacturing Div.
Facility Area Map 9/90

Figure 2

R. R. Donnelley & Sons Company
South Daytona Manufacturing Division

Topographic Map 9/90
Scale 1:24000

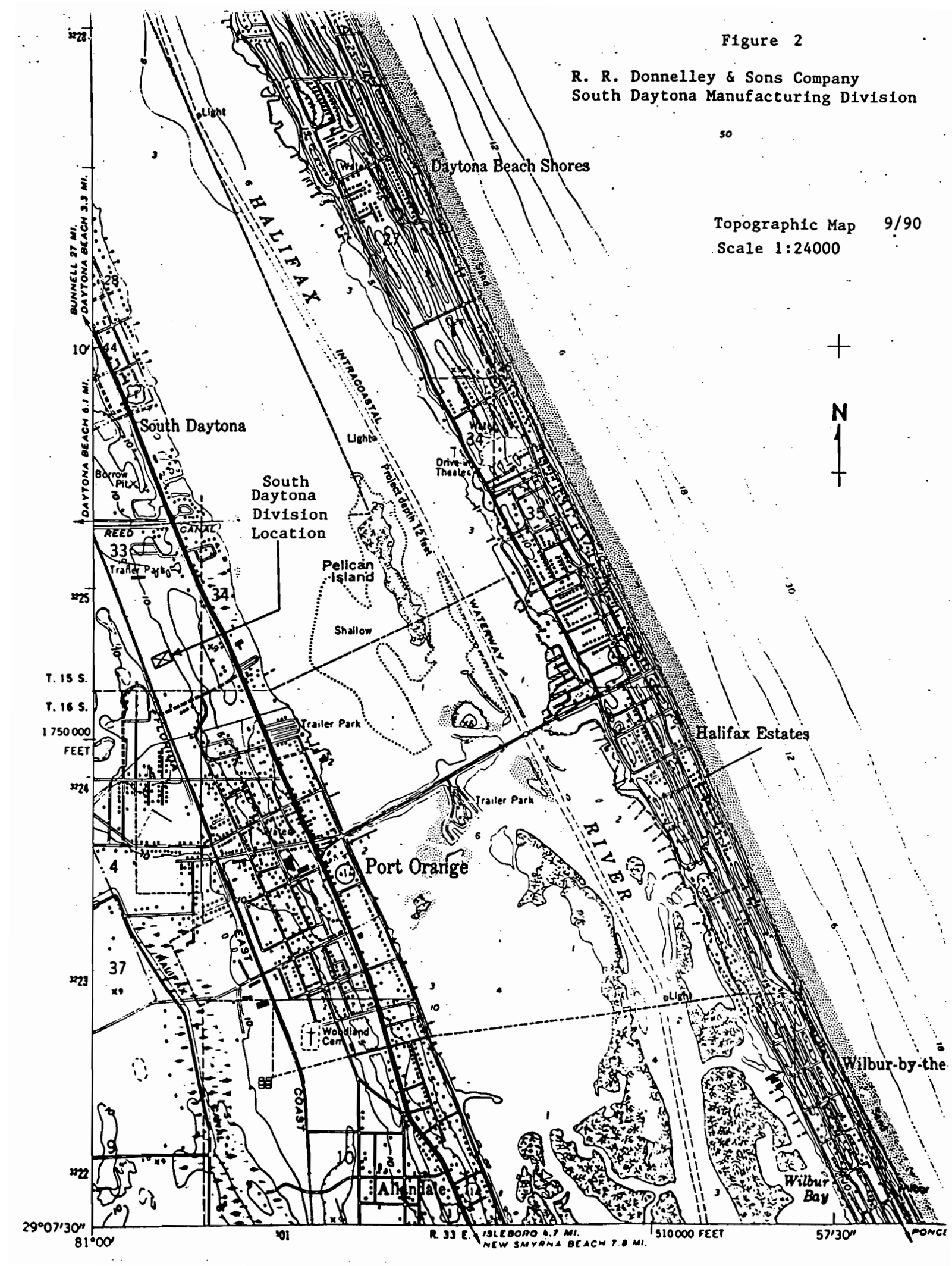
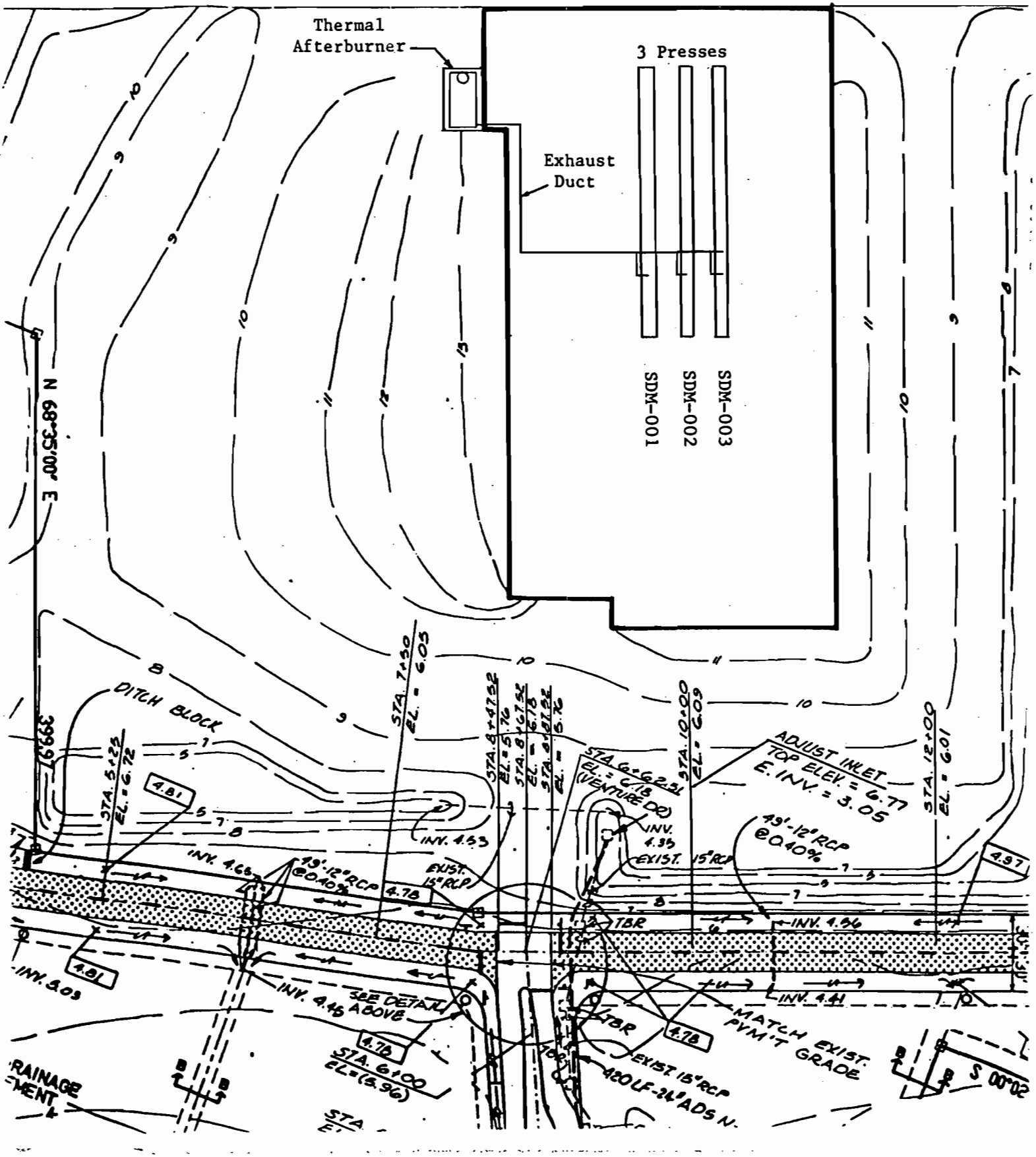


Figure 3
R. R. Donnelley & Sons Company
South Daytona Manufacturing Div.
Site Plan 9/90

0 50 100 ft

N



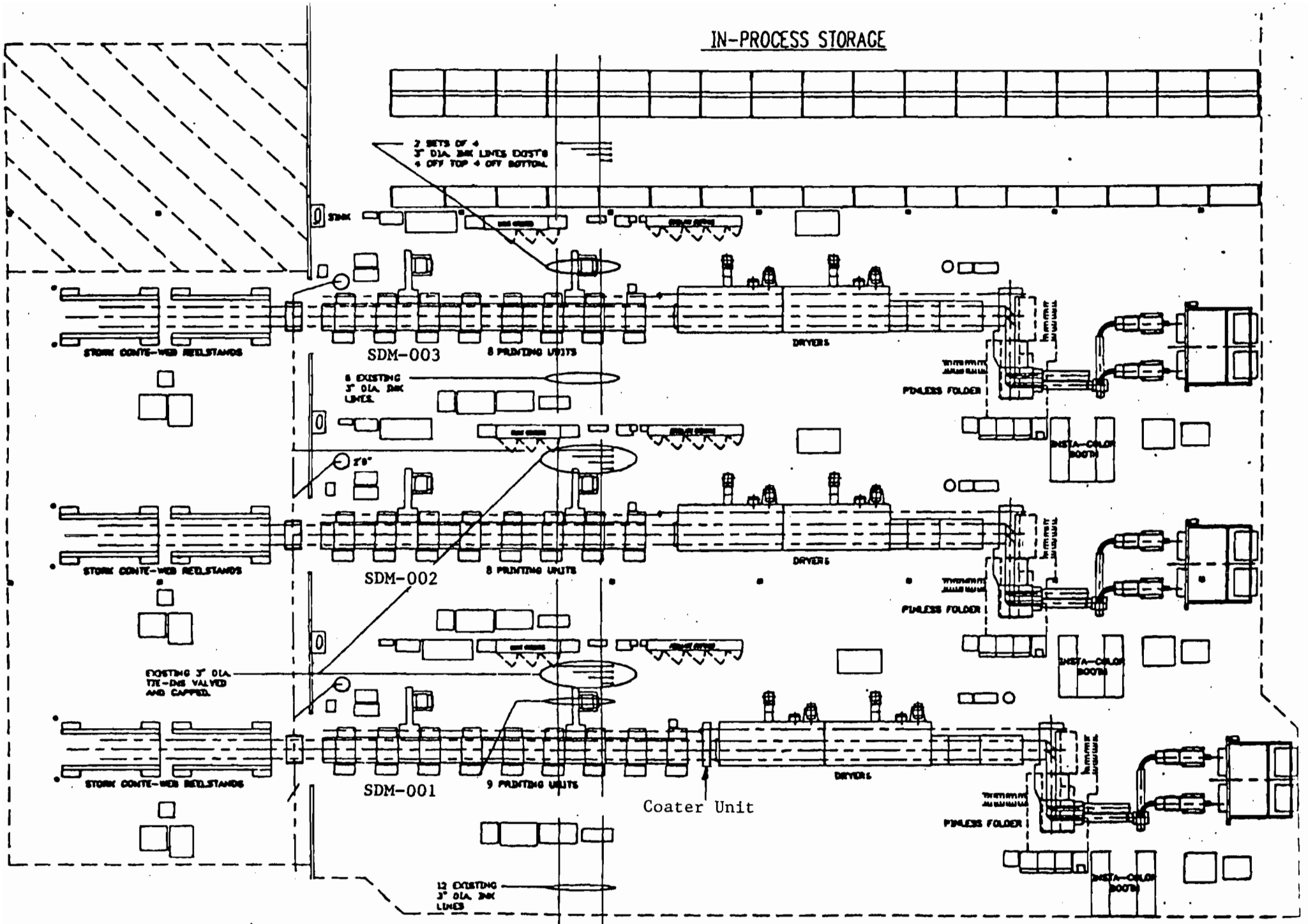
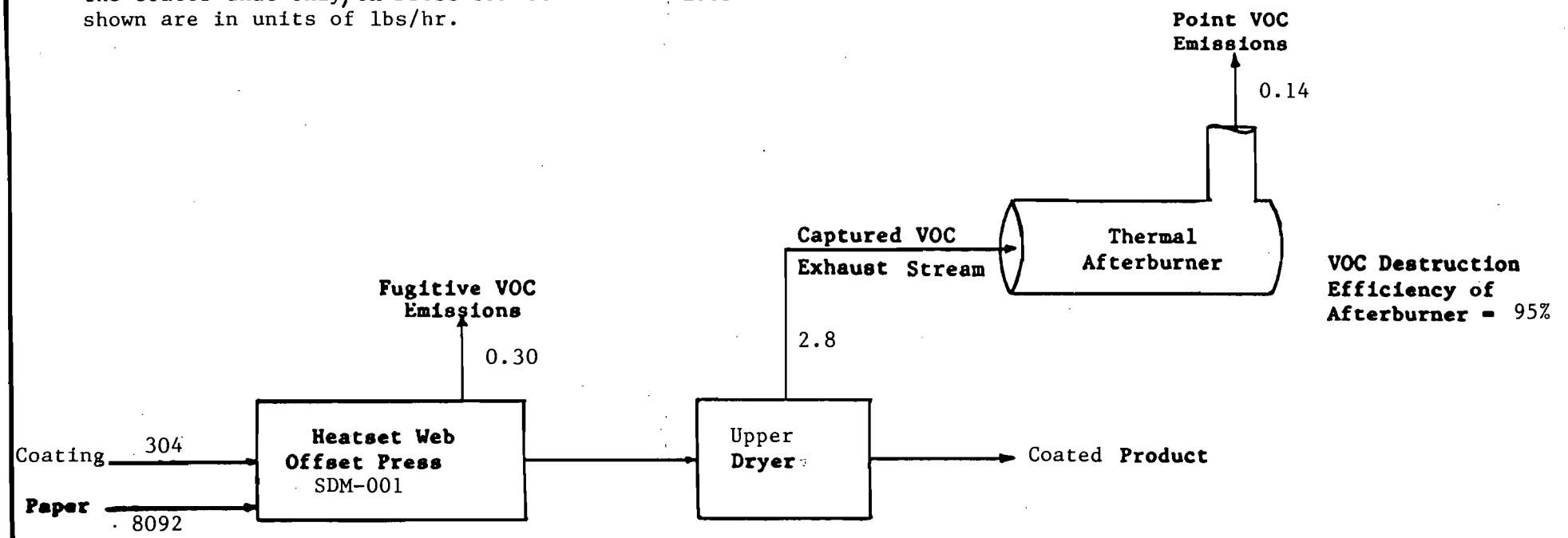


Figure 4
R. R. Donnelley & Sons Company
South Daytona Pressroom 9/90

Values represent total process inputs and outputs for the coater unit only, on Press SDM-001. All values shown are in units of lbs/hr.



OVERALL PROCESS FLOW DIAGRAM

REVISION	BY	DATE
A		

R. R. DONNELLEY & SONS COMPANY

TOLERANCE
DECIMAL ±
FRACTIONAL ±

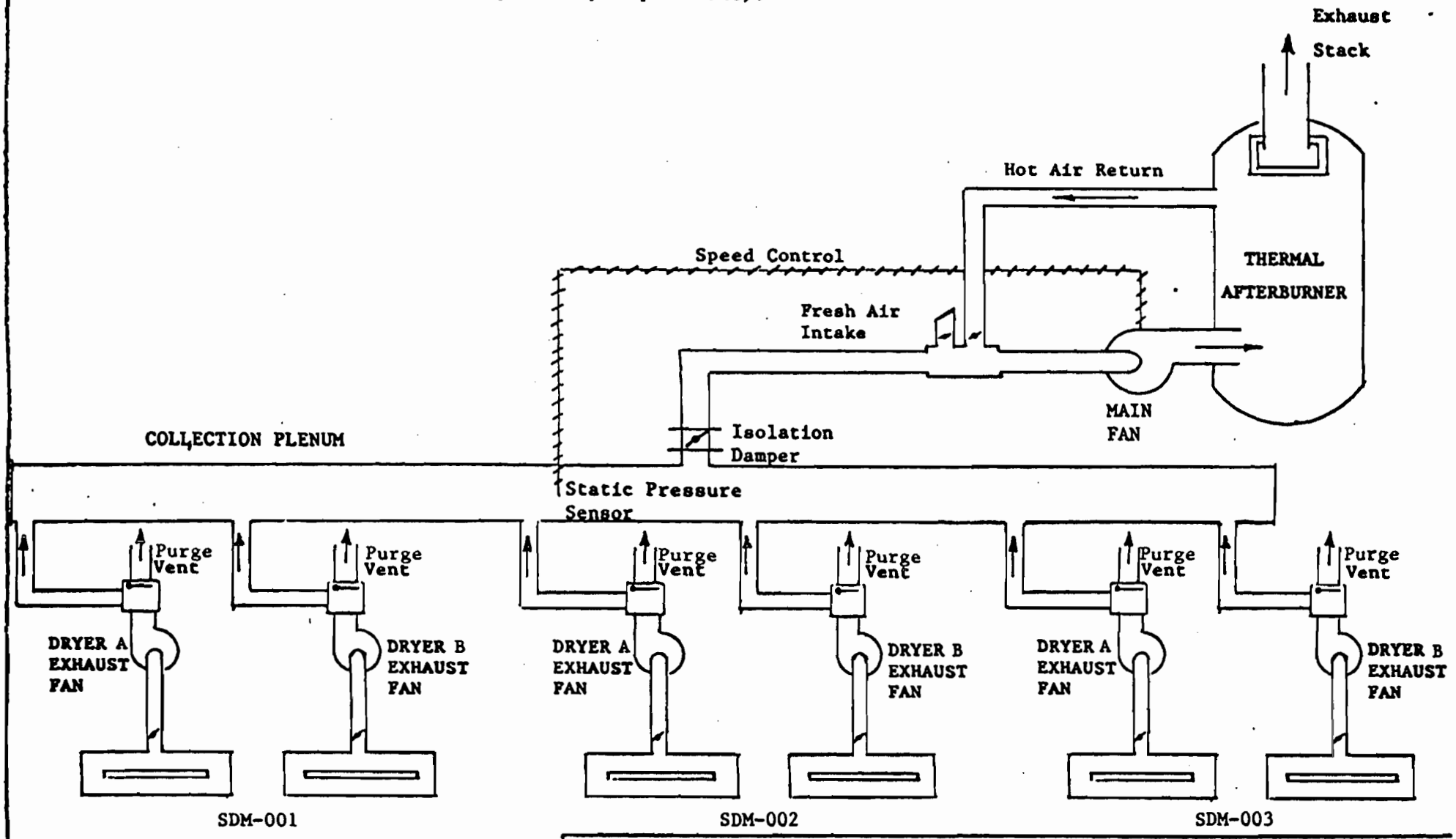
DRAWN
DATE 6/91
CHKD BY
SUPVR BY
APVD BY

PARTS LIST NO.
REF. Dwg. No.

South Daytona Manufacturing Division

DRAWING NO. Figure 5

NOTE: The purge vents are utilized for the initial purge of the dryers just prior to press startup (safety requirement).



R. R. DONNELLEY & SONS COMPANY

TOLERANCE	
DECIMAL ±	DATE 9/90
FRACTIONAL ±	
PARTS LIST NO.	
REF. Dwg. No.	

Thermal Afterburner Control System
South Daytona Manufacturing Division

DRAWING NO. FIGURE 6

REVISION	BY	DATE
A		

ATTACHMENT B

Request to Amend Construction Permit No. AC 64-188871

May 30, 1991

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

May 30, 1991

Mr. Clair H. Fancy, Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Reference: R.R. Donnelley & Sons Company South Daytona Division
Construction Permit No. AC 64-188871 (March 18, 1991)

Dear Mr. Fancy:

Projected customer requirements necessitate the addition of a coating unit on Press No. SDM-001 at our printing facility in South Daytona, Florida. The use of this coater will allow the printing of magazine covers, and will result in a slight net reduction in the potential to emit VOCs from the press whenever the coater is in operation. Since there will be no increase in the potential to emit from the press, we request the above referenced permit be amended to include the coater unit, and that the emissions limitation in the subject permit remain unchanged.

There are two factors which reduce the potential to emit VOCs when using the coater. First, the planned coating is water-based and contains only 1% VOC. Second, when utilizing the coater, only one web can be run on the press since the coated web must be sent through the second dryer in order to dry the overcoat. The result is a net reduction in the potential to emit VOCs when coating relative to normal double web printing. Based on the projected 250 hours annual operation of the coating unit, the potential of Press SDM-001 to emit VOCs will be reduced by 0.35 tons/year with the coater. The maximum potential VOC emissions occur when the press is run in the normal two web configuration without the coater, as currently permitted.

Since the maximum potential VOC emissions occur in the press configuration that is already permitted, we request that the emissions limitation in the subject permit remain unchanged, and that the permit be amended to reflect the addition of the coater unit.

Calculations supporting the above conclusions are attached, as well as the MSDS for the coating material to be applied. Given our tight time constraints, your prompt attention to this request is appreciated. If there are any questions, please call me at (708) 719-6755 or Dirk Hiler at (904) 322-2387.

Sincerely,
R.R. DONNELLEY & SONS COMPANY

Mark A. Horne

Mark A. Horne
Environmental Engineer

MH:mh
DAYPERM2

cc: G. Bender
H. Britton
D. Cote
D. Hiler
D. Kalina
B. Mitchell, FDER
C. Zielke

R.R. Donnelley & Sons Company South Daytona Division

Potential VOC Emissions Calculations for Press SDM-001 Equipped with Epic Products International Model SSDT Overcoater

A. Current VOC Emissions Potential from the Offset Presses

Hourly VOC emissions potential (1 press, 2 webs)..... 6.45 lb/hr

On a per web basis, the hourly VOC emissions potential is 3.23 lb/hr/web. These values are based on the VOC input rates, capture efficiencies and afterburner control efficiency (95%) specified in the construction permit.

B. VOC Emissions Potential from the Overcoater

Coating Material: Cork-Kote 49G, VOC Content = 1.0% (propylene glycol)
(Typical) Volatility of propylene glycol is similar to that of the fountain solution. (VOC Capture= 90%, Destruction= 95%)

Maximum VOC Input Rate (at max press conditions, single web) = 3.04 lb/hr

Epic Coater VOC emissions = 3.04 lb/hr [0.10 + (1-0.95)(0.9)] = 0.44 lb/hr

C. Hourly VOC Emissions Potential from Press SDM-001 while Coating

Press SDM-001, Single Web Configuration.....	3.23 lb/hr
Epic Coater.....	+0.44
Total VOC Emissions from SDM-001 with Coater.....	3.67 lb/hr

D. Net Decrease in Potential VOC Emissions with the Addition of the Coater

Decrease in VOC emissions when coating = (6.45 - 3.67) lb/hr = 2.78 lb/hr

Annual operation of the coater is projected at 250 hours.

Annual decrease in VOC emissions from Press SDM-001 when operating the Epic Overcoater 250 hrs/yr:

250 hr/yr x 2.78 lb/hr x ton/2000 lb = 0.35 tons/yr (tpy)

Note: As the number of coater operating hours increases, the potential to emit VOCs from the press decreases. Conversely, at zero hours annual coater operation, the potential VOC emissions from the press is at its maximum, 28.25 tpy, the current permitted level. Thus a change in the permitted VOC emissions limitation is not necessary.

DAYCOAT2
5/30/91

MATERIAL SAFETY DATA SHEET

SECTION I - PRODUCT IDENTIFICATION

Product Name:			Product Code:
Clear Aqueous Coating			Cork-Kote 49G
Chemical or Common Name:	Date Issued:	Supersedes:	Prepared By:
NA	01/09/91	01/09/90	Cork Industries, Inc. 500 Pine Avenue Holmes, Pa. 19043 (215) 522-9550

SECTION II - INGREDIENT INFORMATION

	Weight %	Exposure Limit
Styrene/Acrylic Polymers (25586-20-3)	30-40	
Ammonium Hydroxide (1336-21-6)	1 - 3	25 ppm
Glycol Ether (57-55-6)	under 1	
Water (7731-18-5)	balance	
Wax (9002-88-4)	1 - 3	
Surfactant (126-86-3)	0 - 4	TWA Ceiling 100 ppm
Surfactant (000577-11-7)	0 - 4	TWA Ceiling 1000 ppm

SECTION III - PHYSICAL DATA

Appearance/Odor:	Milky liquid with mild odor	Specific Gravity (H_2O = 1):	1.06
Vapor Pressure (mm Hg.):	ND	Percent Volatile by Volume (%)	NA
Solubility in Water:	Complete	Vapor Density (Air=1):	ND
Freezing Point (°F):	ND	Boiling Point (°F):	above 200
pH:	8.5-9.0	Evaporation Rate (Butyl Acetate=1)	ND

SECTION IV- FIRE AND EXPLOSION INFORMATION

Flash Point (°F) (Method Used): NA	Flammable Limits NA

Extinguishing Media ☒ Foam ☒ Co_2 ☒ Dry Chemical ☒ Water Fog ☐ Other

Special Fire Fighting Procedures:
Normal fire fighting procedures may be used.

Unusual Fire and Explosion Hazards:
Container may burn and leak in heat of fire.

SECTION V - HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY: Eye Contact X Skin Contact X Ingestion ___ Inhalation ___

SIGNS AND SYMPTOMS

Direct contact of product with eyes can cause irritation. Prolonged or repeated contact of product with skin may cause irritation.

FIRST AID PROCEDURES

Flush eyes with water for 15 minutes. If irritation persists, seek medical aid. If product gets on skin, remove with soap and water.

SECTION VI - REACTIVITY DATA

Stability	Unstable		Conditions to Avoid: None known
	Stable	X	
Incompatability *(Materials to avoid)*	None known		
Hazardous Decomposition Products	When exposed to fire, produces normal products of combustion.		
Hazardous Polymerization	May Occur		Conditions to Avoid: None known
	Will Not Occur	X	

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled

Contains ammonia. Do not let spilled or leaking material enter watercourse. May be toxic to aquatic life. Absorb with oil-dri or similar inert material. Sweep or scrape up and containerize. Rinse affected area thoroughly with water.

Waste Disposal Information

No special method. Observe all applicable Federal/State regulations and Local ordinances regarding disposal of non-hazardous materials.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify type): No special requirements under normal use conditions.

Ventilation: General room ventilation adequate.

Protective Gloves: If prolonged or repeated contact is possible: Rubber, PVC or other impervious material.

Eye Protection: Eye protection not required unless contact with undiluted product is possible.

Other Protective Measures: Use good personal hygiene practices.

SECTION IX - SPECIAL PRECAUTIONS

Precautionary Labeling CAUTION: Avoid contact with eyes. If such contact occurs, flush immediately with water for 15 minutes. If irritation persists, see a doctor. Avoid prolonged contact with skin.

Other Handling and Storage Conditions

Wash thoroughly after handling. Keep from freezing. Keep out of reach of children.

SECTION X - ADDITIONAL INFORMATION

For information on appropriate emergency procedures phone: (215) 522-9550

HMIS RATING: Health-- 1 Flammability-- 0

Reactivity-- 0 Personal Protection-- B

NA-Not Applicable, NSR-No Special Requirement, ND-Not Determined for this product

The information herein is given in good faith. No warranty, expressed or implied, is made. Any use of these data and information must be determined by the user to be in accordance with applicable Federal, State, and local laws and regulations.

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

May 30, 1991

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Bureau of Air Regulation
Florida Department of Environmental Regulation
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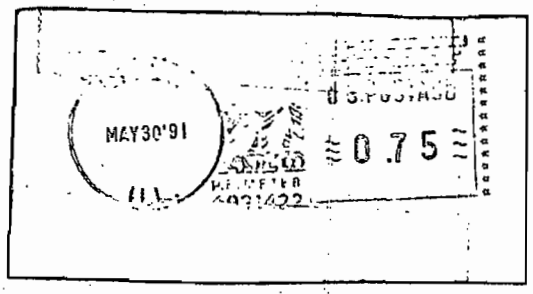

MARK HORNE
The Lakeside Press
R. R. Donnelley & Sons Company
750 Warrenville Road
Lisle, Illinois 60532

S-690

MR. CLAIR H. FANCY
BUREAU CHIEF
FLORIDA DEPT. ENVIRONMENTAL REGULATION
2600 BLAIR STONE ROAD
TALLAHASSEE, FL 32399 - 2400

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R.R. DONNELLEY & SONS COMPANY

Mark A. Horne

Mark A. Horne
Environmental Engineer

MH:mh
DAYPERM2

cc: G. Bender
H. Britton
D. Cote
D. Hiler
D. Kalina
B. Mitchell, FDER
C. Zielke
C. Collins, e Dist.

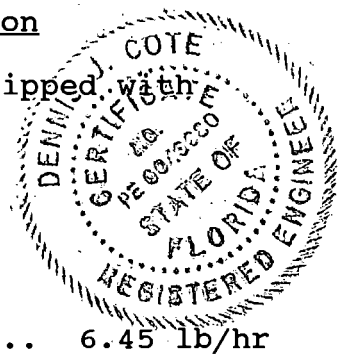
6-4-91

@ 2130-136
Mark Horne,
Told him we
need: App + fee
+o process.
Ron

Minor mod - District
should probably
do-

R.R. Donnelley & Sons Company South Daytona Division

Potential VOC Emissions Calculations for Press SDM-001 Equipped with Epic Products International Model SSDT Overcoater



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Reactivity-- 0 Personal Protection-- B

NA-Not Applicable, NSR-No Special Requirement, ND-Not Determined for this product

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LEGAL ADVERTISEMENT

IN THE CIRCUIT COURT
FOR VOLUSIA COUNTY,
FLORIDA PROBATE DIVI-
SION File Number 90-1660-02
Division F

IN RE: ESTATE OF
LOUSENTAK PAPAZIAN,
Deceased.

NOTICE OF ADMINISTRATION

The administration of the estate of Lousentak Papazian, deceased, File Number 90-1660-02-F, is pending in the Circuit Court for Volusia County, Florida, Probate Division, the address of which is P .O. Box 43, DeLand, FL 32720. The names and addresses of the personal representative and the personal representative's attorney are set forth below.

All interested persons are required to file with this court: (a) All claims against the estate WITHIN THREE MONTHS AFTER THE FIRST PUBLICATION OF THIS NOTICE and (b) any objection by an interested person to whom this notice is served that challenges the validity of the will, the qualifications of the personal representative, venue, or jurisdiction of the Court WITHIN THE LATER OF THREE MONTHS AFTER THE FIRST PUBLICATION OF THIS NOTICE OR THIRTY DAYS AFTER THE DATE OF SERVICE OF A COPY OF THIS NOTICE ON THE OBJECTING PERSON.

ALL CLAIMS AND OBJECTIONS NOT SO FILED WILL BE FOREVER BARRED.

Publication of this Notice has begun on February 14, 1991.

Personal Representative:
Aram Altunian
85-31 67th Avenue
Rego Park, N.Y. 11374

Attorney for Personal Representative:
John C. Revis, Vedder & Elton
Wells, Revis, Wedder & Elton
648 S. Ridgewood Avenue
Daytona Beach, FL 32114
Telephone: (904) 253-3676
Fla. Bar No. 183560
Legal 407. Feb. 14, 21, 1991 2 t

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor — Carol M. Browner, Secretary

FAX TRANSMITTAL LETTER

DATE: 3-15-91

TO:

NAME: Mark Horne

AGENCY: R.R. Donnelley & Sons Company

TELEPHONE: 708-719-6711

OF PAGES (INCLUDE COVER SHEET): 7

FROM:

NAME: Bruce Mitchell

AGENCY: FDER/DARM/BAR

IF ANY PAGES ARE NOT CLEARLY RECEIVED, PLEASE CALL IMMEDIATELY. PHONE NO. 904-488-1344

SENDER'S NAME: Sam

COMMENTS: FD and Specific Conditions (5-7)

MESSAGE CONFIRMATION

MAR-15-'91 FRI 16:15

TERM ID: DIV OF AIR RES MGMT P-9999

TEL NO: 904-922-6979

NO.	DATE	ST. TIME	TOTAL TIME	ID	DEPT CODE	OK	NG
661	03-15	16:10	00°04'56	708 719 6711		06	01

FEB 14 '91 08:26 FROM RRD

BEST AVAILABLE COPY

DRAFT

Faded Fax.
rec'd 2/14/91 @ 826am
from RRD ES & ME

February 14, 1991

Mr. Clair [illegible], Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
[illegible] Road
[illegible]

[illegible] February 7, 1991

[illegible] Fancy,

[illegible] reviewed the [illegible] the three [illegible] offset [illegible] and the [illegible] installed at [illegible] Daytona [illegible] have some concerns [illegible] specific [illegible] Construction Permit. [illegible] alternative [illegible] tions are [illegible].

[illegible]

DRAFT

The containment of ink VOCs in heatset offset printing operations is recognized by the USEPA in their Federal Implementation Plan for the six county Chicago non-attainment area (55 FR 26814, 1990). Here the protocols for determining capture efficiency are applied only to flexographic and rotogravure printing operations, where volatile solvents are used (Attachment B). The Chicago FIP contains no requirement for capture efficiency measurements for the separately regulated heatset web offset lithographic printing, the process that we will be employing at our South Daytona facility.

Further, the Draft CTG for heatset web offset lithographic printing (Attachment C) supports the containment of the volatilized ink VOCs and web retention of the balance. Note that the Draft CTG indicates a 50% emission factor for the isopropyl alcohol contained in fountain solutions. High molecular weight alcohol substitutes (ethylene glycol and ethylene glycol ethers) have replaced IPA due to their dramatically lower volatilities (bp = 340 to 400°F). Therefore our claim of 90% containment of this component is justified.

In our opinion there is no technical justification for the requirement of demonstrating VOC capture efficiencies on the dryer enclosures, and the expense of conducting initial or annual tests is not warranted. Therefore, we request that this condition be removed from the permit.

Specific Condition A(4)

We agree that the initial demonstration of afterburner destruction efficiency is warranted, but annual compliance testing thereafter is overly burdensome and provides little benefit in terms of continued demonstration of compliance. As an alternative, we propose to maintain the afterburner combustion chamber temperature at a minimum of 1300°F whenever any of the presses are in operation, and to continuously monitor and record the combustion chamber temperature. Combustion chamber temperature records will be maintained for a period of two years and will be available for inspection by the agency. At this combustion temperature and the manufacturer's specified residence time of 0.5 seconds (minimum), continuous compliance with the VOC destruction efficiency requirement will be demonstrated. TEC Systems literature discussing the performance of thermal afterburners is included as Attachment E. It should be noted that thermal afterburner performance does not degrade in time, as might occur with catalytic afterburners (due to poisoning of the catalyst material). As long as the thermal combustion chamber temperature is maintained, VOC destruction efficiency is assured.

We request that the requirement for annual compliance testing be replaced with a condition requiring installation of a continuous combustion chamber temperature monitor, with recordings of the output to be maintained for agency inspection for a period of two years.

DRAFT

Special Condition A(5)

This condition subjects the afterburner to opacity limits and requires initial and annual opacity compliance tests. At a 90% minimum control efficiency and maximum projected VOC input to the afterburner, the maximum VOC concentration in the afterburner exhaust will be 52 ppm. And at the more stringent control efficiency requirement of 95%, it will not exceed 26 ppm. Clearly, at these concentrations, there will be no visibles. The opacity of the exhaust from an afterburner meeting the VOC destruction efficiency requirements of Specific Condition A(2) will be well below the 20% limit of Special Condition A(5). Therefore, the additional requirement of opacity compliance demonstration is redundant, overly burdensome, and we request that this condition be deleted from the permit. It is important to note that the continuous monitoring of the combustion chamber temperature proposed under Special Condition A(4) will provide continuous surrogate demonstration of opacity compliance.

Specific Conditions B(1) and B(2)

These conditions impose operating hour restrictions, maximum particulate emissions rates and initial and subsequent compliance test requirements for the by-products pneumatic paper conveying system. These restrictions and requirements are inappropriate due to the fact that in normal operation there are no emissions from this process.

As explained in our letter to you dated November 16, 1990, the by-products system separates paper scrap from the conveying air stream using a series of cyclones. The exhaust from the cyclones is then "polished" by directing it through a baghouse filter system. The entire system is contained inside the building. It is totally enclosed, with no discharge to the environment. Only in the case of an unexpected, transient malfunction of the baghouse would there be a need to exhaust to the atmosphere. If this situation were to occur, its duration would be only the few hours needed to get the baghouse fixed. As stated in our letter, even during a bypass situation, we still would not violate the process weight based particulate emission standard.

We request that the limitations and requirements of Specific Conditions B(1) and B(2) be deleted and replaced by a requirement that the agency be notified whenever there is a malfunction of the baghouse requiring bypass operation for more than two hours.

DRAFT

Conclusion

With the changes to the Special Conditions detailed above, we can agree that the construction permit for our South Daytona facility provides a reasonable and attainable set of conditions consistent with maintaining the air quality goals of the State of Florida. If there are any questions, please call me at (708) 719-6755.

Sincerely,

R.R. DONNELLEY & SONS

Mark A. Horne
Environmental Engineer

MH:mh
DAYAPPL2

cc: G. Bender
H. Britton
D. Kalina
C. Zielke
Mr. Bruce Mitchell, FDER

BEST AVAILABLE COPY

The Lakeside Press

R. R. DONNELLEY & SONS COMPANY

ENVIRONMENTAL, SAFETY, & MATERIALS

750 WARRENVILLE ROAD

LISLE, ILLINOIS U.S.A. 60532-1554

FAX PROBLEMS
(708)719-6691
OR FOR IN-HOUSE
5-265-1-691

FROM FAX NO.
(708)719-6711
OR IN HOUSE
5-365-1-711

TELEFAX TRANSMISSION

DATE [illegible]-91

F[illegible] 708-922-6779

[illegible]

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

SOUTH DAYTONA MANUFACTURING DIVISION
3100 SOUTH RIDGEWOOD AVENUE
SOUTH DAYTONA, FLORIDA 32119
904-322-2300

CARL ZIELKE
VICE PRESIDENT
DIVISION DIRECTOR

February 14, 1991

C. H. Fancy P.E.
Chief
Bureau of Air Regulation
2600 Blair Stone Rd.
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

Per the requirement contained in your letter of 2/7/91, R. R. Donnelley & Sons Co. has had published the Notice of Intent to Issue Permit in the Daytona Beach News Journal. Attached is proof of this publication.

Our DER File No. is AC64-188871.

Sincerely,

Carl W. Zielke

Carl W. Zielke
Vice President & Div. Director

Attach.

cc: M. Horne

CWZ:jv
cc: B. Mitchell
C. Collins, SD Dist

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE TRACKING NUMBER 0205929334

24H 0205929334

Date 2/14/97

RECIPIENT'S COPY

1 From (Your Name) Please Print: C. Gelke

Your Phone Number (Very Important): ( )

Company: R DONNELLEY & SONS

Department/Floor No.:

Street Address: 9100 SOUTH RIDGEWOOD AVENUE

City: SOUTH DAYTONA BEAC State: FL ZIP Required: 32119

2 To (Recipient's Name) Please Print: C H. Yancy P.E.

Recipient's Phone Number (Very Important): ( )

Company: Bureau of Air Regulation

Department/Floor No.:

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip® Codes.): 2600 BLAIR Stone Rd.

City: Tallahassee, Fl. State: ZIP Required: 32399

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.)

H IF HOLD FOR PICK-UP, Print FEDEX Address Here

Street Address:

City: State: ZIP Required:

3 PAYMENT 1 ☐ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☐ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☐ Cash/Check

4 SERVICES (Check only one box)

Priority Overnight Service (Delivery by next business morning†)		Standard Overnight Service (Delivery by next business afternoon†)	
11	YOUR PACKAGING	51	
16	FEDEX LETTER *	56	FEDEX LETTER *
12	FEDEX PAK *	52	FEDEX PAK *
13	FEDEX BOX	53	FEDEX BOX
14	FEDEX TUBE	54	FEDEX TUBE

Economy Two-Day Service (formerly Standard Air) (Delivery by second business day†)		Heavyweight Service (for Extra Large or any package over 150 lbs.)	
30	ECONOMY TWO-DAY SVC.	70	HEAVYWEIGHT **
		80	DEFERRED HEAVYWEIGHT **

†Delivery commitment may be later in some areas.
*Declared Value Limit $100.
**Call for delivery schedule.

DELIVERY AND SPECIAL HANDLING (Check services required)

1 ☐ HOLD FOR PICK-UP (Fill in Box H)
2 ☒ DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) (Not available to all locations) ☐
4 ☐ DANGEROUS GOODS (Extra charge)
5 ☐
6 ☐ DRY ICE _____ Lbs.
7 ☐ OTHER SPECIAL SERVICE
8 ☐
9 ☐ SATURDAY PICK-UP (Extra charge)
10 ☐
11 ☐ DESCRIPTION
12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE
Total	Total	Total

DIM SHIPMENT (Chargeable Weight) ☐ _____ lbs.

Received At: 1 ☐ Regular Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

FedEx Emp. No.

Date/Time

5 Release Signature:

Emp. No. Date

☐ Cash Received
☐ Return Shipment
☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold

Street Address

City State Zip

Received By: X

Date/Time Received FedEx Employee Number

Federal Express Use	
Base Charges	
Declared Value Charge	
Other 1	
Other 2	
Total Charges	

REVISION DATE 8/90
PART #119501 FXEM 1/91
FORMAT #041

041

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LEGAL ADVERTISEMENT

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 R. R. Donnelley & Sons Co., 3100 S. Ridgewood Ave., South Daytona, Florida 32119-3548, to construct/install three new heatset web offset presses (Nos. SDM-001, 002 & 003), with dryers and enclosures, and a by-products pneumatic paper conveying system, with cyclones and baghouse control systems. The new presses will share TEC Systems, Inc. KATEC thermal afterburner system. 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 proposd 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 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 Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of
Environmental Regulation
Central District
319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Mr. Barry Andrews 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.
Legal 394. Feb. 14, 1991 1 t

LEGAL ADVERTISEMENT

DESTINATION DAYTONA! Tour and Travel Committee Meeting will be held February 19, 1991 at 3:00 p.m. in the Chamber Conference Room, 126 East Orange Avenue, Daytona Beach, Florida 32114.
The public is invited to attend.
Legal 396. Feb. 14, 1991 1 t

File Copy

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

Carol M. Browner, Secretary

February 7, 1991

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Carl W. Zielke
V.P. & Division Director
R. R. Donnelley & Sons Co.
3100 S. Ridgewood Ave.
South Daytona, Florida 32119-3548

Dear Mr. Zielke:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit for R. R. Donnelley & Sons Company to construct/install three new heatset web offset presses (Nos. SDM-001, 002 & 003), with dryers and enclosures, and a by-products pneumatic paper conveying system, with cyclones (3) and baghouse control systems. The new presses will share a TEC Systems, Inc. KATEC thermal afterburner system.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Mr. Barry Andrews of the Bureau of Air Regulation.

Sincerely,

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

CHF/bm

Attachments

c: C. Collins, Central District
T. W. Davis, P.E., ES&E
M. Horne, RRD&S
Reading File
Bruce Mitchell } 2-7-91 RAR

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

R. R. Donnelley & Sons Co.
3100 S. Ridgewood Ave.
South Daytona, Florida 32119-3548

DER File No. AC 64-188871

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its intent to issue an air construction permit (copy attached) for the proposed project as detailed in the application package specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, R. R. Donnelley & Sons Co., applied on November 2, 1990, to the Department of Environmental Regulation (DER) for a permit to construct/install three new heatset web offset presses (Nos. SDM-001, 002 & 003), with dryers and enclosures. The new presses will share a TEC Systems, Inc. KATEC thermal afterburner system. The applicant also applied to the DER on December 7, 1990, to construct/install a by-products pneumatic paper conveying system, which will include cyclones (3) and baghouse control systems. The proposed project will occur at the applicant's new facility to be located in South Daytona, Volusia County, Florida.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 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 application(s) 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.
Chief
Bureau of Air Regulation

Copies furnished to:

C. Collins, Central District
T. W. Davis, P.E., ES&E
M. Horne, RRD&S

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 2-7-91.

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.

Kym Dokes 2-7-91
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 R. R. Donnelley & Sons Co., 3100 S. Ridgewood Ave., South Daytona, Florida 32119-3548, to construct/install three new heatset web offset presses (Nos. SDM-001, 002 & 003), with dryers and enclosures, and a by-products pneumatic paper conveying system, with cyclones and baghouse control systems. The new presses will share a TEC Systems, Inc. KATEC thermal afterburner system. 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 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 Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Central District
319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

Any person may send written comments on the proposed action to Mr. Barry Andrews 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

R. R. Donnelley & Sons Company
Volusia County
South Daytona, Florida

Construction Permit No.
AC 64-188871

Department of Environmental Regulation
Division of Air Resources Management
Bureau of Air Regulation

February 7, 1991

I. Application

A. Applicant

R. R. Donnelley & Sons Company
3100 S. Ridgewood Avenue
South Daytona, Florida 32119-3548

B. Project

The applicant intends to construct/install three (two 8-unit and one 9-unit) new heatset web offset presses (SDM-001, 002 and 003), with dryers and enclosures, and a by-products pneumatic paper conveying system, with cyclones (3) and baghouse control systems. The new presses will share a TEC Systems, Inc. KATEC thermal afterburner system (Model No. KATEC 2-174). The project will occur at the applicant's existing facility located in Volusia County, Florida.

The UTM coordinates are Zone 17, 500.4 km East and 3224.6 km North.

C. Process and Controls

1. Three Heatset Web Offset Printing Presses

The substrate (paper) is fed off of a roll (bound) and through a series of ink roller cylinders. Then, the printed material is fed through a heated dryer enclosure, which cures the paper of the VOCs and sets the ink. The paper is then cooled, cut and folded.

The VOCs released in the heated dryer enclosures will be captured and transported to the afterburner. The applicant has a projected minimum destruction efficiency of 90.0%. The projected maximum VOC capture efficiency of each dryer enclosure is 80% (ink VOCs), 90% (alcohol substitute) and 37.5% (cleaning solvent). The incinerator and dryers will be operated on natural gas.

2. By-Products Pneumatic Paper Conveying System

The pneumatic paper conveying system is used to collect and transport paper trimmings and shavings to the balers for packaging and recycling. The system consists of three cyclones for separating the paper from the carrier air stream, followed by a baghouse filter for removing residual paper dust. The exhaust from the baghouse is returned to the conveying system. It is a completely closed loop system with no outside exhaust. An emergency bypass vent will be installed just prior to the baghouse to provide for the short term operation of the bindery in the event of a baghouse malfunction. In this situation, only the trimmers and slitters would be operated. The shredder will not be operated if the baghouse malfunctions. Based on the reliable experience of baghouse filters, no more than a few hours per year of unplanned downtime would be expected.

D. The Source Industrial Code is:

o 2752 Lithographic Commercial Printing Facility

The Source Classification Code is:

o 4-05-004-11 Lithographic Tons Solvent in Ink

II. Rule Applicability

The project is subject to preconstruction review pursuant to Chapter 403, Florida Statutes, and Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4 and 40 CFR (July, 1989 version).

The application package was deemed complete on December 7, 1990.

The existing facility will be a major emitting facility for VOCs in accordance with F.A.C. Rule 17-2.100(115). VOCs are defined in accordance with F.A.C. Rule 17-2.100(217).

The existing facility is located in Volusia County, an area designated attainment for all of the criteria pollutants pursuant to Part IV, F.A.C. Chapter 17-2.

Since the facility is not listed in Table 500-1, F.A.C. Chapter 17-2, the threshold is 250 TPY of any pollutant for initiating new source review pursuant to F.A.C. Rule 17-2.500, Prevention of Significant Deterioration (PSD).

Since there is no specific emission limiting standard for these type of sources contained in F.A.C. Rules 17-2.650 or 17-2.660 (EPA Region IV concurs), the proposed new sources will be permitted in accordance with F.A.C. Rules 17-2.610 and 17-2.620.

The proposed capture (dryer enclosures, etc.) efficiencies of 80% (ink VOCs), 90% (alcohol substitute) and 37.5% (cleaning solvent), are acceptable to the Department pursuant to F.A.C. Rule 17-2.620(1). Based on the proposed destruction (afterburner) efficiency of 90% plus and vendor infrormation, the Department will establish a minimum destruction efficiency of 95% pursuant to F.A.C Rule 17-2.620(1). Therefore, the following table will project the potential VOC emissions from the proposed project:

Table 1

Source	Potential VOC Pollutant Emissions lbs/hr	TPY
Afterburner		
Ink	12.8	56.1
Alcohol Substitute	1.5	6.6
Cleaning Solvents	0.05	0.2
NG Usage	0.04	0.2
Dryers (3)		
NG Usage	0.12	0.5
Fugitives		
Alcohol Substitutes	3.3	14.5
Cleaning Solvents	1.7	7.4
	Total:	85.5

Note: 1. Continuous operation allowed (i.e., 8760 hrs/yr);
2. Minimum afterburner destruction efficiency is 95%; and
3. Emissions for NG combustion based on Table 1.4-1, AP-42 Emission Factors.

The projected potential pollutant emissions, except for VOC, from natural gas combustion from both the afterburner and three associated dryers are 0.7 TPY (PM), 0.15 TPY (SO_2), 25.1 TPY (NO_x), and 7.2 TPY (CO). These projections are based on continuous operation (i.e., 8760 hrs/yr), Table 1.4-1, AP-42 Emission Factors, and maximum heat inputs of 7.2 MMBtu/hr (afterburner) and 42 MMBtu/hr (total: dryers x 3).

The projected potential PM emissions from the by-products pneumatic paper conveying system are 3.44 lbs/hr (12.5 TPY) pursuant to F.A.C. Rule 17-2.610(1). The projected annual hours of operation are 7280 hrs/yr.

Based on the potential pollutant emissions, the proposed new facility is considered a minor facility and the potential pollutant emissions are subject to review in accordance with F.A.C. Rule 17-2.520, Sources Not Subject to PSD or Nonattainment Requirements.

Pursuant to F.A.C. Rule 17-2.620(2), objectionable odors shall not be allowed off of the facility's property.

Pursuant to F.A.C. Rule 17-2.610(2), visible emissions (VE) from the afterburner shall be less than 20% opacity.

The proposed project is subject to all applicable provisions of F.A.C. Chapters 17-2 and 17-4 and 40 CFR (July, 1989 version). Also, the new presses are subject to the applicable provisions of F.A.C. Rules 17-2.240: Circumvention; 17-2.250: Excess Emissions; and, 17-4.130: Plant Operation-Problems.

Initial and annual compliance tests on the TEC Systems, Inc. KATEC thermal afterburner shall be conducted using EPA Method 9 (visible emissions) and EPA Method 25A (VOC destruction efficiency) in accordance with F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A (July, 1989 version). Other test methods may be uesd as long as prior Department approval has been granted in writing.

The actual VOC capture efficiency of each dryer enclosure will have to be demonstrated and is to compare the outlet concentration to the inlet concentration. The initial and annual demonstration of the capture efficiency of each press shall be conducted using the permittee's selected protocol from the U.S. EPA's document titled "Guidelines for Developing a State Protocol for the Measurement of Capture Efficiency" (see permit Attachments). The permittee will have to notify the Department's Central District in writing at least 60 days prior to conducting any compliance test(s) as to which capture efficiency testing protocol will be used.

Since the by-products pneumatic paper conveying system is a minor source with a baghouse control system, a VE standard of "not greater than 5% opacity" will be imposed for compliance purposes pursuant to F.A.C. Rule 17-2.700(3)(d). Consequently, a mass emissions test for PM using EPA Method 5 will not be imposed unless the Department feels that the mass emissions limit of 3.44 lbs/hr (12.5 TPY) is being violated. Therefore, initial and subsequent compliance tests shall be conducted using EPA Method 9 in accordance with F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A (July, 1989 version).

III. Summary of Emissions and Air Quality Analysis

A. Emission Limitations

The pollutant that is regulated from the new presses is VOC. The presses and the by-products pneumatic paper conveying system (BPPPCS) are also subject to visible emissions standards. The following table will display the applicable emissions standards and limitations:

Table 2

Source	Pollutant	Emission Standards and Limitations
Presses SDM-001, 002 & 003	VOC	total of 5.1 lbs/hr, 22.4 TPY
KATEC Thermal Afterburner	VOC	total of 14.4 lbs/hr, 63.1 TPY
	VE	< 20% opacity
BPPPCS	VE	not greater than 5% opacity

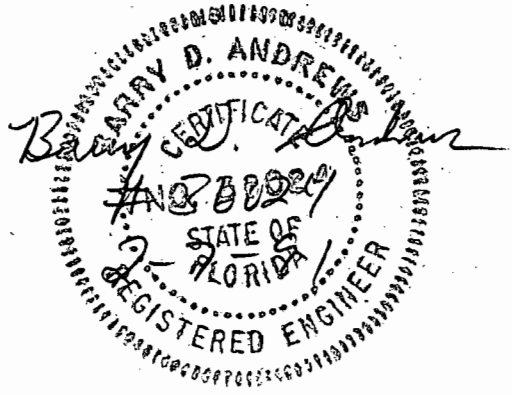
Note:
- o Presses are allowed continuous operation (i.e., 8760 hrs/yr); the BPPPCS will be permitted to operate 7280 hrs/yr;
- o Emissions from the presses are based on minimum capture efficiencies of 80% (ink VOCs), 90% (alcohol substitute) and 37.5% (cleaning solvent), in accordance with F.A.C. Rule 17-2.620(1);
- o Emissions from the afterburner are based on a minimum destruction efficiency of 95% in accordance with F.A.C. Rule 17-2.620(1); and,
- o The VE standard for the BPPPCS is in accordance with F.A.C. Rule 17-2.700(3)(d).

B. Air Quality Analysis

Based on a technical review of the project, an air quality analysis was not required.

IV. Conclusion

Based on the information provided by R. R. Donnelley & Sons Company, the Department has reasonable assurance that the proposed construction of three new heatset web offset printing presses (Nos. SDM-001, 002 & 003) and the by-products pneumatic paper conveying system, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or 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

Lawton Chiles, Governor

Carol M. Browner, Secretary

PERMITTEE:
R. R. Donnelley & Sons Company
3100 S. Ridgewood Avenue
South Daytona, Florida 32119-3548

Permit Number: AC 64-188871
Expiration Date: April 30, 1992
County: Broward
Latitude/Longitude: 29°09'00"N
80°59'15"W
Project: Construction of Presses Nos. SDM-001, 002 & 003, and a By-Products Pneumatic Paper Conveying System

This permit is issued under the provisions of Chapter 403, Florida Statutes, Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and 40 CFR (July, 1989 version). The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the construction of three new presses (Nos. SDM-001, 002 & 003), with dryers and enclosures, and an associated and shared TEC Systems, Inc. KATEC thermal afterburner; also, the minimum VOC capture (dryer enclosures, etc.) efficiencies are 80% (ink VOCs), 90% (alcohol substitute) and 37.5% (cleaning solvent), and destruction (afterburner) efficiency is 95.0%. The project also includes the construction of a by-products pneumatic paper conveying system, with associated cyclones (3) and baghouse control systems. The VOC content of the inks will be 38% or less by weight. The project will occur at the applicant's existing facility. The UTM coordinates are Zone 17, 500.4 km East and 3224.6 km North.

The Source Industrial Code is:
o 2752 Lithographic Commercial Printing Facility
The Source Classification Code is:
o 4-05-004-11 Lithographic Tons Solvent in Ink

The sources 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 are listed below:

1. Application to Construct Air Pollution Sources, DER Form 17-1.202(1) received November 2, 1990.
2. Mr. Mark Horne's letter with enclosures received December 7, 1990.
3. Mr. Bruce P. Miller's letter with enclosure ("Guidelines for Developing a State Protocol for the Measurement of Capture Efficiency) dated May 15, 1990.
4. Interoffice Memorandum dated January 28, 1991, from Mr. Bruce Mitchell.
5. Technical Evaluation and Preliminary Determination dated February 7, 1991.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

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. Neither 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 is not 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, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

GENERAL CONDITIONS:

6. The permittee shall 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 and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

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

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

c. Sample or monitor 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 provide the Department with the following information:

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

b. the period of noncompliance, including 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.

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 for 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 involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

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 17-4.120 and 17-30.300, F.A.C., 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 or a copy thereof shall be kept at the work site of the permitted activity.

13. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold 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) required by the permit, copies of all reports required by this permit, and

GENERAL CONDITIONS:

records of all data used to complete the application for this permit. These materials shall be retained 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 dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

14. 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 corrected promptly.

SPECIFIC CONDITIONS:

A. SDM-001, 002 & 003: Presses

1. Continuous operation is permitted (i.e., 8760 hrs/yr).

2. Total VOC emissions from presses Nos. SDM-001, 002 & 003, shall not exceed 19.35 lbs/hr (84.8 TPY), which is based on minimum capture (dryer enclosures, etc.) efficiencies of 80% (inks), 90% (alcohol substitute) and 37.5% (cleaning solvent), and destruction (afterburner) efficiency of 95.0% pursuant to F.A.C. Rule 17-2.620(1). Total allowable VOC emissions from the KATEC thermal afterburner shall not exceed 14.35 lbs/hr (62.9 TPY).

3. The initial and annual demonstration of the capture efficiency of each dryer enclosure shall be conducted using the U.S. EPA's "Guidelines for Developing a State Protocol for the Measurement of Capture Efficiency" (attached). The permittee shall notify the Department's Central District in writing of the protocol that will be used for the capture efficiency demonstration purpose at least 60 days prior to compliance testing.

SPECIFIC CONDITIONS:

4. Initial and annual compliance tests for the actual destruction efficiency (comparison of the inlet and outlet concentrations) of the KATEC thermal afterburner shall be conducted using EPA Method 25A, pursuant to F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A (July, 1989 version). Other test methods may be used as long as prior Department approval has been granted in writing.

5. The KATEC thermal afterburner is subject to the visible emissions standard of "less than 20% opacity" pursuant to F.A.C. Rule 17-2.610(2). Initial and annual compliance tests shall be conducted using EPA Method 9 pursuant to F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A (July, 1989 version).

B. By-Products Pneumatic Paper Conveying System

1. Hours of operation shall not exceed 20 hrs/day, 7 days/wk and 52 wks/yr, for a total of 7280 hrs/yr.

2. The maximum allowable particulate matter (PM) emissions shall be 3.44 lbs/hr (12.5 TPY) pursuant to F.A.C. Rule 17-2.610(1). Compliance shall be demonstrated using EPA Method 5 pursuant to F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A. In lieu of conducting a mass test for PM for compliance, the Department will impose a visible emission (VE) standard of "not greater than 5% opacity" in accordance with F.A.C. Rule 17-2.700(3)(d). Initial and subsequent VE compliance tests shall be conducted using EPA Method 9 pursuant to F.A.C. Rule 17-2.700 and 40 CFR 60, Appendix A.

C. General

1. The Department's Central District shall be notified in writing at least 15 days prior to conducting compliance tests pursuant to F.A.C. Rule 17-2.700(2).

2. Test reports shall be submitted to the Department's Central District no later than 45 days after the last sampling run of each test is completed pursuant to F.A.C. Rule 17-2.700(7).

3. This project is subject to all applicable provisions of F.A.C. Chapters 17-2 and 17-4 and 40 CFR (July, 1989 version).

4. The sources are subject to the applicable provisions of F.A.C. Rules 17-2.240: Circumvention; 17-2.250: Excess Emissions; and, 17-4.130: Plant Operation-Problems.

PERMITTEE:
R. R. Donnelley & Sons Co.

Permit Number: AC 64-188871
Expiration Date: April 30, 1992

SPECIFIC CONDITIONS:

5. Objectionable odors shall not be allowed off plant property pursuant to F.A.C. Rule 17-2.620(2).

6. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation prior to 60 days before the expiration of the permit (F.A.C. Rule 17-4.090).

7. An application for an operation permit must be submitted to the Department's Central District office at least 90 days prior to the expiration date of this construction permit. 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. Rules 17-4.055 and 17-4.220).

Issued this _____ day
of _____, 1991

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

_____

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

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: File: R. R. Donnelley & Sons Company
AC 64-188871

FROM: Bruce Mitchell

DATE: January 24, 1991

SUBJ: Calculations

A. Destruction Efficiency of 95% - Afterburner

	VOC Input (lbs/hr)	Capture %	Emission Rate (lbs/hr)
o Ink VOCs	319.2	80	12.8
o Alcohol Sub.	32.8	90	1.5
o Cleaning VOC	2.7	37.5	0.05
		Total:	14.35

Department of Environmental Regulation

Routing and Transmittal Slip

To: (Name, Office, Location)

1. Patti,
2. Please send R R Donnelley & Sons Co.
3. TE's BD pkg by FED Exp.:
4.

Remarks:

Fed Exp. #: 1264-1304-1

Please put their "Internal Billing Ref. #" on the Fed Exp. sheet (in middle of the sheet/ receipt):

000-70252200-8500

A.
Mr. Mark Horne
Environmental Engineer
R.R. Donnelley & Sons. Company
750 Warrenville Road
Lisle, Illinois 60532

From	Date
	Phone

SYED

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

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

MAY 15 1990

4APT/APB

Mr. Steve Smallwood, P.E., Director
Air Resources Management Division
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Smallwood:

Enclosed please find a copy of an April 16, 1990, memo from John Seitz entitled "Guidelines for Developing a State Protocol for the Measurement of Capture Efficiency (CE)." This memo provides guidance on the determination of capture efficiency and contains protocols developed by EPA for use by both the states and EPA. These protocols will serve as the basis for capture efficiency determinations and should be used in the interim prior to adoption into the SIP. The model language for adoption of the capture efficiency protocols as SIP regulations will be sent to you as soon as it is received from EPA Headquarters.

If you have any questions, please do not hesitate to call Kay Prince of my staff at (404) 347-2864.

Sincerely,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides & Toxics
Management Division

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AIR PROGRAMS BRANCH
RECEIVED
APR 27 1990
EPA-REGION IV
ATLANTA, GA.

APR 16 1990

MEMORANDUM

SUBJECT: Guidelines for Developing a State Protocol for the Measurement of Capture Efficiency (CE)

FROM: John S. Seitz, Director
Stationary Source Compliance Division

TO: Air Management Division Directors
Regions III and IX

Air and Waste Management Division Director
Region II

Air, Pesticides and Toxics Management Division Directors
Region I, IV, and VI

Air and Radiation Division Director
Region V

Air and Toxics Division Directors
Regions VII, VIII, and X

This memorandum provides guidance on capture efficiency (CE) measurement procedures for determining compliance with the applicable regulations for volatile organic compounds (VOC). The guidance represents the combined input of several offices within the Office of Air Quality Planning and Standards (OAQPS). This guidance has been reviewed by the Office of Enforcement and Compliance Monitoring (OECM).

The purpose of this guidance is to provide sufficient information to States for adopting CE measurement protocols into State implementation plans (SIPs). Included in this guidance are: 1) Conditions for exempting CE determinations; 2) Recommended CE protocols; 3) Requirements for adopting the recommended protocols into SIPs; 4) Requirements if a State decides to adopt non-recommended protocols; and 5) As attachments, a guideline document for developing CE protocols and recommended measurement procedures.

The following terminology and abbreviations are used throughout the memorandum:

CE	Capture efficiency
VOC	Volatile organic compounds
F	Gas phase fugitive VOC
G	Gas phase VOC captured and delivered to the control device
L	VOC in liquid input
BE	Building or room enclosure
PTE	Permanent total enclosure
TTE	Temporary total enclosure

CONDITIONS FOR EXEMPTION FROM CE DETERMINATION

VOC regulations normally require the assessment of overall reduction efficiency of a control system. Generally, this assessment is done in two parts: 1) determination of CE and 2) determination of control device efficiency. However, if a source is equipped with a permanent total enclosure, the requirement to measure CE can be waived provided that the source owner or operator demonstrates that the enclosure meets the specifications given in attached Procedure T for permanent total enclosure (PTE). A PTE is an enclosure that captures and delivers 100 percent of the VOC emitted by the process to the control device. In such a case, the CE will be considered to be 100 percent and only the control device efficiency, which would be equal to the overall reduction efficiency, needs to be determined.

RECOMMENDED CE PROTOCOLS

Typically, in a VOC emitting process, an input VOC stream (L), most likely a liquid, enters the process and two gas phase VOC streams leave the process: the gas phase VOC (G) captured and delivered to the control device, and the gas phase fugitive VOC (F), i.e., the VOC that is not captured. CE is essentially the ratio of the amount of VOC captured (G) to the amount of VOC introduced to the process (L). CE cannot be measured directly, but must be calculated based on a material balance from the measurement of two of the three VOC streams to the process.

When the material balance involves measuring only the gas phase VOC streams, i.e., the captured VOC (G) and fugitive VOC (F), it is referred to as the gas/gas method. When the material balance involves measuring the liquid VOC input (L) and the fugitive VOC (F) or the captured VOC (G), it is referred to as the liquid/gas method.

Several different protocols for determining CE are described in detail in the attachment, "Guidelines for Developing Capture Efficiency Protocols." Specific procedures for measuring VOC in input L and output streams G and F of a process, and verifying that an enclosure meets the specifications for a permanent or temporary total enclosure are also included in the attachments. They are:

Procedure F.1	Fugitive VOC Emissions from Temporary Enclosures
Procedure F.2	Fugitive VOC Emissions from Building Enclosures
Procedure G.1	Capture VOC Emissions
Procedure G.2	Capture VOC Emissions (Dilution Technique)
Procedure L	VOC in Liquid Input Stream
Procedure T	Criteria for and Verification of a Permanent or Temporary Total Enclosure

Some of the protocols are likely to produce much more reliable CE determinations than others. One major objective of this guidance is to encourage the use of those techniques most likely to produce the most accurate CE determinations.

Based on theoretical error analyses of several CE protocols, the protocols that measure the fugitive VOC (F) directly were found to have lowest potential variability. These procedures involve measuring F from a temporary total enclosure (TTE) or from the existing building or room enclosure (BE). Thus the following protocols, identified by the same number as they are listed in the attachment, "Guidelines for Developing Capture Efficiency Protocols," are recommended:

Protocol 1a -

Gas/gas method using a TTE and Procedures G.2 and F.1.

Protocol 2a -

Liquid/gas method using a TTE and Procedures L and F.1.

Protocol 1 c, Option A -

Gas/gas method using as the enclosure the building or room (BE) in which only the affected source is located and operated and Procedures G.2 and F.2.

Protocol 2c, Option A -

Liquid/gas method using as the enclosure the building or room (BE) in which only the affected source is located and operated and Procedures L and F.2.

The installation of a PTE, or the use of an existing enclosure (building or room) that can serve as one, is clearly a highly desirable means for complying with the CE requirements. Not only does it achieve total capture, reducing VOC emissions to the air, but it saves the cost of all future requirements to measure CE.

For sources using a control device, e.g., carbon adsorber, to collect and recover VOC, an explicit measurement of CE may not be necessary; the overall reduction efficiency of the control system can be determined by directly comparing the input VOC to the recovered VOC. The procedure for use in such situations is described in 40 CFR 60.433.

Other protocols evaluated but not recommended for use

Other protocols that have been evaluated are identified as Protocols 1b; 2b; 1c, Option B; and 2c, Option B in the attachment, "Guidelines for Developing Capture Efficiency Protocols." They show significantly higher potential imprecisions, and therefore, are not recommended for use.

REQUIREMENTS FOR SPECIFYING CE IN SIP'S

For EPA approval, SIPs concerning CE measurements must incorporate the above recommended protocols, i.e., Protocols 1a; 2a; 1c, Option A; and 2c, Option A. Model regulatory language for incorporating CE protocol specifications into the SIP revisions is currently being prepared and is expected to be distributed soon.

REQUIREMENTS FOR SPECIFYING NON-RECOMMENDED PROTOCOLS

The recommended CE protocols will accommodate the majority of the VOC sources. However, there may be cases where the recommended protocols will not be suitable. If, for a given source or source category the State feels it necessary to consider other CE protocols, it must present in the SIP for EPA's approval on a case by case basis: a) these new protocols; b) the reasons why the EPA recommended protocols are unsuitable; and c) the rationale and validity for the new protocols.

Once a protocol is approved it must be used, and the source must accept the results of the testing, irrespective of the potential error margin associated with the measured CE values.

Attachments

cc: Jack Farmer, Director
Emission Standards Division

John Calcagni, Director
Air Quality Management Division

William Laxton, Director
Technical Support Division

Air Compliance Branch Chiefs
Regions I - X

Regional Counsel
Regions I - X

VOC Coordinators

VOC CAPTURE EFFICIENCY
Procedure F.1 - Fugitive VOC Emissions from Temporary Enclosures

1. INTRODUCTION

1.1 Applicability. This procedure is applicable for determining the fugitive volatile organic compounds (VOC) emissions from a temporary total enclosure (TTE). It is intended to be used as a segment in the development of liquid/gas or gas/gas protocols for determining VOC capture efficiency (CE) for surface coating and printing operations.

1.2 Principle. The amount of fugitive VOC emissions (F) from the TTE is calculated as the sum of the products of the VOC content (C_{Fj}), the flow rate (Q_{Fj}), and the sampling time (θ_F) from each fugitive emissions point.

1.3 Estimated Measurement Uncertainty. The measurement uncertainties are estimated for each fugitive emission point as follows: Q_{Fj} = ±5.5 percent and CFj = ±5.0 percent. Based on these numbers, the probable uncertainty for F is estimated at about ±7.4 percent.

1.4 Sampling Requirements. A capture efficiency test shall consist of at least three sampling runs. The sampling time for each run should be at least 8 hours, unless otherwise approved.

1.5 Notes. Because this procedure is often applied in highly explosive areas, caution and care should be exercised in choosing appropriate equipment and installing and using the equipment. Mention of trade names or company products does not constitute endorsement. All gas concentrations (percent, ppm) are by volume, unless otherwise noted.

2. APPARATUS AND REAGENTS

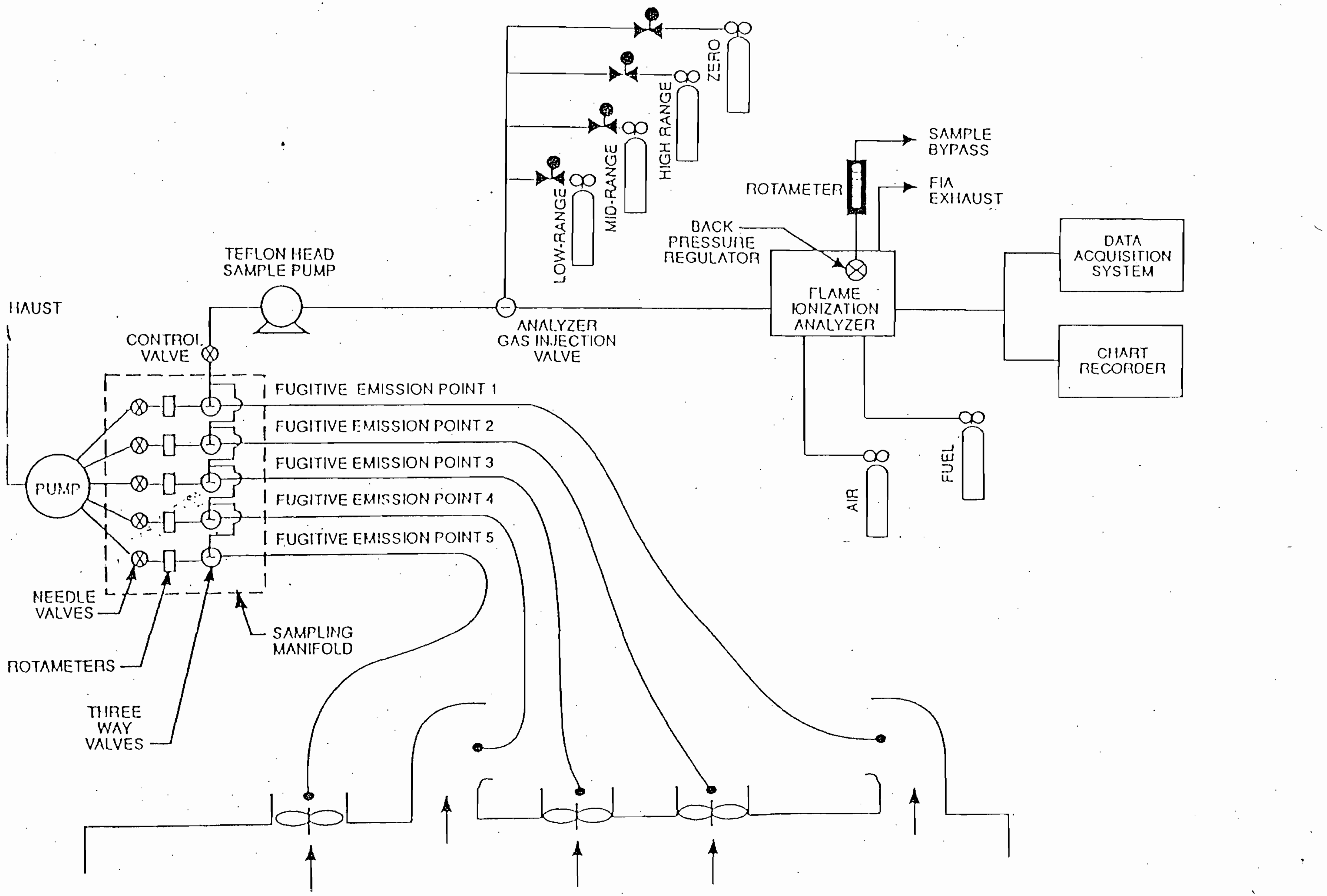
2.1 Gas VOC Concentration. A schematic of the measurement system is shown in Figure 1. The main components are described below:

2.1.1 Sample Probe. Stainless steel, or equivalent. The probe shall be heated to prevent VOC condensation.

2.1.2 Calibration Valve Assembly. Three-way valve assembly at the outlet of sample probe to direct the zero and calibration gases to the analyzer. Other methods, such as quick-connect lines, to route calibration gases to the outlet of the sample probe are acceptable.

2.1.3 Sample Line. Stainless steel or Teflon tubing to transport the sample gas to the analyzer. The sample line must be heated to prevent condensation.

2.1.4 Sample Pump. A leak-free pump, to pull the sample gas through the system at a flow rate sufficient to minimize the response time of the measurement system. The components of the pump that contact the gas stream



...issions measurement system

shall be constructed of stainless steel or Teflon. The sample pump must be heated to prevent condensation.

2.1.5 Sample Flow Rate Control. A sample flow rate control valve and rotameter, or equivalent, to maintain a constant sampling rate within 10 percent. The flow control valve and rotameter must be heated to prevent condensation. A control valve may also be located on the sample pump bypass loop to assist in controlling the sample pressure and flow rate.

2.1.6 Sample Gas Manifold. Capable of diverting a portion of the sample gas stream to the flame ionization analyzer (FIA), and the remainder to the bypass discharge vent. The manifold components shall be constructed of stainless steel or Teflon. If emissions are to be measured at multiple locations, the measurement system shall be designed to use separate sampling probes, lines, and pumps for each measurement location and a common sample gas manifold and FIA. The sample gas manifold and connecting lines to the FIA must be heated to prevent condensation.

2.1.7 Organic Concentration Analyzer. An FIA with a span value of 1.5 times the expected concentration as propane; however, other span values may be used if it can be demonstrated that they would provide more accurate measurements. The system shall be capable of meeting or exceeding the following specifications:

2.1.7.1 Zero Drift. Less than ±3.0 percent of the span value.

2.1.7.2 Calibration Drift. Less than ±3.0 percent of the span value.

2.1.7.3 Calibration Error. Less than ±5.0 percent of the calibration gas value.

2.1.7.4 Response Time. Less than 30 seconds.

2.1.8 Integrator/Data Acquisition System. An analog or digital device or computerized data acquisition system used to integrate the FIA response or compute the average response and record measurement data. The minimum data sampling frequency for computing average or integrated values is one measurement value every 5 seconds. The device shall be capable of recording average values at least once per minute.

2.1.9 Calibration and Other Gases. Gases used for calibration, fuel, and combustion air (if required) are contained in compressed gas cylinders. All calibration gases shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. Additionally, the manufacturer of the cylinder should provide a recommended shelf life for each calibration gas cylinder over which the concentration does not change more than ±2 percent from the certified value. For calibration gas values not generally available, alternative methods for preparing calibration gas mixtures, such as dilution systems, may be used with prior approval.

2.1.9.1 Fuel. A 40 percent H_2/60 percent He or 40 percent H_2/60 percent N_2 gas mixture is recommended to avoid an oxygen synergism effect that reportedly occurs when oxygen concentration varies significantly from a mean value.

2.1.9.2 Carrier Gas. High purity air with less than 1 ppm of organic material (as propane or carbon equivalent) or less than 0.1 percent of the span value, whichever is greater.

2.1.9.3 FIA Linearity Calibration Gases. Low-, mid-, and high-range gas mixture standards with nominal propane concentrations of 20-30, 45-55, and 70-80 percent of the span value in air, respectively. Other calibration values and other span values may be used if it can be shown that more accurate measurements would be achieved.

2.1.10 Particulate Filter. An in-stack or an out-of-stack glass fiber filter is recommended if exhaust gas particulate loading is significant. An out-of-stack filter must be heated to prevent any condensation unless it can be demonstrated that no condensation occurs.

2.2 Fugitive Emissions Volumetric Flow Rate.

2.2.1 Method 2 or 2A Apparatus. For determining volumetric flow rate.

2.2.2 Method 3 Apparatus and Reagents. For determining molecular weight of the gas stream. An estimate of the molecular weight of the gas stream may be used if it can be justified.

2.2.3 Method 4 Apparatus and Reagents. For determining moisture content, if necessary.

2.3 Temporary Total Enclosure. The criteria for designing a TTE are discussed in Procedure T.

3. DETERMINATION OF VOLUMETRIC FLOW RATE OF FUGITIVE EMISSIONS

3.1 Locate all points where emissions are exhausted from the TTE. Using Method 1, determine the sampling points. Be sure to check each site for cyclonic or swirling flow.

3.2 Measure the velocity at each sampling site at least once every hour during each sampling run using Method 2 or 2A.

4. DETERMINATION OF VOC CONTENT OF FUGITIVE EMISSIONS

4.1 Analysis Duration. Measure the VOC responses at each fugitive emission point during the entire test run or, if applicable, while the process is operating. If there are multiple emission locations, design a sampling system to allow a single FIA to be used to determine the VOC responses at all sampling locations.

4.2 Gas VOC Concentration.

4.2.1 Assemble the sample train as shown in Figure 1. Calibrate the FIA and conduct a system check according to the procedures in Sections 5.1 and 5.3, respectively.

4.2.2 Install the sample probe so that the probe is centrally located in the stack, pipe, or duct, and is sealed tightly at the stack port connection.

4.2.3 Inject zero gas at the calibration valve assembly. Allow the measurement system response to reach zero. Measure the system response time as the time required for the system to reach the effluent concentration after the calibration valve has been returned to the effluent sampling position.

4.2.4 Conduct a system check before and a system drift check after each sampling run according to the procedures in Sections 5.2 and 5.3. If the drift check following a run indicates unacceptable performance, the run is not valid. The tester may elect to perform system drift checks during the run not to exceed one drift check per hour.

4.2.5 Verify that the sample lines, filter, and pump temperatures are 120 ± 5°C.

4.2.6 Begin sampling at the start of the test period and continue to sample during the entire run. Record the starting and ending times and any required process information as appropriate. If multiple emission locations are sampled using a single FIA, sample at each location for the same amount of time (e.g., 2 minutes) and continue to switch from one location to another for the entire test run. Be sure that total sampling time at each location is the same at the end of the test run. Collect at least 4 separate measurements from each sample point during each hour of testing. Disregard the response measurements at each sampling location until two times the response time of the measurement system has elapsed. Continue sampling for at least 1 minute and record the concentration measurements.

4.3 Background Concentration.

4.3.1 Determination of VOC Background Concentration.

4.3.1.1 Locate all NDO's of the TTE. A sampling point shall be centrally located outside of the TTE at 4 equivalent diameters from each NDO, if possible. If there are more than 6 NDO's, choose 6 sampling points evenly spaced among the NDO's.

4.3.1.2 Assemble the sample train as shown in Figure 2. Calibrate the FIA and conduct a system check according to the procedures in Sections 5.1 and 5.3.

4.3.1.3 Position the probe at the sampling location.

4.3.1.4 Determine the response time, conduct the system check and sample according to the procedures described in Sections 4.2.3 to 4.2.6.

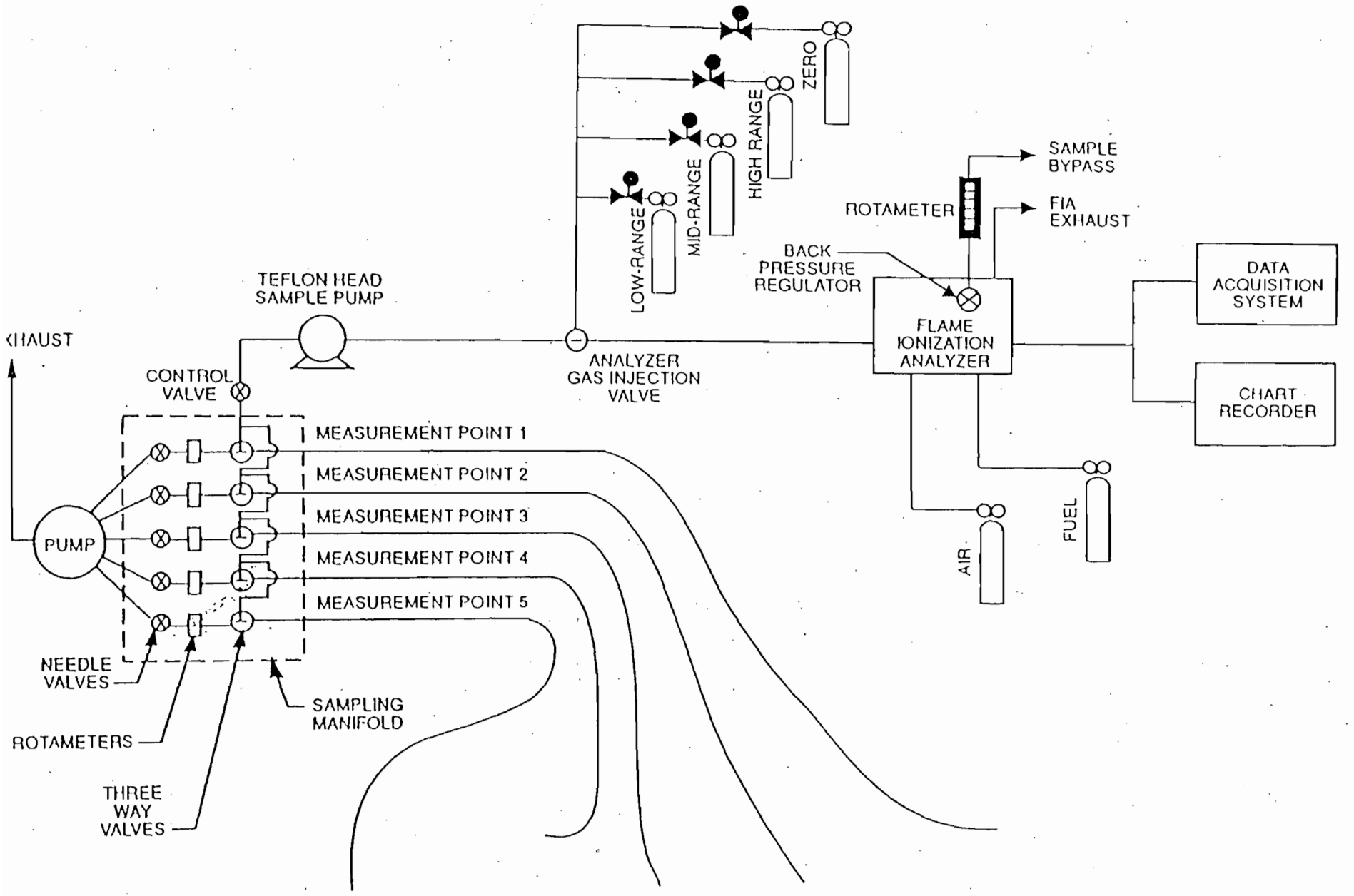


Figure 2. Background measurement system.

4.4 Alternative Procedure. The direct interface sampling and analysis procedure described in Section 7.2 of Method 18 may be used to determine the gas VOC concentration. The system must be designed to collect and analyze at least one sample every 10 minutes.

5. CALIBRATION AND QUALITY ASSURANCE

5.1 FIA Calibration and Linearity Check. Make necessary adjustments to the air and fuel supplies for the FIA and ignite the burner. Allow the FIA to warm up for the period recommended by the manufacturer. Inject a calibration gas into the measurement system and adjust the back-pressure regulator to the value required to achieve the flow rates specified by the manufacturer. Inject the zero- and the high-range calibration gases and adjust the analyzer calibration to provide the proper responses. Inject the low- and mid-range gases and record the responses of the measurement system. The calibration and linearity of the system are acceptable if the responses for all four gases are within 5 percent of the respective gas values. If the performance of the system is not acceptable, repair or adjust the system and repeat the linearity check. Conduct a calibration and linearity check after assembling the analysis system and after a major change is made to the system.

5.2 Systems Drift Checks. Select the calibration gas concentration that most closely approximates that of the fugitive gas emissions to conduct the drift checks. Introduce the zero and calibration gas at the calibration valve assembly and verify that the appropriate gas flow rate and pressure are present at the FIA. Record the measurement system responses to the zero and calibration gases. The performance of the system is acceptable if the difference between the drift check measurement and the value obtained in Section 5.1 is less than 3 percent of the span value. Conduct a system drift check at the end of each run.

5.3 System Check. Inject the high range calibration gas at the inlet of the sampling probe and record the response. The performance of the system is acceptable if the measurement system response is within 5 percent of the value obtained in Section 5.1 for the high range calibration gas. Conduct a system check before each test run.

5.4 Analysis Audit. Immediately before each test analyze an audit cylinder as described in Section 5.2. The analysis audit must agree with the audit cylinder concentration within 10 percent.

6. NOMENCLATURE

A_i = area of NDO i, ft^2.

A_N = total area of all NDO's in the enclosure, ft^2.

C_{Bi} = corrected average VOC concentration of background emissions at point i, ppm propane.

C_B = average background concentration, ppm propane.

C_{DH} = average measured concentration for the drift check calibration gas, ppm propane.

C_{DO} = average system drift check concentration for zero concentration gas, ppm propane.

C_{Fj} = corrected average VOC concentration of fugitive emissions at point j, ppm propane.

C_H = actual concentration of the drift check calibration gas, ppm propane.

C_i = uncorrected average background VOC concentration at point i, ppm propane.

C_j = uncorrected average VOC concentration measured at point j, ppm propane.

F = total VOC content of fugitive emissions, kg.

K_1 = 1.830×10^{-6} kg/(m^3-ppm).

n = number of measurement points.

Q_{Fj} = average effluent volumetric flow rate corrected to standard conditions at fugitive emissions point j, m^3/min.

θ_F = total duration of fugitive emissions sampling run, min.

7. CALCULATIONS

7.1 Total VOC Fugitive Emissions.

$$F = \sum_{j=1}^{n} (C_{Fj} - C_B)\ Q_{Fj}\ \theta_F\ K_1 \qquad \text{Eq. 1}$$

7.2 VOC Concentration of the Fugitive Emissions at Point j.

$$C_{Fj} = (C_j - C_{DO}) \frac{C_H}{C_{DH} - C_{DO}} \qquad \text{Eq. 2}$$

7.3 Background VOC Concentration at Point i.

$$C_{Bi} = (C_i - C_{DO}) \frac{C_H}{C_{DH} - C_{DO}} \qquad \text{Eq. 3}$$

7.4 Average Background Concentration.

$$C_B = \frac{\sum_{i=1}^{n} C_{Bi} A_i}{n . A_N} \qquad \text{Eq. 4}$$

NOTE: If the concentration at each point is within 20 percent of the average concentration of all points, the terms "A_i" and "A_N" may be deleted from Equation 4.

VOC CAPTURE EFFICIENCY
Procedure F.2 - Fugitive VOC Emissions from Building Enclosures

1. INTRODUCTION

1.1 Applicability. This procedure is applicable for determining the fugitive volatile organic compounds (VOC) emissions from a building enclosure (BE). It is intended to be used as a segment in the development of liquid/gas or gas/gas protocols for determining VOC capture efficiency (CE) for surface coating and printing operations.

1.2 Principle. The total amount of fugitive VOC emissions (F_B) from the BE is calculated as the sum of the products of the VOC content (C_{Fj}) of each fugitive emissions point, its flow rate (Q_{Fj}), and time (θ_F).

1.3 Measurement Uncertainty. The measurement uncertainties are estimated for each fugitive emissions point as follows: Q_{Fj} = ±5.0 percent and C_{Fj} = ±5.0 percent. Based on these numbers, the probable uncertainty for F_B is estimated at about ±11.2 percent.

1.4 Sampling Requirements. A capture efficiency test shall consist of at least three sampling runs. The sampling time for each run should be at least 8 hours, unless otherwise approved.

1.5 Notes. Because this procedure is often applied in highly explosive areas, caution and care should be exercised in choosing appropriate equipment and installing and using the equipment. Mention of trade names or company products does not constitute endorsement. All gas concentrations (percent, ppm) are by volume, unless otherwise noted.

2. APPARATUS AND REAGENTS

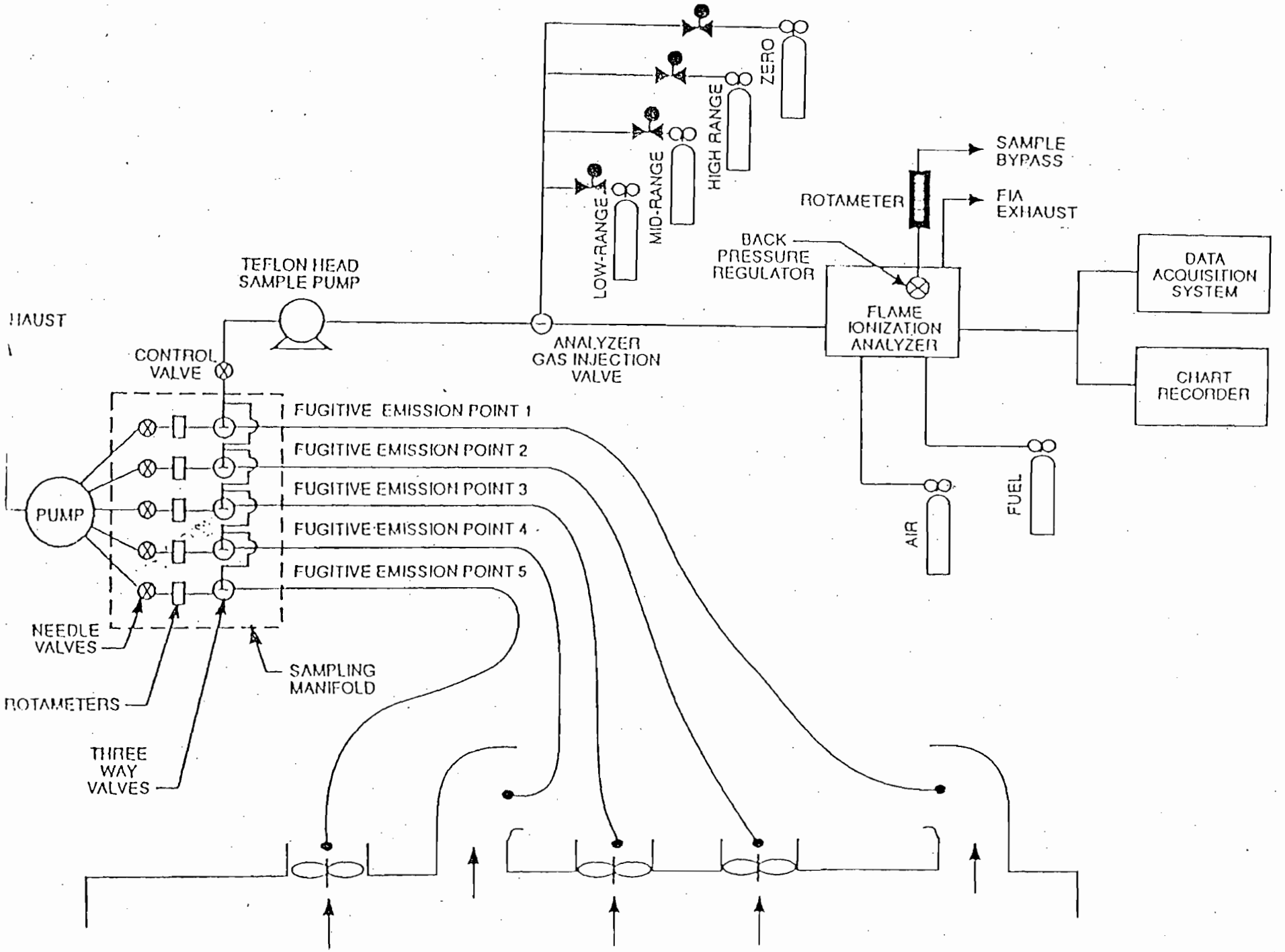
2.1 Gas VOC Concentration. A schematic of the measurement system is shown in Figure 1. The main components are described below:

2.1.1 Sample Probe. Stainless steel, or equivalent. The probe shall be heated to prevent VOC condensation.

2.1.2 Calibration Valve Assembly. Three-way valve assembly at the outlet of sample probe to direct the zero and calibration gases to the analyzer. Other methods, such as quick-connect lines, to route calibration gases to the outlet of the sample probe are acceptable.

2.1.3 Sample Line. Stainless steel or Teflon tubing to transport the sample gas to the analyzer. The sample line must be heated to prevent condensation.

2.1.4 Sample Pump. A leak-free pump, to pull the sample gas through the system at a flow rate sufficient to minimize the response time of the measurement system. The components of the pump that contact the gas stream


ZERO
HIGH RANGE
MID-RANGE
LOW-RANGE
SAMPLE BYPASS
ROTAMETER
FIA EXHAUST
BACK PRESSURE REGULATOR
DATA ACQUISITION SYSTEM
FLAME IONIZATION ANALYZER
CHART RECORDER
TEFLON HEAD SAMPLE PUMP
ANALYZER GAS INJECTION VALVE
CONTROL VALVE
FUGITIVE EMISSION POINT 1
FUGITIVE EMISSION POINT 2
FUGITIVE EMISSION POINT 3
FUGITIVE EMISSION POINT 4
FUGITIVE EMISSION POINT 5
PUMP
AIR
FUEL
NEEDLE VALVES
SAMPLING MANIFOLD
ROTAMETERS
THREE WAY VALVES

shall be constructed of stainless steel or Teflon. The sample pump must be heated to prevent condensation.

2.1.5 Sample Flow Rate Control. A sample flow rate control valve and rotameter, or equivalent, to maintain a constant sampling rate within 10 percent. The flow rate control valve and rotameter must be heated to prevent condensation. A control valve may also be located on the sample pump bypass loop to assist in controlling the sample pressure and flow rate.

2.1.6 Sample Gas Manifold. Capable of diverting a portion of the sample gas stream to the flame ionization analyzer (FIA), and the remainder to the bypass discharge vent. The manifold components shall be constructed of stainless steel or Teflon. If emissions are to be measured at multiple locations, the measurement system shall be designed to use separate sampling probes, lines, and pumps for each measurement location and a common sample gas manifold and FIA. The sample gas manifold must be heated to prevent condensation.

2.1.7 Organic Concentration Analyzer. An FIA with a span value of 1.5 times the expected concentration as propane; however, other span values may be used if it can be demonstrated that they would provide more accurate measurements. The system shall be capable of meeting or exceeding the following specifications:

2.1.7.1 Zero Drift. Less than ±3.0 percent of the span value.

2.1.7.2 Calibration Drift. Less than ±3.0 percent of the span value.

2.1.7.3 Calibration Error. Less than ±5.0 percent of the calibration gas value.

2.1.7.4 Response Time. Less than 30 seconds.

2.1.8 Integrator/Data Acquisition System. An analog or digital device or computerized data acquisition system used to integrate the FIA response or compute the average response and record measurement data. The minimum data sampling frequency for computing average or integrated values is one measurement value every 5 seconds. The device shall be capable of recording average values at least once per minute.

2.1.9 Calibration and Other Gases. Gases used for calibration, fuel, and combustion air (if required) are contained in compressed gas cylinders. All calibration gases shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. Additionally, the manufacturer of the cylinder should provide a recommended shelf life for each calibration gas cylinder over which the concentration does not change more than ±2 percent from the certified value. For calibration gas values not generally available, alternative methods for preparing calibration gas mixtures, such as dilution systems, may be used with prior approval.

2.1.9.1 Fuel. A 40 percent H_2/60 percent He or 40 percent H_2/60 percent N_2 gas mixture is recommended to avoid an oxygen synergism effect that reportedly occurs when oxygen concentration varies significantly from a mean value.

2.1.9.2 Carrier Gas. High purity air with less than 1 ppm of organic material (propane or carbon equivalent) or less than 0.1 percent of the span value, whichever is greater.

2.1.9.3 FIA Linearity Calibration Gases. Low-, mid-, and high-range gas mixture standards with nominal propane concentrations of 20-30, 45-55, and 70-80 percent of the span value in air, respectively. Other calibration values and other span values may be used if it can be shown that more accurate measurements would be achieved.

2.1.10 Particulate Filter. An in-stack or an out-of-stack glass fiber filter is recommended if exhaust gas particulate loading is significant. An out-of-stack filter must be heated to prevent any condensation unless it can be demonstrated that no condensation occurs.

2.2 Fugitive Emissions Volumetric Flow Rate.

2.2.1 Flow Direction Indicators. Any means of indicating inward or outward flow, such as light plastic film or paper streamers, smoke tubes, filaments, and sensory perception.

2.2.2 Method 2 or 2A Apparatus. For determining volumetric flow rate. Anemometers or similar devices calibrated according to the manufacturer's instructions may be used when low velocities are present. Vane anemometers (Young-maximum response propeller), specialized pitots with electronic manometers (e.g., Shortridge Instruments Inc., Airdata Multimeter 860) are commercially available with measurement thresholds of 15 and 8 mpm (50 and 25 fpm), respectively.

2.2.3 Method 3 Apparatus and Reagents. For determining molecular weight of the gas stream. An estimate of the molecular weight of the gas stream may be used if it can be justified.

2.2.4 Method 4 Apparatus and Reagents. For determining moisture content, if necessary.

3. DETERMINATION OF VOLUMETRIC FLOW RATE OF FUGITIVE EMISSIONS

3.1 Preliminary Determinations. The purpose of this exercise is to determine which exhaust points should be measured for volumetric flow rates and VOC concentrations.

3.1.1 Forced Draft Openings. Identify all forced draft openings. Determine the volumetric flow rate according to Method 2.

3.1.2 NDO's Exhaust Points. The NDO's in the roof of a facility are considered to be exhaust points. Determine volumetric flow rate from these NDO's. Divide the cross-sectional area according to Method 1 using 12 equal areas. Use the appropriate velocity measurement devices, e.g., propeller anemometers.

3.1.3 Other NDO's.

3.1.3.1 This step is optional. Determine the exhaust flow rate, including that of the control device, from the enclosure and the intake air flow rate. If the exhaust flow rate divided by the intake air flow rate is greater than 1.1, then all other NDO's are not considered to be significant exhaust points.

3.1.3.2 If the option above is not taken, identify all other NDO's and other potential points through which fugitive emissions may escape the enclosure. Then use the following criteria to determine whether flow rates and VOC concentrations need to be measured:

3.1.3.2.1 Using the appropriate flow direction indicator, determine the flow direction. An NDO with zero or inward flow is not an exhaust point.

3.1.3.2.2 Measure the outward volumetric flow rate from the remainder of the NDO's. If the collective flow rate is 2 percent, or less, of the flow rate from Sections 3.1.1 and 3.1.2, then these NDO's, except those within two equivalent diameters (based on NDO opening) from VOC sources, may be considered to be non-exhaust points.

3.1.3.2.3 If the percentage calculated in Section 3.1.3.2.2 is greater than 2 percent, those NDO's (except those within two equivalent diameters from VOC sources) whose volumetric flow rate total 2 percent of the flow rate from Sections 3.1.1 and 3.1.2 may be considered as non-exhaust points. All remaining NDO's shall be measured for volumetric flow rate and VOC concentrations during the CE test.

3.1.3.2.4 The tester may choose to measure VOC concentrations at the forced exhaust points and the NDO's. If the total VOC emissions from the NDO's are less than 2 percent of the emissions from the forced draft and roof NDO's, then these NDO's may be eliminated from further consideration.

3.2 Determination of Flow Rates.

3.2.1 Measure the volumetric flow rate at all locations identified as exhaust points in Section 3.1.. Divide each exhaust opening into 9 equal areas for rectangular openings and 8 for circular openings.

3.2.2 Measure the velocity at each site at least once every hour during each sampling run using Method 2 or 2A, if applicable, or using the low velocity instruments in Section 2.2.2.

4. DETERMINATION OF VOC CONTENT OF FUGITIVE EMISSIONS

4.1 Analysis Duration. Measure the VOC responses at each fugitive emission point during the entire test run or, if applicable, while the process is operating. If there are multiple emissions locations, design a sampling system to allow a single FIA to be used to determine the VOC responses at all sampling locations.

4.2 Gas VOC Concentration.

4.2.1 Assemble the sample train as shown in Figure 1. Calibrate the FIA and conduct a system check according to the procedures in Sections 5.1 and 5.3, respectively.

4.2.2 Install the sample probe so that the probe is centrally located in the stack, pipe, or duct, and is sealed tightly at the stack port connection.

4.2.3 Inject zero gas at the calibration valve assembly. Allow the measurement system response to reach zero. Measure the system response time as the time required for the system to reach the effluent concentration after the calibration valve has been returned to the effluent sampling position.

4.2.4 Conduct a system check before and a system drift check after each sampling run according to the procedures in Sections 5.2 and 5.3. If the drift check following a run indicates unacceptable performance, the run is not valid. The tester may elect to perform drift checks during the run not to exceed one drift check per hour.

4.2.5 Verify that the sample lines, filter, and pump temperatures are 120 ± 5°C.

4.2.6 Begin sampling at the start of the test period and continue to sample during the entire run. Record the starting and ending times and any required process information as appropriate. If multiple emission locations are sampled using a single FIA, sample at each location for the same amount of time (e.g., 2 minutes) and continue to switch from one location to another for the entire test run. Be sure that total sampling time at each location is the same at the end of the test run. Collect at least 4 separate measurements from each sample point during each hour of testing. Disregard the response measurements at each sampling location until two times the response time of the measurement system has elapsed. Continue sampling for at least 1 minute and record the concentration measurements.

4.3 Alternative Procedure The direct interface sampling and analysis procedure described in Section 7.2 of Method 18 may be used to determine the gas VOC concentration. The system must be designed to collect and analyze at least one sample every 10 minutes.

5. CALIBRATION AND QUALITY ASSURANCE

5.1 FIA Calibration and Linearity Check. Make necessary adjustments to the air and fuel supplies for the FIA and ignite the burner. Allow the FIA to warm up for the period recommended by the manufacturer. Inject a calibration gas into the measurement system and adjust the back-pressure regulator to the value required to achieve the flow rates specified by the manufacturer. Inject the zero- and the high-range calibration gases and adjust the analyzer calibration to provide the proper responses. Inject the low- and mid-range gases and record the responses of the measurement system. The calibration and linearity of the system are acceptable if the responses for all four gases are

within 5 percent of the respective gas values. If the performance of the system is not acceptable, repair or adjust the system and repeat the linearity check. Conduct a calibration and linearity check after assembling the analysis system and after a major change is made to the system.

5.2 Systems Drift Checks. Select the calibration gas that most closely approximates the concentration of the captured emissions for conducting the drift checks. Introduce the zero and calibration gas at the calibration valve assembly and verify that the appropriate gas flow rate and pressure are present at the FIA. Record the measurement system responses to the zero and calibration gases. The performance of the system is acceptable if the difference between the drift check measurement and the value obtained in Section 5.1 is less than 3 percent of the span value. Conduct a system drift check at the end of each run.

5.3 System Check. Inject the high range calibration gas at the inlet of the sampling probe and record the response. The performance of the system is acceptable if the measurement system response is within 5 percent of the value obtained in Section 5.1 for the high range calibration gas. Conduct a system check before each test run.

5.4 Analysis Audit. Immediately before each test analyze an audit cylinder as described in Section 5.2. The analysis audit must agree with the audit cylinder concentration within 10 percent.

6. NOMENCLATURE

C_{DH} = average measured concentration for the drift check calibration gas, ppm propane.

C_{DO} = average system drift check concentration for zero concentration gas, ppm propane.

C_{Fj} = corrected average VOC concentration of fugitive emissions at point j, ppm propane.

C_H = actual concentration of the drift check calibration gas, ppm propane.

C_j = uncorrected average VOC concentration measured at point j, ppm propane.

F_B = total VOC content of fugitive emissions from the building, kg.

K_1 = 1.830×10^{-6} kg/(m^3-ppm).

n = number of measurement points.

Q_{Fj} = average effluent volumetric flow rate corrected to standard conditions at fugitive emissions point j, m^3/min.

θ_F = total duration of capture efficiency sampling run, min.

7. CALCULATIONS

7.1 Total VOC Fugitive Emissions From the Building.

$$F_B = \sum_{j=1}^{n} C_{Fj}\, Q_{Fj}\, \theta_F\, K_1 \qquad \text{Eq. 1}$$

7.2 VOC Concentration of the Fugitive Emissions at Point j.

$$C_{Fj} = (C_j - C_{DO}) \frac{C_H}{C_{DH} - C_{DO}} \qquad \text{Eq. 2}$$

VOC CAPTURE EFFICIENCY
Procedure G.1 - Captured VOC Emissions

1. INTRODUCTION

1.1 **Applicability.** This procedure is applicable for determining the volatile organic compounds (VOC) content of captured gas streams. It is intended to be used as a segment in the development of liquid/gas or gas/gas protocols for determining VOC capture efficiency (CE) for surface coating and printing operations. The procedure may not be acceptable in certain site-specific situations, e.g., when: (1) direct fired heaters or other circumstances affect the quantity of VOC at the control device inlet; and (2) particulate organic aerosols are formed in the process and are present in the captured emissions.

1.2 **Principle.** The amount of VOC captured (G) is calculated as the sum of the products of the VOC content (C_{Gj}), the flow rate (Q_{Gj}), and the sample time (θ_C) from each captured emissions point.

1.3 **Estimated Measurement Uncertainty.** The measurement uncertainties are estimated for each captured or fugitive emissions point as follows: Q_{Gj} = ±5.5 percent and C_{Gj} = ±5.0 percent. Based on these numbers, the probable uncertainty for G is estimated at about ±7.4 percent.

1.4 **Sampling Requirements.** A capture efficiency test shall consist of at least three sampling runs. The sampling time for each run should be at least 8 hours, unless otherwise approved.

1.5 **Notes.** Because this procedure is often applied in highly explosive areas, caution and care should be exercised in choosing appropriate equipment and installing and using the equipment. Mention of trade names or company products does not constitute endorsement. All gas concentrations (percent, ppm) are by volume, unless otherwise noted.

2. APPARATUS AND REAGENTS

2.1 **Gas VOC Concentration.** A schematic of the measurement system is shown in Figure 1. The main components are described below:

2.1.1 **Sample Probe.** Stainless steel, or equivalent. The probe shall be heated to prevent VOC condensation.

2.1.2 **Calibration Valve Assembly.** Three-way valve assembly at the outlet of sample probe to direct the zero and calibration gases to the analyzer. Other methods, such as quick-connect lines, to route calibration gases to the outlet of the sample probe are acceptable.

2.1.3 **Sample Line.** Stainless steel or Teflon tubing to transport the sample gas to the analyzer. The sample line must be heated to prevent condensation.

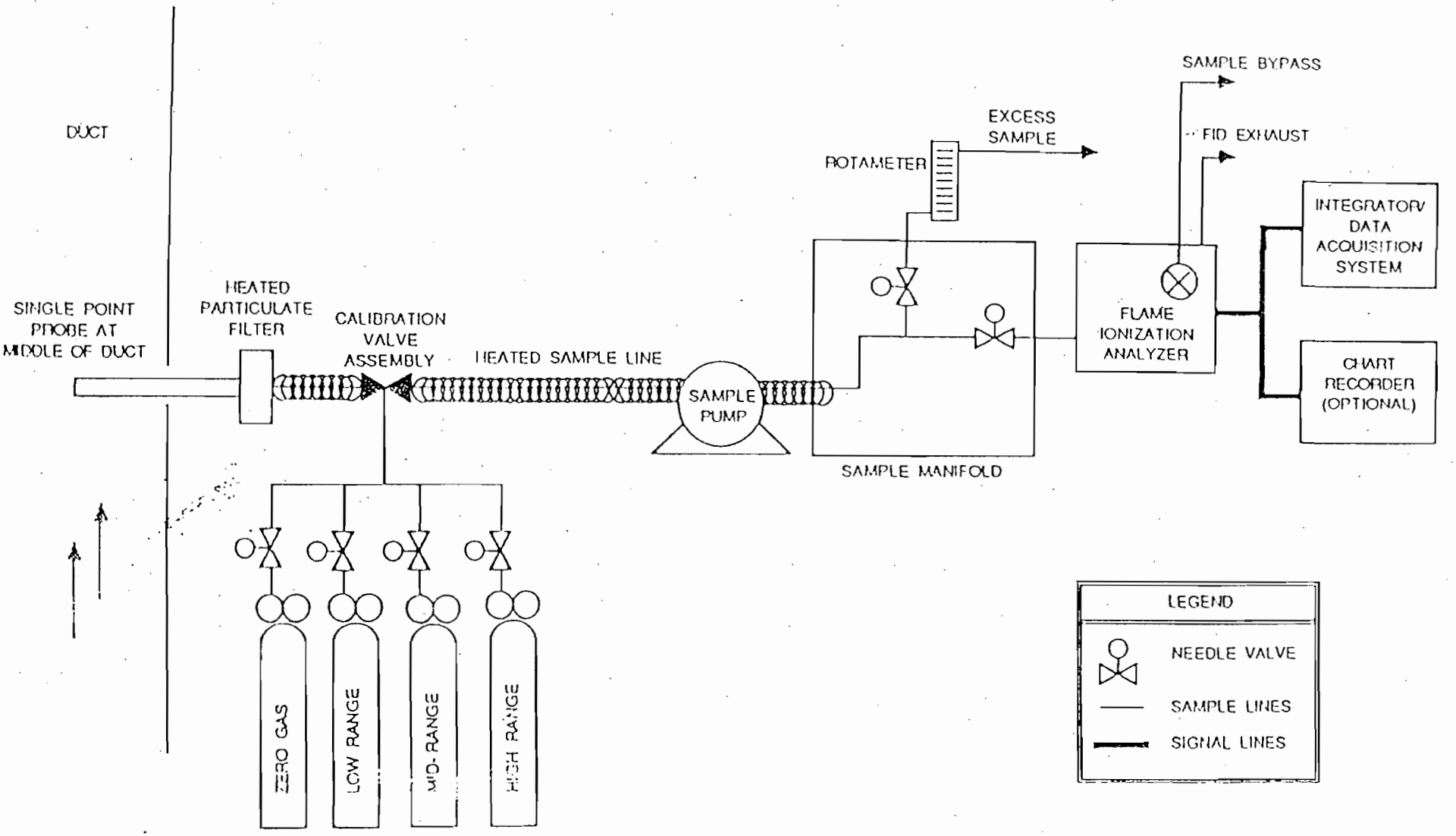


Figure 1. Gas VOC concentration measurement system.

2.1.4 **Sample Pump.** A leak-free pump, to pull the sample gas through the system at a flow rate sufficient to minimize the response time of the measurement system. The components of the pump that contact the gas stream shall be constructed of stainless steel or Teflon. The sample pump must be heated to prevent condensation.

2.1.5 **Sample Flow Rate Control.** A sample flow rate control valve and rotameter, or equivalent, to maintain a constant sampling rate within 10 percent. The flow rate control valve and rotameter must be heated to prevent condensation. A control valve may also be located on the sample pump bypass loop to assist in controlling the sample pressure and flow rate.

2.1.6 **Sample Gas Manifold.** Capable of diverting a portion of the sample gas stream to the flame ionization analyzer (FIA), and the remainder to the bypass discharge vent. The manifold components shall be constructed of stainless steel or Teflon. If captured or fugitive emissions are to be measured at multiple locations, the measurement system shall be designed to use separate sampling probes, lines, and pumps for each measurement location and a common sample gas manifold and FIA. The sample gas manifold and connecting lines to the FIA must be heated to prevent condensation.

2.1.7 **Organic Concentration Analyzer.** An FIA with a span value of 1.5 times the expected concentration as propane; however, other span values may be used if it can be demonstrated that they would provide more accurate measurements. The system shall be capable of meeting or exceeding the following specifications:

2.1.7.1 **Zero Drift.** Less than ±3.0 percent of the span value.

2.1.7.2 **Calibration Drift.** Less than ±3.0 percent of the span value.

2.1.7.3 **Calibration Error.** Less than ±5.0 percent of the calibration gas value.

2.1.7.4 **Response Time.** Less than 30 seconds.

2.1.8 **Integrator/Data Acquisition System.** An analog or digital device or computerized data acquisition system used to integrate the FIA response or compute the average response and record measurement data. The minimum data sampling frequency for computing average or integrated values is one measurement value every 5 seconds. The device shall be capable of recording average values at least once per minute.

2.1.9 **Calibration and Other Gases.** Gases used for calibration, fuel, and combustion air (if required) are contained in compressed gas cylinders. All calibration gases shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. Additionally, the manufacturer of the cylinder should provide a recommended shelf life for each calibration gas cylinder over which the concentration does not change more than ±2 percent from the certified value. For calibration gas values not generally available, alternative methods for preparing calibration gas mixtures, such as dilution systems, may be used with prior approval.

2.1.9.1 Fuel. A 40 percent H_2/60 percent He or 40 percent H_2/60 percent N_2 gas mixture is recommended to avoid an oxygen synergism effect that reportedly occurs when oxygen concentration varies significantly from a mean value.

2.1.9.2 Carrier Gas. High purity air with less than 1 ppm of organic material (as propane or carbon equivalent) or less than 0.1 percent of the span value, whichever is greater.

2.1.9.3 FIA Linearity Calibration Gases. Low-, mid-, and high-range gas mixture standards with nominal propane concentrations of 20-30, 45-55, and 70-80 percent of the span value in air, respectively. Other calibration values and other span values may be used if it can be shown that more accurate measurements would be achieved.

2.1.10 Particulate Filter. An in-stack or an out-of-stack glass fiber filter is recommended if exhaust gas particulate loading is significant. An out-of-stack filter must be heated to prevent any condensation unless it can be demonstrated that no condensation occurs.

2.2 Captured Emissions Volumetric Flow Rate.

2.2.1 Method 2 or 2A Apparatus. For determining volumetric flow rate.

2.2.2 Method 3 Apparatus and Reagents. For determining molecular weight of the gas stream. An estimate of the molecular weight of the gas stream may be used if it can be justified.

2.2.3 Method 4 Apparatus and Reagents. For determining moisture content, if necessary.

3. DETERMINATION OF VOLUMETRIC FLOW RATE OF CAPTURED EMISSIONS

3.1 Locate all points where emissions are captured from the affected facility. Using Method 1, determine the sampling points. Be sure to check each site for cyclonic or swirling flow.

3.2 Measure the velocity at each sampling site at least once every hour during each sampling run using Method 2 or 2A.

4. DETERMINATION OF VOC CONTENT OF CAPTURED EMISSIONS

4.1 Analysis Duration. Measure the VOC responses at each captured emissions point during the entire test run or, if applicable, while the process is operating. If there are multiple captured emission locations, design a sampling system to allow a single FIA to be used to determine the VOC responses at all sampling locations.

4.2 Gas VOC Concentration.

4.2.1 Assemble the sample train as shown in Figure 1. Calibrate the FIA according to the procedure in Section 5.1.

4.2.2 Conduct a system check according to the procedure in Section 5.3.

4.2.3 Install the sample probe so that the probe is centrally located in the stack, pipe, or duct, and is sealed tightly at the stack port connection.

4.2.4 Inject zero gas at the calibration valve assembly. Allow the measurement system response to reach zero. Measure the system response time as the time required for the system to reach the effluent concentration after the calibration valve has been returned to the effluent sampling position.

4.2.5 Conduct a system check before and a system drift check after each sampling run according to the procedures in Sections 5.2 and 5.3. If the drift check following a run indicates unacceptable performance, the run is not valid. The tester may elect to perform system drift checks during the run not to exceed one drift check per hour.

4.2.6 Verify that the sample lines, filter, and pump temperatures are 120 ± 5°C.

4.2.7 Begin sampling at the start of the test period and continue to sample during the entire run. Record the starting and ending times and any required process information as appropriate. If multiple captured emission locations are sampled using a single FIA, sample at each location for the same amount of time (e.g., 2 minutes) and continue to switch from one location to another for the entire test run. Be sure that total sampling time at each location is the same at the end of the test run. Collect at least 4 separate measurements from each sample point during each hour of testing. Disregard the measurements at each sampling location until two times the response time of the measurement system has elapsed. Continue sampling for at least 1 minute and record the concentration measurements.

4.3 Background Concentration.

4.3.1 Locate all NDO's of the TTE. A sampling point shall be centrally located outside of the TTE at 4 equivalent diameters from each NDO, if possible. If there are more than 6 NDO's, choose 6 sampling points evenly spaced among the NDO's.

4.3.2 Assemble the sample train as shown in Figure 2. Calibrate the FIA and conduct a system check according to the procedures in Sections 5.1 and 5.3. NOTE: This sample train shall be a separate sampling train from the one to measure the captured emissions.

4.3.3 Position the probe at the sampling location.

4.3.4 Determine the response time, conduct the system check and sample according to the procedures described in Sections 4.2.4 to 4.2.7.

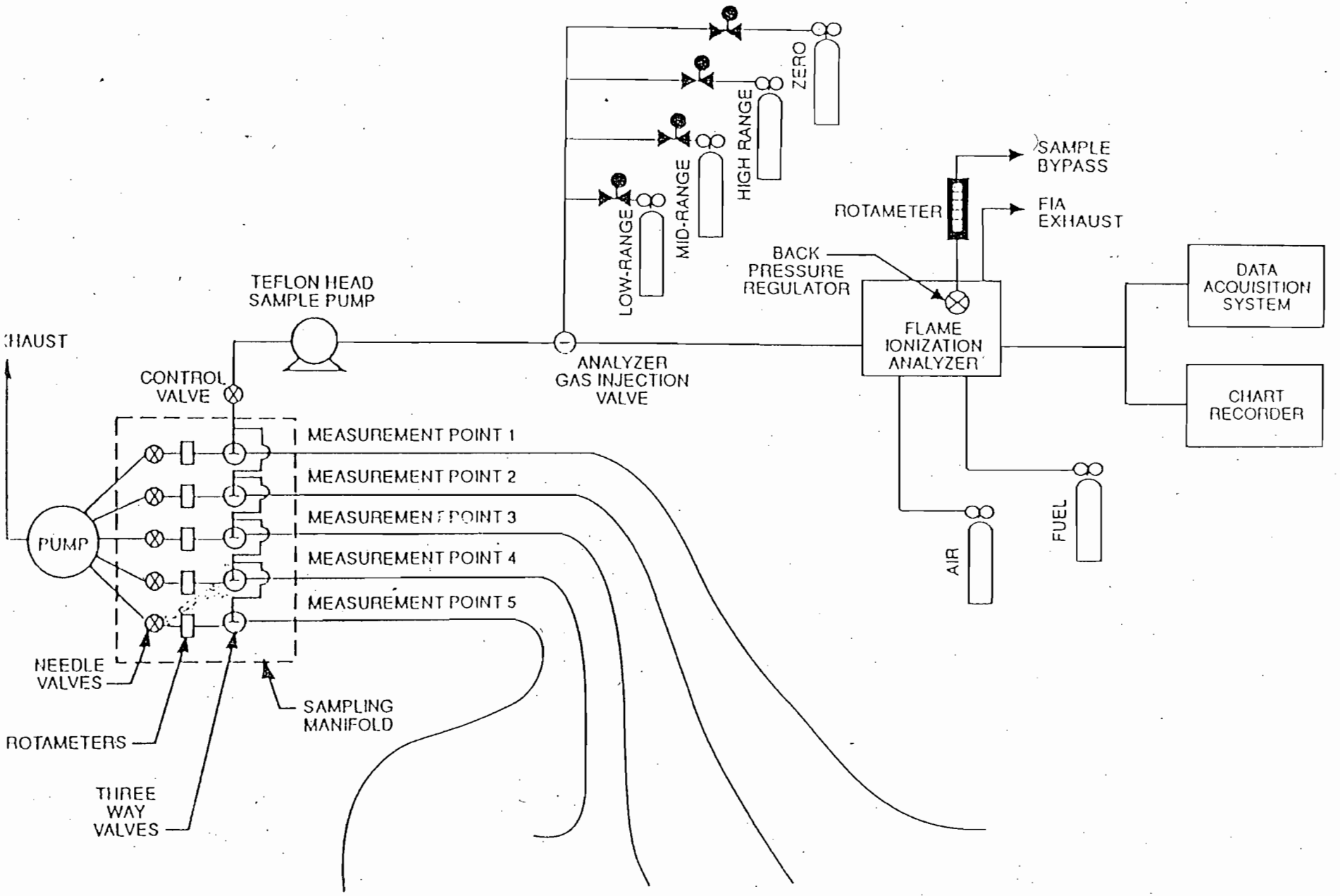


Figure 2. Background measurement system.

4.4 Alternative Procedure. The direct interface sampling and analysis procedure described in Section 7.2 of Method 18 may be used to determine the gas VOC concentration. The system must be designed to collect and analyze at least one sample every 10 minutes.

5. CALIBRATION AND QUALITY ASSURANCE

5.1 FIA Calibration and Linearity Check. Make necessary adjustments to the air and fuel supplies for the FIA and ignite the burner. Allow the FIA to warm up for the period recommended by the manufacturer. Inject a calibration gas into the measurement system and adjust the back-pressure regulator to the value required to achieve the flow rates specified by the manufacturer. Inject the zero- and the high-range calibration gases and adjust the analyzer calibration to provide the proper responses. Inject the low- and mid-range gases and record the responses of the measurement system. The calibration and linearity of the system are acceptable if the responses for all four gases are within 5 percent of the respective gas values. If the performance of the system is not acceptable, repair or adjust the system and repeat the linearity check. Conduct a calibration and linearity check after assembling the analysis system and after a major change is made to the system.

5.2 Systems Drift Checks. Select the calibration gas that most closely approximates the concentration of the captured emissions for conducting the drift checks. Introduce the zero and calibration gas at the calibration valve assembly and verify that the appropriate gas flow rate and pressure are present at the FIA. Record the measurement system responses to the zero and calibration gases. The performance of the system is acceptable if the difference between the drift check measurement and the value obtained in Section 5.1 is less than 3 percent of the span value. Conduct the system drift checks at the end of each run.

5.3 System Check. Inject the high range calibration gas at the inlet of the sampling probe and record the response. The performance of the system is acceptable if the measurement system response is within 5 percent of the value obtained in Section 5.1 for the high range calibration gas. Conduct a system check before and after each test run.

5.4 Analysis Audit. Immediately before each test analyze an audit cylinder as described in Section 5.2. The analysis audit must agree with the audit cylinder concentration within 10 percent.

6. NOMENCLATURE

A_i = area of NDO i, ft^2.

A_N = total area of all NDO's in the enclosure, ft^2.

C_{Bi} = corrected average VOC concentration of background emissions at point i, ppm propane.

C_B = average background concentration, ppm propane.

C_{Gj} = corrected average VOC concentration of captured emissions at point j, ppm propane.

C_{DH} = average measured concentration for the drift check calibration gas, ppm propane.

C_{DO} = average system drift check concentration for zero concentration gas, ppm propane.

C_H = actual concentration of the drift check calibration gas, ppm propane.

C_i = uncorrected average background VOC concentration measured at point i, ppm propane.

C_j = uncorrected average VOC concentration measured at point j, ppm propane.

G = total VOC content of captured emissions, kg.

K_1 = 1.830×10^{-6} kg/(m^3-ppm).

n = number of measurement points.

Q_{Gj} = average effluent volumetric flow rate corrected to standard conditions at captured emissions point j, m^3/min.

θ_C = total duration of captured emissions sampling run, min.

7. CALCULATIONS

7.1 Total VOC Captured Emissions.

$$G = \sum_{j=1}^{n} (C_{Gj} - C_B)\ Q_{Gj}\ \theta_C\ K_1 \qquad \text{Eq. 1}$$

7.2 VOC Concentration of the Captured Emissions at Point j.

$$C_{Gj} = (C_j - C_{DO}) \frac{C_H}{C_{DH} - C_{DO}} \qquad \text{Eq. 2}$$

7.3 Background VOC Concentration at Point i.

$$C_{Bi} = (C_i - C_{DO}) \frac{C_H}{C_{DH} - C_{DO}} \qquad \text{Eq. 3}$$

7.4 Average Background Concentration.

$$C_B = \frac{\sum_{i=1}^{n} C_{Bi} A_i}{n A_N} \qquad \text{Eq. 4}$$

NOTE: If the concentration at each point is within 20 percent of the average concentration of all points, the terms "A_i" and "A_N" may be deleted from Equation 4.

VOC CAPTURE EFFICIENCY
Procedure G.2 - Captured VOC Emissions (Dilution Technique)

1. INTRODUCTION

1.1 Applicability. This procedure is applicable for determining the volatile organic compounds (VOC) content of captured gas streams. It is intended to be used as a segment in the development of a gas/gas protocol in which fugitive emissions are measured for determining VOC capture efficiency (CE) for surface coating and printing operations. A dilution system is used to reduce the VOC concentration of the captured emission to about the same concentration as the fugitive emissions. The procedure may not be acceptable in certain site-specific situations, e.g., when: (1) direct fired heaters or other circumstances affect the quantity of VOC at the control device inlet; and (2) particulate organic aerosols are formed in the process and are present in the captured emissions.

1.2 Principle. The amount of VOC captured (G) is calculated as the sum of the products of the VOC content (C_{Gj}), the flow rate (Q_{Gj}), and the sampling time (θ_C) from each captured emissions point.

1.3 Estimated Measurement Uncertainty. The measurement uncertainties are estimated for each captured or fugitive emissions point as follows: Q_{Gj} = ±5.5 percent and C_{Gj} = ±5 percent. Based on these numbers, the probable uncertainty for G is estimated at about ±7.4 percent.

1.4 Sampling Requirements. A capture efficiency test shall consist of at least three sampling runs. The sampling time for each run should be at least 8 hours, unless otherwise approved.

1.5 Notes. Because this procedure is often applied in highly explosive areas, caution and care should be exercised in choosing appropriate equipment and installing and using the equipment. Mention of trade names or company products does not constitute endorsement. All gas concentrations (percent, ppm) are by volume, unless otherwise noted.

2. APPARATUS AND REAGENTS

2.1 Gas VOC Concentration. A schematic of the measurement system is shown in Figure 1. The main components are described below:

2.1.1 Dilution System. A Kipp in-stack dilution probe and controller or similar device may be used. The dilution rate may be changed by substituting different critical orifices or adjustments of the aspirator supply pressure. The dilution system shall be heated to prevent VOC condensation. Note: An out-of-stack dilution device may be used.

2.1.2 Calibration Valve Assembly. Three-way valve assembly at the outlet of sample probe to direct the zero and calibration gases to the analyzer.

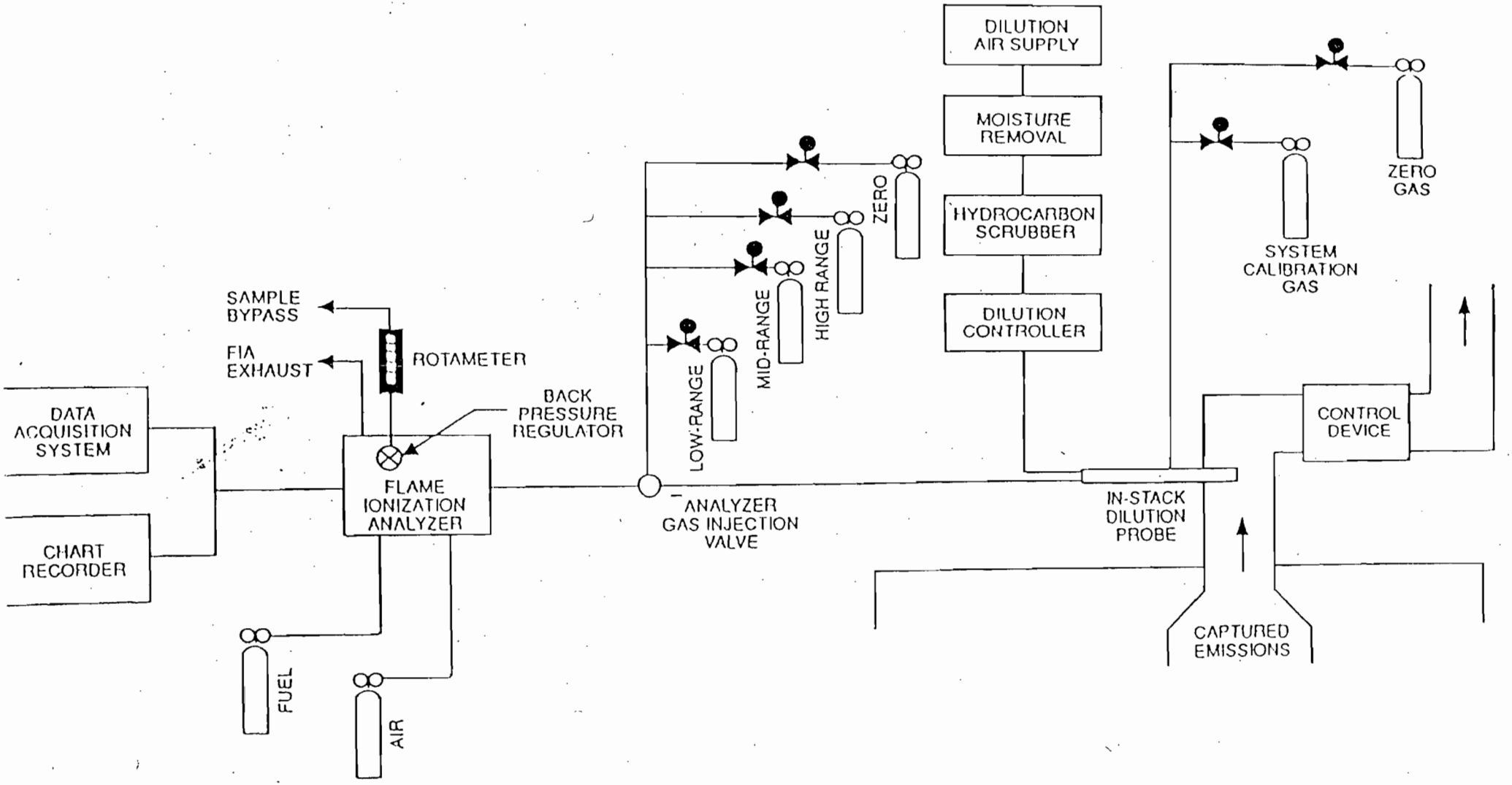


Figure 1. Captured emissions measurement system.

Other methods, such as quick-connect lines, to route calibration gases to the outlet of the sample probe are acceptable.

2.1.3 Sample Line. Stainless steel or Teflon tubing to transport the sample gas to the analyzer. The sample line must be heated to prevent condensation.

2.1.4 Sample Pump. A leak-free pump, to pull the sample gas through the system at a flow rate sufficient to minimize the response time of the measurement system. The components of the pump that contact the gas stream shall be constructed of stainless steel or Teflon. The sample pump must be heated to prevent condensation.

2.1.5 Sample Flow Rate Control. A sample flow rate control valve and rotameter, or equivalent, to maintain a constant sampling rate within 10 percent. The flow control valve and rotameter must be heated to prevent condensation. A control valve may also be located on the sample pump bypass loop to assist in controlling the sample pressure and flow rate.

2.1.6 Sample Gas Manifold. Capable of diverting a portion of the sample gas stream to the flame ionization analyzer (FIA), and the remainder to the bypass discharge vent. The manifold components shall be constructed of stainless steel or Teflon. If captured or fugitive emissions are to be measured at multiple locations, the measurement system shall be designed to use separate sampling probes, lines, and pumps for each measurement location and a common sample gas manifold and FIA. The sample gas manifold and connecting lines to the FIA must be heated to prevent condensation.

2.1.7 Organic Concentration Analyzer. An FIA with a span value of 1.5 times the expected concentration as propane; however, other span values may be used if it can be demonstrated that they would provide more accurate measurements. The system shall be capable of meeting or exceeding the following specifications:

2.1.7.1 Zero Drift. Less than ±3.0 percent of the span value.

2.1.7.2 Calibration Drift. Less than ±3.0 percent of the span value.

2.1.7.3 Calibration Error. Less than ±5.0 percent of the calibration gas value.

2.1.7.4 Response Time. Less than 30 seconds.

2.1.8 Integrator/Data Acquisition System. An analog or digital device or computerized data acquisition system used to integrate the FIA response or compute the average response and record measurement data. The minimum data sampling frequency for computing average or integrated values is one measurement value every 5 seconds. The device shall be capable of recording average values at least once per minute.

2.1.9 Calibration and Other Gases. Gases used for calibration, fuel, and combustion air (if required) are contained in compressed gas cylinders. All calibration gases shall be traceable to NIST standards and shall be certified

by the manufacturer to ±1 percent of the tag value. Additionally, the manufacturer of the cylinder should provide a recommended shelf life for each calibration gas cylinder over which the concentration does not change more than ±2 percent from the certified value. For calibration gas values not generally available, alternative methods for preparing calibration gas mixtures, such as dilution systems, may be used with prior approval.

2.1.9.1 Fuel. A 40 percent H_2/60 percent He or 40 percent H_2/60 percent N_2 gas mixture is recommended to avoid an oxygen synergism effect that reportedly occurs when oxygen concentration varies significantly from a mean value.

2.1.9.2 Carrier Gas and Dilution Air Supply. High purity air with less than 1 ppm of organic material (as propane or carbon equivalent) or less than 0.1 percent of the span value, whichever is greater.

2.1.9.3 FIA Linearity Calibration Gases. Low-, mid-, and high-range gas mixture standards with nominal propane concentrations of 20-30, 45-55, and 70-80 percent of the span value in air, respectively. Other calibration values and other span values may be used if it can be shown that more accurate measurements would be achieved.

2.1.9.4 Dilution Check Gas. Gas mixture standard containing propane in air, approximately half the span value after dilution.

2.1.10 Particulate Filter. An in-stack or an out-of-stack glass fiber filter is recommended if exhaust gas particulate loading is significant. An out-of-stack filter must be heated to prevent any condensation unless it can be demonstrated that no condensation occurs.

2.2 Captured Emissions Volumetric Flow Rate.

2.2.1 Method 2 or 2A Apparatus. For determining volumetric flow rate.

2.2.2 Method 3 Apparatus and Reagents. For determining molecular weight of the gas stream. An estimate of the molecular weight of the gas stream may be used if it can be justified.

2.2.3 Method 4 Apparatus and Reagents. For determining moisture content, if necessary.

3. DETERMINATION OF VOLUMETRIC FLOW RATE OF CAPTURED EMISSIONS

3.1 Locate all points where emissions are captured from the affected facility. Using Method 1, determine the sampling points. Be sure to check each site for cyclonic or swirling flow.

3.2 Measure the velocity at each sampling site at least once every hour during each sampling run using Method 2 or 2A.

4. DETERMINATION OF VOC CONTENT OF CAPTURED EMISSIONS

4.1 Analysis Duration. Measure the VOC responses at each captured emissions point during the entire test run or, if applicable, while the process is operating. If there are a multiple captured emissions locations, design a sampling system to allow a single FIA to be used to determine the VOC responses at all sampling locations.

4.2 Gas VOC Concentration.

4.2.1 Assemble the sample train as shown in Figure 1. Calibrate the FIA according to the procedure in Section 5.1.

4.2.2 Set the dilution ratio and determine the dilution factor according to the procedure in Section 5.3.

4.2.3 Conduct a system check according to the procedure in Section 5.4.

4.2.4 Install the sample probe so that the probe is centrally located in the stack, pipe, or duct, and is sealed tightly at the stack port connection.

4.2.5 Inject zero gas at the calibration valve assembly. Measure the system response time as the time required for the system to reach the effluent concentration after the calibration valve has been returned to the effluent sampling position.

4.2.6 Conduct a system check before and a system drift check after each sampling run according to the procedures in Sections 5.2 and 5.4. If the drift check following a run indicates unacceptable performance, the run is not valid. The tester may elect to perform system drift checks during the run not to exceed one drift check per hour.

4.2.7 Verify that the sample lines, filter, and pump temperatures are 120 ± 5°C.

4.2.8 Begin sampling at the start of the test period and continue to sample during the entire run. Record the starting and ending times and any required process information as appropriate. If multiple captured emission locations are sampled using a single FIA, sample at each location for the same amount of time (e.g., 2 minutes) and continue to switch from one location to another for the entire test run. Be sure that total sampling time at each location is the same at the end of the test run. Collect at least 4 separate measurements from each sample point during each hour of testing. Disregard the measurements at each sampling location until two times the response time of the measurement system has elapsed. Continue sampling for at least 1 minute and record the concentration measurements.

4.3 Background Concentration.

4.3.1 Locate all NDO's of the TTE. A sampling point shall be centrally located outside of the TTE at 4 equivalent diameters from each NDO, if possible. If there are more than 6 NDO's, choose 6 sampling points evenly spaced among the NDO's.

4.3.2 Assemble the sample train as shown in Figure 2. Calibrate the FIA and conduct a system check according to the procedures in Sections 5.1 and 5.4.

4.3.3 Position the probe at the sampling location.

4.3.4 Determine the response time, conduct the system check and sample according to the procedures described in Sections 4.2.4 to 4.2.8.

4.4 Alternative Procedure. The direct interface sampling and analysis procedure described in Section 7.2 of Method 18 may be used to determine the gas VOC concentration. The system must be designed to collect and analyze at least one sample every 10 minutes.

5. CALIBRATION AND QUALITY ASSURANCE

5.1 FIA Calibration and Linearity Check. Make necessary adjustments to the air and fuel supplies for the FIA and ignite the burner. Allow the FIA to warm up for the period recommended by the manufacturer. Inject a calibration gas into the measurement system after the dilution system and adjust the back-pressure regulator to the value required to achieve the flow rates specified by the manufacturer. Inject the zero- and the high-range calibration gases and adjust the analyzer calibration to provide the proper responses. Inject the low- and mid-range gases and record the responses of the measurement system. The calibration and linearity of the system are acceptable if the responses for all four gases are within 5 percent of the respective gas values. If the performance of the system is not acceptable, repair or adjust the system and repeat the linearity check. Conduct a calibration and linearity check after assembling the analysis system and after a major change is made to the system.

5.2 Systems Drift Checks. Select the calibration gas that most closely approximates the concentration of the diluted captured emissions for conducting the drift checks. Introduce the zero and calibration gas at the calibration valve assembly and verify that the appropriate gas flow rate and pressure are present at the FIA. Record the measurement system responses to the zero and calibration gases. The performance of the system is acceptable if the difference between the drift check measurement and the value obtained in Section 5.1 is less than 3 percent of the span value. Conduct the system drift check at the end of each run.

5.3 Determination of Dilution Factor. Inject the dilution check gas into the measurement system before the dilution system and record the response. Calculate the dilution factor using Equation 3.

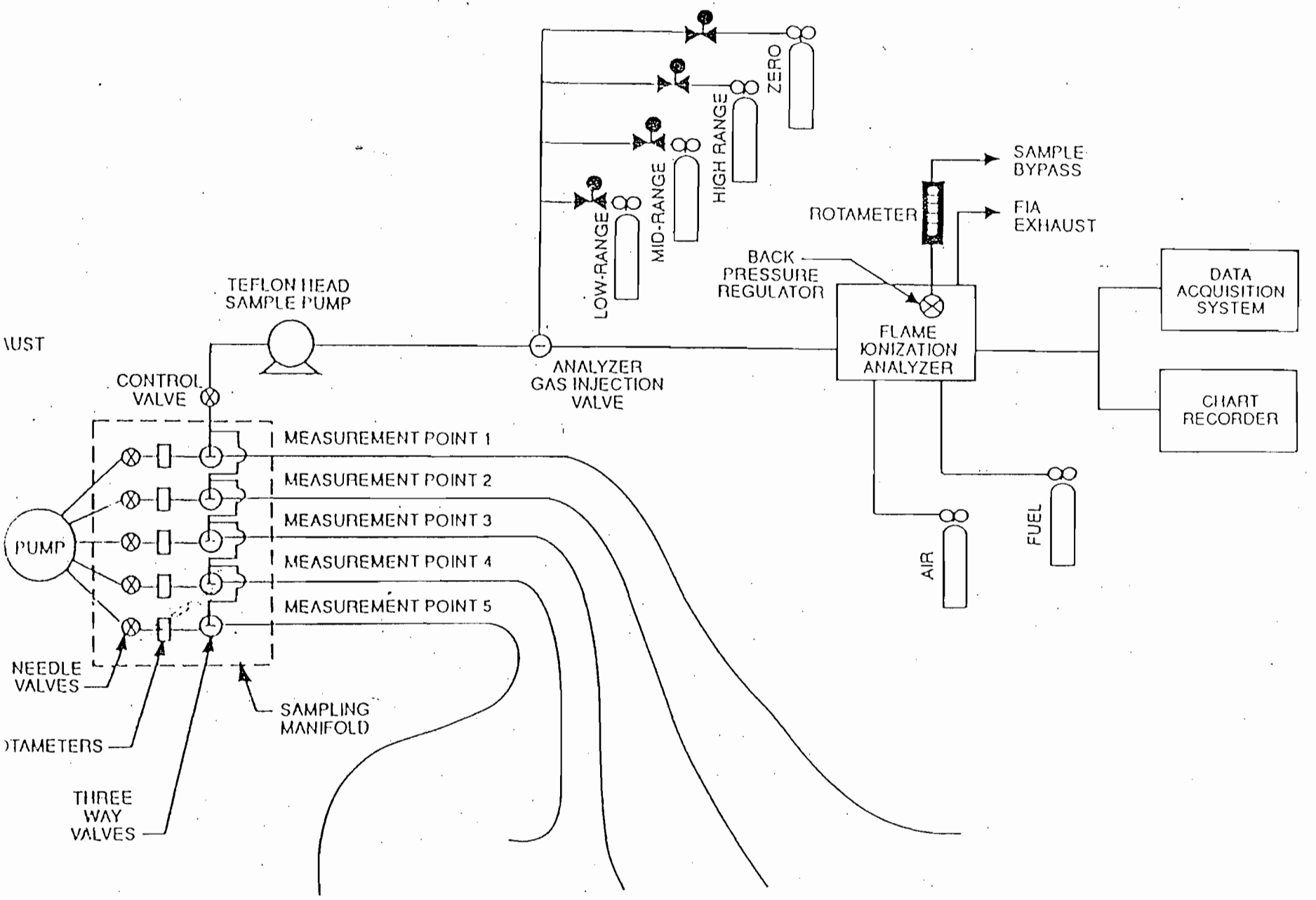


Figure 2. Background measurement system

5.4 System Check. Inject the high range calibration gas at the inlet to the sampling probe while the dilution air is turned off. Record the response. The performance of the system is acceptable if the measurement system response is within 5 percent of the value obtained in Section 5.1 for the high range calibration gas. Conduct a system check before and after each test run.

5.5 Analysis Audit. Immediately before each test analyze an audit cylinder as described in Section 5.2. The analysis audit must agree with the audit cylinder concentration within 10 percent.

6. NOMENCLATURE

A_i = area of NDO i, ft^2.

A_N = total area of all NDO's in the enclosure, ft^2.

C_A = actual concentration of the dilution check gas, ppm propane.

C_{Bi} = corrected average VOC concentration of background emissions at point i, ppm propane.

C_B = average background concentration, ppm propane.

C_{DH} = average measured concentration for the drift check calibration gas, ppm propane.

C_{DO} = average system drift check concentration for zero concentration gas, ppm propane.

C_H = actual concentration of the drift check calibration gas, ppm propane.

C_i = uncorrected average background VOC concentration measured at point i, ppm propane.

C_j = uncorrected average VOC concentration measured at point j, ppm propane.

C_M = measured concentration of the dilution check gas, ppm propane.

DF = dilution factor.

G = total VOC content of captured emissions, kg.

K_1 = 1.830×10^{-6} kg/(m^3-ppm).

n = number of measurement points.

Q_{Gj} = average effluent volumetric flow rate corrected to standard conditions at captured emissions point j, m^3/min.

θ_C = total duration of capture efficiency sampling run, min.

7. CALCULATIONS

7.1 Total VOC Captured Emissions.

$$G = \sum_{j=1}^{n} C_{Gj}\, Q_{Gj}\, \theta_C\, K_1 \qquad \text{Eq. 1}$$

7.2 VOC Concentration of the Captured Emissions at Point j.

$$C_{Gj} = DF\ (C_j - C_{DO})\ \frac{C_H}{C_{DH} - C_{DO}} \qquad \text{Eq. 2}$$

7.3 Dilution Factor.

$$DF = \frac{C_A}{C_H} \qquad \text{Eq. 3}$$

7.4 Background VOC Concentration at Point i.

$$C_{Bi} = (C_i - C_{DO})\ \frac{C_H}{C_{DH} - C_{DO}} \qquad \text{Eq. 4}$$

7.5 Average Background Concentration.

$$C_B = \frac{\sum_{i=1}^{n} C_{Bi}\, A_i}{n\, A_N} \qquad \text{Eq. 5}$$

NOTE: If the concentration at each point is within 20 percent of the average concentration of all points, the terms "A_i" and "A_N" may be deleted from Equation 4.

VOC CAPTURE EFFICIENCY
Procedure L - VOC Input

1. INTRODUCTION

1.1 Applicability. This procedure is applicable for determining the input of volatile organic compounds (VOC). It is intended to be used as a segment in the development of liquid/gas protocols for determining VOC capture efficiency (CE) for surface coating and printing operations.

1.2 Principle. The amount of VOC introduced to the process (L) is the sum of the products of the weight (W) of each VOC containing liquid (ink, paint, solvent, etc.) used and its VOC content (V). A sample of each VOC containing liquid is analyzed with a flame ionization analyzer (FIA) to determine V.

1.3 Estimated Measurement Uncertainty. The measurement uncertainties are estimated for each VOC containing liquid as follows: W = ±2.0 percent and V = ±12.0 percent. Based on these numbers, the probable uncertainty for L is estimated at about ±12.2 percent for each VOC containing liquid.

1.4 Sampling Requirements. A capture efficiency test shall consist of at least three sampling runs. The sampling time for each run should be at least 8 hours, unless otherwise approved.

1.5 Notes. Because this procedure is often applied in highly explosive areas, caution and care should be exercised in choosing appropriate equipment and installing and using the equipment. Mention of trade names or company products does not constitute endorsement. All gas concentrations (percent, ppm) are by volume, unless otherwise noted.

2. APPARATUS AND REAGENTS

2.1 Liquid Weight.

2.1.1 Balances/Digital Scales. To weigh drums of VOC containing liquids to within 0.2 lb.

2.1.2 Volume Measurement Apparatus (Alternative). Volume meters, flow meters, density measurement equipment, etc., as needed to achieve same accuracy as direct weight measurements.

2.2 VOC Content (Flame Ionization Analyzer Technique). The liquid sample analysis system is shown in Figures 1 and 2. The following equipment is required:

2.2.1 Sample Collection Can. An appropriately sized metal can to be used to collect VOC containing materials. The can must be constructed in such a way that it can be grounded to the coating container.

2.2.2 Needle Valves. To control gas flow.

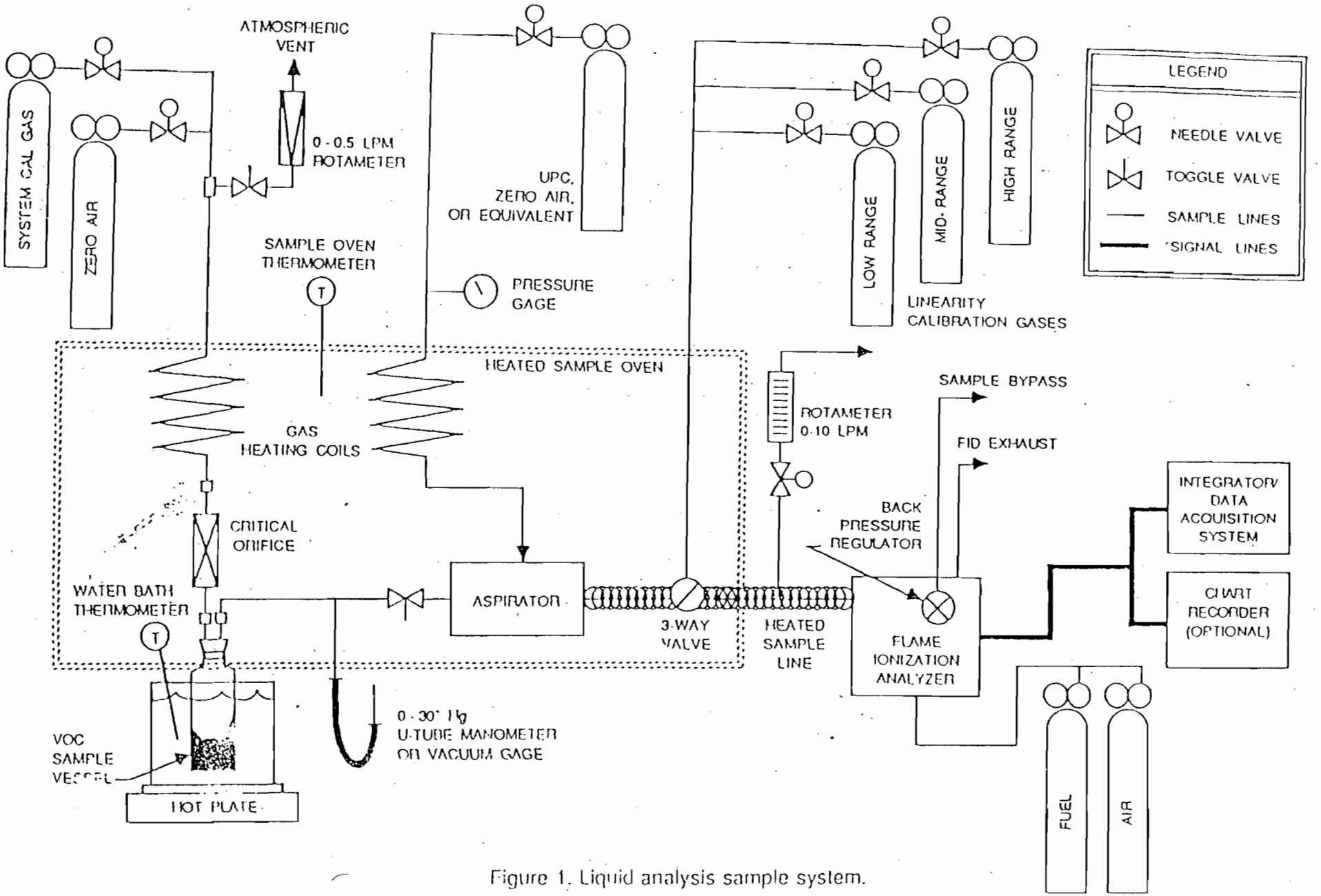


Figure 1. Liquid analysis sample system.

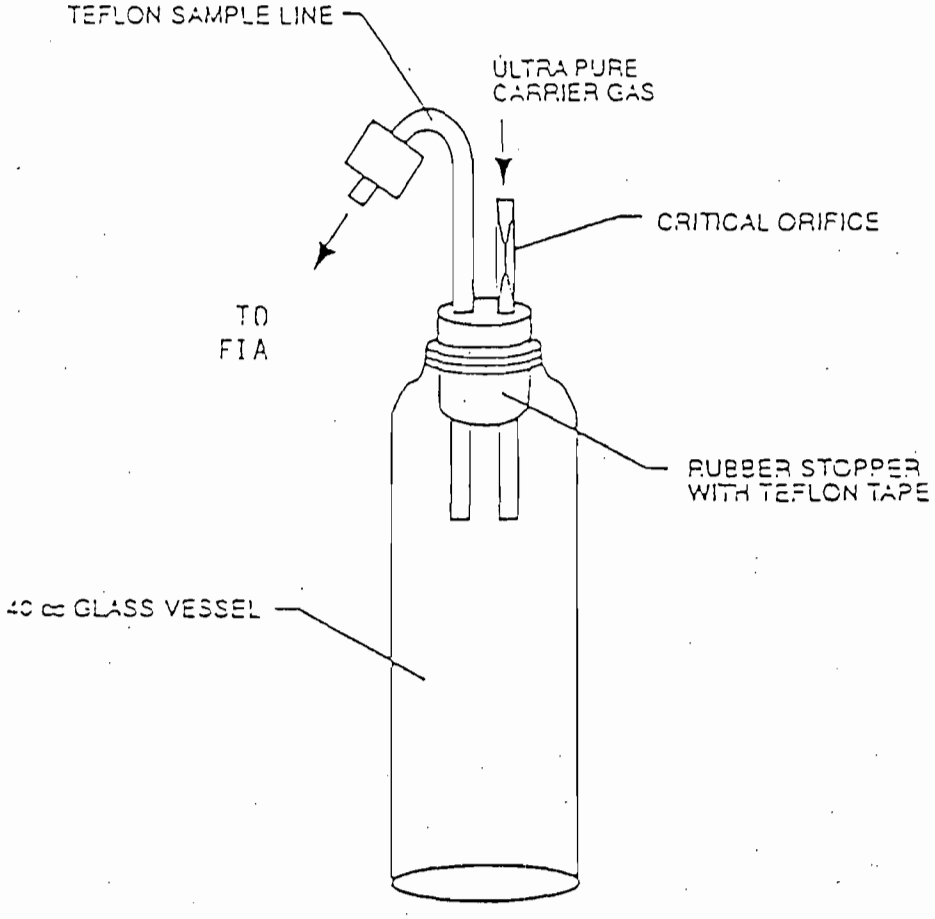


Figure 2. VOC sampling vessel.

2.2.2 Needle Valves. To control gas flow.
2.2.3 Regulators. For carrier gas and calibration gas cylinders.

2.2.4 Tubing. Teflon or stainless steel tubing with diameters and lengths determined by connection requirements of equipment. The tubing between the sample oven outlet and the FIA shall be heated to maintain a temperature of 120 ± 5°C.

2.2.5 Atmospheric Vent. A tee and 0- to 0.5-liter/min rotameter placed in the sampling line between the carrier gas cylinder and the VOC sample vessel to release the excess carrier gas. A toggle valve placed between the tee and the rotameter facilitates leak tests of the analysis system.

2.2.6 Thermometer. Capable of measuring the temperature of the hot water bath to within 1°C.

2.2.7 Sample Oven. Heated enclosure, containing calibration gas coil heaters, critical orifice, aspirator, and other liquid sample analysis components, capable of maintaining a temperature of 120 ± 5°C.

2.2.8 Gas Coil Heaters. Sufficient lengths of stainless steel or Teflon tubing to allow zero and calibration gases to be heated to the sample oven temperature before entering the critical orifice or aspirator.

2.2.9 Water Bath. Capable of heating and maintaining a sample vessel temperature of 100 ± 5°C.

2.2.10 Analytical Balance. To measure ±0.001 g.

2.2.11 Disposable Syringes. 2-cc or 5-cc.

2.2.12 Sample Vessel. Glass, 40-ml septum vial. A separate vessel is needed for each sample.

2.2.13 Rubber Stopper. Two-hole stopper to accommodate 3.2-mm (1/8-in.) Teflon tubing, appropriately sized to fit the opening of the sample vessel. The rubber stopper should be wrapped in Teflon tape to provide a tighter seal and to prevent any reaction of the sample with the rubber stopper. Alternatively, any leak-free closure fabricated of non-reactive materials and accommodating the necessary tubing fittings may be used.

2.2.14 Critical Orifices. Calibrated critical orifices capable of providing constant flow rates from 50 to 250 ml/min at known pressure drops. Sapphire orifice assemblies (available from O'Keefe Controls Company) and glass capillary tubing have been found to be adequate for this application.

2.2.15 Vacuum Gauge. 0- to 760-mm (0- to 30-in.) Hg U-Tube manometer or vacuum gauge.

2.2.16 Pressure Gauge. Bourdon gauge capable of measuring the maximum air pressure at the aspirator inlet (e.g., 100 psig).

2.2.17 Aspirator. A device capable of generating sufficient vacuum at the sample vessel to create critical flow through the calibrated orifice when sufficient air pressure is present at the aspirator inlet. The aspirator must also provide sufficient sample pressure to operate the FIA. The sample is also mixed with the dilution gas within the aspirator.

2.2.18 Soap Bubble Meter. Of an appropriate size to calibrate the critical orifices in the system.

2.2.19 Organic Concentration Analyzer. An FIA with a span value of 1.5 times the expected concentration as propane; however other span values may be used if it can be demonstrated that they would provide more accurate measurements. The system shall be capable of meeting or exceeding the following specifications:

2.2.19.1 Zero Drift. Less than ±3.0 percent of the span value.

2.2.19.2 Calibration Drift. Less than ±3.0 percent of span value.

2.2.19.3 Calibration Error. Less than ±5.0 percent of the calibration gas value.

2.2.20 Integrator/Data Acquisition System. An analog or digital device or computerized data acquisition system used to integrate the FIA response or compute the average response and record measurement data. The minimum data sampling frequency for computing average or integrated values is one measurement value every 5 seconds. The device shall be capable of recording average values at least once per minute.

2.2.21 Chart Recorder (Optional). A chart recorder or similar device is recommended to provide a continuous analog display of the measurement results during the liquid sample analysis.

2.2.22 Calibration and Other Gases. For calibration, fuel, and combustion air (if required) contained in compressed gas cylinders. All calibration gases shall be traceable to NIST standards and shall be certified by the manufacturer to ±1 percent of the tag value. Additionally, the manufacturer of the cylinder should provide a recommended shelf life for each calibration gas cylinder over which the concentration does not change more than ±2 percent from the certified value. For calibration gas values not generally available, alternative methods for preparing calibration gas mixtures, such as dilution systems, may be used with prior approval.

2.2.22.1 Fuel. A 40 percent H_2/60 percent He or 40 percent H_2/60 percent N_2 gas mixture is recommended to avoid an oxygen synergism effect that reportedly occurs when oxygen concentration varies significantly from a mean value.

2.2.22.2 Carrier Gas. High purity air with less than 1 ppm of organic material (as propane) or less than 0.1 percent of the span value, whichever is greater.

2.2.22.3 FIA Linearity Calibration Gases. Low-, mid-, and high-range gas mixture standards with nominal propane concentrations of 20-30, 45-55, and 70-80 percent of the span value in air, respectively. Other calibration values and other span values may be used if it can be shown that more accurate measurements would be achieved.

2.2.22.4 System Calibration Gas. Gas mixture standard containing propane in air, approximating the undiluted VOC concentration expected for the liquid samples.

3. DETERMINATION OF LIQUID INPUT WEIGHT

3.1 Weight Difference. Determine the amount of material introduced to the process as the weight difference of the feed material before and after each sampling run. In determining the total VOC containing liquid usage, account for: (a) the initial (beginning) VOC containing liquid mixture; (b) any solvent added during the test run; (c) any coating added during the test run; and (d) any residual VOC containing liquid mixture remaining at the end of the sample run.

3.1.1 Identify all points where VOC containing liquids are introduced to the process. To obtain an accurate measurement of VOC containing liquids, start with an empty fountain (if applicable). After completing the run, drain the liquid in the fountain back into the liquid drum (if possible), and weigh the drum again. Weigh the VOC containing liquids to ±0.5 percent of the total weight (full) or ±0.1 percent of the total weight of VOC containing liquid used during the sample run, whichever is less. If the residual liquid cannot be returned to the drum, drain the fountain into a preweighed empty drum to determine the final weight of the liquid.

3.1.2 If it is not possible to measure a single representative mixture, then weigh the various components separately (e.g., if solvent is added during the sampling run, weigh the solvent before it is added to the mixture). If a fresh drum of VOC containing liquid is needed during the run, then weigh both the empty drum and fresh drum.

3.2 Volume Measurement (Alternative). If direct weight measurements are not feasible, the tester may use volume meters and flow rate meters (and density measurements) to determine the weight of liquids used if it can be demonstrated that the technique produces results equivalent to the direct weight measurements. If a single representative mixture cannot be measured, measure the components separately.

4. DETERMINATION OF VOC CONTENT IN INPUT LIQUIDS

4.1 Collection of Liquid Samples.

4.1.1 Collect a 100-ml or larger sample of the VOC containing liquid mixture at each application location at the beginning and end of each test run. A separate sample should be taken of each VOC containing liquid added to the application mixture during the test run. If a fresh drum is needed during the

sampling run, then obtain a sample from the fresh drum.

4.1.2 When collecting the sample, ground the sample container to the coating drum. Fill the sample container as close to the rim as possible to minimize the amount of headspace.

4.1.3 After the sample is collected, seal the container so the sample cannot leak out or evaporate.

4.1.4 Label the container to identify clearly the contents.

4.2 Liquid Sample VOC Content.

4.2.1 Assemble the liquid VOC content analysis system as shown in Figure 1.

4.2.2 Permanently identify all of the critical orifices that may be used. Calibrate each critical orifice under the expected operating conditions (i.e., sample vacuum and temperature) against a volume meter as described in Section 5.3.

4.2.3 Label and tare the sample vessels (including the stoppers and caps) and the syringes.

4.2.4 Install an empty sample vessel and perform a leak test of the system. Close the carrier gas valve and atmospheric vent and evacuate the sample vessel to 250 mm (10 in.) Hg absolute or less using the aspirator. Close the toggle valve at the inlet to the aspirator and observe the vacuum for at least one minute. If there is any change in the sample pressure, release the vacuum, adjust or repair the apparatus as necessary and repeat the leak test.

4.2.5 Perform the analyzer calibration and linearity checks according to the procedure in Section 5.1. Record the responses to each of the calibration gases and the back-pressure setting of the FIA.

4.2.6 Establish the appropriate dilution ratio by adjusting the aspirator air supply or substituting critical orifices. Operate the aspirator at a vacuum of at least 25 mm (1 in.) Hg greater than the vacuum necessary to achieve critical flow. Select the dilution ratio so that the maximum response of the FIA to the sample does not exceed the high-range calibration gas.

4.2.7 Perform system calibration checks at two levels by introducing compressed gases at the inlet to the sample vessel while the aspirator and dilution devices are operating. Perform these checks using the carrier gas (zero concentration) and the system calibration gas. If the response to the carrier gas exceeds ±0.5 percent of span, clean or repair the apparatus and repeat the check. Adjust the dilution ratio as necessary to achieve the correct response to the upscale check, but do not adjust the analyzer calibration. Record the identification of the orifice, aspirator air supply pressure, FIA back-pressure, and the responses of the FIA to the carrier and system calibration gases.

4.2.8 After completing the above checks, inject the system calibration gas

for approximately 10 minutes. Time the exact duration of the gas injection using a stopwatch. Determine the area under the FIA response curve and calculate the system response factor based on the sample gas flow rate, gas concentration, and the duration of the injection as compared to the integrated response using Equations 2 and 3.

4.2.9 Verify that the sample oven and sample line temperatures are 120 ± 5°C and that the water bath temperature is 100° ± 5°C.

4.2.10 Fill a tared syringe with approximately 1 g of the VOC containing liquid and weigh it. Transfer the liquid to a tared sample vessel. Plug the sample vessel to minimize sample loss. Weigh the sample vessel containing the liquid to determine the amount of sample actually received. Also, as a quality control check, weigh the empty syringe to determine the amount of material delivered. The two coating sample weights should agree within ±0.02 g. If not, repeat the procedure until an acceptable sample is obtained.

4.2.11 Connect the vessel to the analysis system. Adjust the aspirator supply pressure to the correct value. Open the valve on the carrier gas supply to the sample vessel and adjust it to provide a slight excess flow to the atmospheric vent. As soon as the initial response of the FIA begins to decrease, immerse the sample vessel in the water bath. (Applying heat to the sample vessel too soon may cause the FID response to exceed the calibrated range of the instrument, and thus invalidate the analysis.)

4.2.12 Continuously measure and record the response of the FIA until all of the volatile material has been evaporated from the sample and the instrument response has returned to the baseline (i.e., response less than 0.5 percent of the span value). Observe the aspirator supply pressure, FIA back-pressure, atmospheric vent, and other system operating parameters during the run; repeat the analysis procedure if any of these parameters deviate from the values established during the system calibration checks in Section 4.2.7. After each sample perform the drift check described in Section 5.2. If the drift check results are acceptable, calculate the VOC content of the sample using the equations in Section 7. Integrate the area under the FIA response curve, or determine the average concentration response and the duration of sample analysis.

5. CALIBRATION AND QUALITY ASSURANCE

5.1 **FIA Calibration and Linearity Check.** Make necessary adjustments to the air and fuel supplies for the FIA and ignite the burner. Allow the FIA to warm up for the period recommended by the manufacturer. Inject a calibration gas into the measurement system and adjust the back-pressure regulator to the value required to achieve the flow rates specified by the manufacturer. Inject the zero- and the high-range calibration gases and adjust the analyzer calibration to provide the proper responses. Inject the low- and mid-range gases and record the responses of the measurement system. The calibration and linearity of the system are acceptable if the responses for all four gases are within 5 percent of the respective gas values. If the performance of the system is not acceptable, repair or adjust the system and repeat the linearity

check. Conduct a calibration and linearity check after assembling the analysis system and after a major change is made to the system.

5.2 Systems Drift Checks. After each sample, repeat the system calibration checks in Section 4.2.7 before any adjustments to the FIA or measurement system are made. If the zero or calibration drift exceeds ±3 percent of the span value, discard the result and repeat the analysis.

5.3 Critical Orifice Calibration.

5.3.1 Each critical orifice must be calibrated at the specific operating conditions that it will be used. Therefore, assemble all components of the liquid sample analysis system as shown in Figure 3. A stopwatch is also required.

5.3.2 Turn on the sample oven, sample line, and water bath heaters and allow the system to reach the proper operating temperature. Adjust the aspirator to a vacuum of 380 mm (15 in.) Hg vacuum. Measure the time required for one soap bubble to move a known distance and record barometric pressure.

5.3.3 Repeat the calibration procedure at a vacuum of 406 mm (16 in.) Hg and at 25-mm (1-in.) Hg intervals until three consecutive determinations provide the same flow rate. Calculate the critical flow rate for the orifice in ml/min at standard conditions. Record the vacuum necessary to achieve critical flow.

6. NOMENCLATURE

A_L = area under the response curve of the liquid sample, area count.

A_S = area under the response curve of the calibration gas, area count.

C_S = actual concentration of system calibration gas, ppm propane.

K = 1.830×10^{-9} g/(ml-ppm).

L = total VOC content of liquid input, kg.

M_L = mass of liquid sample delivered to the sample vessel, g.

q = flow rate through critical orifice, ml/min.

RF = liquid analysis system response factor, g/area count.

θ_S = total gas injection time for system calibration gas during integrator calibration, min.

V_{Fj} = final VOC fraction of VOC containing liquid j.

V_{Ij} = initial VOC fraction of VOC containing liquid j.

V_{Aj} = VOC fraction of VOC containing liquid j added during the run.

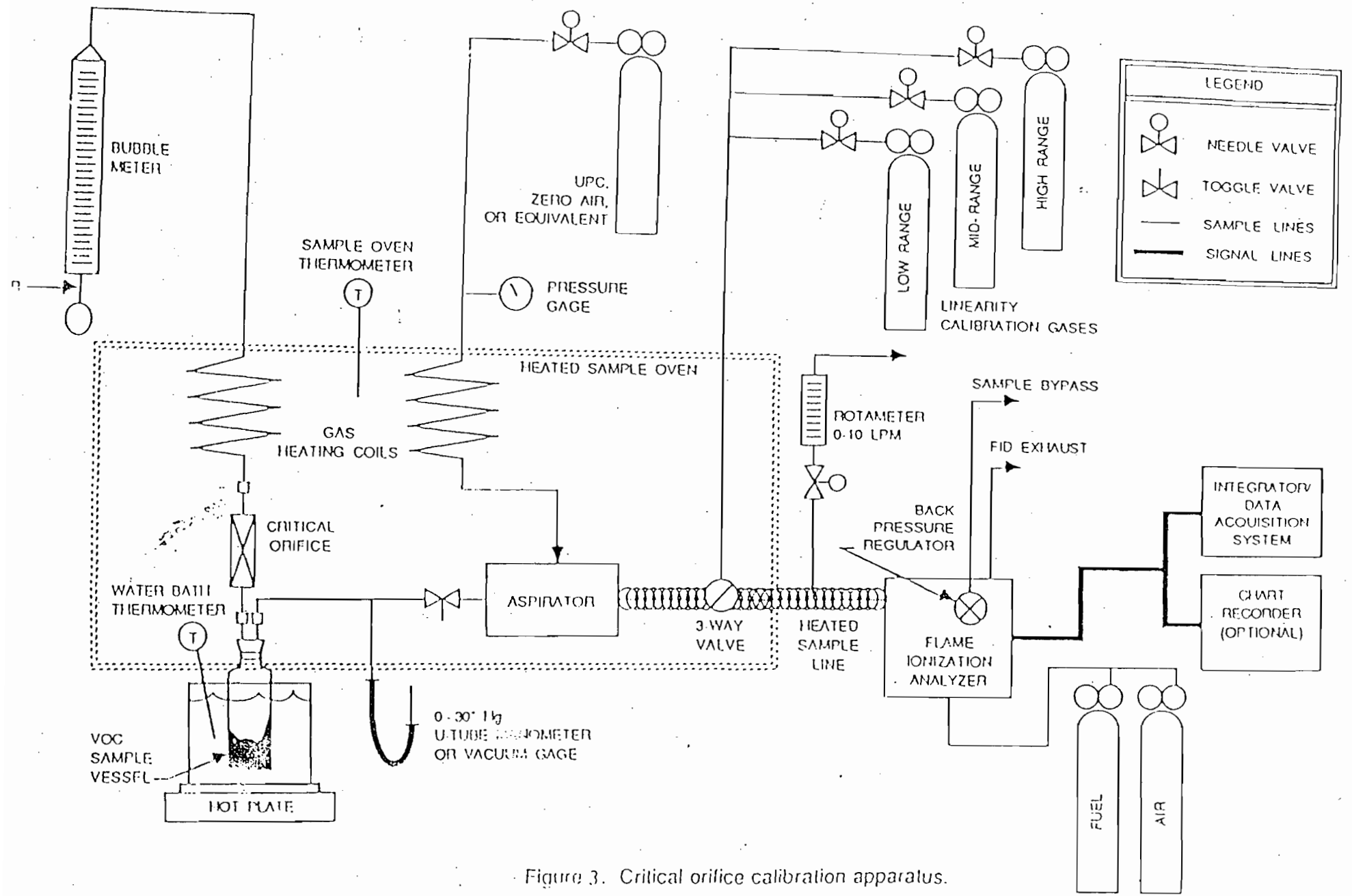


Figure 3. Critical orifice calibration apparatus.

V = VOC fraction of liquid sample.
W_{Fj} = weight of VOC containing liquid j remaining at end of the run, kg.

W_{Ij} = weight of VOC containing liquid j at beginning of the run, kg.

W_{Aj} = weight of VOC containing liquid j added during the run, kg.

7. CALCULATIONS

7.1 Total VOC Content of the Input VOC Containing Liquid.

$$L = \sum_{j=1}^{n} V_{Ij} W_{Ij} - \sum_{j=1}^{n} V_{Fj} W_{Fj} + \sum_{j=1}^{n} V_{Aj} W_{Aj} \qquad \text{Eq. 1}$$

7.2 Liquid Sample Analysis System Response Factor for Systems Using Integrators, Grams/Area Counts.

$$RF = \frac{C_S \, q \, \epsilon_S \, K}{A_S} \qquad \text{Eq. 2}$$

7.3 VOC Content of the Liquid Sample.

$$V = \frac{A_L \, RF}{M_L} \qquad \text{Eq. 3}$$

VOC CAPTURE EFFICIENCY
Procedure T - Criteria for and Verification of a Permanent or Temporary Total Enclosure

1. INTRODUCTION

1.1 Applicability. This procedure is used to determine whether a permanent or temporary enclosure meets the criteria of a total enclosure.

1.2 Principle. An enclosure is evaluated against a set of criteria. If the criteria are met and if all the exhaust gases are ducted to a control device, then the volatile organic compounds (VOC) capture efficiency (CE) is assumed to be 100 percent and CE need not be measured. However, if part of the exhaust gas stream is not ducted to a control device, CE must be determined.

2. DEFINITIONS

2.1 Natural Draft Opening (NDO) -- Any permanent opening in the enclosure that remains open during operation of the facility and is not connected to a duct in which a fan is installed.

2.2 Permanent Total Enclosure (PTE) -- A permanently installed enclosure that completely surrounds a source of emissions such that all VOC emissions are captured and contained for discharge through a control device.

2.3 Temporary Total Enclosure (TTE) -- A temporarily installed enclosure that completely surrounds a source of emissions such that all VOC emissions are captured and contained for discharge through ducts that allow for the accurate measurement of VOC rates.

3. CRITERIA OF A TEMPORARY TOTAL ENCLOSURE

3.1 Any NDO shall be at least 4 equivalent opening diameters from each VOC emitting point.

3.2 Any exhaust point from the enclosure shall be at least 4 equivalent duct or hood diameters from each NDO.

3.3 The total area of all NDO's shall not exceed 5 percent of the surface area of the enclosure's four walls, floor, and ceiling.

3.4 The average facial velocity (FV) of air through all NDO's shall be at least 3,600 m/hr (200 fpm). The direction of air through all NDO's shall be into the enclosure.

3.5 All access doors and windows whose areas are not included in Section 3.3 and are not included in the calculation in Section 3.4 shall be closed during routine operation of the process.

4. CRITERIA OF A PERMANENT TOTAL ENCLOSURE

4.1 Same as Sections 3.1 and 3.3 - 3.5.

4.2 All VOC emissions must be captured and contained for discharge through a control device.

5. PROCEDURE

5.1 Determine the equivalent diameters of the NDO's and determine the distances from each VOC emitting point to all NDO's. Determine the equivalent diameter of each exhaust duct or hood and its distance to all NDO's. Calculate the distances in terms of equivalent diameters. The number of equivalent diameters shall be at least 4.

5.2 Measure the total area (A_t) of the enclosure and the total area (A_N) of all NDO's of the enclosure. Calculate the NDO to enclosure area ratio (NEAR) as follows:

$$NEAR = A_N/A_t$$

The NEAR must be ≤ 0.05.

5.3 Measure the volumetric flow rate, corrected to standard conditions, of each gas stream exiting the enclosure through an exhaust duct or hood using EPA Method 2. In some cases (e.g., when the building is the enclosure), it may be necessary to measure the volumetric flow rate, corrected to standard conditions, of each gas stream entering the enclosure through a forced makeup air duct using Method 2. Calculate FV using the following equation:

$$FV = [Q_O - Q_I]/ A_N$$

where:

Q_O = the sum of the volumetric flow from all gas streams exiting the enclosure through an exhaust duct or hood.

Q_I = the sum of the volumetric flow from all gas streams into the enclosure through a forced makeup air duct; zero, if there is no forced makeup air into the enclosure.

A_N = total area of all NDO's in enclosure.

The FV shall be at least 3,600 m/hr (200 fpm).

5.4 Verify that the direction of air flow through all NDO's is inward. Use streamers, smoke tubes, tracer gases, etc. Strips of plastic wrapping film have been found to be effective. Monitor the direction of air flow at intervals of at least 10 minutes for at least 1 hour.

6. QUALITY ASSURANCE

6.1 The success of this protocol lies in designing the TTE to simulate the conditions that exist without the TTE, i.e., the effect of the TTE on the normal flow patterns around the affected facility or the amount of fugitive VOC emissions should be minimal. The TTE must enclose the application stations, coating reservoirs, and all areas from the application station to the oven. The oven does not have to be enclosed if it is under negative pressure. The NDO's of the temporary enclosure and a fugitive exhaust fan must be properly sized and placed.

6.2. Estimate the ventilation rate of the TTE that best simulates the conditions that exist without the TTE, i.e., the effect of the TTE on the normal flow patterns around the affected facility or the amount of fugitive VOC emissions should be minimal. Figure 1 may be used as an aid. Measure the concentration (C_G) and flow rate (Q_G) of the captured gas stream, specify a safe concentration (C_F) for the fugitive gas stream, estimate the CE, and then use the plot in Figure 1 to determine the volumetric flowrate of the fugitive gas stream (Q_F). A fugitive VOC emission exhaust fan that has a variable flow control is desirable.

6.2.1 Monitor the concentration of VOC into the capture device without the TTE. To minimize the effect of temporal variation on the captured emissions, the baseline measurement should be made over as long a time period as practical. However, the process conditions must be the same for the measurement in Section 6.2.3 as they are for this baseline measurement. This may require short measuring times for this quality control check before and after the construction of the TTE.

6.2.2 After the TTE is constructed, monitor the VOC concentration inside the TTE. This concentration shall not continue to increase and must not exceed the safe level according to OSHA requirements for permissible exposure limits. An increase in VOC concentration indicates poor TTE design or poor capture efficiency.

6.2.3 Monitor the concentration of VOC into the capture device with the TTE. To limit the effect of the TTE on the process, the VOC concentration with and without the TTE must be within ±10 percent. If the measurements do not agree, adjust the ventilation rate from the TTE until they agree within 10 percent.

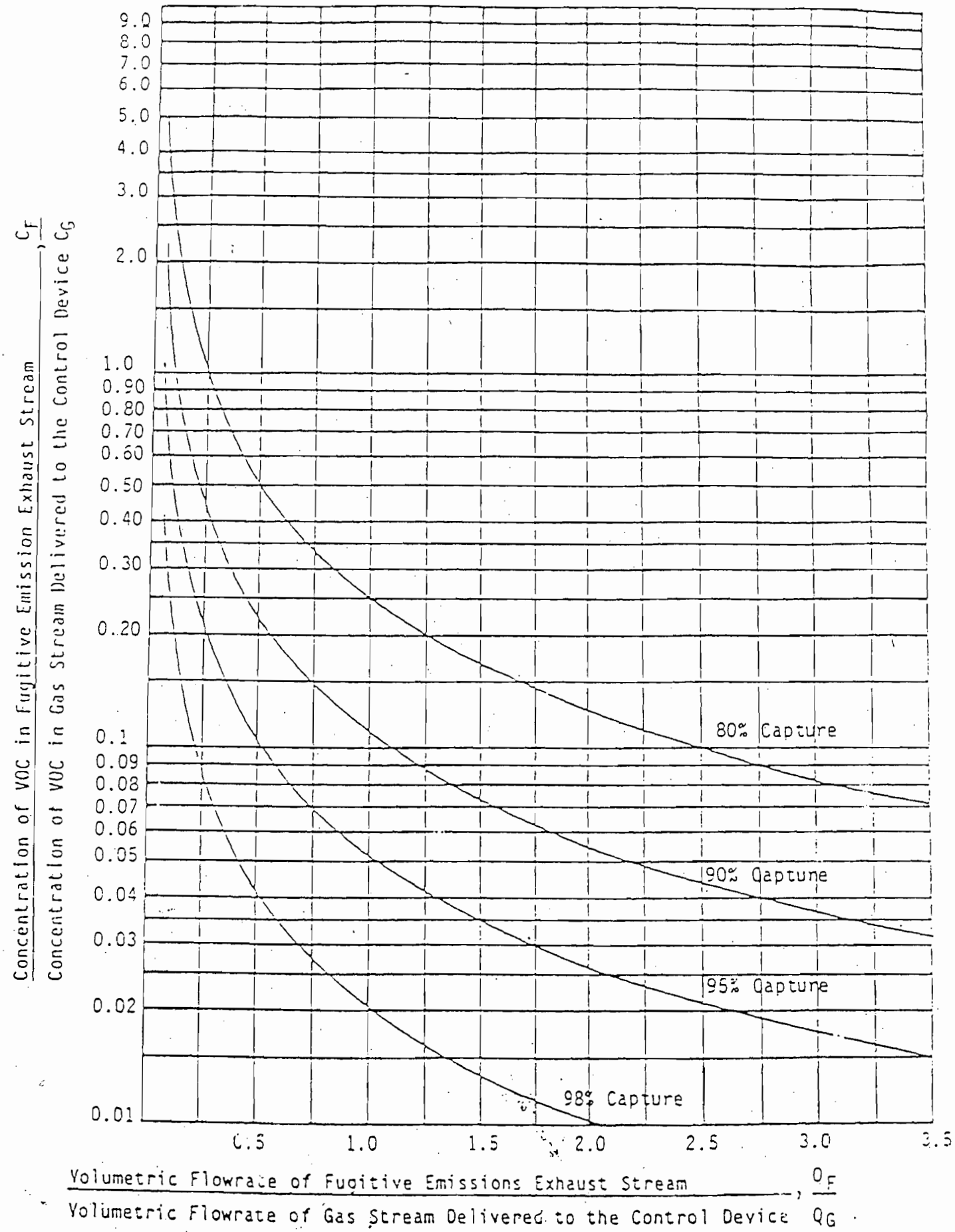


Figure 1. The Crumpler Chart

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

December 7, 1990

Mr. Clair H. Fancy, Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Fancy:

I recently submitted a description of the pneumatic conveying system which will be part of our paper recycling by-products operation at the new R. R. Donnelley & Sons Company South Daytona Manufacturing Division. The letter included Attachments A & B and was dated November 16, 1990.

On December 5, 1990, Mr. Bruce Mitchell from your engineering staff called and requested that this information be sealed by a registered Florida Professional Engineer and submitted to your attention. This has been done and the sealed documents are enclosed herewith. If there are any questions, please call me at (708)719-6755 or Carl Zielke at (904)322-2300.

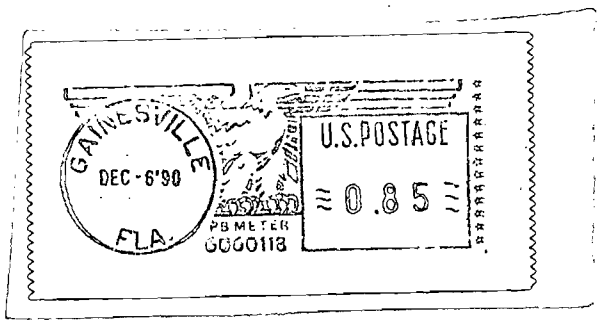
Sincerely,

R.R. DONNELLEY & SONS COMPANY

Mark Horne

Mark A. Horne
Environmental Engineer

MH:mh
SDPECERT
cc: G. Bender
H. Britton
D. Kalina
C. Miller
C. Zielke
B. Mitchell
C. Collins



MR. CLAIR H. FANCY, BUREAU CHIEF
BUREAU OF AIR REGULATION
FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION
2600 BLAIR STONE ROAD
TALLAHASSEE, FL 32399-2400

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

November 16, 1990

Mr. Clair H. Fancy, Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Fancy:

R. R. Donnelley & Sons Company is currently planning the installation of a heatset web offset printing facility in South Daytona, Florida. An application for a permit to construct three presses was recently submitted to your attention.

The facility will include a pneumatic paper conveying system which will be part of our paper recycling by-products operation. The by-products operation is separate and distinct from the pressroom. We did not include the pneumatic paper conveying system in our application because it is completely closed-loop; during normal operations there are no emissions. Subsequent to this submittal, however, the need for an emergency bypass vent on this system has come to our attention. During a transient malfunction condition, a small amount of paper dust would be associated with the emergency bypass exhaust. I discussed this with one of your engineering staff on November 9, 1990, and he suggested I submit a description of the process for your review. Included with this letter are Attachments A and B which describe the system and the associated dust loadings.

After your review of this material, please let us know if a permit for this bypass vent is required or if any further information is needed. If there are any questions, please call me at (708)719-6755 or Carl Zielke at (904)322-2300.

Sincerely,

R.R. DONNELLEY & SONS

Mark A Horne

Mark A. Horne
Environmental Engineer

MH:mh
SDBYPROD
cc: G. Bender
H. Britton
D. Kalina
C. Miller
C. Zielke

ATTACHMENT A

South Daytona By-Products Pneumatic Paper Conveying System

The pneumatic paper conveying system is used to collect and transport paper trimmings and shavings to the balers for packaging and recycling. The system consists of three cyclones for separating the paper from the carrier air stream, followed by a baghouse filter for removing residual paper dust. The exhaust from the baghouse is returned to the conveying system. It is a completely closed loop system with no outside exhaust. An emergency bypass vent will be installed just prior to the baghouse to provide for the short term operation of the bindery in the event of a baghouse malfunction. In this situation, only the trimmers and slitters would be operated. The shredder will not be operated if the baghouse malfunctions. Based on the reliable experience of baghouse filters, no more than a few hours per year of unplanned downtime would be expected. The emissions of paper dust during this limited emergency vent situation will be only 1.81 lbs/hr, calculated as follows:

Projected facility waste paper generation (total) = 6,760 tons/yr

Projected hours of operation of the by-products area = 7,250/yr

Paper dust associated with the shredded paper = $\frac{1.94 \text{ lbs dust}}{\text{ton of paper}}$*

Total volume flow rate of air through the baghouse = 21,800 scfm

Mass flow rate of dust normally directed to the baghouse:

$$\left(\frac{6{,}760 \text{ tons paper}}{\text{yr}}\right) \times \left(\frac{\text{yr}}{7{,}250 \text{ hrs}}\right) \times \left(\frac{1.94 \text{ lbs dust}}{\text{ton paper}}\right) = \frac{1.81 \text{ lb dust}}{\text{hr}}$$

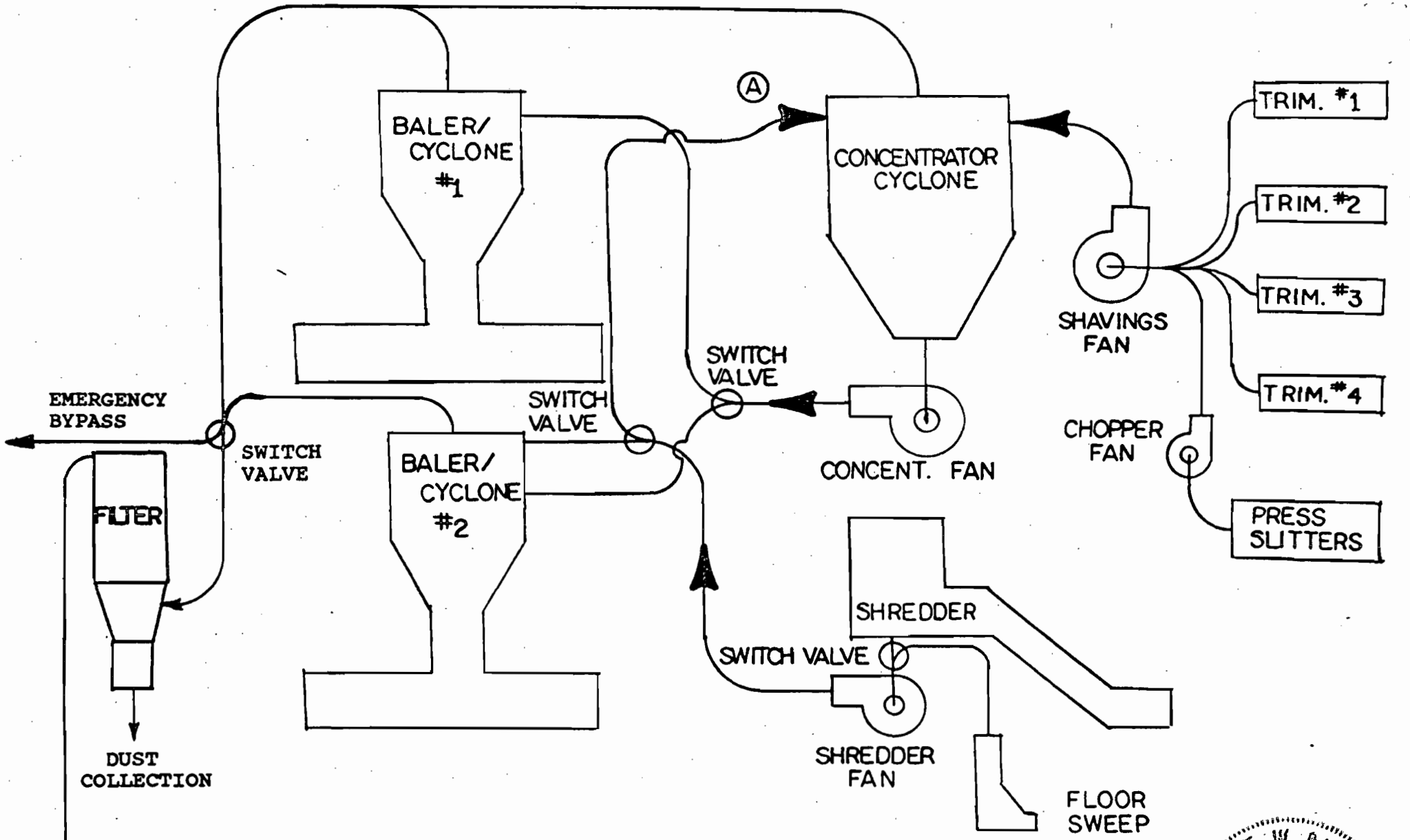
At the above process weight rate, the particulate matter emissions limit (per Rule 17-2.610, F.A.C.) is 3.44 lbs/hr. Please note that even during a transient emergency vent situation, the mass emission rate of paper dust will still be in compliance with this limitation. Under normal operating conditions there are no emissions from this closed-loop process.

*Factor based on measurements of similar systems

BYPRODA

Thomas W. Davis

T. W. DAVIS CERTIFICATE NO. 30777 STATE OF FLORIDA REGISTERED ENGINEER



SOUTH DAYTONA BY-PRODUCTS SYSTEM

ATTACHMENT B

T. W. DAVIS
CERTIFICATE
No. 36777
STATE OF
FLORIDA
REGISTERED ENGINEER

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

November 16, 1990

Mr. Clair H. Fancy, Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

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Sincerely,

R.R. DONNELLEY & SONS

Mark A Horne

Mark A. Horne
Environmental Engineer

MH:mh
SDBYPROD
cc: G. Bender
H. Britton
D. Kalina
C. Miller
C. Zielke

ATTACHMENT A

South Daytona By-Products Pneumatic Paper Conveying System

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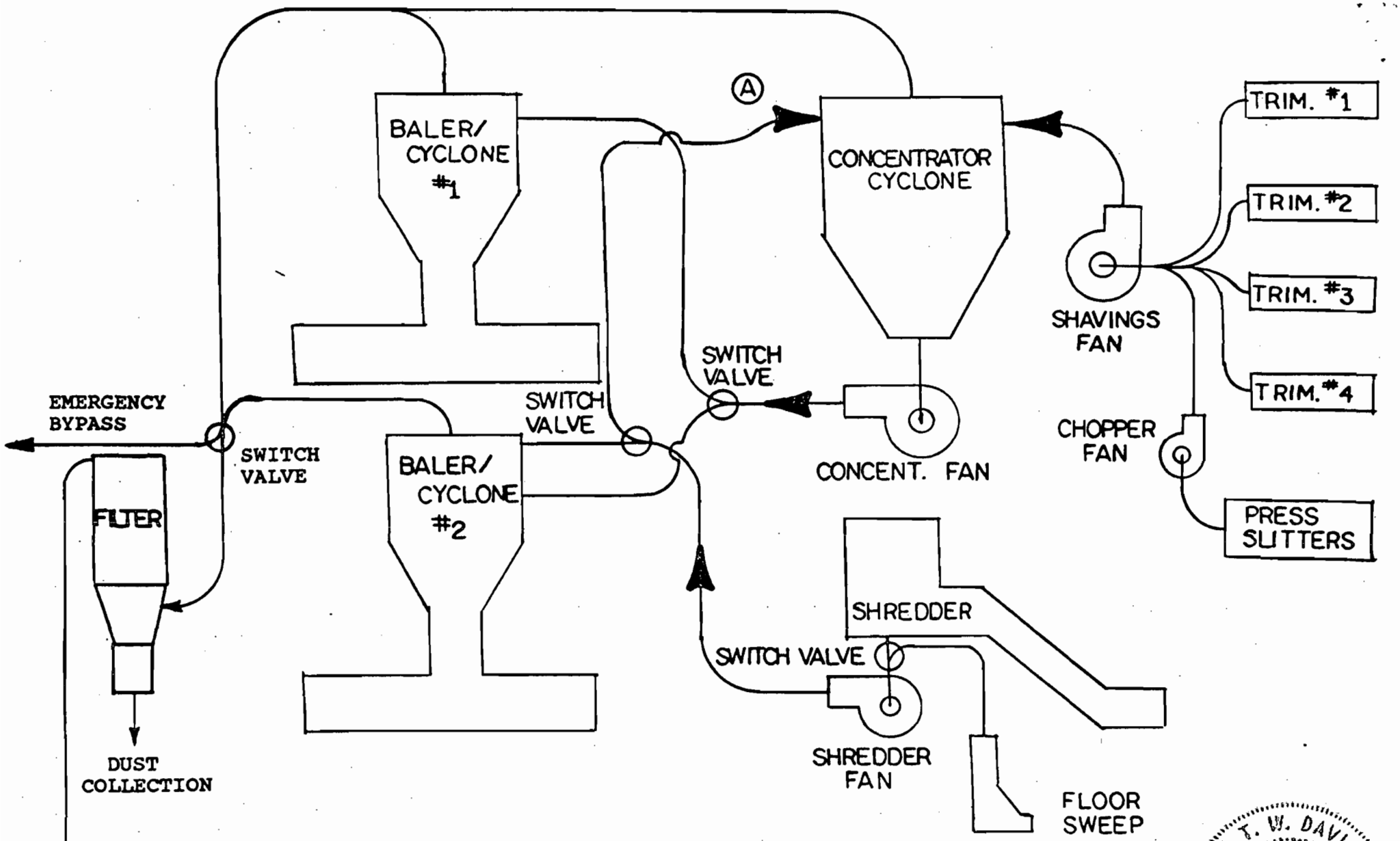
*Factor based on measurements of similar systems

BYPRODA

Thomas W. Davis

T. W. DAVIS CERTIFICATE No. 0 0777 STATE OF FLORIDA REGISTERED ENGINEER



SOUTH DAYTONA BY-PRODUCTS SYSTEM

ATTACHMENT B

T. W. DAVIS
CERTIFICATE
No. 5 C 777
STATE OF FLORIDA
REGISTERED ENGINEER

The Lakeside Press
R·R·DONNELLEY & SONS COMPANY

750 WARRENVILLE ROAD
LISLE, ILLINOIS 60532
708-963-9494

November 16, 1990

Mr. Clair H. Fancy, Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

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RECEIVED
NOV 26 1990
DER-BAQM

Sincerely,

R.R. DONNELLEY & SONS

Mark A. Horne

Mark A. Horne
Environmental Engineer

MH:mh
SDBYPROD
cc: G. Bender
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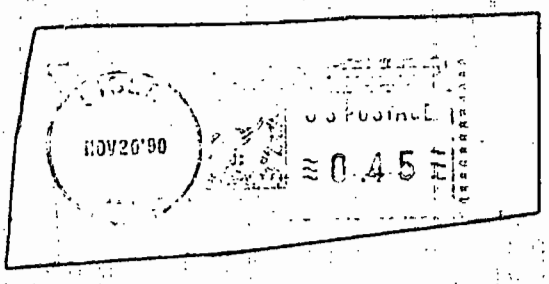

The Lakeside Press
R. R. Donnelley & Sons Company

750 Warrenville Road
Lisle, Illinois 60532

S-690

MR. CLAIR H. FANCY, BUREAU CHIEF
BUREAU OF AIR REGULATION
FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION
2600 BLAIR STONE ROAD
TALLAHASSEE, FL 32399-2400

ATTACHMENT A

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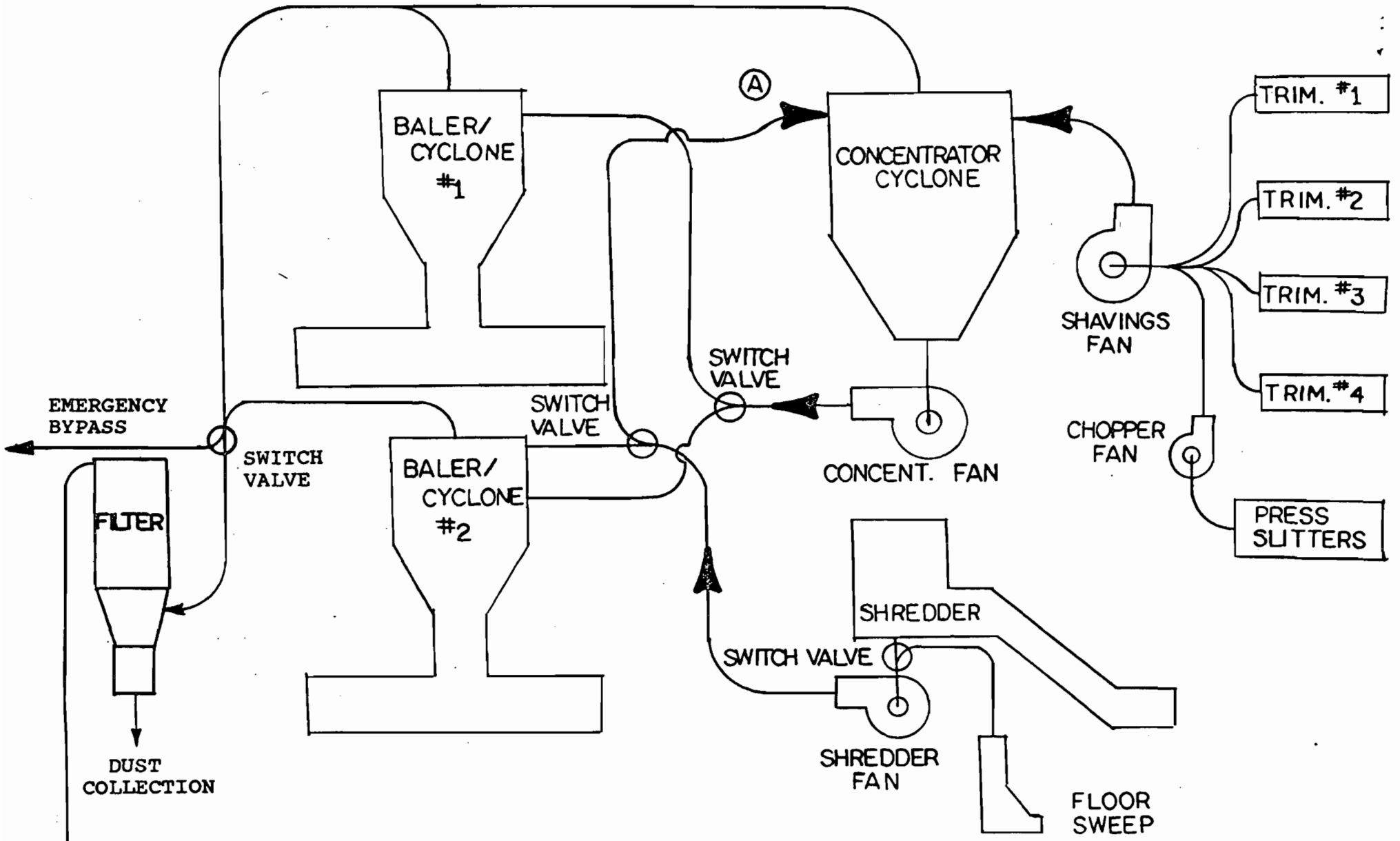
BYPRODA



SOUTH DAYTONA BY-PRODUCTS SYSTEM

ATTACHMENT B

November 1, 1990

Mr. Clair H. Fancy, Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Fancy:

Please find attached an Application for a Permit to Construct two 8-unit and one 9-unit Harris Model M1000BE tandem (2-web) heatset web offset presses at the new R.R. Donnelley & Sons Company South Daytona Manufacturing Division located in South Daytona, Florida. The emissions from each of the 8-unit presses will be the same as from the 9-unit press, therefore all three presses are treated equally throughout this application. The presses will be designated SDM-001, SDM-002 and SDM-003.

The exhaust from the press dryers will be controlled using a TEC Systems recuperative thermal afterburner system. Based on an 80% dryer emission factor, a 90% afterburner control efficiency, 8,760 operating hours per year and the VOC input values described in the attached application, the maximum theoretical VOC emissions from each press will be 49.1 tons/year. Actual VOC emissions will be substantially lower.

Installation of the new presses is scheduled to begin in February of 1991, and the construction is scheduled to be completed by June 1, 1991.

Our check in the amount of $2,500.00 is enclosed to cover the application fee. If there are any questions, please call me at (904)322-2300 or Mark Horne, our Corporate Environmental Engineer, at (708)719-6755.

Sincerely,

R.R. DONNELLEY & SONS

Carl W. Zielke

Carl W. Zielke
Vice-President & Division Director

CZ:mh
DAYAPPL
cc: G. Bender
H. Britton
M. Horne
C. Miller
Mr. Charles Collins, Pgm Administrator, Air Section
Florida Department of Environmental Regulation
3319 Maguire Boulevard
Orlando, Florida 32803-3767

FEDERAL EXPRESS

[redacted]

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE TRACKING NUMBER 6912081282

671 6912081282

[redacted]

Date 11/1/90

RECIPIENT'S COPY

1 From (Your Name) Please Print	Your Phone Number (Very Important)	2 To (Recipient's Name) Please Print	Recipient's Phone Number (Very Important)
[illegible] Miller	(606) 23[illegible]	Chan H Fancy	( )
Company: R R DONNELLEY & SONS CO	Department/Floor No.	Company: [illegible] Bureau of Air Regulation	Department/Floor No.
Street Address: LEBANON RD		Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip® Codes.) [illegible] 2600 Blair Stone Road	
City: DANVILLE State: KY	ZIP Required: 40422	City: Tallahassee State: FL	ZIP Required: 32399

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.) 080 7 025 2200 3500

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address
City State ZIP Required

3 PAYMENT 1 ☒ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☐ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card
5 ☐ Cash [redacted]

4 SERVICES (Check only one box)

Priority Overnight Service (Delivery by next business morning†)	Standard Overnight Service (Delivery by next business afternoon†)
11 ☐ YOUR PACKAGING	51 ☐
16 ☐ FEDEX LETTER *	56 ☐ FEDEX LETTER *
12 ☐ FEDEX PAK *	52 ☒ FEDEX PAK *
13 ☐ FEDEX BOX	53 ☐ FEDEX BOX
14 ☐ FEDEX TUBE	54 ☐ FEDEX TUBE
Economy Service (formerly Standard Air) (Delivery by second business day†)	**Heavyweight Service** (for Extra Large or any package over 150 lbs.)
	70 ☐ HEAVYWEIGHT **
30 ☐ ECONOMY SERVICE	80 ☐ DEFERRED HEAVYWEIGHT **

† Delivery commitment may be later in some areas.
* Declared Value Limit $100.
** Call for delivery schedule.

DELIVERY AND SPECIAL HANDLING
1 ☐ HOLD FOR PICK-UP (Fill in Box H)
2 ☒ DELIVER WEEKDAY
3 ☐ DELIVER SATURDAY (Extra charge) (Not available to all locations)
4 ☐ DANGEROUS GOODS (Extra charge) (CSS not available for Dangerous Goods Shipments)
5 ☐ CONSTANT SURVEILLANCE SVC. (CSS) (Extra charge) (Release Signature Not Applicable)
6 ☐ DRY ICE ______ Lbs.
7 ☐ OTHER SPECIAL SERVICE ______
8 ☐
9 ☐ SATURDAY PICK-UP (Extra charge)
10 ☐
11 ☐ DESCRIPTION
12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

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Total 1	Total 2	Total	

DIM SHIPMENT (Heavyweight Services Only) ☐ ______ lbs.

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1 ☒ Regular Stop 3 ☐ Drop Box 4 ☐ B.S.C.
2 ☐ On-Call Stop 5 ☐ Station

FedEx Emp. No. 7633 [illegible]

Emp. No. Date
☐ Cash Received
☐ Return Shipment
☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold
Street Address
City State Zip
Received By
X
Date/Time Received FedEx Employee Number

5 Release Signature:
Date/Time 1370

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 11/89
PART #119501 FXEM-2/90
FORMAT #014
014

R.R. Donnelley & Sons Company
South Daytona Manufacturing Division
Application for Permit to Construct
Three Heatset Web Offset Presses

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

$2,500 pd. 11-2-90 Recpt. #151199

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

AC64-188871

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: 3 Heatset Web Offset Presses [X] New[1] [ ] Existing[1]

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

COMPANY NAME: R. R. Donnelley & Sons Company COUNTY: Volusia

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) 3 Presses with Afterburner

SOURCE LOCATION: Street 3100 S. Ridgewood Ave. City South Daytona

UTM: East 500400 North 3224600

Latitude 29 ° 09 ' 00 "N Longitude 80 ° 59 ' 15 "W

APPLICANT NAME AND TITLE: Mr. Carl W. Zielke, Vice President and Division Director

APPLICANT ADDRESS: 3100 S. Ridgewood Ave., South Daytona, FL 32119-3548

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of R. R. Donnelley & Sons Co.

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

*Attach letter of authorization

Signed: Carl W Zielke

Carl W. Zielke, Vice President & Div. Director
Name and Title (Please Type)

Date: 11/1/90 Telephone No. (904) 322-1300

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

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

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

Signed Thomas W. Davis

Thomas W. Davis
Name (Please Type)

Environmental Science & Engineering, Inc.
Company Name (Please Type)

P.O. Box 1703, Gainesville, FL 32602
Mailing Address (Please Type)

Florida Registration No. 36777 Date: 10/26/90 Telephone No. (904). 332-3318

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.

This application is for a permit to construct 3 heatset web offset printing presses whose exhaust will be controlled using a thermal afterburner system. The high efficiency VOC destruction achieved by this type of system will ensure compliance with applicable emission limitations.

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

Start of Construction 2/1/91 Completion of Construction 6/1/91

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.)

Thermal afterburner capital cost	$550,000.00
Structural preparation	50,000.00
Mechanical - incl. installation of unit and ductwork	150,000.00
Electrical - incl. controls and monitors	50,000.00
TOTAL	$800,000.00

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

None

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

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

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

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

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

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

   c. If yes, list non-attainment pollutants.

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. No

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. No

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No

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

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

   a. If yes, for what pollutants?_____

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

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

F.3. The combined potential VOC emissions from the three presses is less than 250 tons per year, thus the facility would be classed as a New Minor Facility under the New Source Review provisions of Chapter 17-2 of the Florida Administrative Code and would not be subject to PSD requirements.

NOTE: All values on this page represent the total inputs and emissions from the three presses combined. Refer to Table 1 for expanded data and basis for emissions.

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Paper	N/A	N/A	33,378	Input to Presses
Ink	VOC	38	840	Input to Presses
Alcohol Substitute	VOC	100	32.8	Input to Presses
Water	N/A	N/A	1,533	Mixed with Alcohol Substitute
Cleaning Solvent**	VOC	100	2.7	Input to Presses
Fountain Solution Concentrate	N/A	N/A	31	Mixed with alcohol sub and water. Contains no VOCs. Balance of concentrate is water.

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

1. Total Process Input Rate (lbs/hr): 34,284.5

2. Product Weight (lbs/hr): 33,963

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

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission *		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
VOC	28.6	125.3	17-2.620(1)	N/A	286	1,253	Afterburner
VOC	5.0	21.9	17-2.620(1)	N/A	5	22	Fugitives

[1]See Section V, Item 2.

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

[3]Calculated from operating rate and applicable standard.

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

* These values represent the total potential emissions from the three presses without employment of an emissions control system.

** Represents total solvent consumption for the cleaning of blankets, rollers and all other general cleaning requirements.

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
TEC/KATEC 2-174	VOC	≥ 90%		*
* The TEC Systems Inc. KATEC 2-174 recuperative thermal afterburner system, operated at or above 1300°F, provides 90% or greater VOC destruction efficiencies, based upon performance tests on similar installations. If required, the VOC destruction efficiency of the system can be demonstrated by measuring the concentration of total gaseous organics (using Flame Ionization Analyzer) simultaneously up and downstream of the afterburner under typical operating conditions. USEPA Reference Method 25 is not applicable for compliance demonstration for this type of control system since the method is not valid for VOC concentrations below 50 ppm C-1, as is expected in the exhaust from this unit.				

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Natural Gas - Afterburner	0.002	0.007	7.2
Natural Gas - Dryers (3 Press Total)	0.008	0.042	42.0

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

Fuel Analysis:

Percent Sulfur: Nil Percent Ash: Nil

Density: N/A lbs/gal Typical Percent Nitrogen: Nil

Heat Capacity: Nominal 1,000 BTU/ft^3 _____ BTU/gal

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

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

Annual Average _____ Maximum _____

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

1. Waste paper - recycled

2. Waste cleaning solvent and printing inks - will be disposed of by a licensed waste hauler/fuel blender with ultimate waste disposition via thermal destruction as supplementary fuel in a cement kiln.

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

Stack Height: Discharge @ 50 ft. Stack Diameter: 3.33 ft.

Gas Flow Rate: 36,000 ACFM 17,400 DSCFM Gas Exit Temperature: 600 °F.

Water Vapor Content: 3% v/v % Velocity: 69 FPS

SECTION IV: INCINERATOR INFORMATION N/A

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

Description of Waste _____

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

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

Manufacturer _____

Date Constructed _____ Model No. _____

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

Stack Height: _____ ft. Stack Diamter: _____ 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) _____

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Brief description of operating characteristics of control devices: _____

_____

_____

_____

_____

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

_____

_____

_____

_____

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

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

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

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

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

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

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

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

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

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

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

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

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

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

[ ] Yes [x] No

Contaminant	Rate or Concentration

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

[ ] Yes [x] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration
Although BACT is not required for this installation, the level of containment and	
control that we will be employing for this installation constitutes the equivalent	
of what would be considered BACT.	

D. Describe the existing control and treatment technology (if any). No control equipment currently exists at this facility.

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

*Explain method of determining

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5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft. b. Diameter: ft.

c. Flow Rate: ACFM d. Temperature: °F.

e. Velocity: FPS

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

1. Recuperative thermal afterburner

a. Control Device: TEC/KATEC 2-174 b. Operating Principles: Thermal oxidation

c. Efficiency:[1] ≥ 90% d. Capital Cost: $800,000.00

e. Useful Life: 10-15 yrs f. Operating Cost: $14/hr

g. Energy:[2] 200 KWH, 2MMBTU/hr NG h. Maintenance Cost: $10,000/yr

i. Availability of construction materials and process chemicals: Available

j. Applicability to manufacturing processes: Applicable

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

2. Catalytic Afterburner

a. Control Device: b. Operating Principles: Catalytic oxidation

c. Efficiency:[1] 90% d. Capital Cost: $1,000,000.00

e. Useful Life: 8 yrs f. Operating Cost: $15/hr

g. Energy:[2] 200 KWH, 2 MMBTU/hr NG h. Maintenance Cost: $40,000/yr

i. Availability of construction materials and process chemicals: Available

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

j. Applicability to manufacturing processes: Applicable

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

3. Chilled Condenser

a. Control Device:

b. Operating Principles: Chilled Condensation

c. Efficiency:[1] ≤ 80%

d. Capital Cost: $850,000.00

e. Useful Life: 8 yrs

f. Operating Cost: $15/hr

g. Energy:[2] 400 KWH

h. Maintenance Cost: $150,000/yr

i. Availability of construction materials and process chemicals: Available

j. Applicability to manufacturing processes: Applicable, but low efficiency

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

4. Regenerative thermal afterburner

a. Control Device:

b. Operating Principles: Thermal oxidation

c. Efficiency:[1] ≥ 90%

d. Capital Costs: $1,200,000.00

e. Useful Life: 8 yrs.

f. Operating Cost: $12/hr.

g. Energy:[2] 200 KWH, 1.5 MMBTU/hr NG

h. Maintenance Cost: unknown

i. Availability of construction materials and process chemicals: Available

j. Applicability to manufacturing processes: Applicable

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

F. Describe the control technology selected:

1. Control Device: Recuperative Thermal afterburner

2. Efficiency:[1] ≥ 90%

3. Capital Cost: $800,000.00

4. Useful Life: 10-15 years

5. Operating Cost: $14.24/hr.

6. Energy:[2] 191 KVA electricity; 2 MMBTU/hr NG

7. Maintenance Cost: $10,000/yr.

8. Manufacturer: TEC Systems, Inc.

9. Other locations where employed on similar processes:

a. (1) Company: R. R. Donnelley & Sons Co.

(2) Mailing Address: Donnelley Drive

(3) City: Glasgow

(4) State: Kentucky

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

(5) Environmental Manager: Tom Gaffin or Ben Voliva

(6) Telephone No.: 502-678-2121 708-719-6695

(7) Emissions:[1]

Contaminant	Rate or Concentration
VOCs	< 10% of input VOC concentration

(8) Process Rate:[1] 17,400 scfm

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

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

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION N/A

A. Company Monitored Data

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

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

Other data recorded _____

Attach all data or statistical summaries to this application.

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

2. Instrumentation, Field and Laboratory

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

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

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

2. Surface data obtained from (location)_____

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

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

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

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

D. Applicants Maximum Allowable Emission Data

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

E. Emission Data Used in Modeling

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

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

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

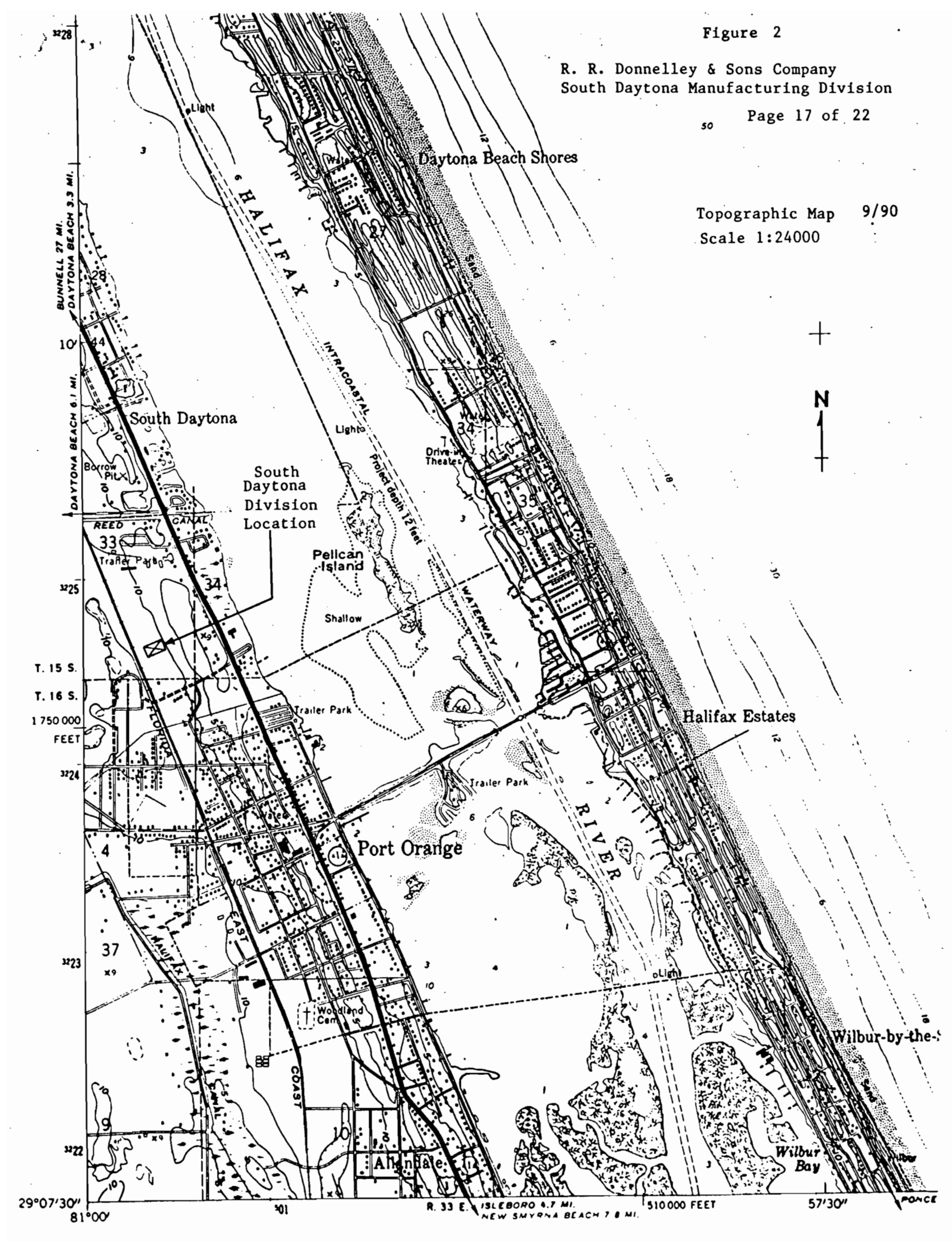
H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

Figure 1
R. R. Donnelley & Sons Company
South Daytona Manufacturing Div.
Facility Area Map 9/90

Figure 2

R. R. Donnelley & Sons Company
South Daytona Manufacturing Division

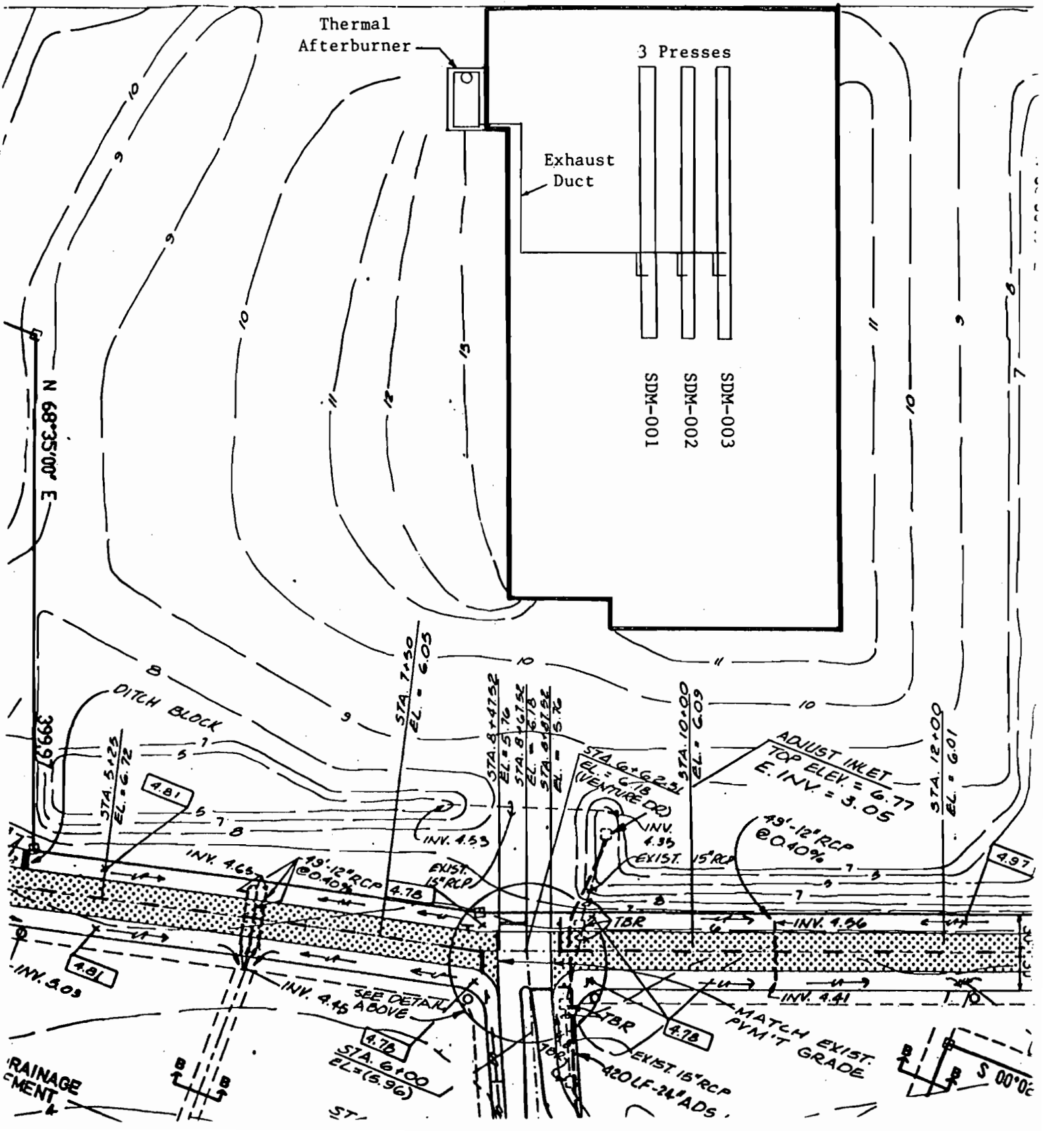
Topographic Map 9/90
Scale 1:24000



0 50 100 ft

N

FLORIDA EAST COAST RAILROAD (100' R/W)



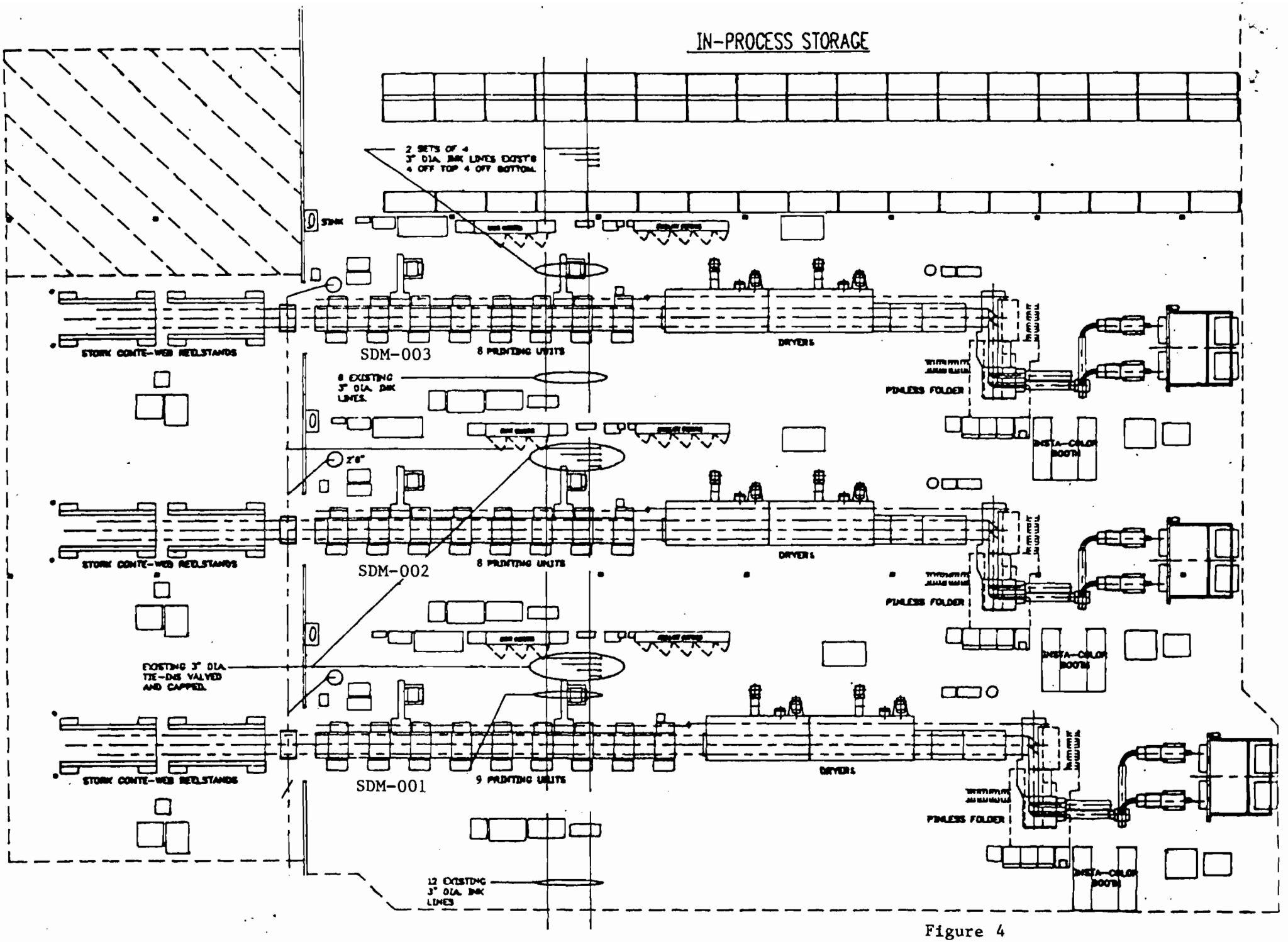


Figure 4
R. R. Donnelley & Sons Company
South Daytona Pressroom 9/90

TABLE 1

R.R. Donnelley & Sons Company
South Daytona Manufacturing Division
Material Input/VOC Emissions Data

I. Material Input/Output Factors

	VOC Content (% by weight)	% Fugitive	% Capture	% Retention in Paper
Ink	38	0	80	20
Alcohol Substitute	100	10	90	0
Cleaning Solvent	100	62.5	37.5	0

Thermal afterburner system VOC control (destruction) efficiency = 90%

II. Material Input and Emission Rates (three press totals)

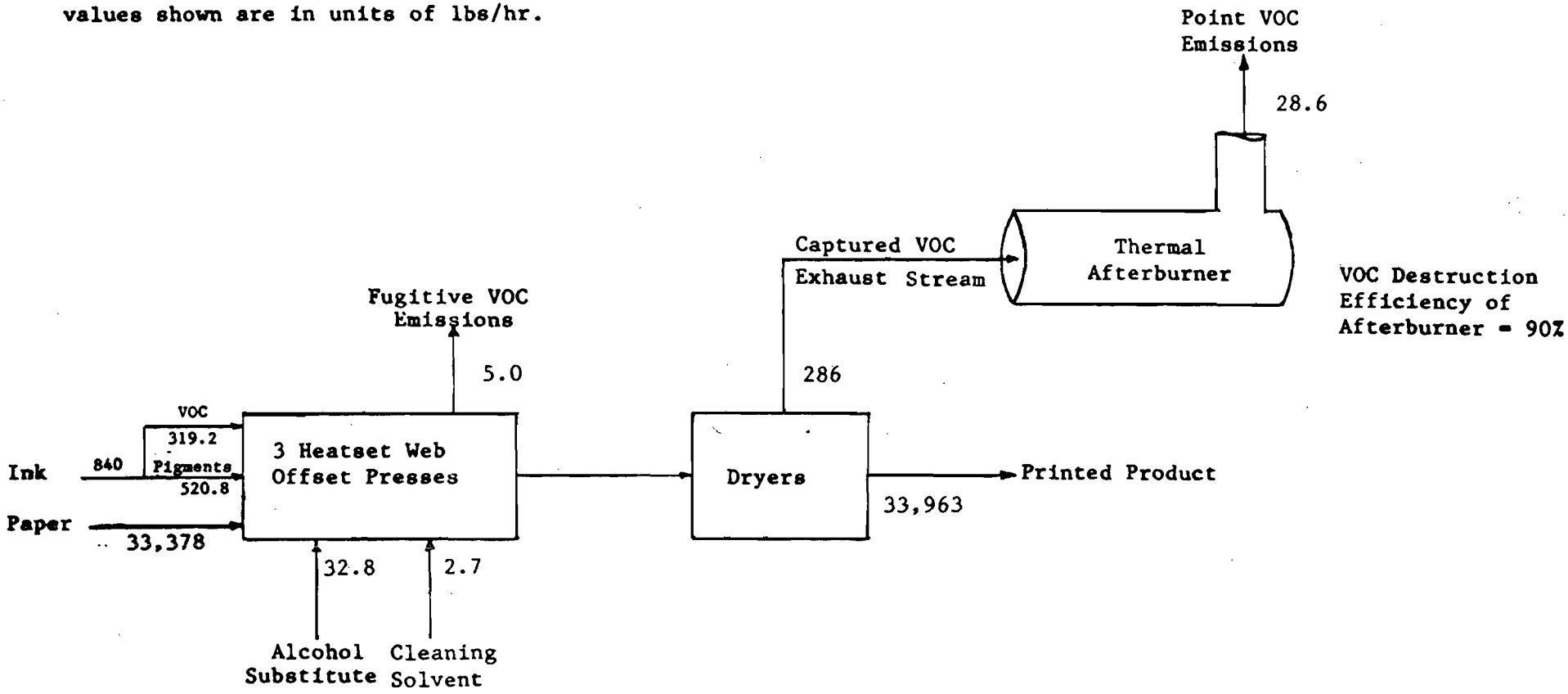
	VOC Input (lbs/hr)	VOC Emission Rates (lb/hr) Fugitive	Point	Total
Ink VOC	319.2	0	25.5	25.5
Alcohol Substitute	32.8	3.3	3.0	6.3
Cleaning Solvent	2.7	1.7	0.1	1.8
Totals	354.7	5.0	28.6	33.6

Total press VOC emissions @8,760 operating hours per year = 147.2 tons/yr

III. Emissions from the Combustion of Natural Gas in the Afterburner (AB) and Press Dryers (3 press totals). Estimates based on AP-42 factors.

	NG Usage (MMBTU/hr)		Partic. (lbs/hr)		SO_2 (lbs/hr)		NO_x (lbs/hr)		CO (lbs/hr)		VOC (lbs/hr)	
	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max
AB	2	7.2	.006	.022	.001	.004	.20	.72	.04	.14	.011	.038
Dryers	8	42	.024	.126	.005	.025	1.1	5.9	.28	1.5	.022	.118

Values represent total process inputs and outputs for all three double web heatset offset presses combined. All values shown are in units of lbs/hr.

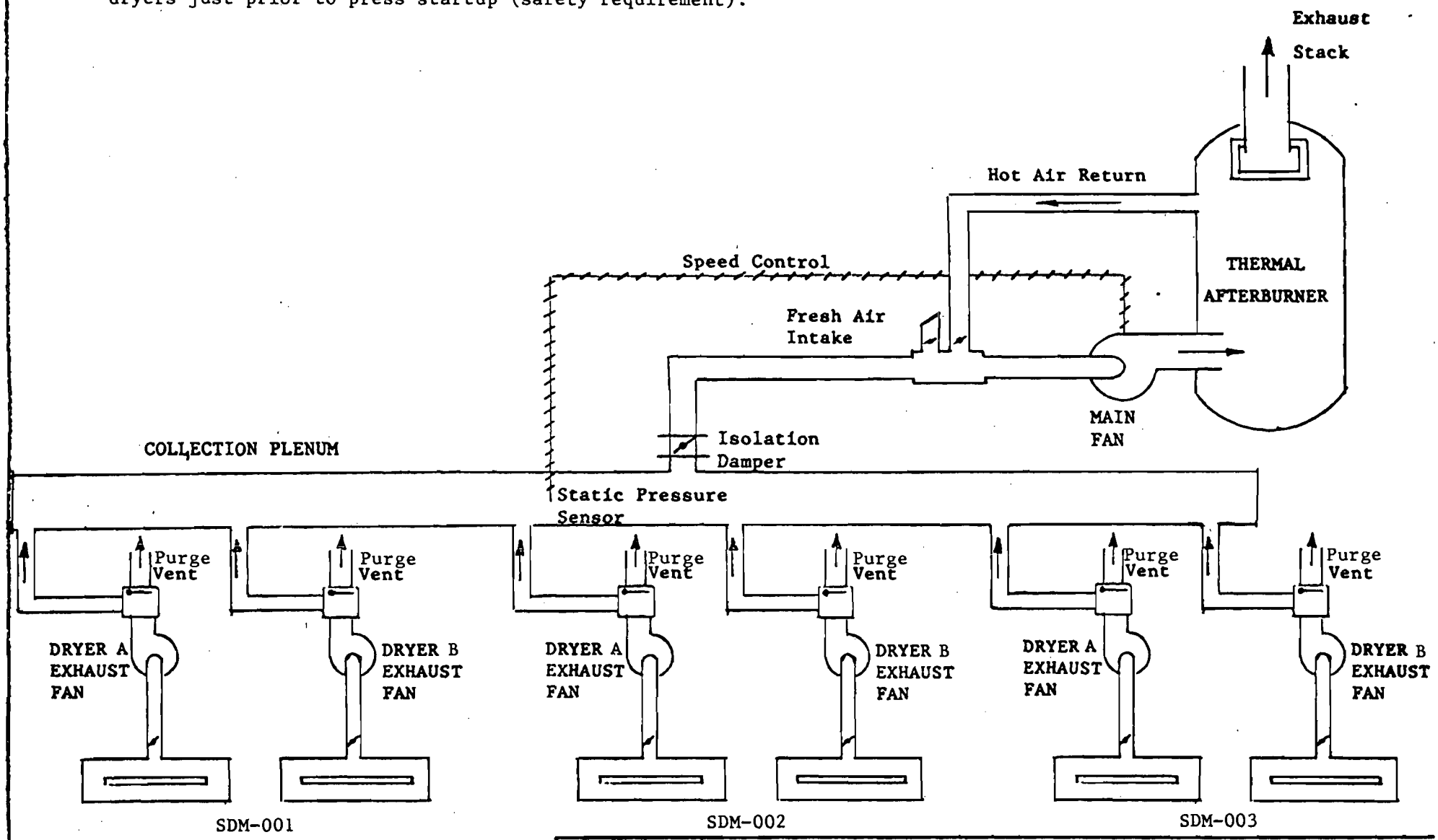


OVERALL PROCESS FLOW DIAGRAM

R. R. DONNELLEY & SONS COMPANY		
THIS DRAWING, REPRODUCTION OR SPECIFICATION IS THE PROPERTY OF R. R. DONNELLEY & SONS COMPANY. NO REPRODUCTION OF ANY OF THE MATTER SHOWN, OR DISCLOSURE OF ANY INFORMATION CONTAINED HERE IS TO BE MADE, AND IT SHALL BE RETURNED INTACT UPON REQUEST.		
TOLERANCE DECIMAL ± FRACTIONAL ±	DRAWN DATE 9/90 CHKD. BY	South Daytona Manufacturing Division
PARTS LIST NO. REF. Dwg. No.	SUPER. BY APP. BY	DRAWING NO. Figure 5

REVISION	BY	DATE
(A)		

NOTE: The purge vents are utilized for the initial purge of the dryers just prior to press startup (safety requirement).



R. R. DONNELLEY & SONS COMPANY

TOLERANCE	SCALE
DECIMAL ±	DATE 9/90
FRACTIONAL ±	DRN. BY
PARTS LIST NO.	CHK'D. BY
REF. Dwg. No.	APP. BY

Thermal Afterburner Control System
South Daytona Manufacturing Division

REVISION	BY	DATE
A		

DRAWING NO. FIGURE 6

APPENDIX A

Materials Specification Sheets

- Typical -

MATERIAL SAFETY DATA SHEET

(For Printing Ink and Related Materials)

15I0-01A

I

Manufacturer's Name:
Sun Chemical Corporation (General Printing Ink)

Emergency Phone No:
(201) 933-4500

Street Address (No., City, State, Zip):
631 Central Avenue Carlstadt, New Jersey 07072

Product Class: Web Offset Heatset Inks

Trade Name:

Manufacturers Code:
(See Attached List)

II Hazardous Ingredients

Material or Component in Hazardous Concentrations:	Hazard Data:
Petroleum Middle Distillate (CAS# 64741-86-2)	(See Section XI)

III Health Effect Information

Eye Contact: May be slightly irritating upon direct contact.

Skin Contact: Repeated or prolonged exposure may cause drying of skin and irritation.

Inhalation: This product has a low vapor pressure and is not expected to present an inhalation hazard at ambient conditions. Caution should be taken to prevent aerosolization or misting of this product.

Ingestion: Ingestion of small quantities is usually non-fatal unless aspiration occurs. Aspiration may lead to chemical pneumonitis.

Health Data: See Section XI

Systemic Effects: See Section XI

IV Emergency & First Aid Procedures

Eye Contact: Flush eyes with water for 15 minutes. If irritation develops, consult a physician.

Skin Contact: Wash affected area with soap and water. Remove soiled clothing and launder before reusing.

Inhalation: None expected to be necessary at ambient conditions.

Ingestion: Do not induce vomiting. Seek immediate medical attention.

V Personal Health Protection Information

Eye Protection: Safety glasses or goggles recommended to prevent accidental contact.

Skin Protection: Gloves recommended for repeated or prolonged exposure.

Ventilation: In accordance with good engineering practices.

Respiratory Protection: None required under conditions of normal use.

Other: None.

VI Fire & Explosion Data

Flash Point Category (NFPA):	Lowest Flash Point:	Lower Explosion Limit:
III B	210°F	1.1%

Extinguishing Media: Carbon dioxide, dry chemical, foam.

Special Fire Fighting Procedure: Self-contained breathing apparatus and protective clothing should be worn in chemical fires.

Unusual Fire & Explosion Hazards: Dense smoke may be generated while burning. Oxides may be generated as products of combustion.

MATERIAL SAFETY DATA SHEET

VII Reactivity Data

Stability (thermal, light, etc.):	Stable Unstable	X —	Conditions to Avoid	none
Incompatibility (materials to avoid):	strong oxidizers			

VIII Physical Data

Boiling Range:	Lbs. Gal.	Appearance:	Type of Odor:
464 - 516°F	approximately 8	colored viscous liquid	hydrocarbon

Vapor Density: Heavier Lighter	X —	vs. air	Evaporation Rate vs. Butyl Acetate: Faster Slower	— X
Liquid Density: Heavier Lighter	— X	vs water	Percent Volatile Wt.:	35 - 45%

IX Environmental Precautions

Procedure When Material is Spilled or Released: Clean up with absorbent material.

Waste Disposal Method: In accordance with federal, state and local regulations.

X Special Precautions

Handling and Storage Requirements: Store in closed containers.

Precautionary Statements: None.

Approved By: Date: 11/21/86

XI Additional Comments

Evaluation of this specific raw material in a test battery designed to detect multiple genotoxic endpoints has demonstrated this component to be nongenotoxic. Lack of genotoxic activity is strongly correlated with noncarcinogenicity. Therefore this component is not expected to result in tumors in laboratory animals.

However, in accordance with the Occupational Safety and Health Administration Hazard Communication Standard, all manufacturers, and distributors of middle distillates are also required to report that earlier studies conducted by the American Petroleum Institute have indicated that middle distillates, as a class, were weakly to moderately tumorigenic in laboratory animals. It is suspected that these tumors may be due in part to the severely irritated skin condition resulting from continuous contact of the test animals with the material.

SECTION I PRODUCT IDENTIFICATION #53270 PAGE 1

TRADE NAME(AS LABELED): ALCOHOL REPLACEMENT

FORMULA: 5-137
PRODUCT CODE #: 53270
DATE ISSUED: 4/29/87 REVISED 8-2-89
MANUFACTURER: RYCOLINE PRODUCTS, INC.
ADDRESS: 5540 NORTHWEST HIGHWAY
CHICAGO, ILLINOIS 60630
PHONE NUMBER: (312) 775-6755

N.F.P.A. HAZARD RATING	HEALTH
	2
4=EXTREME	FIRE
3=HIGH	----
2=MODERATE	2
1=MINIMAL	REACTIVITY
	0

SECTION II HAZARDOUS INGREDIENTS

	CHEMICAL NAME	CAS NUMBERS	PERCENT W/W	EXPOSURE LIMITS IN AIR ACGIH TLV	OSHA PEL
+	ETHYLENE GLYCOL N-BUTYL ETHER	111-76-2	70-80	25 PPM (SKIN)	25 PPM
+	ETHYLENE GLYCOL	107-21-1	20-30	25 PPM	NOT EST.

+THIS CHEMICAL IS SUBJECT TO SARA TITLE III sec. 313 40CFR372 REPORTING.

SECTION III PHYSICAL/CHEMICAL PROPERTIES

BOILING POINT, F: 340 TO 400
VAPOR PRESSURE(MMHG): .19 @68 DEG. F
MELTING POINT,F: UNKNOWN
VAPOR DENSITY(AIR=1):> 3.50 @60 DEG. F
SOLUBILITY IN WATER: INFINITE
APPEARANCE AND ODOR: GREEN LIQUID, MILD ODOR

SPECIFIC GRAVITY(H2O=1): 0.9499
% VOLATILE BY VOLUME: 98
VOC (LB/GAL): 7.8
EVAPORATION RATE: SLOWER (THAN ETHER)

SECTION IV FIRE AND EXPLOSION

FLASH POINT,F: 145 T.C.C.
FLAMMABILITY LIMITS IN AIR: UNKNOWN
AUTOIGNITION TEMPERATURE: 460 DEG. F

EXTINGUISHING MEDIA

_X_ WATER SPRAY/FOG _X_ CO2 _X_ DRY CHEMICAL _X_ ALCOHOL FOAM

SPECIAL FIRE FIGHTING PRODCEDURES: USE SELF CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING.

UNUSUAL FIRE AND EXPLOSION HAZARDS: DO NOT FLAME CUT, WELD OR SAW EMPTY CONTAINER.

SECTION V REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID: FLAME, SPARKS AND EXCESSIVELY WARM TEMP.

INCOMPATIBILITY(MATERIALS TO AVOID): STRONG OXIDIZING MATERIALS AND ALKALINE MATERIALS.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: NONE

HAZARDOUS DECOMPOSITION PRODUCTS: CO AND CO2 UPON COMBUSTION .

SECTION VI SPECIAL PRECAUTION INFORMATION

HANDS(GLOVE MATERIAL): NEOPRENE AND NATURAL RUBBER
EYES: CHEMICAL SAFETY SPLASH GOGGLES

VENTILATION REQUIREMENTS: GENERAL MECHANICAL VENTILATION OF AREA IS RECOMMENDED. LOCAL VENTILATION OF AREA MAYBE NEEDED.

REPIRATION TYPE: OSHA RECOMMENDED FOR ORGANIC VAPOR.

OTHER: SAFETY SHOWER AND EYE WASH SHOULD BE AVAILABLE.

SECTION VII SPILL/LEAKAGE PROCEDURES

SPILL RESPONSE PROCEDURE: USE ABSORBENT MATERIAL TO COLLECT AND CONTAIN FOR DISPOSAL. CONTAIN LARGE SPILL AND PUMP TO SUITABLE TANK. WASH AREA WITH SUITABLE DETERGENT AND WATER AND THOROUGHLY RINSE WITH WATER.

WASTE DISPOSAL: USE PLASTIC OR STEEL CONTAINERS AND DISPOSE IN AN APPROVED LICENSED SITE, INCINERATION.

NOTE: DISPOSE OF ALL WASTES IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.

SECTION VIII HEALTH HAZARD INFORMATION

SYMPTOMS OF OVEREXPOSURE FOR EACH POTENTIAL ROUTE OF EXPOSURE

CONTACT WITH SKIN: DRYING,REDNESS, AND BLISTERING POSSIBLE.

CONTACT WITH EYES: IRRITION ON CONTACT.

INHALATION: EXCESSIVE INHALATION MAY CAUSE DIZZINESS, NAUSEA,AND ANESTHESIA.

INGESTION: IRRITANT MATERIAL - SAME EFFECT AS INHALATION.

ABSORBED THROUGH SKIN: ETHLYENE GLYCOL N-BUTYL ETHER MAY BE ABSORBED THROUGH THE SKIN- SAME EFFECT AS INHALATION.

HEALTH EFFECTS OR RISKS FROM EXPOSURE

ACUTE: INHALATION MAY BE IRRITATION TO THE EYES, NOSE, AND RESPIRATORY TRACK.INGESTION MAY CAUSE HEADACHE, NAUSES, VOMITTING, AND DIZZINESS.

CHRONIC: EXCESSIVE EXPOSURE TO THIS PRODUCT MAY CAUSE DAMAGE TO SKIN, LIVER LUNG, KIDNEY, BLOOD, AND LYMPHOID SYSTEM.

FIRST AID PROCEDURES

EYE CONTACT: IMMEDIATELY FLUSH WITH WATER FOR AT LEAST 15 MINUTES. CONTACT LENSES MUST BE REMOVED. GET MEDICAL ATTENTION.

SKIN CONTACT: REMOVE ALL CONTAMINATED CLOTHING. WASH SKIN WITH SOAP & WATER.

INHALATION: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION OR OXYGEN IF NEEDED. GET MEDICAL ATTENTION IF INDICATED.

INGESTION: GET MEDICAL ATTENTION. DILUTE BY GIVING VICTIM WATER AND THEN INDUCE VOMITING. NEVER GIVE ANYTHING BY MOUTH OR INDUCE VOMITING IF VICTIM IS UNCONSCIOUS.

CARCINOGENICITY: INGREDENT'S OF PRODUCT ARE NOT FOUND ON;

FEDERAL OSHA NTP IARC

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: SKIN DISEASE, RESPIRATORY DISEASE, KIDNEY, AND LIVER DISEASE.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS IN HANDLING AND STORING: WASH THOROUGHLY AFTER HANDLING, KEEP CONTAINER CLOSED. DO NOT GET IN EYES; ON SKIN OR CLOTHING

OTHER PRECAUTIONS: PROTECT AGAINST PHYSICAL DAMAGE TO CONTAINERS. STORE IN A COOL, WELL VENTILATED AREA. KEEP AWAY FROM HEAT AND OXIDIZING MATERIALS. FOR INDUSTRIAL USE ONLY.

MATERIAL SAFETY DATA SHEET

ANCHOR/LITHKEMKO
50 Industrial Loop North
Orange Park, Florida 32073

EMERGENCY PHONE NUMBER • (904) 264-3500 This number is available days, nights, weekends, and holidays.

This MSDS complies with 29 CFR 1910.1200 Hazard Communication Standard.

PRODUCT IDENTIFICATION

Product Name: OXY-WEB AUTOWASH

Date prepared: 11/9/88

Product Number: 7290

Chemical Name: NA

CAS#: Not Applicable, for blends

UN/NA Number: 1993

DOT Proper Shipping Name: Compound, Cleaning, Liquid

V.O.C.: 7.0 lbs./gal. - Calif. Rule 1130

Photochemically Reactive - Calif. Rule 102

HMIS HAZARD RATING

Least:0; Slight:1; Moderate: 2; High: 3; Extreme: 4

Health: 1	Reactivity: 0
Fire: 2	Personal Protection: B

WARNING STATEMENT

COMBUSTIBLE MIXTURE

Avoid extreme heat. In case of eye contact, flush with copious amounts of water and seek medical attention. Avoid prolonged or repeated breathing of vapor. Use with adequate ventilation. Wash affected skin areas with soap and water. Do not take internally. Harmful if swallowed. If swallowed, do NOT induce vomiting; seek medical attention immediately.

- FOR INDUSTRIAL USE ONLY -

Federal law requires persons receiving the Material Safety Data sheet to study it carefully, become aware of hazards, if any, of the product involved. In the interest of safety you should (1) notify your employees, agents, and contractors of the information on this sheet, (2) furnish a copy to each of your customers for the product, and (3) request your customers to inform their employees and customers as well.

TLV - Threshold Limit Value; PEL - Permissible Exposure Limit;
NE - Not Established; NA - Not Applicable; VOC- Volatile Organic Compound

HAZARDOUS INGREDIENTS

		EXPOSURE LIMITS, PPM			
		OSHA PEL	ACGIH TLV	OTHER TLV	% Ranges
1.	Aromatic 150 CAS# 64742-94-5 blend of aromatic petroleum distillates	100	NE	-	45-55
2.	Solvent 140 CAS# 64742-88-7 blend of aliphatic petroleum distillates	500	100	-	25-35
3.	Solvent 460 CAS# 64742-96-7	NE	NE	100	10-20
4.	Solvent DPM CAS# 34590-94-8 syn: dipropylene monomethyl ether	NE	100	NE	<5

EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: If this product comes in contact with eyes, gently flush with large quantities of water for at least 15 minutes and seek immediate medical attention.

SKIN CONTACT: If this product comes in contact with the skin, remove contaminated clothing, wash affected skin areas with quantities of water, and seek medical attention if irritation from contact persists.

INHALATION: If breathing difficulties, dizziness, or light-headedness occur when working in areas with high vapor concentration, victim should seek air free of vapors. If victim experiences continued breathing difficulties, oxygen, where available, should be administered by qualified personnel until medical assistance can be rendered. If breathing stops, begin artificial respiration and seek immediate medical attention.

INGESTION: If swallowed, do NOT induce vomiting; seek medical attention immediately.

HEALTH INFORMATION, ACUTE AND CHRONIC

EYE: Direct contact with vapors or mists may cause burning, tearing and redness.

SKIN EFFECTS: Prolonged or repeated skin contact may result in dermatitis.

INHALATION: Prolonged or repeated exposure or breathing of very high vapor concentrations may cause headaches, nausea and vomiting. Chronic overexposure in high concentrations may produce CNS depression.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

PRIMARY ROUTES OF ENTRY: Inhalation.

CARCINOGENICITY: NTP - no; IARC - no; OSHA - no.

SYSTEMIC AND OTHER EFFECTS: Chronic overexposure to Solvent DPM in high concentrations may cause liver or possibly kidney effects.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: The use of respiratory protection depends on vapor concentration above the time-weighted TLV. Use a respirator/gas mask with appropriate cartridges or canister (NIOSH approved, if available), or supplied air equipment, depending on airborne concentration.

VENTILATION: General mechanical ventilation may be sufficient to keep product vapor concentrations within specified time-weighted TLV ranges. If general ventilation proves inadequate to maintain safe vapor concentrations, supplemental local exhaust may be required. Other special precautions, such as respiratory protection, may be required if vapor concentrations cannot be reduced to below the TLV by ventilation.

PROTECTIVE GLOVES: The use of gloves which are impermeable to the specific material handled is advised to prevent skin irritation.

EYE PROTECTION: Safety glasses are recommended to safeguard against potential eye contact, irritation, or injury.

OTHER PROTECTIVE EQUIPMENT: The availability of eye washes and safety showers in work areas is recommended.

REACTIVITY DATA

STABILITY: Stable CONDITIONS TO AVOID: NA

MATERIALS TO AVOID: .Strong oxidizing agents, strong acids or bases.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition in the presence of air may yield carbon monoxide and/or carbon dioxide.

HAZARDOUS POLYMERIZATION: Will not occur. CONDITIONS TO AVOID: NA

SPILL OR LEAK PROCEDURES

PRECAUTIONS IN CASE OF RELEASE OR SPILL: Stay upwind and away from spill unless wearing appropriate protective equipment. Stop and/or contain discharge if it may be done safely. Keep all sources of ignition away. Ventilate area of spill. Use non-sparking tools for cleanup. Cover with inert material to reduce fumes. Keep out of drains, sewers, or waterways. Contact fire authorities. Notify local health and pollution control agencies. Call spill response teams if large spill.

WASTE DISPOSAL METHOD: Dispose of product in accordance with applicable local, county, state, and federal regulations.

STORAGE AND SPECIAL PRECAUTIONS

HANDLING & STORAGE PRECAUTIONS: Keep product containers cool, dry and away from sources of ignition. Use and store this product with adequate ventilation. Keep product containers closed when not in use.

OTHER PRECAUTIONS: Personnel should avoid inhalation of vapors. Personal contact with the product should be avoided. Should contact be made, remove saturated clothing and flush affected skin areas with water. Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in this data sheet must be observed.

DOT, FIRE AND EXPLOSION HAZARD DATA

DOT HAZARD CLASS: Combustible Liquid.

FLASH POINT (TCC): 145° F.

EXTINGUISHING MEDIA: Use foam, CO_2, or dry chemical fire fighting apparatus.

UNUSUAL FIRE & EXPLOSION HAZARDS: Keep work areas free of hot metal surfaces and other sources of ignition.

FIRE FIGHTING PROCEDURES: The use of self-contained breathing apparatus is recommended for fire fighters. Water may be unsuitable as an extinguishing media, but helpful in keeping adjacent containers cool. Avoid spreading burning liquid with water used for cooling purposes.

PHYSICAL DATA

EVAPORATION RATE: Slower than n-butyl acetate. PERCENT VOLATILE: 100%

APPROXIMATE BOILING RANGE (°F): 375-550° VAPOR DENSITY: Heavier than air.

pH: NA SOLUBILITY IN WATER: 0%

SPECIFIC GRAVITY: Lighter than water. WEIGHT(lbs.)PER GALLON: 7.02

APPEARANCE AND ODOR: Clear, colorless liquid; mild solvent odor.

DOCUMENTARY INFORMATION

Product No.: 7290
Replaces:
Reviewed By: VB

Issue Date: 11/9/88
Product No.:

Prepared by: LMA
Issued:

SECTION I PRODUCT IDENTIFICATION 26050 PAGE 1

TRADE NAME(AS LABELED): BLUE CHIP FOUNTAIN SOLUTION

FORMULA: B-5 TO B-50
PRODUCT CODE #: 26050
DATE ISSUED: 4/29/87 REVISED 5-1-89
MANUFACTURER: RYCOLINE PRODUCTS, INC.
ADDRESS: 5540 NORTHWEST HIGHWAY
CHICAGO, ILLINOIS 60630
PHONE NUMBER: (312) 775-6755

N.F.P.A. HAZARD RATING	HEALTH
	1
4=EXTREME	FIRE
3=HIGH	----
2=MODERATE	0
1=MINIMAL	REACTIVITY

	0

SECTION II HAZARDOUS INGREDIENTS

CHEMICAL NAME	CAS NUMBERS	PERCENT W/W	EXPOSURE LIMITS IN AIR ACGIH TLV	OSHA PEL
+ PHOPHORIC ACID	7664-38-2	1	1 Mg/M3	1 Mg/M3

THIS IS A NON-FLAMMABLE,NON-CORROSIVE WATER SOLUTION
PH OF UNDILUTED CONCENTRATE IS APPROX.=2.0
+CHEMICAL IS SUBJECT TO SARA TITLE III sec. 313 PART 372 REPORTING

SECTION III PHYSICAL/CHEMICAL PROPERTIES

BOILING POINT, F: 212
VAPOR PRESSURE(MMHG): 17.50 @68 DEG. F
MELTING POINT,F: UNKNOWN
VAPOR DENSITY(AIR=1):> 1.00 @60 DEG. F
SOLUBILITY IN WATER: INFINITE
APPEARANCE AND ODOR: BLUE GREEN LIQUID, MILD ODOR

SPECIFIC GRAVITY(H2O=1): 1.110
% VOLATILE BY VOLUME: 84
VOC (LB/GAL): 0
EVAPORATION RATE: SLOWER (THAN ETHER)

SECTION IV FIRE AND EXPLOSION

FLASH POINT,F: ABOVE 200, T.C.C.
FLAMMABILITY LIMITS IN AIR: LOWER(LEL): NONE UPPER(UEL): NONE
AUTOIGNITION TEMPERATURE:NONE DEG. F

EXTINGUISHING MEDIA

_X_ WATER SPRAY/FOG _X_ CO2 _X_ DRY CHEMICAL _X_ ALCOHOL FOAM

SPECIAL FIRE FIGHTING PRODCEDURES: USE SELF CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING.
UNUSUAL FIRE AND EXPLOSION HAZARDS: DO NOT FLAME CUT, WELD OR SAW EMPTY CONTAINER.

SECTION V REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID: FREEZING TEMP. AND EXCESSIVELY WARM TEMP.

INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZING MATERIALS AND ALKALINE MATERIALS.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: NONE

HAZARDOUS DECOMPOSITION PRODUCTS: CO, CO_2, AND OXIDES OF NITROGEN.

SECTION VI SPECIAL PRECAUTION INFORMATION

HANDS (GLOVE MATERIAL): NEOPRENE AND NATURAL RUBBER

EYES: CHEMICAL SAFETY SPLASH GOGGLES

VENTILATION REQUIREMENTS: GENERAL MECHANICAL VENTILATION OF AREA IS RECOMMENDED.

REPIRATION TYPE: OSHA APPROVED FOR ORGANIC VAPOR.

OTHER: SAFETY SHOWER AND EYE WASH SHOULD BE AVAILABLE

SECTION VII SPILL/LEAKAGE PROCEDURES

SPILL RESPONSE PROCEDURE: USE ABSORBENT MATERIAL TO COLLECT AND CONTAIN FOR DISPOSAL. CONTAIN LARGE SPILL AND PUMP TO SUITABLE TANK. WASH AREA WITH SUITABLE DETERGENT AND WATER AND THOROUGHLY RINSE WITH WATER.

WASTE DISPOSAL: USE PLASTIC CONTAINERS AND DISPOSE IN AN APPROVED LICENSED SITE.

NOTE: DISPOSE OF ALL WASTES IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

SECTION VIII HEALTH HAZARD INFORMATION

SYMPTOMS OF OVEREXPOSURE FOR EACH POTENTIAL ROUTE OF EXPOSURE

CONTACT WITH SKIN: DRYING,REDNESS, AND BLISTERING POSSIBLE.

CONTACT WITH EYES: IRRITION ON CONTACT.

INHALATION: EXCESSIVE INHALATION MAY CAUSE DIZZINESS, NAUSEA,AND ANESTHESIA. IF USED IN COMBINTION WITH ALCOHOL.
INGESTION: IRRITANT MATERIAL - SAME EFFECT AS INHALATION.

ABSORBED THROUGH SKIN: NOT EXPECTED TO BE ABSORBED THROUGH THE SKIN

HEALTH EFFECTS OR RISKS FROM EXPOSURE

ACUTE: SKIN OR EYE CONTACT MAY CAUSE IRRITATION.

CHRONIC: NO KNOWN CHRONIC EFFECTS FROM EXPOSURE TO THIS PRODUCT.

FIRST AID PROCEDURES

EYE CONTACT: IMMEDIATELY FLUSH WITH WATER FOR AT LEAST 15 MINUTES. CONTACT LENSES MUST BE REMOVED. GET MEDICAL ATTENTION.
SKIN CONTACT: REMOVE ALL CONTAMINATED CLOTHING. WASH SKIN WITH SOAP & WATER.
INHALATION: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION OR OXYGEN IF NEEDED. GET MEDICAL ATTENTION IF INDICATED.
INGESTION: GET MEDICAL ATTENTION, GIVE LARGE QUANTITIES OF WATER AND INDUCE VOMITING. DO NOT MAKE AN UNCONSCIOUS PERSON VOMIT.
CARCINOGENICITY: INGREDENT'S OF PRODUCT ARE NOT FOUND ON;

FEDERAL OSHA NTP IARC

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: SKIN DISEASE.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS IN HANDLING AND STORING: WASH THOROUGHLY AFTER HANDLING, KEEP CONTAINER CLOSED. DO NOT GET IN EYES; ON SKIN OR CLOTHING

OTHER PRECAUTIONS: PROTECT AGAINST PHYSICAL DAMAGE TO CONTAINERS. STORE IN A COOL, WELL VENTILATED AREA. KEEP AWAY FROM HEAT AND OXIDIZING MATERIALS. FOR INDUSTRIAL USE ONLY.

APPENDIX B

TEC Systems Afterburner Specifications

TEC SYSTEMS
Quality Products Today...
With Tomorrow's Technologies

TEC SYSTEMS
W. R. Grace & Co. - Conn.
830 Prosper Road, P.O. Box 30
De Pere, Wisconsin 54115-0030

(414) 336-5715 TELEX 26-3471
TELEFAX (414) 336-3404

October 25, 1990

Mr. Mark Horne
R.R. Donnelley & Sons Co.
750 Warrenville Road
Lisle, IL 60532-4345

RE: KATEC 2-174, TEC Job #100581

Dear Mark:

Per our discussion, please find below the performance specifications for the TEC systems Model 2-174 Thermal Pollution Control System that is proposed for installation at the R.R. Donnelley & Sons South Daytona Manufacturing Division in South Daytona, Florida.

KATEC 2-174 Thermal Pollution Control System Design Specifications:

Exhaust Volume Flow Capacity	17,400 SCFM
Solvent Load Capacity	291 lbs/hr
Combustion Chamber Residence Time @ 1300°F	0.73 seconds
Minimum Hydrocarbon Reduction Efficiency @ 1300°F ..	90%

The solvent is presumed to be Magie 470 oil or equivalent. Residence times in the combustion chamber will increase with decreasing exhaust flow rates (at constant temperature) and will decrease with increasing gas temperature (at constant flow SCFM).

Please call me if you have any questions.

Sincerely,

Jeff Kudronowicz

Jeffrey A. Kudronowicz
Manager
Pollution Control Engineering

JAK.vsd

cc: Mr. Dennis Cote, R.R. Donnelley-Lisle (708) 719-6711
Mr. Vito Krisciunas, R.R. Donnelley-Lisle (708) 719-6711
G.M. Schmidt, TEC Systems-Engineering
D.J. Tilque, TEC Systems-Sales
G.R. Newkirk, TEC Systems-Sales
R.S. Potter, TEC Systems-Engineering

FIRST UNION NATIONAL BANK, CHAPEL HILL, N.C.

7678

R·R· DONNELLEY & SONS COMPANY

Danville Manufacturing Division

66-156
531

Date 10/26/90

$2,500.00

PAY TO THE ORDER OF

THE SUM 2500 DOLS 00 CTS

Florida Dept. Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

ACCOUNTS PAYABLE

R. R. DONNELLEY & SONS COMPANY

[redacted]

DETACH BEFORE DEPOSITING

NO RECEIPT NECESSARY; ENDORSEMENT OF CHECK CONSTITUTES RECEIPT IN FULL FOR ITEMS DETAILED. IF NECESSARY TO WRITE US REGARDING THIS REMITTANCE REFER TO ABOVE VOUCHER NUMBER AND, IN CASE OF ERROR, HOLD CHECK PENDING REPLY.

R. R. DONNELLEY & SONS CO.

MEMO	REGISTER NUMBER	INVOICE DATE	AMOUNT OF INVOICE	DISCOUNT	BALANCE
Application fee, permit to construct presses		02050800-0000			$2,500.00

RECEIVED
NOV 2 1990
DER-BAQM

RECEIVED
DER-MAIL ROOM
90 NOV 2 PM 2:19

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 0730617145

1136M 0730617145

Date 6/7/91

RECIPIENT'S COPY

1 From (Your Name) Please Print: Dirk Hiler

Your Phone Number (Very Important): 904-322-2300

Company: R R DONNELLEY & SONS

Department/Floor No.:

Street Address: 3100 SOUTH RIDGEWOOD AVENUE

City: SOUTH DAYTONA BEAC State: FL ZIP Required: 3 2 1 1 9

2 To (Recipient's Name) Please Print: Clair A. Fancy

Recipient's Phone Number (Very Important): ( )

Company: Bureau of Air Regulation

Department/Floor No.:

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): FIA Dept of Environmental Reg. 2600 Blair Stone Rd.

City: Tallahassee, FL. State: ZIP Required: 32399-2400

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.): 067-6025-2300-4600

H IF HOLD FOR PICK-UP, Print FEDEX Address Here

Street Address:

City: State: ZIP Required:

3 PAYMENT 1 ☐ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☐ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☐ Cash/Check

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)	Standard Overnight (Delivery by next business afternoon†)
11 ☐ YOUR PACKAGING	51 ☐ YOUR PACKAGING
16 ☐ FEDEX LETTER *	56 ☐ FEDEX LETTER *
12 ☐ FEDEX PAK *	52 ☐ FEDEX PAK *
13 ☐ FEDEX BOX	53 ☐ FEDEX BOX
14 ☐ FEDEX TUBE	54 ☐ FEDEX TUBE
Economy Two-Day (Delivery by second business day†)	**Government Overnight** (Restricted for authorized users only)
30 ☐ ECONOMY	46 ☐ GOVT LETTER
	41 ☐ GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)

70 ☐ OVERNIGHT FREIGHT ** (Call/use reservation required)

80 ☐ TWO-DAY FREIGHT **

†Delivery commitment may be later in some areas

*Declared Value Limit $100

**Call for delivery schedule

DELIVERY AND SPECIAL HANDLING (Check services required)

1 ☐ HOLD FOR PICK-UP (Fill in Box H)

2 ☐ DELIVER WEEKDAY

3 DELIVER SATURDAY (Extra charge) ☐ (Not available to all locations)

4 ☐ DANGEROUS GOODS (Extra charge)

5 ☐

6 ☐ DRY ICE _____ Lbs.

7 ☐ OTHER SPECIAL SERVICE _____

8 ☐

9 ☐ SATURDAY PICK-UP (Extra charge)

10 ☐

11 ☐ DESCRIPTION

12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

PACKAGES	WEIGHT In Pounds Only
Total	Total

DIM SHIPMENT (Chargeable Weight) ☐ _____ lbs.

Received At: 1 ☐ Regular Stop 3 ☐ Drop Box 4 ☐ BSC 2 ☐ On-Call Stop 5 ☐ Station

FedEx Emp. No.:

5 Release Signature:

Date/Time:

Emp. No.: Date:

☐ Cash Received

☐ Return Shipment ☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold

Street Address:

City: State: Zip:

Received By: X

Date/Time Received: FedEx Employee Number:

Federal Express Use

Base Charges

Declared Value Charge

Other 1

Other 2

Total Charges

REVISION DATE 1/91
PART #137204 FXEM 4/91
FORMAT #068

068