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. Doug Rasmussen, Superintendent
A. D. Weiss Lithograph Co., Inc.
2025 McKinley Street
Hollywood, Florida 33020

April 11, 1991

Enclosed is construction permit AC 06-183175 for A. D. Weiss Lithograph Co., Inc. to construct/install two new web offset presses at their facility in Hollywood, Broward County, Florida. This permit is issued pursuant to Section 403, Florida Statutes.

Any party to this permit has the right to seek judicial review of the permit pursuant to Section 120:68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this permit is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copy furnished to:

I. Goldman, SE District
D. Banu, Broward County
H. J. Bauch, P.E., SEEC, Inc.

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of buisness on 4-11-91.

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.

Clerk

4-11-91
Date

Final Determination

A. D. Weiss Lithograph Co., Inc.
Broward County
Hollywood, Florida

Construction Permit Number:

AC 06-183175

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

April 4, 1991

Final Determination

The Technical Evaluation and Preliminary Determination (TE/PD) for the permit to construct/install two new web offset presses at A.D. Weiss Lithograph Company, Inc.'s facility in Hollywood, Broward County, Florida, was distributed on January 10, 1991. The Notice of Intent to Issue was published in the Ft. Lauderdale News/Sun Sentinel on February 9, 1991. Copies of the TE/PD were available for public inspection at the Department's Southeast District office and Bureau of Air Regulation office.

Comments are noted on the Department's Intent to Issue and they are as follows:

1. Since the afterburner system is essentially an incinerator, then the visible emissions (VE) standard pursuant to F.A.C. Rule 17-2.600(1)(a)1. is applicable and more stringent than the VE standard pursuant to F.A.C. Rule 17-2.610(2). Therefore, the following will be changed:

Specific Condition No. 11:

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 Table 700-1, F.A.C. Rule 17-2.700, and 40 CFR 60, Appendix A (July, 1989 version).

To: The KATEC thermal afterburner is subject to F.A.C. Rule 17-2.600(1)(a)1., which imposes a visible emissions standard of no visible emissions (5 percent opacity) except that visible emissions not exceeding 20 percent opacity are allowed for up to three minutes in any one hour period. Initial and annual compliance tests shall be conducted using DER Method 9 in accordance with Table 700-1 and F.A.C. Rule 17-2.700.

2. Daniella Banu, with the Broward County Environmental Quality Control Board-Air Section suggested that the expiration date be extended to allow additional time for installation and testing. The following will be changed:

Expiration Date:

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

Attachment to be Incorporated:

11. Final Determination dated April 4, 1991.

The final action of the Department will be to issue the construction permit, No. AC 06-183175, as proposed and with the above changes and attachment 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:
A. D. Weiss Lithograph Co., Inc.
2025 McKinley Street
Hollywood, Florida 33020

Permit Number: AC 06-183175
Expiration Date: July 31, 1992
County: Broward
Latitude/Longitude: 26°01'31"N
80°08'51"W
Project: Construction of Presses Nos. 22 and 23

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 two new presses with dryer enclosures (Nos. 22 and 23) and an associated and shared TEC Systems Inc. KATEC thermal afterburner system; also, the minimum capture (dryer enclosures) and destruction (afterburner) efficiencies will be 75.0% (inks and process solvents) and 95.0%, respectively. The project also includes the removal from service of existing presses Nos. 2, 3, 4 and 14; and, the facility will undergo a formulation change to reduce the VOC content of the inks from an average of 68.0% to 39.1%. The project will occur at the applicant's existing facility. The UTM coordinates are Zone 17, 585.3 km East and 2878.6 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 June 28, 1990.
2. Mr. H. J. Bauch's letter received August 31, 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 November 6, 1990, from Mr. Bruce Mitchell.
5. Technical Evaluation and Preliminary Determination dated November 9, 1990.

ATTACHMENTS cont.

6. "Facility Quick Look" received from Mr. Tom Tittle on November 19, 1990.
7. Interoffice Memorandum received from Mr. Tom Tittle on November 26, 1990.
8. Memorandum received from Ms. Daniela Banu on December 10, 1990.
9. Interoffice Memorandum dated January 4, 1991, from Mr. Bruce Mitchell.
10. Technical Evaluation and Preliminary Determination dated January 10, 1991.
11. Final Determination dated April 4, 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 403.141, 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.

GENERAL CONDITIONS:

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

GENERAL CONDITIONS:

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.

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 17-730.300, 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.

GENERAL CONDITIONS:

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 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:

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

2. Total VOC emission from presses 22 and 23 shall not exceed 5.4 lbs/hr (23.6 TPY), which is based on minimum capture and destruction efficiencies of 75.0% (inks and process solvents) and 95.0%, respectively, pursuant to F.A.C. Rule 17-2.620(1). Total allowable VOC emissions from the KATEC thermal afterburner shall not exceed 0.7 lb/hr (3.0 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 Southeast 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). Pursuant to F.A.C. Rule 17-2.700(3), alternate test methods may be approved by the Department.

5. A material balance scheme shall be used to assess and report the annual (verifiable monthly) VOC/solvent emissions associated with clean-up. Each month, a material balance scheme will be initiated to account for the VOC/solvents received, any control measures used (must be quantifiable), and any VOC/solvents shipped off the facility by a properly licensed hauler.

6. The Department's Southeast 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).

7. Test reports shall be submitted to the Department's Southeast 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).

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

9. 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.

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

11. Pursuant to F.A.C. Rule 17-2.600(1)(a)1., the KATEC thermal afterburner is subject to the visible emissions standard of "no visible emissions" (5 percent opacity) except that visible emissions not exceeding 20 percent opacity are allowed for up to three minutes in any one hour period. Initial and annual compliance tests shall be conducted using DER Method 9 pursuant to Table 700-1 and F.A.C. Rule 17-2.700.

PERMITTEE:
A. D. Weiss Lithograph Company, Inc.

Permit Number: AC 06-183175
Expiration Date: July 31, 1992

SPECIFIC CONDITIONS:

12. An annual operating report shall be submitted to the Department's Southeast District office by March 31 of each calendar year accounting for the annual VOC/solvent emissions, which shall at a minimum include source test results, quantifiable fugitive VOC emissions and clean-up VOCs/solvent emissions.

13. Any modification pursuant to F.A.C. Rule 17-2.100, Modification, shall be submitted to the Department's the Bureau of Air Regulation office for approval.

14. 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 date of the permit (F.A.C. Rule 17-4.090).

15. An application for an operation permit must be submitted to the Department's Southeast District office at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever comes first. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed, noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rules 17-4.055 and 17-4.220).

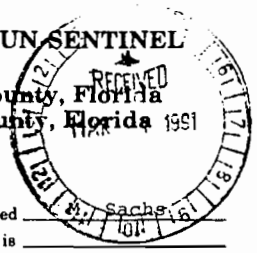
Issued this 10th day
of April, 1991

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

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

FORT LAUDERDALE NEWS/SUN-SENTINEL

Published Daily
Fort Lauderdale, Broward County, Florida
Boca Raton, Palm Beach County, Florida 1991



STATE OF FLORIDA
COUNTY OF BROWARD/PALM BEACH

Before the undersigned authority personally appeared _____ who on oath says that he is Classified Supervisor of the Fort Lauderdale News/Sun-Sentinel, Daily newspapers published in Broward/Palm Beach County, Florida that the attached copy of advertisement, being a Notice of Intent in the matter of A.D. Lithograph _____ in the _____ Court, was published in said newspaper in the issues of February 9, 1991

Affiant further says that the said Fort Lauderdale News/Sun-Sentinel are newspapers published in said Broward/Palm Beach County, Florida, and that the said newspapers have heretofore been continuously published in said Broward/Palm Beach County, Florida, each day, and have been entered as second class matter at the post office in Fort Lauderdale, in said Broward County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in said newspapers.

Sworn to and subscribed before me
this 26th day of February
91
A.D. 19.....

(SEAL) Notary Public, State of Florida
My Commission Expires Aug. 22, 1992
Bonded Thru Troy Fain - Insurance Inc.

cc: B. Mitchell
J. Linero, BC NRP
S. Brooks, SE Dist

PASTE C...ERE

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

The Department of Environmental Regulation gives notice of its intent to issue a permit to A.D. Lithograph Co., Inc., 2025 McKinley Street, Hollywood, Florida 33020; to construct/install two new presses (Nos. 22 and 23) with dryer enclosures. The new presses will share a TEC Systems Inc. KATEC thermal afterburner system. Also, the VOC content of the inks will be reduced from an average of 68% to 39.1% by formulation change. 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 revised 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, 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, within (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 (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 the Petitioner, if any;

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

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

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

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

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

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

Department of Environmental Regulation
Southeast District
1900 S. Congress Avenue, Suite A
West Palm Beach, FL
33406

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.

February 9, 1991

Bruce's Copy

Florida Department of Environmental Regulation

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

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

Lawton Chiles, Governor Carol M. Browner, Sec.

January 10, 1991

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Doug Rasmussen, Superintendent
A. D. Weiss Lithograph Co., Inc.
2025 McKinley Street
Hollywood, Florida 33020

Dear Mr. Rasmussen:

Attached is one copy of the revised Technical Evaluation and Preliminary Determination and proposed permit for A. D. Weiss Lithograph Co., Inc. to construct/install two new presses (Nos. 22 and 23) with dryer enclosures. The new presses will share a TEC Systems Inc. KATEC thermal afterburner system. Also, the VOC content of the inks will be reduced from an average of 68% to 39.1% by formulation change.

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/plm

Attachments

c: I. Goldman, SE District
A. Linero, Broward County
H. J. Bauch, P.E., SEEC, Inc.

mailed-out the 11th CM.

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

A. D. Weiss Lithograph Co., Inc.
2025 McKinley Street
Hollywood, Florida 33020

DER File No. AC 06-183175

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 specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached revised Technical Evaluation and Preliminary Determination.

The applicant, A. D. Weiss Lithograph Co., Inc., applied on June 28, 1990, to the Department of Environmental Regulation for a permit to construct/install two new presses (Nos. 22 and 23) with dryer enclosures. The new presses will share a TEC Systems Inc. KATEC thermal afterburner system. Also, the VOC content of the inks will be reduced from an average of 68% to 39.1% by formulation change. The proposed project will occur at the applicant's existing facility located in Hollywood, Broward 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:

I. Goldman, SE District
A. Linero, Broward County
H. J. Bauch, P.E., SEEC, Inc.

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 1-11-91.

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.

Kim Dokes — Clerk

1-11-91 — 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 A. D. Weiss Lithograph Co., Inc., 2025 McKinley Street, Hollywood, Florida 33020, to construct/install two new presses (Nos. 22 and 23) with dryer enclosures. The new presses will share a TEC Systems Inc. KATEC thermal afterburner system. Also, the VOC content of the inks will be reduced from an average of 68% to 39.1% by formulation change. 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 revised 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;
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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
Southeast District
1900 S. Congress Ave., Suite A
West Palm Beach, Florida 33406

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.

Revised
Technical Evaluation
and
Preliminary Determination

R. R. Donnelly & Sons Company
Volusia County
South Daytona, Florida

Construction Permit No.
AC 06-183175

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

January 10, 1991

I. Application

A. Applicant

A. D. Weiss Lithograph Company, Inc.
2025 McKinley Street
Hollywood, Florida 33020

B. Project

The applicant intends to replace four web offset lithographic presses (Nos. 2, 3, 4, and 14) and associated dual pass Offen dryers with two new presses (Nos. 22 and 23) with dryer enclosures. The new presses will share a TEC Systems Inc. KATEC thermal afterburner system. Also, the VOC content of the inks will be reduced from an average of 68.0% to 39.1% by formulation change. The project will occur at the applicant's facility located in Broward County, Florida.

The UTM coordinates are Zone 17, 585.3 km East and 2878.6 km North.

C. Process and Controls

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 have been vented to the atmosphere from the existing presses. The proposed new presses (Nos. 22 and 23) will have an associated and shared TEC Systems Inc. KATEC thermal afterburner, which has a maximum projected destruction efficiency of 97.5%. The projected maximum VOC capture efficiency of each dryer enclosure is 76.7%. The incinerator and dryers will be operated on natural gas.

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 July 6, 1990. A waiver of the 90-day clock was received on August 31, 1990, and was extended to, and included, November 27, 1990. Due to additional information received from the company via phone, the DER's Southeast District and Broward County, the Department's Intent to Issue of November 9, 1990, is being revised.

The existing facility is 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 Broward County, an area designated nonattainment for ozone pursuant to F.A.C. Rule 17-2.410(b).

The new ink formulation change from an average VOC content of 68.0% to 39.1% will provide a net decrease in VOC emissions to the existing facility of 328.9 TPY. However, the emissions decrease associated with the formulation change is not considered creditable because the lower VOC content inks are available and competitive with existing inks and it meets the intent of "reasonable further progress" toward attaining the ambient air quality standards from existing and modified facilities located in a nonattainment area.

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. Based on the proposed maximum capture and destruction efficiencies of 76.7% and 97.5%, respectively, the Department will establish minimum capture and destruction efficiencies of 75.0% (inks & process solvents) and 95.0%, respectively, pursuant to F.A.C. Rule 17-2.620(1). Therefore, the total allowable VOC emissions from presses 22 and 23 shall not exceed 5.4 lbs/hr (23.6 TPY). The total allowable VOC emissions from the KATEC thermal afterburner shall not exceed 0.7 lb/hr (3.0 TPY).

With the removal of four existing sources (Presses Nos. 2, 3, 4 and 14), contemporaneous creditable VOC emissions for these sources are 36.3 TPY. The projected total potential VOC emissions for the new presses, Nos. 22 and 23, are 23.6 TPY. The net VOC change is -12.7 TPY. Therefore, the modification is considered a minor modification to a major facility, and the potential VOC emissions are subject to review in accordance with F.A.C. Rule 17-2.520, Sources Not Subject to Prevention of Significant Deterioration 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 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 KATEC thermal afterburner shall be conducted using EPA Method 9 (visible emissions) and EPA Method 25A (VOC destruction efficiency) in accordance with Table 700-1, F.A.C. Chapter 17-2, 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.

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 Southeast District in writing at least 60 days prior to conducting any compliance test(s) as to which capture efficiency testing protocol will be used.

III. Summary of Emissions and Air Quality Analysis

A. Emission Limitations

The pollutant that is regulated from the new presses is VOC. The sources are also subject to a visible emissions standard. The following table will display the applicable emissions standards and limitations:

Table 1

Source	Pollutant	Emission Standards and Limitations
Presses 22 and 23	VOC	total of 5.4 lbs/hr, 23.6 TPY
KATEC Thermal Afterburner	VOC	total of 0.7 lb/hr, 3.0 TPY
	VE	< 20% opacity

Note: o Continuous operation is permitted (i.e., 8760 hrs/yr).
o Emissions are based on minimum capture and destruction efficiencies of 75.0% and 95.0%, respectively.

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 A. D. Weiss Lithography Company, Inc., the Department has reasonable assurance that the proposed construction of two new presses (Nos. 22 & 23), the removal from service of four existing presses (Nos. 2, 3, 4, & 14), and the ink formulation change at the facility, 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.

Barry D. Andrews
#36024
1-10-91

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor

PERMITTEE:
A. D. Weiss Lithograph Co., Inc.
2025 McKinley Street
Hollywood, Florida 33020

Permit Number: AC 06-183175
Expiration Date: April 30, 1992
County: Broward
Latitude/Longitude: 26°01'31"N
80°08'51"W
Project: Construction of Presses Nos. 22 and 23

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 two new presses with dryer enclosures (Nos. 22 and 23) and an associated and shared TEC Systems Inc. KATEC thermal afterburner system; also, the minimum capture (dryer enclosures) and destruction (afterburner) efficiencies will be 75.0% (inks and process solvents) and 95.0%, respectively. The project also includes the removal from service of existing presses Nos. 2, 3, 4 and 14; and, the facility will undergo a formulation change to reduce the VOC content of the inks from an average of 68.0% to 39.1%. The project will occur at the applicant's existing facility. The UTM coordinates are Zone 17, 585.3 km East and 2878.6 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 June 28, 1990.
2. Mr. H. J. Bauch's letter received August 31, 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 November 6, 1990, from Mr. Bruce Mitchell.
5. Technical Evaluation and Preliminary Determination dated November 9, 1990.

ATTACHMENTS cont.

6. "Facility Quick Look" received from Mr. Tom Tittle on November 19, 1990.
7. Interoffice Memorandum received from Mr. Tom Tittle on November 26, 1990.
8. Memorandum received from Ms. Daniela Banu on December 10, 1990.
9. Interoffice Memorandum dated January 4, 1991, from Mr. Bruce Mitchell.
10. Technical Evaluation and Preliminary Determination dated January 10, 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.

GENERAL CONDITIONS:

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

GENERAL CONDITIONS:

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.

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.

GENERAL CONDITIONS:

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

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:

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

2. Total VOC emission from presses 22 and 23 shall not exceed 5.4 lbs/hr (23.6 TPY), which is based on minimum capture and destruction efficiencies of 75.0% and 95.0%, respectively, pursuant to F.A.C. Rule 17-2.620(1). Total allowable VOC emissions from the KATEC thermal afterburner shall not exceed 0.7 lb/hr (3.0 TPY).

SPECIFIC CONDITIONS:

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 Southeast District in writing of the protocol that will be used for the capture efficiency demonstration purpose at least 60 days prior to compliance testing.

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. A material balance scheme shall be used to assess and report the annual (verifiable monthly) VOC/solvent emissions associated with clean-up. The material balance scheme will account for the VOC/solvents received, any control measures used (must be quantifiable), and any VOC/solvents shipped off the facility by a properly licensed hauler.

6. The Department's Southeast 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).

7. Test reports shall be submitted to the Department's Southeast 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).

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

9. 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.

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

11. 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 Table 700-1, F.A.C. Rule 17-2.700, and 40 CFR 60, Appendix A (July, 1989 version).

PERMITTEE:
A. D. Weiss Lithograph Company, Inc.

Permit Number: AC 06-183175
Expiration Date: April 30, 1992

SPECIFIC CONDITIONS:

12. An annual operating report shall be submitted to the Department's Southeast District office by March 31 of each calendar year accounting for the annual VOC/solvent emissions, which shall minimally include source test results, quantifiable fugitives and clean-up VOCs/solvents.

13. Any modification pursuant to F.A.C. Rule 17-2.100, Modification, shall be submitted to the Department's Southeast District office and the Bureau of Air Regulation (BAR) office for approval.

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

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

ATTACHMENTS 1 - 5

Available Upon Request

ATTACHMENT 6

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AIR023 50BR0061014          AIR PROGRAM INFORMATION SYSTEM              11/15/90
                              FACILITY QUICK LOOK                       16:05:00
FACIL: OWN: A D  WEISS LITHOG   N/L: 2025 MCKINLEY ST  LAST FACIL UPDT:11/15/90
       SRC: 011  MAJOR FAC: N  CITY: HOLLYWOOD          STATUS: A = ACTIVE

SRC #: 01 DESC: WEB OFFSET LITHOGRAPHIC PRESS #2     UNIT SOLD AND GONE   [ _ ]
 PERMIT/PPS#: .... - ...../A006 - 164202   MAJOR SRC: .  STATUS: (I) = INACTIVE
   NSPS: ...   NESHAP: ...   111D: ...   PSD: ...   NAA/NSR: ...   RACT: ...
SRC #: 02 DESC: WEB OFFSET LITHOGRAPHIC PRESS #3     UNIT SOLD AND GONE   [ _ ]
 PERMIT/PPS#: .... - ...../A006 - 164202   MAJOR SRC: .  STATUS: (I) = INACTIVE
   NSPS: ...   NESHAP: ...   111D: ...   PSD: ...   NAA/NSR: ...   RACT: ...
SRC #: 03 DESC: WEB OFFSET LITHOGRAPHIC PRESS #4     UNIT SOLD AND GONE   [ _ ]
 PERMIT/PPS#: .... - ...../A006 - 164202   MAJOR SRC: .  STATUS: (I) = INACTIVE
   NSPS: ...   NESHAP: ...   111D: ...   PSD: ...   NAA/NSR: ...   RACT: ...
SRC #: 04 DESC: WEB OFFSET LITHOGRAPHIC PRESS #5 ✓                       [ _ ]
 PERMIT/PPS#: .... - ...../A006 - 164202   MAJOR SRC: .  STATUS: (A) = ACTIVE
   NSPS: ...   NESHAP: ...   111D: ...   PSD: ...   NAA/NSR: ...   RACT: ...

MORE SOURCES ON FILE ? YES

                                        ACTION TAKEN _   TRANSMIT HERE __

AIR023 50BR0061014          AIR PROGRAM INFORMATION SYSTEM              11/15/90
                              FACILITY QUICK LOOK                       16:06:00
FACIL: OWN: A D  WEISS LITHOG   N/L: 2025 MCKINLEY ST  LAST FACIL UPDT:11/15/90
       SRC: 011  MAJOR FAC: N  CITY: HOLLYWOOD          STATUS: A = ACTIVE

SRC #: 05 DESC: WEB OFFSET LITHOGRAPHIC PRESS #8 ✓                       [ _ ]
 PERMIT/PPS#: .... - ...../A006 - 164202   MAJOR SRC: .  STATUS: (A) = ACTIVE
   NSPS: ...   NESHAP: ...   111D: ...   PSD: ...   NAA/NSR: ...   RACT: ...
SRC #: 06 DESC: WEB OFFSET LITHOGRAPHIC PRESS #10 ✓                      [ _ ]
 PERMIT/PPS#: .... - ...../A006 - 164202   MAJOR SRC: .  STATUS: (A) = ACTIVE
   NSPS: ...   NESHAP: ...   111D: ...   PSD: ...   NAA/NSR: ...   RACT: ...
SRC #: 07 DESC: WEB OFFSET LITHOGRAPHIC PRESS #7 ✓ (Formerly 12 ... before that it was syst #10)  [ _ ]
 PERMIT/PPS#: .... - ...../A006 - 114613   MAJOR SRC: .  STATUS: (A) = ACTIVE
   NSPS: ...   NESHAP: ...   111D: ...   PSD: ...   NAA/NSR: ...   RACT: ...
SRC #: 08 DESC: LITOGRAPHIC PRESS #9 W/ MMT BLUE HAZE CONTROL DEVICE (FRESNEE) ]
 PERMIT/PPS#: .... - ...../A006 - 129019   MAJOR SRC: .  STATUS: (I) = INACTIVE
   NSPS: ...   NESHAP: ...   111D: ...   PSD: ...   NAA/NSR: ...   RACT: ...

MORE SOURCES ON FILE ? YES

                                        ACTION TAKEN _   TRANSMIT HERE __

AIR023 50BR0061014          AIR PROGRAM INFORMATION SYSTEM              11/15/90
                              FACILITY QUICK LOOK                       16:08:25
FACIL: OWN: A D  WEISS LITHOG   N/L: 2025 MCKINLEY ST  LAST FACIL UPDT:11/15/90
       SRC: 011  MAJOR FAC: N  CITY: HOLLYWOOD          STATUS: A = ACTIVE

SRC #: 09 DESC: LITHOGRAPHIC PRESS #11 ✓ W/ MMT BLUE HAZE CONTROL SYST   [ _ ]
 PERMIT/PPS#: .... - ...../A006 - 129019   MAJOR SRC: .  STATUS: (A) = ACTIVE
   NSPS: ...   NESHAP: ...   111D: ...   PSD: ...   NAA/NSR: ...   RACT: ...
SRC #: 10 DESC: WEB OFFSET #14 W/ DIRCT.FLME.IMP. DRYER   GONE ! UNIT SOLD  (was #15, now #12)
 PERMIT/PPS#: .... - ...../A006 - 038351   MAJOR SRC: .  STATUS: (I) = INACTIVE
   NSPS: ...   NESHAP: ...   111D: ...   PSD: ...   NAA/NSR: ...   RACT: ...
SRC #: 12 DESC: PRINTING PRESS #21 ✓ -SINGLE PRESS TEC WEB PRESS DRYER (was #1)  [ _ ]
 PERMIT/PPS#: .... - ...../A006 - 164202   MAJOR SRC: .  STATUS: (A) = ACTIVE
   NSPS: ...   NESHAP: ...   111D: ...   PSD: ...   NAA/NSR: ...   RACT: ...
SRC #: .. DESC: .....                                                    [ _ ]
 PERMIT/PPS#: .... - ...../.... - .....   MAJOR SRC: .  STATUS: . = .....
   NSPS: ...   NESHAP: ...   111D: ...   PSD: ...   NAA/NSR: ...   RACT: ...

MORE SOURCES ON FILE ? NO

                                        ACTION TAKEN _   TRANSMIT HERE __
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new #6 is now called #22 ✓

new #15 is now called #23 ✓

ATTACHMENT 7

For Routing To Other Than The Addressee

To: _____ Location _____

To: _____ Location _____

To: _____ Location _____

From: _____ Date: _____

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

RECEIVED
NOV 26 1990
DER-BAQM

TO: Bruce Mitchell, BAR/DARM

FROM: Tom Tittle, SEFD

DATE: November 19, 1990

SUBJECT: Technical Evaluation and Preliminary Determination for A.D.Weiss Lithograph Co., Inc.

As discussed today we have the following comments on the subject evaluation and determination:

1. Part I.C. of the review does not recognize the existence of the other sources at the facility. A list of the numbers of the other sources was sent to you previously. Since this facility has a long history of renumbering its sources, please have the applicant supply a plot plan of the facility showing the location of each source. The plot plan should also indicate the location of the control devices for each source and the emission stack for each source. The connections between each source, each control device and each stack should be clear enough to determine which sources are controlled by which control devices and allow an observer to determine which stack is connected to which piece of equipment. It would be very useful to the district if the applicant could also supply us with a chronology of the numbering for each unit over the past 10 years. This would provide us with assurance that our records on their renumbering of the units are accurate.

2. The attached construction permit for Press #1 (now #21) (application also attached) was issued by this office when the Magiesol in the ink was not a VOC as formerly defined in FAC Rule 17-2. Now this solvent is considered a VOC. It appears that the increased emissions allowed by the issuance of the permit for Press #1 (now #21) may put the additional emissions over 40 TPY. If so, then it seems LAER would apply to Press #1 (now #21) and the new presses as well.

3. We do not believe that RACT applies to this facility. Web off-set printing is not a process covered by the paper coating RACT. We asked for guidance early on web off-set printing and were instructed that this was not a RACT covered process. Unfortunately, we don't believe the guidance came in written form. I'm sure that at the time,

EPA agreed with (or made) this determination. Our review of the rule and the CTG for paper coating confirms the position that web off-set is not a covered RACT.

4. Permitting of other facilities has made us aware that some web off-set printing operations use a considerable amount of alcohol in one or more ways. We should ask the applicant whether or not alcohol is used by their operation. If used we need to know how it is used and how much is used potentially.

5. Annual testing is required for both capture efficiency and destruction efficiency. I believe that in the past, capture efficiency was only required to be demonstrated initially and at renewal. We were not sure if this was a change in previous practice or an oversight.

6. EPA Method 25 is specified as the required test method. Would the applicant or the Department consider another method equally suitable (eg. Method 25A)? If so, it would be better to establish the most desirable method now in the permit. This way, the time and effort expended by both the applicant and the Department in processing an ASP may be avoided.

7. Specific Condition 1 of the draft permit limits operation to less than 8760 hrs/yr. If the intent of the 24 hr/day, 7 days/wk, 52 wk/yr allowable is to let them operate year-round, then the allowable hours/yr should be at least 8760 hr/yr (24 hours x 365 days). In fact, if hours of operation are not going to be limited, we suggest that no limit on hours be expressed in the permit at all. In such cases, we need to make sure that the review is based on emissions resulting from the operation of the facility 24 hours a day, year-round.

8. It has always been our understanding that the RACT limit was established based on the assumption of a coating containing a solvent with a density of 7.36 lb.VOC/gal.VOC. Furthermore, it has always been our understanding that the RACT standard equivalent (in lb.VOC per gallon of solids) is to be established using 7.36 lb/gal as the solvent density. However, when determining compliance with the equivalent standard, the actual solvent density of the coating in question is used to determine whether or not the coating is in compliance. Using 7.36 (rather than 8.0) for the solvent density, our calculations show that the equivalent RACT standard for 2.9 lb.VOC/gal.coating is 4.79 (not 4.55)lb.VOC/gal.solids.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHEAST FLORIDA DISTRICT
1900 SOUTH CONGRESS AVENUE, SUITE A
WEST PALM BEACH, FLORIDA 33406
(305) 964-9668

PERMITTEE:
Mr. Charles Labson, Plant Manager
A. D. Weiss Lithograph Co., Inc.
2025 McKinley Street
Hollywood, FL 33020

I.D. NUMBER: 50/BRO/06/1014/09 12
PERMIT/CERTIFICATION NUMBER: AC 06-144132
DATE OF ISSUE: MAY 06 1988
EXPIRATION DATE: January 31, 1989
COUNTY: Broward
LATITUDE/LONGITUDE: 26°01'31"N/80°08'51"W
UTM: Zone 17; 585.3 Km. E; 2878.6 Km. N
PROJECT: A. D. Weiss Lithograph Co., Inc.
Printing Press #1 with Blue Haze Unit

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

CONSTRUCT: An air pollution source consisting of a web offset headset printing press with a single press TEC web press dryer, a Blue Haze control, and a CVM Model 49-CTR S-6 fume eliminator. The dryer burns natural gas and discharges emissions 92 feet above ground level.

IN ACCORDANCE WITH: Application to Construct an Air Pollution Source received January 15, 1988, additional information supplied by letter received February 25, 1988, and Public Notice of Intent issued March 24, 1988 and published April 4, 1988 in the Broward Review (none are attached).

LOCATED AT: 2025 McKinley Street, Hollywood, Broward County, Florida.

TO SERVE: A lithographic commercial printing facility (SIC # 4953)

TO SERVE: SUBJECT TO: General Conditions 1-15 and Specific Conditions 1-9.

PERMITTEE:
Mr. Charles Labson, Plant Manager
A. D. Weiss Lithograph Co., Inc.

I.D. NUMBER: 50/BRO[illegible]/1014/[illegible]
PERMIT/CERTIFICATION NUMBER: [illegible] 06-144132
DATE OF ISSUE:
EXPIRATION DATE: January 31, 1989

GENERAL CONDITIONS:

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

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

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

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

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

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

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

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

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

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

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

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

   a. a description of and cause of noncompliance; and

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

EE:
arles Labson, Plant Manager
Weiss Lithograph Co., Inc.

I.D. NUMBER: BRO/C 014/09
PERMIT/CERTIFICATION NUMBER: AC 06-144132
DATE OF ISSUE:
EXPIRATION DATE: January 31, 1989

NERAL CONDITIONS:

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

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

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

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

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

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
( ) Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)
( ) Compliance with New Source Performance Standards

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

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

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

c. Records of monitoring information shall include:

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

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

PERMITTEE:
Mr. Charles Labson, Plant Manager
A. D. Weiss Lithograph Co., Inc.

I.D. NUMBER: 50/BRO/06/1014/09
PERMIT/CERTIFICATION NUMBER: AC 06-144
DATE OF ISSUE:
EXPIRATION DATE: January 31, 1989

SPECIFIC CONDITIONS:

1. Application for a permit to operate along with the initial compliance test report shall be submitted to the Department at least sixty (60) days prior to the expiration of this permit, but in no case more than fourteen (14) days after commencement of operation. In no case shall a source be operated without an appropriate operating permit. The Certification of Completion of Construction, DER Form 17-1.202(3) may be submitted in lieu of the application for a permit to operate.

2. Emission limiting standards are as follows:

   a) In accordance with Florida Administrative Code Rule 17-2.610(2) - No person shall cause, let, permit, or allow to be discharged into the atmosphere any pollutants from new, or existing sources, the density of which is equal to or greater than 20 percent opacity, and

   b) In accordance with Florida Administrative Code (F.A.C.) Rule 17-2.610(2), No person shall cause, let, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor.

3. The compliance test report shall include results of tests by the following method:

Source/Emission Point	Pollutant	Test-Method
Blue Haze Unit for Press #1	Visible Emissions	EPA Method 9

The compliance test report shall be submitted to the Department in accordance with Florida Administrative Code (F.A.C.) Rule 17-2.700(7)..

4. The compliance test report shall provide the following information on the air pollution control devices and other information as indicated:

   a. General condition of equipment (eg...date of last thorough inspection and results of that inspection. Also note any deficiencies/problems with the equipment which occur during testing).

   b. Normal operating parameters of the equipment and the actual operating parameters for each test run (indicate how each parameter was determined).

5. Testing of emissions should be conducted using the fuel and/or process input which are expected to result in the highest emissions and within ten percent (10%) of the rated capacity of the source, otherwise the Department may require the test to be repeated or require modification of the permit to reflect tested rates and/or fuels.

6. The Department shall be notified of expected test dates at least fifteen (15) days prior to compliance testing.

7. On or before March 1 of each calendar year, a completed DER Form 17-1.202(6), Annual Operations Report Form for Air Emissions Sources shall be submitted to the Department. Show formulas with input and output data.

8. Fuel used shall be limited to natural gas.

TEE:
harles Labson, Plant Manager
. Weiss Lithograph Co., Inc.

I.D. NUMBER: 50/BRO 06/1014 09
PERMIT/CERTIFICATION NUMBER: AC 06-144132
DATE OF ISSUE:
EXPIRATION DATE: January 31, 1989

ECIFIC CONDITIONS:

9. Copies of all reports, tests, notifications or other submittals required by this permit shall be submitted to both the Department of Environmental Regulation, Southeast District Office and Broward County Environmental Quality Control Board.

Issued this 5th day of May, 1988

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

J. Scott Benyon
District Manager

DER Form 17-1.201(5)
Effective November 30, 1982

STATE OF FLOR

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHEAST FLORIDA
DISTRICT
3301 GUN CLUB ROAD
P.O. BOX 3858
WEST PALM BEACH, FLORIDA 33402

BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY
ROY DUKE
DISTRICT MANAGER

RECEIVED

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: AIR POLLUTION [X] New[1] [ ] Existing[1]

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

COMPANY NAME: A. D. WEISS LITHOGRAPH CO., INC. COUNTY: BROWARD

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) BLUE HAZE CONTROL UNIT

SOURCE LOCATION: Street 2025 McKinley Street City Hollywood, Fl.

UTM: East 585.3 North 2878.6

Latitude 26° 01' 31 "N Longitude 80 ° 08' 51"W

APPLICANT NAME AND TITLE: CHUCK LABSON, PLANT MANAGER

APPLICANT ADDRESS: 2025 McKINLEY STREET, HOLLYWOOD, FLORIDA 33020

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of A. D. WEISS LITHO. Co.

I certify that the statements made in this application for a OPERATING 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: Charles M. Labson

Plant Manager
Name and Title (Please Type)

Date: 12/9/82 Telephone No. 920-7300

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 _____

_____
Name (Please Type)

_____
Company Name (Please Type)

_____
Mailing Address (Please Type)

Florida Registration No. _____ Date: _____ Telephone No. _____

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.

BLUE HAZE EMISSION CONTROL UNIT

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

Start of Construction 12/1/87 Completion of Construction 3/15/88

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.)

$110,000

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

AO-29075R1-7

AO-27091

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? YES

   a. If yes, has "offset" been applied? NO

   b. If yes, has "Lowest Achievable Emission Rate" been applied? NO

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

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

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

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

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? N/A

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source?

   a. If yes, for what pollutants? _____

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

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

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
PAPER	NONE		7,000	
INK	ALIPHATIC SOLVENTS	30	104	

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

1. Total Process Input Rate (lbs/hr): 7,104

2. Product Weight (lbs/hr): _____

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

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
NONE							

[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)
CVM BLUE HAZE CONTROL	NON VOLATILE ORGANIC SOL.	85-98	3	TEST

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
NATURAL GAS	1.638 MCF/hr.	3.276 MCF/hr.	3.276 MMBTU/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: 1,000 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.

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

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

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

Water Vapor Content: _____ % Velocity: _____ 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:

Hot exhaust gas enters through the heat exchanger and is cooled by ambient air in a plate-type air-to-air heat exchanger. The precooled exhaust passes through fiberglass filters with the final clean air exhausted to the atmosphere.

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

Reclaimed solvent is sold as fuel

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.

ATTACHMENT 8

BROWARD COUNTY ENVIRONMENTAL QUALITY CONTROL BOARD

500 S.W. 14th Court
Fort Lauderdale, FL 33315
(305) 765-4900

MEMORANDUM

DATE: DECEMBER 5, 1990

TO: BRUCE MITCHELL, DER TALLAHASSEE

FROM: DANIELA BANU, BROWARD COUNTY EQCB Daniela Banu

REFERENCE: A. D. WEISS LITHOGRAPH COMPANY, INC.
AC 06-183175

1. SOURCE DESCRIPTION

After the completion of this project the facility will consist of:

Press #1	Existing	Blue Haze Control Unit
Press #5	Existing	No VOC Control
Press #6	New	Incinerator
Press #7	Existing	Blue Haze Control Unit
Press #8	Existing	Blue Haze Control Unit
Press #9	Existing	Blue Haze Control Unit
Press #10	Existing	Blue Haze Control Unit
Press #11	Existing	Blue Haze Control Unit
Press #15	New	Incinerator

2. VOC EMISSION CALCULATIONS

Attachment #1 contains the VOC emission calculations for each press. The document was prepared by Jim Bauch for A. D. Weiss. The handwritten corrections are mine.

Based on information from the manufacturer, the Blue Haze Control Unit destruction efficiency is 85 - 98%, depending upon ink usage and the type of solvent used. A 92% average is more representative than 98.8% used by J. Bauch.

I have some reservations regarding the VOC capture efficiency and destruction efficiency supporting documents. The values used to calculate emissions are based on assumptions that need to be verified prior to issuance of the operation permit. Please keep the capture efficiency and destruction efficiency determination as conditions in their permit.

3. For your information, the Blue Haze Control Unit is described in Attachment #2.

4. The permit Specific Conditions should require the permitee to submit copies of notifications, reports, etc. to SEFDER and BCEQCB.

5. The permitee should be subject to Annual Operation Report requirement.

ATTACHMENT # 1

PRESS # 1 Pollution Control Device: Blue Haze Control Unit

Process input rate:

Paper:	1,088.83	#/HR	4,755.99	TONS/YR
Ink :	23.44	#/HR	102.37	TONS/YR
Total	1,112.27	#/HR	4,858.36	TONS/YR

VOC DATA PRIOR TO PROCESS REVISIONS:

Previous Ink Formulation of 2/3/88 By % wt . . .

Pigment	32.00%
Polyethylene Compound	5.0%
Varnish	52.0%
Magiesol 47	11.0%
Total VOC Content	68.0%

VOC Production Rate . . .

(0.68)(23.44) = 15.94 #/HR 69.61 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7 %

VOC Captured = (.767)(15.94) = 12.23 #/HR 53.40 TONS/YR

Percent Escape = 23.3 %

VOC Escaped = (.233)(15.94) = 3.71 #/HR 16.22 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = ~~98.8~~ 92 %

VOC Destroyed of Captured VOC = (.988)(12.23) = 12.08 #/HR 52.77 TONS/YR

Percent Not Destroyed of Captured VOC = 1.2 %

VOC Not Destroyed of Captured VOC = (.012)(12.23) = 0.15 #/HR 0.64 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 75.8 %

VOC Captured and Destroyed = (.767)(.988)(15.94) = 12.08 #/HR 52.77 TONS/YR

Percent Emitted = 24.2 %

VOC Emitted = (.767)(.012)(15.94) + 3.71 = ~~3.86~~ 4.69 #/HR ~~16.85~~ 20.48 TONS/YR

VOC DATA FOLLOWING PROCESS REVISIONS:

VOC Content of 1990 Ink Formulation . . .

Black	35.67%
Blue	39.00%
Red	40.33%
Yellow	1.24%
Four Color Average	39.06%

VOC Production Rate . . .

(0.39)(23.44) =	9.14 #/HR	39.93 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7%		
VOC Captured = (0.767)(9.14) =	7.01 #/HR	30.63 TONS/YR
Percent Escape = 23.3%		
VOC Escaped = (.233)(9.14) =	2.13 #/HR	9.30 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = ~~98.8~~ 92 %		
VOC Destroyed of Captured VOC = (.988)(7.01) =	6.93 #/HR	30.25 TONS/YR
Percent not destroyed of Captured VOC = 1.2 %		
VOC not Destroyed of Captured VOC = (.012)(7.01) =	0.08 #/HR	0.37 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 75.8 %		
VOC Captured and Destroyed = (.767)(.988)(9.14) =	6.93 #/HR	30.25 TONS/YR
Percent Emitted = 24.2 %		
VOC Emitted = (.767)(.012)(9.14) + 2.13 =	~~2.21~~ 2.69 #/HR	~~9.67~~ 11.75 TONS/YR

PRESS # 2 Removed from Service

Process input rate:

Paper:	315.67	#/HR	1,378.85	TONS/YR
Ink :	6.79	#/HR	29.68	TONS/YR
Total	322.46	#/HR	1,408.53	TONS/YR

VOC DATA PRIOR TO PROCESS REVISIONS:

Previous Ink Formulation of 2/3/88 By % wt . . .

Pigment	32.00%
Polyethylene Compound	5.0%
Varnish	52.0%
Magiesol 47	11.0%
Total VOC Content	68.0%

VOC Production Rate . . .

(0.68)(6.79) =	4.62	#/HR	20.17 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7 %			
VOC Captured = (.767)(4.62) =	3.54	#/HR	15.48 TONS/YR
Percent Escape = 23.3 %			
VOC Escaped = (.233)(4.62) =	1.08	#/HR	4.70 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = 0 %			
VOC Destroyed of Captured VOC = (0)(3.54) =	0.0	#/HR	0.0 TONS/YR
Percent Not Destroyed of Captured VOC = 100 %			
VOC Not Destroyed of Captured VOC = (1.00)(3.54) =	3.54	#/HR	15.48 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 0 %			
VOC Captured and Destroyed = (.767)(0)(4.62) =	0.0	#/HR	0.0 TONS/YR
Percent Emitted = 100 %			
VOC Emitted = (.767)(1.00)(4.62) + 1.08 =	4.62	#/HR	20.17 TONS/YR

VOC DATA FOLLOWING PROCESS REVISIONS:

VOC Content of 1990 Ink Formulation . . .

Black	35.67%
Blue	39.00%
Red	40.33%
Yellow	1.24%
Four Color Average	39.06%

VOC Production Rate . . .

(0.39)(0) =	0.0 #/HR	0.0 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7%		
VOC Captured = (0.767)(0) =	0.0 #/HR	0.0 TONS/YR
Percent Escape = 23.3%		
VOC Escaped = (.233)(0) =	0.0 #/HR	0.0 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = 0 %		
VOC Destroyed of Captured VOC = (0)(0) =	0.0 #/HR	0.0 TONS/YR
Percent not destroyed of Captured VOC = 100 %		
VOC not Destroyed of Captured VOC = (1.00)(0) =	0.0 #/HR	0.0 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 0 %		
VOC Captured and Destroyed = (.767)(0)(0) =	0.0 #/HR	0.0 TONS/YR
Percent Emitted = 100 %		
VOC Emitted = (.233)(1.00)(0) + 0 =	0.0 #/HR	0.0 TONS/YR

PRESS # 3 Removed from Service

Process input rate:

Paper:	409.63 #/HR	1,789.28	TONS/YR
Ink :	8.82 #/HR	38.51	TONS/YR
Total	418.45 #/HR	1,827.79	TONS/YR

VOC DATA PRIOR TO PROCESS REVISIONS:

Previous Ink Formulation of 2/3/88 By % wt . . .

Pigment	32.00%
Polyethylene Compound	5.0%
Varnish	52.0%
Magiesol 47	11.0%
Total VOC Content	68.0%

VOC Production Rate . . .		
(0.68)(8.82) =	6.00 #/HR	26.19 TONS/YR
VOC Reduction Rates . . .		
Enclosure Efficiency:		
Percent Capture = 76.7 %		
VOC Captured = (.767)(6.00) =	4.60 #/HR	20.10 TONS/YR
Percent Escape = 23.3 %		
VOC Escaped = (.233)(6.00) =	1.40 #/HR	6.11 TONS/YR
Destruction Efficiency:		
Percent Destroyed of Captured VOC = 0 %		
VOC Destroyed of Captured VOC = (0)(4.60) =	0.0 #/HR	0.0 TONS/YR
Percent Not Destroyed of Captured VOC = 100 %		
VOC Not Destroyed of Captured VOC = (1.00)(4.60) =	4.60 #/HR	20.10 TONS/YR
Total VOC Emissions:		
Percent Captured and Destroyed = 0 %		
VOC Captured and Destroyed = (.767)(0)(6.00) =	0.00 #/HR	0.00 TONS/YR
Percent Emitted = 100 %		
VOC Emitted = (.767)(1.00)(6.00) + 1.40 =	6.00 #/HR	26.19 TONS/YR

VOC DATA FOLLOWING PROCESS REVISIONS:

VOC Content of 1990 Ink Formulation . . .

Black	35.67%
Blue	39.00%
Red	40.33%
Yellow	1.24%
Four Color Average	39.06%

VOC Production Rate . . .

(0.39)(0) =	0.0 #/HR	0.0 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7%		
VOC Captured = (0.767)(0) =	0.0 #/HR	0.0 TONS/YR
Percent Escape = 23.3%		
VOC Escaped = (.233)(0) =	0.0 #/HR	0.0 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = 0 %		
VOC Destroyed of Captured VOC = (0)(0) =	0.0 #/HR	
Percent not destroyed of Captured VOC = 100 %		
VOC not Destroyed of Captured VOC = (1.00)(0) =	0.0 #/HR	0.0 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 0 %		
VOC Captured and Destroyed = (.767)(0)(0) =	0.0 #/HR	0.0 TONS/YR
Percent Emitted = 100 %		
VOC Emitted = (.233)(1.00)(0) + 0 =	0.0 #/HR	0.0 TONS/YR

PRESS # 4 Removed from Service

Process input rate:

Paper:	213.32 #/HR	931.82	TONS/YR
Ink :	4.59 #/HR	20.06	TONS/YR
Total	217.91 #/HR	951.88	TONS/YR

VOC DATA PRIOR TO PROCESS REVISIONS:

Previous Ink Formulation of 2/3/88 By % wt . . .

Pigment	32.00%
Polyethylene Compound	5.0%
Varnish	52.0%
Magiesol 47	11.0%
Total VOC Content	68.0%

VOC Production Rate . . .

(0.68)(4.59) =	3.12 #/HR	13.63 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7 %		
VOC Captured = (.767)(3.12) =	2.39 #/HR	10.45 TONS/YR
Percent Escape = 23.3 %		
VOC Escaped = (.233)(3.12) =	0.73 #/HR	3.18 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = 0 %		
VOC Destroyed of Captured VOC = (0)(2.39) =	0.0 #/HR	0.0 TONS/YR
Percent Not Destroyed of Captured VOC = 100 %		
VOC Not Destroyed of Captured VOC = (1.00)(2.39) =	2.39 #/HR	10.45 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 0 %		
VOC Captured and Destroyed = (.767)(0)(3.12) =	0.00 #/HR	0.00 TONS/YR
Percent Emitted = 100 %		
VOC Emitted = (.767)(1.00)(3.12) + 0.73 =	3.12 #/HR	13.63 TONS/YR

VOC DATA FOLLOWING PROCESS REVISIONS:

VOC Content of 1990 Ink Formulation . . .

Black	35.67%
Blue	39.00%
Red	40.33%
Yellow	1.24%
Four Color Average	39.06%

VOC Production Rate . . .

(0.39)(0) =	0.0 #/HR	0.0 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7%		
VOC Captured = (0.767)(0) =	0.0 #/HR	0.0 TONS/YR
Percent Escape = 23.3%		
VOC Escaped = (.233)(0) =	0.0 #/HR	0.0 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = 0 %		
VOC Destroyed of Captured VOC = (0)(0) =	0.0 #/HR	0.0 TONS/YR
Percent not destroyed of Captured VOC = 100 %		
VOC not Destroyed of Captured VOC = (1.00)(0) =	0.0 #/HR	0.0 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 0 %		
VOC Captured and Destroyed = (.767)(0)(0) =	0.0 #/HR	0.0 TONS/YR
Percent Emitted = 100 %		
VOC Emitted = (.233)(1.00)(0) + 0 =	0.0 #/HR	0.0 TONS/YR

PRESS # 5 Pollution Control Device: Dual Pass Offen Dryer — no VOC controls

Process input rate:

Paper:	205.73	#/HR	898.65	TONS/YR
Ink :	4.43	#/HR	19.34	TONS/YR
Total	210.16	#/HR	917.99	TONS/YR

VOC DATA PRIOR TO PROCESS REVISIONS:

Previous Ink Formulation of 2/3/88 By % wt . . .

Pigment	32.00%
Polyethylene Compound	5.0%
Varnish	52.0%
Magiesol 47	11.0%
Total VOC Content	68.0%

VOC Production Rate . . .		
(0.68)(4.43) =	3.01 #/HR	13.16 TONS/YR
VOC Reduction Rates . . .		
Enclosure Efficiency:		
Percent Capture = 76.7 %		
VOC Captured = (.767)(3.01) =	2.31 #/HR	10.08 TONS/YR
Percent Escape = 23.3 %		
VOC Escaped = (.233)(3.01) =	0.70 #/HR	3.06 TONS/YR
Destruction Efficiency:		
Percent Destroyed of Captured VOC = 0 %		
VOC Destroyed of Captured VOC = (0)(2.31) =	0.0 #/HR	0.0 TONS/YR
Percent Not Destroyed of Captured VOC = 100 %		
VOC Not Destroyed of Captured VOC = (1.00)(2.31) =	2.31 #/HR	10.08 TONS/YR
Total VOC Emissions:		
Percent Captured and Destroyed = 0 %		
VOC Captured and Destroyed = (.767)(0)(3.01) =	0.0 #/HR	0.0 TONS/YR
Percent Emitted = 100 %		
VOC Emitted = (.767)(1.00)(3.01) + 0.70 =	3.01 #/HR	13.16 TONS/YR

VOC DATA FOLLOWING PROCESS REVISIONS:

VOC Content of 1990 Ink Formulation . . .

Black	35.67%
Blue	39.00%
Red	40.33%
Yellow	1.24%
Four Color Average	39.06%

VOC Production Rate . . .

(0.39)(4.43) =	1.73 #/HR	7.55 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7%		
VOC Captured = (0.767)(1.73) =	1.33 #/HR	5.80 TONS/YR
Percent Escape = 23.3%		
VOC Escaped = (.233)(1.73) =	0.40 #/HR	1.76 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = 0 %		
VOC Destroyed of Captured VOC = (0)(1.33) =	0.0 #/HR	0.0 TONS/YR
Percent not destroyed of Captured VOC = 100 %		
VOC not Destroyed of Captured VOC = (1.00)(1.33) =	1.33 #/HR	5.80 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 0 %		
VOC Captured and Destroyed = (.767)(0)(1.73) =	0.0 #/HR	0.0 TONS/YR
Percent Emitted = 100 %		
VOC Emitted = (.767)(1.00)(1.73) + 0.40 =	1.73 #/HR	7.54 TONS/YR

PRESS # 6 Pollution Control Device: KATEC Thermal Afterburner

Process input rate:

Paper:	1,100.00	#/HR	4,804.80	TONS/YR
Ink :	24.00	#/HR	104.83	TONS/YR
Total	1,124.00	#/HR	4,909.63	TONS/YR

VOC DATA PRIOR TO PROCESS REVISIONS:

Previous Ink Formulation of 2/3/88 By % wt . . .

Pigment	32.00%
Polyethylene Compound	5.0%
Varnish	52.0%
Magiesol 47	11.0%
Total VOC Content	68.0%

VOC Production Rate . . .		
(0.68)(0) =	0.00 #/HR	0.00 TONS/YR
VOC Reduction Rates . . .		
Enclosure Efficiency:		
Percent Capture = 0 %		
VOC Captured = (0)(0) =	0.00 #/HR	0.00 TONS/YR
Percent Escape = 0 %		
VOC Escaped = (0)(0) =	0.00 #/HR	0.00 TONS/YR
Destruction Efficiency:		
Percent Destroyed of Captured VOC = 0 %		
VOC Destroyed of Captured VOC = (0)(0) =	0.00 #/HR	0.00 TONS/YR
Percent Not Destroyed of Captured VOC = 0 %		
VOC Not Destroyed of Captured VOC = (0)(0) =	0.00 #/HR	0.00 TONS/YR
Total VOC Emissions:		
Percent Captured and Destroyed = 0 %		
VOC Captured and Destroyed = (0)(0)(0) =	0.00 #/HR	0.00 TONS/YR
Percent Emitted = 0 %		
VOC Emitted = (0)(0)(0) + 0 =	0.00 #/HR	0.00 TONS/YR

VOC DATA FOLLOWING PROCESS REVISIONS:

VOC Content of 1990 Ink Formulation . . .

Black	35.67%
Blue	39.00%
Red	40.33%
Yellow	1.24%
Four Color Average	39.06%

VOC Production Rate . . .

(0.39)(24.00) =	9.36 #/HR	40.88 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7%		
VOC Captured = (0.767)(9.36) =	7.18 #/HR	31.36 TONS/YR
Percent Escape = 23.3%		
VOC Escaped = (.233)(9.36) =	2.18 #/HR	9.53 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = 99.8 % 97.7 %		
VOC Destroyed of Captured VOC = (.998)(7.18) =	7.17 #/HR	31.30 TONS/YR
Percent not destroyed of Captured VOC = 0.2 %		
VOC not Destroyed of Captured VOC = (0.002)(7.18) =	0.01 #/HR	0.06 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 76.5 %		
VOC Captured and Destroyed = (.767)(.998)(9.36) =	7.16 #/HR	31.30 TONS/YR
Percent Emitted = 23.5 %		
VOC Emitted = (.767)(.002)(9.36) + 2.18 =	~~2.19~~ 2.36 #/HR	~~9.53~~ 10.30 TONS/YR

PRESS # 7 Pollution Control Device: Blue Haze Control Unit

Process input rate:

Paper:	517.42	#/HR	2,260.09	TONS/YR
Ink :	11.14	#/HR	48.64	TONS/YR
Total	528.56	#/HR	2,308.73	TONS/YR

VOC DATA PRIOR TO PROCESS REVISIONS:

Previous Ink Formulation of 2/3/88 By % wt . . .

Pigment	32.00%
Polyethylene Compound	5.0%
Varnish	52.0%
Magiesol 47	11.0%
Total VOC Content	68.0%

VOC Production Rate . . .			
(0.68)(11.14) =	7.58	#/HR	33.09 TONS/YR
VOC Reduction Rates . . .			
Enclosure Efficiency:			
Percent Capture = 76.7 %			
VOC Captured = (.767)(7.58) =	5.81	#/HR	25.38 TONS/YR
Percent Escape = 23.3 %			
VOC Escaped = (.233)(7.58) =	1.77	#/HR	7.71 TONS/YR
Destruction Efficiency:			
Percent Destroyed of Captured VOC = ~~98.8~~ 92 %			
VOC Destroyed of Captured VOC = (.988)(5.81) =	5.74	#/HR	25.07 TONS/YR
Percent Not Destroyed of Captured VOC = 1.2 %			
VOC Not Destroyed of Captured VOC = (.012)(5.81) =	0.07	#/HR	0.30 TONS/YR
Total VOC Emissions:			
Percent Captured and Destroyed = 75.8 %			
VOC Captured and Destroyed = (.767)(.988)(7.58) =	5.74	#/HR	25.07 TONS/YR
Percent Emitted = 24.2 %			
VOC Emitted = (.767)(.012)(7.58) + 1.77 =	~~1.84~~ 2.23	#/HR	~~8.04~~ 9.74 TONS/YR

VOC DATA FOLLOWING PROCESS REVISIONS:

VOC Content of 1990 Ink Formulation . . .

Black	35.67%
Blue	39.00%
Red	40.33%
Yellow	1.24%
Four Color Average	39.06%

VOC Production Rate . . .

(0.39)(11.14) =	4.34 #/HR	18.96 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7%		
VOC Captured = (0.767)(4.34) =	3.34 #/HR	14.54 TONS/YR
Percent Escape = 23.3%		
VOC Escaped = (.233)(4.34) =	1.01 #/HR	4.42 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = ~~98.8~~ 92 %		
VOC Destroyed of Captured VOC = (.988)(3.34) =	3.30 #/HR	14.41 TONS/YR
Percent not destroyed of Captured VOC = 1.2 %		
VOC not Destroyed of Captured VOC = (.012)(3.34) =	0.04 #/HR	0.18 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 75.8 %		
VOC Captured and Destroyed = (.767)(.988)(4.34) =	3.30 #/HR	14.41 TONS/YR
Percent Emitted = 24.2 %		
VOC Emitted = (.767)(.012)(4.34) + 1.01 =	~~1.05~~ 1.28 #/HR	~~4.59~~ 5.59 TONS/YR

PRESS # 8 Pollution Control Device: Blue Haze Control Unit

Process input rate:

Paper:	355.07	#/HR	1,550.93	TONS/YR
Ink :	7.64	#/HR	33.38	TONS/YR
Total	362.71	#/HR	1,584.31	TONS/YR

VOC DATA PRIOR TO PROCESS REVISIONS:

Previous Ink Formulation of 2/3/88 By % wt . . .

Pigment	32.00%
Polyethylene Compound	5.0%
Varnish	52.0%
Magiesol 47	11.0%
Total VOC Content	68.0%

VOC Production Rate . . .			
(0.68)(7.64) =	5.20	#/HR	22.69 TONS/YR
VOC Reduction Rates . . .			
Enclosure Efficiency:			
Percent Capture = 76.7 %			
VOC Captured = (.767)(5.20) =	3.99	#/HR	17.42 TONS/YR
Percent Escape = 23.3 %			
VOC Escaped = (.233)(5.20) =	1.21	#/HR	5.29 TONS/YR
Destruction Efficiency:			
Percent Destroyed of Captured VOC = ~~98.8~~ 92 %			
VOC Destroyed of Captured VOC = (.988)(3.99) =	3.94	#/HR	17.22 TONS/YR
Percent Not Destroyed of Captured VOC = 1.2 %			
VOC Not Destroyed of Captured VOC = (.012)(3.99) =	0.05	#/HR	0.21 TONS/YR
Total VOC Emissions:			
Percent Captured and Destroyed = 75.8 %			
VOC Captured and Destroyed = (.767)(.988)(5.20) =	3.94	#/HR	17.22 TONS/YR
Percent Emitted = 24.2 %			
VOC Emitted = (.767)(.012)(5.20) + 1.21 =	~~1.26~~ 1.53	#/HR	~~5.49~~ 6.68 TONS/YR

VOC DATA FOLLOWING PROCESS REVISIONS:

VOC Content of 1990 Ink Formulation . . .

Black	35.67%
Blue	39.00%
Red	40.33%
Yellow	1.24%
Four Color Average	39.06%

VOC Production Rate . . .

(0.39)(7.64) =	2.98 #/HR	13.01 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7%		
VOC Captured = (0.767)(2.98) =	2.29 #/HR	9.98 TONS/YR
Percent Escape = 23.3%		
VOC Escaped = (.233)(2.98) =	0.69 #/HR	3.03 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = ~~98.8~~ 92%		
VOC Destroyed of Captured VOC = (.988)(2.29) =	2.26 #/HR	9.88 TONS/YR
Percent not destroyed of Captured VOC = 1.2 %		
VOC not Destroyed of Captured VOC = (.012)(2.29) =	0.03 #/HR	0.12 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 75.8 %		
VOC Captured and Destroyed = (.767)(.988)(2.98) =	2.26 #/HR	9.88 TONS/YR
Percent Emitted = 24.2 %		
VOC Emitted = (.767)(.012)(2.98) + 0.69 =	~~0.72~~ 0.87 #/HR	3.14 ~~TONS/YR~~ 3.81

PRESS # 9 Pollution Control Device: Blue Haze Control Unit

Process input rate:

Paper:	415.66	#/HR	1,815.61	TONS/YR
Ink :	8.95	#/HR	39.08	TONS/YR
Total	424.61	#/HR	1,854.69	TONS/YR

VOC DATA PRIOR TO PROCESS REVISIONS:

Previous Ink Formulation of 2/3/88 By % wt . . .

Pigment	32.00%
Polyethylene Compound	5.0%
Varnish	52.0%
Magiesol 47	11.0%
Total VOC Content	68.0%

VOC Production Rate . . .			
(0.68)(8.95) =	6.09	#/HR	26.58 TONS/YR
VOC Reduction Rates . . .			
Enclosure Efficiency:			
Percent Capture = 76.7 %			
VOC Captured = (.767)(6.09) =	4.67	#/HR	20.40 TONS/YR
Percent Escape = 23.3 %			
VOC Escaped = (.233)(6.09) =	1.42	#/HR	6.20 TONS/YR
Destruction Efficiency:			
Percent Destroyed of Captured VOC = ~~98.8~~ 92 %			
VOC Destroyed of Captured VOC = (.988)(4.67) =	4.61	#/HR	20.15 TONS/YR
Percent Not Destroyed of Captured VOC = 1.2 %			
VOC Not Destroyed of Captured VOC = (.012)(4.67) =	0.06	#/HR	0.24 TONS/YR
Total VOC Emissions:			
Percent Captured and Destroyed = 75.8 %			
VOC Captured and Destroyed = (.767)(.988)(6.09) =	4.61	#/HR	20.15 TONS/YR
Percent Emitted = 24.2 %			
VOC Emitted = (.767)(.012)(6.09) + 1.42 =	~~1.48~~ 1.79	#/HR	~~6.45~~ 7.82 TONS/YR

VOC DATA FOLLOWING PROCESS REVISIONS:

VOC Content of 1990 Ink Formulation . . .

Black	35.67%
Blue	39.00%
Red	40.33%
Yellow	1.24%
Four Color Average	39.06%

VOC Production Rate . . .

(0.39)(8.95) =	3.49 #/HR	15.25 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7%		
VOC Captured = (0.767)(3.49) =	2.68 #/HR	11.69 TONS/YR
Percent Escape = 23.3%		
VOC Escaped = (.233)(3.49) =	0.81 #/HR	3.55 TONS/YR

Destruction Efficiency: 92%

Percent Destroyed of Captured VOC = ~~98.8~~ %		
VOC Destroyed of Captured VOC = (.988)(2.68) =	2.65 #/HR	11.57 TONS/YR
Percent not destroyed of Captured VOC = 1.2 %		
VOC not Destroyed of Captured VOC = (.012)(2.68) =	0.03 #/HR	0.14 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 75.8 %		
VOC Captured and Destroyed = (.767)(.988)(3.49) =	2.65 #/HR	11.57 TONS/YR
Percent Emitted = 24.2 %		
VOC Emitted = (.767)(.012)(3.49) + 0.81 =	~~0.84~~ 1.02 #/HR	~~3.68~~ 4.45 TONS/YR

PRESS # 10 Pollution Control Device: Blue Haze Control Unit

Process input rate:

Paper:	536.41	#/HR	2,343.02	TONS/YR
Ink :	11.55	#/HR	50.43	TONS/YR
Total	547.96	#/HR	2,393.45	TONS/YR

VOC DATA PRIOR TO PROCESS REVISIONS:

Previous Ink Formulation of 2/3/88 By % wt . . .

Pigment	32.00%
Polyethylene Compound	5.0%
Varnish	52.0%
Magicsol 47	11.0%
Total VOC Content	68.0%

VOC Production Rate . . .			
(0.68)(11.55) =	7.85	#/HR	34.31 TONS/YR
VOC Reduction Rates . . .			
Enclosure Efficiency:			
Percent Capture = 76.7 %			
VOC Captured = (.767)(7.85) =	6.02	#/HR	26.30 TONS/YR
Percent Escape = 23.3 %			
VOC Escaped = (.233)(7.85) =	1.83	#/HR	7.99 TONS/YR
Destruction Efficiency: 92%			
Percent Destroyed of Captured VOC = ~~98.8~~ %			
VOC Destroyed of Captured VOC = (.988)(6.02) =	5.95	#/HR	25.98 TONS/YR
Percent Not Destroyed of Captured VOC = 1.2 %			
VOC Not Destroyed of Captured VOC = (.012)(6.02) =	0.07	#/HR	0.32 TONS/YR
Total VOC Emissions:			
Percent Captured and Destroyed = 75.8 %			
VOC Captured and Destroyed = (.767)(.988)(7.85) =	5.95	#/HR	25.98 TONS/YR
Percent Emitted = 24.2 %			
VOC Emitted = (.767)(.012)(7.85) + 1.83 =	~~1.90~~ 2.31	#/HR	~~8.31~~ 10.1 TONS/YR

VOC DATA FOLLOWING PROCESS REVISIONS:

VOC Content of 1990 Ink Formulation . . .

Black	35.67%
Blue	39.00%
Red	40.33%
Yellow	1.24%
Four Color Average	39.06%

VOC Production Rate . . .

(0.39)(11.55) =	4.50 #/HR	19.68 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7%		
VOC Captured = (0.767)(4.50) =	3.45 #/HR	15.08 TONS/YR
Percent Escape = 23.3%		
VOC Escaped = (.233)(4.50) =	1.05 #/HR	4.58 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = ~~98.8~~ 92 %		
VOC Destroyed of Captured VOC = (.988)(3.45) =	3.41 #/HR	14.89 TONS/YR
Percent not destroyed of Captured VOC = 1.2 %		
VOC not Destroyed of Captured VOC = (.012)(3.45) =	0.04 #/HR	0.18 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 75.8 %		
VOC Captured and Destroyed = (.767)(.988)(4.50) =	3.41 #/HR	14.89 TONS/YR
Percent Emitted = 24.2 %		
VOC Emitted = (.767)(.012)(4.50) + 1.05 =	~~1.09~~ 1.32 #/HR	~~4.77~~ 5.79 TONS/YR

PRESS # 11 Pollution Control Device: Blue Haze Control Unit

Process input rate:

Paper:	614.02	#/HR	2,682.04	TONS/YR
Ink :	13.22	#/HR	57.73	TONS/YR
Total	627.24	#/HR	2,739.77	TONS/YR

VOC DATA PRIOR TO PROCESS REVISIONS:

Previous Ink Formulation of 2/3/88 By % wt . . .

Pigment	32.00%
Polyethylene Compound	5.0%
Varnish	52.0%
Magiesol 47	11.0%
Total VOC Content	68.0%

VOC Production Rate . . .		
(0.68)(13.22) =	8.99 #/HR	39.27 TONS/YR
VOC Reduction Rates . . .		
Enclosure Efficiency:		
Percent Capture = 76.7 %		
VOC Captured = (.767)(8.99) =	6.90 #/HR	30.12 TONS/YR
Percent Escape = 23.3 %		
VOC Escaped = (.233)(8.99) =	2.09 #/HR	9.15 TONS/YR
Destruction Efficiency:		
Percent Destroyed of Captured VOC = ~~98.8~~ 92 %		
VOC Destroyed of Captured VOC = (.988)(6.90) =	6.82 #/HR	29.78 TONS/YR
Percent Not Destroyed of Captured VOC = 1.2 %		
VOC Not Destroyed of Captured VOC = (.012)(6.90) =	0.08 #/HR	0.36 TONS/YR
Total VOC Emissions:		
Percent Captured and Destroyed = 75.8 %		
VOC Captured and Destroyed = (.767)(.988)(8.99) =	6.82 #/HR	29.78 TONS/YR
Percent Emitted = 24.2 %		
VOC Emitted = (.767)(.012)(8.99) + 2.09 =	~~2.17~~ 2.64 #/HR	~~9.48~~ 11.54 TONS/YR

VOC DATA FOLLOWING PROCESS REVISIONS:

VOC Content of 1990 Ink Formulation . . .

Black	35.67%
Blue	39.00%
Red	40.33%
Yellow	1.24%
Four Color Average	39.06%

VOC Production Rate . . .

(0.39)(13.22) =	5.16 #/HR	22.52 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7%		
VOC Captured = (0.767)(5.16) =	3.96 #/HR	17.29 TONS/YR
Percent Escape = 23.3%		
VOC Escaped = (.233)(5.16) =	1.20 #/HR	5.25 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = ~~98.8~~ 92 %		
VOC Destroyed of Captured VOC = (.988)(3.96) =	3.91 #/HR	17.09 TONS/YR
Percent not destroyed of Captured VOC = 1.2 %		
VOC not Destroyed of Captured VOC = (.012)(3.96) =	0.05 #/HR	0.21 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 75.8 %		
VOC Captured and Destroyed = (.767)(.988)(5.16) =	3.91 #/HR	17.09 TONS/YR
Percent Emitted = 24.2 %		
VOC Emitted = (.767)(.012)(5.16) + 1.20 =	~~1.25~~ 1.52 #/HR	~~5.45~~ 6.64 TONS/YR

PRESS # 14 Removed from Service

Process input rate:

Paper:	47.25	#/HR	206.39	TONS/YR
Ink :	1.02	#/HR	4.44	TONS/YR
Total	48.27	#/HR	210.83	TONS/YR

VOC DATA PRIOR TO PROCESS REVISIONS:

Previous Ink Formulation of 2/3/88 By % wt . . .

Pigment	32.00%
Polyethylene Compound	5.0%
Varnish	52.0%
Magiesol 47	11.0%
Total VOC Content	68.0%

VOC Production Rate . . .		
(0.68)(1.02) =	0.69 #/HR	3.03 TONS/YR
VOC Reduction Rates . . .		
Enclosure Efficiency:		
Percent Capture = 76.7 %		
VOC Captured = (.767)(0.69) =	0.53 #/HR	2.31 TONS/YR
Percent Escape = 23.3 %		
VOC Escaped = (.233)(0.69) =	0.16 #/HR	0.70 TONS/YR
Destruction Efficiency:		
Percent Destroyed of Captured VOC = 0 %		
VOC Destroyed of Captured VOC = (0)(0.53) =	0.0 #/HR	0.0 TONS/YR
Percent Not Destroyed of Captured VOC = 100 %		
VOC Not Destroyed of Captured VOC = (1.00)(0.53) =	0.53 #/HR	2.31 TONS/YR
Total VOC Emissions:		
Percent Captured and Destroyed = 0 %		
VOC Captured and Destroyed = (.767)(0)(0.69) =	0.0 #/HR	0.0 TONS/YR
Percent Emitted = 100 %		
VOC Emitted = (.767)(1.00)(0.69) + 0.16 =	0.69 #/HR	3.03 TONS/YR

VOC DATA FOLLOWING PROCESS REVISIONS:

VOC Content of 1990 Ink Formulation . . .

Black	35.67%
Blue	39.00%
Red	40.33%
Yellow	1.24%
Four Color Average	39.06%

VOC Production Rate . . .

(0.39)(0) =	0.0 #/HR	0.0 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7%		
VOC Captured = (0.767)(0) =	0.00 #/HR	0.00 TONS/YR
Percent Escape = 23.3%		
VOC Escaped = (.233)(0) =	0.0 #/HR	0.0 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = 0 %		
VOC Destroyed of Captured VOC = (0)(0) =	0.0 #/HR	0.0 TONS/YR
Percent not destroyed of Captured VOC = 100 %		
VOC not Destroyed of Captured VOC = (1.00)(0) =	0.0 #/HR	0.0 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 0 %		
VOC Captured and Destroyed = (.767)(0)(0) =	0.0 #/HR	0.0 TONS/YR
Percent Emitted = 100 %		
VOC Emitted = (.233)(1.00)(0) + 0 =	0.0 #/HR	0.0 TONS/YR

PRESS # 15 Pollution Control Device: KATEC Thermal Afterburner

Process input rate:

Paper:	1,100.00	#/HR	4,804.80	TONS/YR
Ink :	24.00	#/HR	104.83	TONS/YR
Total	1,124.00	#/HR	4,909.63	TONS/YR

VOC DATA PRIOR TO PROCESS REVISIONS:

Previous Ink Formulation of 2/3/88 By % wt . . .

Pigment	32.00%
Polyethylene Compound	5.0%
Varnish	52.0%
Magiesol 47	11.0%
Total VOC Content	68.0%

VOC Production Rate . . .

(0.68)(0) =	0.00	#/HR	0.00 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 0 %			
VOC Captured = (0)(0) =	0.00	#/HR	0.00 TONS/YR
Percent Escape = 0 %			
VOC Escaped = (0)(0) =	0.00	#/HR	0.00 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = 0 %			
VOC Destroyed of Captured VOC = (0)(0) =	0.00	#/HR	0.00 TONS/YR
Percent Not Destroyed of Captured VOC = 0 %			
VOC Not Destroyed of Captured VOC = (0)(0) =	0.00	#/HR	0.00 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 0 %			
VOC Captured and Destroyed = (0)(0)(0) =	0.00	#/HR	0.00 TONS/YR
Percent Emitted = 0 %			
VOC Emitted = (0)(0)(0) + 0 =	0.00	#/HR	0.00 TONS/YR

VOC DATA FOLLOWING PROCESS REVISIONS:

VOC Content of 1990 Ink Formulation . . .

Black	35.67%
Blue	39.00%
Red	40.33%
Yellow	1.24%
Four Color Average	39.06%

VOC Production Rate . . .

(0.39)(24.00) =	9.36 #/HR	40.88 TONS/YR

VOC Reduction Rates . . .

Enclosure Efficiency:

Percent Capture = 76.7%		
VOC Captured = (0.767)(9.36) =	7.18 #/HR	31.36 TONS/YR
Percent Escape = 23.3%		
VOC Escaped = (.233)(9.36) =	2.18 #/HR	9.53 TONS/YR

Destruction Efficiency:

Percent Destroyed of Captured VOC = 99.8 % 97.5		
VOC Destroyed of Captured VOC = (.998)(7.18) =	7.17 #/HR	31.30 TONS/YR
Percent not destroyed of Captured VOC = 0.2 %		
VOC not Destroyed of Captured VOC = (0.002)(7.18) =	0.01 #/HR	0.06 TONS/YR

Total VOC Emissions:

Percent Captured and Destroyed = 76.5 %		
VOC Captured and Destroyed = (.767)(.998)(9.36) =	7.16 #/HR	31.30 TONS/YR
Percent Emitted = 23.5 %		
VOC Emitted = (.767)(.002)(9.36) + 2.18 =	~~2.19~~ 2.36 #/HR	~~9.53~~ 10.30 TONS/YR

ATTACHMENT # 2

BLUE HAZE CONTROL UNIT

2 DESCRIPTION OF THE MMT SYSTEM

The description of the MMT system operating principle and its basic design is presented in this section.

2.1 Principle of Operation

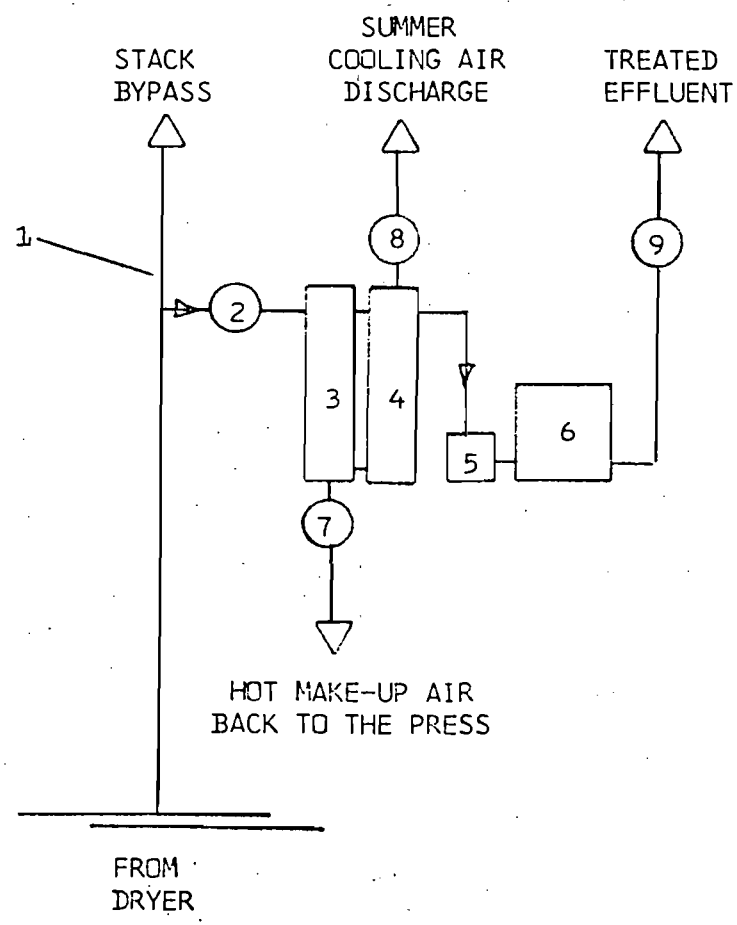
The principle of the MMT system operation is condensing condensible solvents from hot effluent by cooling the effluent to ambient air temperature. The condensed solvents present in the form of microscopic droplets are then collected in a special, self-draining, high-efficiency microfiber air filter.

This principle is very effective primarily because most of the ink solvents are high-boiling point, low vapor pressure of which normally over 95 percent by mass would condense from the web offset dryer effluent at 100° F. However, this percentage depends not only upon the type of solvents, but also upon the ink usage in the press and must be determined individually for each application.

2.2 Flow Diagram

A flow diagram of the system is shown in Figure 1. Raw effluent is removed completely from the dryer stack (1) through an open damper (2) and through a two-stage heat exchanger/condenser (3,4) by a high-pressure centrifugal fan (5). The main portion of condensible solvents condenses in the heat exchanger forming a blue haze. Part of these condensed solvents are collected in and drained from the heat exchanger. The remaining portion of blue haze is almost completely removed from the effluent by a high-efficiency filter (6). Controlled effluent is discharged into the atmosphere through a stack.

The cooling media for the heat exchangers is the ambient air. Warm cooling air from the first stage of the heat exchanger (3) is moved by a fan (7) and can be transported inside the building as make-up air for the press dryer. This results in heat energy savings. The cooling air from the second stage of the heat exchanger is discharged into the atmosphere. This stage operates only in the summer.



LEGEND

1 – STACK (EMERGENCY DISCHARGE)
2 – FIRE DAMPER INLET
3 – #1 CONDENSER
4 – #2 CONDENSER
5 – FAN
6 – PARTICULATE FILTER
7 – MAIN COOLING FAN
8 – SUMMER COOLING FAN
9 – FIRE DAMPER OUTLET

FIGURE 1. FLOW DIAGRAM OF TYPICAL MMT AIR POLLUTION CONTROL SYSTEM

mmt environmental, inc. St. Paul, MN 55112

2.3 System Operation

Solvents and condensed water collected in the condensers and particulate filter are continuously drained. The solvents are separated from the water in a dual-gravity liquid separator. This separation is so good that water is drained directly into a sewer and solvents are collected in barrels for refinery resale, used as solvents by the asphalt industry, or mixed with oil #2 after proper testing.

The system fan (5) is slightly oversized to remove more effluent from the stack than is the actual flow from the dryer. To balance the flow, the difference is made up by a downward flow of ambient air through the dryer stack (1). This design is required by fire safety codes as further explained.

The dampers (2,9) are thermostat operated. When the temperature of the process stack (1) or of the effluent of the MMT system exceeds a preselected level as a result of possible fire in the dryer, the dampers close automatically. The fan (5) and cooling fans (7,8) are turned off, also automatically, at the same time.

Operation of the two heat exchanger/condensers is modulated automatically to maintain effluent temperature at the particulate filter inlet below 110° F at all times. Normally the effluent temperature is maintained at 5° F higher than the ambient air temperature. Effluent temperature is never lower than 40° F. To enhance condensation of solvents, a humidification nozzle is normally installed at the inlet to the first heat exchanger and operated under special press operating conditions (patent pending).

The MMT system is equipped with condenser wash nozzles located in the top of each condenser and also separate nozzles to spray washing solution on the surface of the high-efficiency filter material. The wash system can be activated either manually on an as-needed basis or automatically on a preselected time schedule.

2.4 Design of Critical Elements

The MMT system design and configuration is a result of careful development, both in the laboratory and in the field, and is the subject of several patents pending. From a performance point of view, the most critical elements are the design of heat exchanger/condensers and the type of high-efficiency filter material used to collect condensible aerosols. Attempted copies of the MMT system suffer from inadequate design of the heat exchanger and "low-cost" replacement for special high-efficiency filters.

The heat exchanger must have fins or plates spaced at least 0.25 inch. For smaller spacing, the exchangers will rapidly plug up. For some types of printing inks and web offset dryers, the plates must be surface treated to reduce adhesive forces between the surface of heat exchanging plates and condensed solvents.

The design of filter material must eliminate the danger of material sagging when exposed to liquid droplets and soaked with liquids. In MMT's design the filter material consisting of a mixture of large diameter glass fibers and glass microfibers is exposed to high temperatures to accomplish fusion of fibers where they intersect. The fused fibers give the material strength and stable dimensions even when it is wet. No binding agents can substitute this patented process because they would be slowly dissolved by the ink solvents. The filter material would then develop voids and loose its aerosol collection efficiency.

Large fibers give the material mechanical strength and fine fibers are responsible for high collection efficiency for even submicron aerosol particles. For some ink solvents a special surface treatment of glass fibers improves the self-draining properties of the filter mat. The thermal treatment is a British patent, the surface treatment is an MMT proprietary process.

The filter material design results in a collection efficiency of 99.95 percent for aerosol particles larger than 3 microns and 99.5 percent for particles of 0.3 micron size.

3 FIELD TEST RESULTS

To determine the capabilities of the MMT system, a 500 ACFM pilot system and a 50 ACFM bench model system were constructed several years ago and tested in the field. Long-term testing of the pilot equipment was performed on the effluent from a flame impingement dryer of a web offset press located in the Chicago area. The bench model equipment was tested on the effluent from a hot air dryer of a four-color press located in the St. Paul, Minnesota, area.

The performance parameters of the MMT system were determined for both winter and summer operation during numerous tests performed on four full-size installations; two in the Chicago area, one in the State of Maryland, and one in the State of Minnesota. The results of these tests are summarized in this section.

3.1 Visible and Particulate Emissions

The visible emissions are a result of condensation of condensible solvents in the effluent when it becomes over-saturated with solvent vapor at a given temperature. Visible emissions from the MMT system never exceeded 5 percent for the opacity of untreated effluent of 80 percent. Normally the visible emissions from the MMT system are condensed water vapor which dissipates over a 10 foot distance from the stack.

The particulate emissions from the MMT system determined per EPA Method 5 including back-half catch (condensibles) never exceeded 0.035 gr/dscf. Normally the concentration is 0.01 gr/dscf. It was found that this value is nearly independent of the ink consumption and remains constant for a given type of ink.

3.2 Control of Hydrocarbons

The test results show that the MMT system reduces non-methane hydrocarbons by 85 percent or better. The higher the ink coverage, the better the removal efficiency which may reach a 98 percent level for heavy ink coverage. The emission rate of non-methane hydrocarbons is relatively

independent of the ink coverage. For an average web offset press, the emission rate is typically 1 lb per hour.

It has to be emphasized that because 99 percent of the ink solvents sold on the market are classified as photochemically non-reactive, the emission rate of photochemically reactive solvents from the MMT system is insignificant.

3.3 Control of Odors

The odor concentration of web offset dryer effluent ranges between 400 and 10,000 odor units per cubic foot. The odor concentration depends primarily upon the ink coverage, type of ink and type of dryer.

Odor potential of the dryer effluent was found to be primarily associated with the condensation aerosol. The potential of the solvent vapor, after the aerosol is removed from the test air sample, is much less significant. It was also found during extensive field tests that the proprietary MMT filter material results in reduction of odor potential of non-condensible odorous constituents by absorption in the filter layer. As a result, the odor concentration of the effluent from the MMT system ranges from 25 to 80 odor units per cubic foot. Such a concentration in connection with a properly sized stack (elimination of the plume downwash) does not result in detectable odors on the ground level.

3.4 Overall Performance

The MMT systems which are now in normal use have been in operation for over 33 composite months. No serious operating problems have been experienced during this period.

ATTACHMENT 9

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: A. D. Weiss Lithograph Co., Inc.
AC 06-183175

FROM: Bruce Mitchell

DATE: January 4, 1991

SUBJ: Calculations

1. Creditable VOC Emissions

   a. Presses #4 and #14

      5.6 #/hr x 39.1% = 2.2 lbs/hr, 9.6 TPY

   b. Presses #2 and #3

      15.6 #/hr x 39.1% = 6.1 lbs/hr, 26.7 TPY

      Total: 36.3 TPY

2. Capture and Destruction Efficiencies

   a. Minimum of 75.0% Capture - Dryer Enclosures

      18.8 lbs/hr x 0.75 = 14.1 lbs/hr
      18.8 - 14.1 = 4.7 lbs/hr, 20.6 TPY

   b. Minimum of 95.0% Destruction - Afterburner

      14.1 lbs/hr x 0.95 = 13.4 lbs/hr
      14.1 - 13.4 = 0.7 lb/hr, 3.0 TPY

      Total: 23.6 TPY

Barry's Copy

Florida Department of Environmental Regulation

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

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

November 9, 1990

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. John Markey, V.P. of Manufacturing
A. D. Weiss Lithograph Co., Inc.
2025 McKinley Street
Hollywood, Florida 33020

Dear Mr. Markey:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit for A. D. Weiss Lithograph Co., Inc. to construct/install two new presses (Nos. 6 and 15) and dryer enclosures. The new presses will share a KATEC thermal afterburner. Also, the VOC content of the inks will be reduced from an average of 68% to 39.1% by formulation charge.

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/plm

Attachments

c: I. Goldman, SE District
A. Linero, Broward County
H. J. Bauch, P.E., SEEC, Inc.

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

A. D. Weiss Lithograph Co., Inc.
2025 McKinley Street
Hollywood, Florida 33020

DER File No. AC 06-183175

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 specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, A. D. Weiss Lithograph Co., Inc., applied on June 28, 1990, to the Department of Environmental Regulation for a permit to construct/install two new presses (Nos. 6 and 15) and dryer enclosures. The new presses will share a KATEC thermal afterburner. Also, the VOC content of the inks will be reduced from an average of 68% to 39.1% by formulation charge. The proposed project will occur at the applicant's existing facility located in Hollywood, Broward 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:

I. Goldman, SE District
A. Linero, Broward County
H. J. Bauch, P.E., SEEC, Inc.

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 11-9-90.

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.

Kris Doper — Clerk

11-9-90 — 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 A. D. Weiss Lithograph Co., Inc., 2025 McKinley Street, Hollywood, Florida 33020 to construct/install two new presses (Nos. 6 and 15) and dryer enclosures. The new presses will share a KATEC thermal afterburner. Also, the VOC content of the inks will be reduced from an average of 68% to 39.1% by formulation charge. 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
Southeast District
1900 S. Congress Ave., Suite A
West Palm Beach, Florida 33406

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

A. D. Weiss Lithograph Company, Inc.
Broward County
Hollywood, Florida

Construction Permit No.
AC 06-183175

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

November 9, 1990

I. Application

A. Applicant

A. D. Weiss Lithograph Company, Inc.
2025 McKinley Street
Hollywood, Florida 33020

B. Project

The applicant intends to replace four web offset lithographic presses (Nos. 2, 3, 4 and 14) and associated dual pass Offen dryers with two new presses (Nos. 6 and 15) and dryer enclosures. The new presses will share a KATEC thermal afterburner. Also, the VOC content of the inks will be reduced from an average of 68.0% to 39.1% by formulation change. The project will occur at the applicant's existing facility located in Broward County, Florida.

The UTM coordinates are Zone 17, 585.3 km East and 2878.6 km North.

C. Process and Controls

The existing facility, after the modification, will house five presses (Nos. 5, 6, 8, 10 and 15). 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 have been vented to the atmosphere from the existing presses. The proposed new presses (Nos. 6 and 15) will have an associated and shared KATEC thermal afterburner, which has a maximum projected destruction efficiency of 97.5%. The projected maximum VOC capture efficiency of each dryer enclosure is 76.7%. The incinerator and dryers will be operated on natural gas.

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, 1988 version).

The application package was deemed complete on July 6, 1990. A waiver of the 90-day clock was received on August 31, 1990, and was extended to, and includes, November 27, 1990.

The existing facility is 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 Broward County, an area designated nonattainment for ozone pursuant to F.A.C. Rule 17-2.410(b).

The new ink formulation change from an average VOC content of 68.0% to 39.1% will provide a net decrease in VOC emissions to the existing facility of 328.9 TPY. However, the emissions decrease associated with the formulation change is not considered creditable because the lower VOC content inks are available and competitive with existing inks and it meets the intent of "reasonable further progress" toward attaining the ambient air quality standards from existing and modified facilities located in a nonattainment area.

With the removal of four existing sources (Presses Nos. 2, 3, 4 and 14), contemporaneous creditable VOC emissions for these sources are 36.3 TPY. The projected potential VOC emissions for the new presses, Nos. 6 and 15, are 76.0 TPY. The net VOC change is +39.7 TPY. Therefore, the modification is considered a minor modification to a major facility, and is subject to review in accordance with F.A.C. Rule 17-2.520, Sources Not Subject to Prevention of Significant Deterioration or Nonattainment Requirements.

Since the facility is located in Broward County, which is an area designated nonattainment for ozone, the new presses are subject to the emission limiting standards of F.A.C. Rules 17-2.650(1)(f) and 17-2.650(1)(f)3.b., which requires that no owner or operator cause, allow, or permit the discharge into the atmosphere of any volatile organic compounds in excess of 4.55 pounds per gallon of solids (2.9 pounds per gallon of coating; 17.4 lbs/hr, 76.0 TPY), excluding water and exempt solvents, delivered to the coating applicator from a paper coating line. Control technology shall be in accordance with F.A.C. Rule 17-2.650(1)(f)3.c., of which the applicant has elected to use the application of incineration. Recordkeeping and reports shall be in accordance with F.A.C. Rules 17-2.650(1)(b)2. and 17-2.650(1)(b)3.

The proposed project is subject to all applicable provisions of F.A.C. Chapters 17-2 and 17-4 and 40 CFR (July, 1988 version). Also, the new presses are subject to the provisions of F.A.C. Rules 17-2.240: Circumvention; 17-2.250: Excess Emissions; and, 17-4.130: Plant Operation-Problems.

The new presses are subject to the provisions of F.A.C. Rule 17-2.610(2), General Visible Emissions Standard.

The new presses are subject to the provisions of 17-2.620(1) and (2), General Pollutant Emissions Limiting Standards.

Initial and annual compliance tests on the KATEC thermal afterburner shall be conducted using EPA Method 9 (visible emissions) and EPA Method 25 (destruction efficiency) in accordance with Table 700-1, F.A.C. Chapter 17-2, and 40 CFR 60, Appendix A (July, 1988 version).

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 Southeast District in writing at least 60 days prior to conducting any compliance test(s) as to which capture efficiency testing protocol will be used.

III. Summary of Emissions and Air Quality Analysis

A. Emission Limitations

The pollutant that is regulated from the new presses is VOC. The sources are also subject to a visible emissions standard. The following table will display the applicable emissions standards and limitations:

Table 1

Source	Pollutant	Emission Standards and Limitations
KATEC Thermal Afterburner	VOC	4.55 lbs/gal of solids, excluding water and exempt solvents, delivered to the coating applicator from a paper coating line (2.9 lbs/gal of coating; 17.4 lbs/hr, 76.0 TPY, total)
	VE	< 20% opacity

Note: o Operation hours are 24 Hrs/day, 7 days/wk, and 52 wks/yr, for a total of 8736 hrs/yr.
o Emissions are based on F.A.C. Rules 17-2.650(1)(f) and 17-2.650(1)(f)3.b.
o Presses #6 and #15 contribute equally to the total emissions (i.e., 8.7 lbs/hr/press, 38.0/tons/yr/press).

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 A. D. Weiss Lithography Company, Inc., the Department has reasonable assurance that the proposed construction of two new presses (Nos. 6 & 15), the removal from service of four existing presses (Nos. 2, 3, 4, & 14), and the ink formulation change at the facility, 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.

Barry D. Andrews
#36024
11-8-91

Florida Department of Environmental Regulation

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

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

PERMITTEE:
A. D. Weiss Lithograph Co., Inc.
2025 McKinley Street
Hollywood, Florida 33020

Permit Number: AC 06-183175
Expiration Date: Dec. 31, 1991
County: Broward
Latitude/Longitude: 26°01'31"N
80°08'51"W
Project: Construction of Presses Nos. 6 and 15

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, 1988 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 two new presses and dryer enclosures (Nos. 6 and 15) with an associated and shared KATEC thermal afterburner; also, the projected maximum efficiencies are 76.7% (capture) for each dryer enclosure and 97.5% (destruction) for the thermal afterburner. The project also includes the removal from service of existing presses Nos. 2, 3, 4 and 14; and, the facility will undergo a formulation change to reduce the VOC content of the inks from an average of 68.0% to 39.1%. The project will occur at the applicant's existing facility. The UTM coordinates are Zone 17, 585.3 km East and 2878.6 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 June 28, 1990.
2. Mr. H. J. Bauch's letter received August 31, 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 November 6, 1990, from Bruce Mitchell.
5. Technical Evaluation and Preliminary Determination dated November 9, 1990.

PERMITTEE:
A. D. Weiss Lithograph Company, Inc.

Permit Number: AC 06-183175
Expiration Date: December 31, 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:

1. The sources are allowed to operate 24 hrs/day, 7 days/wk, and 52 wks/yr, for a total of 8736 hrs/yr.

2. Presses Nos. 6 and 15 are each subject to the emission limiting standard pursuant to F.A.C. Rules 17-2.650(1)(f) and 17-2.650(1)(f)3.b., which states that no owner or operator may cause, allow, or permit the discharge into the atmosphere of any volatile organic compounds (VOC) in excess of 4.55 pounds per gallon of solids (2.9 lbs/gal of coating; 17.4 lbs/hr, 76.0 TPY, total), excluding water and exempt solvents, delivered to the coating applicator from a papaer coating line.

3. Emissions control technology shall be in accordance with F.A.C. Rule 17-2.650(1)(f)3.c., which requires that the limit in F.A.C. Rule 17-2.650(1)(f)3.b. be achieved by:

a. the application of low solvent content coating technology; or,

SPECIFIC CONDITIONS:

b. incineration, provided that 90 percent of the VOC (measured as total combustible carbon) which enter the incinerator are oxidized to carbon dioxide and water.

4. The dryer enclosure for each press will be required to achieve a minimum capture efficiency of 70%. 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 Southeast District in writing of the protocol that will be used for the capture efficiency demonstration purpose at least 60 days prior to compliance testing.

5. Pursuant to Table 700-1, F.A.C. Rule 17-2.700, 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 25, 40 CFR 60, Appendix A (July, 1988 version).

6. Recordkeeping shall be in accordance with F.A.C. Rule 17-2.650(1)(b)2.

7. Reporting shall be in accordance with F.A.C. Rule 17-2.650(1)(b)3.

8. The Department's Southeast 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).

9. Test reports shall be submitted to the Department's Southeast 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).

10. This project is subject to all applicable provisions of F.A.C. Chapters 17-2 and 17-4 and 40 CFR (July, 1988 version).

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

12. The sources are subject to the provisions of F.A.C. Rule 17-2.620 (1)(a), General Pollutant Emission Limiting Standards for VOC or Organic Solvents.

PERMITTEE:
A. D. Weiss Lithograph Company, Inc.

Permit Number: AC 06-183175
Expiration Date: December 31, 1991

SPECIFIC CONDITIONS:

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

14. 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 Table 700-1, F.A.C. Rule 17-2.700, and 40 CFR 60, Appendix A (July, 1988 version).

15. 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).

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

Issued this _____ day
of _____, 1990

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Attachment 1

Available Upon Request

Attachment 2

S.E.
ENVIRONMENTAL CONSULTANTS, INC.
MANAGEMENT · ENGINEERING · TESTING
7060 TAFT STREET • HOLLYWOOD, FLORIDA 33024 • PHONE (305) 962-0176

August 30, 1990

Ms. Stephanie Brooks
Department of Environmental Regulation
1900 S. Congress Avenue, Suite A
West Palm Beach, FL 33406

Re: A.D. Weiss Lithograph Company, Inc.
2025 McKinley Street
Hollywood, FL 33020

Dear Ms. Brooks:

Please accept this letter as our motification of a waiver of the 90 day time clock for permit processing of the "Modification to Improve" application dated 6/27/90 for the subject facility so as to permit you to transmit this application to D.E.R.-Tallahassee for processing.

Should you have any questions on the above, please contact me at (305) 962-0176.

Sincerely,

A.D. Bauch P.E.

A.D. Bauch, P.E.
Executive Director

cc: Mr. John Neubauer
A.D. Weiss

Attachment 3

SYED

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

RECEIVED
MAY 18 1990
DER - BAQM

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

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

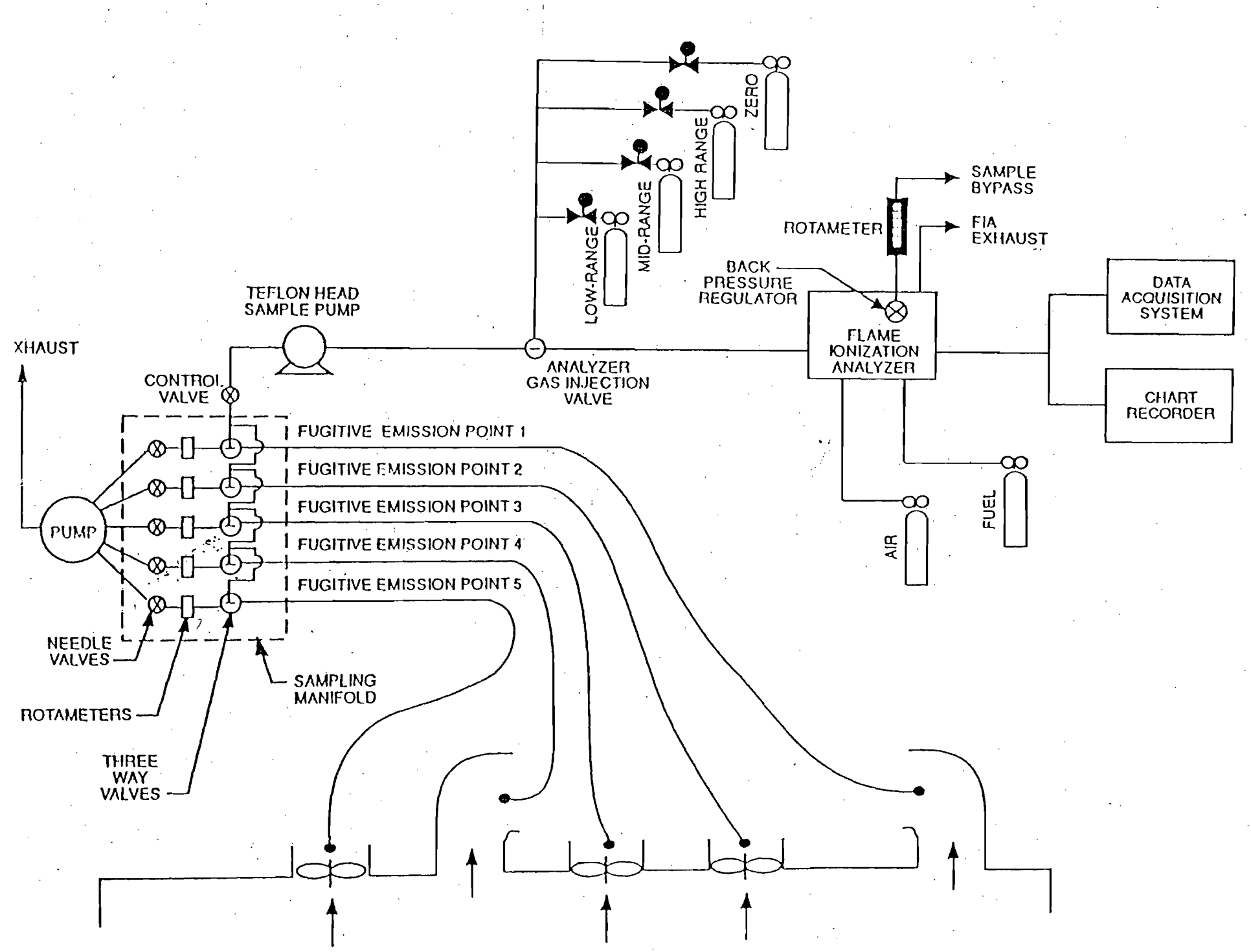


Figure 1. Fugitive emissions measurement system

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.

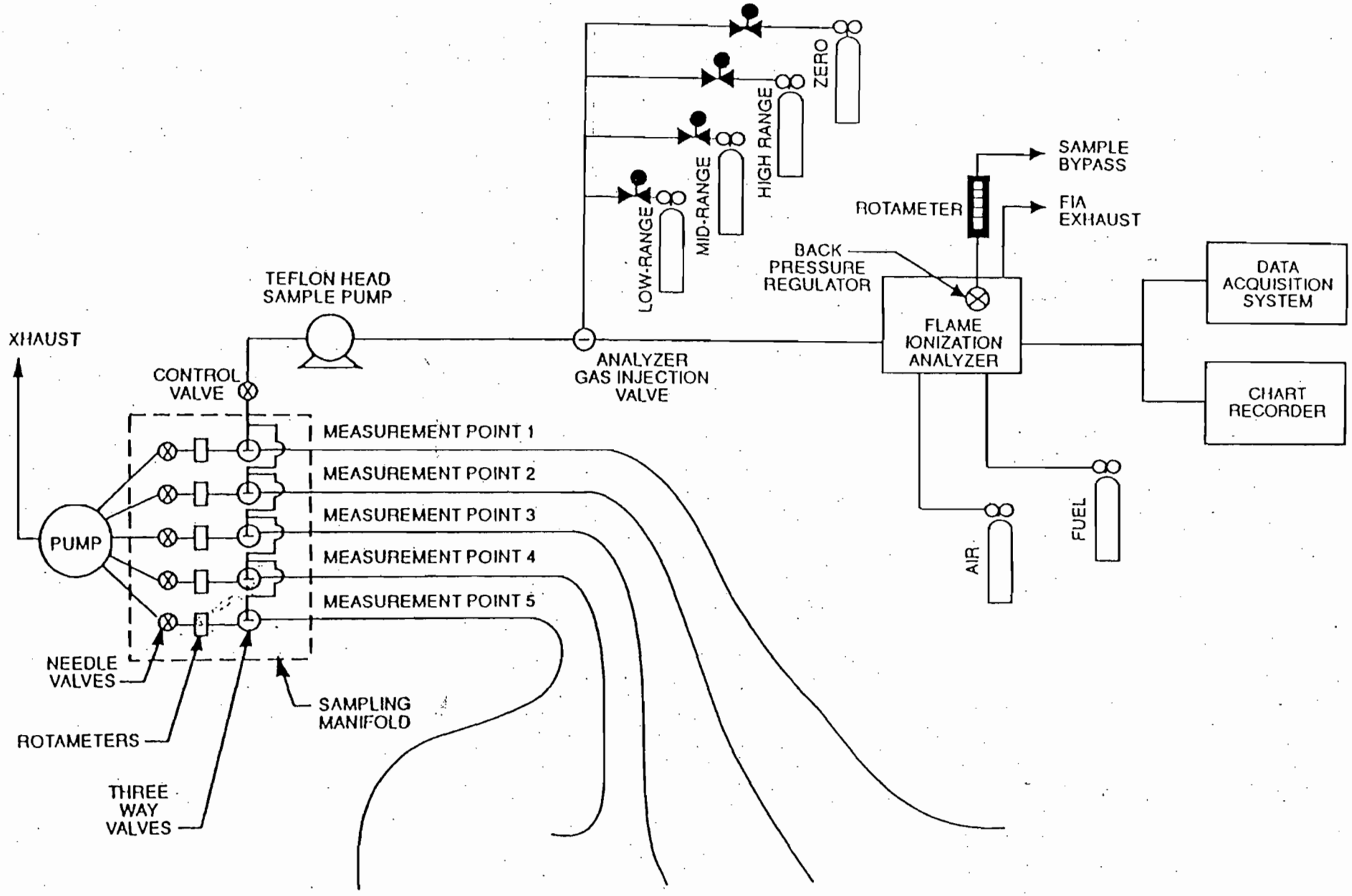


Figure 2. Background measurement system.

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

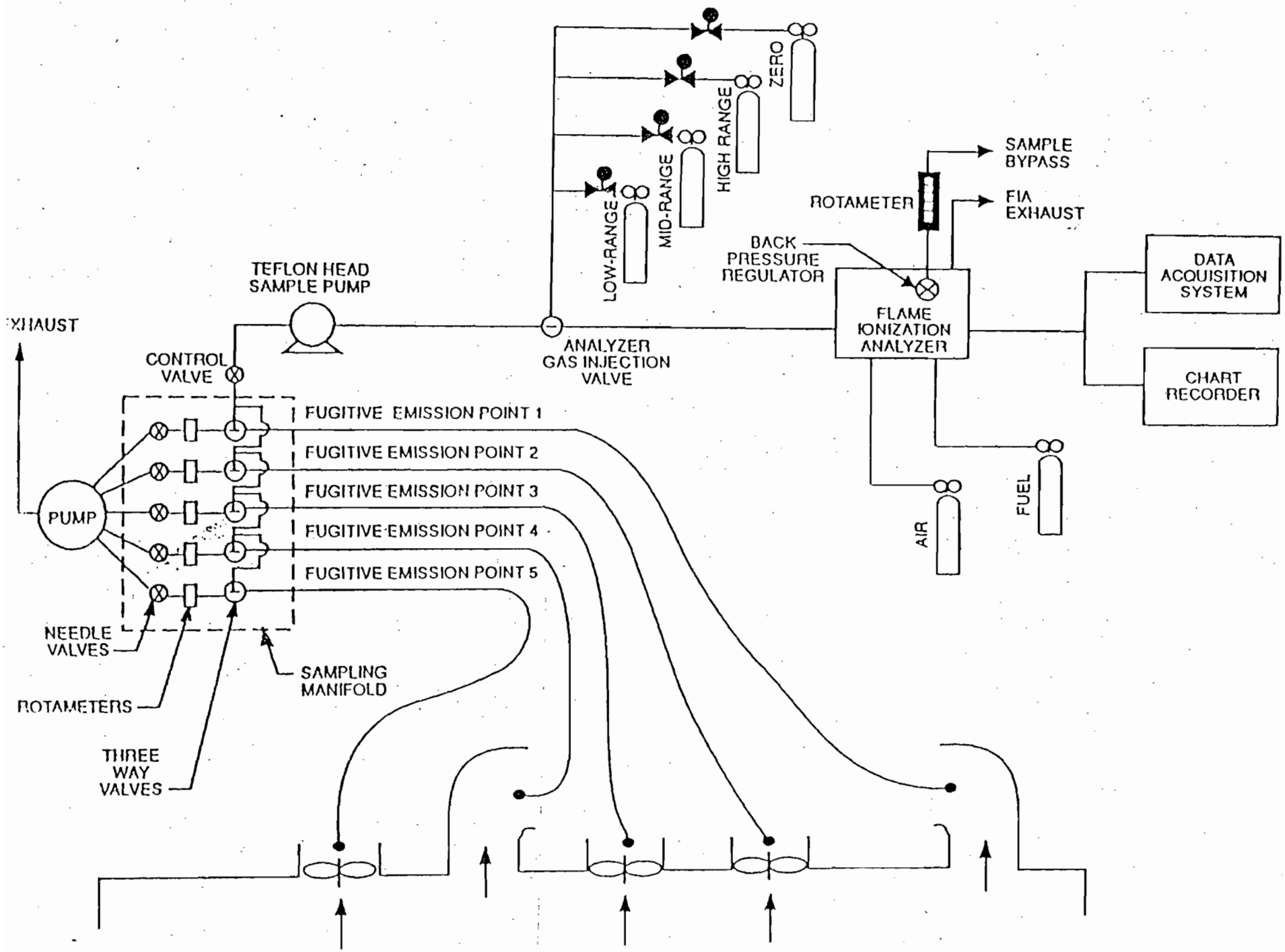


Figure 1. Fugitive emissions measurement system.

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 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.

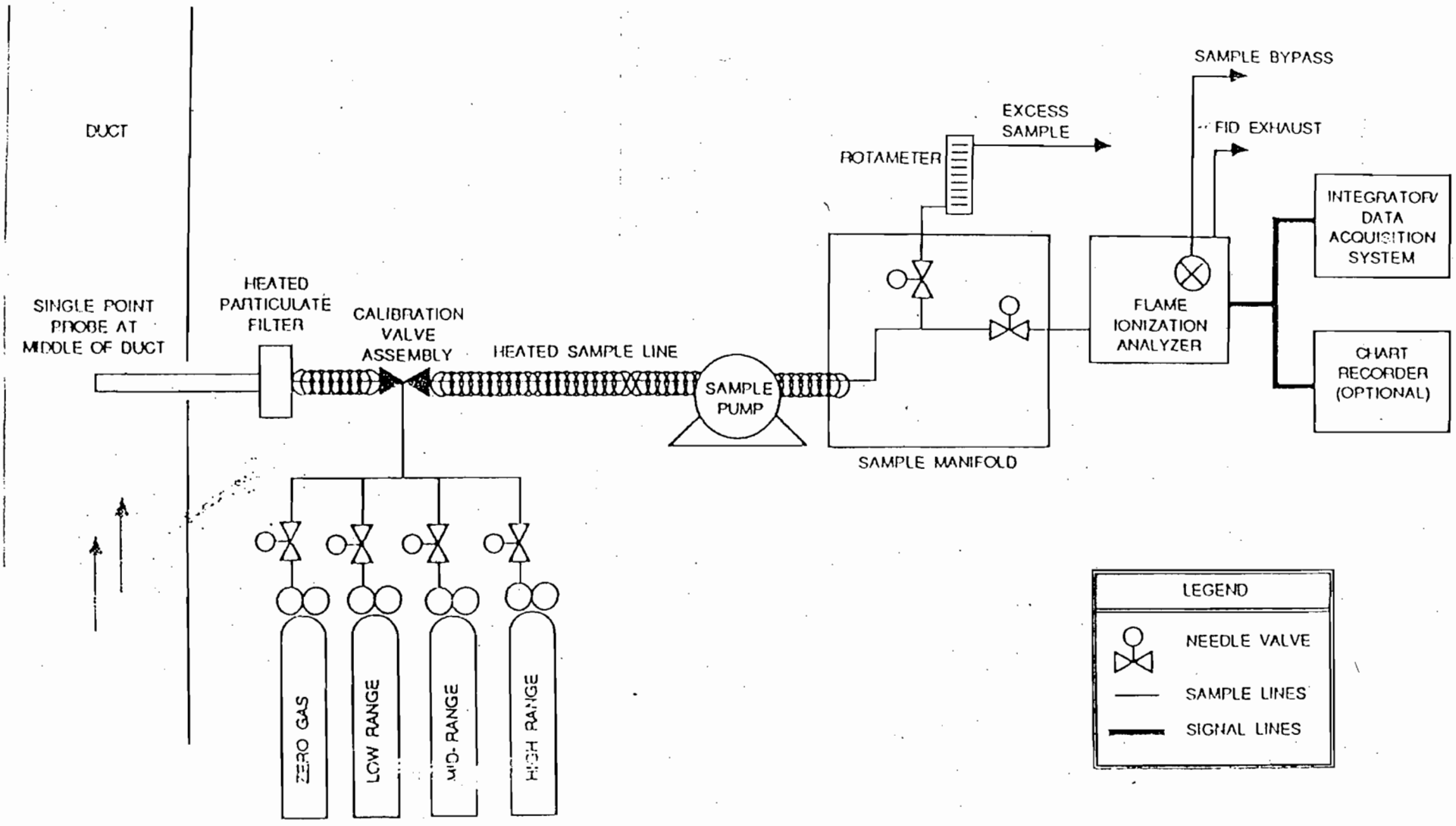


Figure 1. Gas VOC concentration measurement system.

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.

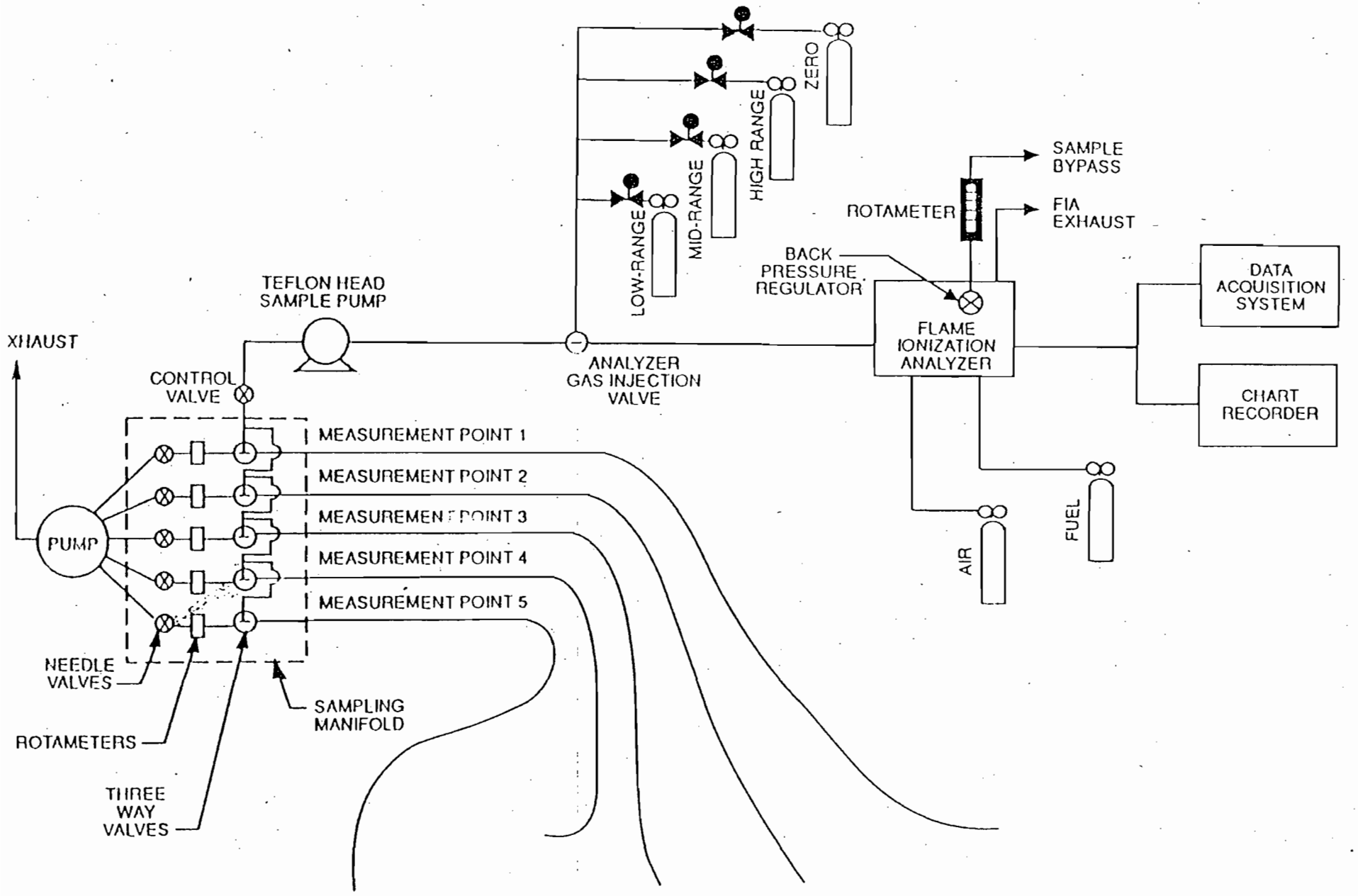


Figure 2. Background measurement system.

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.

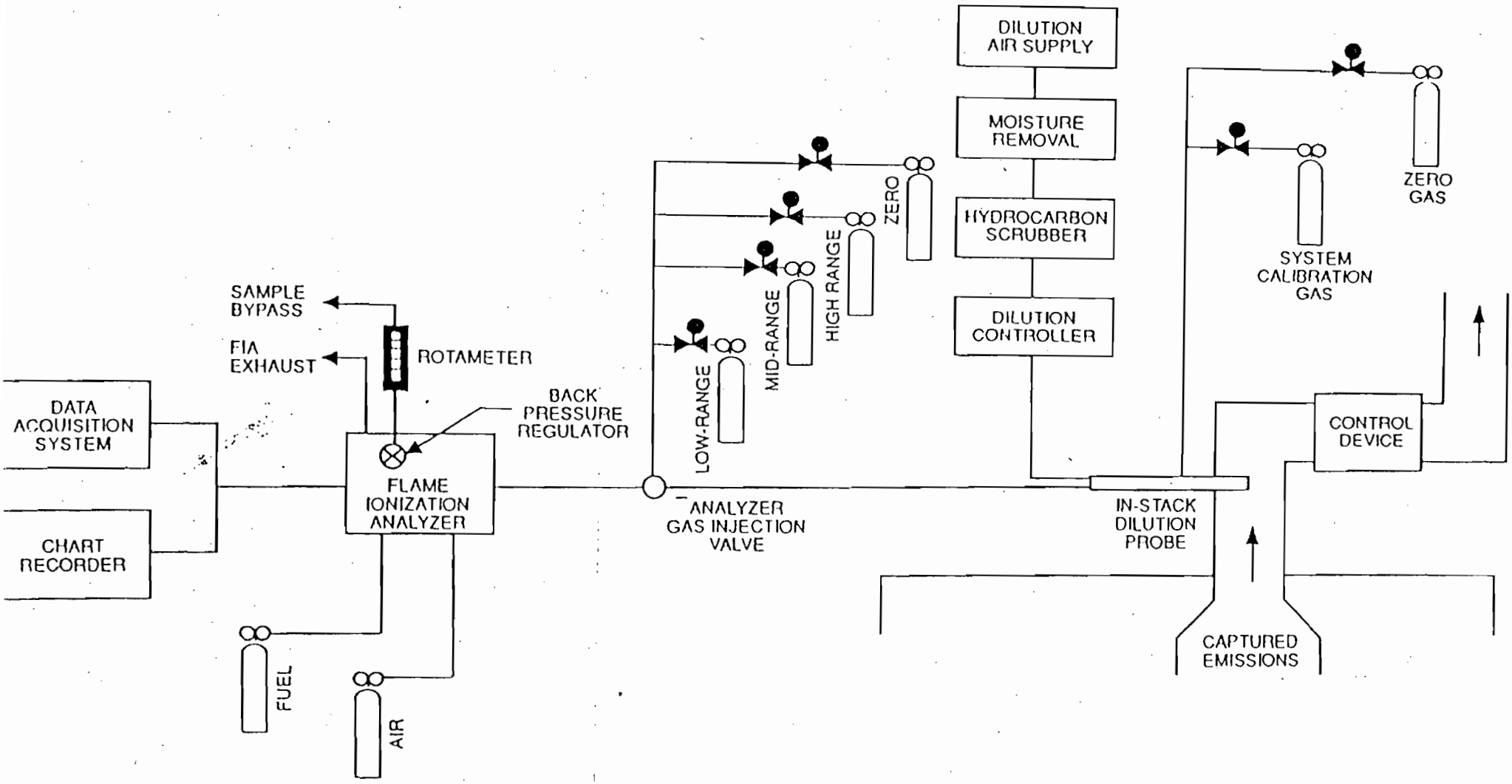


Figure 1. Captured emissions measurement system.

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.

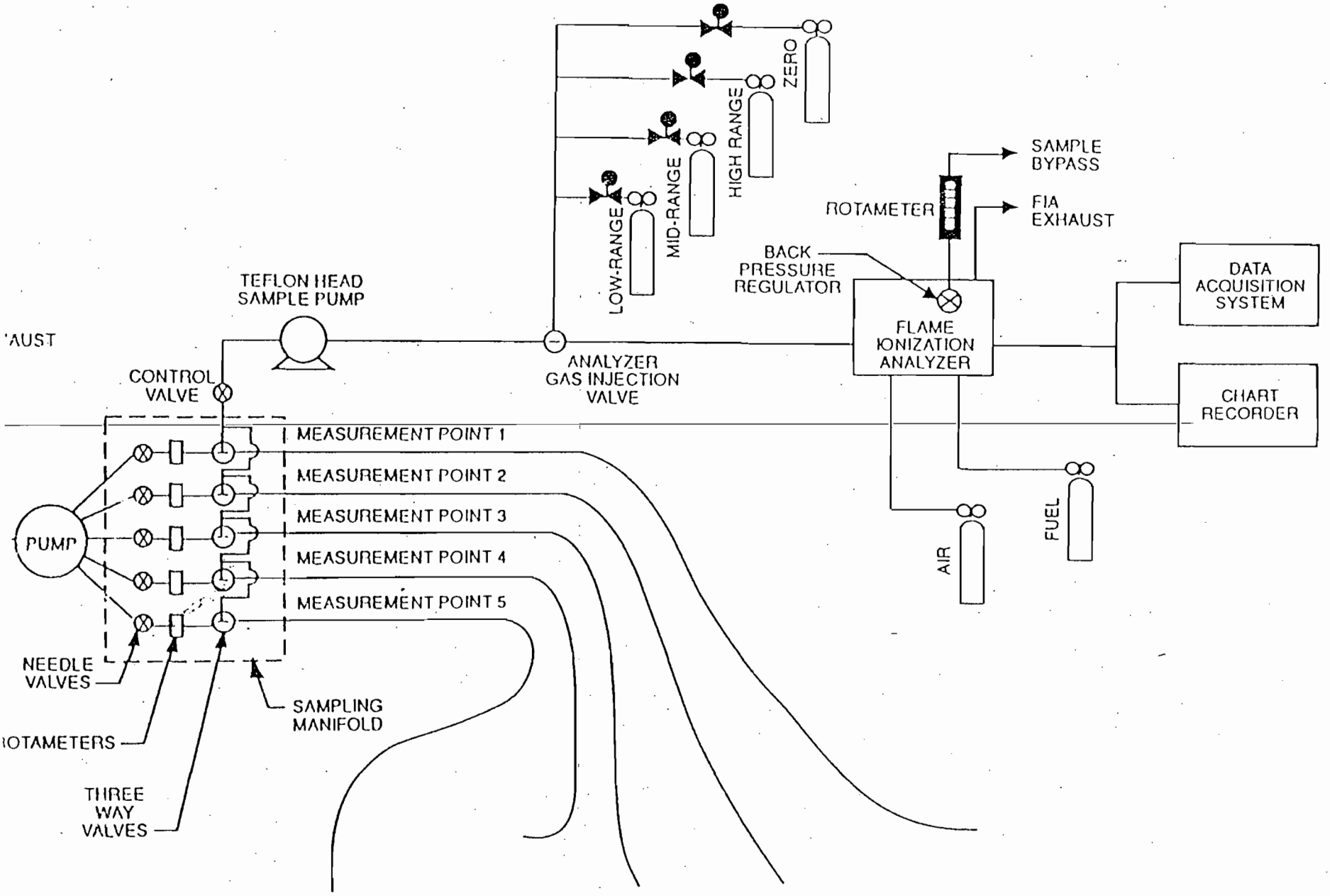


Figure 2. Background measurement system

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.

$$G = \sum_{j=1}^{p} C_{Gj}\, Q_{Gj}\, \theta_C\, K_1 \qquad \text{Eq. 1}$$

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.

$$DF = \frac{C_A}{C_M} \qquad \text{Eq. 3}$$

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.

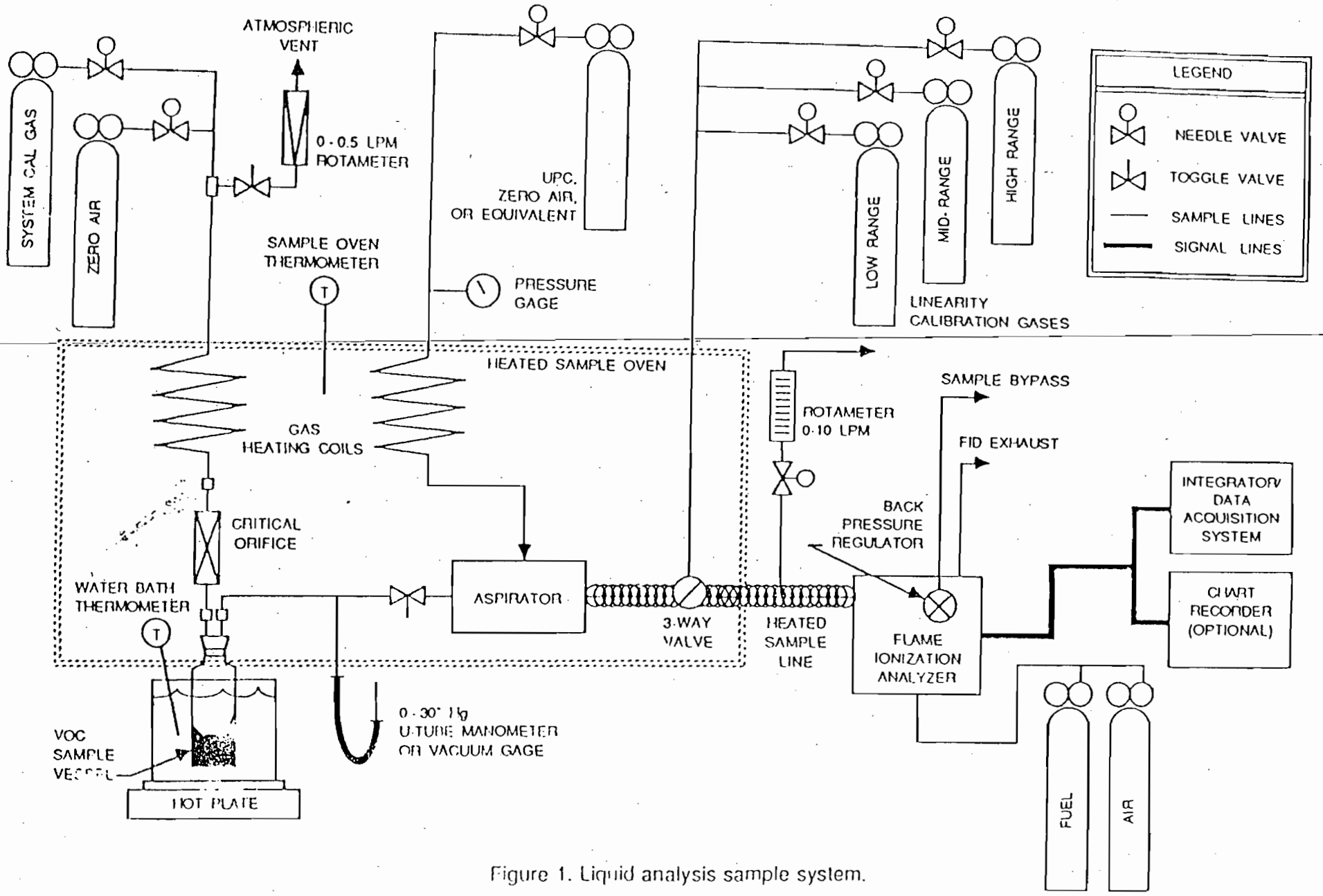


Figure 1. Liquid analysis sample system.

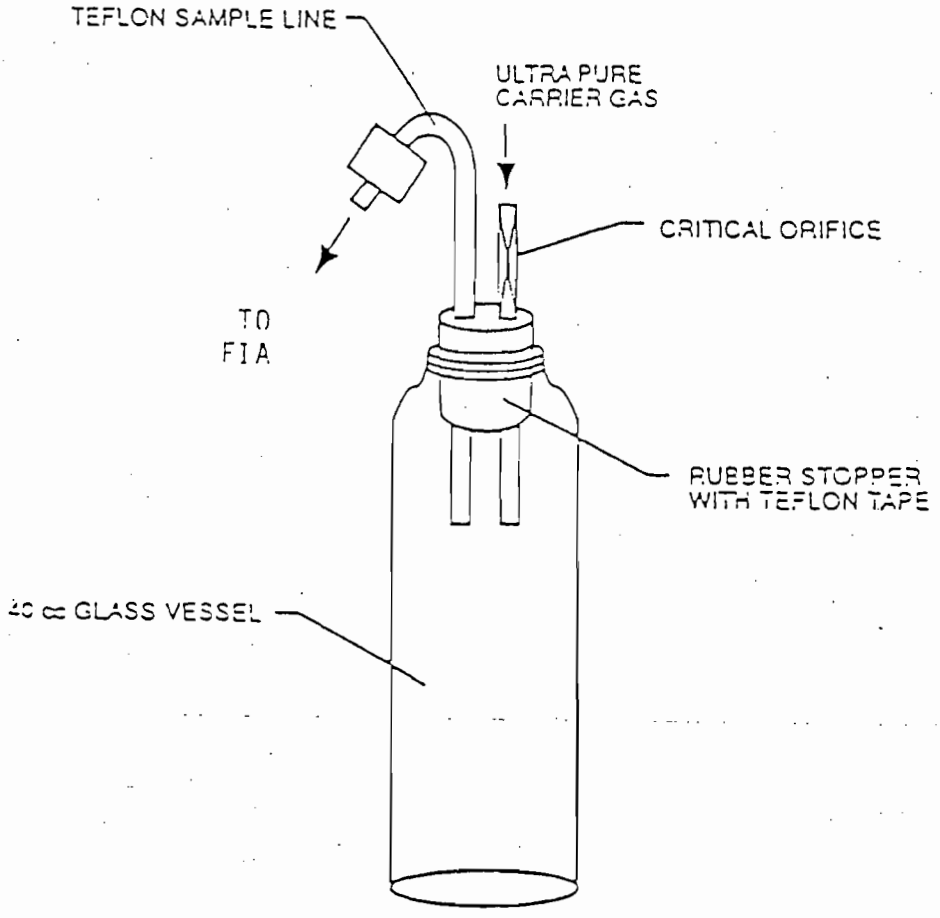


Figure 2. VOC sampling vessel.

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.

$K = 1.830 \times 10^{-9}$ 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.

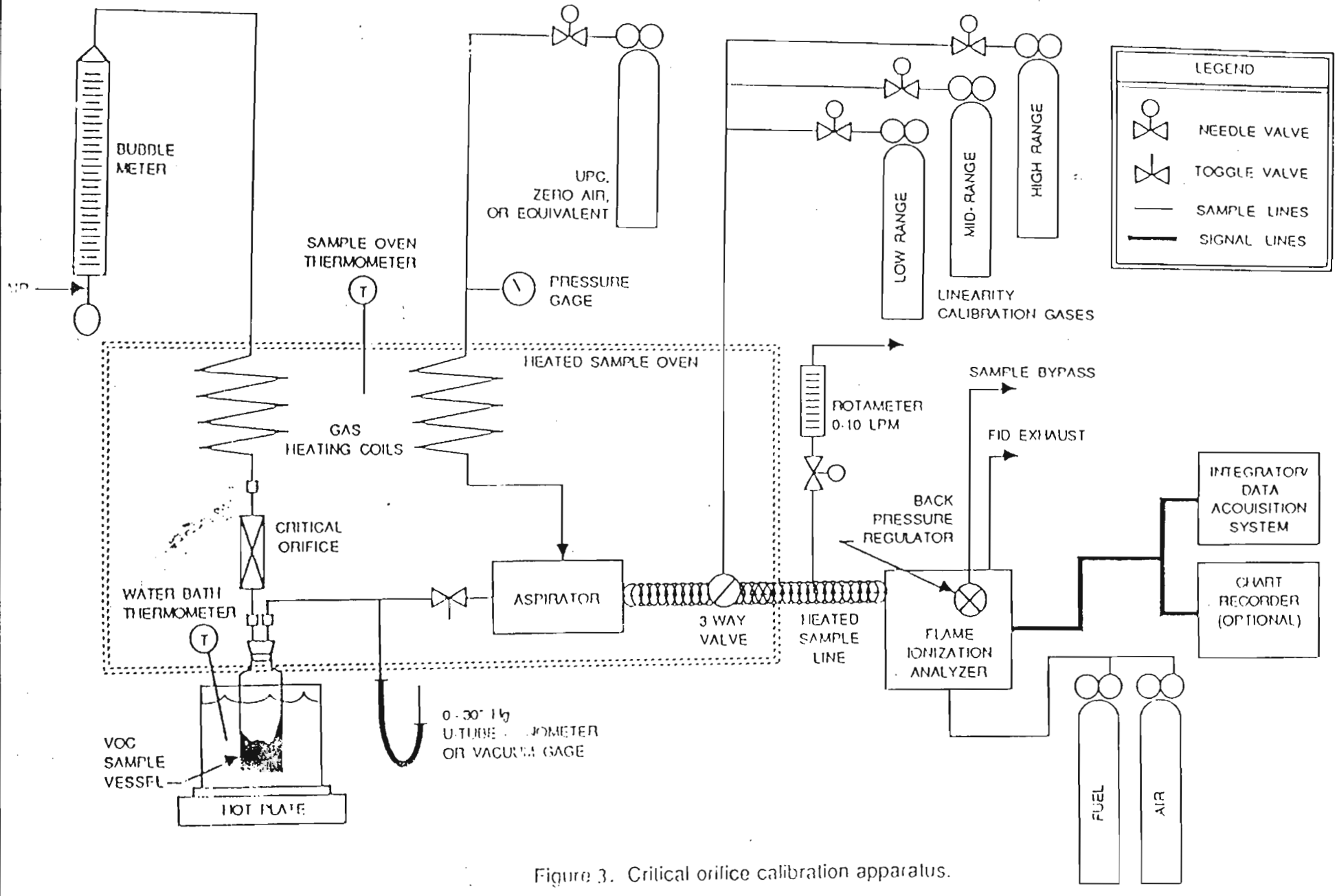


Figure 3. Critical orifice calibration apparatus.

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.

$$RF = \frac{C_S \, q \, \ell_S \, K}{A_S} \qquad \text{Eq. 2}$$

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.

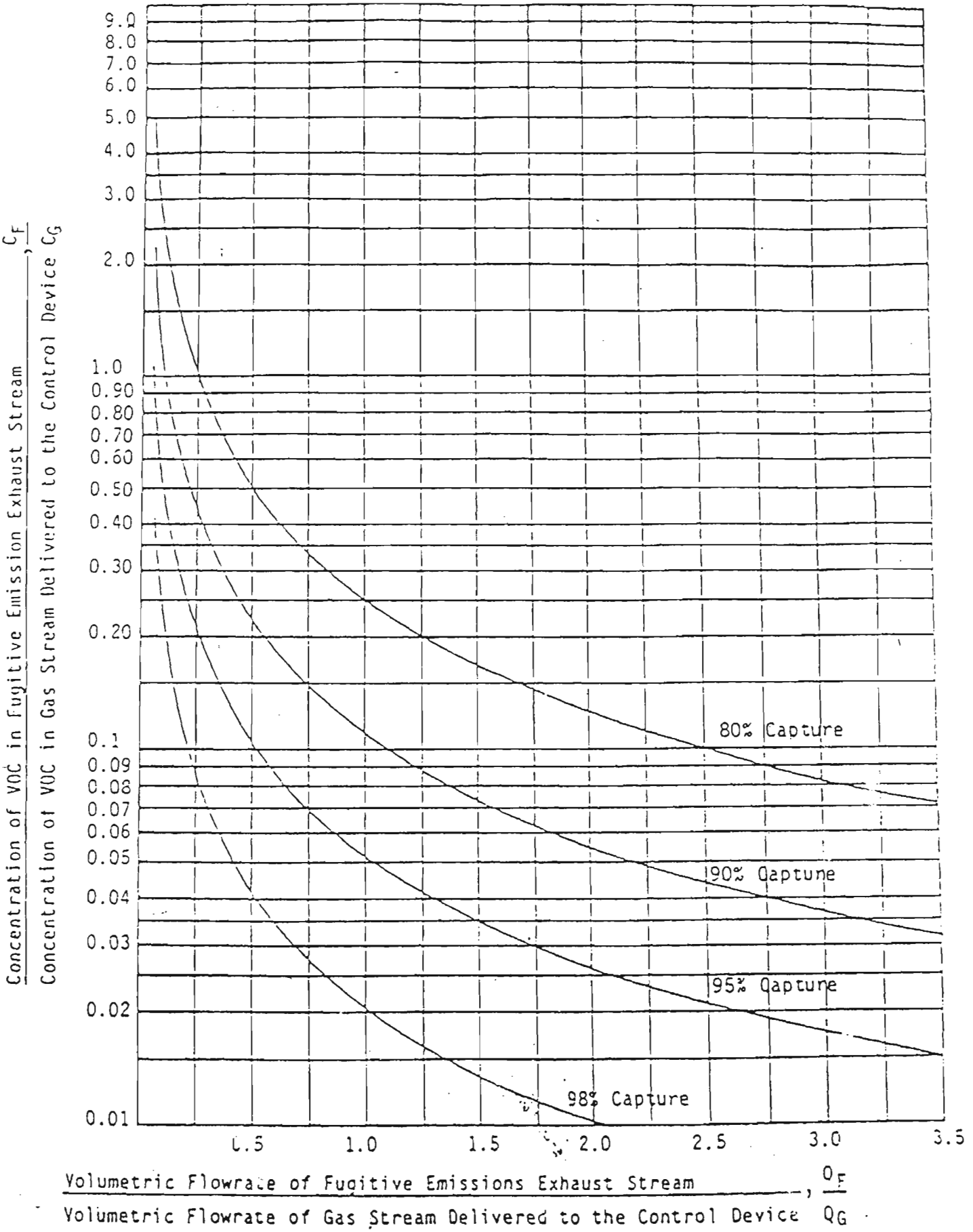


Figure 1. The Crumpler Chart

Attachment 4

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: A. D. Weiss Lithograph Co., Inc.
AC 06-183175

FROM: Bruce Mitchell BM

DATE: November 6, 1990

SUBJ: Calculations

1. Creditable VOC Emissions

   a. Presses #4 and #14

      5.6 #/hr x 39.1% = 2.2 lbs/hr, 9.6 TPY

   b. Presses #2 and #3

      15.6 #/hr x 39.1% = 6.1 lbs/hr, 26.7 TPY

      Total: 36.3 TPY

2. Emissions standard to "lbs VOC/gal of solids" (std. @ 2.9 lbs VOC/gal of coating, less water and exempt solvents; density @ 8.0 lbs/gal)

   a. 2.9 lbs/gal x 1 gal/8.0 lbs = 0.3625 gal VOC/gal coating

   b. 1 - 0.3625 = 0.6375 gal. solids

   c. 1 gal coating/0.6375 gal solids = 1.569 gal coating/gal solids

   d. 2.9 lbs/gal coating x 1.569 = 4.55 lbs VOC/gal solids