STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

Mr. J. M. Murphy
Vice President
Drum Service Company of Florida
Post Office Box 278
Zellwood, Florida 32798

May 15, 1986

Enclosed is Permit Number AC 48-114677 to Drum Service Company of Florida which authorizes the construction of a thermal oxidizer, paint spray booths, and baking ovens at your drum reclamation plant in Zellwood, Orange 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 32301; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this permit is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copies furnished to:

Frank Cross, P.E.
Tom Sawicki
Jeff Pallas

CERTIFICATE OF SERVICE

This is to certify that this NOTICE OF PERMIT and all copies were mailed before the close of business on May 16, 1986 to the listed persons.

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.

Patricia G. Adams — Clerk
May 16, 1986 — Date

Final Determination

Drum Service Company of Florida
Orange County
Zellwood, Florida

Thermal Oxidizer, Paint Spray Booths and Baking Ovens

Permit Number: AC 48-114677

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

May 14, 1986

Final Determination

Drum Service Company of Florida's application for a permit to construct a thermal oxidizer, paint spray booths, and baking ovens at their facility in Zellwood, Orange County, Florida has been reviewed by the Bureau of Air Quality Management. Public Notice of the department's Intent to Issue the permit was published in the Apopka Chief on April 11, 1986.

Copies of the preliminary determination have been available for public inspection at the St. Johns River District office in Orlando and the Bureau of Air Quality Management office in Tallahassee.

Comments on the proposed permit conditions were received and discussed at a meeting on April 3, 1986, with Mr. J. M. Murphy and members of the Bureau of Air Quality Management.

Mr. Murphy requested that Specific Condition No. 1 be changed to allow operation limits of 72 hours per week. Because the permit limits total production at the facility, an increase in permitted hours of operation will not change the total permitted emissions. The permitted hours of operation will be changed to 72 hours per week, 3,744 hours per year.

Mr. Murphy feels that Specific Condition No. 3 is restrictive because it limits the amounts of coatings and solvents used in the coating operations. Drum Service submitted these consumption levels in the application and stated that these were the maximum achievable levels. The evaluation of these levels gave the department the "reasonable assurance" that the permitted allowable emission rates would not be violated. Specific Condition No. 3 will not change.

Specific Condition No. 7 requires demonstration of capture efficiency. Mr. Murphy discussed a problem his facility has in measuring the capture efficiency of the drying ovens. The burners used to heat the drying ovens draw their combustion air from the drying ovens. Because of this, some of the captured volatiles will be destroyed by the burners and any measured capture will be understated. An EPA document (Controlling Pollution from the Manufacturing and Coating of Metal Products, Volume 1, 1977) and a study by the Whittaker Laboratory conservatively show a capture of 40% in the drying oven. The use of this 40% capture efficiency in the drying ovens will still show the sources in compliance with the permitted allowable limits. Due to the special circumstances of these drying ovens, the requirement for measuring capture efficiency will be deleted and an assumed capture efficiency of 40% will be used.

Mr. Murphy requests that the use of reference Method 25 in Specific Condition No. 8 be changed to Method 25A. Specific Condition No. 8 will be changed to read "...using EPA Method 25 or another method approved by the department."

Mr. Murphy expressed concern about operating the spray booths at the maximum permitted operating conditions. This issue was resolved at the meeting and no change will be made to Specific Condition No. 10.

The final action of the department will be to issue the permit with the changes discussed above.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

PERMITTEE:
Drum Service Company of Florida
803 Jones Avenue
Zellwood, Florida 32798

Permit Number: AC48-114677
Expiration Date: June 30, 1987
County: Orange
Latitude/Longitude: 28° 43' 55"N/ 81° 36' 45"W
Project: Thermal Oxidizer, Paint Spray Booths, and Baking Ovens

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

For the construction of three spray lines and a thermal oxidizer (incinerator).

The construction/installation shall be in accordance with the permit application and plans, documents, amendments, and drawings, except as otherwise noted on pages 5-8 of the "Specific Conditions".

Attachments:

1. Application to construct Air Pollution Sources, DER Form 17-1.202(1).

PERMITTEE:
Drum Service Company of Florida

Permit Number: AC48-114677
Expiration Date: June 30, 1987

GENERAL CONDITIONS:

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

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

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

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

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

GENERAL CONDITIONS:

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

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

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

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

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

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

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

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

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

PERMITTEE:
Drum Service Company of Florida

Permit Number: AC48-114677
Expiration Date: June 30, 1987

GENERAL CONDITIONS:

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

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

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

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

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

13. This permit also constitutes:

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

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

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

GENERAL CONDITIONS:

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

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. The time of operation for each spray paint booth shall not exceed 72 hours per week, 3,744 hours per year.

2. Total output of all spray lines shall not exceed 550 drums per hour and 575,000 drums per year.

PERMITTEE:
Drum Service Company of Florida

Permit Number: AC48-114677
Expiration Date: June 30, 1987

SPECIFIC CONDITIONS:

3. Use of coatings and solvents shall not exceed the following gallons per hour and gallons per year.

	Gallons per hour	Gallons per year
Exterior Paints	34.3	35,820
Linings	10.6	12,254
MEK	1.4	1,672
Diacetone	0.9	1,035
Toluol	0.5	535

4. The emissions of VOC shall not exceed the following:

	Maximum lbs/hr	tons/yr
Tight Head Line	55.30	25.13
Openhead Line	106.40	61.77
Lids Line	15.30	8.88
	177.00	95.78

5. Compliance with these limits shall be demonstrated on a 24 hour basis.

6. The emissions of VOC shall equal the amount of VOC, excluding water, delivered to the coating applicator less the amount of VOC destroyed by the incinerator.

PERMITTEE:
Drum Service Company of Florida

Permit Number: AC48-114677
Expiration Date: June 30, 1987

SPECIFIC CONDITIONS:

7. Destruction efficiency of the incinerator shall be demonstrated by determining the inlet and outlet VOC emissions using EPA Method 25 or another method approved by the department. Dividing the outlet concentration by the inlet concentration will provide the penetration. Destruction Efficiency (Percent) = (1 - Penetration)100

8. Determination of the VOC content and the density of the coating as applied shall be demonstrated by EPA Method 24 and as provided by the vendor(s).

9. Compliance tests shall be performed at maximum operating conditions. 95% total destruction of all VOC delivered to the inlet of the incinerator shall be demonstrated by these compliance tests.

10. The Department and EPA shall be notified, in writing, 15 days in advance of the EPA Method 25 and Method 24 compliance tests.

11. The quantity of all coatings and solvents used shall be recorded daily and a report shall be submitted quarterly to DER's St. Johns River District office.

12. The construction shall reasonably conform to the plans and schedule submitted in the application. If the permittee is unable to complete construction on schedule, he must notify the Department in writing 60 days prior to the expiration of the construction permit and submit a new schedule and request for an extension of the construction permit. (Rule 17-4.09 Florida Administrative Code)

13. To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, along with compliance test results and Certificate of Completion, to the Department's St. Johns River District office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit expiration date requires a valid permit to operate. (Rule 17-4.22 and 17-4.23 Florida Administrative Code.)

Permittee:
Drum Service Company of Florida

Permit Number: AC48-114677
Expiration Date: June 30, 1987

SPECIFIC CONDITIONS:

14. If the construction permit expires prior to the permittee requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the permittee must apply for a new permit to construct which can take up to 90 days to process a complete application (Rule 17-4.10 Florida Administrative Code).

Issued this 14 day of May, 1986

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

Victoria J. Tschinkel

VICTORIA J. TSCHINKEL, Secretary

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

RECEIVED
FOR ROUTING TO OTHER THAN THE ADDRESSEE
MAY 14 1986
To: _____ Loctn: _____
To: _____ Loctn: _____
To: _____ Loctn: _____
From: Office of the Secretary Date: _____

TO: Victoria J. Tschinkel

FROM: Clair Fancy

DATE: May 14, 1986

SUBJ: Approval of Attached Air Construction Permit

Attached for your approval and signature is one Air Construction Permit to Drum Service Company of Florida for the construction of a thermal oxidizer, paint spray booths, and baking ovens at their facility in Zellwood, Orange County, Florida.

Day 90, after which the permit would be issued by default, is May 16, 1986.

The Bureau recommends your approval and signature.

CF/pa

Attachment

DER
MAY 15 1986
BAQM

→ P 4/15

Check Sheet

Company Name: Drum Services company
Permit Number:
PSD Number: A C 48-114677
County:
Permit Engineer:
Others involved:

Application:

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

Intent:

- [x] Intent to Issue
- [x] Notice to Public
- [x] Technical Evaluation
- [ ] BACT Determination
- [x] Unsigned Permit

  Attachments:
  - [ ]
  - [ ]
  - [ ]

- [ ] Correspondence with:
  - [ ] EPA
  - [ ] Park Services
  - [ ] County
  - [ ] Other
- [ ] Proof of Publication
- [ ] Petitions - (Related to extensions, hearings, etc.)

Final Determination:

- [x] Final Determination
- [x] Signed Permit
- [ ] BACT Determination

Post Permit Correspondence:

- [x] Extensions
- [x] Amendments/Modifications
- [ ] Response from EPA
- [ ] Response from County
- [ ] Response from Park Services

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addresses

To: _____ Location: _____

To: _____ Location: _____

To: _____ Location: _____

From: _____ Date: _____

Interoffice Memorandum

TO: Carol M. Browner

FROM: Steve Smallwood

DATE: October 17, 1991

SUBJ: Approval of Alternate Standards or Procedures; Order No. ASP 91-G-01, Drum Service of Florida - Thermal Oxidizer and Three Paint Spray Lines

---

Attached for your approval and signature is an order prepared by the Bureau of Air Regulation that will authorize the above mentioned company's use of EPA Method 25A in lieu of EPA Method 25 as the procedure for measuring volailte organic compound emissions at the inlet and the outlet of the thermal oxidizer.

The Region IV Office of the U.S. EPA has recommended approval of the request to use EPA Method 25A. The basis for the recommendation is that the concentration of volatile organic compounds in the thermal oxidizer exhaust are at or below the lower detection limit for EPA Method 25. In this case, EPA Method 25 tests at the outlet of the thermal oxidizer would provide inaccurate results which may cause the compliance status of the source to be questionable.

Pursuant to the recommended order, the Department will retain the ability to impose EPA Method 25.

I recommend your approval and signature.

SS/mh

Attachment

Department of Environmental Regulation

Routing and Transmittal Slip

To: (Name, Office, Location) Patty Adams

1.

2.

3.

4.

Remarks:

From: Mike Harley

Date 11/6/91

Phone 36

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the matter of:	)	
	)	
Drum Service Company of	)	Permit No. AC 48-114677
Florida,	)	AO 48-128916
	)	
Petitioner	)	ASP-91-G-01
	)	

ORDER APPROVING REQUEST
FOR
ALTERNATE TEST PROCEDURES AND REQUIREMENTS

Pursuant to Rule 17-2.700(3), Florida Administrative Code, Drum Service Company of Florida, petitioner, submitted a request for approval to use EPA Method 25A in lieu of EPA Method 25 as the compliance verification procedure for petitioner's thermal oxidizer, permit numbers AC 48-114677 and AO 48-128916, located in Orange County.

Having considered petitioner's written request and all supporting documentation, the following Findings of Fact, Conclusions of Law, and Order are entered.

FINDINGS OF FACT

1. On April 4, 1991, petitioner, specifically requested approval to use EPA Method 25A in lieu of EPA Method 25 for annual testing of volatile organic compound emissions at the inlet and outlet to the thermal oxidizer as specified in permit numbers AC 48-114677 and AO 48-128916.

2. As justification for the use of EPA Method 25A in lieu of EPA Method 25, the petitioner states that the emissions from the affected source may be characterized as follows, "a) Sampling results from 1986, 1987, and 1989 show thermal oxidizer THC concentrations of less than 50 ppm. b) The main organic compounds emitted from the coating process are naptha, mineral spirits, and xylene. The compounds are composed of H and C atoms. c) The type and distribution of organic compounds emitted are relatively consistent. Again, this data

shows that the organic compound emissions mixture consists of naptha, mineral spirits, and xylene the ratio of these compounds is relatively constant. d) Considering the temperature of the thermal oxidizer and the exhaust gas retention time, the generation of large quantities of oxygenated compounds is not expected and the destruction of the original organics will be relatively complete."

3. The applicability section of EPA Method 25 includes criteria for determining when it is appropriate to consider the use of an alternative sampling procedure such as direct measurement with a flame ionization detector (FID) in lieu of EPA Method 25. The applicability section of EPA Method 25 (Subsection 1.1) states, " The minimum detectable limit for the method is 50 ppm as carbon. . . .The FID can be applied to the determination of the mass concentration of the total molecular structure of the organic emissions under any of the following conditions: (1) Where only one compound is known to exist; (2) when the organic compounds consist of only hydrogen and carbon; (3) where the relative percentages of the compounds are known or can be determined, and the FID responses to the compounds are known; (4) where a consistent mixture of the compounds exists before and after emission control and only the relative concentrations are to be assessed; (5) where the FID can be calibrated against mass standards of the compounds emitted (solvent emissions, for example).

4. On July 18, 1991, the Region IV Office of the U.S. EPA provided written comments about Drum Service Company of Florida's request for approval of an alternative procedure. The U. S. EPA states, "We recommend that Drum Service of Florida be allowed to utilize Method 25A to determine the destruction efficiency of their VOC incinerator. . . The basis for this recommendation is that the amount of VOC emitted from the incinerator would provide inaccurate results which may cause the compliance status of the source to be questionable."

CONCLUSIONS OF LAW

1. The Department has jurisdiction to consider petitioner's request pursuant to Section 403.061, Florida Statutes, and Rule 17-2.700(3), Florida Administrative Code.

2. The Department retains the right to require an EPA Method 25 compliance test pursuant to Rule 17-700(2)(b), Florida Administrative Code, if, after investigation it is believed that the use of EPA Method 25 is necessary to determine whether an applicable performance standard is being violated.

3. Petitioner has demonstrated that the proposed alternate compliance verification method would be adequate to verify whether the affected sources are in compliance with the volatile organic compound performance standards.

ORDER

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

1. The relief requested by petitioner is granted;

2. Petitioner shall use EPA Method 25A to measure volatile organic compound emissions at both the inlet and the outlet to the thermal oxidizer;

3. Petitioner shall use EPA Method 3 to measure the concentrations of carbon monoxide, carbon dioxide, and oxygen at the outlet to the thermal oxidizer whenever EPA Method 25A is used to measure volatile organic compound emissions;

4. Petitioner shall conduct the appropriate EPA Method 3 and EPA Method 25A tests using equipment that complies with the provisions of, and the procedures specified in Rule 17-2.700, Florida Administrative Code; and,

5. Petitioner shall conduct the tests and submit the test results to the Manager of the Orange County Environmental Protection Department and the Director of the Department's Central District Office by September 30 of each year.

RIGHT TO APPEAL

Any party to this Order has the right to seek judicial review of the Order 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 the Notice of Agency Action is filed with the Clerk of the Department.

PETITION FOR ADMINISTRATIVE REVIEW

1. A person whose substantial interests are affected by the Department's 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 21 days of receipt of this Order. Petitioner shall mail a copy of the petition to the applicant 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.

2. The petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name address, and the Department File Number;

(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 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 the petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

3. 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 Order. Persons whose substantial interests will be affected by any decision of the Department with regard to the applicant have the right to petition to become a party to the proceeding. The petition must conform with the requirements specified above and be filed (received) within 21 days of receipt of this notice in the Office of General Counsel at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. 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, Florida Statutes, and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, Florida Administrative Code.

4. This Order constitutes final agency action unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petitions is filed within the time specified for filing a petition and conforms to Rule 17-103.070, Florida Administrative Code. Upon timely filing of a petition or a request for an extension of time this Order will not be effective until further Order of the Department.

DONE AND ORDERED this 5th day of November, 1991 in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

CAROL M. BROWNER
Secretary
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Telephone (904) 488-4805

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true copy of the foregoing Order has been mailed, postage prepaid, to J. M. Murphy, President, Drum Service Company of Florida, P. O. Box 278, Zellwood, Florida 32798, this 6th day of November, 1991.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

GARY C. SMALLRIDGE
Assistant General Counsel
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Telephone (904) 488-9730

My Brother Jan.27, 1991

~~my brother~~ said when it was 0 to grease he told me he will where shrot slevss. my brother said when it was 100 to grease he toid me he will where long sievss.

P 408 531 199

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Mr. J.M. Murphy	
Street and No. Drum Srvc. Co. of FL P.O. Box 278	
P.O., State and ZIP Code Zellwood, FL 32798	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return Receipt Showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 07-02-87 AC-48-114677	

PS Form 3800, Feb. 1982

PS Form 3811, July 1983 447-845

DOMESTIC RETURN RECEIPT

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

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

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

2. ☐ Restricted Delivery.

3. Article Addressed to:
Mr. J.M. Murphy
Drum Service Company
Post Office Box 278
Zellwood, Florida 32798

4. Type of Service:	Article Number
☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail	P 408 531 199

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X Deborah A Bowen

7. Date of Delivery
7/6/87

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

File

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

certified

June 29, 1987

Mr. J. M. Murphy
Vice President
Drum Service Company of Florida
Post Office Box 278
Zellwood, Florida 32798

Dear Mr. Murphy:

Re: Drum Service Company of Florida,
Construction Permit No. AC 48-114677

The Department has received Mr. Joseph L. Tessitore's letter of June 16, 1987, on behalf of Drum Service Company of Florida, requesting an extension of the expiration date of the above referenced permit.

This request is acceptable. The expiration date of Construction Permit No. AC 48-114677 will be changed as follows:

From: June 30, 1987
To: December 31, 1987

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

Attachment to be Incorporated

Mr. Joseph L. Tessitore's letter of June 16, 1987.

Sincerely,

Dale Twachtmann

Dale Twachtmann
Secretary

DT/plm

cc: T. Sawicki (DER Orlando)
J. Tessitore, P.E.

attachment

ATTACHMENT

CROSS/TESSITORE & ASSOCIATES, P.A.
4759 S. CONWAY ROAD, SUITE D
ORLANDO, FLORIDA 32812
305/851-1484

June 16, 1987

DER
JUN 19 1987
BAQM

Ms. Teresa Heron
Bureau of Air Quality Management
Florida DER
2600 Blair Stone Road
Tallahassee, Florida 32301

Subject: Drum Service Company of Florida, Construction Permit AC 48-114677

Dear Ms. Heron:

The subject permit application expires on June 30, 1987. In order to conduct another test of the constructed system and to improve coating and solvent consumption measurement, we request an extension of the subject permit to December 31, 1987.

If you have questions and/or desire any additional data, please do not hesitate to call upon me.

Sincerely,

Joseph L. Tessitore

Joseph L. Tessitore, P.E.
Vice President

JLT:kbw
cc: Mike Murphy

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

FOR ROUTING TO OTHER THAN THE ADDRESSEE
To: _____ Loc/In: _____
To: _____ Loc/In: _____
To: _____ Loc/In: _____
From: _____ Date: _____

Office of the Secretary

TO: Dale Twachtmann

THRU: Howard Rhodes

FROM: Clair Fancy

DATE: June 29, 1987

SUBJ: Amendment to Construction Permit No. AC 48-114677
Drum Service Company of Florida

Drum Service Company of Florida has requested an expiration date extension for the referenced construction permit issued May 14, 1986. The Bureau recommends approval.

CHF/BM/s

Attachment

PM
6-16-87
Orlando, FL

File Copy

CROSS/TESSITORE & ASSOCIATES, P.A.
4759 S. CONWAY ROAD, SUITE D
ORLANDO, FLORIDA 32812
305/851-1484

June 16, 1987

DER
JUN 19 1987
BAQM

Ms. Teresa Heron
Bureau of Air Quality Management
Florida DER
2600 Blair Stone Road
Tallahassee, Florida 32301

Subject: Drum Service Company of Florida, Construction Permit AC 48-114677

Dear Ms. Heron:

The subject permit application expires on June 30, 1987. In order to conduct another test of the constructed system and to improve coating and solvent consumption measurement, we request an extension of the subject permit to December 31, 1987.

If you have questions and/or desire any additional data, please do not hesitate to call upon me.

Sincerely,

Joseph L. Tessitore

Joseph L. Tessitore, P.E.
Vice President

JLT:kbw
cc: Mike Murphy
copies:
Teresa Heron } 6/19/87 RRM
Tom Sawicki }

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

FOR ROUTING TO OTHER THAN THE ADDRESSEE

To: _____ Locin: _____
To: _____ Locin: _____
To: _____ Locin: _____
From: _____ Date: _____

TO: Clair Fancy

THRU: John Brown JB

THRU: Jim Pennington JKP

THRU: Syed Arif SA

FROM: Douglas Kiesling JKPBon

DATE: May 26, 1987

SUBJECT: DRUM SERVICE VOLATILE ORGANIC COMPOUNDS (VOC) EMISSIONS

This memo is in response to Drum Service Company of Florida's request of April 28, 1987 for an operating permit. The request is based on the compliance test (conducted December 12, 1986) results indicating actual total emissions for the test were lower than the Construction Permit limits of 177 lbs. per hour. The test was conducted to satisfy the requirements of specific conditions No-3 and 4 of permit No. AC 48-114677.

This memo discusses implications of assuming a capture efficiency of 40 percent in the drying oven and then calculating a potential emission rate from the Tight head, the Open head and the Lids lines. The calculations indicate that the available VOC emissions for capture by the drying oven is 154 lbs. of VOC per hr. If it is assumed that 40 percent of the available emissions are captured by the system, and the feed to the afterburner is 16.84 lbs. VOC/hr., then 61.6 lbs. VOC/hr. would be captured and 44.8 lbs. VOC/hr. are destroyed by the ovens. This yields an oven destruction efficiency of 73 percent. This destruction efficiency, in my opinion, is not realistic for the recirculation systems of VOC bake-off ovens.

Again, based on their data of inlet concentrations to the afterburner and meeting an allowable emission rate of 177 lbs. VOC/hr., the source would have to show a minimum of 32 percent capture efficiency. Even at this low capture efficiency, the ovens need to demonstrate a destruction efficiency of 66 percent to be in compliance. This number, in my opinion, is also too high.

Even though, the source calculates to be in compliance, the question of the degree of certainty of the emission numbers from the three different lines is raised. The emission rates from the three lines, which are not being measured could possibly be higher, putting the source out of compliance.

My recommendation is to measure the capture or destruction efficiencies for the baking ovens, rather than to assume a 40 percent capture efficiency. The calculations are insufficient evidence of compliance.

SA/DK/cl

ATTACHMENT A

VOC EMISSIONS AND ALLOWABLE CALCULATIONS

Revised 2-27-87

DRUM SERVICE COMPANY OF FLORIDA,
PERMIT AC 48-114677
CERTIFICATE OF COMPLETION OF
CONSTRUCTION, SUPPORTING
DOCUMENTATION

April 30, 1987

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

AIR POLLUTION SOURCES
CERTIFICATE OF COMPLETION OF CONSTRUCTION*

PERMIT NO. AC 48-114677 DATE: May 14, 1986

Company Name: Drum Service Co., of Fla County: Orange

Source Identification(s): Thermal Oxidizer, Paint Spray Booths and Baking Ovens

Actual costs of serving pollution control purpose: $ 190,000.

Operating Rates: _____ Design Capacity: 550 Drums/Hour

Expected Normal 288 Drums/Hour During Compliance Test 549.9 Drums/Hour

Date of Compliance Test: 12-12-86 (Attach detailed test report)

Test Results:	Pollutant	Actual Discharge [1]	Allowed Discharge [2]
Tight Head Line	VOC	35.67	55.30/ 51.10
Open Head Line	VOC	114.47	106.40/127.55
Lids Line	VOC	17.29	15.30/ 20.07

Date plant placed in operation: December 1, 1986

This is to certify that, with the exception of deviations noted**, the construction of the project has been completed in accordance with the application to construct and Construction Permit No. AC 48-114677 dated May 14, 1986.

A. Applicant:

J.M. Murphy, President
Name of Person Signing (Type)

Signature of Owner or Authorized Representative and Title

Date: 12-23-86 Telephone: 305-889-2581

B. Professional Engineer:

Joseph L. Tessitore, P.E.
Name of Person Signing (Type)

Joseph L. Tessitore
Signature of Professional Engineer

Cross/Tessitore & Assoc., P.A.
Company Name

Florida Registration No. 23374

Date: 2-27-87

(Seal)

4759 South Conway Rd., Suite D
Mailing Address

Orlando, FL 32812
Telephone Number

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

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

Footnotes: (See attached Sheet)

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
AIR POLLUTION SOURCES
CERTIFICATE OF COMPLETION OF CONSTRUCTION

1) See Attachment A for emissions and Attachment E for VOC destruction efficiency.

2) The original allowable VOC emissions as stated in AC 48-114677 dated May 14, 1986, are based on estimated average value of paint consumption and paint VOC content. The actual allowables shown are based on actual paint and liner consumption during the test and the RACT criteria of 17-2.650 (1) (f) 14.6. (A) and (B).

MAXIMUM HOURLY VOC EMISSIONS COMPLIANCE SUMMARY*

(Test Results 12/12/86)
(Revised 2/24/87)

Line	Source	Actual (lb/hr)	Allowable[1] (lb/hr)	Allowable[2] (lb/hr)
Tight Head Drum Line	A1	35.65		
	B1	0.02		
	Total	35.67	55.30	51.10
Open Head Drum Line	A2	72.52		
	A3	41.93		
	B2	0.02		
	Total	114.47	106.40	127.55
Lids Line	A4	10.437		
	A5	6.847		
	B3	0.008		
	Total	17.29	15.30	20.07
Facility Total		170.43	177.00	198.72

* Drum Production Rate = 550 drums/hour

[1] Allowable based on average paint consumption figures in permit application

[2] Allowable based on actual paint consumption during test period and 17-2.650(1)(f)14.b.(A) and (B)
4.3 lbs VOC per gallon of clear coating
3.5 lbs VOC per gallon of other coatings

ACTUAL VOC EMMISION POINT SUMMARY

MAXIMUM HOURLY (lbs/hr)*

(Revised 2-24-87)

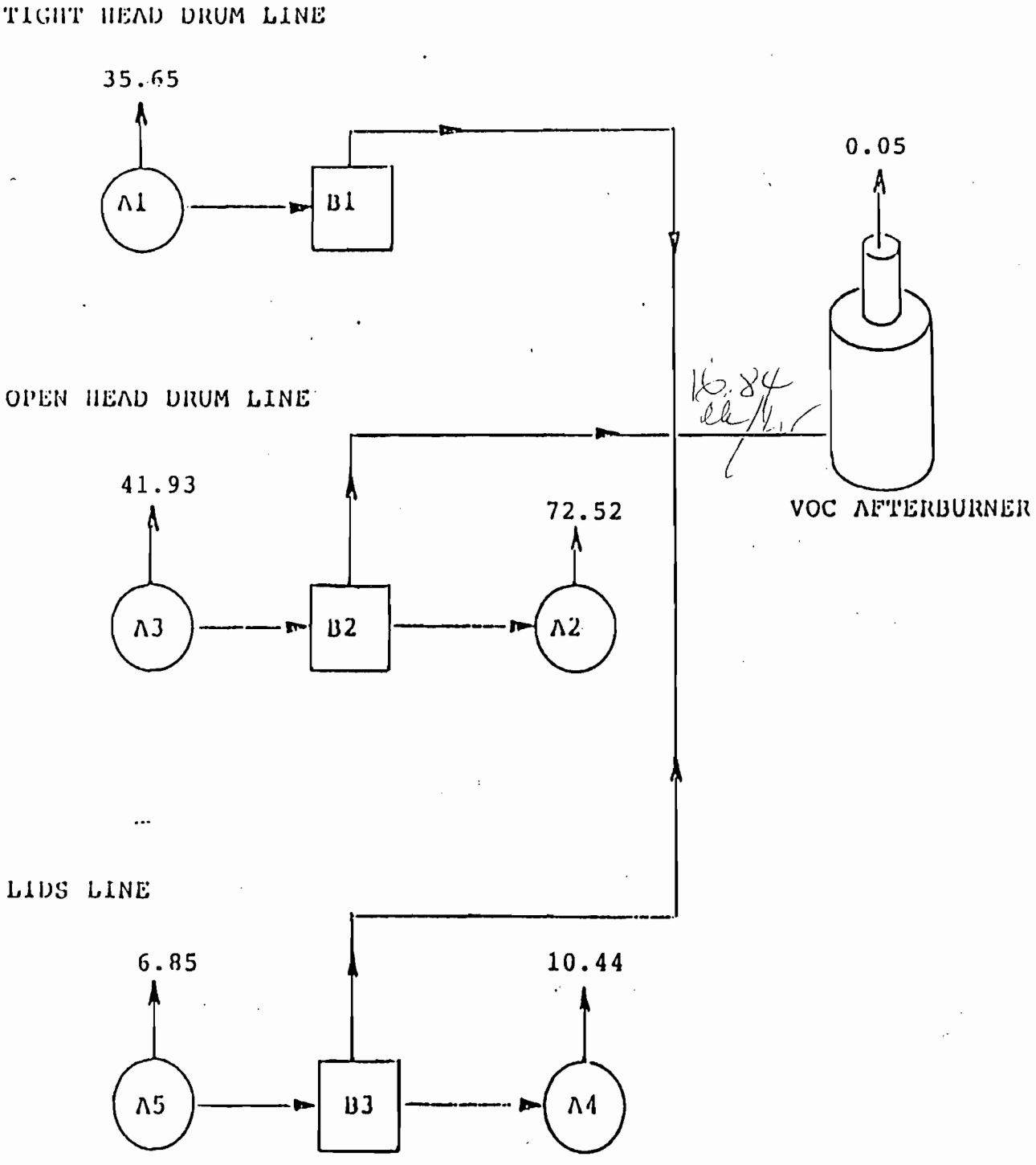


FIGURE 1

A- PAINT SPRAY BOOTH
B- PAINT BAKE OVEN

*250 Tight head drums/hr
*300 Open head drums/hr
for test of 12-12-86

1.0 PAINT CONSUMPTION SUMMARY

	PAINT DESCRIPTION	CONSUMPTION (gals) RUNS 1	2	3
1.1	Tight Head Drum Line (A1/B1)			
	Valspar White (210-W-24)	3.01	3.80	1.20
	Southern Coatings Black (64-4097)	12.99	11.20	0.00
	Dozier & Gay Blue (70-171)	0.00	2.80	8.80
1.2	Open Head Drum Line (A3/A2/B2)			
	A3 (Interior Spray Booth)			
	Valspar Liner (285-R-9)	16.80	15.20	12.80
	Xylene (Shell)	<-------2.50------>		
	A2 (Exterior Spray Booth)			
	Southern Coatings Black (64-4097)	<------13.91------>		
	Dozier & Gay Blue (70-171)	<------37.31------>		
1.3	Lids Line (A4/A5/B3)			
	A5 (Lids Interior Spray Booth)			
	Valspar Liner (285-R-9)	2.40	4.40	3.20
	A4 (Lids Exterior Spray Booth)			
	Southern Coatings Black (64-4097)	<-------2.00------>		
	Dozier & Gay Blue (70-171)	<-------5.37------>		

2.0 PAINT CHARACTERISTICS SUMMARY

	Density (lb/gal)	VOC (lb/gal)
Valspar White (210-W-24)	9.31	3.89
Southern Coatings Black (64-4097)	7.40	4.00
Dozier & Gay Blue (70-171)	8.19	4.34
Valspar Liner (285-R-9)	8.20	4.28
Xylene (Shell)	7.16	7.16

3.0 EMISSION CALCULATIONS (MAXIMUM HOURLY)

3.1 Tight Head Drum Line (A1/B1)

Emission Points	Assumptions
A1 (Exterior Spray Booth)	60% of VOC's captured with no control and 40% of VOC's to B1 (Exterior Bake Oven)
B1 (Exterior Bake Oven)	40% of VOC's captured from A1 and controlled by thermal oxidizer

A1 Emissions (Exterior Spray Booth)

Let P_W = White Paint Consumed

= 3.01 + 3.80 + 1.20

= 8.01 gals

V_W = White Paint VOC

= 3.89 lb/gal

P_{BK} = Black Paint Consumed

= 12.99 + 11.20

= 24.19 gals

V_{BK} = Black Paint VOC

= 4.00 lb/gal

P_{BL} = Blue Paint Consumed

= 2.80 + 8.80

= 11.60 gals

V_{BL} = Blue Paint VOC

= 4.34 lb/gal

CE_B = Capture Efficiency of Spray Booth

= 0.60

Using the above, the emissions from A1 are calculated as follows:

$A1 = ((P_W \times V_W) + (P_{SK} \times V_{SK}) + (P_{SL} \times V_{SL})) \times CE_B$

= ((8.01 gals x 3.89 lb/gal)

+ (24.19 gals x 4.00 lb/gal)

+ (11.60 gals x 4.34 lb/gal)) x 0.60

= 106.96 lbs

B1 Emissions (Exterior Bake Oven for Spray Booth A1)

Let A1 = ~~Uncontrolled~~ VOC's from Exterior Spray Booth A1

= ~~106.96 lbs~~ 71.31 lbs. B-1

CE_B = Capture Efficiency of Bake Oven

= 0.40

R_{TB} = Remaining Fraction of VOC's Due to Thermal Oxidizer

= 1 - ~~0.9988~~ .9994 ← and oven distribution

= ~~0.0012~~ .0006

Using the above, the emissions from B1 are calculated as follows:

$B1 = A1 \times CE_B \times R_{TB}$

178.3

= 106.96 lbs x 0.40 x 0.0012

0.093

= 0.051 lbs ~~0.086~~ lbs.

Tight Head Drum Line Total Emissions for Test

Total Emissions for Test = A1 + B1

.086

= 106.96 + 0.051

= 107.011 lbs

$$\text{Average Hourly Emissions} = \frac{107.011 \text{ lbs}}{3 \text{ hours}} = 35.67 \text{ lb/hr}$$

~~35.68~~

35.66

3.2 Open Head Drum Line (A3/B2/A2)

Emission Points	Assumptions
A3 (Interior Liner Spray Booth)	60% of VOC's ~~captured~~ emitted with no control and 40% of VOC's to B2 (Interior Bake Oven)
B2 (Interior Bake Oven)	40% of VOC's captured from A3 and controlled by thermal oxidizer
A2 (Exterior Paint Spray Booth)	No control and drums from A2 are air dried

A3 Emissions (Interior Liner Spray Booth)

Let L = Interior Liner Consumed

= 16.80 + 15.20 + 12.80

= 44.80 gals

V_L = Liner VOC

= 4.28 lb/gal

X = Xylene Consumed

= 2.50 gals

V_x = Xylene VOC

= 7.16 lb/gal

CE_B = Capture Efficiency of Spray Booth

= 0.60

Using the above, the emissions from A3 are calculated as follows:

$A3 = ((L \times V_L) + (X \times V_x)) \times CE_B$

= ((44.80 gals x 4.28 lb/gal)

+ (2.50 gal x 7.16 lb/gal)) x 0.60

= 125.79 lbs

B2 Emissions (Interior Bake Oven for Spray Booth A3)

Let A3 = ~~Uncontrolled~~ VOC's from Exterior Spray Booth A3

= ~~125.79 lbs~~ 83.86 lbs. B-2

CE_B = Capture Efficiency of Bake Oven

= 0.40

R_{TB} = Remaining Fraction of VOC's Due to Thermal Oxidizer

= 1 - 0.9988

= 0.0012

Using the above, the emissions from B1 are calculated as follows:

B2 = A3 x CE_B x R_{TB}

209.65

= 125.79 lbs x 0.40 x 0.0012

0.05

= 0.06 lbs ~~0.10~~ lbs.

A2 Emissions (Exterior Paint Spray Booth)

Let P_{BK} = Black Paint Consumed

= 13.91 gals

V_{BK} = Black Paint VOC

= 4.00 lb/gal

P_{BL} = Blue Paint Consumed

= 37.31 gals

V_{BL} = Blue Paint VOC

= 4.34 lb/gal

Using the above, the emissions from A2 are calculated as follows:

A2 = (P_{BK} x V_{BK}) + (P_{BL} x V_{BL})

= (13.91 gals x 4.00 lb/gal)

+ (37.31 gals x 4.34 lb/gal)

= 217.57 lbs

Open Head Drum Line Total Emissions for Test

Total Emissions for Test = A3 + B2 + A2

= 125.79 + ~~0.06~~ 0.10 + 217.57

= 343.42 lbs

Average Hourly Emissions = $\frac{343.42 \text{ lbs}}{3 \text{ hours}}$ = 114.47 lb/hr

114.49

3.3 Lids Line (A5/A4/B3)

Emission Points	Assumptions
A5 (Lids Interior Liner Spray Booth)	60% of VOC's ~~captured~~ emitted with no control and 40% of VOC's to B2 (Lids Bake Oven)
A4 (Lids Exterior Spray Booth)	No control and lids from A4 are air dried
B3 (Lids Bake Oven)	40% of VOC's captured from A5 and A4 and controlled by thermal oxidizer

A5 Emissions (Lids Interior Spray Booth)

Let L = Interior Liner Consumed

= 2.40 + 4.40 + 3.20

= 10.00 gals

V_L = Liner VOC

= 4.28 lb/gal

CE_B = Capture Efficiency of Spray Booth

= 0.60

EX = Excess Lids Correction Factor

= 0.80

Using the above, the emissions from A5 are calculated as follows:

$A5 = (L \times V_L) \times CE_B \times EX$

$= (10.00 \text{ gals} \times 4.28 \text{ lb/gal}) \times 0.60 \times 0.80$

$= 20.54 \text{ lbs}$

A4 Emissions (Lids Exterior Spray Booth)

Let P_{BK} = Black Paint Consumed

$= 2.00 \text{ gals}$

V_{BK} = Black Paint VOC

$= 4.00 \text{ lb/gal}$

P_{BL} = Blue Paint Consumed

$= 5.37 \text{ gals}$

V_{BL} = Blue Paint VOC

$= 4.34 \text{ lb/gal}$

Using the above, the emissions from A4 are calculated as follows:

$A4 = (P_{BK} \times V_{BK}) + (P_{BL} \times V_{BL})$

$= (2.00 \text{ gals} \times 4.00 \text{ lb/gal})$

$+ (5.37 \text{ gals} \times 4.34 \text{ lb/gal})$

$= 31.31 \text{ lbs}$

B3 Emissions (Lids Bake Oven)

Let A5 = Uncontrolled VOC's from Exterior Spray Booth A5

$= 20.54 \text{ lbs}$ 34.23 lbs

A4 = Uncontrolled VOC's from Exterior Spray Booth A4

$= 31.31 \text{ lbs}$ 52.18 lbs

B-3

CE_o = Capture Efficiency of Bake Oven

= 0.40

R_{To} = Remaining Fraction of VOC's Due to Thermal Oxidizer

= 1 - 0.9988

= 0.0012

Using the above, the emissions from B1 are calculated as follows:

$B3 = (A5 + A4) \times CE_o \times R_{To}$

= (20.54 lbs + 31.31 lbs) x 0.40 x 0.0012

= 0.025 lbs

Lids Line Total Emissions for Test

Total Emissions for Test = A5 + A4 + B3

= 20.54 + 31.31 + 0.025

= 51.875 lbs

$$\text{Average Hourly Emissions} = \frac{51.875 \text{ lbs}}{3 \text{ hours}} = 17.29 \text{ lb/hr}$$

4.0 CALCULATION OF ALLOWABLE VOC'S BASED ON ACTUAL COATING CONSUMPTION

4.1 Tight Head Drum Line (A1/B1)

Let C = Total Coating Consumed

= 43.80 gals

V_{ca} = Coating Allowable VOC

= 3.50 lb/gal

$\text{Allowable VOC's} = C \times V_{ca}$

= 43.80 gals x 3.50 lb/gal

= 153.30 lbs

$$\text{Allowable Hourly Emission} = \frac{153.30 \text{ lbs}}{3 \text{ hours}} = 51.10 \text{ lb/hr}$$

4.2 Open Head Drum Line (A3/B2/A2)

Let L = Total Liner Consumed

= 47.30 gals

V_{LA} = Liner Allowable VOC

= 4.30 lb/gal

C = Total Coating Consumed

= 51.22 gals

V_{CA} = Coating Allowable VOC

= 3.50 lb/gal

Allowable VOC's = $(L \times V_{LA}) + (C \times V_{CA})$

= (47.30 gals x 4.30 lb/gal)

+ (51.22 gals x 3.50 lb/gal)

= 382.66 lbs

$$\text{Allowable Hourly Emission} = \frac{382.66 \text{ lbs}}{3 \text{ hours}} = 127.55 \text{ lb/hr}$$

4.3 Lids Line (A5/A4/B3)

Let L = Total Liner Consumed

= 10.00 gals

V_{LA} = Liner Allowable VOC

= 4.30 lb/gal

EX = Excess Lids Correction Factor

= 0.80

C = Total Coating Consumed

= 7.37 gals

V_{CA} = Coating Allowable VOC

= 3.50 lb/gal

Allowable VOC's = (L x EX x $V_{L,A}$) + (C x $V_{C,A}$)

= (10.00 gals x 0.80 x 4.30 lb/gal)

+ (7.37 gals x 3.50 lb/gal)

= 60.20 lbs

$$\text{Allowable Hourly Emission} = \frac{60.20 \text{ lbs}}{3 \text{ hours}} = 20.07 \text{ lb/hr}$$

CALCULATION OF A2 AND A4 PAINT CONSUMPTION

Paint consumption for paint booths A2 and A4 was measured together, therfore, the ratio of areas painted between A2 and A4 can be used to determine the paint consumption distribution. Booth A2 sprays the exterior portion of the drum (without the lid), while A4 sprays the exterior portion of the lid.

Open Head Drum Exterior Surface Area = 20.95 ft²

Drum Lid Exterior Surface Area = 3.01 ft²

Total Drum Exterior Surface Area = 23.96 ft²

Also, as noted in J.M. Murphy's letter of January 27, 1987, 375 lids were painted instead of 300. Therfore, the paint consumption must be adjusted to reflect a production rate of 300 open head drums per hour for compliance.

A2 Paint Consumption (Exterior Surface without Lid)

Correction Factor =

$$\frac{300 \text{ drums} \times 20.95 \text{ ft}^2/\text{drum}}{(300 \text{ drums})(20.95 \text{ ft}^2/\text{drum}) + (375 \text{ lids})(3.01 \text{ ft}^2/\text{lid})}$$

$$= \frac{6,285 \text{ ft}^2}{7,414 \text{ ft}^2} = 0.848$$

Total Black Paint Consumed = 16.40 gals

Total Blue Paint Consumed = 4.80 + 20.40 + 18.80

= 44.00 gals

A2 Black Paint Consumption = (0.848)(16.40 gals)

= 13.91 gals

A2 Blue Paint Consumption = (0.848)(44.00 gals)

= 37.31 gals

A4 Paint Consumption (Exterior Surface of Lid)

Correction Factor =

$$\frac{300 \text{ lids} \times 3.01 \text{ ft}^2/\text{lid}}{(300 \text{ drums})(20.95 \text{ ft}^2/\text{drum}) + (375 \text{ lids})(3.01 \text{ ft}^2/\text{lid})}$$

$$= \frac{903 \text{ ft}^2}{7,414 \text{ ft}^2} = 0.122$$

Total Black Paint Consumed = 16.40 gals

Total Blue Paint Consumed = 4.80 + 20.40 + 18.80

= 44.00 gals

A4 Black Paint Consumption = (0.122)(16.40 gals)

= 2.00 gals

A4 Blue Paint Consumption = (0.122)(44.00 gals)

= 5.37 gals

Calculation of Paint Consumption for A5

Since 375 lids were painted in A5 (the Lids Interior Spray Booth) and 300 lids/hour is required for compliance, resulting lids interior paint consumption must be adjusted by the factor 300/375 or 0.80.

ATTACHMENT B

COATING CONSUMPTION AND DRUM PRODUCTION DATA SHEETS

Revised 2-27-87

DRUM SERVICE CO. OF FLORIDA

POST OFFICE BOX 278
ZELLWOOD, FLORIDA 32798
PHONE AREA 305 — 889-2581

January 27, 1987

Mr. Joseph Tessitore
Cross/Tessitore & Associates
4759 S. Conway Road
Orlando, FL 32812

Dear Joe:

This is in response to your request for us to review the method of counting drum covers "produced" during the VOC compliance tests conducted on December 12, 1986.

Your hunch was right - there is an error in the data we gave you. The correct figures for the A5/B3 (open head interior cover lining oven) should be 375 units instead of 300.

The reason for the readjustment is as follows:

> Counting production for the drums painted or lined is easy: a man simply stands next to the conveyor and counts the drums as they go by, one at a time in a steady, continuous progression. With covers, however, the process is not so simple, for the lids are "racked" on a large device that holds 75 lids each. A completely loaded rack is then put into the oven, baked, then removed. The error came from the way we counted cover "production", which is obviously not continuous like the drums, but rather done in batches.
>
> Our men assumed that "production" referred to finished covers after they had been removed from the oven. For the purposes of VOC emissions and paint application, however, the relevant value is what went into the oven. At the end of the one hour of measured production, there was a rack of 75 lids in the oven drying. These came out right after the exact one hour point had passed, but they were not counted in the one hour's production. Obviously, though, they had been painted and put into the oven during the hour.

To get correct figures for paint usage (and therefore emissions calculations) you need to (a) subtract the paint utilized to paint this last rack from the paint utilization figures we measured and gave you; or (b) add the 75 units to the production figures. Since (a) would be an approximation and (b) is an exact figure, we recommend doing the latter, although you could figure pro rata paint consumption and do the former recalculation instead, if that makes the restatement work easier.

I'm sorry for this error. We tried very hard to have all bases covered during this complicated test. Looking back, it was a stupid mistake, but at the time I can't blame the man for thinking that the finished lids coming out equaled "production".

Very truly yours,

J. M. Murphy

bss

DRUM SERVICE CO. OF FLORIDA

POST OFFICE BOX 276
ZELLWOOD, FLORIDA 32798
PHONE AREA 305 — 889-2581

February 24, 1987

Mr. Joseph Tessitore
Cross/Tessitore & Associates
4759 S. Conway Road
Orlando, FL 32812

Dear Joe:

This is to confirm our conversation of 2/20/87 regarding xylene usage during the V.O.C. Test on 12/12/86. The total usage of xylene was 2.5 gallons for all three tests, not 2.5 gallons per test.

The amount of 2.5 gallons of xylene was recorded on a test data sheet. As a reference, this sheet was duplicated and used for the tests in error. The total of 2.5 gallons would then come to .83 gallons per test.

If you need any additional information, please feel free to contact me.

Very truly yours,

Al Dempster
Plant Manager

bss

ARROYO PROCESS EQUIPMENT, INC.
PROCESS EQUIPMENT FOR INDUSTRY
13750 Automobile Boulevard
Clearwater, Florida 33520
813/576-5294

Pumps, Tanks, Mixers

TAMPA - 253-3211
LAKELAND - 686-2092
JACKSONVILLE - 264-3774
FLA. WATS 800-445-2630

TELEX 52-719

12/12/86

SUMMARY of Test -

TEST	TIME	DRUMS RUN	PAINT USED Catalyst	PAINT USED Oil
I	65 MIN	593	35.2	21.2
II	65 MIN	583	37.4	20.4
III	50 MIN	470	26.0	18.8
	3 HRS	1646	98.6	60.4
			Tot. Paint	159 GALS

Avg. DRUM/HR = 548.7

Avg Paint/HR = 53

Best Available Copy

Open Head / Exterior Coatings

AE (12-12-86)

BLUE 3 gallion

Dozier & Gay

6246 - 492755

			GALS
START	29½		
1.13			
1.24 STOP	26½		4.8
2.19 START	26½		
2.49	20½		9.6
3.19	14½		9.[illegible]
3.24 STOP	13¾		1.2
3.44 START	13¾	18	
4.14	7½	6 ¼ =	10.0
4.39	2	- 5½"	8.8

Total Blue 44 GALS

BLACK 2 gAllion

Southern C

B910180 45

START	33½
12.19	
12.49	27½ =
1.13	23¼ =

Total Black 16

ARROYO PROCESS EQUIPMENT, INC.
PROCESS EQUIPMENT FOR INDUSTRY
13750 Automobile Boulevard
Clearwater, Florida 33520
813/576-5294

Pumps, Tanks, Mixers

TAMPA - 253-3211
LAKELAND - 686-2092
JACKSONVILLE - 264-3774
FLA. WATS 800-445-2630

TELEX 52-719

12/12/86 Test #1 Paint usage-

Time = 1 hr 5 min - start 12:15 PM
Drums = 593 stop 1:20 PM

Paint used at control sta. 35.2 GALS
Paint used at OH booth 21.2 GALS
Total 56.4

open Line
Ext. Count

Avg drums per hr = 547.4
Avg GAL'S Paint per hr = 52.1

[signature]

METHOD 25A TEST

Date 12/12 19 84

BOOTH / OVEN [A5/B3 Open Head Interior Cover Lining]

PAINT USED -	Manufacturer	Code#
	Valspar	055-18-9

SOLVENT -	Type	Amount

	Units Processed		Paint Level	Inch
	Per 15 Min.	Accumulative		
Time Start	12:15		21.5	
15 -	IIII 115 (75)	75		
30 -	IIII 115 (75)	150	31	3/4" = 1.2
45 -	IIII 115 (75)	225		
60 -	IIII 115 (75)	300	30 1/4	3/4" = 1.2
				Gal.
Time				
15 -	111+5	335		
30 -				
45 -				
60 -				
				Gal.
Time				
15 -				
30 -				
45 -				
60 -				
				Gal.

Notes Test #1 stop. Start Test @ 1:20

1.35

GALS - 2.

Recorder

BEST AVAILABLE COPY

METHOD 25A TEST

Date 12-12 19 86

BOOTH / OVEN [A1/B1 Tighthead Exteriors]

PAINT USED - Manufacturer: [illegible] / VALSPAR - White; Code#: [illegible] / [illegible]

SOLVENT - Type: ______ Amount: ______

Time Start	Units Processed: Per 15 Min.	Accumulative		Paint Level	Inch
	[illegible] (55)	𝍸 +5	55	Start Black - 32 1/2, White - [illegible]	
15 -	(62)	𝍸 [illegible]	117	12:45 Black - 28 1/4, White - [illegible]	4 1/4" = 6.
30 -	12:45				1 1/4" = 2.
45 -	(70)	[illegible]	187	[illegible] 24 3/4	3 1/2" = 5.
60 -	1:15 (62)	[illegible] +2	249	1:15 [illegible] 20 1/4	1/2 = .
				[illegible]	Gal. 5/8 = .9
Time				1:20 [illegible]	1/8 = .2
15 -	1:20 (17)	1+7	266		Total 16
30 -					
45 -					
60 -					Gal.
Time					
15 -					
30 -					
45 -					
60 -					Gal.

Notes

TEST I

White = 3.01 gal
Black = 12.99 gal

Recorder [illegible signature]

ARROYO PROCESS EQUIPMENT, INC.
PROCESS EQUIPMENT FOR INDUSTRY
13750 Automobile Boulevard
Clearwater, Florida 33520
813/576-5294

Pumps, Tanks, Mixers

TELEX 52-719

TAMPA - 253-3211
LAKELAND - 686-2092
JACKSONVILLE - 264-3774
FLA. WATS 800-445-2630

12/12/86 Test #2 Paint usage.

Time = 1 hr 5 min start 2:15 P.M.
Drums = 583 stop 3:20 P.M.

Paint used at control is a. 37.4 GALS
Paint used at OH booth - 20.4 GALS
Total 57.8

Avg drums per hour: 538.2
Avg GAL's paint per hour: 53.4

JJP

METHOD 25A TEST

Date 12-12 19 86

BOOTH / OVEN [A3/B2 Open Head Interior Linin

PAINT USED -	Manufacturer	Code#
	Volvo	135-19

SOLVENT -	Type	Amount
	Xylene	2 Gal.

	Units Processed		Paint Level	Inch
	Per 15 Min.	Accumulative		
Time Start	2:15		23	
15 -	IIII 5 (75)	25		
30 -	IIII 5 (75)	150	18½	4½" =
45 -	IIII 5 (75)	225		
60 -	IIII 5 (75)	300	14	4½" =
				Gal.
Time	3:15			
15 -	II 5 (25)	325	13½	½" =
30 -				
45 -				
60 -				Total
				Gal.
Time				
15 -				
30 -				
45 -				
60 -				
				Gal.

Notes

+/ :

Recorder Jose

METHOD 25A TEST

Date 12-12 19 86

BOOTH / OVEN [A3/B2 Open Head Interior Lining]

PAINT USED - Manufacturer: Valspar Code#: 28029

SOLVENT - Type: Xylene Amount: 3 Gal

	Units Processed: Per 15 Min.	Units Processed: Accumulative	Paint Level	Inch
Time Start	12:15		33½	
15 -	11+11+15 (75)	75		
30 -	11+11+15 (75)	150	28½	5" = 8.0
45 -	11+11+15 (75)	225		
60 -	11+11+15 (75)	300	23¾	4¾ = 7.6
				Gal.
Time				
15 -	11+2 (27)	327		
30 -			23	¾" = 1.2
45 -				
60 -				Total 16.8
				Gal.
Time				
15 -				
30 -				
45 -				
60 -				
				Gal.

Notes

1. 1

Recorder Jose

BEST AVAILABLE COPY

METHOD 25A TEST

Date 12-12 19 86

BOOTH / OVEN [A1/B1 Tighthead Exteriors]

PAINT USED -

Manufacturer	Code#
[illegible] Coatings - Black	[illegible] - 45
[illegible] - White	[illegible]

SOLVENT -

Type	Amount

	Units Processed: Per 15 Min.	Accumulative		Paint Level	Inch	
Time Start	2:15			Black - 24 1/8; White - 20 1/8		
15 -	[illegible] (63)	63		Black - 20 3/4	4 1/4" =	6.
30 -	[illegible] (63)	126		White - 19 1/2	5/8" =	1.
45 -	[illegible] (63)	189	(Blue start 24 3/4)	Black - 19; White - 18 1/2	2 3/4" =	4.
60 -	[illegible] (41)	230		Blue - 24 [illegible]	1" = ; 1/2" =	1.
					Gal.	

Time			Paint Level	Inch	
15 -	11+8 (28)	258	White - 17 3/4	3/4" =	1.
30 -			Blue - 25	1 1/4" =	2.
45 -					
60 -				Total	17
				Gal.	

Time			
15 -			
30 -			
45 -			
60 -			

Gal.

Notes

White = 3.70 gal.
Black = 11.20 gal.
Blue = 2.8 gal.

TEST II

Recorder ______

METHOD 25A TEST

Date 12/12 19 86

BOOTH / OVEN [A5/B3 Open Head Interior Cover Lining]

PAINT USED -	Manufacturer	Code#
	Valspar	[illegible]
	—	

SOLVENT -	Type	Amount
	—	—

	Units Processed Per 15 Min.	Units Processed Accumulative	Paint Level	Inch
Time Start	215	315	30 1/4	
15 -	~~IIII 15~~ (75)	75		
30 -	~~IIII 15~~ (75)	150	29 1/8	1 1/2" = 2.
45 -	~~IIII 15~~ (75)	225		
60 -	~~IIII 15~~ (75)	300	[illegible]	1 1/4" = 2.
				Gal.
Time			27 3/4	Total 4
15 -	+ 115 (25)	325		
30 -				
45 -				
60 -				
				Gal.
Time				
15 -				
30 -				
45 -				
60 -				
				Gal.

Notes Test #2

+25

Recorder [illegible]

ARROYO PROCESS EQUIPMENT, INC.
PROCESS EQUIPMENT FOR INDUSTRY
13750 Automobile Boulevard
Clearwater, Florida 33520
813/576-5294

Pumps, Tanks, Mixers

TAMPA - 253-3211
LAKELAND - 686-2092
JACKSONVILLE - 264-3774
FLA. WATS 800-445-2630

TELEX 52-719

12/12/86 Test #3 Paint usage

Time: 50 MIN 3:40 Start
Drums: 470 4:30 finish

Paint used at control Station 26 GALS
Paint used at OH Booth 18.8
44.8

Avg Drums per hr = 564
Avg Gals Paint per hr = 53.8

LH

METHOD 25A TEST

Date 12-12-86

BOOTH / OVEN [A1/B1 Tighthead Exteriors]

PAINT USED -	Manufacturer	Code#
	DOIZECT6AY - BLUE	6283
	VALSPAR - WHITE	286W57

SOLVENT -	Type	Amount

	Units Processed			Paint Level	Inch
	Per 15 Min.	Accumulative		WHITE - 18 3/4	
Time Start	3:40			BLUE - 25	
15 -	1111 1-3 (63)	63		WHITE - 18 1/4	1/2" = .8
30 -	1111 1-3=63	126		BLUE - 22	3" = 4.8
45 -	1111 1-3=63	189		WHITE - 18	1/4" = .4
60 -	11 15 25	214	3:10	BLUE - 19 1/2	2 1/2 = 4.0
					Gal.
Time					Total 10.0
15 -					
30 -					
45 -					
60 -					Gal.
Time					
15 -					
30 -					
45 -					
60 -					Gal.

Notes

TEST III

White = 1.20 gal
Blue = 8.80 gal

Recorder _____

Best Available Copy

METHOD 25A TEST

Date 12/12 19 86

BOOTH / OVEN [A3/B2 Open Head Interior Lining]

PAINT USED -

Manufacturer	Code#
[illegible]	[illegible]

SOLVENT -

Type	Amount
[illegible]	[illegible]

	Units Processed Per 15 Min.	Units Processed Accumulative	Paint Level	Inch
Time Start	3:00		13 1/2	
15 -	𝍸 11 + 5 (75)	75		
30 -	𝍸 11 + 5 (75)	150	9 1/2	4" = 6.4
45 -	𝍸 11 + 5 (75)	225		4" = 6.4
60 -	1111 31	256	5 1/2	
				Gal. Total 12.8
Time	4:30			
15 -				
30 -				
45 -				
60 -				
				Gal.
Time				
15 -				
30 -				
45 -				
60 -				
				Gal.

Notes

F7 3

Recorder [illegible]

METHOD 25A TEST

Date 12/12 19 86

BOOTH / OVEN [A5/B3 Open Head Interior Cover Lining]

PAINT USED -	Manufacturer	Code#
	Valspar	
		285-12-4

SOLVENT -	Type	Amount
	—	—

	Units Processed		Paint Level	Inch
	Per 15 Min.	Accumulative		
Time Start	3:40	4:55	27 3/4	
15 -	HH-115 .75	.75		
30 -	HH 115 .00	1.50	26 3/4	1" = 1.6
45 -	HH 115 (.75)	.00		1" 1.6
60 -	HH 115 (.75)	.30	25 3/4	
				Gal.
Time				Total 3.2
15 -				
30 -				
45 -				
60 -				
				Gal.
Time				
15 -				
30 -				
45 -				
60 -				
				Gal.

Notes

Test #3

Recorder

ATTACHMENT C

AFTERBURNER OPERATING TEMPERATURE AND EXHAUST

TEMPERATURE DATA

Previously Submitted
12-27-86

ATTACHMENT C

AFTERBURNER OPERATING TEMPERATURE AND EXHAUST TEMPERATURE DATA

METHOD 25A TEST

Date 12-12 19 86

TEMPERATURES

	After Burner	Stack
Start Time	1310	
15 -	1511	1511
30 -	1600	1600
45 -	1648	1520
60 -	1730	1720
Time		
15 -		
30 -		
45 -		
60 -		
Time		
15 -		
30 -		
45 -		
60 -		

Notes

Recorder

BEST AVAILABLE COPY

METHOD 25A TEST

Date 12-2 19 [illegible]

TEMPERATURES

	After Burner	Stack
Start Time	7:15 [illegible]	[illegible]
15 -	1581	520
30 -	1590	520
45 -	1511	520
60 -	1591	520
Time		
15 -		
30 -		
45 -		
60 -		
Time		
15 -		
30 -		
45 -		
60 -		

Notes

Recorder [illegible]

METHOD 25A TEST

Date 12-12 19 86

TEMPERATURES

	After Burner	Stack
Start Time	12:15 PM	
15 -	1531	500
30 -	1565	500
45 -	1570	500
60 -	1576	500
Time	1:15 - 1576	
15 -		
30 -		
45 -		
60 -		
Time		
15 -		
30 -		
45 -		
60 -		

Notes

Recorder

ATTACHMENT D

COATING VOC DATA SHEETS

EPA METHOD 24

Revised 2-27-87

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

VOC DATA SHEET:

PROPERTIES OF THE COATING "AS SUPPLIED" BY THE MANUFACTURER

Coating Manufacturer: Valspar

Coating Identification: 285-R-9 ANR00009

Batch Identification: 63 R 8727

Supplied To: Drum Service of Florida

Properties of the coating as supplied[1] to the customer:

A. Coating Density $(D_C)_s$: 8.20 lb/gal _____ kg/l

[X] ASTM D1475 [ ] Other[2]

B. Total Volatiles $(W_V)_s$: 52.23 Weight Percent

[X] ASTM D2369 81B [ ] Other[2]

C. Water Content: 1. $(W_W)_s$ 0 Weight Percent

[ ] ASTM D3792 [ ] ASTM D4017 [*] Other[2]

2. $(V_W)_s$ _____ Volume Percent

[ ] Calculated [ ] Other[2]

D. Organic Volatiles $(W_O)_s$: 52.23 Weight Percent

E. Nonvolatiles Content $(V_n)_s$: 34.44* Volume Percent

F. VOC Content $(VOC)_s$: 1. 4.28 lb/gal coating less water

or 0.513 kg/l coating less water

2. _____ lb/gal solids

or _____ kg/l solids

Remarks: (use reverse side)

* Theoretical Value

[1]The subscript "s" denotes each value is for the coating "as supplied" by the manufacturer.

[2]Explain the other method used under "Remarks".

Signed: R W Anderson Date 14 May 86

White/Exterior

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

VOC DATA SHEET:

PROPERTIES OF THE COATING "AS SUPPLIED" BY THE MANUFACTURER

Coating Manufacturer: Valspar

Coating Identification: 210-W-24 AYW0001

Batch Identification: 63 B 0301

Supplied To: Drum Service of Florida

Properties of the coating as supplied[1] to the customer:

A. Coating Density $(D_c)_s$: 9.31 lb/gal _____ kg/l

[x] ASTM D1475 [ ] Other[2]

B. Total Volatiles $(W_v)_s$: 41.75 Weight Percent

[x] ASTM D2369 81B [ ] Other[2]

C. Water Content: 1. $(W_w)_s$ 0 Weight Percent

[ ] ASTM D3792 [ ] ASTM D4017 [*] Other[2]

2. $(V_w)_s$ _____ Volume Percent

[ ] Calculated [ ] Other[2]

D. Organic Volatiles $(W_o)_s$: 41.75 Weight Percent

E. Nonvolatiles Content $(V_n)_s$: 37.38* Volume Percent

F. VOC Content $(VOC)_s$: 1. 3.89 lb/gal coating less water

or 0.466 kg/l coating less water

2. _____ lb/gal solids

or _____ kg/l solics

Remarks: (use reverse side)

* Theoretical Value

[1]The subscript "s" denotes each value is for the coating "as supplied" by the manufacturer.

[2]Explain the other method used under "Remarks".

Signed: R W Anderson Date 14 May 86

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Dozier & Gay Paint Company	904-354-8251

ADDRESS (Number, Street, City, State, and ZIP Code) 2245 North Main Street, Jacksonville, Florida 32206

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
N/A	Trim Enamel Cal Oil Blue
CHEMICAL FAMILY: Alkyd Enamel	FORMULA: 70-171

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	n/a		BASE METAL		
CATALYST	n/a		ALLOYS		
VEHICLE	n/a		METALLIC COATINGS		
SOLVENTS	53		FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	280°	SPECIFIC GRAVITY (H_2O=1)	0.983
VAPOR PRESSURE (mm Hg.)	4 @ 68°F	PERCENT, VOLATILE BY VOLUME (%)	64%
VAPOR DENSITY (AIR=1)	3.8	EVAPORATION RATE (_____ =1)	0.9
SOLUBILITY IN WATER	Negligeable		
APPEARANCE AND ODOR	Blue - Mild		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
TCC 50°F		0	

EXTINGUISHING MEDIA: Foam CO2 or Dry Chemical

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: 500 ppm

EFFECTS OF OVEREXPOSURE: Dizziness

EMERGENCY AND FIRST AID PROCEDURES: Remove to fresh air. If swallowed, call a physician immediately. Do not induce vomiting. If on skin, wash thoroughly with soap and water.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		None
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Keep away from heat, sparks and flame. Avoid breathing fumes, provide good ventilation.

WASTE DISPOSAL METHOD: Absorb, sweep up and place in a waste disposal container.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*: Bureau of Mines 23-B-16 Cartridge

VENTILATION		
	LOCAL EXHAUST: X	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES: Yes

EYE PROTECTION: Safety Goggles

OTHER PROTECTIVE EQUIPMENT: Hood and clothing to cover skin areas

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Keep away from heat, sparks and open flame.

OTHER PRECAUTIONS

GPO 930-540

MATERIAL SAFETY DATA SHEET

Shell

97002 (REV 1-83)

MSDS NUMBER ▶ 7,610-4

SECTION I NAME

PRODUCT ▶	Shell Xylene
CHEMICAL/ SYNONYMS ▶	Xylol; Dimethyl Benzene; Methyl Toluene
CHEMICAL FAMILY ▶	Aromatic Hydrocarbon
SHELL CODE ▶ 83391	C.A.S. NUMBER ▶ 1330-20-7

24 HOUR EMERGENCY ASSISTANCE

SHELL 713-473-9461
CHEMTREC 800-424-9300

HAZARD RATING

LEAST 0 ▶ SLIGHT 1 ▶ MODERATE 2 ▶ HIGH 3 ▶ EXTREME 4

HEALTH	2
FIRE	3
REACTIVITY	0

SECTION II INGREDIENTS

COMPOSITION	%	TOXICITY DATA
Shell Xylene	100	Oral LD_{50} (rat)=>5.2 g/kg Dermal LD_{50} (rabbit)=>3.95 g/kg Inh LC_{50} (rat)=6,350ppm/(4 hr)
Xylenes, a mixture of meta-, para- and ortho-xylenes	80	
Ethylbenzene	20	
Benzene ..... typically <10ppm		

SECTION III HEALTH INFORMATION

Acute Toxicity: Overexposure can lead to central nervous system depression producing such effects as headache, dizziness, nausea, and loss of consciousness.

Eye Contact: Short-term liquid or vapor contact may result in slight eye irritation. Prolonged and repeated contact may be more irritating.

Skin Contact: Prolonged and repeated liquid contact can cause defatting and drying of the skin which may result in skin irritation and dermatitis.

Inhalation: High concentrations or prolonged exposure to lower concentrations may be slightly irritating to mucous membranes.

Ingestion: Liquid ingestion may result in vomiting; aspiration (breathing) of vomitus into the lungs must be avoided as even small quantities in the lungs may result in chemical pneumonitis and pulmonary edema/hemorrhage.

SECTION IV OCCUPATIONAL EXPOSURE LIMITS

	Xylene	Ethylbenzene
OSHA-PEL/TWA =	100 ppm	100 ppm
ACGIH-TLV/TWA =	100 ppm (skin)	100 ppm
-TLV/STEL =	150 ppm (skin)	125 ppm

SECTION V — EMERGENCY AND FIRST AID PROCEDURES

E CONTACT: Flush with water for 15 minutes while holding eyelids open. Get medical attention.

KIN CONTACT: Wash with soap and water. Remove contaminated clothing and shoes; do not reuse until cleaned. If persistent irritation occurs, get medical attention.

INHALATION: Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.

INGESTION: Do not induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Get medical attention.

NOTE TO THE PHYSICIAN: If more than 2.0 ml per kg has been ingested and vomiting has not occurred, emesis should be induced with supervision. Keep victim's head below hips to prevent aspiration. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before emesis, gastric lavage using a cuffed endotracheal tube should be considered.

SECTION VI — PHYSICAL DATA

BOILING POINT (°F) ▶ 281-282	MELTING POINT (°F) ▶ --	VAPOR PRESSURE (mmHg) ▶ 21 @ 100°F
SPECIFIC GRAVITY (H_2O=1) ▶ 0.86	% VOLATILE BY VOLUME ▶ 100	VAPOR DENSITY (AIR=1) ▶ 3.7
SOLUBILITY IN WATER ▶ Negligible	EVAPORATION RATE (BUTYL ACETATE=1) ▶ 0.6 (7.17)	

APPEARANCE AND ODOR

Colorless, mobile liquid. Aromatic odor.

SECTION VII — FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD USED	FLAMMABLE LIMITS/% VOLUME IN AIR ▶ LOWER	UPPER
1°F (TCC)	1	7

EXTINGUISHING MEDIA

Use water fog, foam, dry chemical or CO_2. Do not use a direct stream of water. Product will float and can be reignited on surface of water.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

Evacuate hazard area of unprotected personnel. Wear proper protective clothing including a NIOSH approved self-contained breathing apparatus. Cool fire-exposed containers with water.

In the case of large fires, also cool surrounding equipment and structures with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Vapors are heavier than air and may accumulate in low areas or areas inadequately ventilated. Vapors may also travel along the ground to be ignited at locations distant from the handling site; flashback of flame to the handling site may occur.

SECTION VIII REACTIVITY

STABILITY ▶ [ ] UNSTABLE [X] STABLE

HAZARDOUS POLYMERIZATION ▶ [ ] MAY OCCUR [X] WILL NOT OCC

CONDITIONS AND MATERIALS TO AVOID

Avoid heat, sparks, open flame and contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide and unidentified organic compounds may be formed during combustion.

SECTION IX EMPLOYEE PROTECTION

RESPIRATORY PROTECTION

If exposure may or does exceed occupational exposure limits (Sec.IV) use a NIOSH-approved respirator to prevent overexposure. In accord with 29 CFR 1910.134 use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors.

PROTECTIVE CLOTHING

Wear impervious gloves and protective clothing as required to prevent skin contact. Wear chemical goggles to prevent eye contact.

ADDITIONAL PROTECTIVE MEASURES

Use explosion-proof ventilation as required to control vapor concentrations.

SECTION X ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES

WARNING. Flammable. Eliminate all ignition sources. Handling equipment must be grounded to prevent sparking.
Large spills: Evacuate the hazard area of unprotected personnel. Wear appropriate respirator and protective clothing. Shut off source of leak only if safe to do so. Dike and contain. If vapor cloud forms, water fog may be used to suppress; contain run-off. Remove with vacuum trucks or pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand or other suitable material; place in non-leaking containers for proper disposal. Flush area with water to remove trace residue; dispose of flush solutions as above.
Small spills: take up with an absorbent material and place in non-leaking containers; seal tightly for proper disposal.

WASTE DISPOSAL

Place in a disposal facility approved under RCRA regulations for hazardous waste (See Sec. XIII). Use non-leaking containers, seal tightly and label properly.

ENVIRONMENTAL HAZARDS

This product is designated as a hazardous substance under the Clean Water Act. KEEP OUT OF SURFACE WATERS OR SEWERS ENTERING OR LEADING TO SURFACE WATERS. (See Section XIII).

MATERIAL SAFETY DATA SHEET

Shell

97005 IREV. 7-82I

SECTION XI SPECIAL PRECAUTIONS

RNING. Flammable Liquid.
ep away from heat, sparks and open flames. Keep containers tightly losed. Store away from strong oxidizing agents in a cool, dry place ith adequate explosion-proof ventilation. Ground equipment to prevent ccumulation of static charge. If pouring or transferring materials, ontainers must be bonded and grounded.

o NOT weld, heat or drill on or near container; even emptied containers an contain explosive vapors.

inimize skin contact. Wash with soap and water before eating, drinking, moking or using toilet facilities. Launder contaminated clothing before euse.

SECTION XII TRANSPORTATION REQUIREMENTS

DEPARTMENT OF ANSPORTATION ASSIFICATION

- ☐ FLAMMABLE LIQUID
- ☐ COMBUSTIBLE LIQUID
- ☐ OXIDIZING MATERIAL
- ☐ NON-FLAMMABLE GAS
- ☐ FLAMMABLE SOLID
- ☐ POISON,CLASS A
- ☐ CORROSIVE MATERIAL
- ☐ NOT HAZARDOUS BY D.O.T. REGULATIONS
- ☐ FLAMMABLE GAS
- ☐ POISON,CLASS B
- ☐ IRRITATING MATERIAL
- ☐ OTHER-Specify below

.T. PROPER SHIPPING NAME

ylene

HER REQUIREMENTS

.T. ID.# = UN1307. Guide Sheet 27. RQ xylene (1000 lb). Also ee Section XIII, Clean Water Act.

SECTION XIII OTHER REGULATORY CONTROLS

A,FDA,OSHA,USDA,CPSC,etc.

PA - Clean Water Act (CWA)
his product is designated as a hazardous substance under Section 311 of he Clean Water Act. Spills entering (a) surface waters or (b) any water-ourses or sewers entering/leading to surface waters MUST be reported mmediately to the National Response Center, 800-424-8802. The reportable uantity for xylene is 1000 lb.

PA - Resource Conservation and Recovery Act (RCRA) Regulations
his product has been designated by the EPA (RCRA 40 CFR 261.33) as a azardous waste if it is spilled, discarded or intended to be discarded as s. The EPA hazardous waste number for xylene is U239.

BE SAFE

READ OUR PRODUCT SAFETY INFORMATION ... AND PASS IT ON

(PRODUCT LIABILITY LAW REQUIRES IT)

John P Lepori
Manager

SHELL OIL COMPANY
PRODUCT SAFETY AND COMPLIANCE
OIL AND CHEMICAL PRODUCTS
P.O. BOX 4320
HOUSTON,TEXAS 77210

DATE PREPARED

Southern Coatings
P.O. Box 160
Sumter, SC 29150
EMERGENCY PHONE NO. 800-845-0487
INFORMATION PHONE NO. 800-845-0487

MATERIAL SAFETY DATA SHEET

SECTION I

DATE OF PREPARATION 7/01/86

TRADE NAME GLOSS BLACK DRUM ENAMEL

MANUFACTURER CODE I.D. 64-4097
5E-118-1

SECTION II – HAZARDOUS INGREDIENTS

INGREDIENT	CAS NO.		ALLOWABLE EXPOSURE LEVEL PPM	MG/CU.M.	FBR/CC	MPPCF	SKIN	MAC	VP MM HG @ 20 DEG.C
ON BLACK	1333-86-4	TLV		3.50	na	na	na	na	na
		PEL		3.50	na	na	na	na	
D NAPHTHA	8030-30-6	TLV	300	1350	na	na	na	na	40
		PEL	500		na	na	na	na	
D NAPTHA	8030-30-6	TLV	300	1350	na	na	na	na	na
		PEL	500		na	na	na	na	
NERAL SPIRITS	8032-32-4	TLV	100	525	na	na	na	na	2
		PEL	500	2950	na	na	na	na	
AD COMPOUNDS	7439-92-1	TLV		.1500(as Pb)	na	na	na	na	na
		PEL		.0500	na	na	na	na	

= NOT APPLICABLE
-KIN = SKIN ABSORPTION MUST BE CONSIDERED AS A ROUTE OF EXPOSURE
-MAC = ALLOWABLE EXPOSURE LEVEL SHOULD NOT BE EXCEEDED FOR ANY TIME PERIOD

SECTION III – HEALTH INFORMATION

ECTS OF SHORT TERM OVEREXPOSURE

LLOWING
Can cause gastrointestinal irritation, nausea, and vomiting. Aspiration of material into lung can cause chemical pneumonitis which can be fatal. May cause gastrointestinal irritation.

NHALATION
Anesthetic. May cause irritation of the nose and throat, and acute nervous system depression. Characterized by headache, dizziness, confusion, nausea, unconsciousness, and even asphyxiation.

SECTION II - HEALTH INFORMATION (CONTINUED)

May cause eye irritation.

SKIN

May cause defatting and irritation of the skin.

EFFECTS OF REPEATED OVEREXPOSURE

Reports have associated prolonged and repeated occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Chronic overexposure to lead may result in severe damage to blood forming, nervous, urinary, and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, weakness, insomnia, headache, muscle and joint pain, fine tremors, numbness, dizziness, hyperactivity, and colic. Occupational exposure to lead is regulated by OSHA - 29 CFR 1910.1025.

GNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH.

Prexisting kidney conditions may be aggravtaed by exposures to lead.

SECTION IV - FIRST AID AND EMERGENCY PROCEDURES

SWALLOWING

If swallowed call Poison Control Center, Hospital Emergency Room, or Physician immediately.

IN''ATION

Remove to fresh air immediately. If breathing has stopped, give artificial respiration. Keep warm and quiet. Get medical attention immediately.

'E

Flush with large amounts of water, lifting upper and lower lids occasionally. Continue for at least 15 minutes. Get medical attention.

IN

Wash affected area with soap and water. Remove contaminated clothing. Get medical attention if irritation persists.

TES TO PHYSICIAN

Any treatment that might be required for overexposure should be directed at the control of symptoms and the clinical conditions.

SECTION V - PHYSICAL DATA

OILING RANGE 203 DEG.F. TO 399 DEG.F.

VAPOR DENSITY
Heavier than air.

% VOLATILE BY VOLUME 63

VAPORATION RATE
Slower than ether.

VOC 4.0 lb/gal less water 480 g/l less water CALCULATED

'EIGHT LB./GAL. 7.4

VOC 10.9 lb/gal solids 1308 g/l solids CALCULATED

SECTION VI - FIRE AND EXPLOSION DATA

FLAMMABILITY CLASSIFICATION FLAMMABLE LIQUID - CLASS IB

FLASHPOINT 20 DEG.F, CALCULATED

XTINGUISHING MEDIA

Use NFPA Class B Fire extinguishers (carbon dioxide, all purpose dry chemical or alcohol foam) designed to extinguish flammable liquid fires. Polymer foam is preferred for large fires.

UNUSUAL FIRE AND EXPLOSION HAZARDS

During emergency conditions, overexposure to decompostion products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.
WARNING ! FLAMMABLE.
Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and flame. Closed containers may explode when exposed to extreme heat.

ECIAL FIRE FIGHTING PROCEDURES

Firefighters should wear self-contained breathing apparatus.
Water may be ineffective, but may be used to cool exposed containers to prevent pressure build-up and possible auto-ignition or explosion when exposed to extreme heat. If water is used, fog nozzles are preferable.

SECTION VII - REACTIVITY DATA

ABILITY

Normally stable.

CONDITIONS TO AVOID

Avoid excessive heat and sources of ignition.

COMPATABILITY (MATERIALS TO AVOID)

Strong acids or alkaline materials.

ZARDOUS DECOMPOSITION PRODUCTS

Burning, including when heated by welding or cutting, will produce smoke, carbon monoxide and carbon dioxide.In addition, oxides of lead may be generated.

HAZARDOUS POLYMERIZATION

Will not occur

CONDITIONS TO AVOID

Keep away from heat sparks and flame.

SECTION VIII - ENVIRONMENTAL INFORMATION

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Keep spectators away. Eliminate all ignition sources (flames, hot surfaces, and sources of electrical, static or frictional sparks). Dike and contain spill with inert material (e.g. sand, earth). Transfer

SECTION VIII - ENVIRONMENTAL INFORMATION (CONTINUED)

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

liquids to covered metal containers for recovery or disposal, or remove with inert absorbent. Use only non-sparking tools. Place absorbent diking materials in covered metal containers for disposal. Prevent contamination of sewers, streams, and groundwater with spilled material or used absorbent.

WASTE DISPOSAL

Dispose in accordance with federal, state and local laws.
Contaminated absorbant may be disposed in EPA-permitted hazardous watse landfills.
Incinerate only in EPA permitted facility. Do not incinerate closed containers. Observe precautions for disposal of flammable materials.
Contaminated absorbant may be disposed in a hazardous waste landfill.
Dispose only in accordance with federal, state and local regulations.

RCRA CLASSIFICATION

This product, if discarded directly, would be classified a hazardous waste based on its ignitability characteristic, i.e. has a flash point of 140 deg. F., or less. The proper RCRA classification would be D001.
This product contains lead, which, if present in waste at 5.0 mg/l or more after extracted, is considered EP Toxic, and therefore a hazardous waste under the RCRA regulations. The hazardous waste number for an EP Toxic waste based on the lead content is D008.

ENVIRONMENTAL HAZARDS

None known

SECTION IX - PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION

Refer to OSHA standard for specific respiratory protection requirements for lead, 29CFR1910.1025.
If required, use an appropriate NIOSH/OSHA approved respirator with a suitable protection factor. Comply with OSHA 29 CFR 1910.134 "Respiratory Protection."
When spraying outdoors, or in open or well-ventilated areas, use NIOSH approved mechanical filter respirator to remove overspray.
In restricted ventilation areas, use NIOSH approved paint spray (combination chemical cartridge/mechanical filter) respirator to remove spray mist and organic vapors. In confined areas use a NIOSH approved air-supplied respirator.

VENTILATION

Refer to OSHA standards for specific ventilation requirements for lead-29CFR1910.1025.
Provide general dilution and local exhaust ventilation in sufficient volume and pattern to keep concentration of hazardous ingredients listed in Section II below the lowest exposure limit stated. Remove decomposition products that are generated when welding, cutting, or brazing objects coated with this product. Vapors produced while drying or baking this

SECTION IX - PERSONAL PROTECTION INFORMATION; (CONTINUED)

LATION
product must be properly vented.

PROTECTION
Wear appropriate impermeable gloves.
Solvent impermeable gloves are required for repeated or prolonged contact.

ROTECTION
Wear safety spectacles at all times. Chemical splash goggles and/or face shields may be required for specific applications.

PROTECTIVE EQUIPMENT
As required to prevent skin contact. See OSHA standard for lead.

SECTION X - SPECIAL PRECAUTIONS

CAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Do not store above 95 degrees F. Store large quantities in compliance with OSHA 29CFR1910.106.

ER PRECAUTIONS
Do not take internally. Close container after each use.
Keep away from children.
Do not breathe sanding dust.
Wash hands and face thoroughly before eating or drinking.
Empty containers must not be washed and re-used for any purpose.
Containers should be grounded and bonded to the receiving container.
Do not weld, braze or cut on empty container.
Never use pressure to empty. Drum is not a pressure vessel.

SECTION XI - OTHER INFORMATION

INFORMATION

HAZARD CLASS: FLAMMABLE LIQUID

UMBER: UN 1263

OPER SHIPPING NAME: PAINT - FLAMMABLE LIQUID

The information contained herein is based on data considered to be accurate. While the information is believed to be reliable, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. Since the use of this information and the conditions and use of this product are controlled by the user, it is the user's obligation to determine the conditions of safe use of the product.

UM SERVICE CO OF FLA.
P.O. BOX 278
ZELLWOOD, FLA.

32798

SECTION III - HEALTH INFORMATION (CONTINUED)

May cause eye irritation.

SKIN

May cause defatting and irritation of the skin.

EFFECTS OF REPEATED OVEREXPOSURE

Reports have associated prolonged and repeated occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Chronic overexposure to lead may result in severe damage to blood forming, nervous, urinary, and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, weakness, insomnia, headache, muscle and joint pain, fine tremors, numbness, dizziness, hyperactivity, and colic. Occupational exposure to lead is regulated by OSHA - 29 CFR 1910.1025.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH.

Prexisting kidney conditions may be aggravtaed by exposures to lead.

SECTION IV - FIRST AID AND EMERGENCY PROCEDURES

SWALLOWING

If swallowed call Poison Control Center, Hospital Emergency Room, or Physician immediately.

INHALATION

Remove to fresh air immediately. If breathing has stopped, give artificial respiration. Keep warm and quiet. Get medical attention immediately.

Flush with large amounts of water, lifting upper and lower lids occasionally. Continue for at least 15 minutes. Get medical attention.

Wash affected area with soap and water. Remove contaminated clothing. Get medical attention if irritation persists.

NOTE TO PHYSICIAN

Any treatment that might be required for overexposure should be directed at the control of symptoms and the clinical conditions.

SECTION V - PHYSICAL DATA

BOILING RANGE 203 DEG.F. TO 399 DEG.F.

VAPOR DENSITY

Heavier than air.

% VOLATILE BY VOLUME 63

EVAPORATION RATE

Slower than ether.

VOC	4.0	lb/gal less water	480	g/l less water	CALCULATED		
WEIGHT LB/GAL	7.4	VOC	10.9	lb/gal solids	1308	g/l solids	CALCULATED

SECTION VI - FIRE AND EXPLOSION DATA

FLAMMABILITY CLASSIFICATION FLAMMABLE LIQUID - CLASS IB

FLASHPOINT 20 DEG.F, CALCULATED

EXTINGUISHING MEDIA

Use NFPA Class B Fire extinguishers (carbon dioxide, all purpose dry chemical or alcohol foam) designed to extinguish flammable liquid fires. Polymer foam is preferred for large fires.

UNUSUAL FIRE AND EXPLOSION HAZARDS

During emergency conditions, overexposure to decompostion products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.
WARNING ! FLAMMABLE.
Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and flame. Closed containers may explode when exposed to extreme heat.

SPECIAL FIRE FIGHTING PROCEDURES

Firefighters should wear self-contained breathing apparatus.
Water may be ineffective, but may be used to cool exposed containers to prevent pressure build-up and possible auto-ignition or explosion when exposed to extreme heat. If water is used, fog nozzles are preferable.

SECTION VII - REACTIVITY DATA

STABILITY

Normally stable.

CONDITIONS TO AVOID

Avoid excessive heat and sources of ignition.

INCOMPATABILITY (MATERIALS TO AVOID)

Strong acids or alkaline materials.

HAZARDOUS DECOMPOSITION PRODUCTS

Burning, including when heated by welding or cutting, will produce smoke, carbon monoxide and carbon dioxide.In addition, oxides of lead may be generated.

HAZARDOUS POLYMERIZATION

Will not occur

CONDITIONS TO AVOID

Keep away from heat sparks and flame.

SECTION VIII - ENVIRONMENTAL INFORMATION

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Keep spectators away. Eliminate all ignition sources (flames, hot surfaces, and sources of electrical, static or frictional sparks). Dike and contain spill with inert material (e.g. sand, earth). Transfer

SECTION VIII – ENVIRONMENTAL INFORMATION (CONTINUED)

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

liquids to covered metal containers for recovery or disposal, or remove with inert absorbent. Use only non-sparking tools. Place absorbent diking materials in covered metal containers for disposal. Prevent contamination of sewers, streams, and groundwater with spilled material or used absorbent.

WASTE DISPOSAL

Dispose in accordance with federal, state and local laws.
Contaminated absorbant may be disposed in EPA-permitted hazardous watse landfills.
Incinerate only in EPA permitted facility. Do not incinerate closed containers. Observe precautions for disposal of flammable materials.
Contaminated absorbant may be disposed in a hazardous waste landfill.
Dispose only in accordance with federal, state and local regulations.

RCRA CLASSIFICATION

This product, if discarded directly, would be classified a hazardous waste based on its ignitability characteristic, i.e. has a flash point of 140 deg. F., or less. The proper RCRA classification would be D001.
This product contains lead, which, if present in waste at 5.0 mg/l or more after extracted, is considered EP Toxic, and therefore a hazardous waste under the RCRA regulations. The hazardous waste number for an EP Toxic waste based on the lead content is D008.

ENVIRONMENTAL HAZARDS

None known

SECTION IX – PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION

Refer to OSHA standard for specific respiratory protection requirements for lead, 29CFR1910.1025.
If required, use an appropriate NIOSH/OSHA approved respirator with a suitable protection factor. Comply with OSHA 29 CFR 1910.134 "Respiratory Protection."
When spraying outdoors, or in open or well-ventilated areas, use NIOSH approved mechanical filter respirator to remove overspray.
In restricted ventilation areas, use NIOSH approved paint spray (combination chemical cartridge/mechanical filter) respirator to remove spray mist and organic vapors. In confined areas use a NIOSH approved air-supplied respirator.

VENTILATION

Refer to OSHA standards for specific ventilation requirements for lead-29CFR1910.1025.
Provide general dilution and local exhaust ventilation in sufficient volume and pattern to keep concentration of hazardous ingredients listed in Section II below the lowest exposure limit stated. Remove decomposition products that are generated when welding, cutting, or brazing objects coated with this product. Vapors produced while drying or baking this

SECTION IX - PERSONAL PROTECTION INFORMATION (CONTINUED)

VENTILATION
product must be properly vented.

HAND PROTECTION
Wear appropriate impermeable gloves.
Solvent impermeable gloves are required for repeated or prolonged contact.

EYE PROTECTION
Wear safety spectacles at all times. Chemical splash goggles and/or face shields may be required for specific applications.

OTHER PROTECTIVE EQUIPMENT
As required to prevent skin contact. See OSHA standard for lead.

SECTION X - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Do not store above 95 degrees F. Store large quantities in compliance with OSHA 29CFR1910.106.

OTHER PRECAUTIONS
Do not take internally. Close container after each use.
Keep away from children.
Do not breathe sanding dust.
Wash hands and face thoroughly before eating or drinking.
Empty containers must not be washed and re-used for any purpose.
Containers should be grounded and bonded to the receiving container.
Do not weld, braze or cut on empty container.
Never use pressure to empty. Drum is not a pressure vessel.

SECTION XI - OTHER INFORMATION

SHIPPING INFORMATION

HAZARD CLASS: FLAMMABLE LIQUID

ID NUMBER: UN 1263

PROPER SHIPPING NAME: PAINT - FLAMMABLE LIQUID

The information contained herein is based on data considered to be accurate. While the information is believed to be reliable, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. Since the use of this information and the conditions and use of this product are controlled by the user, it is the user's obligation to determine the conditions of safe use of the product.

DRUM SERVICE CO OF FLA.
P.O. BOX 278
ZELLWOOD, FLA.

ATTACHMENT E

VOC SOURCE TEST REPORT

Previously Submitted
12-29-86

ATTACHMENT E

VOC SOURCE TEST REPORT

SOURCE TEST REPORT
for
VOLATILE ORGANIC COMPOUNDS

DRUM SERVICES, INC.
ZELLWOOD, FLORIDA

DECEMBER 12, 1986

Prepared for:

TECHNICAL SERVICES, INC.
2471 SWAN STREET
JACKSONVILLE, FLORIDA 32201

Prepared by:

AIR CONSULTING AND ENGINEERING
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32609
(904) 335-1889

126-86-07

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

To the best of my knowledge, all applicable field and analytical procedures comply with Florida Department of Environmental Regulation requirements and all test data and plant operating data are true and correct.

Stephen L. Neck, P.E.

State of Florida
Registration No. 20020

12/16/86
Date

SEAL

1.0 INTRODUCTION

Environmental Protection Agency (EPA) Reference Method 25A testing for Volatile Organic Compounds (VOC) was performed on December 12, 1986, by Air Consulting and Engineering (ACE) working as a subcontractor to Technical Services, Inc. (TSI), of Jacksonville, Florida, who in turn contracted to Cross/Tessitore and Associates of Orlando, Florida.

Simultaneous testing of a thermal incinerator inlet and outlet was performed using Beckman and Bendix total hydrocarbon analyzers with flame ionization detectors (FID). Three 1-hour test runs were conducted while drum and lid production lines were operating near permitted capacity. The last test run was only 50 minutes in duration due to completion of the day's production.

2.0 SUMMARY AND DISCUSSION OF RESULTS

Results of the testing is summarized in Table 1. VOC incinerator destruction efficiency was greater than 99.88%. The permitted destruction efficiency is 95.0%. All results are reported in terms of carbon emission.

Calibration drift of the Bendix (inlet) analyzer was 10% for the test Run 2 (3% maximum specified). This was due to an increase in the air fuel pressure to the instrument. Results for this test run were determined using the determined drift of the 1010 ppm propane calibration gas and the best fit curve of the average response of the inlet concentrations. The best fit curve is shown as a dashed line on the strip chart readouts (Appendix C). The 1010 ppm calibration drift line and the emission average line are identical for test Run 2. The value of the 1010 ppm calibration gas was taken as 970 ppm based on the response of zero and 1940 ppm propane calibration gases. The use of 970 ppm rather than the 1010 ppm certified value is conservative (i.e., yields lower inlet concentrations). This 4.0% difference is within the allowable calibration error range of 5%. No drift was experienced for test Runs 1 and 3.

The outlet (Beckman) instrument was calibrated using zero air, 51.5 ppm propane, and 9.45 ppm propane. The 9.45 ppm gas would read 8.6 ppm based on the response of the 51.5 ppm gas which is within 9% linearity against a specified linearity of 5% but all outlet emission data are obviously accurate to the degree reported.

Table 1 Volatile Organic Compounds Emission Summary
Drum Services, Inc.
Zellwood, Florida
December 12, 1986

Run Number	Time	Inlet PPM C	Outlet PPM C	SCFMD Volumetric Flow Inlet	SCFMD Volumetric Flow Outlet	lb/Hr as Carbon Inlet	lb/Hr as Carbon Outlet
1	1223-1323	2550	<1.0	3049	8697	14.53	<0.02
2	1422-1522	2910	<1.0	3049	8697	16.58	<0.02
3	1543-1633	3408	<1.0	3049	8697	19.42	<0.02
Average	---	2956	<1.0	3049	8697	16.84	<0.02

$$\text{Destruction Efficiency} = \frac{16.84 - .02}{16.84} = >99.88\%$$

ppm C = ppm propane X 3

$$\text{lb/Hr} = (\text{ppm C})(2.595 \times 10^{-9})(12)(\text{SCFMD})(60)$$

3.0 PROCESS DESCRIPTION AND OPERATION

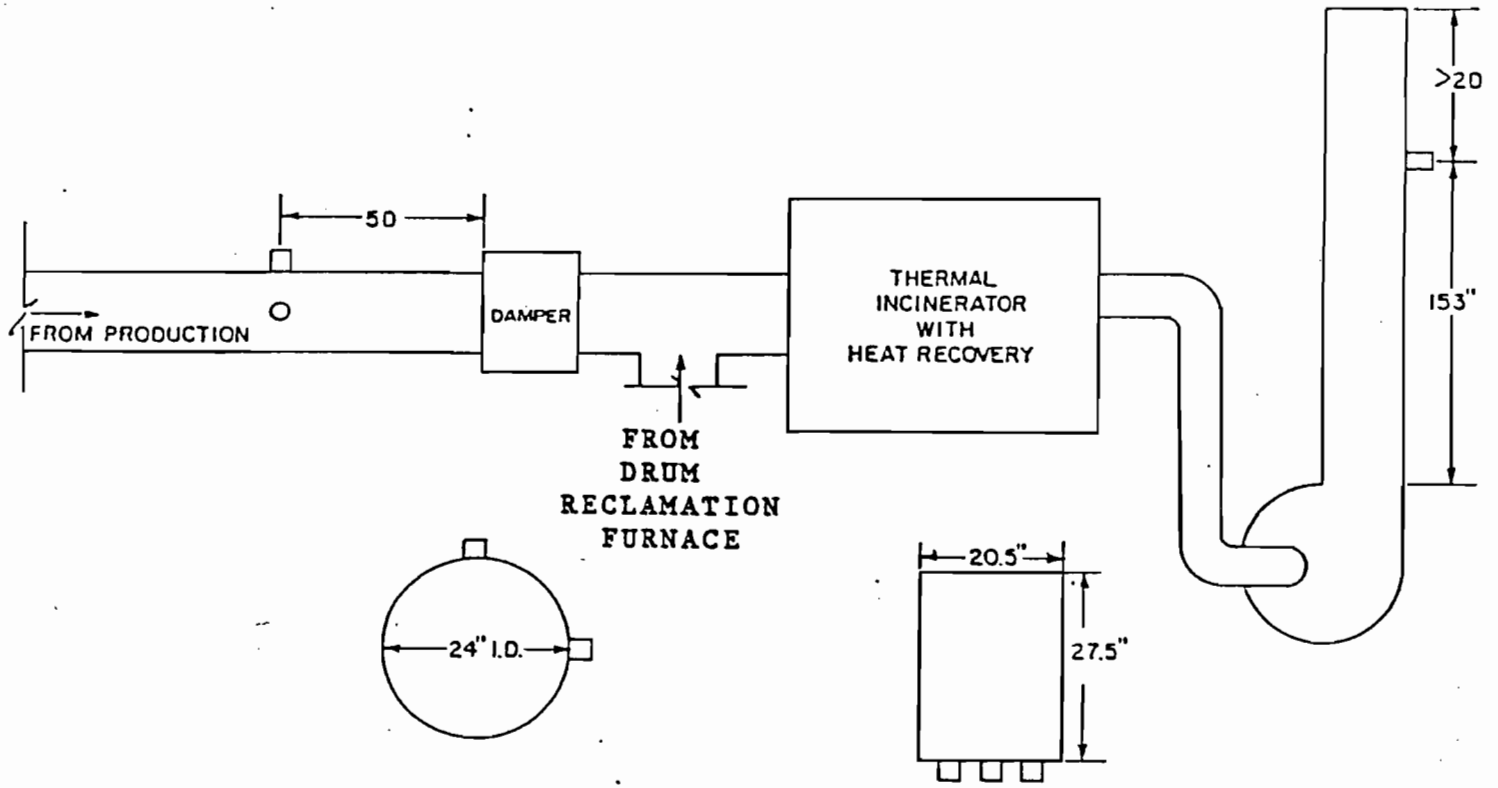
Drum Services, Inc., recycles drums by processing through a drum reclamation furnace to prepare drums for cleaning by steel shot blasting. The cleaned open end drums are then lined on the inside and dryed in the open head drum oven, then painted on the exteriors and air dryed. Lids are also coated, painted, and dryed in the lid batch oven.

Closed end drums are painted on the outside followed by drying in the tight head oven.

Emissions from the drum reclamation furnace, open head drum oven, tight head drum oven, and lid oven are all conveyed to the thermal incinerator via induced draft.

4.0 SAMPLING POINT LOCATION

The sampling point locations and incinerator schematic are provided in Figure 1.



TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.06
2	3.50
3	7.10
4	16.90
5	20.50
6	22.94

TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	3.44
2	10.31
3	17.19
4	24.06

FIGURE 1
INCINERATOR INLET AND OUTLET
SAMPLING POINT LOCATIONS

AIR CONSULTING
and
ENGINEERING

5.0 FIELD AND ANALYTICAL PROCEDURES--EPA METHOD 25A - VOC TESTING

A complete summary of EPA Method 25A is provided in Appendix A. All procedures were done in accordance with the method except that response time was not documented as averages were begun after response had reached steadystate and ended before it dropped back towards zero. Response time is 2.5 minutes on the Beckman and 1.5 minutes on the Bendix analyzer.

At the date of this submittal, the manufacturer's analysis certifications of the gases have not arrived. If deemed necessary, they will be furnished at a later date.

APPENDIX A

FLOW CALCULATIONS

AND

VELOCITY TRAVERSES

VOLUMETRIC FLOW CALCULATIONS

INLET

1300 TRAVERSE

$A_S = 3.14\ FT^2$

$\overline{\sqrt{\Delta P}} = 0.314$

$T_S °F = 161 = 621° R$

$G_S = 1.0$

$\%\ H_2O = 2.0$ (ASSUMED)

$P_S = 29.92$

$U = 1144$ FPM

$Q_A = 3592$ ACFM

$Q_S = 2993$ SCFMD

1625 TRAVERSE

$\overline{\sqrt{\Delta P}} = 0.324$

$T_S °F = 154 = 614° R$

$G_S = 1.0$

$\%\ H_2O = 2.0$ (ASSUMED)

$P_S = 29.92$

$U = 1173$ FPM

$Q_A = 3684$ ACFM

$Q_S = 3105$ SCFMD

$$U = 174 \times C_p \times \overline{\sqrt{\Delta p}} \times \sqrt{\frac{T_S °R}{G_S} \times \frac{29.92}{P_S}} = FPM$$

$$Q_A = A_S \times U$$

$$Q_S = Q_A \times \frac{528}{T_S °R} \times \frac{P_S}{29.92} \times F.D.A$$

$$\overline{Q_S} = 3049\ SCFMD$$

OUTLET

1438 TRAVERSE

$A_S = 3.91\ FT^2$

$\overline{\sqrt{\Delta P}} = 1.021$

$\overline{T_S °F} = 693°F = 1153°R$

$G_S = 0.98$

$\%\ H_2O = 5.0$ (Assumed)

$\therefore F.D.A = 0.95$

$P_S = 29.95$

$U = 5116$ FPM

$Q_A = 20004$ ACFM

$Q_S = 8711$ SCFMD

1605 TRAVERSE

$A_S = 3.91$

$\overline{\sqrt{\Delta P}} = 1.023$

$\overline{T_S F} = 705°F = 1165°F$

$G_S = 0.98$

$\%\ H_2O = 5.0$ (ASSUMED)

$F.D.A = 0.95$

$P_S = 29.95$

$U = 5152$ FPM

$Q_A = 20147$ ACFM

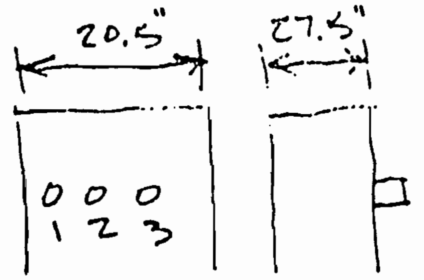
$Q_S = 8783$ SCFMD

$Q_S = 8697$ SCFMD

BEST AVAILABLE COPY

PRELIMINARY VELOCITY TRAVERSE

...T TRUM ...
...TE 12/12/86
:ATION OUTLET
...K I.D. 20.5" x 27.5"
...ROMETRIC PRESSURE, in. Hg 30.00
...ACK GAUGE PRESSURE, in. H_2O -.7
...ATORS [illegible]



SCHEMATIC OF TRAVERSE POINT LAYOUT

TEMP = 693°F TIME: 1438

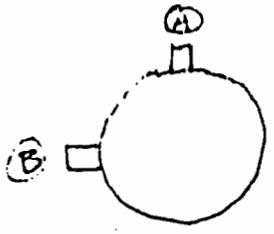
TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1-1	.86	3.44
2	1.0	15.31
3	1.15	17.19
4	1.70	24.06
		Test 1
-1	.58	
2	.90	
3	1.9	
4	1.9	
		Test 2
1	[illegible]	
2	.64	
3	.56	
4	1.15	
	$\sqrt{\Delta P}$ =	1.021
AVERAGE		

TEMP = 705°F TIME 1605

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
2-1	.60	TEST 1
2	1.2	
3	1.8	
4	2.0	
2-1	.58	TEST 2
2	.60	
3	.60	
4	1.0	
2-1	.80	TEST 3
2	1.0	
3	1.[illegible]	
4	1.7	
	$\sqrt{\Delta P}$ =	1.023
AVERAGE		

PRELIMINARY VELOCITY TRAVERSE

NT DRUM SERVICES
E 12/12/86
CATION INLET
CK I.D. 24" DIA.
AROMETRIC PRESSURE, in. Hg 30.00
ACK GAUGE PRESSURE, in. H_2O -1.1
RATORS NECK/HEDGE



SCHEMATIC OF TRAVERSE POINT LAYOUT

TEMP = 161°F TIME 1300

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1-1	.07	(A) 1,06.1
2	.10	3.50
3	.11	7.10
4	.10	16.90
5	.09	20.50
6	.07	22.94
1-1	.09	(5)
2	.11	
3	.12	
4	.13	
5	.14	
6	.15	
1-1 TEST	.06	(A)
2	.10	
3	.13	
4	.11	
5	.10	
6	.08	
AVERAGE		

TEMP. = 154 TIME 1625

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1-1 TEST	.08	(B)
2	.11	
3	.13	
4	.12	
5	.10	.314
6	.08	
(A) 2-1	.09	
2	.11	
3	.12	
4	.14	
5	.11	
6	.05	
(B) 2-1	.07	
2	.10	
3	.12	
4	.15	
5	.12	
6	.10	
AVERAGE		

APPENDIX B

EPA METHOD 25A

METHOD 25A

DETERMINATION OF TOTAL GASEOUS ORGANIC CONCENTRATION USING A FLAME IONIZATION ANALYZER

1. Applicability and Principle

1.1 Applicability. This method applies to the measurement of total gaseous organic concentration of vapors consisting primarily of alkanes, alkenes, and/or arenes (aromatic hydrocarbons). The concentration is expressed in terms of propane (or other appropriate organic calibration gas) or in terms of carbon.

1.2 Principle. A gas sample is extracted from the source through a heated sample line, if necessary, and glass fiber filter to a flame ionization analyzer (FIA). Results are reported as volume concentration equivalents of the calibration gas or as carbon equivalents.

2. Definitions

2.1 Measurement System. The total equipment required for the determination of the gas concentration. The system consists of the following major sub-systems:

2.1.1 Sample Interface. That portion of the system that is used for one or more of the following sample acquisition, sample transportation, sample conditioning, or protection of the analyzer from the effects of the stack effluent.

2.1.2 Organic Analyzer. That portion of the system that senses organic concentration and generates an output proportional to the gas concentration.

2.2 Span Value. The upper limit of a gas concentration measurement range that is specified for affected source categories in the applicable part of the regulations. The span value is established in the applicable regulation and is usually 1.5 to 2.5 times the applicable emission limit. If no span value is provided, use a span value equivalent to 1.5 to 2.5 times the expected concentration. For convenience, the span value should correspond to 100 percent of the recorder scale.

2.3 Calibration Gas. A known concentration of a gas in an appropriate diluent gas.

2.4 Zero Drift. The difference in the measurement system response to a zero level calibration gas before and after a stated period of operation during which no unscheduled maintenance, repair, or adjustment took place.

2.5 Calibration Drift. The difference in the measurement system response to a mid-level calibration gas before and after a stated period of operation during which no unscheduled maintenance, repair or adjustment took place.

2.6 Response Time. The time interval from a step change in pollutant concentration at the inlet to the emission measurement system to the time at which 95 percent of the corresponding final value is reached as displayed on the recorder.

2.7 Calibration Error. The difference between the gas concentration indicated by the measurement system and the known concnetration of the calibration gas.

3. Apparatus

A schematic of an acceptable measurement system is shown in Figure 25A-1. The essential components of the measurement system are described below:

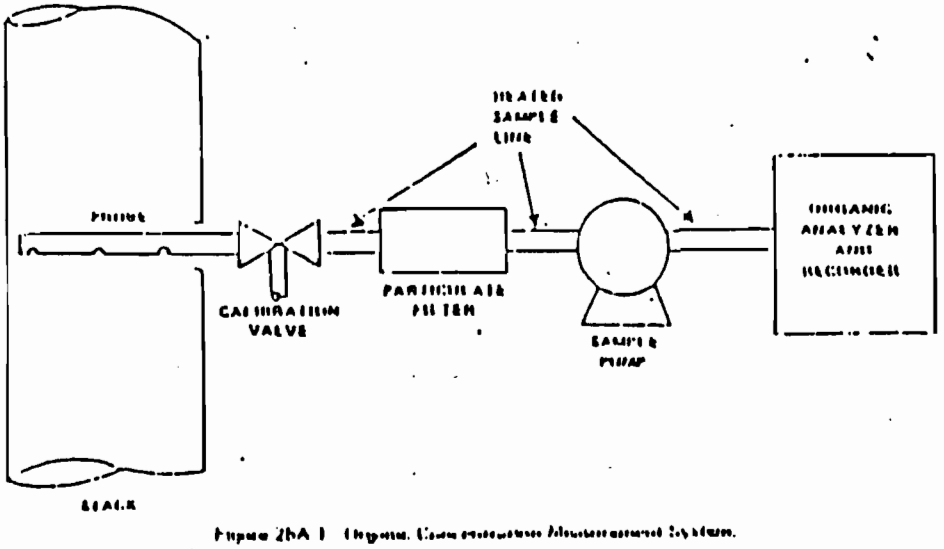


Figure 25A-1 Organic Concentration Measurement System.

3.1 Organic Concentration Analyzer. A flame ionization analyzer (FIA) capable of meeting or exceeding the specifications in this method.

3.2 Sample Probe. Stainless steel, or equivalent, three-hole rake type. Sample holes shall be 4 mm in diameter or smaller and located at 16.7, 50, and 83.3 percent of the equivalent stack diameter. Alternatively, a single opening probe may be used so that a gas sample is collected from the centrally located 10 percent area of the stack cross-section.

3.3 Sample Line. Stainless steel or Teflon* tubing to transport the sample gas to the analyzer. The sample line should be heated, if necessary, to prevent condensation in the line.

3.4 Calibration Valve Assembly. A three-way valve assembly to direct the zero and calibration gases to the analyzer is recommended. Other methods, such as quick-connect lines, to route calibration gas to the analyzers are applicable.

3.5 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 should be heated to prevent any condensation.

3.6 Recorder. A strip-chart recorder, analog computer, or digital recorder for recording measurement data. The minimum data recording requirement is one measurement value per minute. Note: This method is often applied in highly explosive areas. Caution and care should be exercised in choice of equipment and installation.

4. Calibration and Other Gases

Gases used for calibrations, fuel, and combustion air (if required) are contained in compressed gas cylinders. Preparation of calibration gases shall be done according to the procedure in Protocol No. 1, listed in Reference 9.2. 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

---

*Mention of trade names or specified products does not constitute endorsement.

(i.e., organics between 1 and 10 percent by volume), alternative methods for preparing calibration gas mixtures, such as dilution systems, may be used with prior approval of the Director.

Calibration gases usually consist of propane in air or nitrogen and are determined in terms of the span value. Organic compounds other than propane can be used following the above guidelines and making the appropriate corrections for response factor.

4.1 Fuel. A 40 percent H_2/60 percent He or 40 percent H_2/60 percent N_2gas mixture is recommended to avoid an oxygen synergism effect that reportedly occurs when oxygen concentration varies significantly from a mean value.

4.2 Zero Gas. High purity air with less than 0.1 parts per million by volume (ppmv) of organic material (propane or carbon equivalent) or less than 0.1 percent of the span value, whichever is greater.

4.3 Low-level Calibration Gas. An organic calibration gas with a concentration equivalent to 25 to 35 percent of the applicable span value.

4.4 Mid-level Calibration Gas. An organic calibration gas with a concentration equivalent to 45 to 55 percent of the applicable span value.

4.5 High-level Calibration Gas. An organic calibration gas with a concentration equivalent to 80 to 90 percent of the applicable span value.

5. Measurement System Performance Specifications

5.1 Zero Drift. Less than ±3 percent of the span value.

5.2 Calibration Drift. Less than ±3 percent of span value.

5.3 Calibration Error. Less than ±5 percent of the calibration gas value.

6. Pretest Preparations

6.1 Selection of Sampling Site. The location of the sampling site is generally specified by the applicable regulation or purpose of the test; i.e., exhaust stack, inlet line, etc. The sample port shall be located at least 1.5 meters or 2 equivalent diameters upstream of the gas discharge

to the atmosphere.

6.2 Location of Sample Probe. 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.

6.3 Measurement System Preparation. Prior to the emission test, assemble the measurement system following the manufacturer's written instructions in preparing the sample interface and the organic analyzer. Make the system operable.

FIA equipment can be calibrated for almost any range of total organics concentrations. For high concentrations of organics (>1.0 percent by volume as propane) modifications to most commonly available analyzers are necessary. One accepted method of equipment modification is to decrease the size of the sample to the analyzer through the use of a smaller diameter sample capillary. Direct and continuous measurement of organic concentration is a necessary consideration when determining any modification design.

6.4 Calibration Error Test. Immediately prior to the test series (within 2 hours of the start of the test) introduce zero gas and high-level calibration gas at the calibration valve assembly. Adjust the analyzer output to the appropriate levels, if necessary. Calculate the predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level responses. Then introduce low-level and mid-level calibration gases successively to the measurement system. Record the analyzer responses for low-level and mid-level calibration gases and determine the differences between the measurement system responses and the predicted responses. These differences must be less than 5 percent of the respective calibration gas value. If not, the measurement system is not acceptable and must be replaced or repaired prior to testing. No adjustments to the measurement system shall be conducted after the calibration and before the drift check (Section 7.3). If adjustments are necessary before the completion of the test series, perform the drift checks prior to the required adjustments and repeat the calibration following the adjustments. If multiple electronic ranges are to be used, each additional range must be checked with a mid-level calibration gas to verify the multiplication factor.

6.5 Response Time Test. Introduce zero gas into the measurement system at the calibration valve assembly. When the system output has stabilized, switch quickly to the high-level calibration gas. Record the time from the concentration change to the measurement system response equivalent to 95 percent of the step change. Repeat the test three times and average the results.

7. Emission Measurement Test Procedure

7.1 Organic Measurement. Begin sampling at the start of the test period, recording time and any required process information as appropriate. In particular, note on the recording chart periods of process interruption or cyclic operation.

7.2 Drift Determination. Immediately following the completion of the test period and hourly during the test period, reintroduce the zero and mid-level calibration gases, one at a time, to the measurement system at the calibration valve assembly. (Make no adjustments to the measurement system until after both the zero and calibration drift checks are made). Record the analyzer response. If the drift values exceed the specified limits, invalidate the test results preceding the check and repeat the test following corrections to the measurement system. Alternatively, recalibrate the test measurement system as in Section 6.4 and report the results using both sets of calibration data (i.e., data determined prior to the test period and data determined following the test period).

8. Organic Concentration Calculations

Determine the average organic concentration in terms of ppmv as propane or other calibration gas. The average shall be determined by the integration of the output recording over the period specified in the applicable regulation.

If results are required in terms of ppmv as carbon, adjust measured concentrations using Equation 25A-1.

$$C_e = K C_{meas} \qquad \text{Equation 25A-1}$$

where:

C_e = Organic concentration as carbon, ppmv.

C_{meas} = Organic concentration as measured, ppmv.

K = Carbon equivalent correction factor.

K = 2 for ethane.

K = 3 for propane.

K = 4 for butane.

K = Appropriate response factor for other organic calibration gases.

9. Bibliography

9.1 Measurement of Volatile Organic Compounds - Guideline Series. U.S. Environmental Protection Agency. Research Triangle Park, N.C. Publication No. EPA-450/2-78-041. June 1978. p. 46-54.

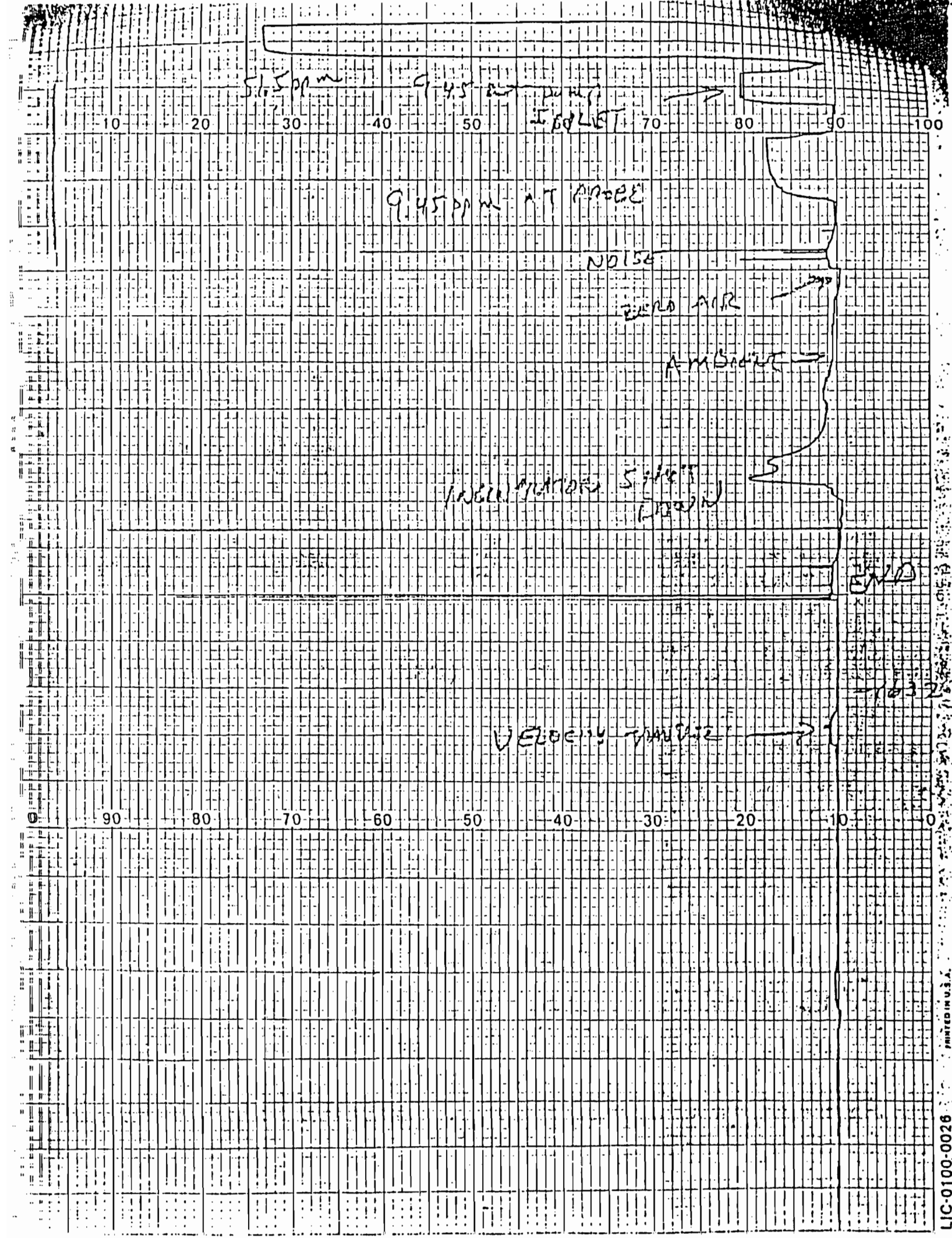
9.2 Traceability Protocol for Establishing True Concentrations of Gases Used for Calibration and Audits of Continuous Source Emission Monitors (Protocol No. 1). U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory. Research Triangle Park, N.C. June 1978.

9.3 Gasoline Vapor Emission Laboratory Evaluation - Part 2. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, N.C. EMB Report No. 75-GAS-6. August 1975.

APPENDIX C

STRIP CHART RECORDS

INCINERATOR INLET


10
20
30
40
50
60
70
80
90
100
0
90
80
70
60
50
40
30
20
10
0

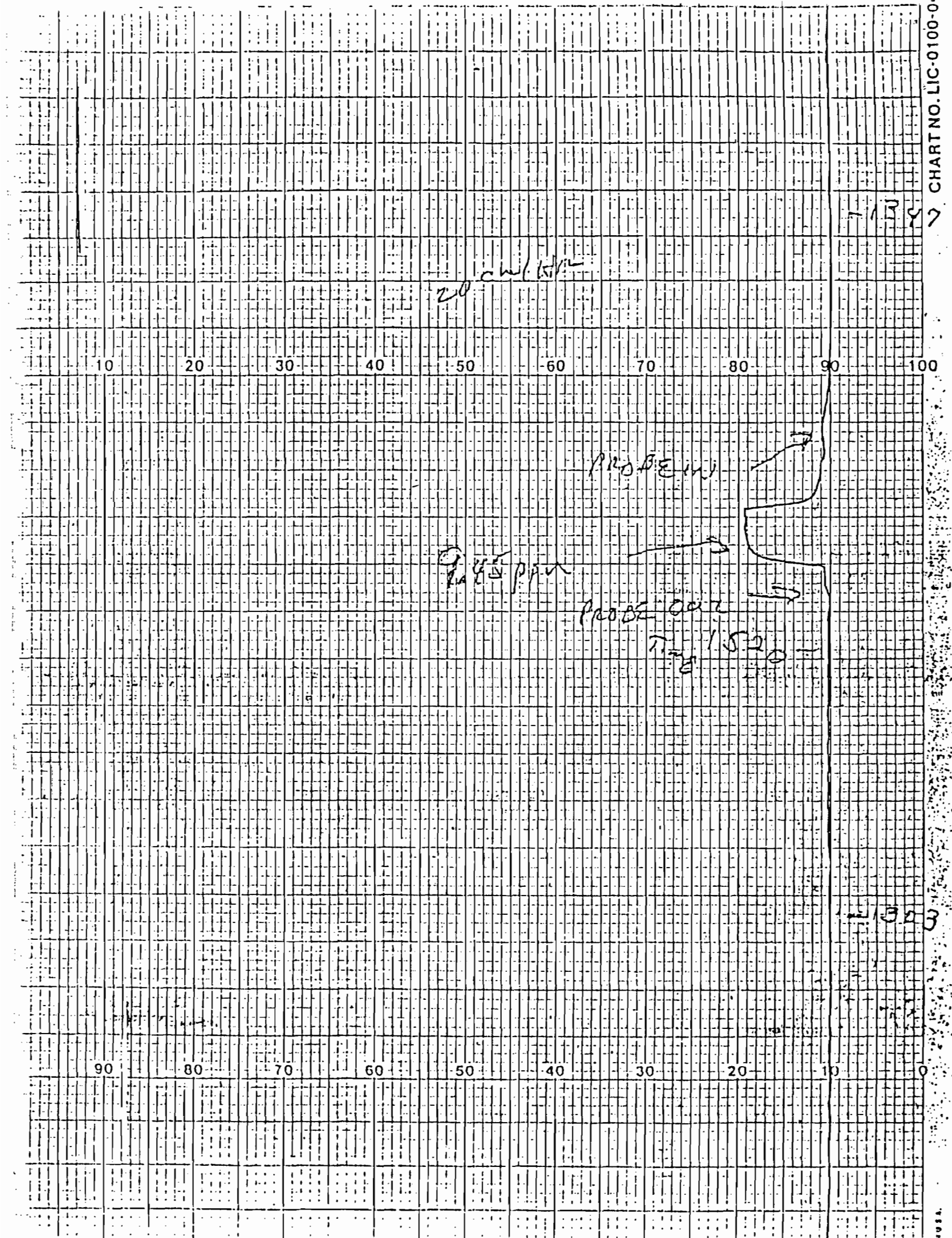


CHART NO. LIC-0100-0
10
20
30
40
50
60
70
80
90
100
20 cm/hr
PROBE IN
PROBE OUT
90
80
70
60
50
40
30
20
10
0

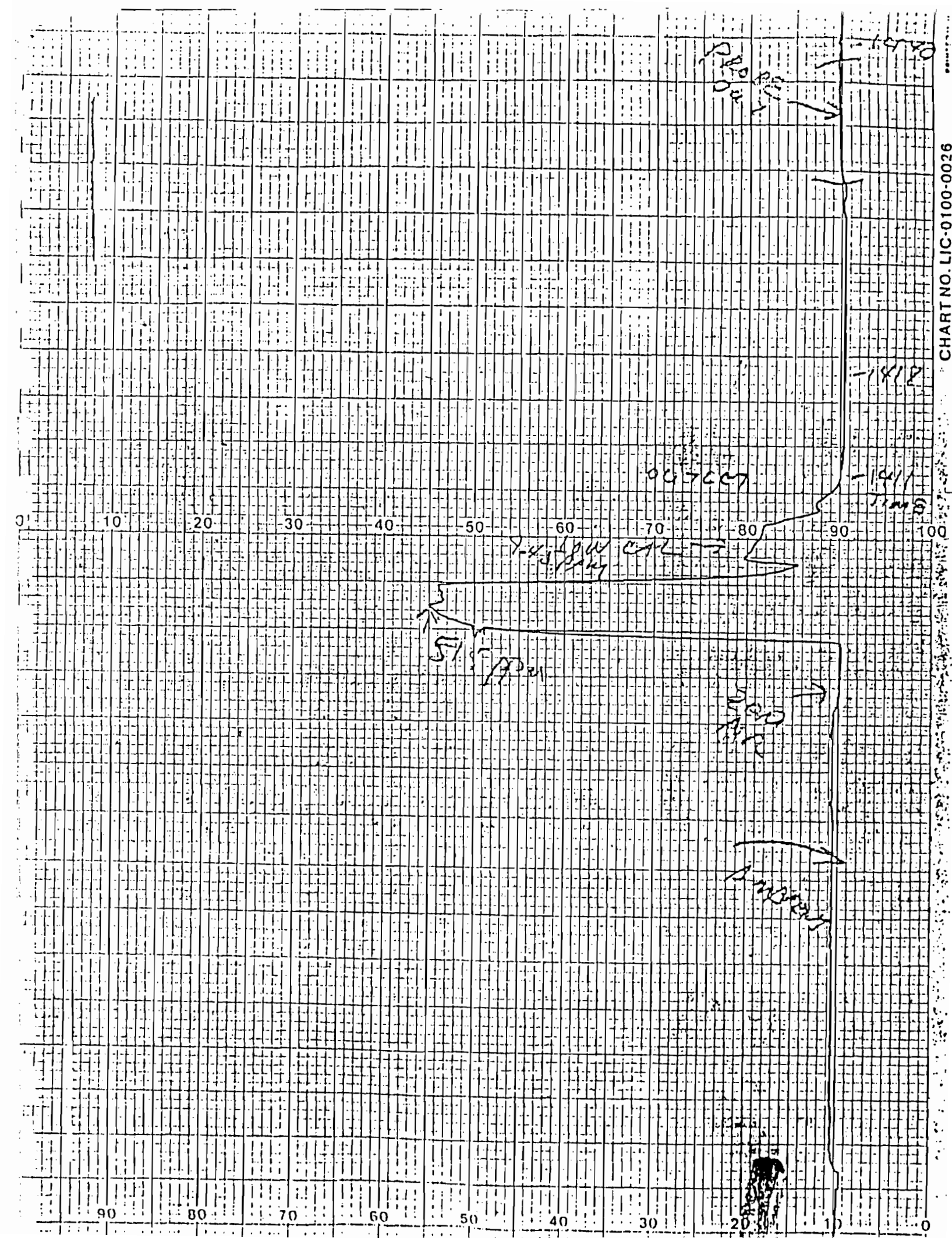
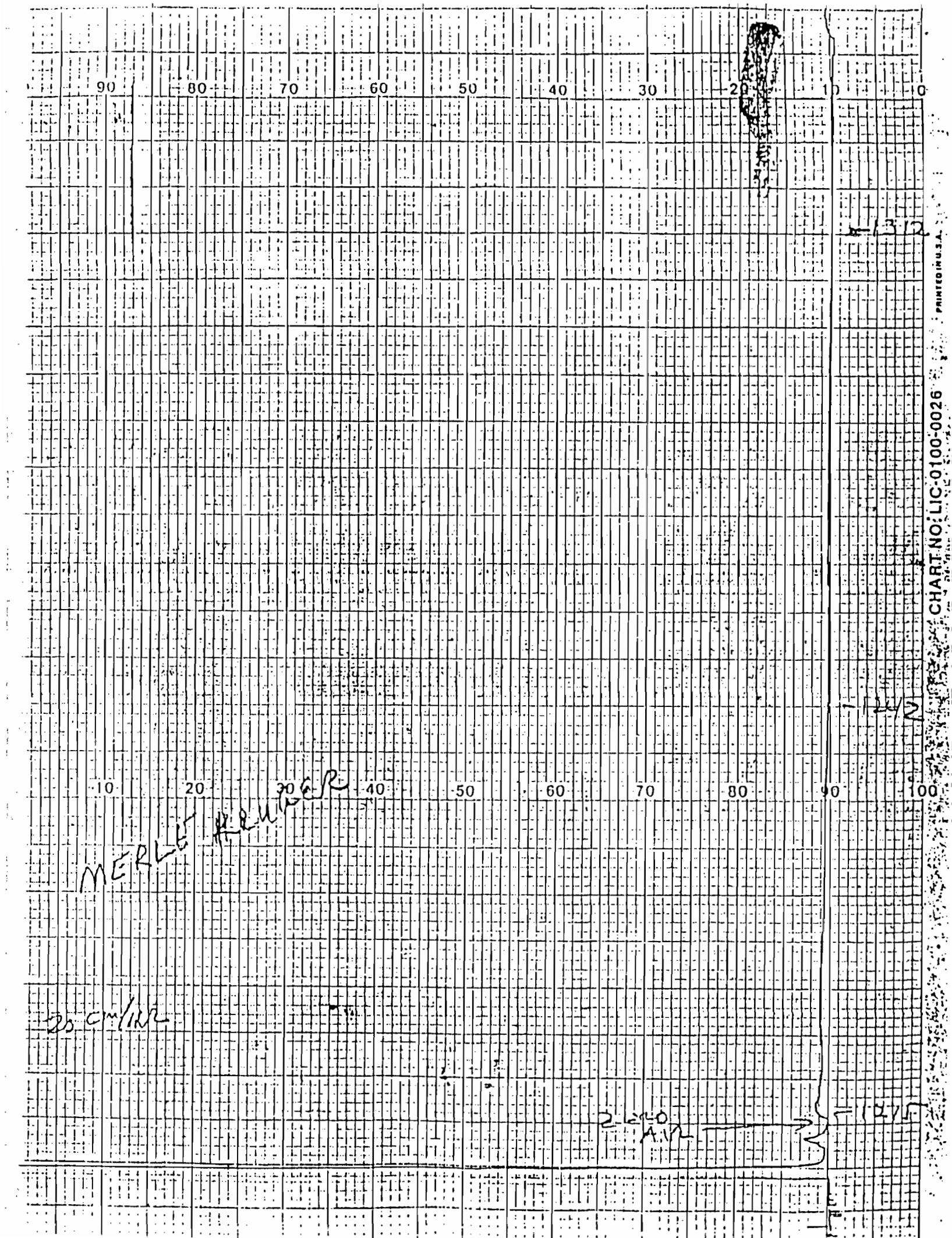


CHART NO. LIC-0100-0026
0
10
20
30
40
50
60
70
80
90
100
90
80
70
60
50
40
30
20
10
0


90
80
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
MERLIN HUMIDIFIER
30 CM/HR
CHART NO. LIC-0100-0026
PRINTED IN U.S.A.

PROJECT PARTICIPANTS

ACE

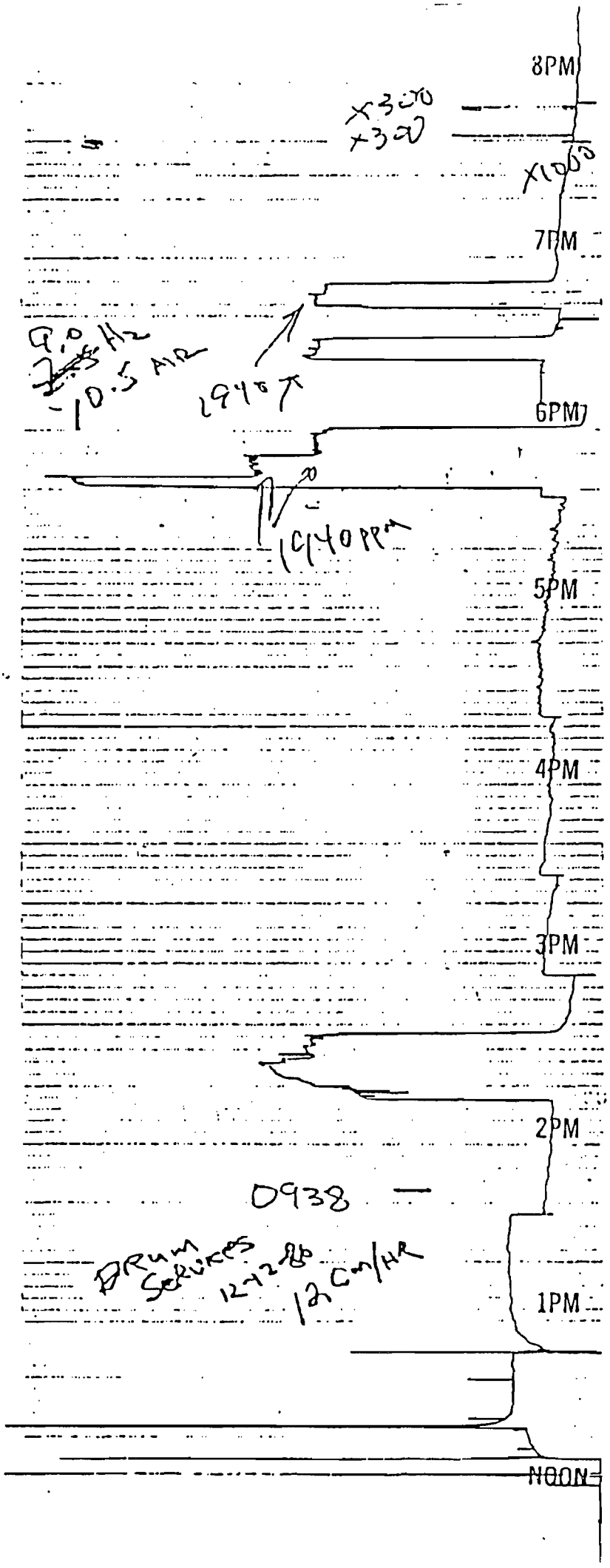
Stephen L. Neck, P.E.	Field Testing Report Preparation
Colleen Hodge	Field Testing
Carolyn T. Graham	Document Production

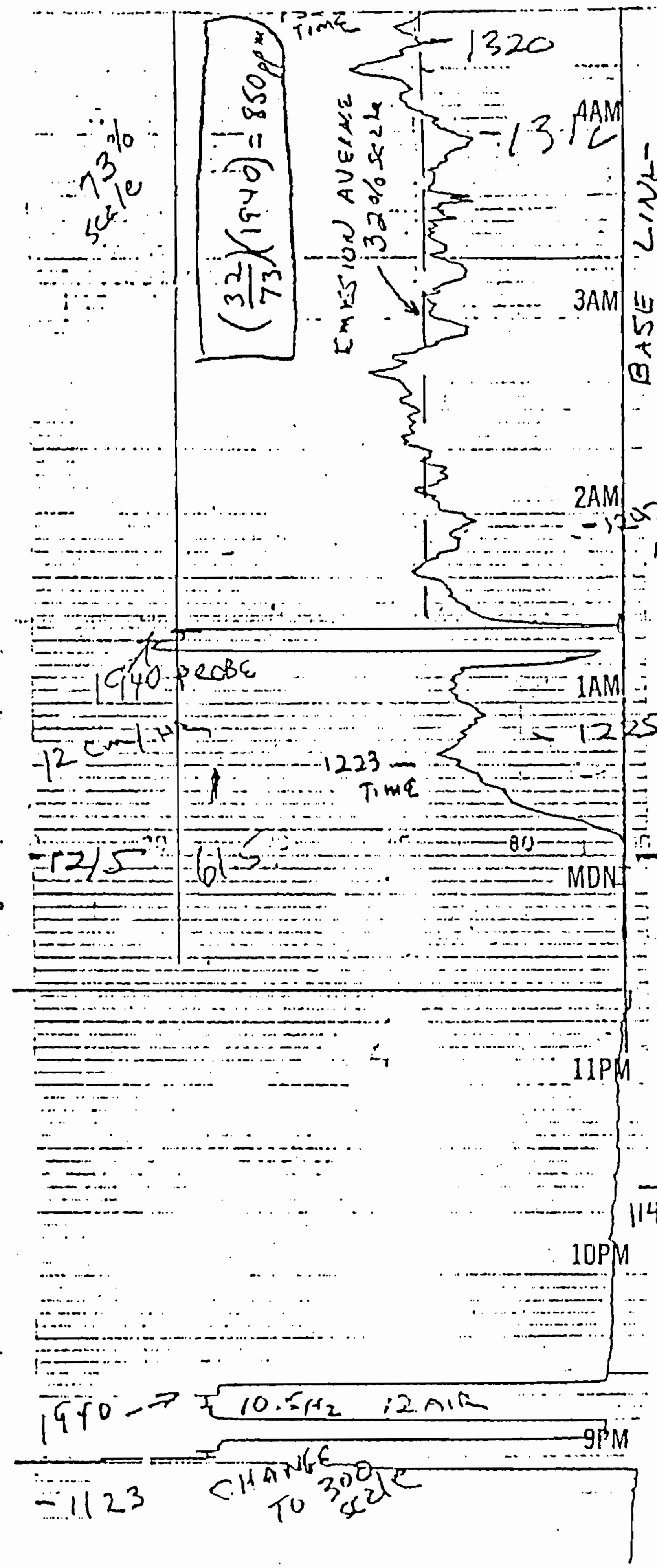
TSI

A. E. Henderson, Jr.	Project Manager

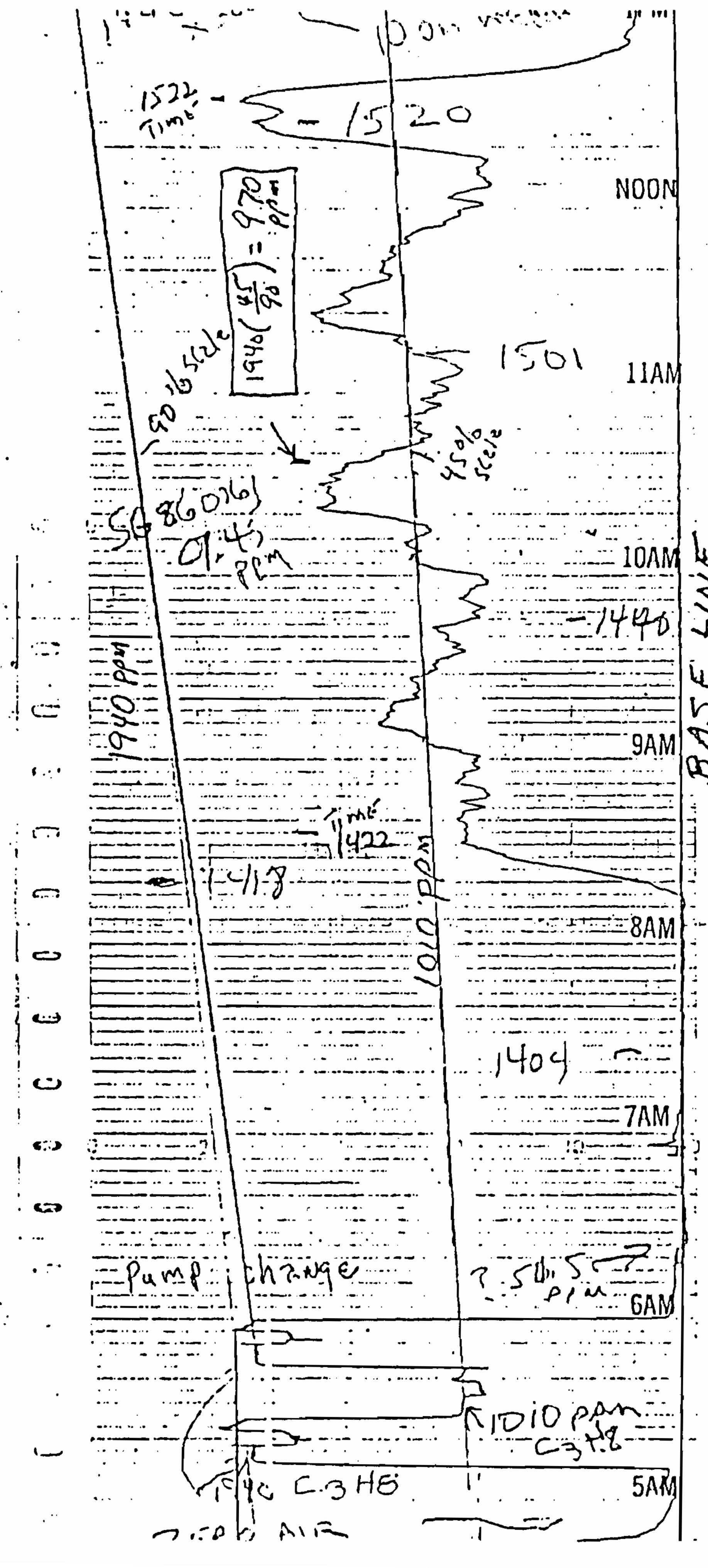
APPENDIX D

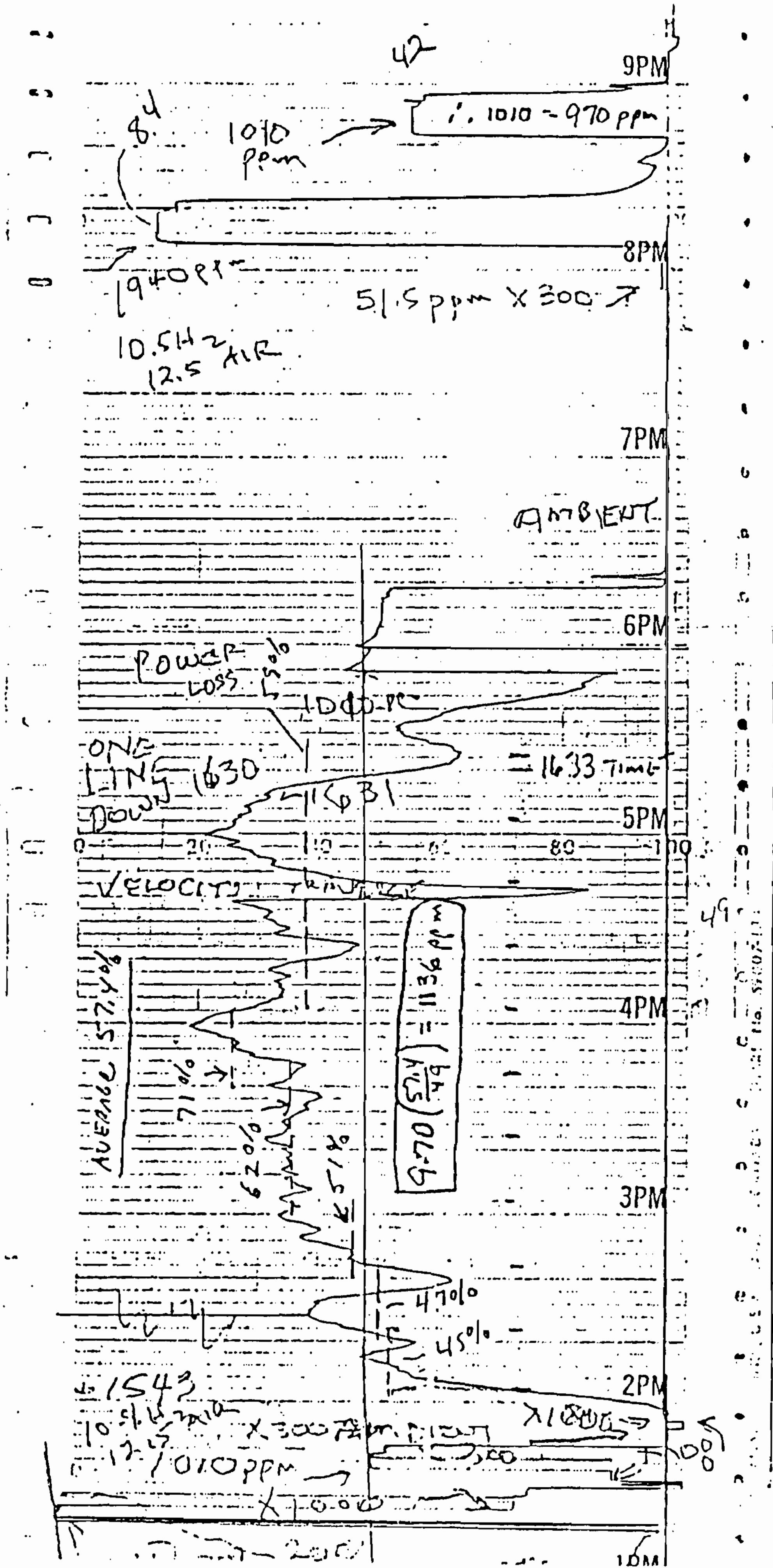
PROJECT PARTICIPANTS


8PM
X300
X300
X1000
7PM
9.0 H2
10.5 AIR
194°F
6PM
1040 PPM
5PM
4PM
3PM
2PM
0938
DRUM SERVICES
12-28-88
12 Cm/HR
1PM
NOON



1320
TIME
4AM
1312
73% scale
(32/73)(1940) = 850 ppm
EMISSION AVERAGE 32% scale
3AM
BASE LINE
2AM
1290
1940 PROBE
1AM
1225
12 cm [illegible]
1223 TIME
80
1215
615
MDN
11PM
1149
10PM
1940 → 10.5 H2 12 AIR
9PM
1123
CHANGE TO 300 scale


1522 Time
1520
NOON
1940 (45/90) = 970 ppm
90% scale
1501
11AM
45% scale
SG 86076)
01.4 ppm
10AM
1440
BASE LINE
1940 PPM
9AM
Time 1422
1418
1010 PPM
8AM
1404
7AM
Pump change
6AM
1010 PPM C3H8
1940 C3H8
5AM



42
9PM
1010 - 970 ppm
1010 ppm
8PM
1940 ppm
51.5 ppm X 300
10.5 H2 AIR
12.5
7PM
AMBIENT
6PM
POWER LOSS
1000 PC
ONE LINE DOWN 1630
1633 TIME
1631
5PM
0
20
40
60
80
100
49
4PM
970 (51.4/49.5) = 1136 ppm
AVERAGE 57.4%
71%
62%
51%
3PM
47%
45%
1543
2PM
1800
1010 ppm

INCINERATOR OUTLET

80
70
60
50
40
30
20
10
0
INLET
20
30
40
50
60
70
80
90
100
DRUM
CHART NO. LIC-0100-0026

CHART NO. LIC-0100-0026

PRINTED IN U.S.A.

90
80
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
CHART NO. LIC-0100-0026

ATTACHMENT F

SYSTEM DRAWINGS

File Copy

CROSS/TESSITORE & ASSOCIATES, P.A.

REGISTERED PROFESSIONAL ENGINEERS

ENVIRONMENTAL ENGINEERS

DRUM SERVICE COMPANY OF FLORIDA,
PERMIT AC 48-114677
CERTIFICATE OF COMPLETION OF
CONSTRUCTION, SUPPORTING
DOCUMENTATION

April 30, 1987

ATTACHMENT A

VOC EMISSIONS AND ALLOWABLE CALCULATIONS

Revised 2-27-87

MAXIMUM HOURLY VOC EMISSIONS COMPLIANCE SUMMARY*

(Test Results 12/12/86)
(Revised 2/24/87)

Line	Source	Actual (lb/hr)	Allowable[1] (lb/hr)	Allowable[a] (lb/hr)
Tight Head Drum Line	A1	35.65		
	B1	0.02		
	Total	35.67	55.30	51.10
Open Head Drum Line	A2	72.52		
	A3	41.93		
	B2	0.02		
	Total	114.47	106.40	127.55
Lids Line	A4	10.437		
	A5	6.847		
	B3	0.008		
	Total	17.29	15.30	20.07
Facility Total		170.43	177.00	198.72

* Drum Production Rate = 550 drums/hour

[1] Allowable based on average paint consumption figures in permit application

[a] Allowable based on actual paint consumption during test period and 17-2.650(1)(f)14.b.(A) and (B)
4.3 lbs VOC per gallon of clear coating
3.5 lbs VOC per gallon of other coatings

ACTUAL VOC EMMISION POINT SUMMARY

MAXIMUM HOURLY (lbs/hr)*

(Revised 2-24-87)

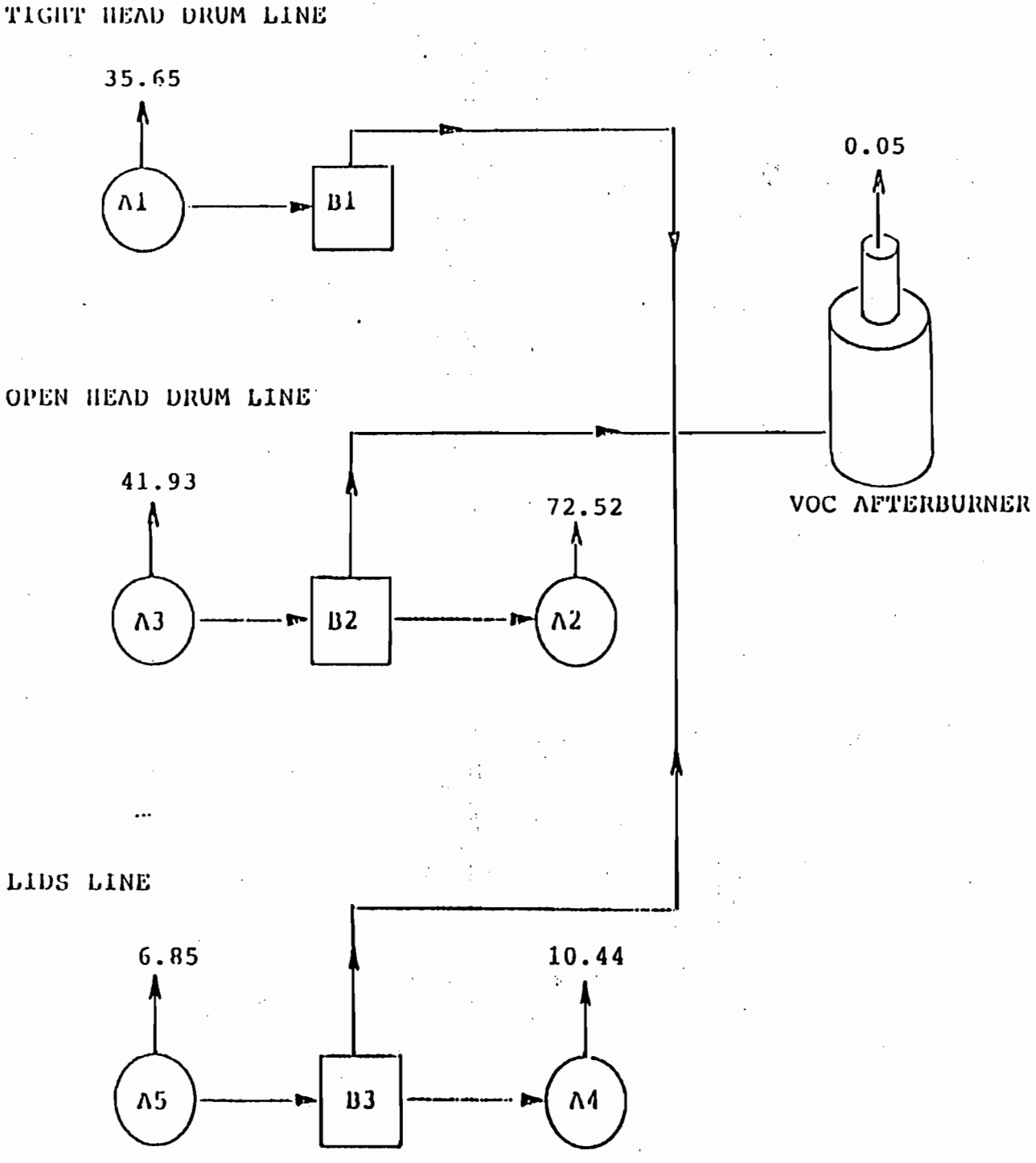


FIGURE 1

A- PAINT SPRAY BOOTH
B- PAINT BAKE OVEN

*250 Tight head drums/hr
*300 Open head drums/hr
for test of 12-12-86

1.0 PAINT CONSUMPTION SUMMARY

	PAINT DESCRIPTION	CONSUMPTION (gals) RUNS 1	2	3
1.1	Tight Head Drum Line (A1/B1)			
	Valspar White (210-W-24)	3.01	3.80	1.20
	Southern Coatings Black (64-4097)	12.99	11.20	0.00
	Dozier & Gay Blue (70-171)	0.00	2.80	8.80
1.2	Open Head Drum Line (A3/A2/B2)			
	A3 (Interior Spray Booth)			
	Valspar Liner (285-R-9)	16.80	15.20	12.80
	Xylene (Shell)	<-------2.50------>		
	A2 (Exterior Spray Booth)			
	Southern Coatings Black (64-4097)	<------13.91------>		
	Dozier & Gay Blue (70-171)	<------37.31------>		
1.3	Lids Line (A4/A5/B3)			
	A5 (Lids Interior Spray Booth)			
	Valspar Liner (285-R-9)	2.40	4.40	3.20
	A4 (Lids Exterior Spray Booth)			
	Southern Coatings Black (64-4097)	<-------2.00------>		
	Dozier & Gay Blue (70-171)	<-------5.37------>		

2.0 PAINT CHARACTERISTICS SUMMARY

	Density (lb/gal)	VOC (lb/gal)
Valspar White (210-W-24)	9.31	3.89
Southern Coatings Black (64-4097)	7.40	4.00
Dozier & Gay Blue (70-171)	8.19	4.34
Valspar Liner (285-R-9)	8.20	4.28
Xylene (Shell)	7.16	7.16

3.0 EMISSION CALCULATIONS (MAXIMUM HOURLY)

3.1 Tight Head Drum Line (A1/B1)

Emission Points	Assumptions
A1 (Exterior Spray Booth)	60% of VOC's captured with no control and 40% of VOC's to B1 (Exterior Bake Oven)
B1 (Exterior Bake Oven)	40% of VOC's captured from A1 and controlled by thermal oxidizer

A1 Emissions (Exterior Spray Booth)

Let P_W = White Paint Consumed

= 3.01 + 3.80 + 1.20

= 8.01 gals

V_W = White Paint VOC

= 3.89 lb/gal

P_{BK} = Black Paint Consumed

= 12.99 + 11.20

= 24.19 gals

V_{BK} = Black Paint VOC

= 4.00 lb/gal

P_{BL} = Blue Paint Consumed

= 2.80 + 8.80

= 11.60 gals

V_{BL} = Blue Paint VOC

= 4.34 lb/gal

CE_B = Capture Efficiency of Spray Booth

= 0.60

Using the above, the emissions from A1 are calculated as follows:

$A1 = ((P_W \times V_W) + (P_{BK} \times V_{BK}) + (P_{BL} \times V_{BL})) \times CE_B$

= ((8.01 gals x 3.89 lb/gal)

+ (24.19 gals x 4.00 lb/gal)

+ (11.60 gals x 4.34 lb/gal)) x 0.60

= 106.96 lbs

B1 Emissions (Exterior Bake Oven for Spray Booth A1)

Let A1 = Uncontrolled VOC's from Exterior Spray Booth A1

= 106.96 lbs

CE_B = Capture Efficiency of Bake Oven

= 0.40

R_{TO} = Remaining Fraction of VOC's Due to Thermal Oxidizer

= 1 - 0.9988

= 0.0012

Using the above, the emissions from B1 are calculated as follows:

$B1 = A1 \times CE_B \times R_{TO}$

= 106.96 lbs x 0.40 x 0.0012

= 0.051 lbs

Tight Head Drum Line Total Emissions for Test

Total Emissions for Test = A1 + B1

= 106.96 + 0.051

= 107.011 lbs

$$\text{Average Hourly Emissions} = \frac{107.011 \text{ lbs}}{3 \text{ hours}} = 35.67 \text{ lb/hr}$$

3.2 Open Head Drum Line (A3/B2/A2)

Emission Points	Assumptions
A3 (Interior Liner Spray Booth)	60% of VOC's captured with no control and 40% of VOC's to B2 (Interior Bake Oven)
B2 (Interior Bake Oven)	40% of VOC's captured from A3 and controlled by thermal oxidizer
A2 (Exterior Paint Spray Booth)	No control and drums from A2 are air dried

A3 Emissions (Interior Liner Spray Booth)

Let L = Interior Liner Consumed

= 16.80 + 15.20 + 12.80

= 44.80 gals

V_L = Liner VOC

= 4.28 lb/gal

X = Xylene Consumed

= 2.50 gals

V_x = Xylene VOC

= 7.16 lb/gal

CE_B = Capture Efficiency of Spray Booth

= 0.60

Using the above, the emissions from A3 are calculated as follows:

$A3 = ((L \times V_L) + (X \times V_x)) \times CE_B$

= ((44.80 gals x 4.28 lb/gal)

+ (2.50 gal x 7.16 lb/gal)) x 0.60

= 125.79 lbs

B2 Emissions (Interior Bake Oven for Spray Booth A3)

Let A3 = Uncontrolled VOC's from Exterior Spray Booth A3

= 125.79 lbs

CE_b = Capture Efficiency of Bake Oven

= 0.40

R_{Tb} = Remaining Fraction of VOC's Due to Thermal Oxidizer

= 1 - 0.9988

= 0.0012

Using the above, the emissions from B1 are calculated as follows:

B2 = A3 x CE_b x R_{Tb}

= 125.79 lbs x 0.40 x 0.0012

= 0.06 lbs

A2 Emissions (Exterior Paint Spray Booth)

Let P_{bK} = Black Paint Consumed

= 13.91 gals

V_{bK} = Black Paint VOC

= 4.00 lb/gal

P_{bL} = Blue Paint Consumed

= 37.31 gals

V_{bL} = Blue Paint VOC

= 4.34 lb/gal

Using the above, the emissions from A2 are calculated as follows:

A2 = (P_{bK} x V_{bK}) + (P_{bL} x V_{bL})

= (13.91 gals x 4.00 lb/gal)

+ (37.31 gals x 4.34 lb/gal)

= 217.57 lbs

Open Head Drum Line Total Emissions for Test

Total Emissions for Test = A3 + B2 + A2

= 125.79 + 0.06 + 217.57

= 343.42 lbs

$$\text{Average Hourly Emissions} = \frac{343.42 \text{ lbs}}{3 \text{ hours}} = 114.47 \text{ lb/hr}$$

3.3 Lids Line (A5/A4/B3)

Emission Points	Assumptions
A5 (Lids Interior Liner Spray Booth)	60% of VOC's captured with no control and 40% of VOC's to B2 (Lids Bake Oven)
A4 (Lids Exterior Spray Booth)	No control and lids from A4 are air dried
B3 (Lids Bake Oven)	40% of VOC's captured from A5 and A4 and controlled by thermal oxidizer

A5 Emissions (Lids Interior Spray Booth)

Let L = Interior Liner Consumed

= 2.40 + 4.40 + 3.20

= 10.00 gals

V_L = Liner VOC

= 4.28 lb/gal

CE_B = Capture Efficiency of Spray Booth

= 0.60

EX = Excess Lids Correction Factor

= 0.80

Using the above, the emissions from A5 are calculated as follows:

$A5 = (L \times V_L) \times CE_a \times EX$

$= (10.00 \text{ gals} \times 4.28 \text{ lb/gal}) \times 0.60 \times 0.80$

$= 20.54 \text{ lbs}$

A4 Emissions (Lids Exterior Spray Booth)

Let P_{aK} = Black Paint Consumed

$= 2.00 \text{ gals}$

V_{aK} = Black Paint VOC

$= 4.00 \text{ lb/gal}$

P_{aL} = Blue Paint Consumed

$= 5.37 \text{ gals}$

V_{aL} = Blue Paint VOC

$= 4.34 \text{ lb/gal}$

Using the above, the emissions from A4 are calculated as follows:

$A4 = (P_{aK} \times V_{aK}) + (P_{aL} \times V_{aL})$

$= (2.00 \text{ gals} \times 4.00 \text{ lb/gal})$

$+ (5.37 \text{ gals} \times 4.34 \text{ lb/gal})$

$= 31.31 \text{ lbs}$

B3 Emissions (Lids Bake Oven)

Let A5 = Uncontrolled VOC's from Exterior Spray Booth A5

$= 20.54 \text{ lbs}$

A4 = Uncontrolled VOC's from Exterior Spray Booth A4

$= 31.31 \text{ lbs}$

CE_b = Capture Efficiency of Bake Oven

= 0.40

R_{Tb} = Remaining Fraction of VOC's Due to Thermal Oxidizer

= 1 - 0.9988

= 0.0012

Using the above, the emissions from B1 are calculated as follows:

B3 = (A5 +A4) x CE_b x R_{Tb}

= (20.54 lbs + 31.31 lbs) x 0.40 x 0.0012

= 0.025 lbs

Lids Line Total Emissions for Test

Total Emissions for Test = A5 + A4 + B3

= 20.54 + 31.31 + 0.025

= 51.875 lbs

$$\text{Average Hourly Emissions} = \frac{51.875 \text{ lbs}}{3 \text{ hours}} = 17.29 \text{ lb/hr}$$

4.0 CALCULATION OF ALLOWABLE VOC'S BASED ON ACTUAL COATING CONSUMPTION

4.1 Tight Head Drum Line (A1/B1)

Let C = Total Coating Consumed

= 43.80 gals

V_{ca} = Coating Allowable VOC

= 3.50 lb/gal

Allowable VOC's = C x V_{ca}

= 43.80 gals x 3.50 lb/gal

= 153.30 lbs

$$\text{Allowable Hourly Emission} = \frac{153.30 \text{ lbs}}{3 \text{ hours}} = 51.10 \text{ lb/hr}$$

4.2 Open Head Drum Line (A3/B2/A2)

Let L = Total Liner Consumed

= 47.30 gals

V_{LA} = Liner Allowable VOC

= 4.30 lb/gal

C = Total Coating Consumed

= 51.22 gals

V_{CA} = Coating Allowable VOC

= 3.50 lb/gal

Allowable VOC's = $(L \times V_{LA}) + (C \times V_{CA})$

= (47.30 gals x 4.30 lb/gal)

+ (51.22 gals x 3.50 lb/gal)

= 382.66 lbs

$$\text{Allowable Hourly Emission} = \frac{382.66 \text{ lbs}}{3 \text{ hours}} = 127.55 \text{ lb/hr}$$

4.3 Lids Line (A5/A4/B3)

Let L = Total Liner Consumed

= 10.00 gals

V_{LA} = Liner Allowable VOC

= 4.30 lb/gal

EX = Excess Lids Correction Factor

= 0.80

C = Total Coating Consumed

= 7.37 gals

V_{CA} = Coating Allowable VOC

= 3.50 lb/gal

Allowable VOC's = (L x EX x $V_{L,R}$) + (C x $V_{C,R}$)

= (10.00 gals x 0.80 x 4.30 lb/gal)

+ (7.37 gals x 3.50 lb/gal)

= 60.20 lbs

$$\text{Allowable Hourly Emission} = \frac{60.20 \text{ lbs}}{3 \text{ hours}} = 20.07 \text{ lb/hr}$$

CALCULATION OF A2 AND A4 PAINT CONSUMPTION

Paint consumption for paint booths A2 and A4 was measured together, therfore, the ratio of areas painted between A2 and A4 can be used to determine the paint consumption distribution. Booth A2 sprays the exterior portion of the drum (without the lid), while A4 sprays the exterior portion of the lid.

Open Head Drum Exterior Surface Area = 20.95 ft²

Drum Lid Exterior Surface Area = 3.01 ft²

Total Drum Exterior Surface Area = 23.96 ft²

Also, as noted in J.M. Murphy's letter of January 27, 1987, 375 lids were painted instead of 300. Therfore, the paint consumption must be adjusted to reflect a production rate of 300 open head drums per hour for compliance.

A2 Paint Consumption (Exterior Surface without Lid)

Correction Factor =

$$\frac{300 \text{ drums} \times 20.95 \text{ ft}^2/\text{drum}}{(300 \text{ drums})(20.95 \text{ ft}^2/\text{drum}) + (375 \text{ lids})(3.01 \text{ ft}^2/\text{lid})}$$

$$= \frac{6{,}285 \text{ ft}^2}{7{,}414 \text{ ft}^2} = 0.848$$

Total Black Paint Consumed = 16.40 gals

Total Blue Paint Consumed = 4.80 + 20.40 + 18.80

= 44.00 gals

A2 Black Paint Consumption = (0.848)(16.40 gals)

= 13.91 gals

A2 Blue Paint Consumption = (0.848)(44.00 gals)

= 37.31 gals

A4 Paint Consumption (Exterior Surface of Lid)

Correction Factor =

$$\frac{300 \text{ lids} \times 3.01 \text{ ft}^2/\text{lid}}{(300 \text{ drums})(20.95 \text{ ft}^2/\text{drum}) + (375 \text{ lids})(3.01 \text{ ft}^2/\text{lid})}$$

$$= \frac{903 \text{ ft}^2}{7,414 \text{ ft}^2} = 0.122$$

Total Black Paint Consumed = 16.40 gals

Total Blue Paint Consumed = 4.80 + 20.40 + 18.80

= 44.00 gals

A4 Black Paint Consumption = (0.122)(16.40 gals)

= 2.00 gals

A4 Blue Paint Consumption = (0.122)(44.00 gals)

= 5.37 gals

Calculation of Paint Consumption for A5

Since 375 lids were painted in A5 (the Lids Interior Spray Booth) and 300 lids/hour is required for compliance, resulting lids interior paint consumption must be adjusted by the factor 300/375 or 0.80.

ATTACHMENT B

COATING CONSUMPTION AND DRUM PRODUCTION DATA SHEETS

Revised 2-27-87

DRUM SERVICE CO. OF FLORIDA

POST OFFICE BOX 278
ZELLWOOD, FLORIDA 32798
PHONE AREA 305 — 889-2581

January 27, 1987

Mr. Joseph Tessitore
Cross/Tessitore & Associates
4759 S. Conway Road
Orlando, FL 32812

Dear Joe:

This is in response to your request for us to review the method of counting drum covers "produced" during the VOC compliance tests conducted on December 12, 1986.

Your hunch was right - there is an error in the data we gave you. The correct figures for the A5/B3 (open head interior cover lining oven) should be 375 units instead of 300.

The reason for the readjustment is as follows:

> Counting production for the drums painted or lined is easy: a man simply stands next to the conveyor and counts the drums as they go by, one at a time in a steady, continuous progression. With covers, however, the process is not so simple, for the lids are "racked" on a large device that holds 75 lids each. A completely loaded rack is then put into the oven, baked, then removed. The error came from the way we counted cover "production", which is obviously not continuous like the drums, but rather done in batches.
>
> Our men assumed that "production" referred to finished covers after they had been removed from the oven. For the purposes of VOC emissions and paint application, however, the relevant value is what went into the oven. At the end of the one hour of measured production, there was a rack of 75 lids in the oven drying. These came out right after the exact one hour point had passed, but they were not counted in the one hour's production. Obviously, though, they had been painted and put into the oven during the hour.

To get correct figures for paint usage (and therefore emissions calculations) you need to (a) subtract the paint utilized to paint this last rack from the paint utilization figures we measured and gave you; or (b) add the 75 units to the production figures. Since (a) would be an approximation and (b) is an exact figure, we recommend doing the latter, although you could figure pro rata paint consumption and do the former recalculation instead, if that makes the restatement work easier.

I'm sorry for this error. We tried very hard to have all bases covered during this complicated test. Looking back, it was a stupid mistake, but at the time I can't blame the man for thinking that the finished lids coming out equaled "production".

Very truly yours,

J. M. Murphy

bss

DRUM SERVICE CO. OF FLORIDA

POST OFFICE BOX 278
ZELLWOOD, FLORIDA 32798
PHONE AREA 305 — 889-2581

February 24, 1987

Mr. Joseph Tessitore
Cross/Tessitore & Associates
4759 S. Conway Road
Orlando, FL 32812

Dear Joe:

This is to confirm our conversation of 2/20/87 regarding xylene usage during the V.O.C. Test on 12/12/86. The total usage of xylene was 2.5 gallons for all three tests, not 2.5 gallons per test.

The amount of 2.5 gallons of xylene was recorded on a test data sheet. As a reference, this sheet was duplicated and used for the tests in error. The total of 2.5 gallons would then come to .83 gallons per test.

If you need any additional information, please feel free to contact me.

Very truly yours,

Al Dempster
Plant Manager

bss

ARROYO PROCESS EQUIPMENT, INC.
PROCESS EQUIPMENT FOR INDUSTRY
13750 Automobile Boulevard
Clearwater, Florida 33520
813/576-5294

Pumps, Tanks, Mixers

TAMPA - 253-3211
LAKELAND - 686-2092
JACKSONVILLE - 264-3774
FLA. WATS 800-445-2630

TELEX 52-719

12/12/86

SUMMARY of Test -

TEST	TIME	DRUMS RUN	PAINT USED Gallons	PAINT USED OZ
I	65 MIN	543	35.2	21.2
II	65 MIN	583	37.4	20.4
III	50 MIN	470	26.0	18.8
	3 HRS	1646	98.6	60.4
			Tot. Paint	159 GALS

Avg. DRUM/HR = 548.7

Avg Paint/HR = 53

Open Head / Exterior Coating

AE (12-12-86)

BLUE 3 gallon

Dozier & May

6246 - 492755

START	29½	GAL
1.13		
1.24 STOP	26½	4.8
2.19 START	26½	
2.49	20½	9.6
3.19	14½	9.6
3.24 STOP	13¾	1.2
3.44 START	13¾ (18)	
4.14	7½ 6¼ =	10.0
4.39	2 - 5½"	8.8

Total Blue 44 GALS

BLACK 2 gallon

Southern C

B910180 45

START	33½
12.19	
12.49	27½ =
1.13	23¼ =

Total Black 16

ARROYO PROCESS EQUIPMENT, INC.
PROCESS EQUIPMENT FOR INDUSTRY
13750 Automobile Boulevard
Clearwater, Florida 33520
813/576-5294

Pumps, Tanks, Mixers

TAMPA - 253-3211
LAKELAND - 686-2092
JACKSONVILLE - 264-3774
FLA. WATS 800-445-2630

TELEX 52-719

12/12/86 Test #1 Paint usage -

Time = 1 hr 5 min - start 12:15 PM
drums = 593 stop 1:20 PM

Paint used at control sta.	35.2	GALS
Paint used at OH booth	21.2	GALS
Total	56.4	

open time limit

Avg drums per hr = 547.4
Avg GAL's Paint per hr = 52.1

<u>METHOD 25A TEST</u>

Date 12/13 19 86

BOOTH / OVEN [A5/B3 Open Head Interior Cover Lining]

PAINT USED - Manufacturer: Valspar Code#: 255-R-9

SOLVENT - Type: ______ Amount: ______

	Units Processed: Per 15 Min.	Accumulative	Paint Level	Inch
Time Start	12:15		31.4	
15 -	~~||||~~ ||5 (75)	75		3/4" = 1.2
30 -	~~||||~~ ||5 (75)	150	31	
45 -	~~||||~~ ||5 (75)	225		3/4" = 1.2
60 -	~~||||~~ ||5 (75)	300	30.4	
				Gal.
Time				
15 -	|||+5	335		
30 -				
45 -				
60 -				
				Gal.
Time				
15 -				
30 -				
45 -				
60 -				
				Gal.

Notes
Test #1 stop first test at 1:20 GALS - 2.

2:35

Recorder ______

BEST AVAILABLE COPY

METHOD 25A TEST

Date 12-12 19 96

BOOTH / OVEN [A1/B1 Tighthead Exteriors]

PAINT USED -	Manufacturer	Code#
	[illegible]	[illegible]
	VALSPAR - WHITE	2366-57

SOLVENT -	Type	Amount

	Units Processed Per 15 Min.		Accumulative		Paint Level	Inch
					Start: [illegible] - 32 1/2	
					White - 28	
Time Start	15	(55)	1111 +5	55		
15 -		(60)	1111 1111 +2	117	[illegible] - 28 1/4	4 1/4" = 6.
30 -	12:45				12:45 White - 26 3/4	1 1/4" = 2.
45 -		(70)	1111 1111	187	[illegible] - 24 3/4	3 1/2" = 5.
60 -	1:15	(62)	1111 1111 +2	249	1:15 [illegible] - 20 1/4	1/2" = .8
						Gal.
					1:29 [illegible]	5/8" = .9
Time						1/8" = .2
15 -	1:30	(17)	17	266		Total 16.
30 -						
45 -						
60 -						
						Gal.
Time						
15 -						
30 -						
45 -						
60 -						
						Gal.

Notes

White = 3.01 gal
Black = 12.99 gal

TEST I

Recorder [signature]

ARROYO PROCESS EQUIPMENT, INC.
PROCESS EQUIPMENT FOR INDUSTRY
13750 Automobile Boulevard
Clearwater, Florida 33520
813/576-5294

Pumps, Tanks, Mixers

TAMPA - 253-3211
LAKELAND - 686-2092
JACKSONVILLE - 264-3774
FLA. WATS 800-445-2630

TELEX 52-719

12/13/86 Test #2 Paint usage.

Time = 1 hr 5 min start 2:15 PM
Drums = 583 stop 3:20 PM

Paint used at control sta. 37.4 GALS
Paint used at OH booth - 20.4 GALS
Total 57.8

Avg drums per hour: 538.2
Avg GAL's paint per hour: 53.4

JPP

METHOD 25A TEST

Date 12-12 19 86

BOOTH / OVEN [A3/B2 Open Head Interior Lining

PAINT USED -	Manufacturer	Code#
	Velsicol	1125-19

SOLVENT -	Type	Amount
	Xylene	5 Gal.

	Units Processed		Paint Level	Inch
	Per 15 Min.	Accumulative		
Time Start	2:15		23	
15 -	75	75		
30 -	75	150	18½	4½" =
45 -	75	225		
60 -	75	300	14	4½" =
				Gal.
Time	3:15			
15 -	25	325	13½	½" =
30 -				
45 -				
60 -				Total
				Gal.
Time				
15 -				
30 -				
45 -				
60 -				
				Gal.

Notes

Recorder JDSC

METHOD 25A TEST

Date 12-12 19 86

BOOTH / OVEN [A3/B2 Open Head Interior Lining]

PAINT USED -	Manufacturer	Code#
	Valspar	285829

SOLVENT -	Type	Amount
	Xylene	3 1/2 Gal

	Units Processed		Paint Level	Inch
	Per 15 Min.	Accumulative		
Time Start	12:15		33 1/2	
15 -	75	75		
30 -	75	150	28 1/2	5" = 8.0
45 -	75	225		
60 -	75	300	23 3/4	4 3/4 = 7.6
				Gal.
Time				
15 -	27	327		
30 -			23	3/4" = 1.2
45 -				
60 -				Total 16.8
				Gal.
Time				
15 -				
30 -				
45 -				
60 -				
				Gal.

Notes

1. 1

Recorder Jose

BEST AVAILABLE COPY

METHOD 25A TEST

Date 12-12 19 86

BOOTH / OVEN [A1/B1 Tighthead Exteriors]

PAINT USED - Manufacturer / Code#

SOLVENT - Type / Amount

	Units Processed Per 15 Min.	Units Processed Accumulative	Paint Level	Inch
Time Start	2.15		Black - 24 1/8	
			White - 20 1/8	
15 -	63	63	Black - 20 3/4	4 1/4" = 6.
30 -	63	126	White - 17 1/2	5/8" = 1.
45 -	63	189	Black - 19 (Blue start 24 3/4)	2 3/4" = 4.
60 -	41	230	White - 18 1/2	1" = 1.
			Blue - 26 1/4	1/8" = .
				Gal.
Time				
15 -	28	258	White - 17 3/4	3/4" = 1.
30 -			Blue - 25	1 1/4" = 2.
45 -				Total 17.
60 -				Gal.
Time				
15 -				
30 -				
45 -				
60 -				Gal.

Notes

White = 3.10 gal.
Black = 11.20 gal.
Blue = 2.8 gal.

1151 JT

Recorder _____

BEST AVAILABLE COPY

METHOD 25A TEST

Date 12/12 19 86

BOOTH / OVEN [A5/B3 Open Head Interior Cover Lining]

PAINT USED -	Manufacturer	Code#
	Valspar	15-K-9

SOLVENT -	Type	Amount

	Units Processed		Paint Level	Inch
	Per 15 Min.	Accumulative		
Time Start	2.75	3:15	30 1/4	
15 -	IIII 15 (75)	75		
30 -	IIII 15 (75)	150	29 1/8	1 1/8" = 2.
45 -	IIII 15 (75)	225		
60 -	IIII 15 (75)	300	[illegible]	1 1/4" = 2.
				Gal.
Time			27 3/4	Total 4
15 -	+ 15 (25)	325		
30 -				
45 -				
60 -				
				Gal.
Time				
15 -				
30 -				
45 -				
60 -				
				Gal.

Notes Test #2

+25

Recorder [signature]

ARROYO PROCESS EQUIPMENT, INC.
PROCESS EQUIPMENT FOR INDUSTRY
13750 Automobile Boulevard
Clearwater, Florida 33520
813/576-5294

Pumps, Tanks, Mixers

TELEX 52-719

TAMPA - 253-3211
LAKELAND - 686-2092
JACKSONVILLE - 264-3774
FLA. WATS 800-445-2630

12/12/86 Test #3 Paint usage

Time: 50 MIN 3:40 Start
Drums: 470 4:30 finish

Paint used at control Station 26 GALS
Paint used at OH Booth 18.8
44.8

Avg Drums per hr = 564
Avg Gals Paint per hr = 53.8

LHD

METHOD 25A TEST

Date 12-12-86 19 86

BOOTH / OVEN [A1/B1 Tighthead Exteriors]

PAINT USED -

	Manufacturer	Code#
	DOIRECT GAY - BLUE	6283
	VALSPAR - WHITE	286W57

SOLVENT -

	Type	Amount

	Units Processed Per 15 Min.	Accumulative		Paint Level	Inch	
				WHITE - 18 3/4		
Time Start	3:40			BLUE - 25		
15 -	~~1111~~ 1+3 (63)	63		WHITE - 18 1/4	1/2" =	.8
30 -	~~1111~~ 1+3 (63)	126		BLUE - 22	3" =	4.8
45 -	~~1111~~ 1+3 63	189		WHITE - 18	1/4" =	.4
60 -	11 ~~15~~ 25	214	3:10	BLUE - 19 1/2	2 1/2 =	4.0
					Gal.	
					Total	10.0

Time			
15 -			
30 -			
45 -			
60 -			

Gal.

Time			
15 -			
30 -			
45 -			
60 -			

Gal.

Notes

TEST III

White = 1.20 gal
Blue = 8.80 gal

Recorder ________________ /

METHOD 25A TEST

Date 12/12 19 86

BOOTH / OVEN [A3/B2 Open Head Interior Lining]

PAINT USED -	Manufacturer	Code#
	Valspar	245.497

SOLVENT -	Type	Amount
	Xylene	? gal

	Units Processed		Paint Level	Inch
	Per 15 Min.	Accumulative		
Time Start	3:00		13 1/2	
15 -	1111 1111 (75)	75		
30 -	1111 1111 (75)	150	9 1/2	4" = 6.4
45 -	1111 1111 (75)	225		
60 -	1111 31	256	5 1/2	4" = 6.4
				Gal. 12.8 Total
Time	4:30			
15 -				
30 -				
45 -				
60 -				
				Gal.
Time				
15 -				
30 -				
45 -				
60 -				
				Gal.

Notes

F3

Recorder Jose

METHOD 25A TEST

Date 12/12 19 86

BOOTH / OVEN [A5/B3 Open Head Interior Cover Lining]

PAINT USED -	Manufacturer	Code#
	Valspar	
		285-12-4

SOLVENT -	Type	Amount
	—	—

	Units Processed		Paint Level	Inch
	Per 15 Min.	Accumulative		
Time Start	3:40	4:30	27 3/4	
15 -	HH 115 .75	.25		1" = 1.6
30 -	HH 115 .00	1.50	26 3/4	
45 -	HH 115 .05	.00		1" 1.6
60 -	HH 115 .05	3.00	25 3/4	
				Gal.
Time				Total 3.2
15 -				
30 -				
45 -				
60 -				
				Gal.
Time				
15 -				
30 -				
45 -				
60 -				
				Gal.

Notes

Test #3

Recorder

ATTACHMENT C

AFTERBURNER OPERATING TEMPERATURE AND EXHAUST

TEMPERATURE DATA

Previously Submitted
12-27-86

ATTACHMENT C

AFTERBURNER OPERATING TEMPERATURE AND EXHAUST TEMPERATURE DATA

BEST AVAILABLE COPY

METHOD 25A TEST

Date 12-12 19 86

TEMPERATURES

	After Burner	Stack
Start Time	3:10	
15 -	1500	[illegible]
30 -	1600	[illegible]
45 -	1556	520
60 -	1570	520
Time		
15 -		
30 -		
45 -		
60 -		
Time		
15 -		
30 -		
45 -		
60 -		

Notes

Recorder [illegible]

METHOD 25A TEST

Date 12-2 19 85

TEMPERATURES

	After Burner	Stack
Start Time	7:15 10:00	7:10
15 -	1581	520
30 -	1591	520
45 -	1511	520
60 -	1591	520
Time		
15 -		
30 -		
45 -		
60 -		
Time		
15 -		
30 -		
45 -		
60 -		

Notes

Recorder [illegible]

METHOD 25A TEST

Date 12-12 19 86

TEMPERATURES

	After Burner	Stack
Start Time	12:15 PM	
15 -	1531	500
30 -	1565	500
45 -	1570	500
60 -	1576	500
Time	1:15 - 1576	
15 -		
30 -		
45 -		
60 -		
Time		
15 -		
30 -		
45 -		
60 -		

Notes

Recorder [illegible]

ATTACHMENT D

COATING VOC DATA SHEETS

EPA METHOD 24

Revised 2-27-87

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

VOC DATA SHEET:

PROPERTIES OF THE COATING "AS SUPPLIED" BY THE MANUFACTURER

Coating Manufacturer: Valspar

Coating Identification: 285-B-9 ANR00009

Batch Identification: 63 A 8727

Supplied To: Drum Service of Florida

Properties of the coating as supplied[1] to the customer:

A. Coating Density $(D_C)_S$: 8.20 lb/gal _____ kg/l

[X] ASTM D1475 [ ] Other[2]

B. Total Volatiles $(W_V)_S$: 52.23 Weight Percent

[X] ASTM D2369 81B [ ] Other[2]

C. Water Content: 1. $(W_W)_S$ 0 Weight Percent

[ ] ASTM D3792 [ ] ASTM D4017 [*] Other[2]

2. $(V_W)_S$ _____ Volume Percent

[ ] Calculated [ ] Other[2]

D. Organic Volatiles $(W_O)_S$: 52.23 Weight Percent

E. Nonvolatiles Content $(V_n)_S$: 34.44* Volume Percent

F. VOC Content $(VOC)_S$: 1. 4.28 lb/gal coating less water

or 0.513 kg/l coating less water

2. _____ lb/gal solids

or _____ kg/l solics

Remarks: (use reverse side)

* Theoretical Value

[1]The subscript "s" denotes each value is for the coating "as supplied" by the manufacturer.

[2]Explain the other method used under "Remarks".

Signed: R W Anderson Date 14 May 86

White/Exterior

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

VOC DATA SHEET:

PROPERTIES OF THE COATING "AS SUPPLIED" BY THE MANUFACTURER

Coating Manufacturer: Valspar

Coating Identification: 210-W-24 AYW0001

Batch Identification: 63 B 8301

Supplied To: Drum Service of Florida

Properties of the coating as supplied[1] to the customer:

A. Coating Density $(D_c)_s$: 9.31 lb/gal _____ kg/l

[x] ASTM D1475 [ ] Other[2]

B. Total Volatiles $(W_v)_s$: 41.75 Weight Percent

[x] ASTM D2369 81B [ ] Other[2]

C. Water Content: 1. $(W_w)_s$ 0 Weight Percent

[ ] ASTM D3792 [ ] ASTM D4017 [*] Other[2]

2. $(V_w)_s$ _____ Volume Percent

[ ] Calculated [ ] Other[2]

D. Organic Volatiles $(W_o)_s$: 41.75 Weight Percent

E. Nonvolatiles Content $(V_n)_s$: 37.38* Volume Percent

F. VOC Content $(VOC)_s$: 1. 3.89 lb/gal coating less water

or 0.466 kg/l coating less water

2. _____ lb/gal solids

or _____ kg/l solics

Remarks: (use reverse side)

~~A Theoretical Value~~

[1]The subscript "s" denotes each value is for the coating "as supplied" by the manufacturer.

[2]Explain the other method used under "Remarks".

Signed: R W Anderson Date 14 May 86

BLUE/EXTERIOR

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Dozier & Gay Paint Company	904-354-8251
ADDRESS (Number, Street, City, State, and ZIP Code) 2245 North Main Street, Jacksonville, Florida 32206	
CHEMICAL NAME AND SYNONYMS N/A	TRADE NAME AND SYNONYMS Drum Enamel Cal Oil Blue
CHEMICAL FAMILY Alkyd Enamel	FORMULA 70-171

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	n/a		BASE METAL		
CATALYST	n/a		ALLOYS		
VEHICLE	n/a		METALLIC COATINGS		
SOLVENTS	53		FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	280°	SPECIFIC GRAVITY (H_2O=1)	0.983
VAPOR PRESSURE (mm Hg.)	4 @ 68°F	PERCENT, VOLATILE BY VOLUME (%)	61%
VAPOR DENSITY (AIR=1)	3.8	EVAPORATION RATE (_____ =1)	0.9
SOLUBILITY IN WATER	Neglineable		
APPEARANCE AND ODOR	Blue - Mild		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	TCC 50°F	FLAMMABLE LIMITS	Lel 0	Uel
EXTINGUISHING MEDIA	Foam CO2 or Dry Chemical			
SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: 500 ppm

EFFECTS OF OVEREXPOSURE: Dizziness

EMERGENCY AND FIRST AID PROCEDURES: Remove to fresh air. If swallowed, call a physician immediately. Do not induce vomiting. If on skin, wash thoroughly with soap and water.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		None
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Keep away from heat, sparks and flame. Avoid breathing fumes, provide good ventilation.

WASTE DISPOSAL METHOD: Absorb, sweep up and place in a waste disposal container.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*: Bureau of Mines 23-B-16 Cartridge

VENTILATION		
	LOCAL EXHAUST: X	SPECIAL
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES: Yes

EYE PROTECTION: Safety Goggles

OTHER PROTECTIVE EQUIPMENT: Hood and clothing to cover skin areas

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Keep away from heat, sparks and open flame.

OTHER PRECAUTIONS

GPO 930-540

MATERIAL SAFETY DATA SHEET

Shell

97002 (REV 1-83)

MSDS NUMBER ▶ 7,610-4

SECTION I NAME

PRODUCT ▶	Shell Xylene
CHEMICAL/ SYNONYMS ▶	Xylol; Dimethyl Benzene; Methyl Toluene
CHEMICAL FAMILY ▶	Aromatic Hydrocarbon
SHELL CODE ▶ 83391	C.A.S. NUMBER ▶ 1330-20-7

24 HOUR EMERGENCY ASSISTANCE

SHELL 713-473-9461
CHEMTREC 800-424-9300

HAZARD RATING
LEAST 0 ▶ SLIGHT 1 ▶ MODERATE 2 ▶ HIGH 3 ▶ EXTREME 4

HEALTH	2
FIRE	3
REACTIVITY	0

SECTION II INGREDIENTS

COMPOSITION	%	TOXICITY DATA
Shell Xylene	100	Oral LD_{50} (rat)=>5.2 g/kg Dermal LD_{50} (rabbit)=>3.95 g/kg Inh LC_{50} (rat)=6,350ppm/(4 hr)
Xylenes, a mixture of meta-, para- and ortho-xylenes	80	
Ethylbenzene	20	
Benzene ..... typically <10ppm		

SECTION III HEALTH INFORMATION

Acute Toxicity: Overexposure can lead to central nervous system depression producing such effects as headache, dizziness, nausea, and loss of consciousness.

Eye Contact: Short-term liquid or vapor contact may result in slight eye irritation. Prolonged and repeated contact may be more irritating.

Skin Contact: Prolonged and repeated liquid contact can cause defatting and drying of the skin which may result in skin irritation and dermatitis.

Inhalation: High concentrations or prolonged exposure to lower concentrations may be slightly irritating to mucous membranes.

Ingestion: Liquid ingestion may result in vomiting; aspiration (breathing) of vomitus into the lungs must be avoided as even small quantities in the lungs may result in chemical pneumonitis and pulmonary edema/hemorrhage.

SECTION IV OCCUPATIONAL EXPOSURE LIMITS

	Xylene	Ethylbenzene
OSHA-PEL/TWA =	100 ppm	100 ppm
ACGIH-TLV/TWA =	100 ppm (skin)	100 ppm
-TLV/STEL =	150 ppm (skin)	125 ppm

SECTION V — EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: Flush with water for 15 minutes while holding eyelids open. Get medical attention.

SKIN CONTACT: Wash with soap and water. Remove contaminated clothing and shoes; do not reuse until cleaned. If persistent irritation occurs, get medical attention.

INHALATION: Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.

INGESTION: Do not induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Get medical attention.

NOTE TO THE PHYSICIAN: If more than 2.0 ml per kg has been ingested and vomiting has not occurred, emesis should be induced with supervision. Keep victim's head below hips to prevent aspiration. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before emesis, gastric lavage using a cuffed endotracheal tube should be considered.

SECTION VI — PHYSICAL DATA

BOILING POINT (°F) ▶ 281-282	MELTING POINT (°F) ▶ --	VAPOR PRESSURE (mmHg) ▶ 21 @ 100°F
SPECIFIC GRAVITY (H_2O=1) ▶ 0.86	% VOLATILE BY VOLUME ▶ 100	VAPOR DENSITY (AIR=1) ▶ 3.7
SOLUBILITY IN WATER ▶ Negligible	EVAPORATION RATE (BUTYL ACETATE=1) ▶ 0.6 (7.17)	

APPEARANCE AND ODOR

Colorless, mobile liquid. Aromatic odor.

SECTION VII — FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD USED	FLAMMABLE LIMITS/% VOLUME IN AIR ▶ LOWER	UPPER
°F (TCC)	1	7

EXTINGUISHING MEDIA

Use water fog, foam, dry chemical or CO_2. Do not use a direct stream of water. Product will float and can be reignited on surface of water.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

Evacuate hazard area of unprotected personnel. Wear proper protective clothing including a NIOSH approved self-contained breathing apparatus. Cool fire-exposed containers with water.

In the case of large fires, also cool surrounding equipment and structures with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Vapors are heavier than air and may accumulate in low areas or areas inadequately ventilated. Vapors may also travel along the ground to be ignited at locations distant from the handling site; flashback of flame to the handling site may occur.

SECTION VIII REACTIVITY

STABILITY ▶ [ ] UNSTABLE [X] STABLE

HAZARDOUS POLYMERIZATION ▶ [ ] MAY OCCUR [X] WILL NOT OCCU

CONDITIONS AND MATERIALS TO AVOID

Avoid heat, sparks, open flame and contact with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide and unidentified organic compounds may be formed during combustion.

SECTION IX EMPLOYEE PROTECTION

RESPIRATORY PROTECTION

If exposure may or does exceed occupational exposure limits (Sec.IV) use a NIOSH-approved respirator to prevent overexposure. In accord with 29 CFR 1910.134 use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors.

PROTECTIVE CLOTHING

Wear impervious gloves and protective clothing as required to prevent skin contact. Wear chemical goggles to prevent eye contact.

ADDITIONAL PROTECTIVE MEASURES

Use explosion-proof ventilation as required to control vapor concentrations.

SECTION X ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES

WARNING. Flammable. Eliminate all ignition sources. Handling equipment must be grounded to prevent sparking.
Large spills: Evacuate the hazard area of unprotected personnel. Wear appropriate respirator and protective clothing. Shut off source of leak only if safe to do so. Dike and contain. If vapor cloud forms, water fog may be used to suppress; contain run-off. Remove with vacuum trucks or pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand or other suitable material; place in non-leaking containers for proper disposal. Flush area with water to remove trace residue; dispose of flush solutions as above.
Small spills: take up with an absorbent material and place in non-leaking containers; seal tightly for proper disposal.

WASTE DISPOSAL

Place in a disposal facility approved under RCRA regulations for hazardous waste (See Sec. XIII). Use non-leaking containers, seal tightly and label properly.

ENVIRONMENTAL HAZARDS

This product is designated as a hazardous substance under the Clean Water Act. KEEP OUT OF SURFACE WATERS OR SEWERS ENTERING OR LEADING TO SURFACE WATERS. (See Section XIII).

MATERIAL SAFETY DATA SHEET

Shell 97005 (REV. 7-82)

SECTION XI SPECIAL PRECAUTIONS

ARNING. Flammable Liquid.
eep away from heat, sparks and open flames. Keep containers tightly losed. Store away from strong oxidizing agents in a cool, dry place ith adequate explosion-proof ventilation. Ground equipment to prevent ccumulation of static charge. If pouring or transferring materials, ontainers must be bonded and grounded.

o NOT weld, heat or drill on or near container; even emptied containers an contain explosive vapors.

inimize skin contact. Wash with soap and water before eating, drinking, moking or using toilet facilities. Launder contaminated clothing before euse.

SECTION XII TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION ▶

- ☐ FLAMMABLE LIQUID
- ☐ COMBUSTIBLE LIQUID
- ☐ OXIDIZING MATERIAL
- ☐ NON-FLAMMABLE GAS
- ☐ FLAMMABLE SOLID
- ☐ POISON, CLASS A
- ☐ CORROSIVE MATERIAL
- ☐ NOT HAZARDOUS BY D.O.T. REGULATIONS
- ☐ FLAMMABLE GAS
- ☐ POISON, CLASS B
- ☐ IRRITATING MATERIAL
- ☐ OTHER—Specify below

D.T. PROPER SHIPPING NAME

ylene

THER REQUIREMENTS

.T. ID.# = UN1307. Guide Sheet 27. RQ xylene (1000 lb). Also ee Section XIII, Clean Water Act.

SECTION XIII OTHER REGULATORY CONTROLS

A.FDA,OSHA,USDA,CPSC,etc.

PA - Clean Water Act (CWA)
his product is designated as a hazardous substance under Section 311 of he Clean Water Act. Spills entering (a) surface waters or (b) any water-ourses or sewers entering/leading to surface waters MUST be reported mmediately to the National Response Center, 800-424-8802. The reportable uantity for xylene is 1000 lb.

PA - Resource Conservation and Recovery Act (RCRA) Regulations
his product has been designated by the EPA (RCRA 40 CFR 261.33) as a azardous waste if it is spilled, discarded or intended to be discarded as s. The EPA hazardous waste number for xylene is U239.

BE SAFE
READ OUR PRODUCT SAFETY INFORMATION ... AND PASS IT ON
[PRODUCT LIABILITY LAW REQUIRES IT]

John P. Lepori
Manager

SHELL OIL COMPANY
PRODUCT SAFETY AND COMPLIANCE
OIL AND CHEMICAL PRODUCTS
P.O. BOX 4320
HOUSTON, TEXAS 77210

DATE PREPARED
October 13, 1982

Southern Coatings
P.O. Box 160
Sumter, SC 29150
EMERGENCY PHONE NO. 800-845-0487
INFORMATION PHONE NO. 800-845-0487

BLACK/EXTERIOR

MATERIAL SAFETY DATA SHEET

SECTION I

DATE OF PREPARATION 7/01/86

TRADE NAME GLOSS BLACK DRUM ENAMEL

MANUFACTURER CODE I.D. 64-4097
5E-118-1

SECTION II – HAZARDOUS INGREDIENTS

INGREDIENT	CAS NO.		ALLOWABLE EXPOSURE LEVEL PPM	MG/CU.M.	FBR/CC	MPPCF	SKIN	MAC	VP MM HG @ 20 DEG.C
[illegible]ON BLACK	1333-86-4	TLV		3.50	na	na	na	na	na
		PEL		3.50	na	na	na	na	
[illegible] NAPHTHA	8030-30-6	TLV	300	1350	na	na	na	na	40
		PEL	500		na	na	na	na	
[illegible] NAPTHA	8030-30-6	TLV	300	1350	na	na	na	na	na
		PEL	500		na	na	na	na	
NERAL SPIRITS	8032-32-4	TLV	100	525	na	na	na	na	2
		PEL	500	2950	na	na	na	na	
AD COMPOUNDS	7439-92-1	TLV		.1500(as Pb)	na	na	na	na	na
		PEL		.0500	na	na	na	na	

[illegible] = NOT APPLICABLE
SKIN = SKIN ABSORPTION MUST BE CONSIDERED AS A ROUTE OF EXPOSURE
MAC = ALLOWABLE EXPOSURE LEVEL SHOULD NOT BE EXCEEDED FOR ANY TIME PERIOD

SECTION III – HEALTH INFORMATION

ECTS OF SHORT TERM OVEREXPOSURE

WALLOWING

Can cause gastrointestinal irritation, nausea, and vomiting. Aspiration of material into lung can cause chemical pneumonitis which can be fatal. May cause gastrointestinal irritation.

INHALATION

Anesthetic. May cause irritation of the nose and throat, and acute nervous system depression. Characterized by headache, dizziness, confusion, nausea, unconsciousness, and even asphyxiation.

SECTION II - HEALTH INFORMATION (CONTINUED)

May cause eye irritation.

SKIN

May cause defatting and irritation of the skin.

EFFECTS OF REPEATED OVEREXPOSURE

Reports have associated prolonged and repeated occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Chronic overexposure to lead may result in severe damage to blood forming, nervous, urinary, and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, weakness, insomnia, headache, muscle and joint pain, fine tremors, numbness, dizziness, hyperactivity, and colic. Occupational exposure to lead is regulated by OSHA - 29 CFR 1910.1025.

GNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH.

Prexisting kidney conditions may be aggravtaed by exposures to lead.

SECTION IV - FIRST AID AND EMERGENCY PROCEDURES

SWALLOWING

If swallowed call Poison Control Center, Hospital Emergency Room, or Physician immediately.

IN···ATION

Remove to fresh air immediately. If breathing has stopped, give artificial respiration. Keep warm and quiet. Get medical attention immediately.

E

Flush with large amounts of water, lifting upper and lower lids occasionally. Continue for at least 15 minutes. Get medical attention.

IN

Wash affected area with soap and water. Remove contaminated clothing. Get medical attention if irritation persists.

TES TO PHYSICIAN

Any treatment that might be required for overexposure should be directed at the control of symptoms and the clinical conditions.

SECTION V - PHYSICAL DATA

OILING RANGE 203 DEG.F. TO 399 DEG.F.

VAPOR DENSITY

Heavier than air.

% VOLATILE BY VOLUME 63

VAPORATION RATE

Slower than ether.

VOC 4.0 lb/gal less water 480 g/l less water CALCULATED

EIGHT LB./GAL. 7.4

VOC 10.9 lb/gal solids 1308 g/l solids CALCULATED

SECTION VI - FIRE AND EXPLOSION DATA

FLAMMABILITY CLASSIFICATION FLAMMABLE LIQUID - CLASS IB

FLASHPOINT 20 DEG.F, CALCULATED

EXTINGUISHING MEDIA

Use NFPA Class B Fire extinguishers (carbon dioxide, all purpose dry chemical or alcohol foam) designed to extinguish flammable liquid fires. Polymer foam is preferred for large fires.

UNUSUAL FIRE AND EXPLOSION HAZARDS

During emergency conditions, overexposure to decompostion products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.
WARNING ! FLAMMABLE.
Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and flame. Closed containers may explode when exposed to extreme heat.

SPECIAL FIRE FIGHTING PROCEDURES

Firefighters should wear self-contained breathing apparatus.
Water may be ineffective, but may be used to cool exposed containers to prevent pressure build-up and possible auto-ignition or explosion when exposed to extreme heat. If water is used, fog nozzles are preferable.

SECTION VII - REACTIVITY DATA

STABILITY

Normally stable.

CONDITIONS TO AVOID

Avoid excessive heat and sources of ignition.

INCOMPATABILITY (MATERIALS TO AVOID)

Strong acids or alkaline materials.

HAZARDOUS DECOMPOSITION PRODUCTS

Burning, including when heated by welding or cutting, will produce smoke, carbon monoxide and carbon dioxide.In addition, oxides of lead may be generated.

HAZARDOUS POLYMERIZATION

Will not occur

CONDITIONS TO AVOID

Keep away from heat sparks and flame.

SECTION VIII - ENVIRONMENTAL INFORMATION

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Keep spectators away. Eliminate all ignition sources (flames, hot surfaces, and sources of electrical, static or frictional sparks). Dike and contain spill with inert material (e.g. sand, earth). Transfer

SECTION VIII – ENVIRONMENTAL INFORMATION (CONTINUED)

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

liquids to covered metal containers for recovery or disposal, or remove with inert absorbent. Use only non-sparking tools. Place absorbent diking materials in covered metal containers for disposal. Prevent contamination of sewers, streams, and groundwater with spilled material or used absorbent.

WASTE DISPOSAL

Dispose in accordance with federal, state and local laws.
Contaminated absorbant may be disposed in EPA-permitted hazardous watse landfills.
Incinerate only in EPA permitted facility. Do not incinerate closed containers. Observe precautions for disposal of flammable materials.
Contaminated absorbant may be disposed in a hazardous waste landfill.
Dispose only in accordance with federal, state and local regulations.

RCRA CLASSIFICATION

This product, if discarded directly, would be classified a hazardous waste based on its ignitability characteristic, i.e. has a flash point of 140 deg. F., or less. The proper RCRA classification would be D001.
This product contains lead, which, if present in waste at 5.0 mg/l or more after extracted, is considered EP Toxic, and therefore a hazardous waste under the RCRA regulations. The hazardous waste number for an EP Toxic waste based on the lead content is D008.

ENVIRONMENTAL HAZARDS

None known

SECTION IX – PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION

Refer to OSHA standard for specific respiratory protection requirements for lead, 29CFR1910.1025.
If required, use an appropriate NIOSH/OSHA approved respirator with a suitable protection factor. Comply with OSHA 29 CFR 1910.134 "Respiratory Protection."
When spraying outdoors, or in open or well-ventilated areas, use NIOSH approved mechanical filter respirator to remove overspray.
In restricted ventilation areas, use NIOSH approved paint spray (combination chemical cartridge/mechanical filter) respirator to remove spray mist and organic vapors. In confined areas use a NIOSH approved air-supplied respirator.

VENTILATION

Refer to OSHA standards for specific ventilation requirements for lead-29CFR1910.1025.
Provide general dilution and local exhaust ventilation in sufficient volume and pattern to keep concentration of hazardous ingredients listed in Section II below the lowest exposure limit stated. Remove decomposition products that are generated when welding, cutting, or brazing objects coated with this product. Vapors produced while drying or baking this

SECTION IX - PERSONAL PROTECTION INFORMATION (CONTINUED)

LATION
product must be properly vented.

PROTECTION
Wear appropriate impermeable gloves.
Solvent impermeable gloves are required for repeated or prolonged contact.

ROTECTION
Wear safety spectacles at all times. Chemical splash goggles and/or face shields may be required for specific applications.

PROTECTIVE EQUIPMENT
As required to prevent skin contact. See OSHA standard for lead.

SECTION X - SPECIAL PRECAUTIONS

CAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Do not store above 95 degrees F. Store large quantities in compliance with OSHA 29CFR1910.106.

ER PRECAUTIONS
Do not take internally. Close container after each use.
Keep away from children.
Do not breathe sanding dust.
Wash hands and face thoroughly before eating or drinking.
Empty containers must not be washed and re-used for any purpose.
Containers should be grounded and bonded to the receiving container.
Do not weld, braze or cut on empty container.
Never use pressure to empty. Drum is not a pressure vessel.

SECTION XI - OTHER INFORMATION

INFORMATION

HAZARD CLASS: FLAMMABLE LIQUID

NUMBER: UN 1263

PROPER SHIPPING NAME: PAINT - FLAMMABLE LIQUID

The information contained herein is based on data considered to be accurate. While the information is believed to be reliable, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. Since the use of this information and the conditions and use of this product are controlled by the user, it is the user's obligation to determine the conditions of safe use of the product.

RUM SERVICE CO OF FLA.
P.O. BOX 278
ZELLWOOD, FLA.

32798

SECTION II - HEALTH INFORMATION (CONTINUED)

May cause eye irritation.

SKIN

May cause defatting and irritation of the skin.

EFFECTS OF REPEATED OVEREXPOSURE

Reports have associated prolonged and repeated occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

Chronic overexposure to lead may result in severe damage to blood forming, nervous, urinary, and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, weakness, insomnia, headache, muscle and joint pain, fine tremors, numbness, dizziness, hyperactivity, and colic. Occupational exposure to lead is regulated by OSHA - 29 CFR 1910.1025.

FICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH.

Prexisting kidney conditions may be aggravtaed by exposures to lead.

SECTION IV - FIRST AID AND EMERGENCY PROCEDURES

ALLOWING

If swallowed call Poison Control Center, Hospital Emergency Room, or Physician immediately.

ATION

Remove to fresh air immediately. If breathing has stopped, give artificial respiration. Keep warm and quiet. Get medical attention immediately.

Flush with large amounts of water, lifting upper and lower lids occasionally. Continue for at least 15 minutes. Get medical attention.

Wash affected area with soap and water. Remove contaminated clothing. Get medical attention if irritation persists.

TO PHYSICIAN

Any treatment that might be required for overexposure should be directed at the control of symptoms and the clinical conditions.

SECTION V - PHYSICAL DATA

NG RANGE 203 DEG.F. TO 399 DEG.F.

POR DENSITY

Heavier than air.

% VOLATILE BY VOLUME 63

ORATION RATE

Slower than ether.

VOC	4.0	lb/gal less water	480	g/l less water	CALCULATED
VOC	10.9	lb/gal solids	1308	g/l solids	CALCULATED

HT LB./GAL. 7.4

SECTION VI - FIRE AND EXPLOSION DATA

N' ' FLAMMABILITY CLASSIFICATION FLAMMABLE LIQUID - CLASS IB

LASHPOINT 20 DEG.F, CALCULATED

XTINGUISHING MEDIA

Use NFPA Class B Fire extinguishers (carbon dioxide, all purpose dry chemical or alcohol foam) designed to extinguish flammable liquid fires. Polymer foam is preferred for large fires.

UNUSUAL FIRE AND EXPLOSION HAZARDS

During emergency conditions, overexposure to decompostion products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.
WARNING ! FLAMMABLE.
Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and flame. Closed containers may explode when exposed to extreme heat.

ECIAL FIRE FIGHTING PROCEDURES

Firefighters should wear self-contained breathing apparatus.
Water may be ineffective, but may be used to cool exposed containers to prevent pressure build-up and possible auto-ignition or explosion when exposed to extreme heat. If water is used, fog nozzles are preferable.

SECTION VII - REACTIVITY DATA

ABILITY

Normally stable.

CONDITIONS TO AVOID

Avoid excessive heat and sources of ignition.

OMPATABILITY (MATERIALS TO AVOID)

Strong acids or alkaline materials.

ARDOUS DECOMPOSITION PRODUCTS

Burning, including when heated by welding or cutting, will produce smoke, carbon monoxide and carbon dioxide.In addition, oxides of lead may be generated.

AZARDOUS POLYMERIZATION

Will not occur

ONDITIONS TO AVOID

Keep away from heat sparks and flame.

SECTION VIII - ENVIRONMENTAL INFORMATION

TEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Keep spectators away. Eliminate all ignition sources (flames, hot surfaces, and sources of electrical, static or frictional sparks). Dike and contain spill with inert material (e.g. sand, earth). Transfer

SECTION VIII – ENVIRONMENTAL INFORMATION (CONTINUED)

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

liquids to covered metal containers for recovery or disposal, or remove with inert absorbent. Use only non-sparking tools. Place absorbent diking materials in covered metal containers for disposal. Prevent contamination of sewers, streams, and groundwater with spilled material or used absorbent.

WASTE DISPOSAL

Dispose in accordance with federal, state and local laws.
Contaminated absorbant may be disposed in EPA-permitted hazardous watse landfills.
Incinerate only in EPA permitted facility. Do not incinerate closed containers. Observe precautions for disposal of flammable materials.
Contaminated absorbant may be disposed in a hazardous waste landfill.
Dispose only in accordance with federal, state and local regulations.

RCRA CLASSIFICATION

This product, if discarded directly, would be classified a hazardous waste based on its ignitability characteristic, i.e. has a flash point of 140 deg. F., or less. The proper RCRA classification would be D001.
This product contains lead, which, if present in waste at 5.0 mg/l or more after extracted, is considered EP Toxic, and therefore a hazardous waste under the RCRA regulations. The hazardous waste number for an EP Toxic waste based on the lead content is D008.

ENVIRONMENTAL HAZARDS

None known

SECTION IX – PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION

Refer to OSHA standard for specific respiratory protection requirements for lead, 29CFR1910.1025.
If required, use an appropriate NIOSH/OSHA approved respirator with a suitable protection factor. Comply with OSHA 29 CFR 1910.134 "Respiratory Protection."
When spraying outdoors, or in open or well-ventilated areas, use NIOSH approved mechanical filter respirator to remove overspray.
In restricted ventilation areas, use NIOSH approved paint spray (combination chemical cartridge/mechanical filter) respirator to remove spray mist and organic vapors. In confined areas use a NIOSH approved air-supplied respirator.

VENTILATION

Refer to OSHA standards for specific ventilation requirements for lead-29CFR1910.1025.
Provide general dilution and local exhaust ventilation in sufficient volume and pattern to keep concentration of hazardous ingredients listed in Section II below the lowest exposure limit stated. Remove decomposition products that are generated when welding, cutting, or brazing objects coated with this product. Vapors produced while drying or baking this

SECTION IX - PERSONAL PROTECTION INFORMATION: (CONTINUED)

VENTILATION
product must be properly vented.

HAND PROTECTION
Wear appropriate impermeable gloves.
Solvent impermeable gloves are required for repeated or prolonged contact.

EYE PROTECTION
Wear safety spectacles at all times. Chemical splash goggles and/or face shields may be required for specific applications.

OTHER PROTECTIVE EQUIPMENT
As required to prevent skin contact. See OSHA standard for lead.

SECTION X - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Do not store above 95 degrees F. Store large quantities in compliance with OSHA 29CFR1910.106.

OTHER PRECAUTIONS
Do not take internally. Close container after each use.
Keep away from children.
Do not breathe sanding dust.
Wash hands and face thoroughly before eating or drinking.
Empty containers must not be washed and re-used for any purpose.
Containers should be grounded and bonded to the receiving container.
Do not weld, braze or cut on empty container.
Never use pressure to empty. Drum is not a pressure vessel.

SECTION XI - OTHER INFORMATION

SHIPPING INFORMATION

HAZARD CLASS: FLAMMABLE LIQUID

ID NUMBER: UN 1263

PROPER SHIPPING NAME: PAINT - FLAMMABLE LIQUID

The information contained herein is based on data considered to be accurate. While the information is believed to be reliable, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. Since the use of this information and the conditions and use of this product are controlled by the user, it is the user's obligation to determine the conditions of safe use of the product.

DRUM SERVICE CO OF FLA.
P.O. BOX 278
ZELLWOOD, FLA.

32798

ATTACHMENT E

VOC SOURCE TEST REPORT

Previously Submitted
12-29-86

ATTACHMENT E

VOC SOURCE TEST REPORT

SOURCE TEST REPORT
for
VOLATILE ORGANIC COMPOUNDS

DRUM SERVICES, INC.
ZELLWOOD, FLORIDA

DECEMBER 12, 1986

Prepared for:

TECHNICAL SERVICES, INC.
2471 SWAN STREET
JACKSONVILLE, FLORIDA 32201

Prepared by:

AIR CONSULTING AND ENGINEERING
2106 N.W. 67th PLACE, SUITE 4
GAINESVILLE, FLORIDA 32609
(904) 335-1889

126-86-07

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

To the best of my knowledge, all applicable field and analytical procedures comply with Florida Department of Environmental Regulation requirements and all test data and plant operating data are true and correct.

Stephen L. Neck

Stephen L. Neck, P.E.

State of Florida
Registration No. 20020

12/16/86

Date

SEAL

1.0 INTRODUCTION

Environmental Protection Agency (EPA) Reference Method 25A testing for Volatile Organic Compounds (VOC) was performed on December 12, 1986, by Air Consulting and Engineering (ACE) working as a subcontractor to Technical Services, Inc. (TSI), of Jacksonville, Florida, who in turn contracted to Cross/Tessitore and Associates of Orlando, Florida.

Simultaneous testing of a thermal incinerator inlet and outlet was performed using Beckman and Bendix total hydrocarbon analyzers with flame ionization detectors (FID). Three 1-hour test runs were conducted while drum and lid production lines were operating near permitted capacity. The last test run was only 50 minutes in duration due to completion of the day's production.

2.0 SUMMARY AND DISCUSSION OF RESULTS

Results of the testing is summarized in Table 1. VOC incinerator destruction efficiency was greater than 99.88%. The permitted destruction efficiency is 95.0%. All results are reported in terms of carbon emission.

Calibration drift of the Bendix (inlet) analyzer was 10% for the test Run 2 (3% maximum specified). This was due to an increase in the air fuel pressure to the instrument. Results for this test run were determined using the determined drift of the 1010 ppm propane calibration gas and the best fit curve of the average response of the inlet concentrations. The best fit curve is shown as a dashed line on the strip chart readouts (Appendix C). The 1010 ppm calibration drift line and the emission average line are identical for test Run 2. The value of the 1010 ppm calibration gas was taken as 970 ppm based on the response of zero and 1940 ppm propane calibration gases. The use of 970 ppm rather than the 1010 ppm certified value is conservative (i.e., yields lower inlet concentrations). This 4.0% difference is within the allowable calibration error range of 5%. No drift was experienced for test Runs 1 and 3.

The outlet (Beckman) instrument was calibrated using zero air, 51.5 ppm propane, and 9.45 ppm propane. The 9.45 ppm gas would read 8.6 ppm based on the response of the 51.5 ppm gas which is within 9% linearity against a specified linearity of 5% but all outlet emission data are obviously accurate to the degree reported.

Table 1 Volatile Organic Compounds Emission Summary
Drum Services, Inc.
Zellwood, Florida
December 12, 1986

Run Number	Time	Inlet PPM C	Outlet PPM C	SCFMD Volumetric Flow Inlet	SCFMD Volumetric Flow Outlet	lb/Hr as Carbon Inlet	lb/Hr as Carbon Outlet
1	1223-1323	2550	<1.0	3049	8697	14.53	<0.02
2	1422-1522	2910	<1.0	3049	8697	16.58	<0.02
3	1543-1633	3408	<1.0	3049	8697	19.42	<0.02
Average	---	2956	<1.0	3049	8697	16.84	<0.02

$$\text{Destruction Efficiency} = \frac{16.84 - .02}{16.84} = >99.88\%$$

ppm C = ppm propane X 3

$$\text{lb/Hr} = (\text{ppm C})(2.595 \times 10^{-9})(12)(\text{SCFMD})(60)$$

3.0 PROCESS DESCRIPTION AND OPERATION

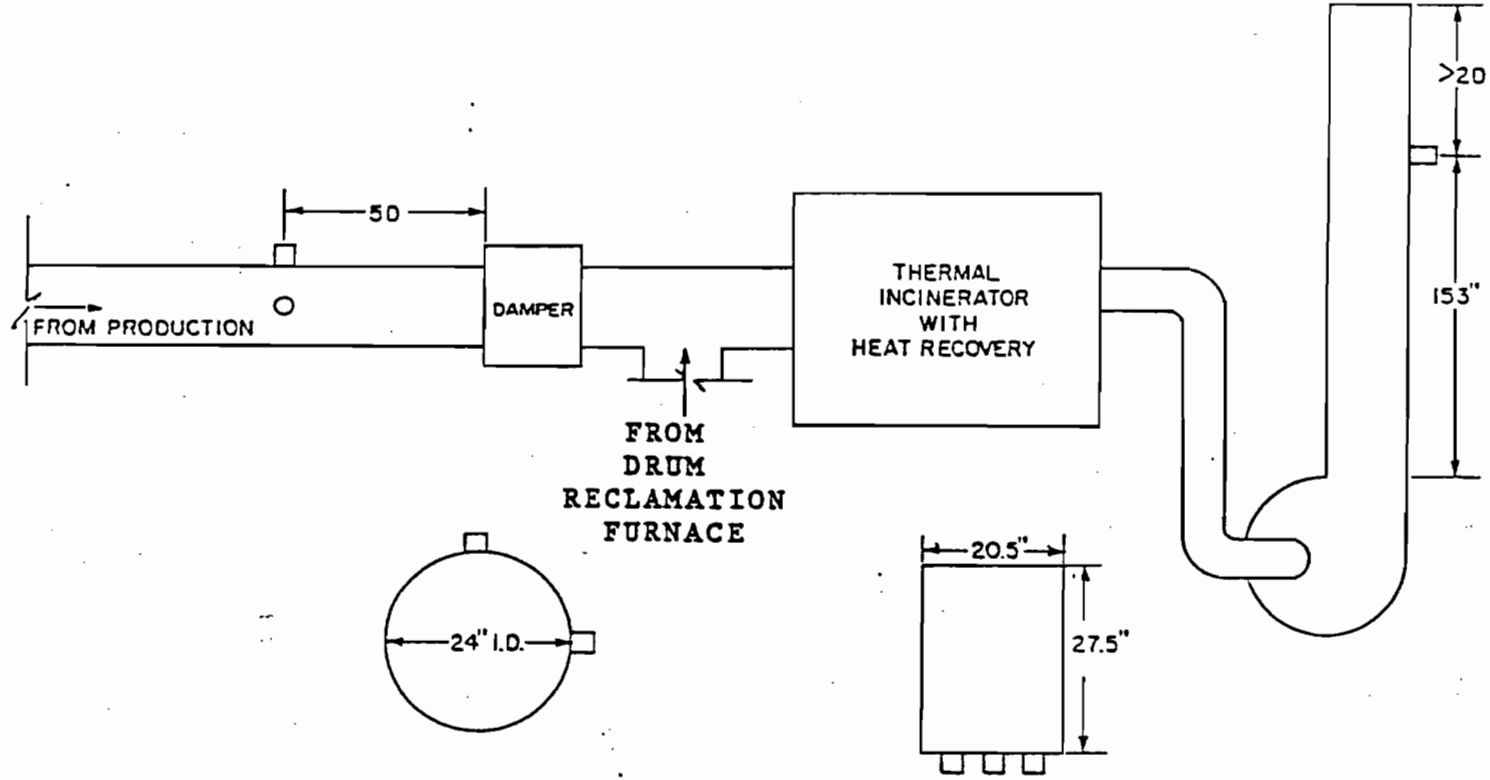
Drum Services, Inc., recycles drums by processing through a drum reclamation furnace to prepare drums for cleaning by steel shot blasting. The cleaned open end drums are then lined on the inside and dryed in the open head drum oven, then painted on the exteriors and air dryed. Lids are also coated, painted, and dryed in the lid batch oven.

Closed end drums are painted on the outside followed by drying in the tight head oven.

Emissions from the drum reclamation furnace, open head drum oven, tight head drum oven, and lid oven are all conveyed to the thermal incinerator via induced draft.

4.0 SAMPLING POINT LOCATION

The sampling point locations and incinerator schematic are provided in Figure 1.



TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	1.06
2	3.50
3	7.10
4	16.90
5	20.50
6	22.94

TRAVERSE POINT NUMBER	INCHES INSIDE STACK WALL
1	3.44
2	10.31
3	17.19
4	24.06

FIGURE 1
INCINERATOR INLET AND OUTLET
SAMPLING POINT LOCATIONS

AIR CONSULTING
and
ENGINEERING

5.0 FIELD AND ANALYTICAL PROCEDURES--EPA METHOD 25A - VOC TESTING

A complete summary of EPA Method 25A is provided in Appendix A. All procedures were done in accordance with the method except that response time was not documented as averages were begun after response had reached steadystate and ended before it dropped back towards zero. Response time is 2.5 minutes on the Beckman and 1.5 minutes on the Bendix analyzer.

At the date of this submittal, the manufacturer's analysis certifications of the gases have not arrived. If deemed necessary, they will be furnished at a later date.

APPENDIX A

FLOW CALCULATIONS

AND

VELOCITY TRAVERSES

VOLUMETRIC FLOW CALCULATIONS

INLET

1300 TRAVERSE

$A_S = 3.14\ FT^2$

$\overline{\sqrt{\Delta P}} = 0.314$

$T_S\,^\circ F = 161 = 621^\circ R$

$G_S = 1.0$

$\%\ H_2O = 2.0$ (ASSUMED)

$P_S = 29.92$

$U = 1144$ FPM

$Q_A = 3592$ ACFM

$Q_S = 2993$ SCFMD

1625 TRAVERSE

$\overline{\sqrt{\Delta P}} = 0.324$

$T_S\,^\circ F = 154 = 614^\circ R$

$G_S = 1.0$

$\%\ H_2O = 2.0$ (ASSUMED)

$P_S = 29.92$

$U = 1173$ FPM

$Q_A = 3684$ ACFM

$Q_S = 3105$ SCFMD

$$U = 174 \times C_p \times \overline{\sqrt{\Delta p}} \times \sqrt{\frac{T_S{}^\circ R}{G_S} \times \frac{29.92}{P_S}} = \text{FPM}$$

$$Q_A = A_S \times U$$

$$Q_S = Q_A \times \frac{528}{T_S{}^\circ R} \times \frac{P_S}{29.92} \times F.D.A$$

$$\bar{Q}_S = 3049\ \text{SCFMD}$$

OUTLET

1438 TRAVERSE

$A_S = 3.91\ FT^2$

$\overline{\sqrt{\Delta P}} = 1.021$

$\bar{T}_S\,^\circ F = 693^\circ F = 1153^\circ R$

$G_S = 0.98$

$\%\ H_2O = 5.0$ (ASSUMED)

$\therefore F.D.A = 0.95$

$P_S = 29.95$

$U = 5116$ FPM

$Q_A = 20004$ ACFM

$Q_S = 8711$ SCFMD

1605 TRAVERSE

$A_S = 3.91$

$\overline{\sqrt{\Delta P}} = 1.023$

$\bar{T}_S\,^\circ F = 705^\circ F = 1165^\circ F$

$G_S = 0.98$

$\%\ H_2O = 5.0$ (ASSUMED)

$F.D.A = 0.95$

$P_S = 29.95$

$U = 5153$ FPM

$Q_A = 20147$ ACFM

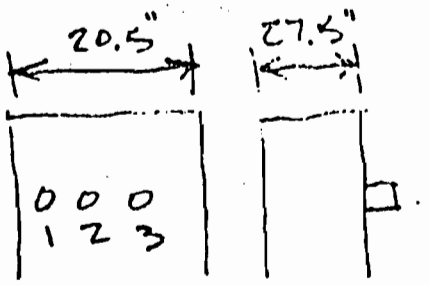
$Q_S = 8763$ SCFMD

$\bar{Q}_S = 8697$ SCFMD

BEST AVAILABLE COPY

PRELIMINARY VELOCITY TRAVERSE

[redacted]
12/12/86
ATION OUTLET
K I.D. 20.5" X 27.5"
OMETRIC PRESSURE, in. Hg 30.00
CK GAUGE PRESSURE, in. H_2O -.7
ATORS [redacted]



SCHEMATIC OF TRAVERSE POINT LAYOUT

TEMP = 695°F TIME: 1438

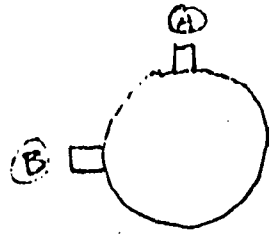
TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1-1	.86	3.44
2	1.0	16.31
3	1.15	17.19
4	1.70	24.06
		TEST 1
1	.58	
2	.90	
3	1.9	
4	1.9	
		TEST 2
1	.64	
2	.64	
3	.56	
4	1.15	
	$\sqrt{\Delta P}$ =	1.021
AVERAGE		

TEMT = 705°F TIME 1605

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
2-1	.60	TEST 1
2	1.2	
3	1.8	
4	2.0	
2-1	.68	TEST 2
2	.60	
3	.60	
4	1.0	
2-1	.80	TEST 3
2	1.0	
3	1.2	
4	1.7	
	$\sqrt{\Delta P}$ =	1.023
AVERAGE		

PRELIMINARY VELOCITY TRAVERSE

NT TRUM SERVICES
E 12/12/86
CATION INLET
CK I.D. 24" DIA.
AROMETRIC PRESSURE, in. Hg 30.60
ACK GAUGE PRESSURE, in. H_2O -1.1
RATORS NECK/HEDGE



SCHEMATIC OF TRAVERSE POINT LAYOUT

TEMP = 161°F TIME 1300

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1-1	.07	(A) 1,061
2	.10	3.50
3	.11	7.10
4	.10	16.90
5	.09	20.50
6	.07	22.94
1-1	.09	(B)
2	.11	
3	.12	
4	.13	
5	.14	
6	.15	
1-1 Repr	.06	(A)
2	.10	
3	.13	
4	.11	
5	.10	
6	.08	
AVERAGE		

TEMP. = 154 TIME 1625

TRAVERSE POINT NUMBER	VELOCITY HEAD (Δp_s), in. H_2O	STACK TEMPERATURE (T_s), °F
1-1 Repr	.08	(B)
2	.11	
3	.13	
4	.12	
5	.10	.314
6	.08	
(A) 2-1	.09	
2	.11	
3	.12	
4	.14	
5	.11	
6	.05	
(B) 2-1	.07	
2	.10	
3	.12	
4	.15	
5	.12	
6	.10	
AVERAGE		

APPENDIX B

EPA METHOD 25A

METHOD 25A

DETERMINATION OF TOTAL GASEOUS ORGANIC CONCENTRATION USING A FLAME IONIZATION ANALYZER

1. Applicability and Principle

1.1 Applicability. This method applies to the measurement of total gaseous organic concentration of vapors consisting primarily of alkanes, alkenes, and/or arenes (aromatic hydrocarbons). The concentration is expressed in terms of propane (or other appropriate organic calibration gas) or in terms of carbon.

1.2 Principle. A gas sample is extracted from the source through a heated sample line, if necessary, and glass fiber filter to a flame ionization analyzer (FIA). Results are reported as volume concentration equivalents of the calibration gas or as carbon equivalents.

2. Definitions

2.1 Measurement System. The total equipment required for the determination of the gas concentration. The system consists of the following major sub-systems:

2.1.1 Sample Interface. That portion of the system that is used for one or more of the following sample acquisition, sample transportation, sample conditioning, or protection of the analyzer from the effects of the stack effluent.

2.1.2 Organic Analyzer. That portion of the system that senses organic concentration and generates an output proportional to the gas concentration.

2.2 Span Value. The upper limit of a gas concentration measurement range that is specified for affected source categories in the applicable part of the regulations. The span value is established in the applicable regulation and is usually 1.5 to 2.5 times the applicable emission limit. If no span value is provided, use a span value equivalent to 1.5 to 2.5 times the expected concentration. For convenience, the span value should correspond to 100 percent of the recorder scale.

2.3 Calibration Gas. A known concentration of a gas in an appropriate diluent gas.

2.4 Zero Drift. The difference in the measurement system response to a zero level calibration gas before and after a stated period of operation during which no unscheduled maintenance, repair, or adjustment took place.

2.5 Calibration Drift. The difference in the measurement system response to a mid-level calibration gas before and after a stated period of operation during which no unscheduled maintenance, repair or adjustment took place.

2.6 Response Time. The time interval from a step change in pollutant concentration at the inlet to the emission measurement system to the time at which 95 percent of the corresponding final value is reached as displayed on the recorder.

2.7 Calibration Error. The difference between the gas concentration indicated by the measurement system and the known concnetration of the calibration gas.

3. Apparatus

A schematic of an acceptable measurement system is shown in Figure 25A-1. The essential components of the measurement system are described below:

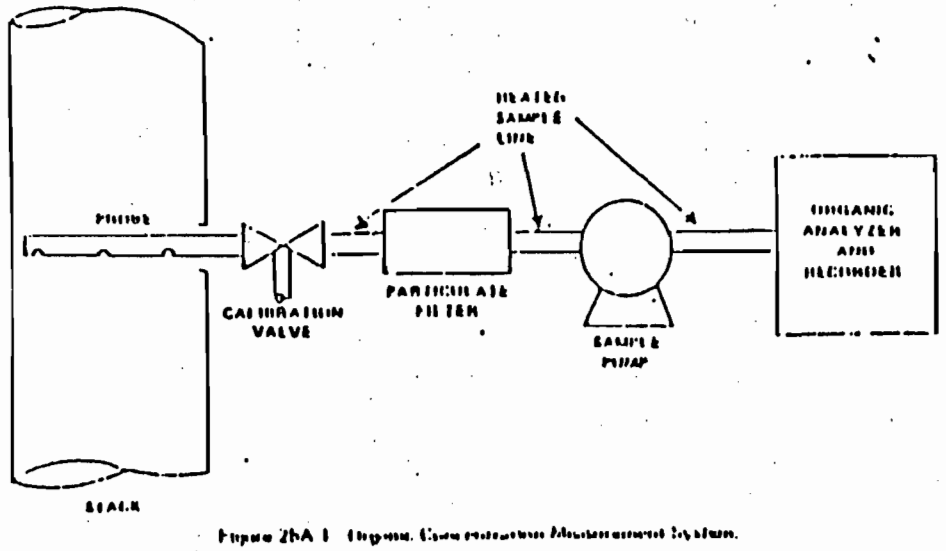


Figure 25A-1 Diagram, Concentration Measurement System.

3.1 Organic Concentration Analyzer. A flame ionization analyzer (FIA) capable of meeting or exceeding the specifications in this method.

3.2 Sample Probe. Stainless steel, or equivalent, three-hole rake type. Sample holes shall be 4 mm in diameter or smaller and located at 16.7, 50, and 83.3 percent of the equivalent stack diameter. Alternatively, a single opening probe may be used so that a gas sample is collected from the centrally located 10 percent area of the stack cross-section.

3.3 Sample Line. Stainless steel or Teflon* tubing to transport the sample gas to the analyzer. The sample line should be heated, if necessary, to prevent condensation in the line.

3.4 Calibration Valve Assembly. A three-way valve assembly to direct the zero and calibration gases to the analyzer is recommended. Other methods, such as quick-connect lines, to route calibration gas to the analyzers are applicable.

3.5 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 should be heated to prevent any condensation.

3.6 Recorder. A strip-chart recorder, analog computer, or digital recorder for recording measurement data. The minimum data recording requirement is one measurement value per minute. Note: This method is often applied in highly explosive areas. Caution and care should be exercised in choice of equipment and installation.

4. Calibration and Other Gases

Gases used for calibrations, fuel, and combustion air (if required) are contained in compressed gas cylinders. Preparation of calibration gases shall be done according to the procedure in Protocol No. 1, listed in Reference 9.2. 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

---

*Mention of trade names or specified products does not constitute endorsement.

(i.e., organics between 1 and 10 percent by volume), alternative methods for preparing calibration gas mixtures, such as dilution systems, may be used with prior approval of the Director.

Calibration gases usually consist of propane in air or nitrogen and are determined in terms of the span value. Organic compounds other than propane can be used following the above guidelines and making the appropriate corrections for response factor.

4.1 Fuel. A 40 percent H_2/60 percent He or 40 percent H_2/60 percent N_2gas mixture is recommended to avoid an oxygen synergism effect that reportedly occurs when oxygen concentration varies significantly from a mean value.

4.2 Zero Gas. High purity air with less than 0.1 parts per million by volume (ppmv) of organic material (propane or carbon equivalent) or less than 0.1 percent of the span value, whichever is greater.

4.3 Low-level Calibration Gas. An organic calibration gas with a concentration equivalent to 25 to 35 percent of the applicable span value.

4.4 Mid-level Calibration Gas. An organic calibration gas with a concentration equivalent to 45 to 55 percent of the applicable span value.

4.5 High-level Calibration Gas. An organic calibration gas with a concentration equivalent to 80 to 90 percent of the applicable span value.

5. Measurement System Performance Specifications

5.1 Zero Drift. Less than ±3 percent of the span value.

5.2 Calibration Drift. Less than ±3 percent of span value.

5.3 Calibration Error. Less than ±5 percent of the calibration gas value.

6. Pretest Preparations

6.1 Selection of Sampling Site. The location of the sampling site is generally specified by the applicable regulation or purpose of the test; i.e., exhaust stack, inlet line, etc. The sample port shall be located at least 1.5 meters or 2 equivalent diameters upstream of the gas discharge

to the atmosphere.

6.2 Location of Sample Probe. 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.

6.3 Measurement System Preparation. Prior to the emission test, assemble the measurement system following the manufacturer's written instructions in preparing the sample interface and the organic analyzer. Make the system operable.

FIA equipment can be calibrated for almost any range of total organics concentrations. For high concentrations of organics (>1.0 percent by volume as propane) modifications to most commonly available analyzers are necessary. One accepted method of equipment modification is to decrease the size of the sample to the analyzer through the use of a smaller diameter sample capillary. Direct and continuous measurement of organic concentration is a necessary consideration when determining any modification design.

6.4 Calibration Error Test. Immediately prior to the test series (within 2 hours of the start of the test) introduce zero gas and high-level calibration gas at the calibration valve assembly. Adjust the analyzer output to the appropriate levels, if necessary. Calculate the predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level responses. Then introduce low-level and mid-level calibration gases successively to the measurement system. Record the analyzer responses for low-level and mid-level calibration gases and determine the differences between the measurement system responses and the predicted responses. These differences must be less than 5 percent of the respective calibration gas value. If not, the measurement system is not acceptable and must be replaced or repaired prior to testing. No adjustments to the measurement system shall be conducted after the calibration and before the drift check (Section 7.3). If adjustments are necessary before the completion of the test series, perform the drift checks prior to the required adjustments and repeat the calibration following the adjustments. If multiple electronic ranges are to be used, each additional range must be checked with a mid-level calibration gas to verify the multiplication factor.

6.5 Response Time Test. Introduce zero gas into the measurement system at the calibration valve assembly. When the system output has stabilized, switch quickly to the high-level calibration gas. Record the time from the concentration change to the measurement system response equivalent to 95 percent of the step change. Repeat the test three times and average the results.

7. Emission Measurement Test Procedure

7.1 Organic Measurement. Begin sampling at the start of the test period, recording time and any required process information as appropriate. In particular, note on the recording chart periods of process interruption or cyclic operation.

7.2 Drift Determination. Immediately following the completion of the test period and hourly during the test period, reintroduce the zero and mid-level calibration gases, one at a time, to the measurement system at the calibration valve assembly. (Make no adjustments to the measurement system until after both the zero and calibration drift checks are made). Record the analyzer response. If the drift values exceed the specified limits, invalidate the test results preceding the check and repeat the test following corrections to the measurement system. Alternatively, recalibrate the test measurement system as in Section 6.4 and report the results using both sets of calibration data (i.e., data determined prior to the test period and data determined following the test period).

8. Organic Concentration Calculations

Determine the average organic concentration in terms of ppmv as propane or other calibration gas. The average shall be determined by the integration of the output recording over the period specified in the applicable regulation.

If results are required in terms of ppmv as carbon, adjust measured concentrations using Equation 25A-1.

$$C_e = K C_{meas} \qquad \text{Equation 25A-1}$$

where:

C_e = Organic concentration as carbon, ppmv.

C_{meas} = Organic concentration as measured, ppmv.

K = Carbon equivalent correction factor.

K = 2 for ethane.

K = 3 for propane.

K = 4 for butane.

K = Appropriate response factor for other organic calibration gases.

9. Bibliography

9.1 Measurement of Volatile Organic Compounds - Guideline Series. U.S. Environmental Protection Agency. Research Triangle Park, N.C. Publication No. EPA-450/2-78-041. June 1978. p. 46-54.

9.2 Traceability Protocol for Establishing True Concentrations of Gases Used for Calibration and Audits of Continuous Source Emission Monitors (Protocol No. 1). U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory. Research Triangle Park, N.C. June 1978.

9.3 Gasoline Vapor Emission Laboratory Evaluation - Part 2. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, N.C. EMB Report No. 75-GAS-6. August 1975.

APPENDIX C

STRIP CHART RECORDS

INCINERATOR INLET

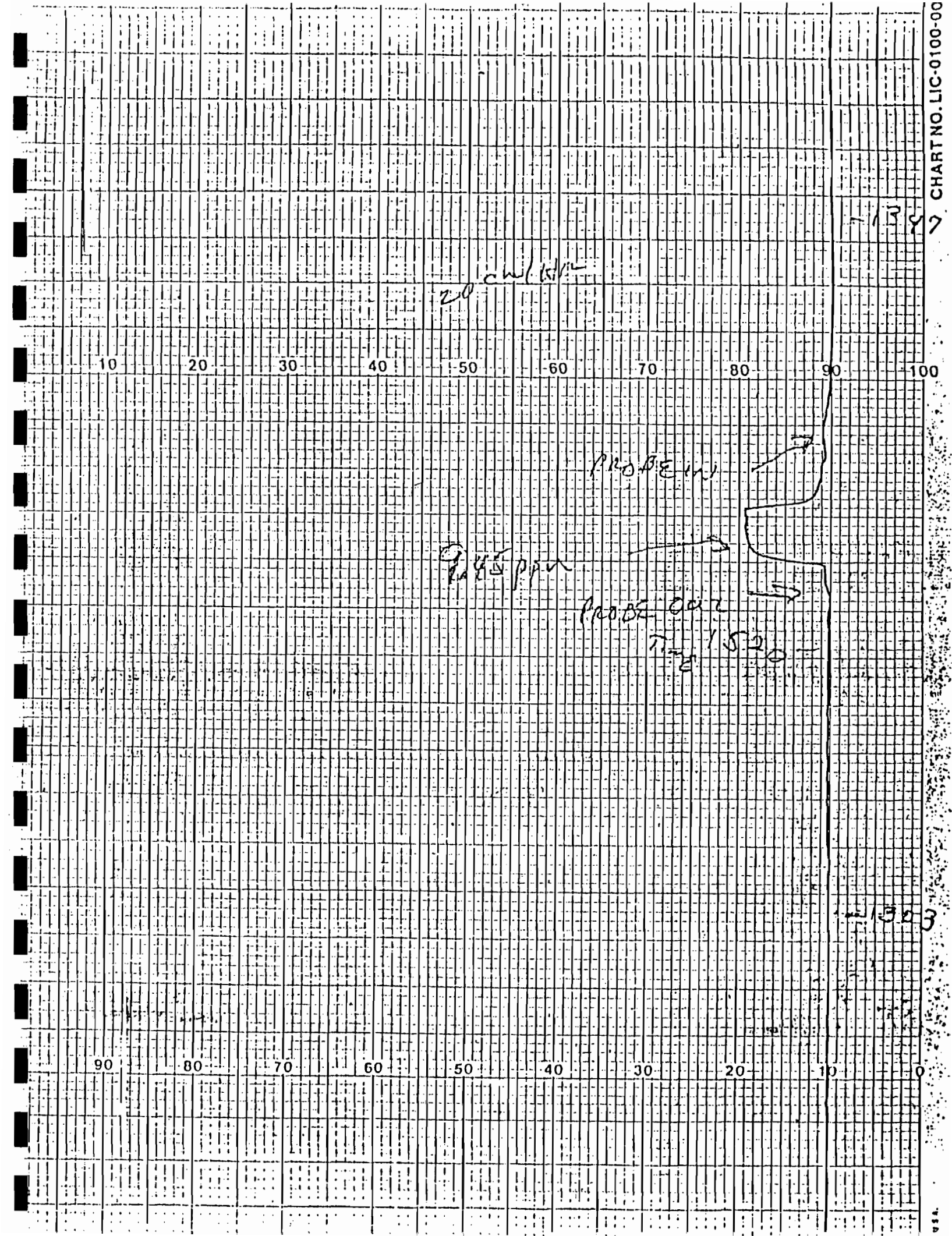
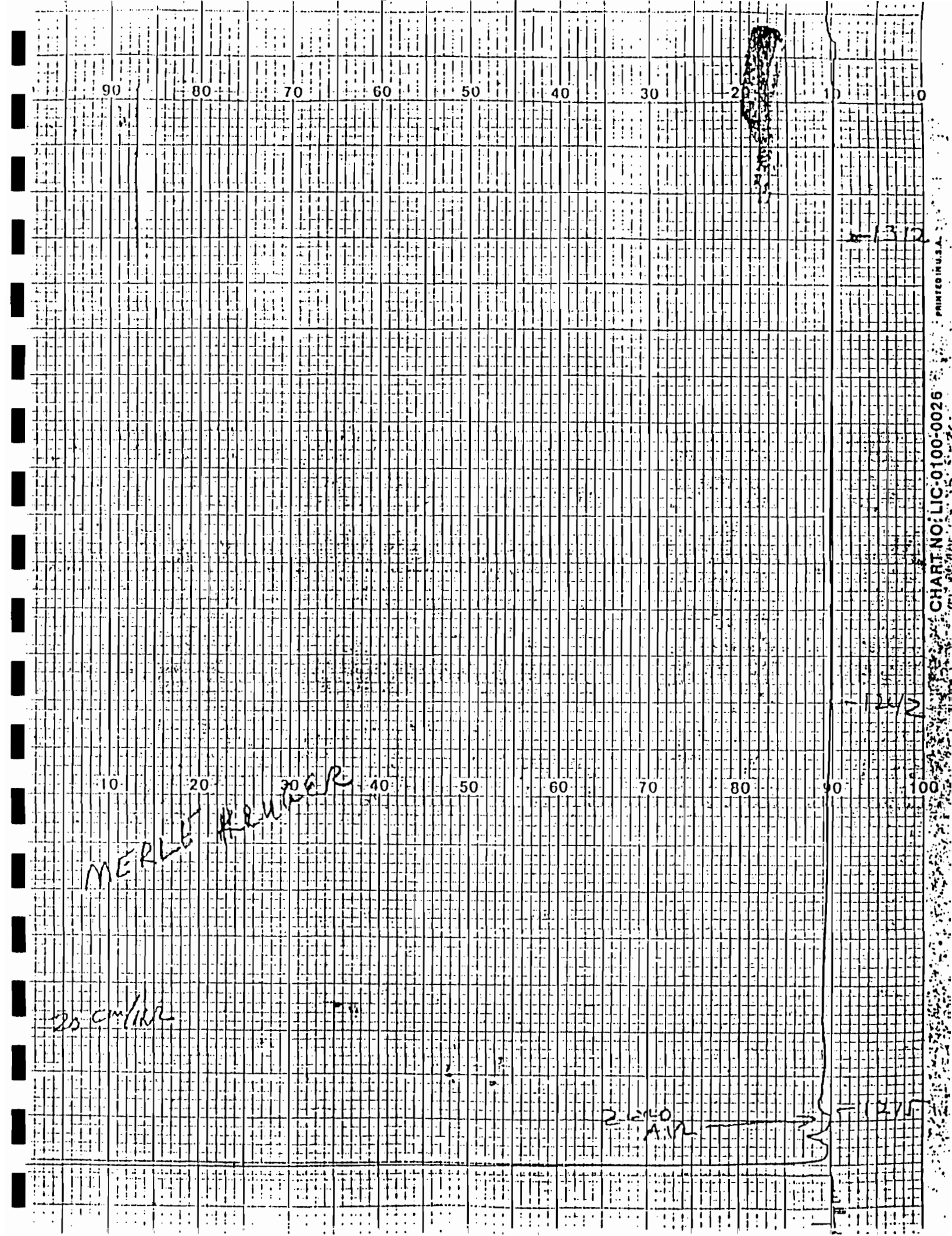


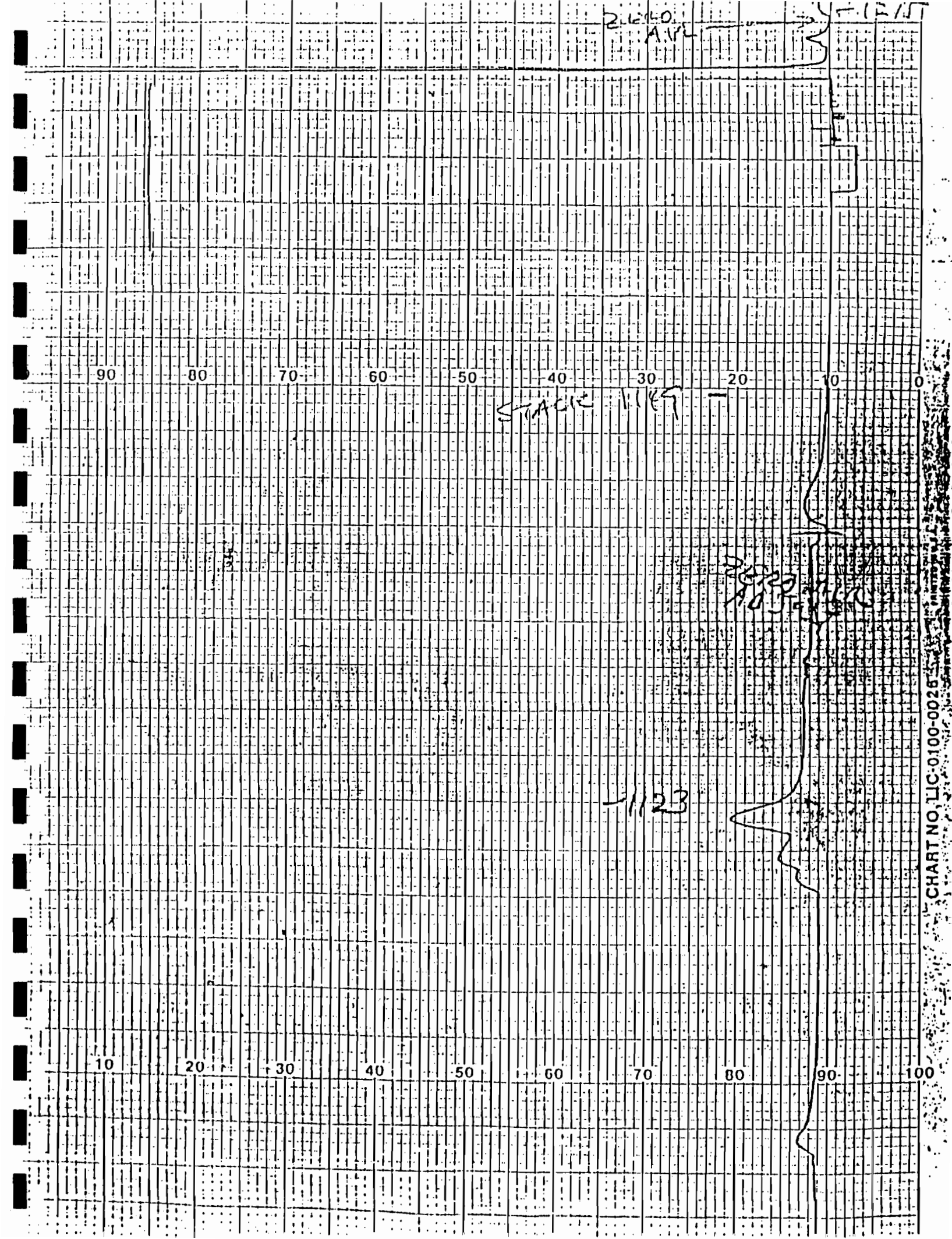
CHART NO. LIC-0100-00
20 cm/div
10
20
30
40
50
60
70
80
90
100
PROBE IN
EXIT PIPE
PROBE OUT
TIME 1520
90
80
70
60
50
40
30
20
10
0

CHART NO. LIC-0100-0026

0 10 20 30 40 50 60 70 80 90 100

90 80 70 60 50 40 30 20 10 0


90
80
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
CHART NO. LIC-0100-0026
PRINTED IN U.S.A.


90
80
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
CHART NO. LIC-0100-0026

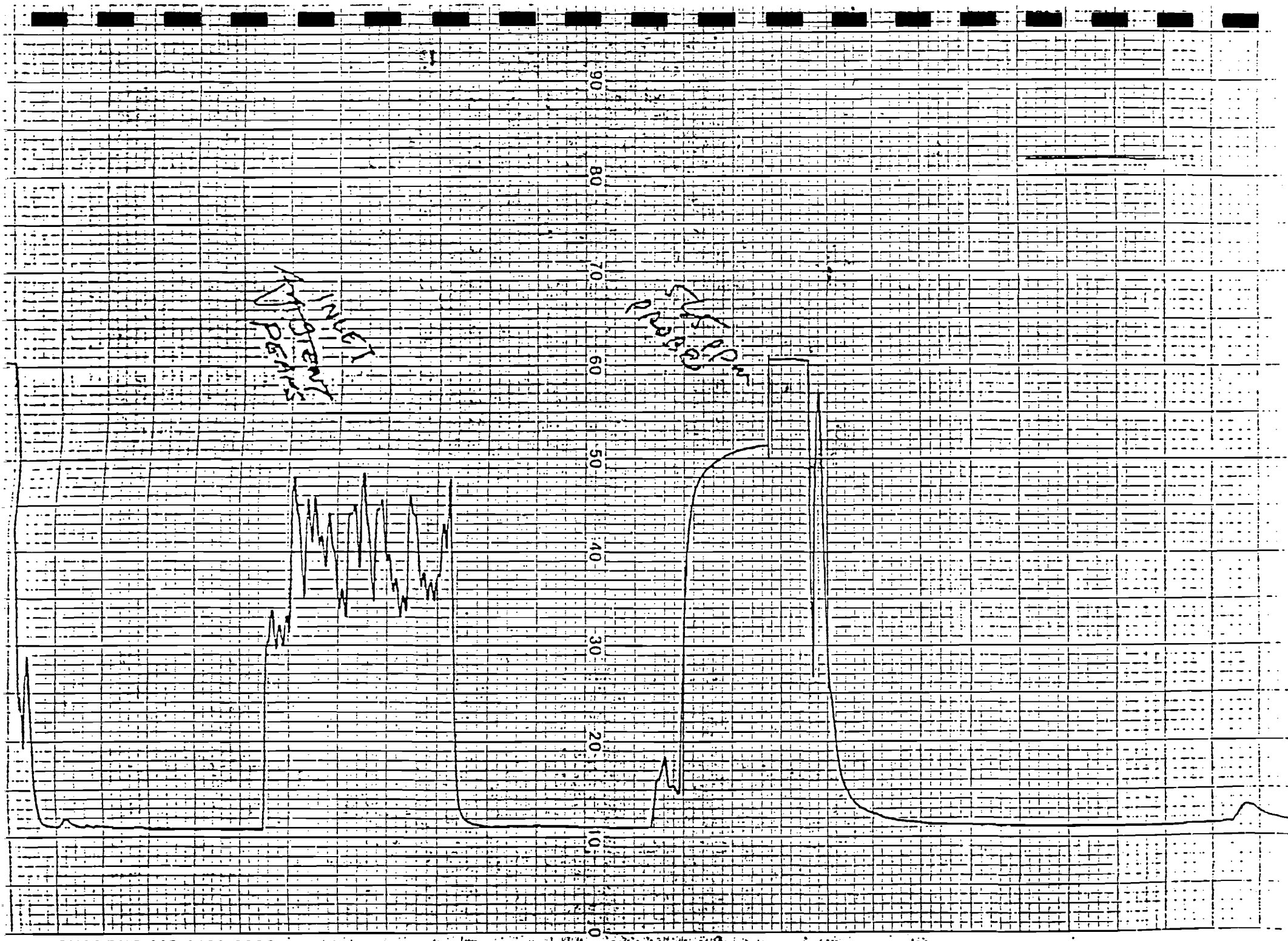
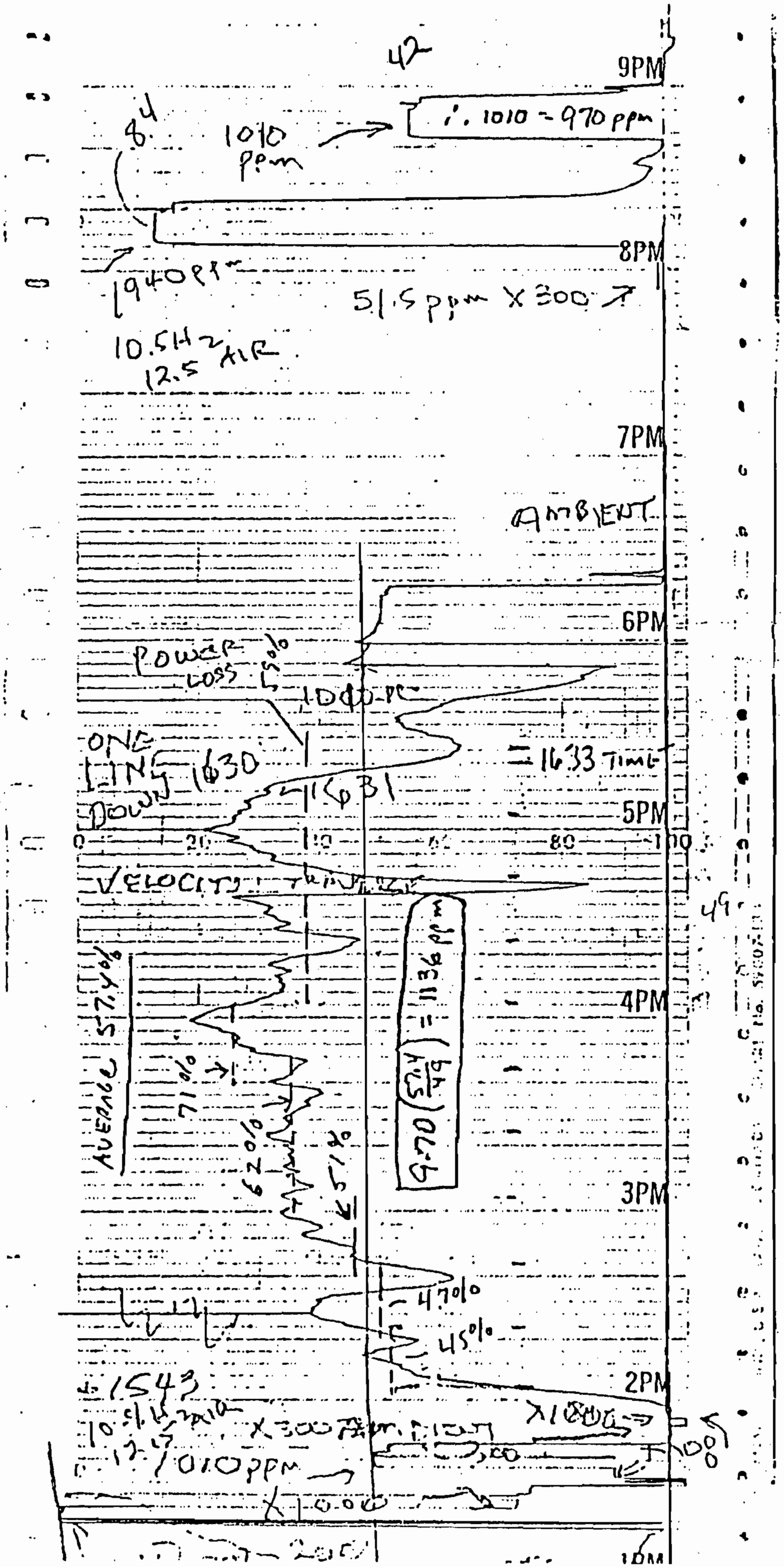


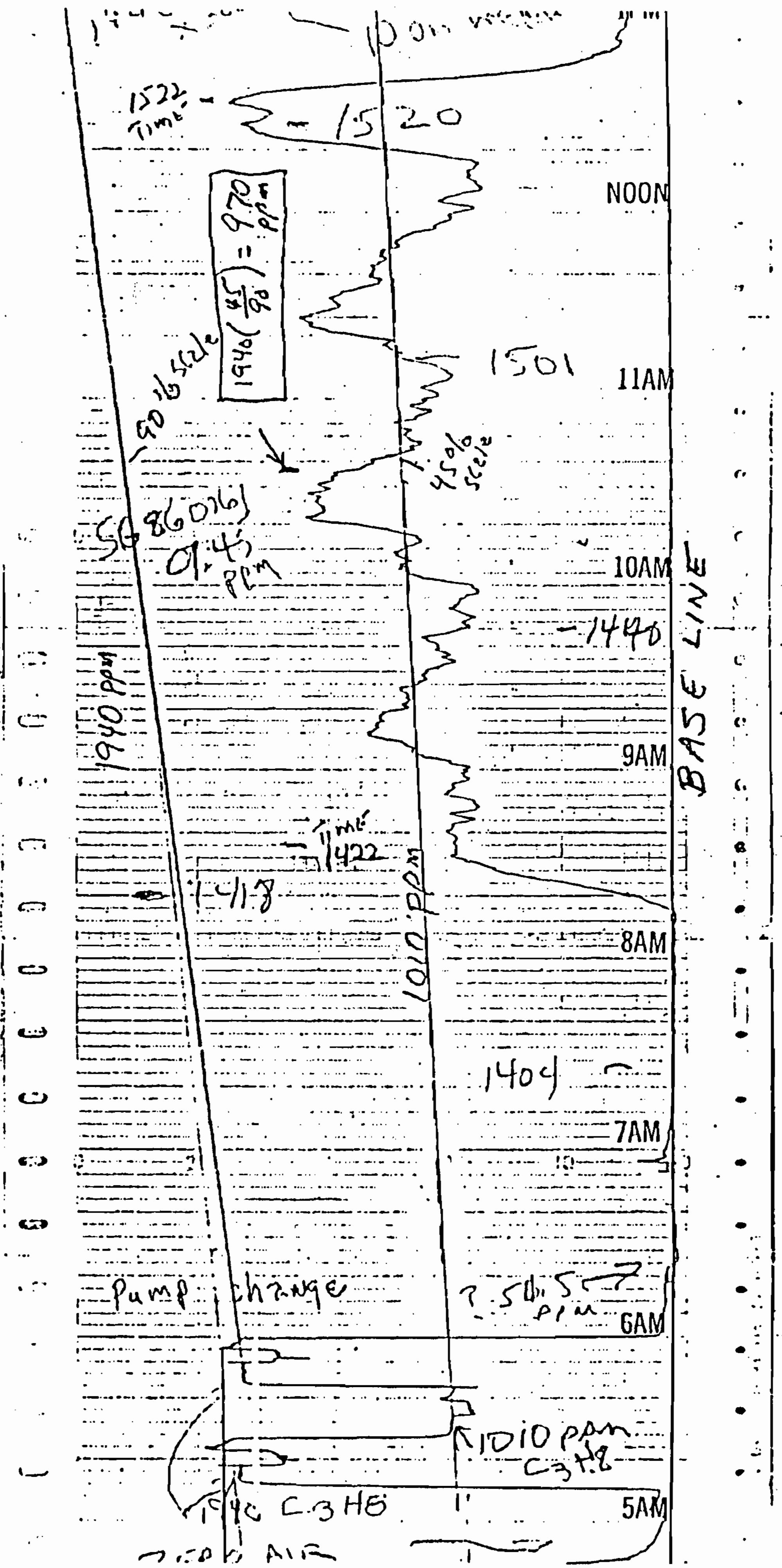
CHART NO. LIC-0100-0026

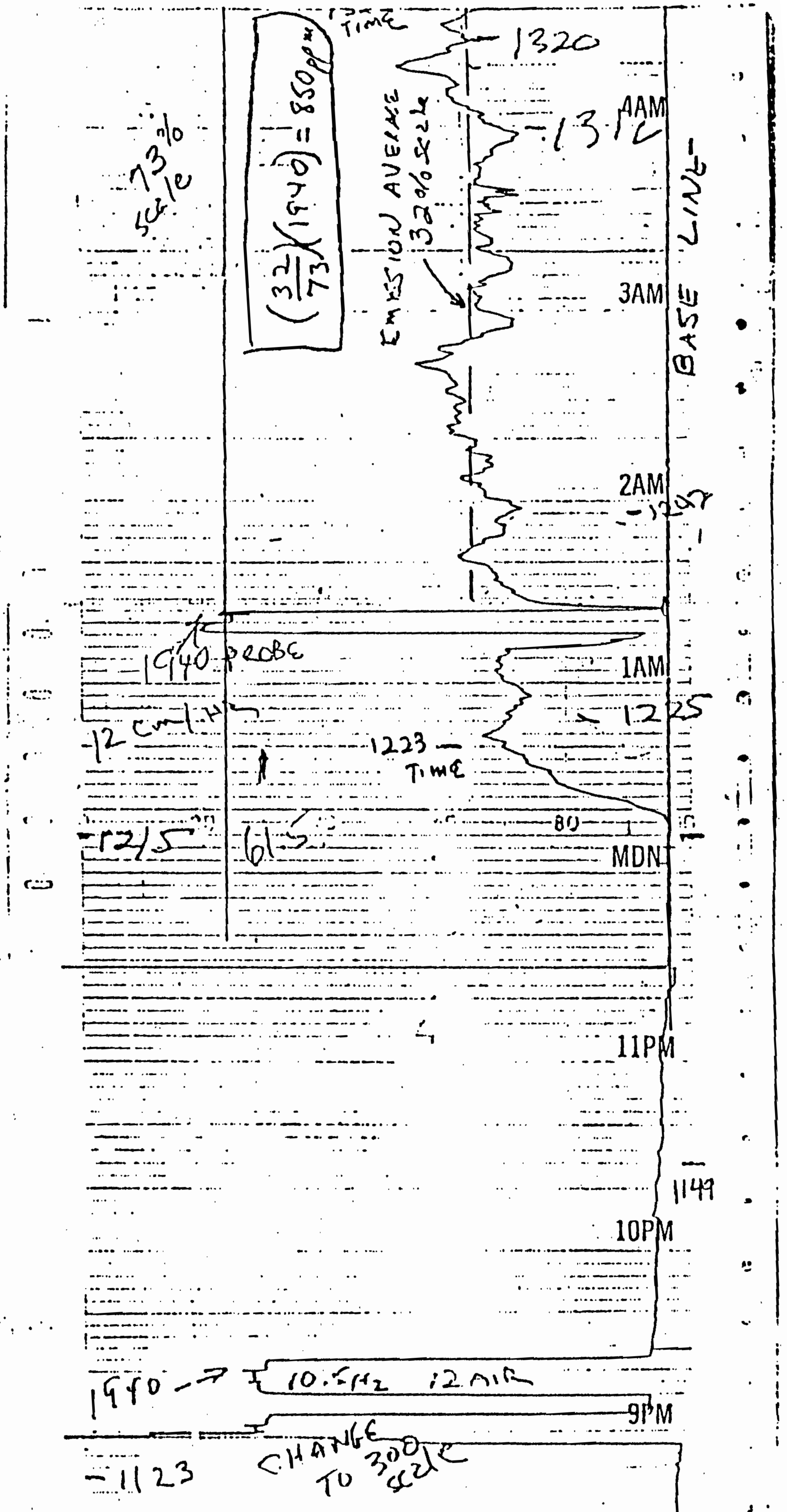
PRINTED IN U.S.A.

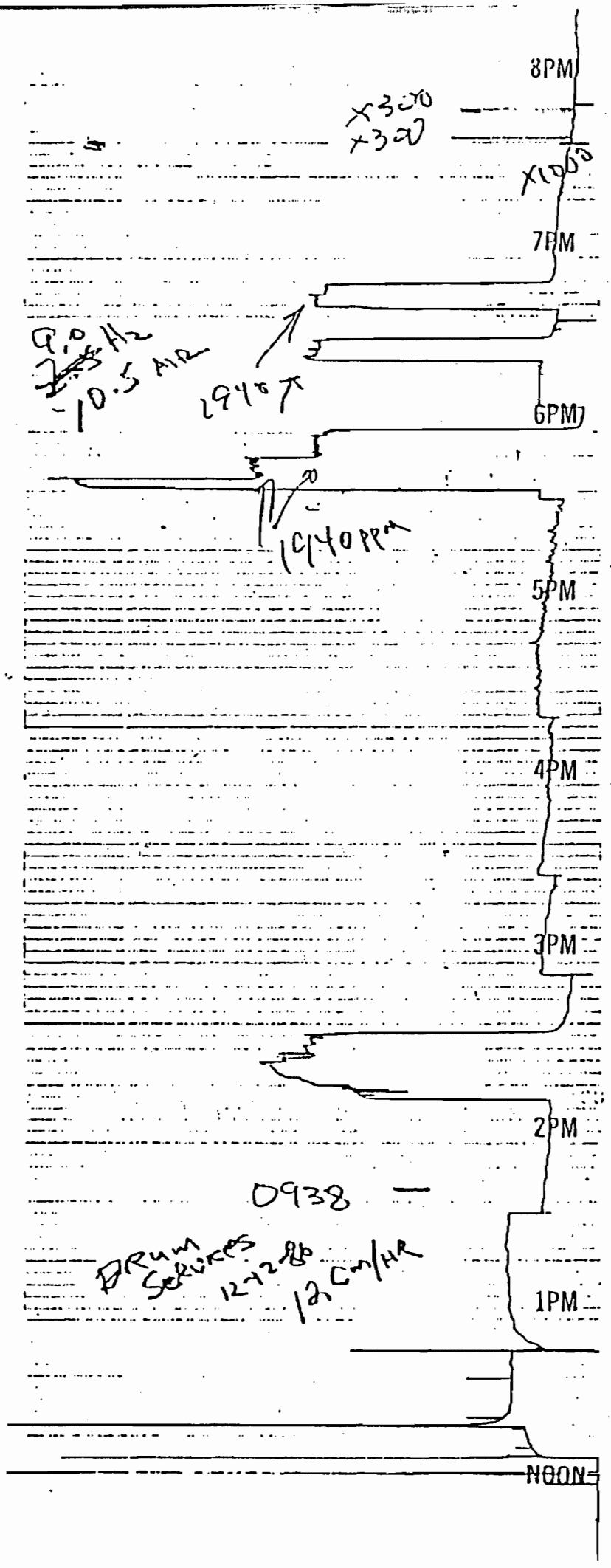
80
70
60
50
40
30
20
10
0
INLET
20
30
40
50
60
70
80
90
100
DRUM
12-12-86
CHART NO. LIC-0100-0026
PRINTED IN U.S.A.

INCINERATOR OUTLET


42
9PM
8PM
7PM
6PM
5PM
4PM
3PM
2PM
1010 ppm
∴ 1010 = 970 ppm
1940 ppm
51.5 ppm X 300
10.5 H2
12.5 AIR
AMBIENT
POWER LOSS
1000 ppm
ONE LINE DOWN 1630
1631
= 1633 TIME
0
20
40
60
80
100
VELOCITY
AVERAGE 57.4%
71%
62%
51%
970 (57.4 / 49) = 1136 ppm
47%
45%
1543
X300
1010 ppm
X1800


1522 Time
1520
NOON
1940(45/90) = 970 ppm
1501
11AM
45% scale
10AM
1440
BASE LINE
1940 ppm
9AM
Time 1422
1418
1010 ppm
8AM
1404
7AM
Pump change
6AM
1010 ppm C3H8
1940 C3H8
5AM


TIME
1320
1314
4AM
73% scale
$\left(\frac{32}{73}\right)(1940) = 850$ ppm
EMISSION AVERAGE 32% scale
BASE LINE
3AM
2AM
1297
1940 PROBE
1AM
12 cm/hr
1225
1223 TIME
80
1215
61.5
MDN
11PM
1149
10PM
1940 → 10.5 H2 12 AIR
9PM
1123
CHANGE TO 300 scale


8PM
x300
x30
x1000
7PM
9.0 H2
10.5 AIR
194°F
6PM
1940 PPM
5PM
4PM
3PM
2PM
0938
DRUM SERVICES
12-2-88
12 Cm/HR
1PM
NOON

APPENDIX D

PROJECT PARTICIPANTS

PROJECT PARTICIPANTS

ACE

Stephen L. Neck, P.E.	Field Testing Report Preparation
Colleen Hodge	Field Testing
Carolyn T. Graham	Document Production

TSI

A. E. Henderson, Jr.	Project Manager

ATTACHMENT F

SYSTEM DRAWINGS

PM
4-30-87
Orlando, FL

CROSS/TESSITORE & ASSOCIATES, P.A.
4759 S. CONWAY ROAD, SUITE D
ORLANDO, FLORIDA 32812
305/851-1484

File Copy

April 28, 1987

DER
MAY 4 1987
BAQM

Mr. Bill Thomas
Florida Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Subject: Drum Service Company of Florida, Paint Spray Booths and Baking Ovens, Construction Permit AC 48-114677

Dear Bill:

Attached is the FDER/Central Florida District Completeness Summary for the subject source. Also, attached is a Certificate of Completion of Construction for your review.

A review of the latter shows that the subject application was in compliance with VOC emission limits as defined by 17-2 and measured paint consumption, but was marginally out of compliance for the Open Head Line and the Lids Line when compared to the allowable limits stated in the Construction Permit. Also, it should be noted that (1) the actual total emissions for the test were lower than the Construction Permit allowable, and (2) the destruction efficiency of the VOC afterburner is substantially above the 95% required by the Construction Permit.

As discussed in our telephone conversation, please review the attached reports so that an Operating Permit can be issued. If you have any questions, please do not hesitate to call upon me.

Sincerely,

Joseph L. Tessitore

Joseph L. Tessitore, P.E.
Vice President

JLT:kbw
Enc:a/s

cc: Mike Murphy

Tom Sawicki
John Brown
} 5-11-87 RBM

4/3/86

Patty

Original for file.
Bill & I talked to Murphy
about this.

Ed

RECEIVED APR 1 1987

D/2

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

CENTRAL FLORIDA DISTRICT
3319 MAGUIRE BOULEVARD
SUITE 232
ORLANDO, FLORIDA 32803-3767

April 9, 1987

COMPLETENESS SUMMARY AIR POLLUTION SOURCES

SOURCE NAME: Drum Service Co.
Incinerator, Paint Spray Booths, and
Baking Ovens - AC48-114677

DATE RECEIVED: 3/13/87

DATE REVIEWED: 4/8/87

APPLICANT NAME: Joseph L. Tessitore, P.E.

REVIEWED BY: John Turner

Cross/Tessitore & Assoc., P.A.

APPLICANT ADDRESS: 4759 South Conway Road, Suite D (AO48-128916)
Orlando, Florida 32812

Your application for a permit to construct/operate this referenced project has been received, and reviewed for completeness. The following checked items are needed to complete your application.

( ) Application fee of $_____. Make check payable to the Department of Environmental Regulation.

( ) Letter authorizing applicant to represent owner.

( ) 8-1/2" x 11" diagram of flow process.

( ) 8-1/2" x 11" location map.

( ) 8-1/2" x 11" plant layout sketch showing emission points.

(X) Test results showing compliance with emission limitations of the department. (see below)

( ) Air diffusion modeling results showing compliance with ambient air standards and PSD increment.

( ) Engineer's report pursuant to Florida Administrative Code Rule 17-4.21(1)(c).

( ) See comments on application attached.

(X) Other: (Any section of the application which is incomplete or lacks sufficient information to be evaluated).

1. The compliance test conducted December 12, 1986 indicates the openhead line and lids line were not in compliance with the emission limits of Permit Specific Condition #4.

DER Form 17-1.202(2), Effective Date November 30, 1982

2. The usage rates for linings and solvents of 53 gals/hr. exceeded the allowable limits of 47.7 gals/hr. of Specific Condition #3.

Therefore, either submit a test report which indicates compliance with all conditions of the referenced construction permit or information which indicates the construction permit, AC48-114677, has been modified such that the December 12, 1986 test would demonstrate compliance.

Any request for a modification to the construction permit must be submitted to the Central Air Permitting staff in Tallahassee.

Pursuant to Section 120.60(2) Florida Statutes, the department may deny an application if the applicant, after receiving timely notice fails to correct errors, omissions or supply additional information within a reasonable period of time.

If there are any questions, please call John Turner at 305/894-7555 or write to me at the above address.

Sincerely,

A. T. Sawicki

A. T. Sawicki, P.E., Supervisor
Air Engineering

ATS/jte

cc: J. M. Murphy, Vice President
John Bateman
Bill Thomas, BAQM

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

AIR POLLUTION SOURCES
CERTIFICATE OF COMPLETION OF CONSTRUCTION*

PERMIT NO. AC 48-114677 DATE: May 14, 1986

Company Name: Drum Service Co., of Fla County: Orange

Source Identification(s): Thermal Oxidizer, Paint Spray Booths and Baking Ovens

Actual costs of serving pollution control purpose: $ 190,000.

Operating Rates: _____ Design Capacity: 550 Drums/Hour

Expected Normal 288 Drums/Hour During Compliance Test 549.9 Drums/Hour

Date of Compliance Test: 12-12-86 (Attach detailed test report)

Test Results:	Pollutant	Actual Discharge [1]	Allowed Discharge [2]
Tight Head Line	VOC	35.67	55.30/ 51.10
Open Head Line	VOC	114.47	106.40/127.55
Lids Line	VOC	17.29	15.30/ 20.07

Date plant placed in operation: December 1, 1986

This is to certify that, with the exception of deviations noted**, the construction of the project has been completed in accordance with the application to construct and Construction Permit No. AC 48-114677 dated May 14, 1986.

A. Applicant:

J.M. Murphy, President
Name of Person Signing (Type)

Signature of Owner or Authorized Representative and Title

Date: 12-23-86 Telephone: 305-889-2581

B. Professional Engineer:

Joseph L. Tessitore, P.E.
Name of Person Signing (Type)

Joseph L. Tessitore
Signature of Professional Engineer

Cross/Tessitore & Assoc., P.A.
Company Name

Florida Registration No. 23374

Date: 2-27-87

(Seal)

4759 South Conway Rd., Suite D
Mailing Address

Orlando, FL 32812
Telephone Number

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

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

Footnotes: (See attached Sheet)

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
AIR POLLUTION SOURCES
CERTIFICATE OF COMPLETION OF CONSTRUCTION

1) See Attachment A for emissions and Attachment E for VOC destruction efficiency.

2) The original allowable VOC emissions as stated in AC 48-114677 dated May 14, 1986, are based on estimated average value of paint consumption and paint VOC content. The actual allowables shown are based on actual paint and liner consumption during the test and the RACT criteria of 17-2.650 (1) (f) 14.6. (A) and (B).

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

FOR ROUTING TO OTHER THAN THE ADDRESSEE

To: _____ Locin: _____
To: _____ Locin: _____
To: _____ Locin: _____
From: _____ Date: _____

To: Files

From: Ligia Mora and John Glunn

Date: May 28, 1986

Subj: Air Toxics Inspection at Drum Services Company of Florida

On 5/9/86 an air toxics inspection was conducted at the Drum Services Co. of Florida facility in Zellwood. John Glunn (BAQM), Tom Sawicki, Linda Lee Anderson (St. Johns River District) and Merle Kruger (Orange Co.) participated in the inspection. Before touring the plant, Michael Murphy, the plant manager, discussed the facility's planned purchase and installation of a new after burner to control the major emission sources. Construction will commence in late August if a permit to construct this device is approved.

The facility collects steel drums from industries and maintains a policy of selecting only those drums which satisfy the EPA RCRA "empty drum" rule (261.7). Generally two types of drums are collected; closed head drums which have a sealed top with a 2" opening and typically contain residues of oil, solvents or flowable resins, and open head drums, which have fully removable heads and contain more viscous residues such as petrochemicals and adhesives. Open head drums are pyrolyzed (charred) to dry and loosen the residue and paint coating, shot blasted (for cleaning the drum surfaces), hydraulically restored to the desired shape, leak tested, repainted by interior and exterior spray booths and baked to harden these coatings. Closed head drums are first flushed with a caustic solution, shotblasted, restored, leak tested and then alkali stripped, shotblasted, repainted and baked.

Emissions which could be toxic emanate from the pyrolyzing oven and the afterburner control device vent. The pyrolyzing furnace is fired with #2 diesel which incompletely combusts the residues in the drum and the drum's coating. The afterburner did not appear to adequately control these emissions and puffed several times as drums went through the furnace. The paint spray booths, additional sources of possible toxics, were controlled by pulling the vapors through a water trap. Baghouses control the shotblasting process.

Mr. Murphy listed several changes which will occur in late August. A new afterburner designed to collect the exhaust gases and vapors from the existing drum reclamation furnace and from the main paint booth and oven will replace the present afterburner. By design, the exhaust gases will be raised to at least 1500°F with a minimum retention time of 0.5 seconds. This combination will achieve 95% VOC destruction and 93% particulate destruction efficiency.

The proposed afterburner which has a heat input capacity of 8.8×10^6 BTU/hr will replace the existing 1.5×10^6 BTU/hr afterburner. The new afterburner should also have increased combustion efficiency since the proposed configuration offers better mixing conditions and increased retention time.

The exhaust gases from the new afterburner will probably be passed through a waste heat boiler prior to discharge. This should allow the recovery of considerable energy which could be used in the drum reclamation process. The fuel for the oven would be switched from diesel to propane.

A recommendation is to reinspect this source later this year to determine what effect these changes will make on the present emissions of VOCs and products of incomplete combustion.

LM:JG:ht

cc: Jim Pennington
Tom Sawicki
Merle Kruger

DRUM SERVICE CO. OF FLORIDA

POST OFFICE BOX 278
ZELLWOOD, FLORIDA 32798
PHONE AREA 305 — 889-2581

May 12, 1986

Mr. F. John Glunn
Environmental Specialist - Air Toxics
Department of Environmental Regulation
State of Florida
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

Dear Mr. Glunn:

I enjoyed meeting you and I hope you have a more thorough understanding of steel drum reconditioning and recycling after visiting our plant on May 9th. Ours is a small but unique industry and it is impossible to understand what we do without a complete "tour" such as you made.

In the packet of information I gave you I omitted one news article from the Oil Daily that I wanted you to see. It is another story on the efforts our industry has taken to insure that all incoming drums are truly "empty." As I indicated, 40 CFR 261.7 - EPA's "empty drum" rule - has been for our industry the most effective pollution control regulation ever written.

My understanding is that your area of interest in regard to air toxics would be possible incomplete products of combustion from the drum reclamation furnace. I'm glad Frank Reed of Spencer Boiler and Equipment Co. was able to reschedule his visit from California and address your questions about the combustion efficiency of his incineration/afterburner. I am certain his is the best unit manufactured today for our unique furnaces. I hope you will concur with him that the high efficiency of the Spencer afterburner provides adequate safeguards.

Of great concern to us is the standard of overall air quality requirements - for both existing and any future drum reclamation furnaces. My sense is we all agreed at the meeting that the 20% opacity limit currently permissible is not adequate and has been eclipsed by current technological improvements. A few years ago 20% opacity was difficult for many drum reconditioners to achieve, but with units such as the one

Mr. Reed and his company have developed, far higher standards are available and cost effective. When we install his unit this summer (assuming we get our permit) we will achieve zero visible emissions, all the time.

Accordingly, I would suggest the most effective use of your office's resources in any further involvement with the drum reconditioning industry would to see that all existing plants and any potential new ones meet the same high standards we will achieve when our new unit is established. We don't see how the Department could justify being concerned with the negligible possible emissions from the finest drum reclamation furnace control device made while it allows grossly higher levels of all emissions from other existing units. We would be happy to assist in any rule-making procedure this might require.

Thank you for your interest and please let me know if I may provide any additional information.

Very truly yours,

DRUM SERVICE CO. OF FLORIDA

J. M. Murphy

/kmk

Enclosure

cc: A. T. Sawicki, P.E.
John Bateman
Roger Schwenke, Esq.

Are These Drums Truly Empty?

If so, sign here please....

By Lisa Tocci

SINCE November, many oil and chemical companies sending their drums out to be cleaned and reconditioned have been startled to find they're being asked to certify in writing that the drums are empty. Not squeaky clean. Just that they contain an inch or less of residue.

Cradle-to-grave liability for the residue already lies with the generator. So the drum certification doesn't shift any extra responsibility to the drum emptier. Rather, the reconditioners are trying to make their clients more aware of the problems faced in transporting and disposing of this waste. They estimate that close to $1 billion a year of virgin product is thrown out because of poor emptying practices.

Since 1980, regulations such as the Resource Conservation and Recovery Act, Superfund, and the Hazardous Materials Transportation Act have made it illegal for reconditioners to handle any hazardous residues left in drums. The Department of Transportation and Environmental Protection Agency in turn said that a drum is empty only if it contains an inch or less of residue. That can still leave up to 1.66 gallons of product in each 55 gallon drum. Anything more may count as hazardous waste, and must be documented, manifested and disposed of as such.

"We're not people's waste haulers. We're their reconditioners," declares Vincent Buonanno, chairman of the National Barrel and Drum Association, which represents 180 drum reconditioning firms that recycle some 50 million barrels annually. It was at their annual meeting last November that the certification program was initiated.

"Results of the empty drum certification program have been good" at Buonanno's company, New England Container Corp., in Smithfield, R.I. "With only a few exceptions, most have been willing to sign."

Chemical companies, he notes, have been more favorable to the certification program than oil companies, where there's been some resistance. The chemical companies seem to have accepted the initiative as an educational effort aimed at improving emptying practices.

"On the other hand, the oil companies don't like to sign because they claim that they're not dealing in a hazardous material," he explained. "But in at least five or six states, oil is considered a hazardous material, including Massachusetts and Rhode Island."

Buonanno thinks that oil companies should be enthusiastic about the program, since it essentially aims at preventing waste in their own plants.

Who Signs?

"Most of our clients have been very understanding," reports Elliot Pearlman at Acme Barrel Co. in Chicago. His firm began requesting empty drum certificates from its clients "right away, in November, after the NABADA annual meeting," he says, adding that the main question being asked is "who signs?"

"Many feel that it's too important to leave to the shipping clerk," Pearlman relates. "They may want a supervisor or purchasing agent to take care of it." Once this sort of internal question is answered, he predicts "smooth sailing."

It's his feeling that "overall, there's been a good spirit of cooperation."

Some reconditioners have been seeking certification for years. Drum Service Co. of Florida, in Zellwood, Fla., was among the first companies to begin asking clients to sign an empty drum certification. "We've been doing it for about three years," Mike Murphy there says. "We started printing our own certification on our recieving tickets back then." Pressures of complying with RCRA's waste minimization program and Florida's own aggressive environmental stance prompted the company's early action.

Minor Objections

"Some folks were uncertain at first that they wanted to certify," Murphy recalls. "This usually happened because they had an imperfect understanding of what they were being asked to sign.

"We feel strongly in favor of NABADA's initiative. There really have been only minor objections, which can all be overcome by education."

And in Virginia, Richmond Barrel and Box Co. has been asking clients to certify drum emptiness for close to 10 years, recalls Charles Borton. The avowal is at the bottom of their color-coded pickup slips, which also indicate whether the drums last contained any corrosive, flammable, poisonous or other dangerous substance.

At the bottom it says: "I further certify that all these drums are empty." It reminds the signer of DOT empty drum mandates.

For his company and clients, Borton applies a more stringent rule than EPA's. He defines "empty" as containing one gallon or less, versus the 1.66 gallons permitted by EPA. "I don't permit my drivers to accept any drums that have more than that," he asserts.

Cost Survey

"I did a survey of the materials my clients were using," Borton recalls. "The average price per gallon of material they purchased came to $15. If you allow one inch, or 1.66 gallons, to stay in the drum, it comes to about $25 apiece. If you multiply that by a trailer load of 264 drums, it comes to $6,600.

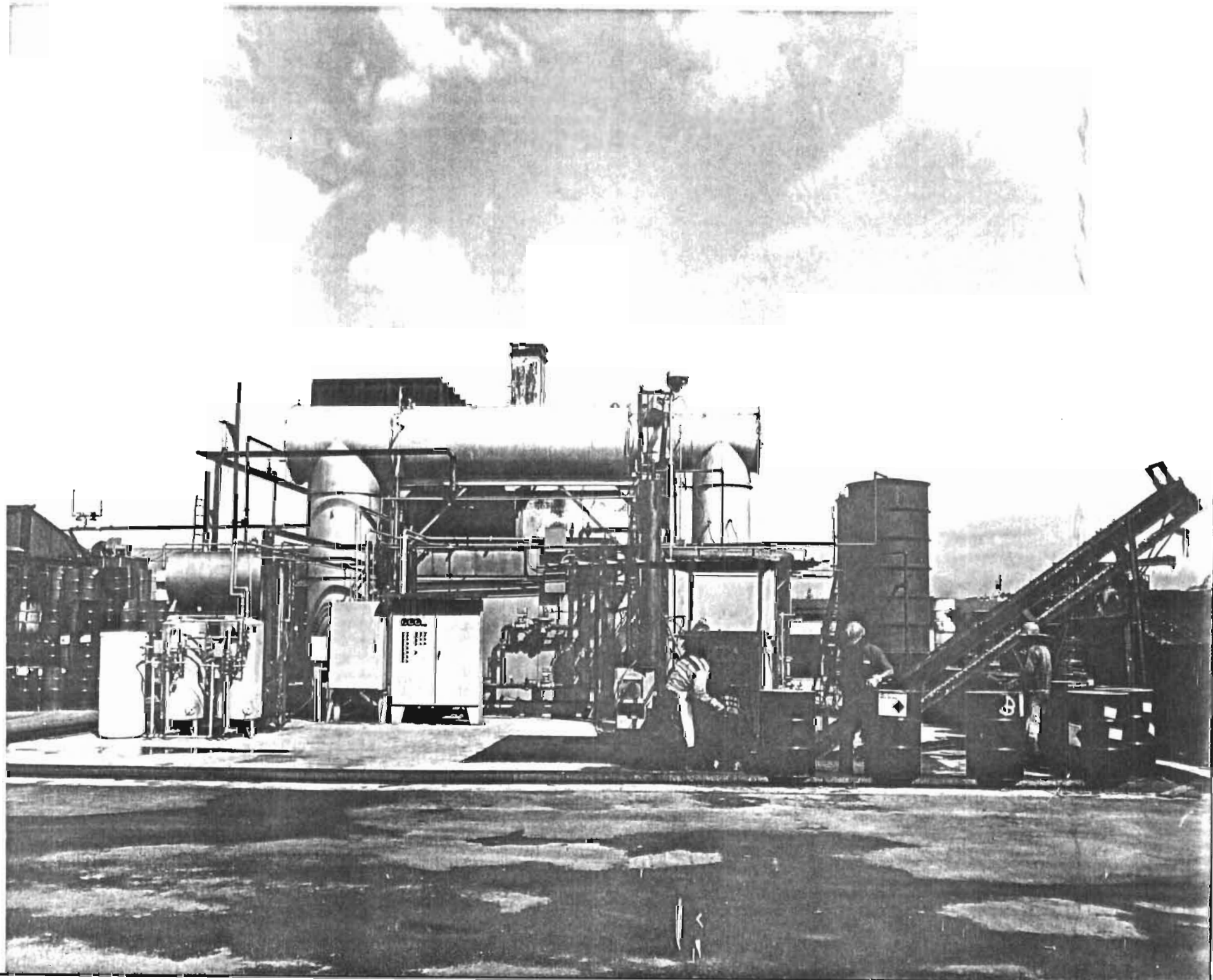
"Once you begin to lay figures like these on them, they begin to see the value of emptying."

Borton also notes that in some Northern states, highway authorities have begun to stop drum transports, checking the drums for residue levels and quizzing the drivers on applicable hazardous transportation laws.

"In Connecticut and Rhode Island there have been routine checks on the one-inch rule," concurs Buonanno. "The inspectors are quite up to date on their regulations, and some even have gauges to measure the bottom of the drums with." The fine for violating the one-inch rule is $1,000 per drum, he adds.

"I think the enlightened companies — from our viewpoint at least they're enlightened — are the ones who will say, 'we don't want to deal with anyone who'll take drums that aren't empty,' he feels.

Is the empty drum certification and education program working? Buonanno says that he has already noted a decrease in the amount of residue being sent to his company. "We're getting more really empty drums — and we're refusing to take the drums if they're not empty."



stockholder-rights plan designed to ensure appropriate consideration of unsolicited takeover moves. The board has declared a dividend of one "preferred-share purchase right," expiring in 1996, for each common share outstanding on Mar. 7. Under the proposed plan, those purchase rights could be used if someone acquires at least 20% of FMC's common stock, or if a suitor announces a tender or exchange offer for 30% of the stock. In such a case, each right would entitle a shareholder to buy for $150, $300 worth of the acquiring company's stock. The basic aim of the plan, according to an FMC spokesperson, is to impel an acquirer, or a would-be acquirer, to deal with FMC's board of directors □

JEFFREY TREWHITT in Chicago, with Joseph F. Dunphy

Drum residue: A $1 billion inch

To chemical industry executives, the words "hazardous waste" might mean Superfund sites or waste disposal. But to Vincent J. Buonanno, chairman of the National Barrel and Drum Assn. (NABADA)—a group of 180 barrel and drum reconditioners—hazardous waste means the last inch or so of chemical substance left in the bottoms of some of the 50 million containers that the industry and others send out for reconditioning in the U. S. each year. That one inch, Buonanno says, is "the No. 1 environmental problem in the reconditioning industry."

"For many years," he says, "drum reconditioners shouldered the burden" caused by improperly emptied drums, "such as handling safety problems, and more recently, meeting [the requirements of] federal clean air and clean water laws." However, since 1980, provisions of the Resource Conservation and Recovery Act (RCRA), the Hazardous Materials Transportation Act and Superfund have made it impossible—in fact, illegal—for drum reconditioners to accept full responsibility for hazardous residues left in the drums by their clients. To help make the industry aware of its responsibility, NABADA is launching a three-pronged "Empty Drum Certification" program that will combine an educational effort with a form for reconditoners' clients to sign certifying that their drums are empty in compliance with the law.

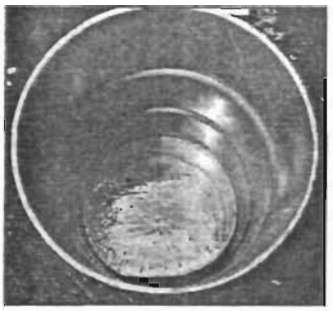
New rules. The program's first level is educational, says Daniel W. Barber, NABADA's new president. "I've got an objective right now to start a mailing" of educational material to chemical company executives "at the end of this week," he says. NABADA also will distribute posters for companies to put up in container emptying and loading dock areas outlining their legal responsibilities. Plus, Barber says, "we are putting a [seminar] program together" to present to chemical trade associations.

Level two is the distribution of the certification forms to NABADA's members, to be signed by companies when they load their containers onto reconditioners' trucks. The third part of the program, still very much in its formative stage, Buonanno says, is the establishment of an "800" telephone line for information on what to do with empty drums. NABADA's members will pick up, free of charge, any such containers that are found "orphaned" in public areas, such as parks or residential neighborhoods.

"I don't have any reservations about" this portion of the program, says Joseph J. Mayhew, director of the Chemical Manufacturers Assn.'s (CMA) National Chemical Response Information Center (NCRIC), who says this is the only part of the program with which he is conversant. In fact, he says, "we were kind of excited about it." He notes

Buonanno: Working for industry compliance.

that NABADA "had approached us to use our [NCRIC] 800 number," set up last year (*CW, July 10, 1985, p. 44*), "and we expressed some interest in the project." However, CMA is unsure of how many calls its new referral number can handle, so, he says, "it's going to be a couple of more months" before CMA gives NABADA its answer.



Residue is the No. 1 environmental problem for reconditioners.

NABADA need not wait for positive feedback on the rest of its program. "I'm happy to hear of NABADA's plans to launch an educational program," says Bill W. Petryk, director of packaging at 3M. "We have no problem" asking packaging employees involved in shipping drums for reconditioning to "sign the form."

Neither does William G. Megargle, packaging engineer for the chemical purchasing department at FMC. There is "no question we would feel comfortable" signing the form, he says, and "would support" the educational program that goes with it. Signing the form, he points out, does "not really change" emptiers' responsibilities. As "an educational program, this is a very positive thing, because it's helping to spread [information about] the requirements of the laws down to those who work with" the containers.

Intertwined. Those laws are complex, their requirements are intertwined. In 1980, the Dept. of Transportation (DOT), which administers the Hazardous Materials Transportation Act, and the Environmental Protection Agency (EPA), which administers RCRA and Superfund, issued a coordinated rule on the transportation and management of hazardous wastes. DOT ruled that any emptied package containing hazardous residue must be shipped in commerce as if it were full, and specified how such packages must be labeled, shipped and manifested.

Concurrently, EPA adopted RCRA regulations exempting those containers that met the DOT rules from designation as hazardous wastes under RCRA. EPA defines a container as "empty" if "no more than 2.5 centimeters (one inch) of residue remain on the bottom of the container or inner liner." This applies only if the inch is left when the container has been emptied as thoroughly as possible using commercial emptying methods. The one-inch requirement—known as the DOT/EPA "one-inch rule"—is an outside limit reserved for unusually viscous materials.

A drum reconditioning company cannot accept drums with residues exceeding the "one-inch rule" unless it applies for and receives, from EPA, a RCRA permit to become a hazardous waste treatment, storage or disposal (TSD) facility. Emptiers sending containers exceeding the one-inch rule must comply with RCRA hazardous waste manifest requirements, and ship the containers with EPA-approved transporters. EPA considers the contents of these drums as part of the total volume of hazardous waste generated by the emptier.

Problems. Add to these requirements Superfund restrictions, which impose cradle-to-grave liability on parties that release "hazardous substances" to the environment—including regulated hazardous wastes under RCRA. The interplay of the three laws can cause emptiers a great deal of trouble, NABADA says, if they don't ensure that their drums leave their sites legally empty.

If so much liability can be incurred, a number of chemical company executives ask, what is the advantage of signing off on a form that is not administered by some federal or state agency? The advantage, Buonanno says, "is they know . . . when they sign the slip, that they have obligated their local supervisor to make sure that this gray area of hazardous waste potential violation has been covered. We think that they're covering their own tails as well as ours."

But some executives don't think signing the form will solve the problem. "It's a great idea and I think it should be implemented," says Chet A. Harlow, associate packaging engineer for the chemicals group at Olin. "The problem with it is that . . . a warehouse worker or laborer can sign and not know what he's signing, or does not understand the implications." Harlow notes that Olin already has a program of internal certification in effect.

"The question of who signs off is a very important one," NABADA's Barber says. "If the individual who loads the drums onto [the trucks] is not sufficiently familiar with the laws, then he's not the one to sign" the form, Barber notes. "It's the supervisor" who should sign, he adds. He stresses that the in-

tent of the program is not "to just automatically have a piece of paper signed. It's to ensure that the drum is properly emptied."

That's an admirable goal, says Joseph L. Flynn, packaging engineer for North American packaging in the agricultural and industrial chemicals division at Rohm and Haas (Philadelphia). However, "in today's world," he says, "I don't think that the department supervision where this drum is last used is ready to take on an additional chore to make sure [the drum is empty], certify papers, and so forth." The program is "terrific" and needed, he concedes, but without new federal or state legislation to force compliance, "I don't think that this is feasible."

Liability. Buonanno is well aware of negative industry perception of the program. "There's a certain knee-jerk reaction of 'they want to transfer liability to us,'" he says. "It's amazing how people are ignorant of some of the implications" of RCRA and Superfund, says 3M's Petryk. He points out that "generators of empty drums have to be made to realize that the responsibility and liability [for empty drums] is theirs, regardless of whether they sign a form or don't sign a form."

An added bonus of the heightened awareness NABADA's program should generate, he notes, is more thorough use of the virgin products contained in the drums and barrels. "When you've emptied the drum to one inch," he says "you've left 3% of the product in there. And 3% of the tons and tons of chemicals being made in this country is a huge mountain of material." NABADA members call this "the $1 billion inch," says Buonanno—the total of wasted materials removed by reconditioners every year. The last inch in a drum, Petryk notes, "is terribly easy to overlook in normal practice."

NABADA officials hope that, as they continue to publicize their empty drum certification program, industry resistance will evaporate. Chemical industry executives seem, on the whole, to "agree with the program," Barber says. "But very wisely, they want to know more about it."

He emphasizes that the program is "absolutely" in its infancy. But soon, he says, "we will have a program in place to go out to present to drum emptiers around the country. We welcome the opportunity to do that, and we welcome their cooperation." □

LAURIE A. RICH

Corrections: Some of the units were mislabeled in the table on the plastics market for toys in "A winning game for plastics" (*CW, Feb. 19, p. 17*). The table below converts all figures to millions of pounds. The first paragraph of the article should have stated that since 1980, resin sales to the toy makers have grown an estimated 32%, to about 640 million lb/year.

Toys: A small but growing market for plastics

	U.S. resin sales (million lb)					
Resin type	1980	1981	1982	1983	1984	1985
Acrylonitrile butadiene styrene	24	26.5	22	40	35	34
Cellulosics	2	2	2	2	2	2
High-density polyethylene	74	90	97	108	130	150
Low-density polyethylene	112	123.5	128	137	145	152
Polypropylene	68	79	31	33	37	30
Polystyrene	130	152	141	163	171	172
Polyvinyl chloride	30	40	33	37.5	39	30
Other	46	57	66	73	70	70
Total	486	571	520	584	629	640

Source: Modern Plastics.

Because of a proofreading error, the wrong column headings were used in a recent table on the value of U. S. chemical exports and imports in 1985 (*CW, Feb. 19, p. 20*). The corrected version begins as follows:

U.S. chemical trade: Exports fall as imports rise

	EXPORTS		IMPORTS	
(Dollar amounts are in millions.)	Value in 1985	Change from 1984	Value in 1985	Change from 1984
Organic intermediates	$6,012.1	−1%	$4,575.9	+7%
Inorganic chemicals	2,972.0	−5	3,021.0	+1
	460.6	−7	617.6	+5

CROSS/TESSITORE & ASSOCIATES, P.A.
4759 S. CONWAY ROAD, SUITE D
ORLANDO, FLORIDA 32812
305/851-1484

April 4, 1986

To: Mr. Bill Thomas, P.E.
Bureau of Air Quality Management

Subject: Permit Conditions for Drum Service of Florida
Permit Number Ac 48-114677

Dear Mr. Thomas:

After reviewing the subject permit conditions, the following comments and opinions are presented:

Specific Conditions:

1. This condition limits hours of operation to 40 hours per week and 2000 hours per year. In actuality, Specific Condition No. 2, which limits production, and Specific Condition No. 4, which limits emissions, both effectively limit the production hours. Also, operating hours can vary considerably due to the demands of the Citrus industry, that the above limitations may be restrictive. In reality, we are requesting operating hour limits of 72 hours per week and 3744 hours per year. Again in view of the production and emission limits this will have no effect on VOC emissions.

2. Acceptable.

3. The coating and solvent consumptions listed in this condition are restrictive for the following reasons:

   (a) The production limits in Specific Condition No. 2 and the emission limits in Specific Condition No. 4 will actually limit the paint consumption in this condition.

   (b) The emission limits in Specific Condition No. 4 are allowable and actual emissions are lower. Since the paint and solvent quantities in Specific Condition No. 3 are based on actual emission, the operation at allowable emission levels would not be possible at these paint and solvent quantities.

(c) Changes in paint technology may allow greater paint consumption with less VOC emissions. This condition would restrict this desirable approach.

4. Acceptable.

5. Acceptable.

6. Acceptable.

7. This condition, which requires the demonstration of capture efficiency, may be excessively expensive without yielding any significant data. The following information is presented:

(a) The VOC capture efficiency assumption is only 40% and not 90%, as quoted in the Technical Evaluation. This is considered a conservative estimate of capture efficiency; and therefore, the VOC emission levels are not based on an excessive or impossible collection efficiency.

(b) The EPA in "Controlling Pollution from the Manufacturing and Coating of Metal Products", Vol. 1, EPA, 1977, states the following for VOC emissions during the painting and drying process:

Spray Booth	50%
Pre/Dry Flash Off	10%
Bake Oven	40%
	100%

Therefore, assuming 40% VOC capture in the bake oven is in accordance with EPA guidelines.

(c) The Whittaker laboratory study presented in the permit application shows the maximum VOC loss prior to the bake oven was 60%, assuming 90 seconds for air drying before the oven. Considering that the air drying time for the Open Head Line Oven is 45 seconds and the Tight Head Line Oven is 14 seconds, a 60% loss prior to the ovens and a 40% capture efficiency of VOC's in the ovens would be conservative.

(d) The measurement of VOC capture efficiency would be extremely difficult for the permitted ovens, since the ovens are the recirculating type using internal/recycled air for combustion to conserve energy and increase VOC destruction efficiency. Therefore, with VOC's being destroyed during the oven burner combustion process, VOC's emitted from the oven are not representative of the system's capture efficiency. The James Berry memorandum of

July 7, 1980, appears to deal with paint booth exhaust or exhaust from ovens that do not have the recirculation feature. Finally, the use of internal oven air for combustion causes the oven to draw outside air from the drum entrance and exit, placing the oven under a negative draft condition which assures a higher VOC capture efficiency.

8. This condition requires the use of Method 25 for measuring the VOC destruction efficiency. Method 25 is extremely difficult and expensive; and it is requested that Method 25A be allowed. This method when properly calibrated and implemented can provide equivalent information to Method 25 at a more reasonable cost.

   It should be noted that this method was approved and successfully applied in VOC compliance testing for Citrus Central Co. and Boise Cascade Products which are major VOC emitters located in the St. Johns River District. Both these facilities have much higher emission levels than the permit applicant.

9. Acceptable.

10. This condition requires testing of maximum operating conditions. Currently, maximum capacity as stated in the permit conditions does not physically exist and testing is possible only at maximum operating conditions for existing equipment. At this time, this would allow testing at a maximum production rate of approximately 420 drums per hour.

11. Acceptable.

12. Acceptable.

13. Acceptable.

14. Acceptable.

15. Acceptable.

If your have any questions on the above comments and/or require any additional information please do not hesitate to call upon me.

Sincerely,

Joseph L. Tessitore

Joseph L. Tessitore, P.E.
Vice President

E. Requested permitted equipment operating time: hrs/day 12 ; days/wk 6 ; wks/yr 52 ;

If power plant, hrs/yr _____; if seasonal, describe: Operating time may vary with demands of the citrus industry.

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

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

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

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

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

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

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

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

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

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

   a. If yes, for what pollutants? VOC

   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.

See attached Exhibits #1 thru 21 for data relating to Rule 17-2.650.

DER

APR 3 1986

BAQM

E. Requested permitted equipment operating time: hrs/day 12 ; days/wk 6 ; wks/yr 52 ;

If power plant, hrs/yr_____; if seasonal, describe: Operating time may vary with demands of the citrus industry.

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

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

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

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

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

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

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

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

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

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

   a. If yes, for what pollutants? VOC

   b. If yes, is 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.

See attached Exhibits #1 thru 21 for data relating to Rule 17-2.650.

DER

APR 3 1986

BAQM

E. Requested permitted equipment operating time: hrs/day 12 ; days/wk 6 ; wks/yr 52 ;

If power plant, hrs/yr _____; If seasonal, describe: Operating time may vary with demands of the citrus industry.

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

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

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

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

   c. If yes, list non-attainment pollutants.

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

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

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

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

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

   a. If yes, for what pollutants? VOC

   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.

See attached Exhibits #1 thru 21 for data relating to Rule 17-2.650.

DER

APR 3 1986

BAQM

E. Requested permitted equipment operating time: hrs/day 12 ; days/wk 6 ; wks/yr 52 ;

If power plant, hrs/yr _____ ; if seasonal, describe: Operating time may vary with demands of the citrus industry.

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

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

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

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

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

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

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

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

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

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

   a. If yes, for what pollutants? VOC

   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.

See attached Exhibits #1 thru 21 for data relating to Rule 17-2.650.

DER

APR 3 1986

BAQM

P 408 533 184

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Mr. J. M. Murphy	
Street and No.	
P.O., State and ZIP Code	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return Receipt Showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date 3/26/86	

PS Form 3800, Feb. 1982

PS Form 3811, July 1983

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

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

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

RETR
MAR 27 1986
BAOM

3. Article Addressed to:

Mr. J. M. Murphy
Drum Service Co. of Florida
Post Office Box 278
Zellwood, FL 32798

4. Type of Service:	Article Number
☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail	P 408 533 184

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X Deborah A Bauer

7. Date of Delivery
3-28-86

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

DOMESTIC RETURN RECEIPT

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

March 24, 1986

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. J. M. Murphy
Vice President
Drum Service Company of Florida
Post Office Box 278
Zellwood, Florida 32798

Dear Mr. Murphy:

Attached is one copy of the Technical Evaluation and Preliminary Determination, and proposed permit to construct an incinerator to control the emissions from a spray painting operation at your drum reclamation plant in Zellwood, Orange County, Florida.

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

Sincerely,

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

CHF/pa

Attachments

cc: Frank Cross, P.E.
Tom Sawicki
Jeff Pallas

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department gives notice of its intent to issue a permit to Drum Service Company of Florida to construct an incinerator to control the emissions from a spray painting operation at the applicant's existing drum reclamation plant located at 803 Jones Avenue, Zellwood, Orange County, Florida. A determination of best available control technology (BACT) was not required.

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

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

The application 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:

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

Dept. of Environmental Regulation
St. Johns River District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803

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

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

Drum Service Company of Florida
P. O. Box 278
Zellwood, Florida 32798

DER File No. AC 48-112906

INTENT TO ISSUE

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

The applicant, Drum Service Company of Florida, applied on January 14, 1986, to the Department of Environmental Regulation for a permit to construct an incinerator to control the emissions from a spray painting operation at their drum reclamation plant in Zellwood, Orange County, Florida.

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

Pursuant to Section 403.815, F.S. and DER Rule 17-103.150, FAC, you (the applicant) are required to publish at your own expense the enclosed Notice of Proposed Agency Action on permit application. The notice must be published one time only in a section of a major local newspaper of general circulation in the county in which the project is located and within thirty (30) days from receipt of this intent. Proof of publication must be provided to the Department within seven days of publication of the notice. 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 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. Petitions must comply with the requirement of Florida Administrative Code Rules 17-103.155 and 28-5.201 (copies enclosed) and be filed with (received by) the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32301-8241. Petitions filed by the permit applicant must be filed within fourteen (14) days of receipt of this intent. Petitions filed by other persons must be filed within fourteen (14) days of publication of the public notice or within fourteen (14) days of receipt of this intent, whichever first occurs. 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, concerning the subject permit application. Petitions which are not filed in accordance with the above provisions will be dismissed.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copies furnished to:

Frank Cross, P.E.
Tom Sawicki
Jeff Pallas

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 March 26, 1986.

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.

Patricia G. Adams — Clerk
March 26, 1986 — Date

of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to an administrative determination (hearing) under Section 120.57, F.S.

---

(4) Notice to substantially affected persons concerning applications for Department permits is an essential and integral part of the state environmental licensing process. Therefore, no application for a permit for which publication of notice is required shall be granted until and unless proof of publication of Notice is furnished to the appropriate Department permitting office.

(5)(a) Any applicant or person benefiting from the Department's action may elect to publish notice of proposed agency action in the manner provided by subsection (2) or (3). Any person who elects to publish notice of proposed agency action, upon presentation of proof of publication to the Department, prior to final agency action, shall be entitled to the same benefits under this rule as a person who is required to publish notice of proposed agency action. Since persons whose substantial interests are affected by a Department decision on a permit application may petition for an administrative proceeding within fourteen (14) days after receipt of notice and since, unless notice is given or published as prescribed in this rule, receipt of notice can occur at any time, the applicant or persons benefiting from the Department's action cannot justifiably rely on the finality of the Department's decision without the notice having been duly given or published.

(b) The notices required by this rule may be combined with other notices required by the Department pursuant to Chapter 403, 376, or 253, F.S., or Chapter 17, FAC.

(c) The provisions of this section shall also apply to the permitting of hazardous waste facilities, but only to the extent it is consistent with Chapter 17-30, Part IV, FAC. Whenever Chapter 17-30, Part IV, FAC, provides for a different time or notice procedure than that set forth in this section the time and notice provisions of Chapter 17-30 shall govern.

(6) Failure to publish any notice of application, notice of proposed agency action, or notice of agency action required by the Department shall be an independent basis for the denial of a permit.

Specific Authority: 120.53, 403.0876, 403.815, F.S. Law Implemented: 120.53, F.S. History: New 9-20-79, Amended 4-28-81, Transferred from 17-1.62 and Amended 6-1-84.

17-103.155 Petition for Administrative Hearing; Waiver of Right to Administrative Proceeding.

(1)(a) Any person whose substantial interests may be affected by proposed or final agency action may file a petition for administrative proceeding. A petition shall be in the form required by this Chapter and Chapter 28-5, FAC, and shall be filed (received) in the Office of General Counsel of the Department within fourteen (14) days of receipt of notice of proposed agency action or within fourteen (14) days of receipt of notice of

agency action whenever there is no public notice of proposed agency action. In addition to the requirements of Rule 28-5.201, FAC, the Petition must specify the county in which the project is or will be located.

(b) Failure to file a petition within fourteen (14) days of receipt of notice of agency action or fourteen (14) days of receipt of notice of proposed agency action, whichever notice first occurs, shall constitute a waiver of any right to request an administrative proceeding under Chapter 120, F.S.

(c) When there has been no publication of notice of agency action or notice of proposed agency action as prescribed in Rule 17-103.150, FAC, a person who has actual knowledge of the agency action or has knowledge which would lead a reasonable person to conclude that the Department has taken final agency action, has a duty to make further inquiry within fourteen (14) days of obtaining such knowledge by contacting the Department to ascertain whether action has occurred. The Department shall upon receipt of such an inquiry, if agency action has occurred, promptly provide the person with notice as prescribed by Rule 17-103.150, FAC. Failure of the person to make inquiry with the Department within fourteen (14) days after obtaining such knowledge may estop the person from obtaining an administrative proceeding on the agency action.

(2)(a) "Receipt of notice of agency action" means receipt of written notice of final agency action, as prescribed by Department rule, or the publication, pursuant to Department rule, of notice of final agency action, whichever first occurs.

(b) "Receipt of notice of proposed agency action" means receipt of written notice (such as a letter of intent) that the Department proposes to take certain action, or the publication pursuant to Department rule of notice of proposed agency action, whichever first occurs.

(3) Notwithstanding any other provision in this Chapter, should a substantially affected person who fails to timely request a hearing under Section 120.57, F.S., administratively appeal the final Department action or order, the record on appeal should be limited to:

(a) the application, and accompanying documentation submitted by the applicant prior to the issuance of the agency's intent to issue or deny the requested permit.

(b) the materials and information relied upon by the agency in determining the final agency action or order;

(c) any notices issued or published; and

(d) the final agency action or order entered concerning the permit application.

(4) In such cases where persons do not timely exercise their rights accorded by Section 120.57(1), Florida Statutes, the allegations of fact contained in or incorporated by the final agency action shall be deemed uncontested and true, and appellants may not dispute the truth of such allegations upon subsequent appeal.

(5) Any applicant may challenge the Department's request for additional information by filing with the Office of General Counsel an appropriate petition for administrative proceeding pursuant to Section 120.60, F.S., following receipt by

the applicant of the Department's notification, pursuant to Section 403.0876, F.S., that additional information is required.
Specific Authority: 120.53, 403.0876, 403.815, F.S. Law Implemented: 120.53, F.S.
History: New 9-20-79, Amended 4-28-81, Transferred from 17-1.62 and Amended 6-1-84.

17-103.160 Uniformity in Approval and Denial of Applications for Department Permits and Certifications. To the extent possible and consistent with the public interest, the Department approves and denies applications for permits and certifications on a uniform and consistent basis. Final Department actions on applications for permits and certifications shall be consistent with prior Department actions, unless deviation therefrom is explained by the Department in writing or the hearing officer who submits a recommended order to the Department for final agency action in accordance with Section 120.57, Florida Statutes.
Specific Authority: 120.53(1), F.S. Law Implemented: 120.53(1), 120.68(12), F.S. History: New 2-6-78, Transferred from 17-1.63, 6-1-84.

17-103.170 Designation, Preparation and Transmittal of Record for Administrative Appeals.

When any Department action or order is the subject of an administrative appeal under Chapter 17-103, Part II, FAC, the following requirements shall apply:

(1) Designation of Record. Within fifteen (15) days of rendition of the Department's final order, the appellant shall designate to the Department, in writing, with copies to other parties, those documents or things under the control of or in the possession of the Department which the appellant desires to have included in the record, and which were received or considered in the Department proceeding below. If a proceeding was reported by mechanical recording devices, the appellant shall designate those portions of the proceeding for which it requires written transcription or tapes for transcription. Any other party may designate other portions of the record in the manner provided herein. Such cross-designation shall be filed with the Department, with copies provided other parties, within seven (7) days after receipt of the designation by the appellant.

(2) Original Record. The Department shall thereupon include in the record all of the designated portions of the original papers and exhibits in the proceedings or matter from which administrative appeal is taken, together with a copy of any such parts of the proceedings as were stenographically reported or transcribed from tapes, and as have been designated by the parties and certified by a notary public, the reporter, or other officer for inclusion in the record on appeal or review, and certified copies of the order, if any, of which review is sought. The Department may, at its discretion, substitute certified copies for original papers or documents in its possession.

(3) Preparation of Record. Upon tender or deposit by appellant of the estimated cost of preparation, the Department shall prepare the record in accordance with the designations of the parties. The cost of preparation, and reproduction,

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

28-5.15 Requests for Formal and Informal Proceedings

(1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.

(2) All petitions filed under these rules should contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name and address of the petitioner or petitioners;

(c) All disputed issues of material fact. If there are none, the petition must so indicate;

(d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;

(e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;

(f) A demand for the relief to which the petitioner deems himself entitled; and

(g) Such other information which the petitioner contends is material.

Technical Evaluation
and
Preliminary Determination

Drum Service Company of Florida
Orange County
Zellwood, Florida

Thermal Oxidizer, Paint Spray Booths and Baking Ovens

Permit Number: AC 48-114677

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

March 21, 1986

I. Project Description

A. Applicant

Drum Service Company of Florida
P.O. Box 278
Zellwood, Florida 32798

B. Project and Location

The applicant proposes to construct an incinerator to control the emissions from a spray painting operation at their drum reclamation plant. The project will be located at the applicant's existing facility at 803 Jones Avenue, Orange County, Zellwood, Florida. The universal transverse mercator (UTM) coordinates of the source are: Zone 17, 439.9 km East and 3178.1 km North.

C. Sources Reviewed

This application has been submitted for the following sources:

Source	Permit Number
Drum Spray Booths, Baking Ovens, and Thermal Oxidizer	AC48-114677

D. Standard Industrial Classification Code (SIC)

The facility is classified as:

Major Group No. 34 - Fabricated Metal Products, Except Machinery and Transportation Equipment

Industry No. 341 - Metal Cans and Shipping Containers

E. Facility Category

Drum Service Company of Florida is classified as a major emitting facility for the air pollutant volatile organic compounds.

F. Application Completeness Date

Application Received: January 14, 1986
Application Deemed Complete: January 14, 1986

G. Process and Controls

Drum Service Company of Florida reconditions steel drums. The operation addressed in this permit is the coating phase of

the process. The coating operation consists of the following lines:

1. Tight head drum line
2. Open head drum line
3. Lids line

The applicant proposes to collect and destroy the volatile organic compound (VOC) emissions from the drying oven of each line.

The proposed control device is a Spencer Boiler and Engineering Thermal Oxidizer (incinerator). The applicant estimates that 90% of the VOC will be captured and the incinerator will have an efficiency of 95% destruction of the VOC. After incineration, the gases will be routed through a waste heat recovery boiler before being discharged to the atmosphere.

Any particulate matter generated from paint overspray will be controlled by dry filters, except for the open head drum exterior booth which utilizes a Binks water wash filter.

Propane is proposed to be used as the fuel for the afterburner and the drying ovens.

II. Rule Applicability

The existing facility is major for the pollutant VOC, FAC Rule 17-2.100(98). The facility is located in an area designated as nonattainment for the pollutant ozone, FAC Rule 17-2.410(1)(d) VOC's are precursors to ozone.

The spray booths and drying ovens are existing sources of VOC in an area designated as nonattainment for ozone and are subject to review under FAC Rule 17-2.650, Reasonably Available Control Technology. The spray booths and drying ovens are subject to the control technology and provisions of FAC Rule 17-2.650(1)(f)14, Surface Coating of Miscellaneous Metal Parts and Products.

The VOC emissions from the open head cover interior and drum interior lining booths and drying ovens shall be limited to 4.3 pounds per gallon of coating, excluding water, delivered to the coating applicator, FAC Rule 17-2.650 (1)(f) 14.b.(i)(A). The VOC emissions from the exterior drum and cover spray booths and drying oven shall be limited to 3.5 pounds per gallon of coating, excluding water, delivered to the coating applicators, FAC Rule 17-2.650(1)(f)14.b.(i)(B) and(C). These emission limits shall be achieved by application of low solvent technology or incineration, provided that 90 percent of the VOC which enter the incinerator are oxidized to carbon dioxide and water, FAC Rule 17-2.650(1)(f)14.c.

All VOC emissions from solvent washings will be considered in the emissions limitations in FAC Rule 17-2.650(1)(f)14.b.(i), unless the solvent is directed into containers that prevent evaporation into the atmosphere, FAC Rule 17- 2.650(1)(f)14.b.(iii).

When incineration is used to meet the emissions limits, the incinerators must oxidize 90% of the volatile organic compounds to carbon dioxide and water, FAC Rule 17-2.650(1)(f)14.c.

A compliance test will be required to ascertain the actual overall collection and destruction efficiencies of the retrofitted VOC control system and will be accomplished by the following:

- The destruction efficiency of the incinerator of the pollutant vapors delivered to it shall be determined by establishing and comparing the inlet and outlet concentrations using EPA Method 25, which is the test method required of sources with add-on destructive control devices.

- Since there is no official EPA test method for measuring capture and transport efficiency, the following methodology will be utilized:

  -the determination of the volatile organic matter content and the density of the coatings shall be in accordance with 40 CFR 60, Appendix A, Method 24 and as provided from the vendor(s).

  -a 24-hour testing cycle is to be used and is to represent a typical operating cycle.

  -capture and transport efficiency is to be assessed using the July 7, 1980 EPA memorandum entitled "Determination of Capture Efficiency", from James Berry to Doug Cook.

  -all fugitive VOC emissions are to be accounted for: clean-up solvents, make-up solvents (solvents used to maintain coating viscosity), and solvent spillage make up the majority of the fugitive VOC emissions.

The source is subject to the provision of FAC Rule 17-2.620(1)(a), which states that no person shall store, pump, handle, process, load, unload, or use in any process or installation volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. Therefore, some in-house preventive maintenance procedures shall be required.

The source is subject to the provisions of FAC Rule 17-2.620(2), which states that no person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. Therefore, objectionable odors shall not be allowed on off-plant property.

The source is subject to the provisions of FAC Rule 17-2.240, which states that no person shall circumvent any air pollution control device, or allow the emission of air pollutants without the applicable air pollution control device operating properly. Therefore, an electrical interlock shall be installed such that the spray booth is prevented from operating without the associated vapor control system.

The source is subject to the provisions of FAC Rule 17-2.250(1), (4), (5), and (6), Excess Emissions. Whenever a report of excess emissions is required, notify the DER's St. Johns River District Office. File all written reports with the same office.

III. Summary of Emissions and Air Quality Analysis

A. Emissions Limitations

The maximum annual production of reconditioned drums is projected to be 575,000, with a maximum production rate of 550 drums per hour. Using these production figures, the maximum usage of coatings and solvents is as follows:

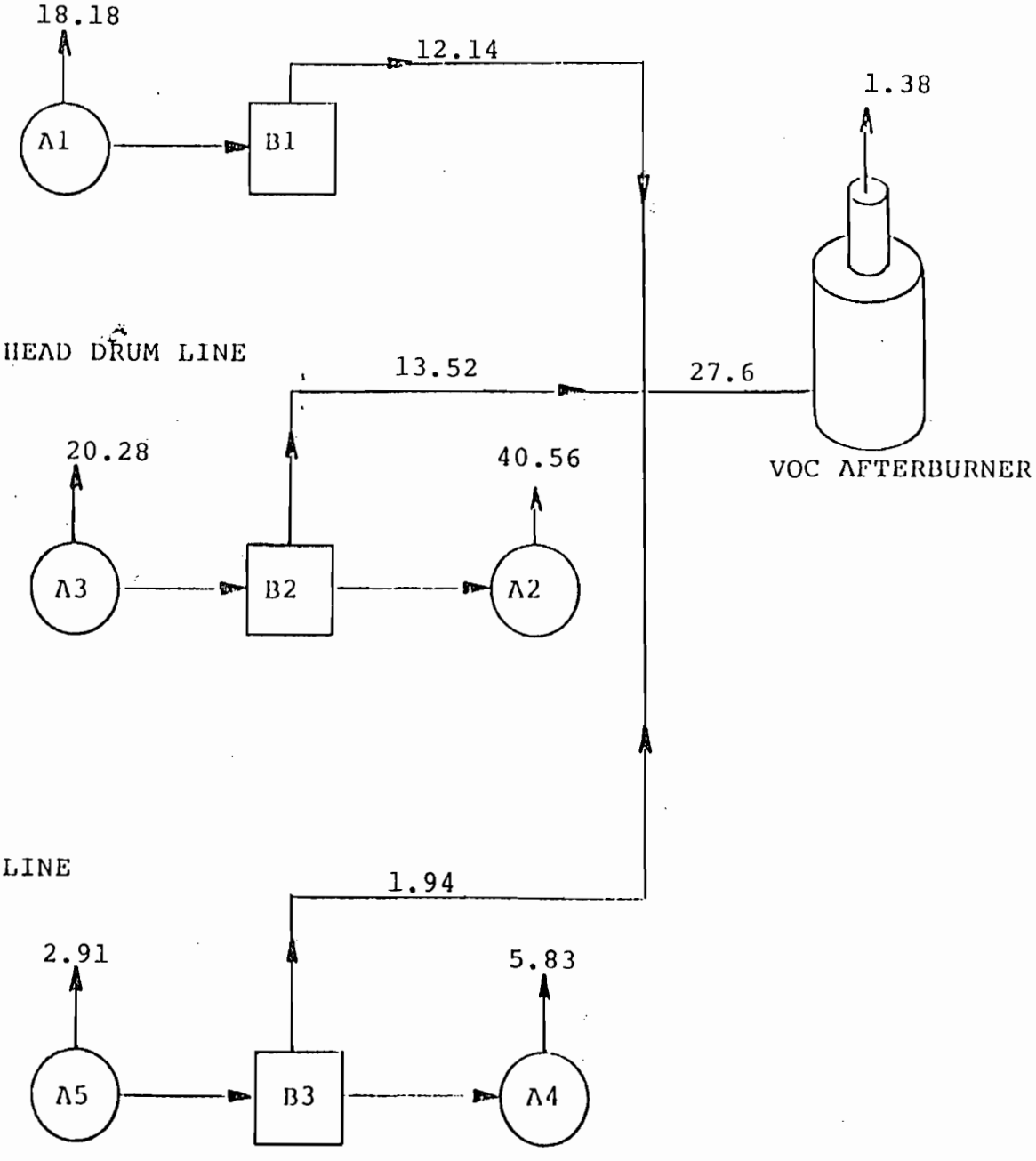
	Maximum Gallons per hour	Annual Gallons per year
Exterior Paints	34.3	35,820
Linings	10.6	12,254
MEK	1.4	1,672
Diacetone	0.9	1,035
Toluol	0.5	535

The applicant proposes to control emissions of VOC from the drying oven by incineration (90% capture and 95% destruction). When the amounts of coating and solvents listed in the above chart are used, VOC emissions are estimated as follows:

ACTUAL VOC EMMISION POINT SUMMARY

MAXIMUM ANNUAL (Tons/yr)*

TIGHT HEAD DRUM LINE

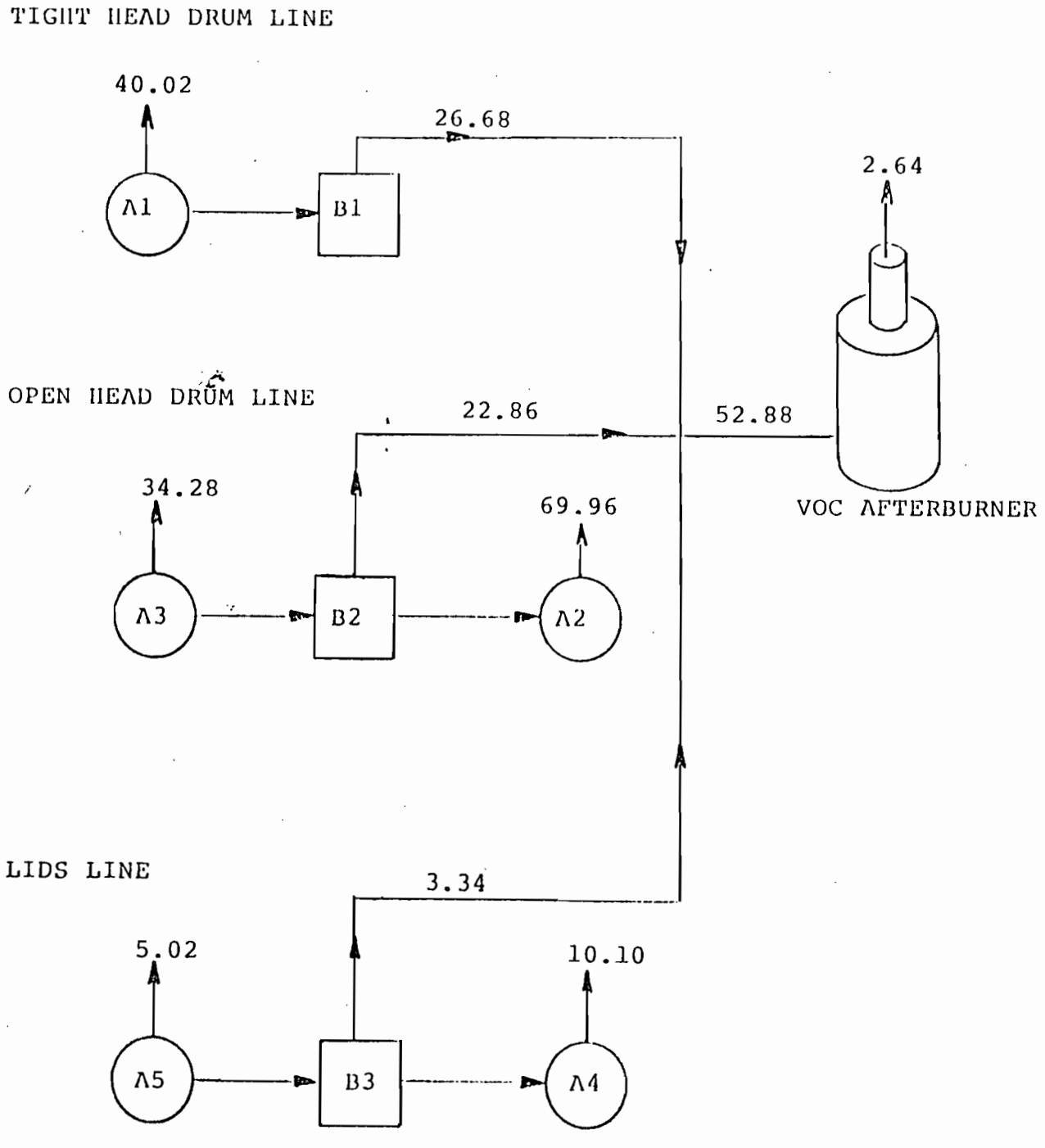


A- PAINT SPRAY BOOTH
B- PAINT BAKE OVEN

* 575,000 drums/yr

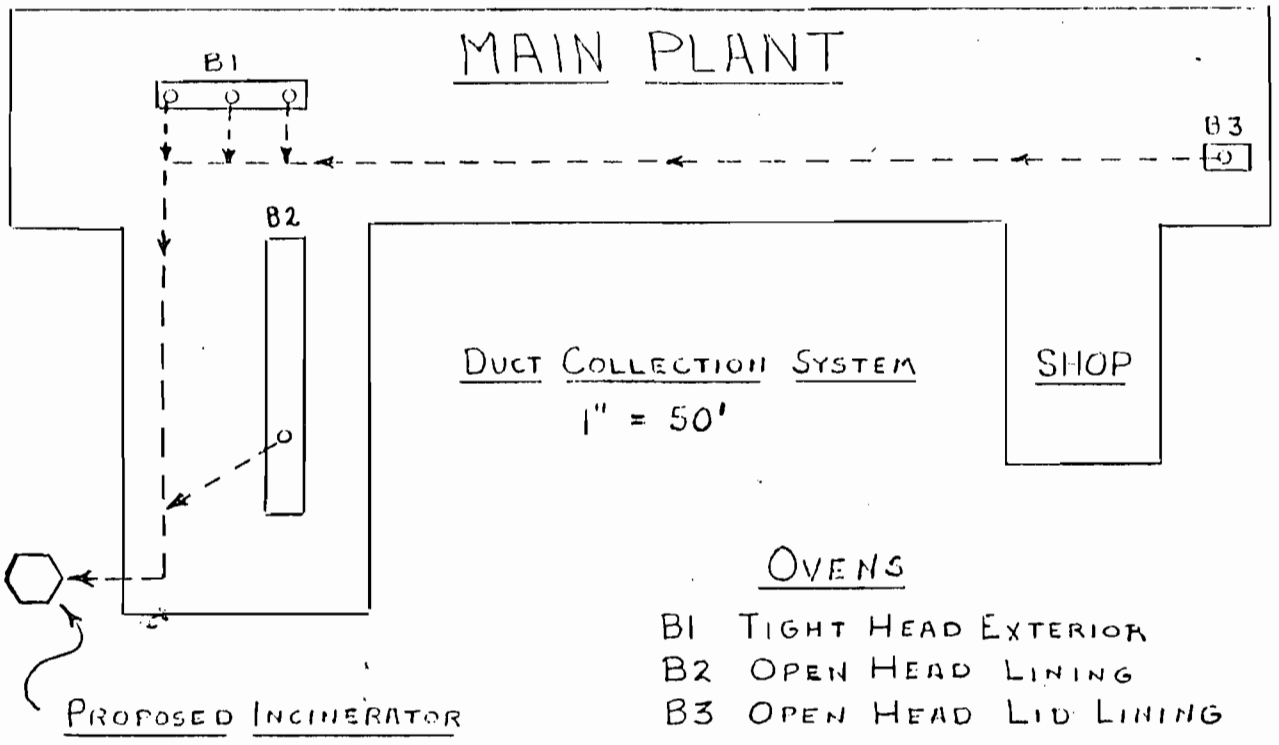
ACTUAL VOC EMMISION POINT SUMMARY

MAXIMUM HOURLY (lbs/hr)*



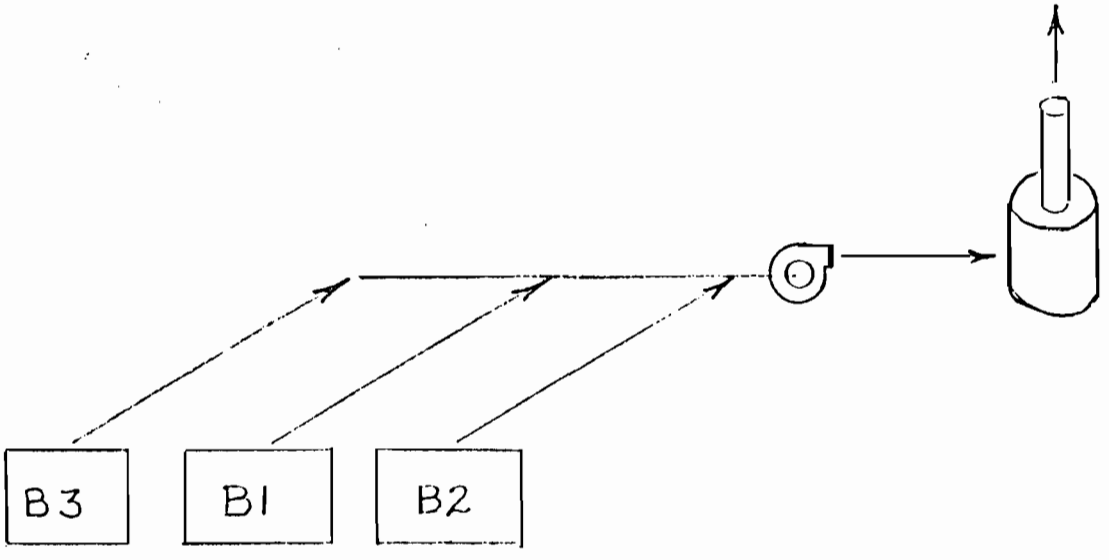
A- PAINT SPRAY BOOTH
B- PAINT BAKE OVEN

*250 Tight head drums/hr
*300 Open head drums/hr



OVENS

B1 TIGHT HEAD EXTERIOR
B2 OPEN HEAD LINING
B3 OPEN HEAD LID LINING



VOC CONTROL SYSTEM

DRUM SERVICE CO. OF FLORIDA

JWS 12-28-85

	Uncontrolled		Controlled	
	max lb/hr	ton/yr	max lb/hr	ton/yr
Tight Head Line	66.70	30.32	41.35	18.79
Openhead Line	127.10	74.36	105.38	61.52
Lids Line	18.46	10.68	15.29	8.84

The allowable emissions of VOC per line are as follows:

	max lb/hr	ton/yr
Tight Head Line	55.30	25.13
Openhead Line	106.40	61.77
Lids Line	15.30	8.88

B. Air Quality Analysis

An air quality analysis is not required for a criteria nonattainment pollutant in a nonattainment area.

IV. CONCLUSION

The emission limits that will be imposed have been determined to be in compliance with all applicable requirements of FAC Rule 17-2. The permitted maximum allowable emisssion limits should not cause any violation of Florida's ambient air quality standards.

The general and specific conditions listed in the proposed construction permit (attached) will assure compliance with all applicable requirements of FAC Rule 17-2.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

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

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

PERMITTEE:
Drum Service Company of Florida
803 Jones Avenue
Zellwood, Florida 32798

Permit Number: AC48-114677
Expiration Date: June 30, 1987
County: Orange
Latitude/Longitude: 28° 43' 55"N/ 81° 36' 45"W
Project: Thermal Oxidizer, Paint Spray Booths, and Baking Ovens

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

For the construction of three spray lines and a thermal oxidizer (incinerator).

The construction/installation shall be in accordance with the permit application and plans, documents, amendments, and drawings, except as otherwise noted on pages 5-8 of the "Specific Conditions".

Attachments:

1. Application to construct Air Pollution Sources, DER Form 17-1.202(1).
2. J. Berry's memorandum to D. Cook dated July 7, 1985

PERMITTEE:
Drum Service Company of Florida

Permit Number: AC48-114677
Expiration Date: June 30, 1987

GENERAL CONDITIONS:

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

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

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

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

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

GENERAL CONDITIONS:

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

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

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

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

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

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

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

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

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

PERMITTEE:
Drum Service Company of Florida

Permit Number: AC48-114677
Expiration Date: June 30, 1987

GENERAL CONDITIONS:

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

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

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

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

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

13. This permit also constitutes:

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

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

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

PERMITTEE:
Drum Service Company of Florida

Permit Number: AC48-114677
Expiration Date: June 30, 1987

GENERAL CONDITIONS:

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

c. Records of monitoring information shall include:

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

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

SPECIFIC CONDITIONS:

1. The hours of operations for each spray paint booth shall not exceed 40 hours per week 2,000 hours per year.

2. Total out-put of all spray lines shall not exceed 550 drums per hour or 575,000 drums per year.

PERMITTEE:
Drum Service Company
Florida

Permit Number: AC48-114677
Expiration Date: June 30, 1987

SPECIFIC CONDITIONS:

3. Use of coatings or solvents shall not exceed the following gallons per hour or gallons per year.

	Gallons per hour	Gallons per year
Exterior Paints	34.3	35,820
Linings	10.6	12,254
MEK	1.4	1,672
Diacetone	0.9	1,035
Toluol	0.5	535

4. The emissions of VOC shall not exceed the following:

	Maximum lbs/hr	tons/yr
Tight Head Line	55.30	25.13
Openhead Line	106.40	61.77
Lids Line	15.30	8.88

5. Compliance with these limits shall be demonstrated on a 24 hour basis.

6. The emissions of VOC shall equal the amount of VOC, excluding water, delivered to the coating applicator less the amount of VOC destroyed by the incinerator.

7. Capture efficiency shall be demonstrated using the procedures specified in the July 7, 1980 EPA memorandum entitled "Determinationd of Capture Efficiency", from James Berry to Doug Cook (attached).

PERMITTEE:
Drum Service Company of Florida

Permit Number: AC48-114677
Expiration Date: June 30, 1986

SPECIFIC CONDITIONS:

8. Destruction efficiency of the incinerator shall be demonstrated by determining the inlet and outlet VOC emissions using EPA Method 25. Dividing the outlet concentration by the inlet concentration will provide the penetration. Destruction Efficiency = 1 - Penetration.

9. Determination of the VOC content and the density of the coatings as applied shall be demonstrated by EPA Method 24 and as provided by the vendor(s).

10. Compliance tests shall be performed at maximum operating conditions. 95% total destruction of all VOC delivered to the inlet of the incinerator shall be demonstrated by these compliance tests.

11. The Department and EPA shall be notified, in writing, 15 days in advance of the EPA Method 25 and Method 24 compliance tests.

12. The use of all coatings and solvents shall be recorded daily and shall be submitted quarterly to DER's St. Johns River District office.

13. The construction shall reasonably conform to the plans and schedule submitted in the application. If the permittee is unable to complete construction on schedule, he must notify the Department in writing 60 days prior to the expiration of the construction permit and submit a new schedule and request for an extension of the construction permit. (Rule 17-4.09 Florida Administrative Code)

14. To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, along with compliance test results and Certificate of Completion, to the Department's St. Johns River District office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit expiration date requires a valid permit to operate. (Rule 17-4.22 and 17-4.23 Florida Administrative Code.)

Permittee:
Drum Service Company of Florida

Permit Number: AC48-114677
Expiration Date: June 30, 1987

SPECIFIC CONDITIONS:

15. If the construction permit expires prior to the permittee requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the permittee must apply for a new permit to construct which can take up to 90 days to process a complete application.(Rule 17-4.10 Florida Administrative Code)

Issued this ____ day of _____, 1986

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION

_____
VICTORIA J. TSCHINKEL, Secretary

ATTACHMENT 1

(On file at DER, Bureau of Air Quality Management and St. Johns River District office)

ATTACHMENT 2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

DATE: JUL 07 1980

SUBJECT: Determination of Capture Efficiency

FROM: James Berry, Chief
Chemical Applications Section, CPB (MD-13)

TO: Doug Cook
EPA Region IV

This is in response to your telephone call requesting an acceptable technique to measure the capture efficiency of hoods used in the control of surface coating operations. As you are aware, there is no official EPA test method for measuring capture efficiency. In fact we have gotten somewhat poor results when we have tried to measure this in actual plant tests. We have asked EPA's Office of Research and Development to develop a test method for this. Even though a standardized test method does not now exist, the technique outlined below will theoretically give an acceptable measure of capture efficiency.

A technique for measuring capture efficiency is needed because the VOC that is not captured by the hoods can represent a significant portion of the total VOC emitted to the atmosphere. The VOC not captured by the hoods could, in some cases, exceed the allowable emission rate established in the SIP's, even assuming 100 percent of the VOC which is captured by the hoods and directed to the control device is destroyed or recovered.

When carbon adsorbers are used, it is not necessary to determine capture efficiency since the VOC recovered can be compared directly to the emission standard. Our estimates for capture capability for web processes used in the CTG reports have been reinforced by observations by our engineers of overall control levels as high as 90-94 percent when carbon adsorbers are used. Since overall control is the product of the capture efficiency and the control device efficiency, even if we assume the carbon adsorbers are 100 percent efficient (which they're not), hood capture efficiencies of greater than 90 percent are demonstrated.

When incinerators are used, determination of compliance is more involved. A general procedure would be as follows. An example is provided as an attachment.

1. Calculate a potential emission rate in mass/time based on VOC content of the coating and amount of coating used.

2. Calculate an allowable emission rate in mass/time based on the SIP standard. (This can be tricky; less volume of coating is required since the solids content is greater.)

3. Determine the required reduction in VOC.

4. Measure the inlet concentration and flow rate to the incinerator and calculate the inlet emission rate in mass/time. If this is less than the required reduction, obviously the source is in violation, since enough emissions will not be destroyed in the incinerator to give the required reduction. This will result if an undesirably large portion of the emissions are emitted as fugitives.

5. If the inlet VOC mass flow rate is greater than the required reduction, measure the outlet concentration and flow rate for the incinerator and calculate the outlet emission rate in mass/time.

6. By difference, determine if the required reduction is achieved.

To measure the VOC concentration before and after the incinerator, two approaches are available: (1) FID; or (2) Reference Method 25.

If the FID is used, it must be calibrated with the solvent in the coating. This calibration will provide a good measure on the inlet to the incinerator, but it will not be accurate for the outlet. The outlet of an incinerator contains oxygenated compounds which have a depressed response in the FID. Therefore, outlet readings will be low compared to absolute values. An FID might be used for an easy to make measurement to check for non-compliance. If the FID shows the source to be in violation then, it undoubtedly will be in violation. If the FID shows that the incinerator outlet emissions are equal to or slightly less than the allowable emission level, the results will be somewhat in doubt. Method 25 may be resorted to in this case. An advantage of the FID is that measurements are easy to make and can be taken over a period of time, perhaps leading to a better measure of average emission rates compared to the short-term sampling with Reference Method 25.

If Reference Method 25 is used, VOC concentrations are made in terms of mass of carbon atoms (C). To compare the measured values with the allowable emission rates, the measured values must be corrected to mass VOC or the other terms must be corrected to mass C. This is done by obtaining formulation data for the solvents and calculating a mass VOC to C ratio. If the solvent formula is C_4H_8O, for example, the mass VOC to mass C ratio is 72/48 or 1.5. The major advantage of Reference Method 25 over the FID is that Reference Method 25 gives an accurate reading on the incinerator outlet. The need for this accuracy depends on incinerator efficiency and how close the emissions are to the standard. With low incinerator efficiency, an accurate measure of outlet emissions is more important than with a high incinerator efficiency.

Remember, however, that even a high efficiency control device would be ineffective if the capture device were very inefficient. The effectiveness of the control system is equally dependent on its two components, the capture and control devices. Because of the large number of sources which must come into compliance with a variety of State regulations in the near future, it probably is more realistic for a State to initially plan on determining compliance with the capture requirements of their regulations on the basis of engineering judgment. Recognizing that 90% capture means that almost all emissions must be contained and delivered to

the control device, it should be possible for an enforcement official to make some judgment that a system does or does not approach perfect capture. It would be well to train each enforcement person by having him inspect a web process that uses a carbon adsorber control device for which the overall recovery has actually been measured and found to be high. Its associated capture system would obviously have to be good. Ultimately, however, the enforcer and industry must recognize that achievement of emission limits based on 90% capture requires almost total containment of the emissions. Very little can be permitted to escape the control system.

Attachment

cc: CAS
Dave Patrick
Barry Perlmutter, Region V
Tom Williams

ATTACHMENT

DETERMINATION OF COMPLIANCE BY A COATING OPERATION
WHICH CONTROLS EMISSIONS WITH AN AFTERBURNER

Step 1. Determine the VOC emission rate from the process based on the VOC content of the coating and the rate of coating usage. (VOC content can be taken from the coating manufacturer's formulation or it can be determined by EPA Method 24.) Then calculate the solids content of the coating.

Coating Feed Rate	x	Factor to Convert Waterborne Coatings to Solvent Borne Equivalent	x	Coating Solvent Content	=	Actual Solvent Emission Rate	(Eq. 1)
$\frac{\text{Gal Coating}}{\text{hr}}$	x	$\frac{\text{Gal Coating less } H_2O}{\text{Gal coating}}$	x	$\frac{\text{\# VOC}}{\text{Gal Coating less } H_2O}$	=	$\frac{\text{\# VOC}}{\text{hr}}$	

As an example, consider the case of a coater using 100 gal/hr of a conventional solvent borne coating containing 5 pounds VOC per gallon of coating. Since a solvent borne coating contains no measurable amount of water, the units "gal coating less H_2O" and "gal coating" are synonymous and equation 1 becomes:

$$\frac{100 \text{ gal coating}}{\text{hr}} \times \frac{5\# \text{ VOC}}{\text{gal coating}} = \frac{500\# \text{ VOC}}{\text{hr}} \qquad \text{(Eq. 2)}$$

The solids content of this coating is then calculated by difference: (Assume the density of the solvent is 7.36 #/gal.)

$$\frac{5\# \text{ VOC}}{\text{gal coating}} \times \frac{1 \text{ gal VOC}}{7.36\# \text{ VOC}} = \frac{.68 \text{ gal VOC}}{\text{gal coating}} \qquad \text{(Eq. 3)}$$

1 gal coating - 0.68 gal VOC = 0.32 gal solids (Eq. 4)

Step 2. Determine the allowable exhaust rate based on use of a complying coating and calculate its solids content. Assume the regulation contains an emission limitation of 2.5 #VOC/gal coating less H_2O which, if we use the same solvent density, is equivalent to:

$$\frac{2.5\# \text{ VOC}}{\text{gal coating}} \times \frac{1 \text{ gal VOC}}{7.36\# \text{ VOC}} = \frac{0.34 \text{ gal VOC}}{\text{gal coating}} \qquad \text{(Eq. 5)}$$

The solids content is again calculated by difference.

1 gal coating - 0.34 gal VOC = .66 gal solids (Eq. 6)

If the facility used a complying coating with 66% solids instead of 32%, far fewer gallons of coating would be required to coat a specified article. Assuming both coatings are applied at the same transfer efficiency, the volume of complying coating required to coat at the same production rate would be:

$$\frac{100 \text{ gal noncomplying coating}}{\text{hr}} \times \frac{.32}{.66} = \frac{49 \text{ gal complying coating}}{\text{hr}} \quad \text{(Eq}$$

Therefore, the allowable emission rate is:

$$\frac{49 \text{ gallons complying coating}}{\text{hr}} \times \frac{2.5\# \text{ VOC}}{\text{gal complying coating}} = \frac{121\# \text{ VOC}}{\text{hr}} \quad \text{(Eq}$$

Step 3. Determine the required VOC reduction.

Actual emission rate - allowable rate = reduction required

$$500 \frac{\# \text{ VOC}}{\text{hr}} - 121 \frac{\# \text{ VOC}}{\text{hr}} = 379 \text{ lbs VOC/hr} \quad \text{(Eq.}$$

Step 4. Measure the mass flow rate of VOC to the incinerator using a flame ionization detector calibrated with the solvent in the coating feed to the coating line. If the measured VOC mass flow rate is less than or equal to 379 pounds per hour, the capture system is deficient and the source is not in compliance. (This presumes the control device could never achieve perfect control.)

Step 5. If the mass flow rate of VOC to the incinerator is greater than 379 pounds per hour, the destruction efficiency of the incinerator should be determined using the Total Gaseous Non-Methane Organics detector (Reference Method 25). The incinerator must be efficient enough to destroy no less than 379 pounds per hour of VOC in order for the coater to be in compliance.

DRUM SERVICES COMPANY
OF FLORIDA

CONSTRUCTION/MODIFICATION PERMIT
APPLICATION FOR THERMAL OXIDIZER,
PAINT SPRAY BOOTHS & PAINT BAKE OVENS

JANUARY 6, 1986

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

AC 48-114677

BOB GRAHAM
GOVERNOR

DER

VICTORIA J. TSCHINKEL
SECRETARY

JAN 14 1986

BAQM

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Drum Reclamation Plant [ ] New[1] [X] Existing[1]

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

COMPANY NAME: Drum Service Co. of Florida COUNTY: Orange

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) Thermal Oxidizer, Paint Spray Booths and Baking Ovens

SOURCE LOCATION: Street 803 Jones Avenue City Zellwood

UTM: East 17-439904 North 3178077

Latitude 28 ° 43 ' 55 "N Longitude 81 ° 36 ' 45 "W

APPLICANT NAME AND TITLE: J.M. Murphy, Vice President

APPLICANT ADDRESS: P.O. Box 278, Zellwood, Florida 32798

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Drum Service Co. of FL

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

*Attach letter of authorization

Signed:

J.M. Murphy, Vice President
Name and Title (Please Type)

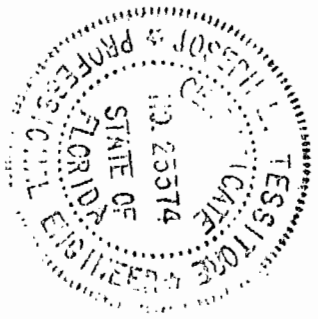
Date: 1/6/86 Telephone No. 305/889-2581

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 Joseph L. Tessitore

Joseph L. Tessitore, P.E.
Name (Please Type)

Cross/Tessitore & Associates, P.A.
Company Name (Please Type)

4759 S. Conway Road, Orlando, FL 32812
Mailing Address (Please Type)

Florida Registration No. 23374 Date: 1/6/86 Telephone No. 305/851-1484

SECTION II: GENERAL PROJECT INFORMATION

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

This is an Application to Construct a system to collect and render harmless (incinerate) vapors from paint spraying operations to the extent that emissions are within the limiting standards of 17-2.650 (1)(e) and 17-2.650 (1)(f) 14 (i)(B), see Exhibits 1 thru 12. See attached Exhibit 1 for complete description.

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

Start of Construction 120 days after approval* Completion of Construction 12 to 18 months after start

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.)

Afterburner	$77,300.00
Ducts, Fan, and Collection Hoods	15,000.00
Foundation, Roof, Wiring, Labor	22,500.00
TOTAL	114,800.00

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

AO 48-49657 issued 2/19/82 to expire 1/30/86; Renewal application submitted 12-4-85

No previous VOC Permits; Warning Notice OWN-84-034 and OWN-85-133

*120 days estimated as necessary to obtain financing and finalize agreements w/Contractors.

E. Requested permitted equipment operating time: hrs/day 8 ; days/wk 5 ; wks/yr 50 ;

if power plant, hrs/yr _____ ; if seasonal, describe: Operating time is not seasonal,

but may vary with demands of the trade.

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

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

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

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

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

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

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

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

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

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

   a. If yes, for what pollutants? VOC

   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.

See attached Exhibits #1 thru 21 for data relating to Rule 17-2.650.

Tight Head Drum LIne A1 & B1

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

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

Description	Contaminants Type	Contaminants % Wt	Utilization Rate - lbs/hr	Relate to Flow Diagram
Exterior Coatings	VOC	See Exhibit 2	See Exhibit 13	See Exhibit 13
Linings	VOC	See Exhibit 3	"	"
Solvents	VOC	100%	"	"
Used Steel Drums	Particulate	Variable	17,200	"

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

1. Total Process Input Rate (lbs/hr): 17,200*

2. Product Weight (lbs/hr): 16,100*

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] Maximum lbs/hr	Emission[1] Actual T/yr	Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission lbs/hr	Potential[4] Emission T/yr	Relate to Flow Diagram
VOC	See Exhibit 17		See Exhibit 9	See Exhibit 17	See Exhibit 18		See Exhibit 10
Particulate	"		17-2.04(1)(b)	"	"		"
CO	"		N/A	N/A	"		"
SO_2	"		"	"	"		"
NO_x	"		"	"	"		"

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, C. (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).

*Applies to Used Steel Drum input rate

Lids Line A4, A5, & B3

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

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

Description	Contaminants Type	Contaminants % Wt	Utilization Rate - lbs/hr	Relate to Flow Diagram
Exterior Coatings	VOC	See Exhibit 2	See Exhibit 13	See Exhibit 13
Linings	VOC	See Exhibit 3	"	"
Solvents	VOC	100%	"	"
Used Steel Drums	Particulate	Variable	17,200	"

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

1. Total Process Input Rate (lbs/hr): 17,200*

2. Product Weight (lbs/hr): 16,100*

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] Maximum lbs/hr	Emission[1] Actual T/yr	Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission lbs/hr	Potential[4] Emission T/yr	Relate to Flow Diagram
VOC	See Exhibit 17		See Exhibit 9	See Exhibit 17	See Exhibit 18		See Exhibit 10
Particulate	"		17-2.04(1)(b)	"	"		"
CO	"		N/A	N/A	"		"
SO_2	"		"	"	"		"
NO_x	"		"	"	"		"

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g. Rule 17-2.600(3)(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).

* Applies to Used Steel Drum input rate

Open Head Drum Line A2, A3 & B2

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

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

Description	Contaminants Type	Contaminants % Wt	Utilization Rate - lbs/hr	Relate to Flow Diagram
Exterior Coatings	VOC	See Exhibit 2	See Exhibit 13	See Exhibit 13
Linings	VOC	See Exhibit 3	"	"
Solvents	VOC	100%	"	"
Used Steel Drums	Particulate	Variable	17,200	"

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

1. Total Process Input Rate (lbs/hr): 17,200*

2. Product Weight (lbs/hr): 16,100*

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] Maximum lbs/hr	Emission[1] Actual T/yr	Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission lbs/hr	Potential[4] Emission T/yr	Relate to Flow Diagram
VOC	See Exhibit 17		See Exhibit 9	See Exhibit 17	See Exhibit 18		See Exhibit 10
Particulate	"		17-2.04(1)(b)	"	"		"
CO	"		N/A	N/A	"		"
SO_2	"		"	"	"		"
NO_x	"		"	"	"		"

[1] See Section V, Item 2.

[2] Reference applicable emission standards and units (e.g. Rule 17-2.600(3)(b)2. Table II, C. (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).

*Applies to Used Steel Drum input rate

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)
Spencer Boiler and Engineering Co. Afterburner Model DSF-002	VOC	95%	N.A.	EPA study - See Exhibits 5 & 12
	PARTICULATES	93%	1 to 50 microns	

E. Fuels SEE EXHIBIT 11

Type (Be Specific)	Consumption* avg/hr	Consumption* max./hr	Maximum Heat Input (MMBTU/hr)
Propane (Afterburner)	96.0 gal/hr	96.0 gal/hr	8.8
No.2 (Drum Reclamation Furnace)	67.2 gal/hr	67.2 gal/hr	9.0
Propane (Ovens B1,B2,&B3)	90.6 gal/hr	90.6 gal/hr	8.3

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

Fuel Analysis: Propane/No.2

Percent Sulfur: Nil/0.2 Percent Ash: Nil/0.1

Density: 4.23/7.0 lbs/gal Typical Percent Nitrogen: 0.0045/1.0

Heat Capacity: 21,660/19,114 BTU/lb 91,620/134,000 BTU/gal

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

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

Annual Average _____ Maximum _____

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

None

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: _____

_____

_____

_____

_____

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

_____

_____

_____

_____

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

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

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

SEE EXHIBIT 13.

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.

SEE EXHIBITS 12, 14, 15, 16, and 17.

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

SEE EXHIBITS 15, 16, and 18.

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.)

SEE EXHIBITS 5, 8, and 12.

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).

SEE EXHIBITS 5, 8, and 12.

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.

SEE EXHIBITS 6 and 7.

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).

SEE EXHIBIT 20.

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.

SEE EXHIBITS 6, 7, and 10.

ADDITIONAL INFORMATION DESCRIBING

THE NATURE AND EXTENT OF THE PROJECT

EXHIBIT 1	GENERAL DESCRIPTION
EXHIBIT 2	COATING SUPPLIER PRODUCT DATA MOBIL (26 PAGES)
EXHIBIT 3	COATING SUPPLIER PRODUCT DATA KNS (2 PAGES)
EXHIBIT 4	COATING/SOLVENT CONSUMPTION DATA
EXHIBIT 5	DESIGN DATA FOR INCINERATION OF VOC VAPORS
EXHIBIT 6	PLANT LAYOUT DRAWING #110-7-VOC1
EXHIBIT 7	SCHEMATIC FLOW DIAGRAM DRAWING #110-7-VOC2
EXHIBIT 8	SUBSTANTIATION OF AFTERBURNER DESTRUCTION EFFICIENCY
EXHIBIT 9	CALCULATION OF VOC EMISSION FACTORS, AND EXTERIOR COATING, LINING, AND SOLVENT CONSUMPTION
EXHIBIT 10	AIRBORNE CONTAMINANTS EMITTED-VOC EMISSION POINT SUMMARY
EXHIBIT 11	VERIFICATION OF CONTROLLED VS. UNCONTROLLED VOC EMISSION RATIO
EXHIBIT 12	PARTICULATE CONTROL
EXHIBIT 13	PROCESS WEIGHT DIAGRAMS
EXHIBIT 14	EMISSION CALCULATIONS FROM PROPANE AND FUEL OIL COMBUSTION SOURCES
EXHIBIT 15	VOC EMISSION CALCULATIONS & SUMMARY
EXHIBIT 16	SUMMARY OF ACTUAL AND UNCONTROLLED EMISSIONS FOR ALL PAINT LINES
EXHIBIT 17	SUMMARY OF ACTUAL AND ALLOWABLE EMISSIONS FOR EACH PAINT LINE
EXHIBIT 18	SUMMARY OF UNCONTROLLED EMISSIONS FOR EACH PAINT LINE
EXHIBIT 19	EMISSION STACK GEOMETRY AND FLOW CHARACTERISTICS
EXHIBIT 20	LOCATION MAP
EXHIBIT 21	SUBSTANTIATION/REFERENCES FOR VOC OVEN COLLECTION EFFICIENCY

Exhibit 1

GENERAL DESCRIPTION

The Drum Service Co. of Florida is a supplier of reconditioned steel drums to a variety of corporations and individuals who use such containers as a means of packaging lubricants, foods, and other liquid products.

Chief competitor of the reconditioned drum is the new drum, which sets a standard of appearance and cleanliness which must be equaled or exceeded to offset the stigma of being secondhand.

A leading factor in establishing and maintaining a favorable image of appearance and cleanliness is the quality of surface coating applied to the straightened, sanitized, reconditioned item.

The coating must not only give a fresh and unblemished appearance, but must resist heat, cold, sun, and rain, as well as a broad spectrum of commonly encountered mild corrosive agents within the bounds of reasonable cost and mass production drying and curing limitations.

It is within the realm of possibility that American ingenuity will, in the not too distant future, develop a coating for metal surfaces which will be sufficiently attractive and durable to satisfy the foregoing requirements without use of the conventional and time honored solvents which have lately been limited for environmental reasons. Please refer to letter of June 13, 1984, from Mr. S. R. Persak to Mr. J. M. Murphy which describes the present status of solvent/coating technology. (Letter attached to Exhibit 2).

In the meantime, and until suitable coatings of low solvent content become available, it is the intention of the Drum Service Co. of Florida to comply with both the letter and spirit of the law by abating the emissions of volatile organic compounds by incineration to the extent that resultant emisssions are equal to or lower than emission limiting standards as contained in Chapter 17-2.650(f)14,b,(B); namely 3.5 lbs/gallon of coating or less.

Because of severe practical problems to be faced in drum reconditioning where two types of drums must be painted in three separate spray booths, internally lined in two separate spray booths, oven-dried in three separate heated enclosures, or air-dried in two separate areas, with application of 57 different coatings, all depending upon the end use of the drums, it was deemed impractical to apply a mixture of controls to the widely separated and dissimilar parts of the system.

It is proposed to incinerate and totally destroy all collectible VOC emissions from the drying ovens for each individual paint line as shown in the attached schematic. This approach allows each paint line to be in compliance with FDER RACT requirements.

The proposed control system consists of a Spencer Boiler and Engineering Thermal Oxidizer (Afterburner) whose design details are presented in Exhibit 5. This afterburner has been designed to collect the exhaust gases and vapors from the existing Drum Reclamation Furnace, and ovens B1, B2, and B3 (see Exhibits 6 and 7). The exhaust gases will be raised to a minimum of 1500°F with a minimum retention time of 0.5 seconds. This combination of temperature and retention will achieve 95% VOC destruction and 93% particulate destruction efficiency.

The proposed afterburner which has a heat input capacity of 8.8×10^6 BTU/hr replaces the existing afterburner which has a heat input capacity of only 1.5×10^6 BTU/hr. The new afterburner should also have increased combustion efficiency since the proposed configuration offers better mixing conditions and increased retention time.

The exhaust gases from the afterburner also will be passed through a waste heat boiler prior to discharge. This will allow the recovery of considerable energy which can be used in the drum reclamation process.

EXHIBIT 2

Mobil Chemical Company

MAINTENANCE, TRANSPORTATION
STEEL CONTAINER COATINGS DEP

P.O. BOX 250
EDISON, NEW JERSEY 08817
TELEPHONE (201) 321-6000

June 13, 1984

1-800-526-757

Mr. J. M. Murphy
Drum Service Co. of Florida
P. O. Box 278
Zellwood, Florida 32798

Dear Mike:

The USEPA had issued Volume VI: Coatings of Miscellaneous Metal Parts and Products in the Guideline Series on control of volatile organic emissions. This had been further clarified to indicate that interior steel container linings, both clear and pigmented, would purportedly be governed by the clear coat category which permits a VOC of 4.3 lbs./gallon.

At that time, we reported that the industrially acceptable linings had a VOC of 5 to 5.5 lbs./gallon and that a presumptive norm of 4.3 lbs./gallon was beyond RACT (Reasonble Available Control Technology). Also, that no promising developing technology was impending which would permit compliance in the foreseeable future.

Our present position, unfortunately, has not changed in that even after expending considerable laboratory effort, we still cannot offer the industry any low VOC lining material which will provide a degree of chemical resistance equivalent to that of any of the coatings historically supplied to the industry.

Fortunately, our vehicle suppliers have heeded our pleas for assistance and are assisting us in attempting to develop resins which will increase the solids content of these linings.

The breakthrough, however, remains in the undefined future. As soon as we have a candidate product considered suitable for this demanding application, we will offer it for your evaluation.

Very truly yours,

Stan Persak

S. R. Persak
Manager, Steel Containers

SRP/ny

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

DATE: September 3, 1980

SUBJECT: Miscellaneous Metal Parts and Products CTG--
Emission Limits for Coating of Shipping Pails and Drums

FROM: Tom Helms, Chief (MD-15)
Control Programs Operations Branch, CPDD

TO: Air Branch Chief, Regions I - X

The sample regulation for the Group II CTG categories indicated that the coating of pails and drums was to be included in the Miscellaneous Metal Parts CTG. Representatives from the shipping container industry have since requested clarification as to what emission limits are applicable to their coatings.

We recommend that a presumptive norm of 4.3 pounds of VOC per gallon of coating less water is reasonably available control technology for coatings used in pail and drum interior protective linings even though the coatings may not be a true "clear coat." This determination was made on the basis of the unavailability of lower VOC coatings that can withstand the harsh, toxic, and corrosive nature of many chemicals that are shipped in these containers.

The exterior coatings for pails and drums must meet an emission limit of 3.5 pounds of VOC per gallon of coating less water. This is the limit described in the CTG for outdoor exposure coatings.

The following information is provided for the States to use in defining metal pails and drums:

Pails -- any nominal cylindrical metal shipping container of 1- to 12-gallon capacity and constructed of 29 gauge and heavier material.

Drums -- any cylindrical metal shipping container of 13- to 110-gallon capacity.

For additional information, please call Tom Williams at FTS 629-5226.

cc: VOC Contact, Regions I - X
Jim Berry, ESED

Mobil Chemical Company

MAINTENANCE TRANSPORTATION A
STEEL CONTAINER COATINGS DEPAR

P.O. BOX 250
EDISON, NEW JERSEY 08817
TELEPHONE (201) 321-6000

June 13, 1984

Mr. J. M. Murphy
Drum Service Co. of Florida
P. O. Box 278
Zellwood, Florida 32798

Dear Mike:

You recently questioned the theoretical square feet of coverage in a gallon coating. The volume solids of a coating determines the coverage and will vary depending on the color of the coating.

Theoretically, a gallon of coating at 100% solids will cover 1600 square feet at a film thickness of 1.0 mil dry. This assumes 100% transfer efficiency which, of course, is not available. The efficiency percentage of drum spraying equipment will vary from 40% to 80% depending upon the degree of sophistication of the equipment.

We attach a list of our coatings which you are currently using or have used in the past. On this list we show the theoretical coverage if applied at 1.0 mil dry with 100% efficiency. You can determine your own approximate percent of spray efficiency with the following example.

Consider our 210-J-20 Black Enamel, which is a volume color in your plant. A 55 gal. drum has 23 sq. ft. of steel to be painted. This includes the shell and both heads. At 100% efficiency and painting the entire drum black, you would coat twenty-four drums per gallon at 1.0 mil dry. At 0.6 mil dry, still at 100% efficiency, you would coat forty drums per gallon. Your actual paint mileage compared to the theoretical mileage will give you the spray efficiency. You may consider each head to be 3 sq. ft., and the shell to be 17 sq. ft. These constants will enable you to determine paint mileage on multi-colored drums.

We hope these explanations have answered your questions; please let us know if you need more information.

Very truly yours,

S. R. Persak
Manager, Steel Containers

SRP/ny

Att.

Mobil

THEORETICAL SQUARE FOOT COVERAGE OF PAINTS

210-B-23	578 sq. ft./gal.	210-Y-48	594 sq. ft./gal.
210-B-54	674 " "	86-F-20	561 " "
210-B-72	561 " "	86-R-14	561 " "
210-B-74	561 " "	286-B-50	642 " "
210-B-77	578 " "	286-B-77	513 " "
210-B-78	578 " "	286-B-78	658 " "
210-D-9	594 " "	286-B-92	545 " "
210-F-16	706 " "	286-B-107	594 " "
210-F-22	561 " "	286-F-41	561 " "
210-F-23	578 " "	286-D-18	642 " "
210-G-40	561 " "	286-G-39	626 " "
210-G-42	545 " "	286-G-81	545 " "
210-J-20	545 " "	286-R-48	594 " "
10-R-12	610 " "	286-W-57	610 " "
210-R-26	561 " "	286-Y-53	578 " "
210-W-12	578 " "	286-Y-54	545 " "
210-W-24	610 " "	286-Y-71	578 " "
210-Y-47	578 " "	285-R-9	545 " "

Mobil

Product		V.O.C.
210-B-23	P. & G. Light Blue	4.1
210-B-54	Amoco Blue	3.8
210-B-72	Chevron Blue	4.2
210-B-74	Gulf Blue	4.1
210-B-77	Fina Blue	4.1
210-B-78	New Chevron 370 Blue	4.1
210-D-9	Stevens Brown	4.1
210-F-16	High Gloss Texaco Gray	3.6
210-F-22	Texaco Gray	4.2
210-F-23	Semi-Gloss Texaco Gray	4.1
210-G-40	Texaco Green	4.2
210-G-42	Semi-Gloss Texaco Green	4.1
210-J-20	Black	4.3
10-R-12	Mobil Red	4.2
210-R-26	Shell Red	4.2
210-W-12	White	4.3
210-W-24	White	4.0
210-Y-47	Shell Yellow	4.1
210-Y-48	Gulf Orange	4.0
285-R-9	Citrus Drum Lining	4.5
86-F-20	Mobil Beige	4.2
86-R-14	Mobil Red	4.2

Mobil

Product		V.O.C.
286-B-50	Cal Oil Blue	3.8
286-B-77	Gulf Blue	4.3
286-B-78	Amoco Blue	3.8
286-B-82	Chevron Blue	4.2
286-B-107	Fina Blue	4.1
286-F-41	Semi-Gloss Texaco Gray	4.2
286-D-18	Stevens Brown	4.0
286-G-39	Texaco Green	3.9
286-G-81	Semi-Gloss Texaco Green	4.2
286-R-48	Shell Red	4.1
286-W-57	White	4.1
286-Y-53	Shell Yellow	4.3
286-Y-54	Gulf Orange	4.1
286-Y-71	B. P. Yellow	4.1

Mobil Chemical. product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-B-23

NAME Drum Enamel P&G Light Blue

COLOR Blue TYPE Mod. Alkyd

SUGGESTED USE	[X] EXTERIOR Drum Enamel [ ] INTERIOR
CONSTANTS	VISCOSITY 45 - 55 Sec. # 4 Ford Cup @ 80°F. ____ Sec. # ____ Zahn Cup @ 80°F. WEIGHT PER GALLON 8.26 ± .15 Lbs. Pigment 15.3 % By Weight SOLIDS 50 ± 1 % By Weight 36 % By Volume THEORETICAL COVERAGE 585 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE CRS Primed With ____ GAUGE ____ Reverse Side ____ CHEMICAL TREATMENT Free of all surface contaminants
APPLICATION	METHOD Spray Applied Viscosity 30 - 33" #2 Zahn FILM THICKNESS ____ Mils (Wet) .7 - 1 Mils (Dry) BAKE 5-10' @ 275 °F. Peak Metal Temp. ____ °F. REDUCE 10 - 1 With Naphtha OTHER Clean up solvent(s) Toluene
PROPERTIES	GLOSS 85+ @ 60° Angle Contains Lubricant ____ PENCIL HARDNESS (Engle Turquoise) Solvent Rubs
REMARKS	VOC = 4.1 lbs/gallon Conforms with Rule 66 This product will air dry to handle in 15 minutes and is hard overnight.

EVELOPED FOR	____ ____ ____ Attn.	SUBMITTED BY	Salesman Laboratory Date 10/7/83 Ref. No. 1550

Mobil Chemical

BEST AVAILABLE COPY

product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-B-54

NAME Air-Dry Drum Enamel Amoco Blue

COLOR Blue TYPE Alkyd

SUGGESTED USE	[X] EXTERIOR Drum Enamel [ ] INTERIOR
CONSTANTS	VISCOSITY 40-50 Sec. # 4 Ford Cup @ 80°F. _____ Sec. # _____ Zahn Cup @ 80°F. WEIGHT PER GALLON 8.35 ± .15 Lbs. Pigment _____ % By Weight SOLIDS 54.0 ± 1 % By Weight 42.0 ± 1 % By Volume THEORETICAL COVERAGE 55 Sq. Ft. @ Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE CRS Primed With _____ GAUGE _____ Reverse Side _____ CHEMICAL TREATMENT Oil Free
APPLICATION	METHOD Spray Applied Viscosity 30-35" #2 Zahn Cup FILM THICKNESS _____ Mils (Wet) .7-1.0 Mils (Dry) BAKE _____ @ _____ °F. Peak Metal Temp. _____ °F. REDUCE 8-1 With Xylol OTHER Clean up solvent(s) Xylol
PROPERTIES	GLOSS _____ @ _____ Angle Contains Lubricant _____ PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs
REMARKS	V.O.C. = 3.74 Air-dry tack free 1 hour, overnight - hard. Rule 66

DEVELOPED FOR	Attn.	SUBMITTED BY	Salesman Laboratory Date 5-30-84 Ref. No.

Mobil Chemical — product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-B-72

NAME Drum Enamel Chevron Blue

COLOR Blue TYPE Alkyd

SUGGESTED USE	[X] EXTERIOR Drum Enamel [ ] INTERIOR
CONSTANTS	VISCOSITY 30 - 35 Sec. # 4 Ford Cup @ 80°F. ____ Sec. # ____ Zahn Cup @ 80°F. WEIGHT PER GALLON 7.88 ± .15 Lbs. Pigment 9.8 % By Weight SOLIDS 47 ± 1 % By Weight 35 ± 1 % By Volume THEORETICAL COVERAGE 565 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE Steel Primed With ____ GAUGE ____ Reverse Side ____ CHEMICAL TREATMENT Free from surface contaminants
APPLICATION	METHOD Spray Applied Viscosity 30-35" Zahn 2 Cup FILM THICKNESS ____ Mils (Wet) 0.7 - 1.0 Mils (Dry) BAKE 5-10' @ ____ °F. Peak Metal Temp. 275 °F. REDUCE 10 - 1 With Naphtha OTHER Clean up solvent(s) Aromatic
PROPERTIES	GLOSS 85+ @ 60° Angle Contains Lubricant ____ PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs
REMARKS	Rule 66 met VOC = 4.16 lbs/gallon

ELOPED FOR	____ ____ ____ Attn.	SUBMITTED BY	____ Salesman ____ Laboratory Date 7/27/83 Ref. No. WO 1511

Mobil Chemical — product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-B-74

NAME Drum Enamel Gulf Blue

COLOR Blue TYPE Alkyd

SUGGESTED USE	[X] EXTERIOR Drum Enamel [ ] INTERIOR
CONSTANTS	VISCOSITY 35-50 Sec. # 4 Ford Cup @ 80°F. _____ Sec. # _____ Zahn Cup @ 80°F. WEIGHT PER GALLON 7.6 ± .1 Lbs. Pigment 5.2 % By Weight SOLIDS 45 ± 1 % By Weight 35 ± 1 % By Volume THEORETICAL COVERAGE 571 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE CRS Primed With _____ GAUGE _____ Reverse Side _____ CHEMICAL TREATMENT Free from all Surface Contaminants
APPLICATION	METHOD Spray Applied Viscosity 30 - 35 Sec. #2 Zahn Cup FILM THICKNESS _____ Mils (Wet) .7 - 1 Mils (Dry) BAKE 5-10 min. @ _____ °F. Peak Metal Temp. 275 °F. REDUCE 10:1 With Naphtha OTHER Clean up solvent(s) Naphtha or Aromatic
PROPERTIES	GLOSS 85+ @ 60° Angle Contains Lubricant _____ PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs
REMARKS	VOC = 4.13 lbs/gallon Conforms to Rule 66

DEVELOPED FOR	_____ _____ _____ Attn.	SUBMITTED BY	_____ Salesman _____ Laboratory Date 8/19/83 Ref. No. 1520

Mobil Chemical

BEST AVAILABLE COPY

product data she

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-B-77

NAME Drum Enamel Fina Blue

COLOR Blue

TYPE Mod. Alkyd

SUGGESTED USE	☒ EXTERIOR Drum Enamel ☐ INTERIOR
CONSTANTS	VISCOSITY 40 - 50 Sec. # 4 Ford Cup @ 80°F. _____ Sec. # _____ Zahn Cup @ 80°F. WEIGHT PER GALLON 7.75 ± .1 Lbs. Pigment 6.6 % By Weight SOLIDS 47 ± 1 % By Weight 36 % By Volume THEORETICAL COVERAGE 589 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency
SUBSTRATE	TYPE CRS Primed With _____ GAUGE _____ Reverse Side _____ CHEMICAL TREATMENT Free of all surface contaminants
APPLICATION	METHOD spray Applied Viscosity 30-35" #2 Zahn FILM THICKNESS _____ Mils (Wet) .7 - 1 Mils (Dry) BAKE 5-10' @ 275 °F. Peak Metal Temp. _____ °F. REDUCE 10 - 1 With Naphtha OTHER Clean up solvent(s) Aromatic
PROPERTIES	GLOSS 85+ @ 60° Angle Contains Lubricant _____ PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs
REMARKS	VOC = 4.1 lbs/gallon Conforms to Rule 66. This product will air dry to handle in 15 minutes and is hard overnight.

DEVELOPED FOR	Attn.	SUBMITTED BY	Salesman Laboratory Date 10/4/83 Ref. No.

Mobil Chemical — product data sheet

BEST AVAILABLE COPY

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-B-78

NAME Drum Enamel Chevron 370 Blue

COLOR Blue TYPE Alkyd

SUGGESTED USE	☒ EXTERIOR Drum Enamel ☐ INTERIOR
CONSTANTS	VISCOSITY 35-50 Sec. # 4 Ford Cup @ 80°F. ____ Sec. # ____ Zahn Cup @ 80°F. WEIGHT PER GALLON 7.89 ± .15 Lbs. Pigment 10 % By Weight SOLIDS 47 ± 1 % By Weight 36 % By Volume THEORETICAL COVERAGE 570 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE CRS Primed With ____ GAUGE ____ Reverse Side ____ CHEMICAL TREATMENT Free of all surface contaminants
APPLICATION	METHOD Spray Applied Viscosity 30-35" #2 Zahn FILM THICKNESS ____ Mils (Wet) .7 - 1 Mils (Dry) BAKE 5' @ ____ °F. Peak Metal Temp. 275 °F. REDUCE 10-1 With Naphtha OTHER Clean up solvent(s) Aromatic or naphtha
PROPERTIES	GLOSS 85+ @ 60 Angle Contains Lubricant ____ PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs
REMARKS	Meets rule 66 VOC = 4.1 lbs/gallon

DEVELOPED FOR	____ ____ ____ Attn.	SUBMITTED BY	Salesman " Laboratory Date 3/9/84 Ref. No. 1610

Mobil Chemical

BEST AVAILABLE COPY

product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-D-9

NAME Drum Enamel Brown

COLOR Brown TYPE Mod. Alkyd

SUGGESTED USE	☒ EXTERIOR Drum Enamel ☐ INTERIOR
CONSTANTS	VISCOSITY 40-50 Sec. # 4 Ford Cup @ 80°F. ____ Sec. # ____ Zahn Cup @ 80°F. WEIGHT PER GALLON 7.95 ± .1 Lbs. Pigment 10.6 % By Weight SOLIDS 49 ± 1 % By Weight 37 % By Volume THEORETICAL COVERAGE 594 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE CRS Primed With ____ GAUGE ____ Reverse Side ____ CHEMICAL TREATMENT Free of all surface contaminants
APPLICATION	METHOD Spray Applied Viscosity 30-35" #2 Zahn FILM THICKNESS ____ Mils (Wet) .7 - 1 Mils (Dry) BAKE 5-10' @ 275 °F. Peak Metal Temp. ____ °F. REDUCE 10 - 1 With Naphtha OTHER Clean up solvent(s) Aromatic
PROPERTIES	GLOSS 85+ @ 60° Angle Contains Lubricant ____ PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs
REMARKS	VOC = 4.1 lbs/gal. Conforms to Rule 66 This product will air dry to handle in 15 minutes and is hard overnight.

VELOPED FOR	____ ____ ____ Attn.	SUBMITTED BY	Salesman Laboratory Date 10/4/83 Ref. No.

Mobil Chemical — product data sheet

BEST AVAILABLE COPY

CHEMICAL COATINGS DIV.
P. O. BOX 250
…ISON, NEW JERSEY 08817

CODE: 210-F-16

NAME: Air-Dry Drum Enamel Texas Gray

COLOR: Gray

TYPE: Alkyd

Section	Details
SUGGESTED USE	[X] EXTERIOR: Drum Enamel [ ] INTERIOR
CONSTANTS	VISCOSITY: 50-60 Sec. = 4 Ford Cup @ 80°F. Sec. = ____ Zahn Cup @ 80°F. WEIGHT PER GALLON: 8.8 ± .15 Lbs. Pigment ____ % By Weight SOLIDS: 59 ± 1 % By Weight; 44 ± 1 % By Volume THEORETICAL COVERAGE: [illegible] Sq. Ft. @ ____ Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE: CRS Primed With: ____ GAUGE: -- Reverse Side: ____ CHEMICAL TREATMENT: Oil Free
APPLICATION	METHOD: Spray Applied Viscosity: 30-35" #2 Zahn Cup FILM THICKNESS: ____ Mils (Wet); .7-1.0 Mils (Dry) BAKE: ____ @ ____ °F. Peak Metal Temp. ____ °F. REDUCE: 8-1 With Xylol OTHER: ____ Clean up solvent(s): Xylol
PROPERTIES	GLOSS: ____ @ ____ Angle Contains Lubricant: ____ PENCIL HARDNESS: ____ (Eagle Turquoise) Solvent Rubs: ____
REMARKS	V.O.C. = 3.56 Air-dry tack free 1 hour, overnight - hard.
…ELOPED FOR	Attn.
SUBMITTED BY	Salesman Laboratory Date: 5-30-84 Ref. No.

The technical information and suggestions for use and application presented herein represent the best information available to us and are believed to be reliable. They should not, however, be construed as controlling suggestions, and there is no warranty of performance of our materials either express … We recommend … product confirmatory tests to determine final suitability for their specific end uses.

Mobil Chemical — product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-F-22

NAME Drum Enamel Texaco Gray

COLOR Gray TYPE Alkyd

SUGGESTED USE

[X] EXTERIOR Drum Enamel

[ ] INTERIOR

CONSTANTS

VISCOSITY 30-35 Sec. # 4 Ford Cup @ 80°F.

_____ Sec. # _____ Zahn Cup @ 80°F.

WEIGHT PER GALLON 8.09±.15 Lbs. Pigment 12.0 % By Weight

SOLIDS 48±1 % By Weight 35±1 % By Volume

THEORETICAL COVERAGE 563 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)

SUBSTRATE

TYPE CRS Primed With _____

GAUGE _____ Reverse Side _____

CHEMICAL TREATMENT Free from surface contaminants

APPLICATION

METHOD Spray Applied Viscosity as required

FILM THICKNESS _____ Mils (Wet) 0.7-1.0 Mils (Dry)

BAKE 5-10 @ 300 °F. Peak Metal Temp. _____ °F.

REDUCE 10-1 With Naphtha

OTHER Clean up solvent(s) Aromatic or Naphtha

PROPERTIES

GLOSS 85+ @ 60° Angle Contains Lubricant _____

PENCIL HARDNESS _____ (Eagle Turquoise) Solvent Rubs _____

REMARKS

Meets Rule 66

VOC = 4.2 lbs. per gallon

'ELOPED FOR

_____

_____

_____

Attn.

SUBMITTED BY

_____ Salesman

_____ Laboratory

Date 3/29/83

Ref. No.

Mobil Chemical. product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-F-23

NAME Semi-Gloss Texaco Gray Enamel

COLOR Gray TYPE Mod. Alkyd

SUGGESTED USE

[X] EXTERIOR Drum Enamel

[ ] INTERIOR

CONSTANTS

VISCOSITY 40-55 Sec. # 4 Ford Cup @ 80°F.

_____ Sec. # _____ Zahn Cup @ 80°F.

WEIGHT PER GALLON 8.28 ± .15 Lbs. Pigment 15.5 % By Weight

SOLIDS 50 ± 1 % By Weight 36 % By Volume

THEORETICAL COVERAGE 581 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)

SUBSTRATE

TYPE CRS Primed With _____

GAUGE _____ Reverse Side _____

CHEMICAL TREATMENT Free of all surface contaminants

APPLICATION

METHOD Spray Applied Viscosity 30-33" #2 Zahn

FILM THICKNESS _____ Mils (Wet) .7 - 1 Mils (Dry)

BAKE 5-10' @ 275 °F. Peak Metal Temp. _____ °F.

REDUCE 10 - 1 With Naphtha

OTHER Clean up solvent(s) Aromatic

PROPERTIES

GLOSS 50-60 @ 60° Angle Contains Lubricant _____

PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs

REMARKS

VOC = 4.1 lbs/gallon
Conforms with Rule 66
This product will air dry to handle in 15 minutes and is hard overnight.

DEVELOPED FOR

Attn.

SUBMITTED BY

Salesman

Laboratory

Date 10/7/83

Ref. No. 1550

Mobil Chemical — product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-G-40

NAME Drum Enamel Texaco Green

COLOR Green TYPE Alkyd

SUGGESTED USE	[X] EXTERIOR Drum Enamel [ ] INTERIOR
CONSTANTS	VISCOSITY 30 - 35 Sec. # 4 Ford Cup @ 80°F. _____ Sec. # _____ Zahn Cup @ 80°F. WEIGHT PER GALLON 7.89 ± .15 Lbs. Pigment 9 % By Weight SOLIDS 46.5±1 % By Weight 34.5 % By Volume THEORETICAL COVERAGE 554 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE CRS Primed With _____ GAUGE _____ Reverse Side _____ CHEMICAL TREATMENT Free of oil and water soluble salts.
APPLICATION	METHOD Spray Applied Viscosity as required FILM THICKNESS _____ Mils (Wet) 1 Mils (Dry) BAKE 5-10' @ 300 °F. Peak Metal Temp. _____ °F. REDUCE 10-1 With VM&P Naphtha OTHER Clean up solvent(s) Naphtha or aromatic
PROPERTIES	GLOSS 85+ @ 60° Angle Contains Lubricant _____ PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs
REMARKS	Rule 66 complying VOC = 4.2 lbs/gal.

VELOPED FOR		SUBMITTED BY	Salesman
			Laboratory
			Date 3/23/83
	Attn.		Ref. No.

Mobil Chemical

BEST AVAILABLE COPY

product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-G-42

NAME Semi-Gloss Texaco Green Enamel

COLOR Green TYPE Mod, Alkyd

SUGGESTED USE

[X] EXTERIOR Drum Enamel

[ ] INTERIOR

CONSTANTS

VISCOSITY 40-55 Sec. # 4 Ford Cup @ 80°F.

Sec. # Zahn Cup @ 80°F.

WEIGHT PER GALLON 8.07 + .15 Lbs. Pigment 12.3 % By Weight

SOLIDS 48 ± 1 % By Weight 35 % By Volume

THEORETICAL COVERAGE 569 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)

SUBSTRATE

TYPE CRS Primed With

GAUGE Reverse Side

CHEMICAL TREATMENT Free of all surface contaminants.

APPLICATION

METHOD Spray Applied Viscosity 30-33" #2 Zahn

FILM THICKNESS Mils (Wet) .7 - 1 Mils (Dry)

BAKE 5-10' @ 275 °F. Peak Metal Temp. °F.

REDUCE 10 - 1 With Naphtha

OTHER Clean up solvent(s) Aromatic

PROPERTIES

GLOSS 50-60 @ 60° Angle Contains Lubricant

PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs

REMARKS

VOC - 4.1 lbs/gallon
Conforms with Rule 66
This product will air dry to handle in 15 minutes
and is hard overnight.

VELOPED FOR

Attn.

SUBMITTED BY

Salesman

Laboratory

Date 10/7/83

Ref. No. 1550

Mobil Chemical — product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210 J 20

NAME Drum Enamel Black

COLOR Black TYPE Modified Alkyd

SUGGESTED USE	[X] EXTERIOR Drum Enamel [ ] INTERIOR
CONSTANTS	VISCOSITY 40-50 Sec. # 4 Ford Cup @ 80°F. ____ Sec. # ____ Zahn Cup @ 80°F. WEIGHT PER GALLON 7.35±.1 Lbs. Pigment 2.7 % By Weight SOLIDS 42±1 % By Weight 34±1 % By Volume THEORETICAL COVERAGE 602 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE CRS Primed With ____ GAUGE ____ Reverse Side ____ CHEMICAL TREATMENT Oil free
APPLICATION	METHOD Spray Applied Viscosity 30-35" #2 Zahn FILM THICKNESS ____ Mils (Wet) .7-1 Mils (Dry) BAKE 5-10' @ 275-300 °F. Peak Metal Temp. ____ °F. REDUCE 8-1 With Naphtha OTHER Clean up solvent(s) Naphtha or Toluene
PROPERTIES	GLOSS 85+ @ 60 Angle Contains Lubricant ____ PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs
REMARKS	Conforms to Rule 66

LOPED FOR	____ ____ ____ Attn.	SUBMITTED BY	Salesman Laboratory Date Ref. No.

Mobil Chemical — product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 10-R-12

NAME Mobil Drum Red Enamel

COLOR Red TYPE Mod. Alkyd

SUGGESTED USE

[X] EXTERIOR Drum Enamel

[ ] INTERIOR

CONSTANTS

VISCOSITY 40 - 50 Sec. # 4 Ford Cup @ 80°F.

Sec. # Zahn Cup @ 80°F.

WEIGHT PER GALLON 8.66 ± .15 Lbs. Pigment 18 % By Weight

SOLIDS 53 ± 1 % By Weight 38 % By Volume

THEORETICAL COVERAGE 608 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)

SUBSTRATE

TYPE CRS Primed With

GAUGE Reverse Side

CHEMICAL TREATMENT Free of all surface contaminants

APPLICATION

METHOD Spray Applied Viscosity 28 - 33" #2 Zahn Cup

FILM THICKNESS Mils (Wet) 1 Mils (Dry)

BAKE 5-10' @ 275 °F. Peak Metal Temp. °F.

REDUCE 10 - 1 With Naphtha

OTHER Clean up solvent(s) Aromatic

PROPERTIES

GLOSS 85+ @ 60° Angle Contains Lubricant

PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs

REMARKS

VOC = 4.0 lbs/gal.
Conforms to Rule 66.

This product will air dry to handle in 15 minutes and is hard overnight.

DEVELOPED FOR

Attn.

SUBMITTED BY

Salesman

Laboratory

Date 2-28-83

Ref. No.

Mobil Chemical — product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-R-26

NAME Drum Enamel Shell Red

COLOR Red TYPE Alkyd

SUGGESTED USE	[X] EXTERIOR Drum Enamel [ ] INTERIOR
CONSTANTS	VISCOSITY 30-35 Sec. # 4 Ford Cup @ 80°F. _____ Sec. # _____ Zahn Cup @ 80°F. WEIGHT PER GALLON 8.1 ± .1 Lbs. Pigment 11.5 % By Weight SOLIDS 48 ± 1 % By Weight 35 ± 1 % By Volume THEORETICAL COVERAGE 559 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE CRS Primed With _____ GAUGE _____ Reverse Side _____ CHEMICAL TREATMENT Free from surface contaminants
APPLICATION	METHOD Spray Applied Viscosity as required FILM THICKNESS _____ Mils (Wet) .7 - 1.0 Mils (Dry) BAKE 5-10 min @ 300 °F. Peak Metal Temp. _____ °F. REDUCE as required With Naphtha OTHER Clean up solvent(s) Aromatic or Naphtha
PROPERTIES	GLOSS 85+ @ 60° Angle Contains Lubricant Yes PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs
REMARKS	Conforms with the requirements of Rule 66 VOC = 4.18 lbs. per gallon

VELOPED FOR		SUBMITTED BY	Salesman Laboratory Date 4/11/83
	Attn.		Ref. No.

Mobil Chemical — product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210 W 12

NAME Air Dry Drum En. Mobil White

COLOR White TYPE Alkyd

SUGGESTED USE	[X] EXTERIOR Drum Enamel [ ] INTERIOR
CONSTANTS	VISCOSITY _____ Sec. # _____ Ford Cup @ 80°F. 40-60 Sec. = 2 Zahn Cup @ 80°F. WEIGHT PER GALLON 9.15±.15 Lbs. Pigment 22. % By Weight SOLIDS 53 ± 1 % By Weight 36 % By Volume THEORETICAL COVERAGE 583 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE Steel Primed With _____ GAUGE _____ Reverse Side _____ CHEMICAL TREATMENT Oil Free
APPLICATION	METHOD Spray Applied Viscosity 30-35 2 Zahn Cup FILM THICKNESS _____ Mils (Wet) .7-1 Mils (Dry) Air dry to handle 15 min. overnight hard BAKE _____ @ _____ °F. Peak Metal Temp. _____ °F. REDUCE as required With Naphtha OTHER Clean up solvent(s) Toluene
PROPERTIES	GLOSS 85+ @ 60 Angle Contains Lubricant _____ PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs
REMARKS	Conforms to Rule 66
VELOPED FOR	Attn.
SUBMITTED BY	Salesman Laboratory Date Ref. No.

Mobil Chemical — product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-W-24

NAME Drum Enamel SSCI #41 White

COLOR White TYPE Alkyd

SUGGESTED USE	[X] EXTERIOR Drum Enamel [ ] INTERIOR
CONSTANTS	VISCOSITY 30-35 Sec. # 4 Ford Cup @ 80°F. ____ Sec. # ____ Zahn Cup @ 80°F. WEIGHT PER GALLON 9.4 ± .15 Lbs. Pigment 29.0 % By Weight SOLIDS 57±1 % By Weight 38±1 % By Volume THEORETICAL COVERAGE 606 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE CRS Primed With ____ GAUGE ____ Reverse Side ____ CHEMICAL TREATMENT Free from surface contaminants
APPLICATION	METHOD Spray Applied Viscosity 30-35" #2 Zahn Cup FILM THICKNESS ____ Mils (Wet) 0.7 - 1.0 Mils (Dry) BAKE 5-10' @ 300 °F. Peak Metal Temp. ____ °F. REDUCE 10-1 With Naphtha OTHER Clean up solvent(s) Naphtha or toluene
PROPERTIES	GLOSS 85+ @ 60° Angle Contains Lubricant ____ PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs
REMARKS	VOC = 3.99 lbs/gallon Meets Rule 66.

VELOPED FOR		SUBMITTED BY	Salesman
			Laboratory
			Date 4/19/83
	Attn.		Ref. No.

Mobil Chemical — product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-Y-47

NAME Drum Enamel Shell Yellow

COLOR Yellow TYPE Alkyd

SUGGESTED USE	[X] EXTERIOR Drum Enamel [ ] INTERIOR
CONSTANTS	VISCOSITY 30-35 Sec. # 4 Ford Cup @ 80°F. ____ Sec. # ____ Zahn Cup @ 80°F. WEIGHT PER GALLON 9.17 ± .15 Lbs. Pigment 24 % By Weight SOLIDS 55 ± 1 % By Weight 36 ±1 % By Volume THEORETICAL COVERAGE 575 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE CRS Primed With ____ GAUGE ____ Reverse Side ____ CHEMICAL TREATMENT Free from surface contaminants
APPLICATION	METHOD Spray Applied Viscosity 30-35" #2 Zahn FILM THICKNESS ____ Mils (Wet) 0.7 - 1.0 Mils (Dry) BAKE 5-10' @ 275 °F. Peak Metal Temp. 275 °F. REDUCE 10-1 With Naphtha OTHER Clean up solvent(s) Naphtha or Toluene
PROPERTIES	GLOSS 85+ @ 60° Angle Contains Lubricant ____ PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs
REMARKS	VOC = 4.12 lbs/gallon Meets Rule 66
ELOPED FOR	____ ____ ____ Attn.
SUBMITTED BY	____ Salesman ____ Laboratory Date 4/14/83 Ref. No.

Mobil Chemical — product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 210-Y-48

NAME Drum Enamel Gulf Orange

COLOR Orange TYPE Alkyd

SUGGESTED USE

[X] EXTERIOR Drum Enamel

[ ] INTERIOR

CONSTANTS

VISCOSITY 35 - 50 Sec. # 4 Ford Cup @ 80°F.

Sec. # Zahn Cup @ 80°F.

WEIGHT PER GALLON 8.3 ± .1 Lbs. Pigment 13.2 % By Weight

SOLIDS 51 ± 1 % By Weight 37 ± 1 % By Volume

THEORETICAL COVERAGE 592 Sq. Ft. @ 1 Mil Dry Film (100% Efficiency)

SUBSTRATE

TYPE CRS Primed With

GAUGE Reverse Side

CHEMICAL TREATMENT Free from all Surface Contaminants

APPLICATION

METHOD Spray Applied Viscosity 30-35 Sec. #2 Zahn Cup

FILM THICKNESS Mils (Wet) .7 - 1 Mils (Dry)

BAKE 5-10 min. @ °F. Peak Metal Temp. 275 °F.

REDUCE 10:1 With Naptha

OTHER Clean up solvent(s) Naphtha or Aromatic

PROPERTIES

GLOSS 85 + @ 60° Angle Contains Lubricant

PENCIL HARDNESS (Eagle Turquoise) Solvent Rubs

REMARKS

VOC = 4.04 lbs/gallon
Conforms to Rule 66

DEVELOPED FOR

Attn.

SUBMITTED BY

Salesman

Laboratory

Date 8/10/83

Ref. No. 1520

Mobil Chemical

BEST AVAILABLE COPY

product data sheet

CHEMICAL COATINGS DIV.
P. O. BOX 250
EDISON, NEW JERSEY 08817

CODE 285-R-9

NAME Drum Lining Red

COLOR Red

TYPE Alkyd-Amine

SUGGESTED USE	☐ EXTERIOR Special Purpose Drum Lining ☒ INTERIOR
CONSTANTS	VISCOSITY 20-30 Sec. # 4 Ford Cup @ 80°F. ____ Sec. # ____ Zahn Cup @ 80°F. WEIGHT PER GALLON 8.2 ± 1 Lbs. Pigment 12.0 % By Weight SOLIDS 45.2 ± 1 % By Weight 33.9 % By Volume THEORETICAL COVERAGE 545 Sq. Ft. @ Mil Dry Film (100% Efficiency)
SUBSTRATE	TYPE Steel Primed With -- GAUGE Varied Reverse Side -- CHEMICAL TREATMENT Free from all surface contaminants.
APPLICATION	METHOD Spray Applied Viscosity ____ FILM THICKNESS - Mils (Wet) .5 - .7 Mils (Dry) BAKE 10 @ 300 - 400 °F.* Peak Metal Temp. ____ °F. REDUCE As required With Toluol OTHER Clean up solvent(s) Toluol
PROPERTIES	GLOSS ____ @ ____ Angle Contains Lubricant ____ PENCIL HARDNESS (Engle Turquoise) Solvent Rubs
REMARKS	* Bake temperature dependent upon end use of package. Note: When lining is to hold shortening, pure foods, and edible oils, the final bake must be 10 minutes at 400°F.

DEVELOPED FOR	____ ____ ____ Attn.	SUBMITTED BY	Salesman Laboratory Date Ref. No.

EXHIBIT 3

KNS Companies, Inc.
475 RANDY ROAD, P. O. BOX 962
CAROL STREAM, ILLINOIS 60187
Telephone: Area 312/665-9010

kerpro

May 22, 1984

Mr. J. M. Murphy
Drum Service Co. of Florida
803 Jones Ave.
Zellwood, Fla. 32798

Dear Mr. Murphy:

KNS lining L-15 (407-30-J76) has a V.O.C. content of 4.84 pounds per gallon. The following lists the percentage of volatiles.

Xylol	8.0%
Ketones, exempt	8.54
Ketones, non-exempt	11.26
Alcohols, exempt	62.94
Esters	9.27
	100.01%

Please let me know if any additional information is needed.

Very truly yours,
KNS COMPANIES, INC.

John M. Browning
General Manager

JMB/jd

ADDISON, ILLINOIS 60101
Telephones: Area 312/543-2020

® Area Code 312/ 543

CONTAINER LININGS
PROPERTIES & APPLICATION DATA

CODE NO. 407-30B-J76

DESIGNATION Kerpro Lo-Cure L-15 Dark Brown Pigmented, Ready to Spray.

DESCRIPTION

Epoxy modified phenolic resin base, pigmented with inert pigments.

TYPICAL PROPERTIES

VISCOSITY #4FC @ 70°F., SECS	26 ± 1	DENSITY @ 70°F., LBS./GALS	8.8 ± 1
RESIN SOLIDS % BY WEIGHT	26 ± 1	TOTAL SOLIDS % BY WEIGHT	40 ± 2
PIGMENT SOLIDS % BY WEIGHT	14 ± 1	TOTAL SOLIDS % BY VOLUME	28 ± 2
COLOR, WET	Dark Brown	GLOSS GARDNER 60°	40 ± 10
COLOR, BAKED	Dark Brown	HIDING POWER SQ. FT./GAL.	650 @ 0.7 mils D

APPLICATION DATA

FOR REDUCTION USE: No reduction required

\- PARTS (VOLUME) KERPRO - PARTS (VOLUME) SO

APPLY BY Spray as is.

APPLY 2.5 - MILS WET TO OBTAIN 0.7 - 0.8 MILS

FORCE DRY 5 MINUTES AT 250 °F.*

BAKE 10 MINUTES AT 350 °F.*

CLEAN UP SOLVENT MEK

*METAL TEMPERATURE

NOTES

SUMMARY OF INVOICES FOR EXTERIOR COATING, LINING, AND SOLVENT PURCHASES FOR CALENDAR YEARS 1983 and 1984

1983 | For [illegible]

BEST AVAILABLE COPY

Vendor	Invoice #	Name of Paint	Quantity (gal)	V.O.C. (#/gal)	V.O.C. (lb)
[illegible]	5757	White [illegible] Enamel (7.15)	275	4.3	118
Dozier & King	3611	Drum Black Enamel (7.35)	450	4.3	19
"	"	" " " (7.35)	35	4.3	15
	4684	Drum Black Enamel (7.35)	250	4.3	10
	"	Drum Col Oil Blue	150	3.8	5
Mobile	204360	Drum Enamel Black KL (7.35)	550	4.3	2
	292790	Spray Enamel [illegible] Blue	110	3.8	4
	"	Drum Enamel Black KL (7.35)	550	4.3	2
	"	Drum [illegible] Light Blue (6.26)	50	4.1	20
	"	" " " " (6.26)	45	4.1	18
	"	Texas Gray Enamel KL (8.09)	275	3.6	9
	"	Drum Enamel [illegible] Red KL	55	4.1	2
	"	Spray [illegible] 5561 #11 KL (9.4)	110	4.1	4
	"	Shell Yellow EN KL (9.17)	55	4.3	2
	"	Col Oil Blue Black ENL	165	3.8	6
	"	Spray EN [illegible] Blue (7.75)	40	4.1	16
	260610	Drum Enamel Black KL (7.35)	550	4.3	2
	346100	Drum Enamel Black KL (7.35)	550	4.3	23
	"	Drum EN [illegible] Blue (7.08)	275	4.2	11
	"	[illegible] Tex Green EN (6.08)	110	4.2	4
	"	Spray EN 5562 #11 KL (9.4)	55	4.1	22
	193590	Drum Enamel Black KL (7.35)	550	4.3	23
	"	DR EN [illegible] Blue (7.44)	275	4.3	11
	"	Spray EN 5562 #11 KL (9.4)	55	4.1	2
	"	[illegible] Texas Gray EN (6.08)	110	4.2	4

BEST AVAILABLE COPY

Vendor	Invoice #	Name of Paint	Quantity (gal)	VOC (lbs/gal)	VOC lbs
	225730	Drum Enamel Black RL (7.31)	55	4.3	237
	244520	" " " " (7.31)	550	4.3	2365
	244570	Drum En Brown (7.95)	55	4.0	220
	222560	Spray En Fine Blue (8.58)	55	4.1	226
	"	Lt. Grey Enamel RL (6.09)	110	3.6	396
	"	Drum Enamel Esso Red RL	110	4.1	451
	"	Drum Enamel Black RL (7.35)	220	4.3	94[illegible]
	204270	Drum En Brown (7.95)	55	4.0	220
	303370	Drum Enamel Black RL (7.31)	550	4.3	2365
	"	Dr En New Chevron Blue (7.89)	220	4.2	924
	"	Semi Glo Texaco Grey EN (6.26)	110	4.2	168
	"	Drum En Brown (7.95)	50	4.0	200
	284040	Spray EN Fine Blue (7.95)	55	4.1	[illegible]
	"	Gloss EN Texaco Green RL (7.87)	110	3.9	4[illegible]
	303380	DR EN New Chevron Blue	220	4.2	924
	231260	Spray EN Mobile Beige RL	55	4.2	231
	236670	DR EN New Chevron Blue	55	4.2	231
	237600	Drum Enamel Black RL.	550	4.3	23[illegible]
	"	DR EN New Chevron Blue	220	4.2	924
	"	Drum EN Brown	50	4.0	200
	317060	Spray EN S.C.I. #41 RL	275	4.1	[illegible]
	"	Drum Enamel Esso Red RL	55	4.1	226
	"	Spray EN Fine Blue	55	4.1	226
	300180	Drum EN Chevron Blue	550	4.2	23[illegible]
	334130	Drum Enamel Black RL	275	4.3	118[illegible]
	328060	DR EN New Chevron Blue	220	4.2	924
	317560	Spray EN Fine Blue	55	4.1	22[illegible]
	274600	Drum EN Beige RL.	55	4.1	22[illegible]
	"	Spray EN SCI #41	40	4.1	[illegible]

Vendor	Invoice #	Name of [illegible]			
[illegible]	[illegible]	[illegible]	165	4.1	[illegible]
	271610	Drum Enamel Black RL	275	4.3	[illegible]
	"	DR EN Med Chrome Blue	220	4.2	134
	"	SEMI GLO Texaco Grey EN	110	4.2	1160
	"	Drum EN Tex Light Blue	55	4.1	2266
	314370	" " " "	110	4.1	451
	"	Cat O/I Blue Back ENL	110	3.8	418
	"	Drum Enamel 2580 Red RL	55	4.1	[illegible]
	"	DR EN Med Chrome Blue	330	4.2	1386
	"	SEMI GL Tex Green EN	110	4.2	[illegible]
	"	SEMI GLO Texaco Grey EN	110	4.2	[illegible]
	327460	Drum Enamel Black RL	275	4.3	1183
	334110	" " " "	550	4.3	[illegible]
	"	SEMI GLO Texaco Grey EN	55	4.2	231
	"	" " " "	30	4.2	126
	222550	Drum Enamel Black RL	550	4.3	2365
	"	Drum Enamel 2580 Red RL	110	4.1	451
	209430	Drum Enamel Black RL	550	4.3	2365
	"	DR EN Med Chrome Blue	165	4.2	[illegible]
	"	Semi EN Tex Blue	55	4.1	2266
	"	Red Oxide Ext White	110	4.1	451
	278290	Blue EN Drum	55	4.0	220
	"	DR EN Med Chrome Blue	275	4.2	1155
	326230	Drum Enamel Black RL	275	4.3	1182
	"	Semi EN Tex Blue	55	4.1	[illegible]
	318510	Drum Enamel Black RL	550	4.3	2365
	"	Semi Enamel Indigo Blue	55	3.8	209

BEST AVAILABLE COPY

Vendor	Invoice #	Name of Paint	Quantity (Gal)	V.O.C (lb/gal)	V.O.C (lb)
Mobile	233930	Drum Enamel Black RL	550	4.3	2365
	"	Spray Enamel Marine Blue	55	3.8	209
	"	Drum enl RG Light Blue	55	4.1	226
	"	Spray EN Steel #41	110	4.1	451
	225930	Drum Enamel Black RL	550	4.3	2365
		DR EN New Chevron Blue	275	4.2	1155
		Fast Cure EN White	110	4.1	451
	216250	Drum Enamel Black RL	550	4.3	2365
	"	Spray Enamel Marine Blue	55	3.8	209
	"	Drum EN RG Light Blue	55	4.1	226
	"	DR EN New Chevron Blue	275	4.2	1155
	"	Drum Enamel Esso Red RL	55	4.1	226
	"	Spray EN Steel #41	110	4.1	451
	222560	Spray EN Fina Blue	55	4.1	226
	"	Texaco Grey Enamel RL	110	3.6	396
	"	Drum Enamel Esso Red RL	110	4.1	451
	"	Drum Enamel Black RL	220	4.3	946
	279080	Spray EN Fina Blue	55	4.1	226
	"	Drum Enamel Esso Red RL	55	4.1	226
	219070	SEMI Glo Texaco Grey EN	110	4.2	462
	272181	DR EN New Chevron Blue	220	4.2	924
	105000	" " "	110	4.2	462
	301620	Mobile DR Grey ENL	110	3.6	396
	305950	Texaco Grey Enamel RL	110	4.2	462
	212180	Drum EN Brown	55	4.0	220
	251460	Drum Enamel Black RL	550	4.3	2365
	247340	DR EN New Chevron Blue	220	4.2	924
	"	[illegible] Grey EN	110	4.2	462

BEST AVAILABLE COPY

Vendor	Invoice #	Name of Paint	[illegible]	[illegible]	[illegible]
Invoice	267820	Mobile [illegible] Red Enl	55	4.2	[illegible]
	267770	Drum Enamel Black KL	550	4.3	[illegible]
	"	[illegible] Enl [illegible] C650 Red KL	55	4.1	[illegible]
	"	DE En New Chevron Blue	220	4.2	224
	264310	Spray En [illegible] White	55	4.1	[illegible]
	"	Drum Enamel C650 Red	55	4.1	[illegible]
	265850	Drum Enamel Black KL	550	4.3	[illegible]
	264700	Semi Glo Terrea Grey EN	55	4.2	231
	"	Drum Enamel Black KL	550	4.3	[illegible]
	"	Drum Enamel C650 Red KL	110	4.1	451
	"	[illegible]	220	4.2	924
	264710	Spray EN SSC1 441	55	4.1	[illegible]
	"	Fresh [illegible] EN White	110	4.1	451
	"	Semi Glo Terrea Grey EN	55	4.2	231
	"	Terrea Grey Enamel KL	110	3.6	396
	242640	Mobile Red Enl No2.	55	4.2	231
	254240	Dr. En New Chevron Blue	220	4.2	924
	"	Spray Enamel Chevron Blue	55	3.8	209
	"	SEMI GL TER Green EN	55	4.2	231
	"	" " "	40	4.2	168
	255430	Mobile Red Enl No2	55	4.2	231
	244510	Drum Enamel Black KL	825	4.3	3548
	"	Fast Baking EN White	110	4.1	451
	"	Spray EN [illegible] Blue	55	4.1	226
	"	SEMI GL TER Green EN	110	4.2	462
	333970	En Mobile Drum Red Spray	12	4.2	50
	346070	DRM ENL SHL Red	165	4.2	693
		Drum Enamel Black KL	275	4.3	1183
		SEMI GL TER Green EN	53	4.2	223

BEST AVAILABLE COPY

Vendor	Invoice #	Name of Paint	Quantity (gals)	($/gal)	Date
Mobile	342950	Cal ?l Blue Bak Enl	165	5.8	6/27
	341060	Drum EN PG Light Blue	55	4.1	2/26
	339500	DM Enl Tex Gy	55	4.2	[illegible]/
	"	Spray En SSCI #41	165	4.1	6/7
	"	Drum En [illegible]	110	4.0	4/10
	338200	Drum EN Orange RL	55	4.1	2/26
	"	DM Enl Gulf Blue	55	4.1	2/26
	284040	Bakel EN [illegible] Green RL	110	3.9	4/27
	335530	Mobil DM Red Enl	110	4.2	4/22
	"	Spray EN [illegible] Blue	55	4.1	2/26
	"	Drum Enl SHL Red	220	4.2	1/27
	340410	Drum EN [illegible] Red RL	55	4.1	2/26
	300750	Drum EN Clayton Blue	110	4.2	4/22
	"	[illegible] Enl Tex Gy	110	4.2	4/22
	"	" " Green	110	4.2	4/22
	"	DM Enl SHL Red	55	4.2	2/31
	"	" " " Yellow	55	4.1	2/26
	"	AD Drum En Mobil White	55	4.3	2/37
	297920	Mobil Red Enl #2	55	4.2	2/31
	"	Spray En [illegible]	55	4.2	2/31
	"	Semi Gloss Terraco Gray	110	4.2	4/22
	"	Drum En Blue	55	4.3	2/37
	"	DR En [illegible] Clayton Blue	110	4.2	4/22
	271260	Drum En Blue	55	4.3	2/37
	330330	DM Enl Tex Gy	55	4.2	2/31
	337500	Mobil DM Red Enl	55	4.2	2/31

Vendor	Invoice #	Name of Paint	Quantity (gal)	V.O.C (lb/gal)	V.O.C (lb)
Mon. Coating Inc.	230121	Black Diam Enamel	110	4.3	473
	231220	Texaco Green Diam EN	55	4.2	231
	"	Amoco Blue Diam EN	55	3.8	209
	"	Black Diam EN	275	4.3	1183
	"	QD Enamel chevron blue	55	4.2	231
	228913	Black Diam Enamel	110	4.3	473
			29,155		123,921 lbs

62 Tons

Average weight of paint 7.925 lb/gal

7.925 lb/gal x 29,155 gal = 231,039.88 lbs

Year 1984 For Paints BEST AVAILABLE COPY

Vendor	Invoice #	Name of Paint	Quantity (gal)	V.O.C (#/gal)	V.O.C (lbs)
Ela Palanathin	4138	White Air Dry Enamel	110	4.3	473
Dunn & Coy	10169	Drum Col oil Blue	100	3.8	380
	"	Drum ... Black	150	4.3	645
	10754	" Black EN	250	4.3	1075
	10818	" Col oil Blue	100	3.8	380
	11867	" " " "	100	3.8	380
	12264	" " " "	150	3.8	570
	14243	" " " "	100	3.8	380
	14245	" " " "	150	3.8	570
	15618	" " " "	200	3.8	760
Product Coating	44112	Texaco Green Drum EN	110	4.2	[illegible]
	"	" " "	5	4.2	21
Southern Coating	232660	Black Drum Enamel	550	4.3	2365
	232746	Texaco Green Dll Enamel	165	4.2	693
	"	" " " "	51	4.2	[illegible]
	232837	Shell Red Drum ENA	165	4.1	[illegible]
	233209	QD Epoxy ...	110	4.2	[illegible]
	234515	Black Drum EN	275	4.3	1183
	235558	" " "	220	4.3	946
	235675	" " "	55	4.3	237
	236174	Shell Red Drum EN	165	4.2	693
Stevens Paint Co.	71612	H.B. Black	55	4.3	237
	"	# 4112 White	55	4.0	220

Vendor	Invoice #	Name of Paint	Quantity (Gal)	(lb/gal)	lb
Mobil	350470	DRM ENL Red shell	55	4.2	[illegible]
	"	DM " " Yellow	110	4.1	451
	344010	DM ENL Tex GY	110	4.2	[illegible]
	"	DM EN shell Red	165	4.2	693
	345850	" " " "	330	4.2	1386
	"	" " Tex GRN	55	4.2	231
	"	Spray EN SSCI # 41	55	4.1	226
	350470	Drum EN Black RL	550	4.3	[illegible]
	"	" " chevron BL.	275	4.2	1155
	355770	Drum EN Black RL	550	4.3	[illegible]
	"	" " chevron blue	275	4.2	1155
	"	Drum EN Brown	110	4.1	[illegible]
	359860	Drum ENL Black RL	275	4.3	[illegible]
	"	DM EN Pa light Blue	110	4.1	[illegible]
	356370	DM ENL TEX GY	110	4.2	[illegible]
	"	" " " "	34	4.2	[illegible]
	"	Spray EN Fam Blue	55	4.1	[illegible]
	357870	DM EN Black RL	275	4.3	1183
	"	DM EN Pa light Blue	110	4.1	451
	364020	DM EN Black RL	275	4.3	[illegible]
	367030	DM EN chevron Blue	110	4.2	[illegible]
	367040	" " "	110	4.2	[illegible]
	"	Rust Pane EN White	55	4.1	[illegible]
	"	DM EN Black RL	275	4.3	1183
	367050	" " " "	550	4.3	2365
		DM EN chevron Blue	55	4.2	231
		" " Fam Blue	110	4.1	451
		Semi Gloss Tex GRN ENL	110	4.1	451

Vendor	Invoice #	Name of Paint	Gal	($/G)	($)
Mobil	371670	DH EN Black KL	275	4.3	1183
	"	Fast Tube EN White	55	4.1	226
	"	DH EN Chevron Blue	165	4.2	693
	367810	Fast Tube EN White	110	4.1	451
	370880	" " " "	55	4.1	226
	"	DH EN [illegible] White	55	4.0	220
	378330	DH EN Black KL	220	4.3	946
	"	" " " "	45	4.3	194
	"	DH EN PG Light Blue	55	4.1	226
	"	" " Green	55	4.1	226
	"	Semi Gloss Tex Gry ENL	55	4.1	226
	"	" " " " "	43	4.1	176
	"	DH EN Chevron Blue	220	4.2	924
		" " " "	45	4.2	189
	378320	DH EN Black	550	4.3	2365
	"	" " Dull Yellow	55	4.1	226
	"	" " PG Light Blue	55	4.1	226
	"	Spray EN Amoco Blue	55	3.8	209
	373440	DH EN SSCI #41 White	165	4.0	660
	381740	Spray EN " " KL	110	4.0	440
	382140	DH EN Chevron Blue	165	4.2	693
	384070	DH EN Black KL	410	4.3	1892
	"	DH EN Chevron Blue	165	4.2	693
	384100	Semi Gloss Tex Gry ENL	110	4.1	451
	388050	DH EN Black KL	275	4.3	1183
	"	DH EN [illegible]	55	4.1	226
	"	" " [illegible] Blue	110	4.1	451
	"	" " PG Light Blue	55	4.1	226

Vendor	Invoice #	Name of Paint	Quantity (gal)	VOC (lb/gal)	VOC (lbs)
Mobil	388070	DH EN Black	275	4.3	[illegible]
	"	Semi Gloss Hex HCM EN	110	4.1	[illegible]
	"	DH EN chevron blue	110	4.2	[illegible]
	"	" " " "	34	4.2	143
	391030	DH EN Black	165	4.3	710
	"	" " Brown	55	4.1	[illegible]
	"	" " chevron blue	165	4.2	693
	398770	A Amoco Blue EN RL	55	3.8	[illegible]
	"	DH EN Gulf Brown	55	4.1	[illegible]
	391770	Spray EN SSCI #41 RL	55	4.1	[illegible]
	397070	DH EN Black	550	4.3	[illegible]
	"	DH EN PG light blue	55	4.1	226
	"	DH EN shell red	110	4.2	[illegible]
	"	Semi Gloss Hex 691 EN	110	4.1	[illegible]
	"	DH EN chevron blue	165	4.2	[illegible]
	402820	DH EN shell red	165	4.2	693
	"	DH EN PG light blue	110	4.1	451
	"	DH EN Chevron blue	220	4.2	924
	394560	DH EN Gulf ORG	110	4.0	44
	"	" " " Blue	110	4.1	451
	"	Spray EN SSCI #41	110	4.1	45
	396760	" " " "	165	4.1	677
	402850	DH EN Black RL	550	4.3	236
	402840	" " "	275	4.3	118
	"	" " chevron blue	275	4.2	115
	400220	A Amoco Blue EN RL	110	3.8	41
	"	" " " "	110	3.8	41
	"	" " " "	110	3.8	41

Vendor	Invoice #	Name of Paint	(Gal)	(Kg/gal)	(Kg)
Mobil	407070	DH CN Black XL	550	4.3	2365
"	"	" " Chevron Blue	55	4.2	231
"	"	DK EN Med Chevron Blue	275	4.2	1155
	413800	DH EN Black XL	275	4.3	1183
	"	" " Emd Blue	110	4.1	451
	418740	SEMI Gloss TCX GRN EN	110	4.1	451
	"	DH EN Gulf Blue	110	4.1	45
	"	DH EN Black XL	275	4.3	1183
	418970	DN Chevron 370 Blue	275	4.1	1128
	"	[illegible]	165	4.1	677
	"	DH EN SEMI GLOSS WHITE	110	4.0	440
	"	" " " "	41	4.0	164
	424020	DH EN Black XL	55	4.3	237
	422470	" " " "	275	4.3	1183
	424050	DN Chevron 370 Blue	275	4.1	1129
	424100	DH EN Black XL	275	4.3	1183
	"	" " PG Light Blue	55	4.1	226
	"	" " Gulf Blue	55	4.1	226
	"	SEMI Gloss TCX GRN EN	110	4.1	451
	"	" " " GRN "	50	4.1	205
	433110	DH EN Black XL	110	4.3	473
	433100	" " "	550	4.3	2365
	454590	DH EN Gulf Blue	55	4.1	226
	"	" " " ORG	55	4.0	200
	"	DEN Chevron 370 Blue	275	4.1	1129
	"	DH EN Chevron 4611	55	4.1	226
	"	" Amoco Blue EN XL	110	3.8	418
	433580	DEN Chevron 370 Blue	550	4.1	1353
	426520	" " " "	275	4.1	1129

Vendor	Invoice #	Name of Paint	(gal)	(lb/gal)	(lb)
Hollo	444470	DM EN PG Light Blue	45	4.1	185
	"	" " Grey ORG	55	4.0	220
	"	" " Black RL	110	4.3	473
	454570	" " " "	165	4.3	710
	454620	SEMI Gloss TEX GRY EN	110	4.1	451
	454560	DEN Chevron 570 Blue	275	4.1	1128
	"	DM EN Fan Blue	110	4.1	451
	456360	DM Enamel Light Blue	110	4.1	451
	451700	SEMI Gloss TEX GRY EN	220	4.1	902
	4610006	Chevron BL	550	4.1	2255
	4610007	DII Black	220	4.3	946
	"	SSCL 41 White	55	4.0	220
	4610005	SG TEX GRY	45	4.1	185
	"	" " "	110	4.1	451
	4610004	EN Brown	110	4.1	451
	4610010	Chevron BL	550	4.1	2255
	"	PG LT BL	110	4.1	451
	"	Shell Red	110	4.2	462
	"	AD Amoco BL	110	3.8	418
	"	Drum Black	275	4.3	1183
	4066874	Texaco GRY	220	4.2	924
			25,890 gal		107,993 lbs

Average weight 7.762 lb/gal

7.762 lb/gal × 25,890 gal = 200,972.5 lbs

54 Tons

BEST AVAILABLE COPY

Year 1983 For Linings

[illegible]ndor	Invoice #	Name of Liner	Quantity (gal)	V.O.C (lb/gal)	V.O.C (lb)
[illegible]lla Laboratories	3959	Clear Soluble Liner	55	4.84	266
[illegible]ozier & Gay	3883	Dura Liner Red	500	4.84	2420
	5486	Dura citrus Liner	450	4.5	[illegible]
	"	" "	30	4.5	135
	3166	Dura Liner Red	450	4.84	2178
	"	" " "	40	4.84	194
	2666	Citrus Dura Liner	500	4.5	2250
	3611	" " "	450	4.5	[illegible]
	"	" " "	30	4.5	135
	4684	Dura Liner Red	450	4.84	2178
	7058	Citrus Dura Liner	500	4.5	2250
K.M.S. Coatings	5476	L.15 DK. Brown Phen/Co	275	4.84	1331
	5368	" "	220	4.84	1065
	5601	" " "	220	4.84	1065
	5670	" " "	220	4.84	1065
	5702	" " "	165	4.84	799
	"	" " "	55	4.84	266
	5766	" " "	330	4.84	1597
	5728	" " "	220	4.84	1065
	5421	" " "	220	4.84	1065
	5352	" " "	220	4.84	1065
	5376	" " "	275	4.84	1331
	5324	" "	220	4.84	1065
	5262	" " "	220	4.84	1065
	5210	" " "	220	4.84	1065

BEST AVAILABLE COPY

Vendors	Invoice #	Name of Resin	[illegible]	lb/gal	(lb)
K. n. S. Coatings	5159	L-15 Dk. Brown [illegible]/[illegible]	220	4.84	1065
	5100	" " " "	220	4.84	1065
	5190	" " " "	220	4.84	1065
Mobil Chem. Co.	195590	Drum Liner Red	550	4.84	2662
	346120	" " "	275	4.84	1331
	260610	" " "	550	4.84	2662
	334150	" " "	550	4.84	2662
	292790	" " "	275	4.84	1331
	204360	" " "	550	4.84	2662
Southern Coating	230121	Red Drum Liner	275	4.84	1331
	232233	" " "	275	4.84	1331
	228338	" " "	275	4.84	1331
	225878	" " "	275	4.84	1331
	229218	" " "	275	4.84	1331
	229595	" " "	275	4.84	1331
	231810	" " "	220	4.84	1065
	"	" " "	40	4.84	194
			11,855		56,705

BEST AVAILABLE COPY

Vendor	Invoice #	Name of Lining	Gallon	[illegible]	[illegible]
D[illegible] Co.	4135	Clear [illegible] [illegible]	55	4.84	266
[illegible] & Co.	10196	Clear Liner Red	250	4.5	1125
K.N.S. Corp	5797	L-15 Dk Brown [illegible]/[illegible]	275	4.84	1331
	5864	" "	275	4.84	1331
	5913	" "	275	4.84	1331
	5982	"	275	4.84	1331
	5796	"	275	4.84	1331
	6044	"	275	4.84	1331
	6080	"	220	4.84	1065
	6081	"	55	4.84	266
	6146		275	4.84	1331
	6240		275	4.84	1331
	6300		275	4.84	1331
	6333		550	4.84	2662
Mobil Company	355990	Drum Liner Red	550	4.84	2662
	350460	" " "	275	4.84	1331
	378330	" " "	275	4.84	1331
	384090	" " "	110	4.84	532
	384100	" "	165	4.84	799
	388090	" " "	275	4.84	1331
	402820	" " "	275	4.84	1331
	402840	" " "	220	4.84	1065
	"	" " "	20	4.84	97
[illegible] Co.	233660	Red Drum Liner	275	4.84	1331

Vendor	Invoice #	Name of Business	[illegible]	[illegible]	[illegible]
[illegible]	232979	[illegible]	165	4.84	799
	234088	" " "	275	4.84	1331
	234917	" " "	220	4.84	1065
	"	" " "	46	4.84	223
	236772	" " "	330	4.84	1597
			7081		[illegible]

BEST AVAILABLE COPY

BEST AVAILABLE COPY

Vendor	Invoice #	D.A. (gals)	M.C.K. (gal)
Industrial chemical	28526	55	220
"	26514	55	220
	35144	110	220
	32166	110	—
	35046	—	220
	32443	55	—
	31002	110	—
	30556	55	165
	29606	110	220
	30076	110	—
	28465	55	—
	27150	55	—

FOR 1984 Solvents

Freedom chemicals	22119	—	165
Industrial chem	35236	110	220
	35430	55	110
	39411	55	—
	39461	110	—
	39476	55	—
	41521	55	165
	41796	110	165
	43578	165	—
	43639	—	165
	48128	—	165
	48259	—	165

Vendor	Invoice #	D.A. (gal)	H.C.L. (gal)
Industrial	28526	55	220
...cal	26514	55	220
	35144	110	220
	32166	110	—
	35046	—	220
	32443	55	—
	31002	110	—
	30556	55	165
	29606	110	220
	30076	110	—
	28465	55	—
	27150	55	—

FOR 1984 Solvents

Specialty chemicals	22719	—	165
Industrial chem	35236	110	220
	35430	55	110
	39411	55	—
	39461	110	—
	39476	55	—
	41521	55	165
	41796	110	165
	43578	165	—
	43639	—	165
	48128	—	165
	48259	→	165

BEST AVAILABLE COPY

[illegible] Alcohol

[illegible]	Invoice #	Quantity (gal)	V.O.C (lb/gal)	V.O.C (lb)
[illegible]	28526	55	7.82	430
[illegible]	26514	55	7.82	430
	35144	110	7.82	860
	32166	110	7.82	860
	32443	55	7.82	430
	31002	110	7.82	860
	30556	55	7.82	430
	29606	110	7.82	860
	30076	110	7.82	860
	28465	55	7.82	430
	27150	55	7.82	430
		880 (gallons)		6880 (lb)

Methyl Ethyl Ketone

[illegible]	Invoice #	Quantity (gal)	V.O.C (lb/gal)	V.O.C (lb)
[illegible]	28526	220	6.73	1480
[illegible]	26514	220	6.73	1480
	35144	220	6.73	1480
	35046	220	6.73	1480
	30556	165	6.73	1110
	29606	220	6.73	1480
		1265 (gal)		8510 (lb)

Denatured Alcohol

Vendor	Invoice #	Quantity (gal)	V.O.C (lb/gal)	V.O.C (lb)
[illegible]	35236	110	7.82	860
[illegible]	35430	55	7.82	430
	39411	55	7.82	430
	39461	110	7.82	860
	39476	55	7.82	430
	41521	55	7.82	430
	41796	110	7.82	860
	43538	165	7.82	1290
		715		5590 (lbs)

Methyl Ethyl Ketone

Vendor	Invoice #	Quantity (gal)	V.O.C (lb/gal)	V.O.C (lb)
Pierson chemical	227119	165	6.73	1110
Industrial chemical	35236	220	6.73	1480
	35430	110	6.73	740
	41521	165	6.73	1110
	41796	165	6.73	1110
	43639	165	6.73	1110
	48128	165	6.73	1110
	48259	165	6.73	1110
		1320		8880 (lbs)

DRUM SERVICE CO. OF FLORIDA
P.O. BOX 278
ZELLWOOD, FLORIDA

EQUIPMENT SPECIFICATION
THERMAL OXIDIZER (AFTERBURNER)/WASTE HEAT BOILER

A. GENERAL SYSTEM DESCRIPTION

Propane fired thermal oxidizer with a waste heat boiler, fan, refractory lined transition ducting, control panel and support platform.

B. THERMAL OXIDIZER (AFTERBURNER)

Performance: Raise 8500 SCFM of effluent from approximately 850°F to 1500°F.

Retention Time: .5 seconds.

Burner: 4 Eclipse NM128, 2.2 million BTU each at 14" W.C. with combustion air blower.

Construction: ASTM A-36 all welded 3/16 HRP shell lined with 5" thick litecrete 90 castable refractory secured with stainless steel anchors and complete with access doors, sight ports and test ports.

Gas Train: Pilot and main trains in accordance with Factory Mutual insurance requirements including:

- Modulating gas control valve
- Hydromotor gas valve with proof of closure switch
- High and low gas pressure switches
- Pilot regulator and solenoid valve
- Main gas pressure regulator
- Pressure gauge

C. FAN

Twin Cities Model 914RBO radial blade, self cleaning class III, rated at 8000 SCFM at 8" static complete with 50 H.P., 3 Ph., 230/460 VAC motor with belt drive, OSHA approved guard and high temperature limit.

D. TRANSITION DUCTING

Furnace-to-afterburner and afterburner-to-Waste Heat Boiler:

ASTM A-36 shell lined with 4" litecrete 90 castable refractory secured with stainless steel anchors.

E. CONTROL PANEL

Nema 12 enclosure with Fireye flame safeguard system, modulating temperature controller, high limit temperature control, manual over ride, alarm silence, indicating lights and switches.

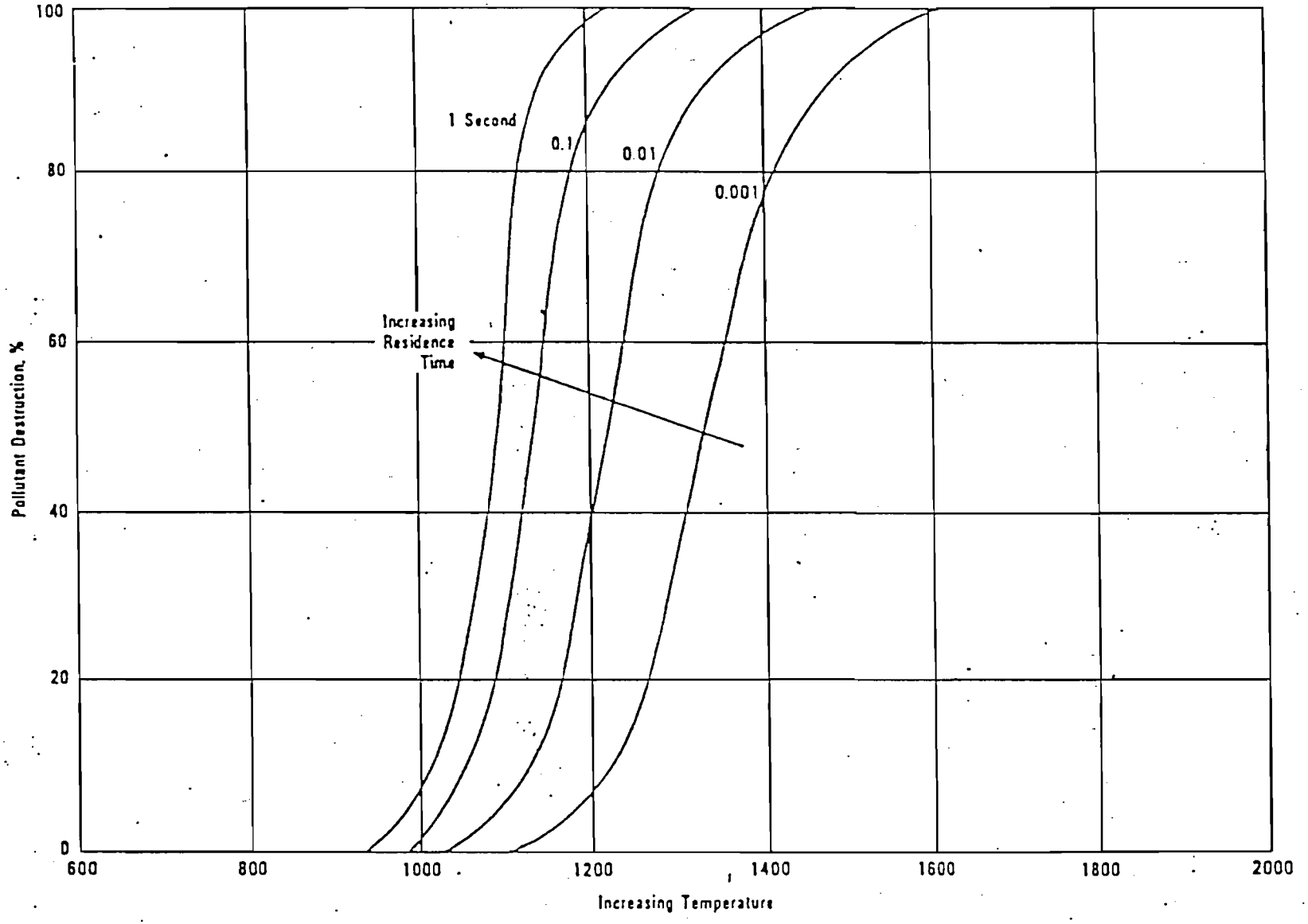
F. SUPPORT STRUCTURE

Designed to requirements of local Building & Safety Code.

G. WASTE HEAT BOILER

Eclipse 7HR 250 H.P. (Max. 400 H.P.), 250 PSI waste heat boiler complete with all equipment necessary for its operation including:

- Low water cutoff and pump control.
- Low-low water cutoff.
- Safety valves.
- Blow down valves.
- Steam stop valves.
- Make up tank with feed pumps.
- Blow down tank.
- Temperature gauge.
- Superior water softener, dual system with automatic regeneration.
- Hays-Republic steam flow meter complete with orifice flanges and recorder.



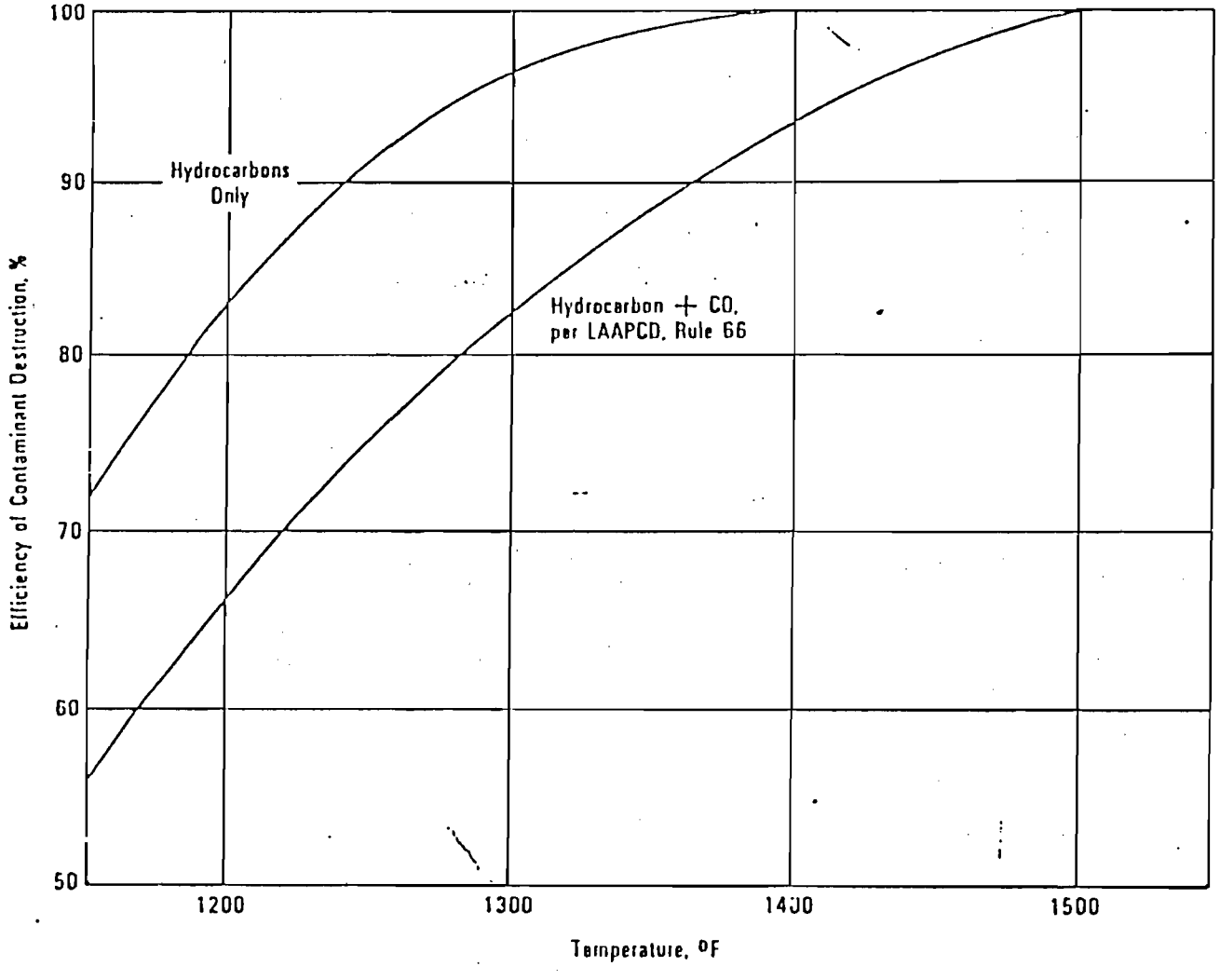
Source: *Afterburner Systems Study*, Shell Development Company, 1972.

Figure 1. Coupled Effects of Temperature and Time on Rate of Pollutant Oxidation

FROM: CONTROLLING POLLUTION FROM THE MANUFACTURING AND COATING OF METAL PRODUCTS. 1. METAL COATING AIR POLLUTION CONTROL

In cases where carbon monoxide formation in the incinerator is deducted from the unit's efficiency, such as under Rule 66 of the Southern California Air Pollution Control District referred to earlier, significantly higher time/temperature units are required to achieve a given efficiency. This principle is illustrated in Figure 2. The combustion of organic carbon to carbon dioxide is a two-stage reaction: the first stage of oxidation to CO involves a relatively high-heat release and proceeds rapidly. The second stage, further oxidation to CO_2, gives off less heat and is therefore an inherently slower reaction.

The zone of combustion consists of a region of rising temperature followed by a dwell region with an essentially constant temperature. The design residence time of 0.3 or more seconds should apply to the reaction zone only, with additional volume provided for initial combustion and mixing. Insufficient combustion chamber volume is probably the most significant design flaw in units that fail to meet performance expectations.



Source: *Afterburner Systems Study*, Shell Development Company, 1972.

Figure 2. Typical Effect of Operating Temperature on Effectiveness of Thermal Afterburner for Destruction of Hydrocarbons and CO

DRUM SERVICE

OF FLORIDA

DIRECT FLAME THERMAL OXIDIZER

DESIGN CALCULATIONS

GIVEN:

1. Source of contaminates - drum furnace & baking ovens.
2. Effluent air volume - 8500 SCFM.
3. Effluent air temperature at thermal oxidizer inlet - $800^{O}F$.

PROBLEM:

Determine thermal oxidizer dimensions, burner type, burner input, and operating temperature in accordance with requirements of EPA, AP-40.

1. Burner selection:

   Four Eclipse 128NM burners.

2. Temperature selection:

   Given $1500^{O}F$.

3. Burner capacity:

   (a) Net heat required to raise the effluent to $1500^{O}F$.

   Assumed properties of air

   Enthalpy @ $1500^{O}F$ = 28.4 BTU/SCF

   Enthalpy @ $800^{O}F$ = 14.07 BTU/SCF

   Net enthalpy = 14.33

   $Q = W\Delta H$

   $= 8500 \times 60 \times 14.33$

   $= 7,308,300$ BTU/Hr.

   (b) Propane input required:

   $$\frac{7,308,300}{2316 \text{ BTU/Ft}^3} = 3099 \text{ Ft}^3/\text{Hr.}$$

4. Combustion chamber size:

   Volume of gases in afterburner = 8500 SCFM

   Volume of gases @ $1500^{O}F$ (1960R)

   $$\frac{(8500)\ (1960)}{(60)\ (520)} = 534 \text{ CFS}$$

(a) Diameter of afterburner:

Assume velocity @ fps

Afterburner cross section $= \frac{534}{30} = 17.8\ Ft^2$

Diameter $= \sqrt{\frac{17.8}{.785}} = 4.76' = 57"$ Dia.

5. Combustion chamber length:

Assume .5 sec. retention

Length = .5 x 30 = 15' min.

DESIGN SUMMARY

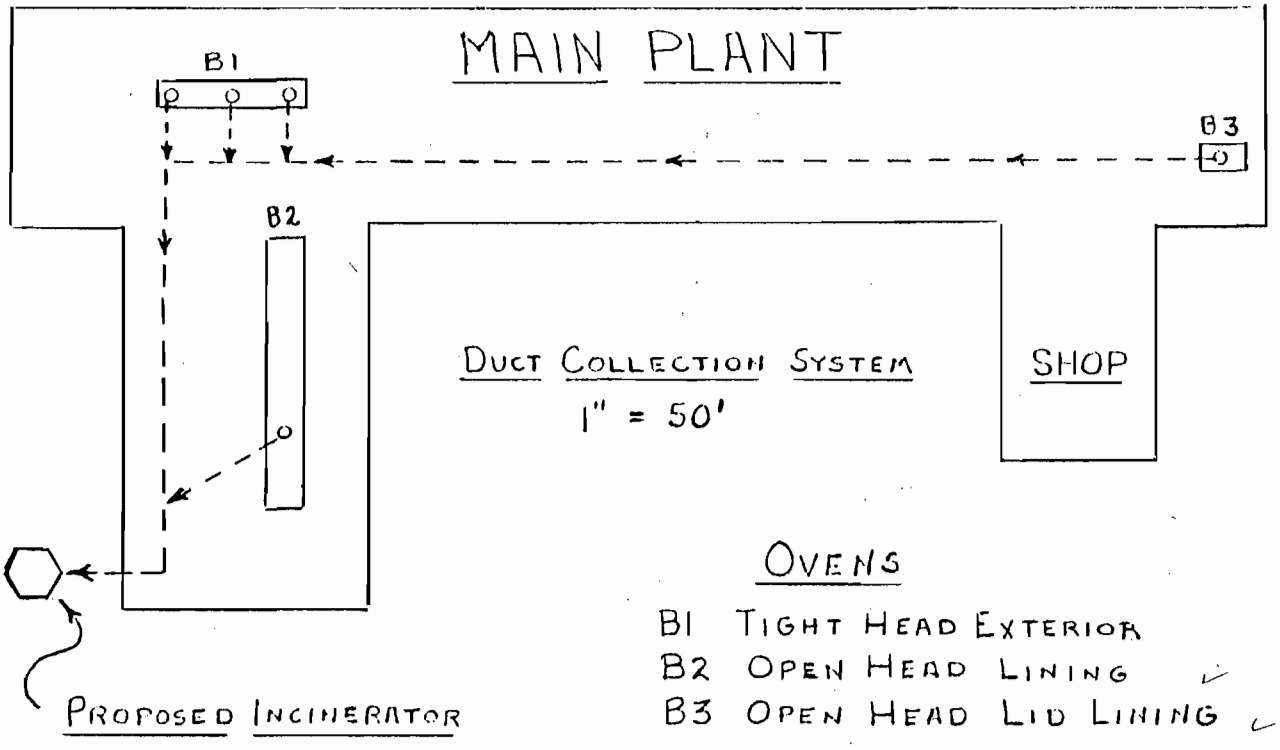
Burner type - Four Eclipse 128NM (Capacity 2.2 million BTU/Burner)

Afterburner Temp. - $1500^{O}F$

Burner Input - 7,308,300 BTU/Hr.

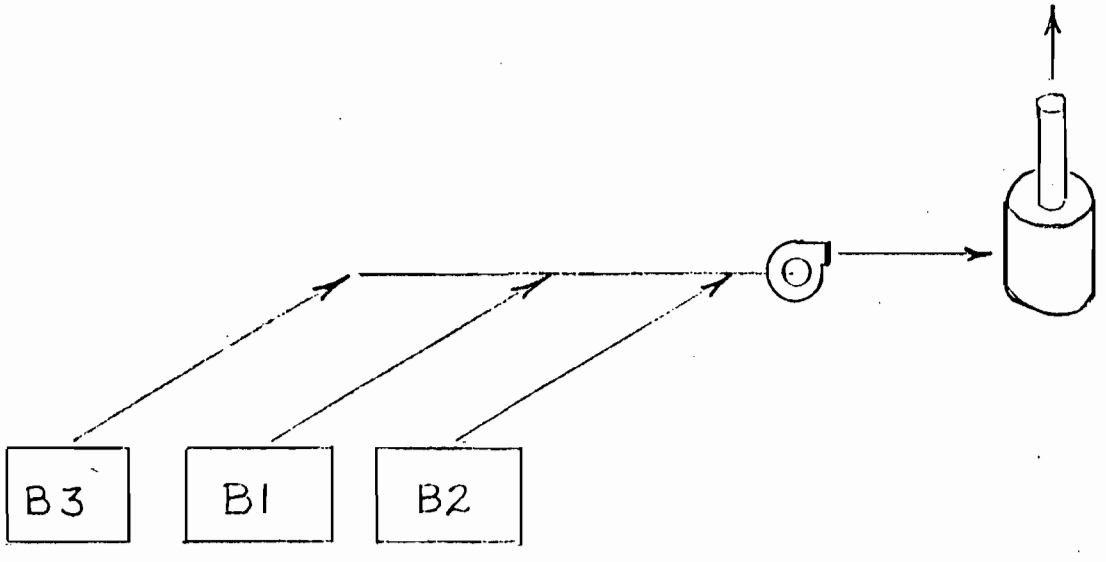
Afterburner Dia. - 57'

Afterburner Length - 15'



OVENS

B1 TIGHT HEAD EXTERIOR
B2 OPEN HEAD LINING
B3 OPEN HEAD LID LINING



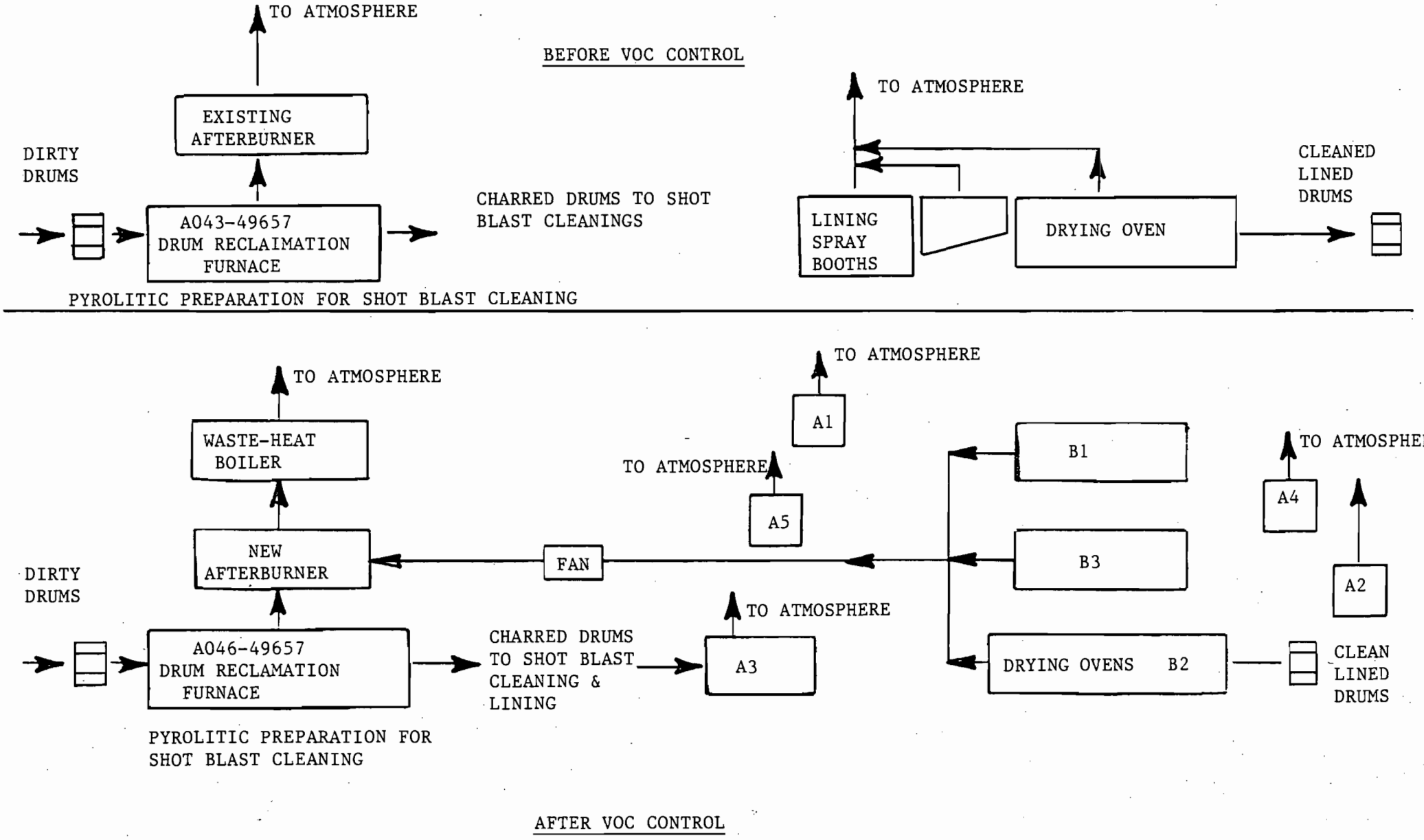
VOC CONTROL SYSTEM

DRUM SERVICE CO. OF FLORIDA

JWS 12-28-85

FIGURE 1-1

SCHEMATIC FLOW DIAGRAM



COMBUSTION CONTROLS ENGINEERING SERVICE

SPENCER BOILER & ENGINEERING INC.

NEW & RECONDITIONED BOILERS, AIR POLLUTION CONTROL & HEAT RECOVERY SYSTEMS
DISTRIBUTOR FOR: ABCO IND. - BOILERS,

CRANE COCHRANE ENVIRONMENTAL SYSTEMS

GENERAL OFFICES AND FACTORY
P. O. BOX 2355
12106 S. CENTER STREET
SOUTH GATE, CALIF. 90280
(213) 636-0216
(213) 630-1102

FRESNO BRANCH
2141 S. VAN NESS
FRESNO, CALIF. 93721
(209) 237-6951

January 6, 1986

Drum Co. of Florida
P.O. Box 278
803 Jones Ave.
Zellwood, Fla.

Attention: Mr. Mike Murphy

Subject: Quotation #2603 - Thermal Oxidizer (Afterburner) & Waste Heat Boiler.

Dear Mike:

We received a phone call from Mr. Joe Tessitore on January 2, 1986 confirming that you will be venting the effluent from the three bake ovens to the afterburner. He also stated that the local air quality control agency wants assurance from Spencer Boiler & Engr. Inc. that the unit will maintain an efficiency of 95% with regard to VOC emissions, regardless of the number of ovens being vented - one, two or three. We can assure you that this will be the case.

The unit will be designed to operate under the worst case, three ovens. We suggest that a barometric damper be installed at the entrance to the afterburner to adjust the air flow, depending on the number of ovens in operation. We can go into this further during our next meeting.

If you have any questions please give me a call.

Very truly yours,

SPENCER BOILER & ENGINEERING INC.

Frank L. Reed
President

FLR/amd

cc: Joe Tessitore

DRUM SERVICE CO. OF FLORIDA

POST OFFICE BOX 278
ZELLWOOD, FLORIDA 32798
PHONE AREA 305 — 889-2581

April 9, 1985

Frank Cross, P.E.
Cross-Tessitore, Inc.
4759 S. Conway Road
Orlando, FL 32812

Dear Frank:

Pursuant to your request, I am enclosing copies of paint, lining, and solvent invoices representing purchases made over the two year calendar period, 1983-1984. Total gallons purchased for the two years are as follows:

		Solvents	
Paint	Lining	MEK & Diacetone Alcohol	Toluol
55,135	18,936	4,180	825

Production figures for the same period are as follows (Note: these follow the same format and assumptions as in Exhibit 4, Part II of our initial application):

Booth	Application	Quantity	Notes
A.1.	Tight Head Drum Exteriors	350,489	(1)
A.2.	Open Head Drum Exteriors	537,396	(1)
A.3.	Open Head Drum Interiors	494,404	(2)
A.4.	Open Head Covers Exteriors	537,396	(1)
A.5.	Open Head Covers Interiors	494,404	(2)

Notes:

(1) Represents 100% of production.

(2) Not all drums run on open head line are lined internally; some are shipped unlined. Calendar year 1983-84 production estimated at 92% lined, 8% unlined.

Per our discussion, please note that these two years' purchases and production figures are calendar years; our original application covered one fiscal year (11/1/82 - 10/31/83). A calendar year summary of purchases was much easier since our bills are kept by calendar year. Both of us may have overlooked the difference at our meeting, but I am trusting it will create no problems for the approach to DER you described to me. Also, by using these calendar years, we an get the most recent year's activity (1984) into our figures.

Note also that there are other paint and lining suppliers shown besides Mobil and KNS (the only two shown on the application). In all cases, the VOC characteristics of substitute paint and lining products from other suppliers should be similar to those reported by Mobil and KNS. John and I felt it would be sufficient to use Mobil and KNS data for the full range of products we purchase since we had product data sheets for these. More data sheets (from substitute suppliers) seemed to entail unnecessary extra work. Also, note that Mobil Chemical was acquired by and became part of Valspar Corporation in 1984.

The solvent purchases are broken down into two categories: "MEK and Diacetone Alcohol", and "Toluol". This is necessary because of the way we reported the VOC characteristics of "#1 Lining" (L-15, supplied by KNS). This requires a bit of explanation:

My letter of December 13, 1984 to C. H. Fancy of DER (answer #2, page 3) reported:

> Coatings are received in ready-to-spray condition and are used directly from the drum except for #1 lining and in very cold weather when a small but indeterminate amount of diacetone alcohol or toluol is added for reduction (viscosity control) purposes.

Note:

1. This paragraph was poorly written. In fact, there are two reductions involved, for different purposes; we tried to cover both in one sentence. It isn't clear from the whole paragraph that:

   a. Diacetone alcohol is added to #1 lining because it is not bought in "ready-to-spray" condition (rather, we purchase it in "concentrated" form); and

   b. Toluol is added to exterior paints in cold weather when viscosities become a problem.

2. In addition to diacetone alcohol, MEK is used to prepare concentrated #1 lining to ready-to-spray condition. We overlooked this in the letter; both solvents are needed to prepare concentrated L-15.

The Product Data Sheet used in the application (Exhibit 3) for KNS L-15 #1 lining is for a "ready-to-spray" material. I felt it would be misleading to send in a data sheet for the concentrated product we bought, since so much solvent is added to it (unless, of course, I went back through all the files and dragged out solvent purchases, which work I had hoped to avoid). Since our approach in the original application was to deal with the emissions from the products as applied at the spray booth, the emissions data (VOC content) of the reported L-15 #1 lining was correct, since those are the parameters to which we reduce the concentrated product purchased when preparing it for spraying. However, as I understand your approach to DER, you should not count the diacetone alcohol and MEK purchases since the reported data on the KNS lining (i.e., ready-to-spray) already includes them.

I haven't had time to get a new data sheet for concentrated L-15, but if you must have it you can probably get the information over the phone by calling John Browning of KNS at 312-665-9010. Naturally, a data sheet for concentrated L-15 along with our actual MEK and diacetone alcohol purchases, should theoretically yield the same VOC data as the ready-to-spray L-15 data sheet submitted.

My final note is an enormous caveat about the value of the paint, lining and solvent purchases here recorded. Again I wish to list several severe qualifications to any correlation with any VOC emissions data calculated from these figures.

1. At the beginning of the period, a certain amount of paint was on hand in the form of inventory, which obviously got used up during the year. We don't have exact counts of this.

2. The same is obviously true at the end of the period: much of the paint purchased during the last several weeks of the year would not have been used by the end of the year, but was still on hand, unopened, and therefore should not properly be counted in consumption figures for that year.

3. From time to time, colors are discontinued and the paint, if not suitable for rework into other colors, is discarded. There is no data at all on the volumes involved here, only estimates, but these can be substantial.

4. The same is true on bad paint: for a variety of reasons, paint gets stale and unusable, and is discarded. There is no exact data for this, but we had an especially difficult year with bad paint in 1983.

5. We have certain non-application usages for paint, primarily supplying "touch-up paint" to customers who use it to cover small scratches in the drums due to transportation marring. Likewise, we have no figures on this.

6. Paint is not purchased in an even, "one-to-one" ratio with drum production. To reduce freight costs and achieve lowest possible per gallon prices, orders are sometimes bunched into very large quantities on a single order at one time. Thus there is no meaningful ratio that can be established between monthly purchases and monthly production.

7. Not all paint and lining is emptied from each container. (The fact that there is some residue in every "empty" drum is the raison d'etre for the whole drum reconditioning industry.) As you know, an "empty" drum can have up to 1" of residue; this is approximately 2.9% of the contents. Actually, we make every effort to truly empty the drum, and our experience is nowhere near one inch, but there is still some residue which must be subtracted from every 55 gallons purchased.

Please contact us after you have formulated an approach to Mr. Thomas at DER.

Very truly yours,

DRUM SERVICE CO. OF FLORIDA

J. M. Murphy

cc: Roger D. Schwenke, Esq.

Derivation of Paint, Lining, and Thinner Consumption Factors

Calculation of Drum Surface Areas

Drum Height = 35 in. = 2.917 feet

Drum Diameter = 23.5 in. = 1.958 feet

Exterior Surface Area

Tight Head Drum = $(2)\ \frac{\pi}{4}\ (1.958^2) + \pi\ (1.958)(2.917)$

$= (2)(3.01) + 17.94 = 23.96\ ft^2$

Open Head Drum = $3.01 + 17.94 = 20.95\ ft^2$

Open Head Covers = $3.01\ ft^2$

Interior Surface Area

Open Head Drum = $3.01 + 17.94 = 20.95\ ft^2$

Open Head Covers = $3.01\ ft^2$

Average Drum Production For 1983-1984

Booth	Application	Quantity (Drums/Year)
A1	Tight Head/Ext.	175, 245
A2	Open Head/Ext.	268, 685
A3	Open Head/Int.	247, 202
A4	Open Head Covers/Ext.	268, 685
A5	Open Head Covers/Int.	247, 202

Total Drums Painted = 175, 245 + 268, 685 = 443,930

% Tight Head Drums = 39.5%

% Open Head Drums = 60.5%

% Open Head Drum Interiors = $\frac{247,202}{268,685}$ = .92 x 100 = 92%
of Open Head Drum Exteriors

Paint Consumption Factors For 1983-1984

Consumption (gal/yr)

Coating Type	1983	1984	Average
Exterior Paint	29,455	25,896	27,676
Lining	11,855	7,081	9,468
MEK	1,265	1,320	1,293
Diacetone	883	715	799
Toluol	495	330	413

Exterior Paint

Booth	Application	Quantity (drums/yr)	Area (ft^2/drum)	Total Area (ft^2)
A1	Tight Head/Ext.	175,245	23.96	4,198,870
A2	Open Head/Ext.	268,685	20.95	5,628,951
A4	Open Head Covers/Ext.	268,685	3.01	808,742
				10,636,563

$$\text{Paint Consumption Factor} = \frac{27,656}{10,636,563}\ \frac{\text{gals}}{ft^2} = 0.00260\ \frac{\text{gal}}{ft^2}$$

or 384.62 ft^2/gal

Lining

Booth	Application	Quantity	Area (ft^2/drum)	Total Area (ft^2)
A3	Open Head/Int.	247,202	20.95	5,178,882
A5	Open Head Covers/Int.	247,202	3.01	744,078
				5,922,960

$$\text{Lining Consumption Factor} = \frac{9,468}{5,922,960}\ \frac{\text{gal}}{ft^2} = 0.001598\ \frac{\text{gal}}{ft^2}$$

or 625.58 ft^2/gal

MEK

Used for lining thinning only

$$\text{MEK Consumption Factor} = \frac{1,293}{5,922,960}\ \frac{\text{gal}}{ft^2} = 0.000218 \text{ or } 4580.8\ \frac{ft^2}{\text{gal}}$$

Diacetone

Same as above (MEK)

Diacetone Consumption Factor = $\frac{799 \text{ gal}}{5,922,960 \text{ ft}^2}$ = 0.000135 or 7412.9 ft²/gal

Toluol

Toluol used for thinning external paints only

Toluol Consumption Factor = $\frac{413 \text{ gal}}{10,636,563 \text{ ft}^2}$ = 0.0000388

or 25,754 ft²/gal

Calculation of Paint, Lining, and Thinner Annual Consumption for a Production Rate of 575,000 Drums Per Year

Drum Service Co. of Florida

Maximum Annual Production (575,000 Drums/Year)

Booth	Application	Quantity (Drums/Year)
A1	Tight Head Drum/Ext.	227,125
A2	Open Head Drum/Ext.	347,875
A3	Open Head Drum/Int.	320,045
A4	Open Head Covers/Ext.	347,875
A5	Open Head Covers/Int.	320,045

Exterior Paint Consumption

Booth	Drums/Year	Area(ft^2/drum)	Total Area(ft^2/year)
A1	227,125	23.96	5,441,915.0
A2	347,875	20.95	7,287,981.2
A4	347,875	3.01	1,047,103.7
		Total	13,776,999.9

13,777,000 ft^2/yr X 0.0026 gal/ft^2 = 35,820 gal/yr

Lining Consumption

A3	320,045	20.95	6,704,942.7
A5	320,045	3.01	963,335.5
		Total	7,668,278.2

7,668,278 ft^2/yr X 0.001598 gal/ft^2 = 12,254 gal/yr

MEK Consumption

7,668,278 ft^2/yr X 0.000218 gal/ft^2 = 1,672 gal/yr

Diacetone Consumption

7,668,278 ft^2/yr X 0.000135 gal/ft^2 = 1,035 gal/yr

Toluol Consumption

13,777,000 ft^2/yr X 0.0000388 gal/ft^2 = 535 gal/yr

Coating Consumption

Coating	Gal/Year
Exterior Paint	35,820
Lining	12,254
MEK	1,672
Diacetone	1,035
Toluol	535

Calculation of Paint, Lining, and Thinner Annual Consumption for Paint Booths and Ovens for a Production Rate of 575,000 Drums Per Year

Coating Consumption for Each Booth

(Production of 575,000 drums/yr)

Booth A1 - Tight Head Drum Exteriors

227,125 drum/yr x 23.96 ft^2/drum = 5,441,915 ft^2/yr

Paint Consumption

5,441,915 ft^2/yr x 0.0026 gal/ft^2 = 14,149 gal/yr

Toluol Consumption

5,441,915 ft^2/yr x 0.0000388 gal/ft^2 = 211 gal/yr

Booth A2 - Open Head Drum Exteriors

347,875 drum/yr x 20.95 ft^2/drum = 7,287,981 ft^2/yr

Paint Consumption

7,287,981 ft^2/yr x 0.0026 gal/ft^2 = 18,949 gal/yr

Toluol Consumption

7,287,981 ft^2/yr x 0.0000388 gal/ft^2 = 277 gal/yr

Booth A3 - Open Head Drum Interiors

320,045 drum/yr x 20.95 ft^2/drum = 6,704,943 ft^2/yr

Lining Consumption

6,704,943 ft^2/yr x 0.001598 gal/ft^2 = 10,715 gal/yr

MEK Consumption

6,704,943 ft^2/yr x 0.000218 gal/ft^2 = 1,462 gal/yr

Diacetone Consumption

6,704,943 ft^2/yr x 0.000135 gal/ft^2 = 905 gal/yr

Booth A4 - Open Head Cover Exteriors

347,875 drum/yr x 3.01 ft²/drum = 1,047,104 ft²/yr

Paint Consumption

1,047,104 ft²/yr x 0.0026 gal/ft² = 2,722 gal/yr

Toluol Consumption

1,047,104 ft²/yr x 0.0000388 gal/ft² = 41 gal/yr

Booth A5 - Open Head Cover Interiors

320,045 drum/yr x 3.01 ft²/drum = 963,336 ft²/yr

Lining Consumption

963,336 ft²/yr x 0.001598 gal/ft² = 1,539 gal/yr

MEK Consumption

963,336 ft²/yr x 0.000218 gal/ft² = 210 gal/yr

Diacetone Consumption

963,336 ft²/yr x 0.000135 gal/ft² = 130 gal/yr

Coating Consumption Summary for Each Booth (gal/yr)

(Production of 575,000 drums/yr)

Booth	Paint	Toluol	Lining	MEK	Diacetone
A1	14,149	211			
A2	18,949	277			
A3			10,715	1,462	905
A4	2,722	41			
A5			1,539	210	130

Calculation of Paint, Lining, and Thinner Maximum Hourly Consumption for a Production Rate of 250 Tight Head Drums Per Hour and 300 Open Head Drums Per Hour

MAXIMUM HOURLY COATING CONSUMPTION

Maximum Hourly Production

Booth	Application	Quantity (drums/hr)
A1	Tight Head Drum/Ext.	250
A2	Open Head Drum/Ext.	300
A3	Open Head Drum/Int.	276
A4	Open Head Cover/Ext.	300
A5	Open Head Cover/Int.	276

Exterior Paint Consumption (A1, A2, A4)

$$= \frac{[(250)(23.96) + (300)(20.95) + (300)(3.01)]\ ft^2}{hr} \times 0.00260\ \frac{gal}{ft^2}$$

$$= [5990 + 6285 + 903](0.00260) = 34.3\ gal/hour$$

Lining Consumption (A3, A5)

$$= [(276)(20.95) + (276)(3.01)]\ \frac{ft^2}{hr} \times 0.001598\ \frac{gal}{ft^2}$$

$$= 10.56\ gal/hour$$

MEK Consumption

$$6{,}613\frac{ft^2}{hr} \times 0.000218\ \frac{gal}{ft^2} = 1.44\ gal/hour$$

Diacetone Consumption

$$6{,}613\frac{ft^2}{hr} \times 0.000135\ \frac{gal}{ft^2} = 0.89\ gal/hour$$

Toluol Consumption

$$13{,}178\ \frac{ft^2}{hr} \times 0.0000388\ \frac{gal}{ft^2} = 0.51\ gal/hour$$

MAXIMUM HOURLY COATING CONSUMPTION

COATING	GALS/HOUR
Exterior Paint	34.30
Lining	10.60
MEK	1.44
Diacetone	0.89
Toluol	0.51

Calculation of Paint, Lining, and Thinner Maximum Hourly Consumption for Paint Booths and Ovens for a Production Rate of 250 Tight Head Drums Per Hour and 300 Open Head Drums Per Hour

Coating Consumption for Each Booth

(Maximum Hourly Production of
250 tight head drums/hr
and 300 open head drums/yr)

Booth A1 - Tight Head Drum Exteriors

250 drum/hr x 23.96 ft^2/drum = 5990 ft^2/hr

Paint Consumption

5990 ft^2/hr x 0.0026 gal/ft^2 = 15.57 gal/hr

Toluol Consumption

5990 ft^2/hr x 0.0000388 gal/ft^2 = 0.23 gal/hr

Booth A2 - Open Head Drum Exteriors

300 drum/hr x 20.95 ft^2/drum = 6285 ft^2/hr

Paint Consumption

6285 ft^2/hr x 0.0026 gal/ft^2 = 16.34 gal/hr

Toluol Consumption

6285 ft^2/hr x 0.0000388 gal/ft^2 = 0.24 gal/hr

Booth A3 - Open Head Drum Interiors

276 drum/hr x 20.95 ft^2/drum = 5782.2 ft^2/hr

Lining Consumption

5782.2 ft^2/hr x 0.001598 gal/ft^2 = 9.24 gal/hr

MEK Consumption

5782.2 ft^2/hr x 0.000218 gal/ft^2 = 1.26 gal/hr

Diacetone Consumption

5782.2 ft^2/hr x 0.000135 gal/ft^2 = 0.78 gal/hr

Booth A4 - Open Head Cover Exteriors

300 drum/hr x 3.01 ft²/drum = 903 ft²/hr

Paint Consumption

903 ft²/hr x 0.0026 gal/ft² = 2.35 gal/hr

Toluol Consumption

903 ft²/hr x 0.0000388 gal/ft² = 0.04 gal/hr

Booth A5 - Open Head Cover Interiors

276 drum/hr x 3.01 ft²/drum = 830.8 ft²/hr

Lining Consumption

830.8 ft²/hr x 0.001598 gal/ft² = 1.33 gal/hr

MEK Consumption

830.8 ft²/hr x 0.000218 gal/ft² = 0.18 gal/hr

Diacetone Consumption

830.8 ft²/hr x 0.000135 gal/ft² = 0.11 gal/hr

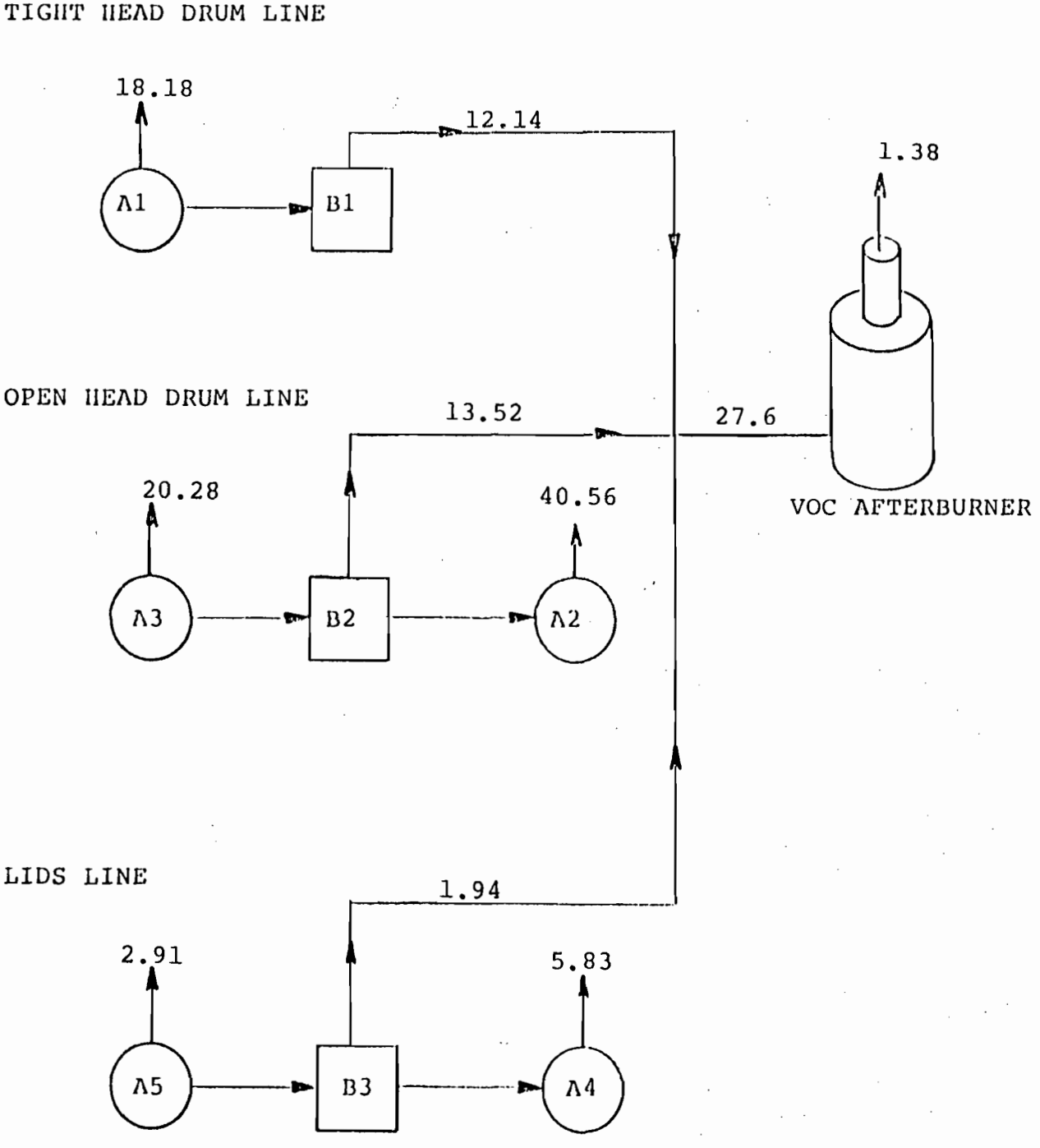
Maximum Hourly Coating Consumption Summary for Each Booth (gal/hr)

(Production of 250 Tight Head drums/hr and 300 Open Head drums/hr)

Booth	Paint	Toluol	Lining	MEK	Diactone
A1	15.57	0.23			
A2	16.34	0.24			
A3			9.21	1.26	0.78
A4	2.35	0.04			
A5			1.33	0.18	0.11

ACTUAL VOC EMMISION POINT SUMMARY

MAXIMUM ANNUAL (Tons/yr)*

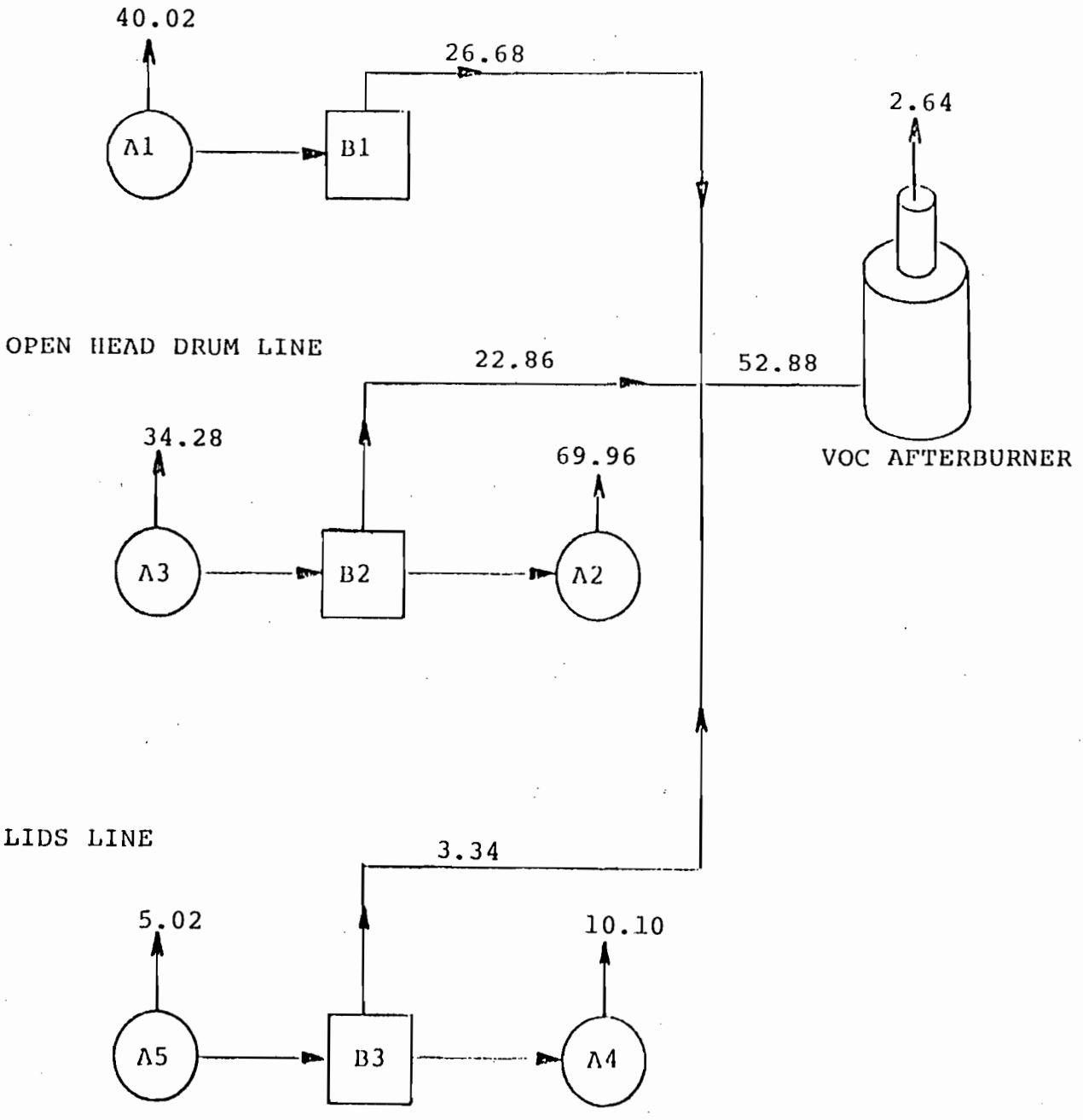


A- PAINT SPRAY BOOTH
B- PAINT BAKE OVEN

* 575,000 drums/yr

ACTUAL VOC EMMISION POINT SUMMARY

MAXIMUM HOURLY (lbs/hr)*



A- PAINT SPRAY BOOTH
B- PAINT BAKE OVEN

*250 Tight head drums/hr
*300 Open head drums/hr

EXHIBIT 11

VERIFICATION OF CONTROLLED VS. UNCONTROLLED VOC EMISSION RATIO - INVENTORY CONTROL

In order for the Florida Department of Environmental Regulation to have assurance that overall emissions remain within proposed/allowable limits, it will be necessary to demonstrate on a continuing basis the use and disposition of all VOC material received.

To this end a complete inventory and reporting system is proposed to account for each shipment of paint or lining material received, as well as utilization and record of exit.

The inventory system will include coating stock and solvent on hand at beginning and end of each reporting period as well as the amounts of each purchased during the period.

Tally sheets for production foremen will be arranged for easy check-off of each category of utilization with predetermination of emission potential of each category to allow easy summation.

In order to minimize overlap and to promote orderly development of meaningful data, the manner of gathering subtotal information by daily, by weekly, or by individual production runs should be left to the discretion of Drum Service Co. of Florida's Management.

It is a fortunate necessity that drum lining is always prior to exterior coating (to minimize handling damage to finish).

Due to storage limitations inherent to the bulky nature of 55 gallon drums, no significant delays of production are possible between interior lining (controlled emission) and exterior painting (uncontrolled emission). With the exception of in-process malfunctions causing need for repair, retouch, or scrapping, the entire process is on an assembly line basis with only a few minutes between stages.

It would be acceptable to Drum Service Co. of Florida if a permit condition should require that 97% of drums lined be painted within 24 hours.

The following three sample inventory sheets include all basic data necessary to arrive at the appropriate totals from which emissions can be determined.

These sheets should be regarded as outline only; in actual use, multiple entry will be necessary to account for the item to item variation of VOC content.

SIX MON
ENDING _____

DRUM SERVICE CO. OF FLORIDA

PAINT AND SOLVENT INVENTORY AND

REPORTING CONTROL

DER PERMIT #_____ VOC CONTROL, PAINT SPRAYING SYSTEM

	EXTERIOR PAINT	INTERIOR LINING	SOLVENTS
I. MATERIAL ON HAND AT BEGINNING OF PERIOD DATE_____			
[NOTE: Same figures as in Item III from previous report]	_____GALLONS	_____GALLONS	_____GALLONS
ADD:			
II. PURCHASES DURING PERIOD:	_____GALLONS	_____GALLONS	_____GALLONS
TOTAL TOTAL	_____GALLONS	_____GALLONS	_____GALLONS
LESS:			
III. MATERIALS ON HAND AT END OF PERIOD DATE_____	_____GALLONS	_____GALLONS	_____GALLONS
MATERIAL TO BE ACCOUNTED FOR:	_____GALLONS	_____GALLONS	_____GALLONS

COMMENTS:

PAINT FOREMAN_____
(Signature)

DRUM SERVICE CO. OF FLORIDA

PAINT AND SOLVENT INVENTORY AND

REPORTING CONTROL

IV. UTILIZATION – COATINGS

CODE "E" LEADS TO VOC EMISSIONS
CODE "NE" LEADS TO NO VOC EMISSIONS

	EXTERIOR PAINT	INTERIOR LININGS
A. SPRAYED IN PRODUCTION	_____ E	_____ NE
B. SOLD DIRECTLY TO CUSTOMERS, OR PROVIDED FREE AS "TOUCH-UP" PAINT	_____ NE	
C. DISCONTINUED PAINT COLORS (To be scrapped)	_____ NE	
D. BAD PAINT		
1. TO BE REPROCESSED	_____ NE	_____ NE
2. TO BE SCRAPPED	_____ NE	_____ NE
E. RECOVERED FROM SOLVENT WASH OF PIPING	_____ NE	_____ NE

COMMENTS

PAINT FOREMAN _____
(Signature)

DRUM SERVICE CO. OF FLORIDA

PAINT AND SOLVENT INVENTORY AND

REPORTING CONTROL

V. UTILIZATION - SOLVENTS

CODE "E" LEADS TO VOC EMISSIONS
CODE "NE" LEADS TO NO VOC EMISSIONS

A.	ADDED TO PAINT - VISCOSITY CONTROL	_____ E
B.	ADDED TO LINING - VISCOSITY CONTROL	_____ NE
C.	CLEAN UP - DISSIPATED	_____ E
D.	CLEAN UP - RECAPTURED AND RECYCLED	_____ NE

VI. DRUM PRODUCTION BY PAINT BOOTH

A1	TIGHT HEAD DRUM EXTERIOR	_____ E
A2	OPEN HEAD DRUM EXTERIOR	_____ E
A3	OPEN HEAD DRUM INTERIOR	_____ NE
A4	OPEN HEAD COVERS EXTERIOR	_____ E
A5	OPEN HEAD COVERS INTERIOR	_____ E

COMMENTS

PAINT FOREMAN _____
(Signature)

EXHIBIT 12

PARTICULATE CONTROL IN EXHAUST FROM BOOTH OVERSPRAY

Control of particulate from overspray is accomplished by high efficiency filters or water wash.

Overspray is drawn by means of spray booth exhaust fans to control/capture devices. A minor portion of overspray falls onto and adheres to booth interior from which it is periodically removed by hand scraper for disposal according to approved RCRA Methods.

Capture efficiency reduces 20,106 Lbs./Yr. sent to control devices to actual emission of 441 Lb./Yr. for an overall efficiency of 97.8%.

For purposes of calculation of particulate emission as follows, the efficiency of filters was taken from data furnished by the manufacturers. This resulted in a higher emission than if efficiency as stated on Page 20 of Controlling Pollution from the Manufacturing and Coating of Metal Products, Vol. I, U.S. EPA, May 1977, i.e. filter pads 98%, water wash 95%.

Even with the lesser efficiency, however, particulate emission amounts to only 441 Lbs./Year.

PARTICULATE CONTROL

PAINT BOOTH OVERSPRAY CONTROL SYSTEMS

BOOTH	SPRAY TYPE	APPLICATION	QUANTITY	CONTROL TYPE
A.1.	Hand	Tight Head drum exteriors	165,502	Dry Filters*
A.2.	Automatic	Open Head drum exteriors	278,259	Water Wash**
A.3.	Automatic	Open Head drum interiors	255,998	Dry Filters*
A.4.	Semi Automatic	Open Head covers exteriors	278,259	Dry Filters*
A.5.	Semi Automatic	Open Head covers interiors	255,998	Dry Filters*

NOTES: *20 x 20 x 2 paint arrestors manufactured by:
Chemco Manufacturing Co., Inc.
7540 N. Linder
Skokie, IL 60077

**Booth manufactured by:
Binks Manufacturing Company
9201 West Belmont Ave.
Franklin Park, IL 60666

PAINT OVERSPRAY CALCULATIONS

FISCAL YEAR ENDING 10/31/83

BOOTH	TOTAL PAINT SPRAYED [NOTE: LBS./YR. SOLIDS ONLY] (NOT GALLONS OF COATINGS)	% OVERSPRAYED Note 1	% OF OVERSPRAY CAPTURED ON BOOTH SURFACES (SCRAPED OFF BY OPERATOR DURING ROUTINE MAINTENANCE AND DISPOSED OF) Note 2	OVERSPRAY TO CONTROL SYSTEM LBS./YR.	CONTROL SYSTEM EFFICIENCY*	EMISSIONS LBS./YR.
A.1.	31,773	25	25	5957	95.8%	250
A.2.	44,406	25	25	8326	99.8%	17
A.3.	33,382	5	N.A.	1669	95.8	Nil**
A.4.	15,287	25	25	2864	95.8	120
A.5.	6,879	25	25	1290	95.8	54
			TOTAL	20,106 Lb./Yr.	TOTAL	441 Lb./Yr.

Note 1: See Exhibit 4

Note 2: Per DSC Operator and Foreman Estimate

*See test reports attached,
Binks Manufacturing Co.
and Chemco Manufacturing Co.

**Theoretically 70 Lb./Yr. will pass to incinerator from which an incalculable minor weight of ash will escape.

Air Filter Testing Laboratories, Inc.

4632 Old LaGrange Road • Crestwood, Kentucky 40014 • Phone (502) 222-572

REPORT NO. 3180
TEST NO. 3

PAINT ARRESTOR PAD PERFORMANCE TEST

TEST REQUESTED BY: CHEMCO MANUFACTURING COMPANY, INC.
MANUFACTURER: CHEMCO MANUFACTURING COMPANY, INC
PRODUCT NAME: GREEN/WHITE
HOW LABORATORY PROCURED TEST SAMPLE: FURNISHED BY MANUFACTURER
MODEL NO.: GREEN/WHITE DIMENSIONS: 20IN. H 20IN. W 2IN. L
PRODUCT DESCRIPTION: GLASS FIBER

TEST CONDITIONS:

TEST AIR FLOW RATE 200 FPM
PAINT APPLICATION RATE 0.5QT./20MIN.
DESCRIPTION OF PAINT USED SYNTHETIC ENAMEL LIMCO

RESULTS:

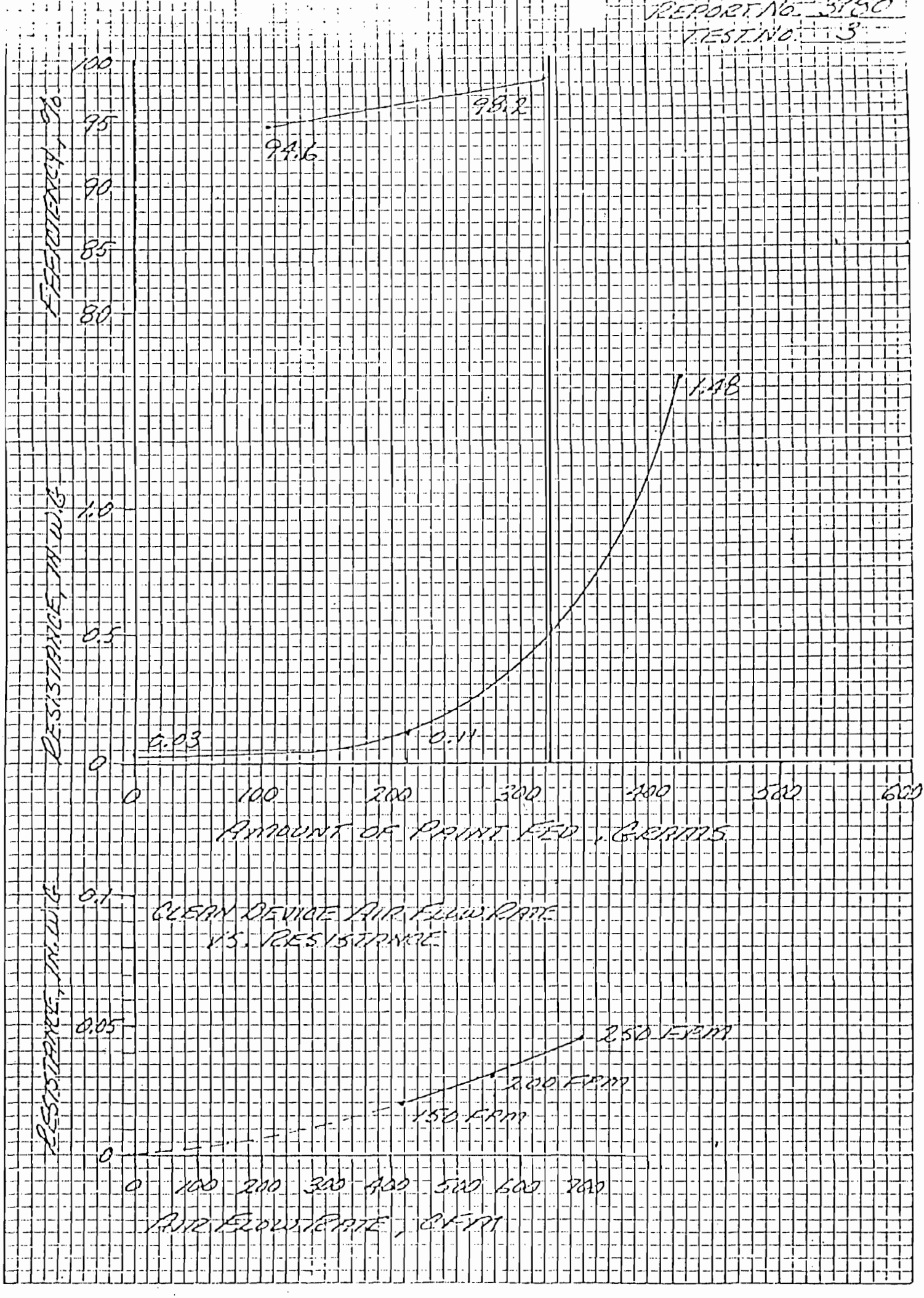
WEIGHT GAIN PAINT ARRESTOR PAD	410.0	GM.
FINAL ARRESTANCE FILTERS WEIGHT GAIN	15.3	GM.
TOTAL WEIGHT PAINT FED (DRY BASES)	425.3	GM.
FINAL RESISTANCE PAINT LOADED FILTER	1.48	IN. W.G.
PERFORMANCE TO CHANGE OUT RESISTANCE	0.50	IN. W.G.
AVERAGE PAINT REMOVAL EFFICIENCY	95.8	%
PAINT HOLDING CAPACITY 309 GM. OR 0.68		LBS.

DATE 2-3-1984

ENGINEERING APPROVAL David J. Murphy Jr.

STATE OF KENTUCKY
DAVID J. MURPHY JR.
6035
REGISTERED
PROFESSIONAL ENGINEER

REPORT NO. 3250
TEST NO. 3



BINKS MANUFACTURING COMPANY
[illegible] NG SUN AVENUE, PHILADELPHIA, PENNSYLVANIA 19140
AILING ADDRESS
O BOX 46008, PHILADELPHIA, PENNSYLVANIA
9160-6008
HONE 215/329-7800
X: 834222
IN ALL PRINCIPAL CITIES

BINKS

October 17, 1984

Mr. Mike Murphy
Drum Service Co.
803 Jones Avenue
Zellwood, FL 32798

Subject: Binks No-Pump Spray Booth
Model CNPB 10-7T
Invoice #38147

Dear Mr. Murphy:

In accordance with your request regarding the efficiency of Binks No-Pump Spray Booths, a test was conducted by an Independent Consulting Engineering Service Co. in 1966. The booth design has not been changed and the results remain to date, as follows:

TEST RESULTS: (Paint used for testing has a weight of 2.25 lbs/qt.)

Test No. 1
Material Usage: 20 gals/hr. x 4 qts. x 2.25 lbs/qt. = 180 lbs/hr.

Grain Loading: 4.68 gr/1000 CF

Material Injection:

$$\frac{180 \text{ lbs/hr.} \times 7000 \text{ gr.} \times 1000 \text{ CF}}{9017 \text{ CFM} \times 60 \text{ mins.}} = 2328.93 \text{ grains}$$

Efficiency:

$$\text{Efficiency} = \frac{2328.93 - 4.68 \times 100}{2328.93}$$

Efficiency = 99.799%

Emission Rate (lbs/hr.)

$$E = \frac{9017 \times 60 \times 4.68}{1000} = \frac{2531.9}{7000}$$

E = 0.361 lbs/hr.

Test No. 2

Material Usage: 21 gals/hr. x 4 qts. x 2.25 lbs/qt = 189 lbs/hr.

Grain Loading: 4.99 gr/1000 CF

Material Injection:

$$\frac{189 \times 7000 \times 1000}{9017 \times 60} = 2445.38 \text{ grains}$$

Efficiency:

$$\text{Efficiency} = \frac{2445.38 - 4.99 \times 100}{2445.38}$$

Efficiency = 99.795'

Emmission Rate (lbs/hr.)

$$E = \frac{9017 \times 60 \times 4.99}{1000} = 7000$$

E = 0.385 lbs/hr.

Allowable Emission (0.62 lbs/hr.)

E = 3.59 (P)

E = 0.83 lbs/hr. for 189 lbs. material/hr.

Binks Spray Booths conform with O.S.H.A. and E.P.A. regulations. However, this equipment is designed expressly for the removal of particulate matter only. Reduction of "Volatile Organic Compunds" requires either coating reformulation or optional additional equipment.

If you have any questions or need additional information please feel free to contact this office.

Very truly yours,

BINKS MANUFACTURING COMPANY

Ben Mallen

Ben Mallen
Resident Engineer
Philadelphia Branch

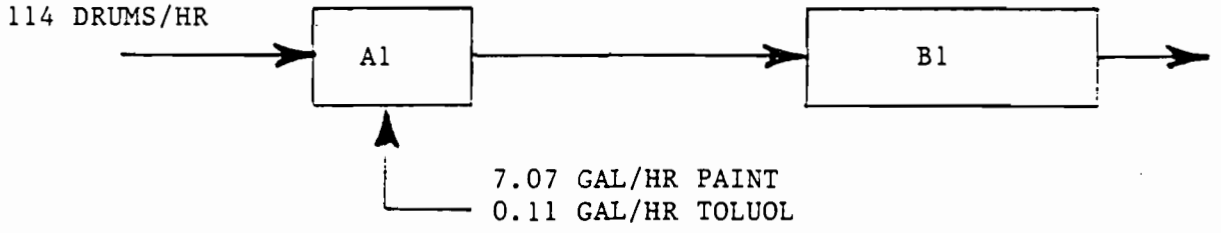
BM:ds

cc: R. Kradoska
L. Gonzales

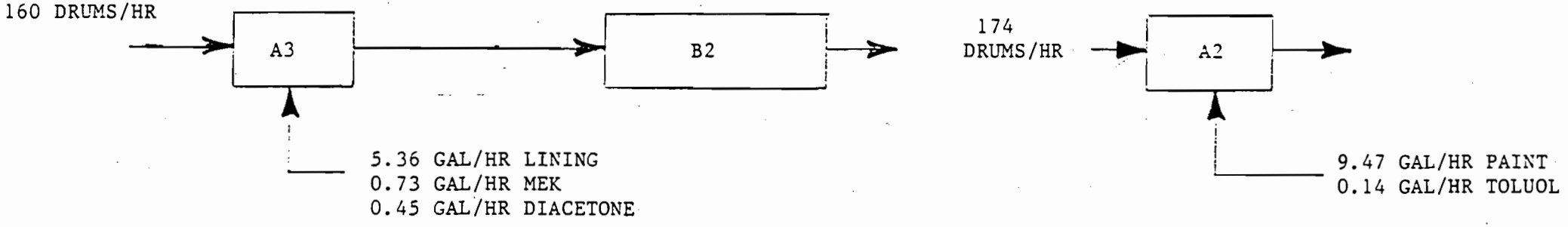
PROCESS WEIGHT DIAGRAM

MAXIMUM ANNUAL PRODUCTION (575,000 DRUMS/YEAR)

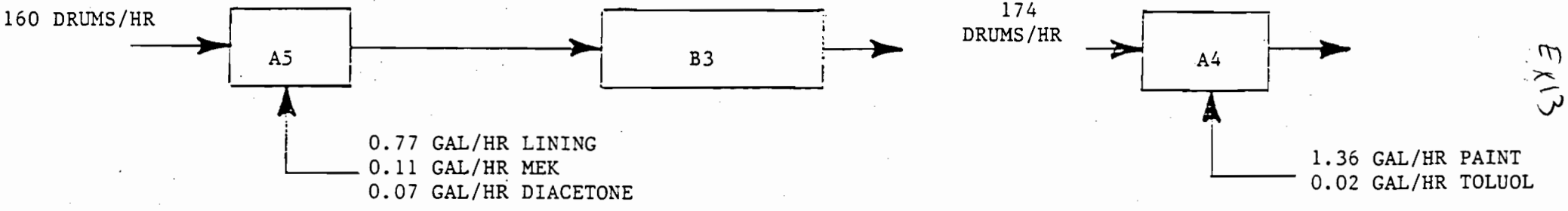
TIGHT HEAD DRUM LINE



OPEN HEAD DRUM LINE



LID LINE

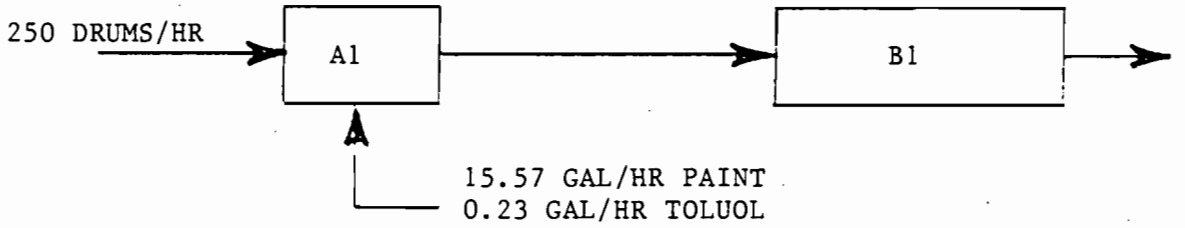


EX13

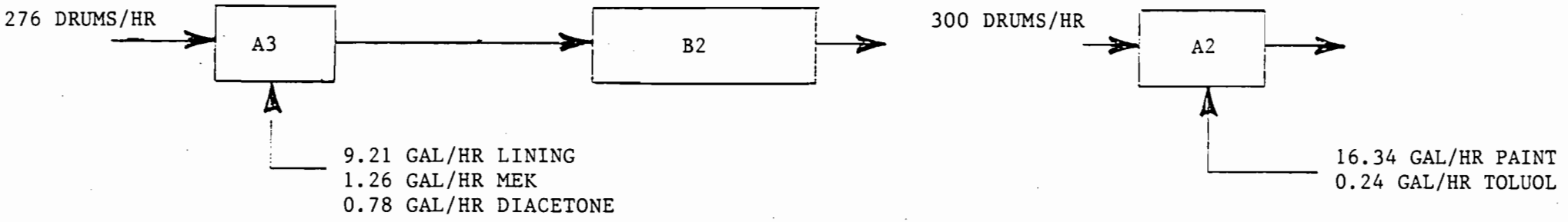
PROCESS WEIGHT DIAGRAM

MAXIMUM HOURLY PRODUCTION (250 TIGHT HEAD DRUMS/HR AND 300 OPEN HEAD DRUMS/HR)

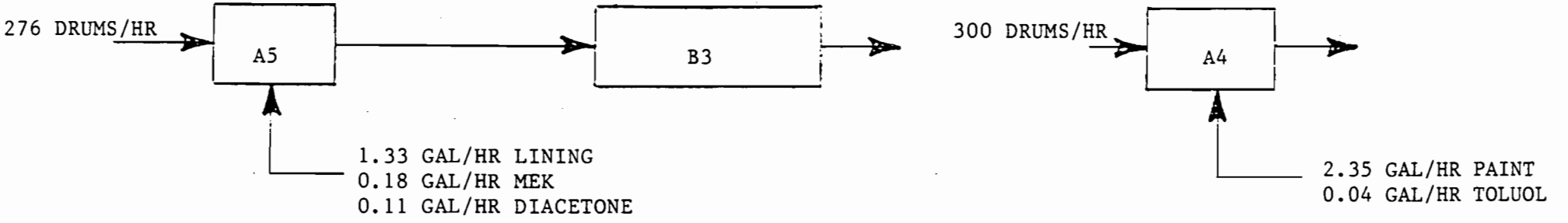
TIGHT HEAD DRUM LINE



OPEN HEAD DRUM LINE



LID LINE



Potential Emissions From Propane Combustion Sources*

Ovens	Max. Rating (BTU/hr)	(BTU/gal)	Propane Consumption (gal/hr)
B1	2.5 X 10^6	91,620	27.30
B2	5.0 X 10^6	91,620	54.60
B3	0.8 X 10^6	91,620	8.73
Afterburner	8.8 x 10^6	91,620	96.05

	Particulates		Nitrogen Oxide		Carbon Monoxide		Volatile Organic (non methane)	
Ovens	Emission Rate ($lb/10^3$ gal)	Emission (lb/hr)	Emission Rate ($lb/10^3$ gal)	Emission (lb/hr)	Emission Rate ($lb/10^3$ gal)	Emission (lb/hr)	Emission Rate ($lb/10^3$ gal)	Emission (lb/hr)
B1	0.9-0.44	0.25-0.12	12.4	0.34	3.1	0.085	0.25	0.007
B2	0.9-0.44	0.05-0.024	12.4	0.68	3.1	0.170	0.25	0.014
B3	0.9-0.44	0.008-0.004	12.4	0.108	3.1	0.027	0.25	0.002
After-burner	0.9-0.44	0.09-0.42	12.4	1.19	3.1	0.300	0.25	0.024

*Emission Factors based on sttached AP-42 Table 1.5-1

Ex14

Potential Emissions From No. 2 Fuel Combustion Sources

Source	Max. Rating (BTU/hr)	(BTU/gal)	Distillate Oil Used (gal/hr)
Drum Reclamation Furnace	9.0×10^6	134,000	67.20

Source	Particulates		Sulfuric Dioxide		Nitrogen Oxide		Carbon Monoxide	
	Emission Rate ($lb/10^3$ gal)	Emission (lb/hr)	Emission Rate ($lb/10^3$ gal)	Emission (lb/hr)	Emission Rate ($lb/10^3$ gal)	Emission (lb/hr)	Emission Rate ($lb/10^3$ gal)	Emission (lb/hr)
Drum Reclamation Furnace	2	0.134	142[S]*	1.91	5	0.34	20	1.34

Source	Volatile Organics (non methane)	
	Emission Rate ($lb/10^3$ gal)	Emission (lb/hr)
Drum Reclamation Furnace	0.20	0.13

*[S] indicates the % weight of the Sulfur in the oil.

Ex 15

Calculation of Annual VOC Emission Rates for a Production Rate of 575,000 Drums Per Year

VOC Loss and Capture Criteria

Whittaker Study

* 60 % of VOC lost prior to bake oven for 90 second air drying time

Assumptions

* 60% VOC lost prior to bake oven
* 100% of VOC are captured by oven (enclosed oven with forced draft fan)
* 95% VOC destruction

VOC Emission Calculations

(Production of 575,000 drums/yr)

(1) Tight Head Drum Line

Spray Booth A1

Bake Oven B1

A1 Emissions = [(14,149)(4.186) + (211)(6.48)](0.60)
= [59,227.7 + 1367.3](0.60)
= (60,695)(0.60)
= 36,357 lb/yr

B1 Emissions = (60,695)(0.40)[1 - (1.00)(0.95)]
= (24,278)(0.05)
= 1,214 lb/yr

Total = 36,357 + 1,214 = 37,571 lb/yr
= 18.79 ton/yr

(2) Open Head Drum Line

Exterior Spray Booth A2

Interior Spray Booth A3

Interior Bake Oven B2

A2 Emissions = [(18,949)(4.186) + (277)(6.48)]
= 79,320.5 + 1,795
= 81,116 lb/yr

A3 Emissions = [(10,715)(4.73) + (1,462)(6.73) +
(905)(7.82)](0.60)
= [50,682 + 9,839 + 7,077](0.60)
= (67,598)(0.60)
= 40,559 lb/yr

B2 Emissions = (67,598)(0.40)[1 - (1.00)(0.95)]
= (27,039)(0.05)
= 1,352 lb/yr

Total = 81,116 + 40,559 + 1,352 = 123,027 lb/yr
= 61.51 ton/yr

(3) Lids Line

Interior Spray Booth A5

Exterior Spray Booth A4

Lid Bake Oven B3

A4 Emissions = (2,722)(4.186) + (41)(6.48)
= 11,394.3 + 265.7
= 11,660 lb/yr

A5 Emissions = [(1,539)(4.73) + (210)(6.73) +
(130)(7.82)](0.60)
= [7,279.5 + 1.413.3 + 1,016.6](0.60)
= (9,709.4)(0.60)
= 5,825.6 lb/yr

B3 Emissions = (9,709.4)(0.40)[1 - (1.00)(0.95)]
= (3,883.8)(0.05)
= 194.2 lb/yr

Total = 11,660 + 5,825.6 + 194.2 = 17,679.8 lb/yr
= 8.84 ton/yr

VOC Emission Summary

(Production of 575,000 drums/yr)

Line	Booth	VOC (lb/yr)
Tight Head Drum Line	A1	36,357
	B1	1,214
	Total	37,571
Open Head Drum Line	A2	81,116
	A3	40,559
	B2	1,352
	Total	123,027
Lids Line	A4	11,660
	A5	5,825.6
	B3	194.2
	Total	17,679.8

Calculation of Allowable VOC Emission Rates for an Annual Production Rate of 575,000 Drums Per Year

Allowable VOC Emissions

(Production of 575,000 drums/yr)

(1) Tight Head Drum Line

VOC's = (14,149 + 211) (3.5) = 50,260 lb/yr

= 25.13 ton/yr

(2) Open Head Drum Line

VOC's = (18,949 + 277)(3.5) +
(10,715 + 1,462 + 905)(4.3)

= 67,291 + 56,253

= 123,544 lb/yr

= 61.77 ton/yr

(3) Lids Line

VOC's = (2,722 + 41)(3.5) + (1,539 + 210 + 130)(4.3)

= 9,671 + 8,080

= 17,751 lb/yr

= 8.88 ton/yr

95.78

Calculation of Maximum Hourly VOC Emission Rates for a Production Rate of 250 Tight Head Drums Per Hour and 300 Open Head Drums Per Hour

VOC Loss and Capture Criteria

Whittaker Study

* 60 % of VOC lost prior to bake oven for 90 second air drying time

Assumptions

* 60% VOC lost prior to bake oven
* 100% of VOC are captured by oven (enclosed oven with forced draft fan)
* 95% VOC destruction

Maximum Hourly VOC Emission Calculations

(Production of 250 Tight Head drums/hr and 300 Open Head drums/hr)

(1) Tight Head Drum Line

Spray Booth A1

Bake Oven B1

A1 Emissions = [(15.57)(4.186) + (0.23)(6.48)](0.60)
= [65.2 + 1.5](0.60)
= (66.7)(0.60)
= 40.02 lb/hr

B1 Emissions = (66.7)(0.40)[1 - (1.00)(0.95)]
= (26.68)(0.05)
= 1.33 lb/hr

Total = 40.02 + 1.33 = 41.35 lb/hr

(2) Open Head Drum Line

Exterior Spray Booth A2

Interior Spray Booth A3

Interior Bake Oven B2

A2 Emissions = [(16.34)(4.186) + (0.24)(6.48)]
= 68.40 + 1.56
= 69.96 lb/hr

A3 Emissions = [(9.21)(4.73) + (1.26)(6.73) +
(0.78)(7.82)](0.60)
= [42.56 + 8.48 + 6.10](0.60)
= (57.14)(0.60)
= 34.28 lb/hr

B2 Emissions = (57.14)(0.40)[1 - (1.00)(0.95)]
= (22.86)(0.05)
= 1.14 lb/hr

Total = 69.96 + 34.28 + 1.14 = 105.38 lb/hr

(3) Lids Line

Interior Spray Booth A5

Exterior Spray Booth A4

Lid Bake Oven B3

A4 Emissions = (2.35)(4.186) + (0.04)(6.48)
= 9.84 + 0.26
= 10.10 lb/hr

A5 Emissions = [(1.33)(4.73) + (0.18)(6.73) +
(0.11)(7.82)](0.60)
= [6.29 + 1.21 + 0.86](0.60)
= (8.36)(0.60)
= 5.02 lb/hr

B3 Emissions = (8.36)(0.40)[1 - (1.00)(0.95)]
= (3.34)(0.05)
= 0.17 lb/hr

Total = 10.10 + 5.02 + 0.17 = 15.29 lb/hr

Maximum Hourly VOC Emission Summary

(Production of 250 Tight Head drums/hr and 300 Open Head drums/hr)

Line	Booth	VOC (lb/hr)
Tight Head Drum Line	A1	40.02
	B1	1.33
	Total	41.35
Open Head Drum Line	A2	69.96
	A3	34.28
	B2	1.14
	Total	105.38
Lids Line	A4	10.10
	A5	5.02
	B3	0.17
	Total	15.29

Calculation of Allowable VOC Emission Rates for a Maximum Hourly Production Rate of 250 Tight Head Drums Per Hour and 300 Open Head Drums Per Hour

Allowable Maximun Hourly VOC Emissions

(Production of 250 Tight Head drums/hr
and 300 Open Head drums/hr)

(1) Tight Head Drum Line

VOC's = (15.57 + 0.23) (3.5) = 55.3 lb/hr

(2) Open Head Drum Line

VOC's = (16.34 + 0.24) (3.5) +
(9.21 + 1.26 + 0.78) (4.3)

= 58.03 + 48.38

= 106.41 lb/hr

(3) Lids Line

VOC's = (2.35 + 0.04)(3.5) + (1.33 + 0.18 + 0.11)(4.3)

= 8.37 + 6.97

= 15.34 lb/hr

VOC Emissions

(Maximum Annual Production of 575,000 drums/year)

Line	Source	Actual (lb/hr)	Actual (ton/yr)	Allowable (ton/yr)
Tight Head Drum Line	A1	18.18	18.18	
	B1	0.61	0.61	
	Total	18.79	18.79	25.13
Open Head Drum Line	A2	40.56	40.56	
	A3	20.28	20.28	
	B2	0.68	0.68	
	Total	61.52	61.52	61.77
Lids Line	A4	5.83	5.83	
	A5	2.91	2.91	
	B3	0.097	0.097	
	Total	7.737	7.737	8.88

VOC Emissions

(Maximum Hourly Production of 250 Tight Head drums/hour and 300 Open Head drums/hour)

Line	Source	Actual (lb/hr)	Actual (ton/yr)	Allowable (ton/yr)
Tight Head Drum Line	A1	40.02	40.02	
	B1	0.61	0.61	
	Total	40.63	40.63	55.30
Open Head Drum Line	A2	69.96	69.96	
	A3	34.28	34.28	
	B2	1.14	1.14	
	Total	105.38	105.38	106.41
Lids Line	A4	10.10	10.10	
	A5	5.02	5.02	
	B3	0.17	0.17	
	Total	15.29	15.29	15.34

EX16

see page 3 of this exhibit

Maximum Actual Annual Emissions Summary (ton/yr)

(575,000 drums/yr)

Source	Particulate	VOC	SO_x	CO	NO_x
Drum Reclamation Furnance	*	*	*	*	*
Baking Ovens[1]					
B1	*	*	*	*	*
B2	*	*	*	*	*
B3	*	*	*	*	*
Paint Spray Booths[2]					
A1	0.125	18.18	none	none	none
A2	0.009	40.56	none	none	none
A3	0.035	20.28	none	none	none
A4	0.060	5.83	none	none	none
A5	0.027	2.91	none	none	none
Afterburner	4.68	1.38	1.19	0.64	2.53
TOTAL	4.901	89.14	1.91	0.64	2.53

*Emissions for these sources included in afterburner emission summary.

[1]Baking oven VOC includes only combustion contribution. Coating operation VOC's included in paint spray booths.

[2]Paint spray booth includes VOC's from baking ovens due to coating operation. See Exhibit 9 for VOC's and Exhibit 12 for particualtes.

Maximum Actual Hourly Emissions Summary (lbs/hr)

(250 Tight Head drums/hr and 300 Open Head drums/hr)

Source	Particulate	VOC	SO_x	CO	NO_x
Drum Reclamation Furnance	*	*	*	*	*
Baking Ovens[1]					
B1	*	*	*	*	*
B2	*	*	*	*	*
B3	*	*	*	*	*
Paint Spray Booths[2]					
A1	0.125	40.02	none	none	none
A2	0.009	69.96	none	none	none
A3	0.035	34.28	none	none	none
A4	0.060	10.10	none	none	none
A5	0.027	5.02	none	none	none
Afterburner	4.68	2.64	1.19	0.64	2.53
TOTAL	4.901	162.02	1.91	0.64	2.53

*Emissions for these sources included in afterburner emission summary.

[1] Baking oven VOC includes only combustion contribution. Coating operation VOC's included in paint spray booths.

[2] Paint spray booth includes VOC's from baking ovens due to coating operation. See Exhibit 9 for VOC's and Exhibit 12 for particualtes.

Maximum Uncontrolled Annual Emissions Summary (ton/yr)

(575,000 drums/year)

Source	Particulate	VOC	SO_x	CO	NO_x
Drum Reclamation Furnance	66.0	0.013	1.19	0.34	1.34
Baking Ovens[1]					
B1	0.012	12.14	neg.	0.085	0.34
B2	0.024	13.52	neg.	0.170	0.68
B3	0.004	1.94	neg.	0.027	0.108
Paint Spray Booths[2]					
A1	2.970	18.18	none	none	none
A2	4.163	40.56	none	none	none
A3	0.830	20.28	none	none	none
A4	1.432	5.83	none	none	none
A5	0.645	2.91	none	none	none
TOTAL	76.08	115.37	1.91	0.62	2.47

[1] Baking oven VOC includes only combustion contribution. Coating operation VOC's included in paint spray booths.

[2] Paint spray booth includes VOC's from baking ovens due to coating operation. See Exhibit 9 for VOC's and Exhibit 12 for particualtes.

Maximum Uncontrolled Hourly Emissions Summary (lb/hr)

(250 Tight Head drums/hr and 300 Open Head drums/hr)

Source	Particulate	VOC	SO_x	CO	NO_x
Drum Reclamation Furnance	66.0	0.013	1.19	0.34	1.34
Baking Ovens[1]					
B1	0.012	26.68	neg.	0.085	0.34
B2	0.024	22.86	neg.	0.170	0.68
B3	0.004	3.34	neg.	0.027	0.108
Paint Spray Booths[2]					
A1	2.970	40.02	none	none	none
A2	4.163	69.96	none	none	none
A3	0.830	34.28	none	none	none
A4	1.432	10.10	none	none	none
A5	0.645	5.02	none	none	none
TOTAL	76.08	212.27	1.91	0.62	2.47

[1] Baking oven VOC includes only combustion contribution. Coating operation VOC's included in paint spray booths.

[2] Paint spray booth includes VOC's from baking ovens due to coating operation. See Exhibit 9 for VOC's and Exhibit 12 for particualtes.

EX17

Emissions Summary

Tight Head Drum Line

Pollutant	Actual Max. (lb/hr)	Actual Annual (ton/yr)	Allowable Max. (lb/hr)	Allowable Annual (ton/yr)
VOC	40.63	18.79	55.30	25.13
Particulate	0.137	0.137	13.63*	13.63*
CO	0.085	0.085	N/A	N/A
SO_2	neg.	neg.	N/A	N/A
NO_x	0.34	0.34	N/A	N/A

* 13.63 lb/hr and 13.63 ton/yr Allowable Particulate Emissions apply to the entire facility.

Emissions Summary

Lids Line

Pollutant	Actual Max. (lb/hr)	Actual Annual (ton/yr)	Allowable Max. (lb/hr)	Allowable Annual (ton/yr)
VOC	15.29	7.737	15.34	8.88
Particulate	0.091	0.091	13.63*	13.63*
CO	0.027	0.027	N/A	N/A
SO_2	neg.	neg.	N/A	N/A
NO_x	0.108	0.108	N/A	N/A

* 13.63 lb/hr and 13.63 ton/yr Allowable Particulate Emissions apply to the entire facility.

Emissions Summary

Open Head Drum Line

Pollutant	Actual Max. (lb/hr)	Actual Annual (ton/yr)	Allowable Max. (lb/hr)	Allowable Annual (ton/yr)
VOC	105.38	61.52	106.41	61.77
Particulate	0.068	0.068	13.63•	13.63•
CO	0.17	0.17	N/A	N/A
SO_2	neg.	neg.	N/A	N/A
NO_x	0.68	0.68	N/A	N/A

permit cl

• 13.63 lb/hr and 13.63 ton/yr Allowable Particulate Emissions apply to the entire facility.

Ex 18

Emissions Summary

Tight Head Drum Line

Pollutant	Uncontrolled Max. (lb/hr)	Uncontrolled Annual (ton/yr)
VOC	66.70	30.32
Particulate	2.982	2.982
CO	0.085	0.085
SO_2	neg.	neg.
NO_x	0.34	0.34

Emissions Summary

Open Head Drum Line

Pollutant	Uncontrolled Max. (lb/hr)	Uncontrolled Annual (ton/yr)
VOC	127.1	74.36
Particulate	5.017	5.017
CO	0.17	0.17
SO_x	neg.	neg.
NO_x	0.68	0.68

Emissions Summary

Lids Line

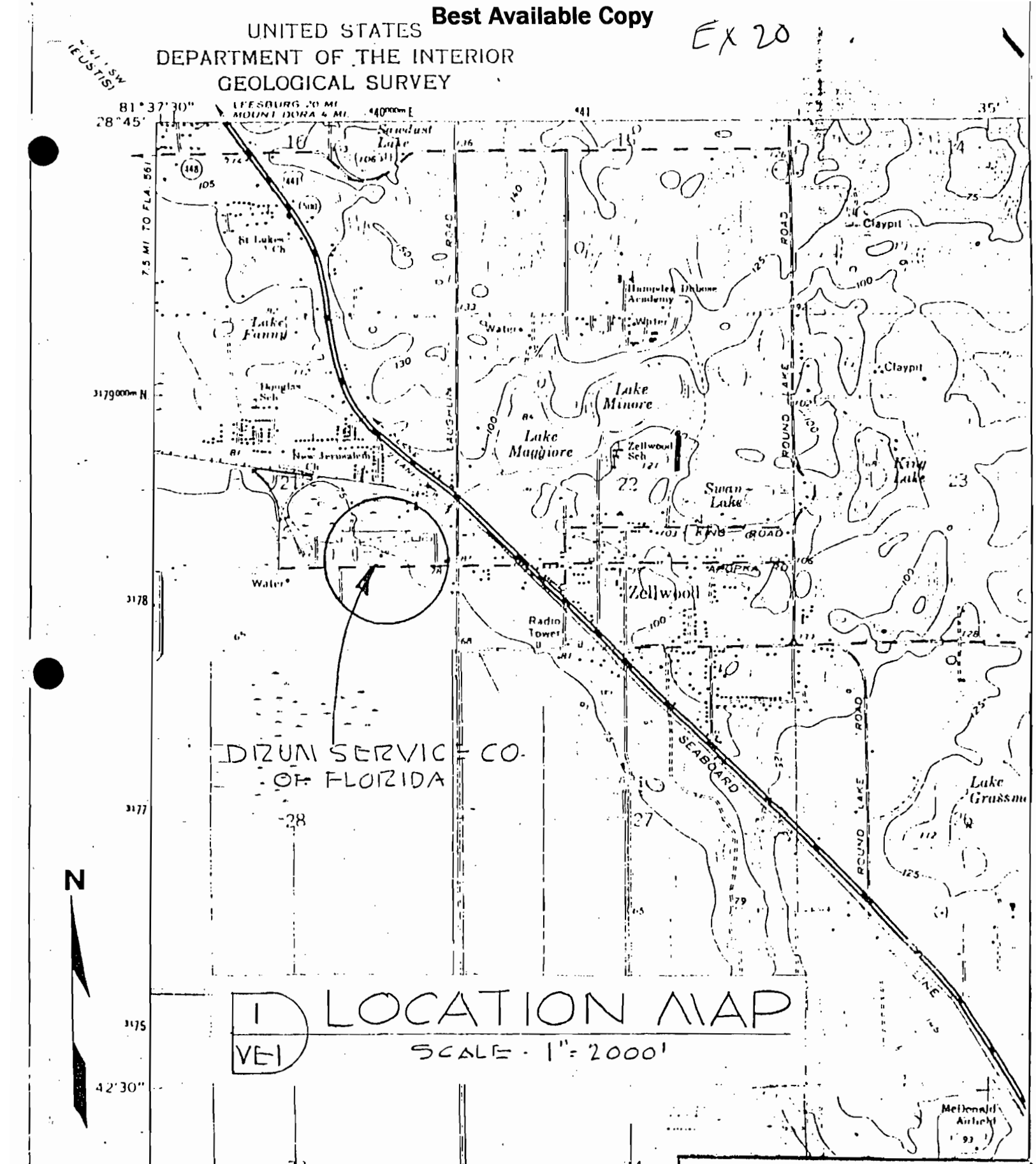
Pollutant	Uncontrolled Max. (lb/hr)	Uncontrolled Annual (ton/yr)
VOC	18.46	10.68
Particulate	2.081	2.081
CO	0.027	0.027
SO_2	neg.	neg.
NO_x	0.108	0.108

EX 19

Emission Stack Geometry and Flow Characteristics

Stack/ Source	Height (ft.)	Diameter (ft.)	ACFM	T (°F)	Velocity (fps)
A1	21	3.0	5000	Ambient	11.78
A2	21	2.29 x 1.54	9600	Ambient	45.37
A3	26	2.83	3148	Ambient	8.34
A4	20	1.5	3250	Ambient	30.65
A5	20	1.5	3250	Ambient	30.65

EX 20



1 LOCATION MAP

VE1

SCALE - 1" = 2000'

SEABURY-BOTTORF ASSOCIATES, INC. CONSULTING ENGINEERS WINTER PARK, FLORIDA 32769		
DIZUM SERVICE CO. OF FLORIDA		
ZELLWOOD, FLORIDA		
DES:	DWN. SBP	110-4-VE1
SCALE —	DATE 11-3-78	DRAWING NO.

DRUM SERVICE CO. OF FLORIDA

EX21

DESIGN FACTORS FOR INCINERATION OF VOC VAPORS FROM SPRAY LINING OF OPEN HEAD DRUMS

OPERATING RATE OF SPRAY BOOTH

Citrus Lining	300 Drums/Hr.
#1 Lining	200 Drums/Hr.

AREA PER DRUM = 19.78 SQ. FT.

COATED AREA PER HOUR

19.78 x 300 = 5934 Sq. Ft./Hr. Citrus Lining

19.78 x 200 = 3956 Sq. Ft./Hr. #1 Lining

THEORETICAL APPLICATION RATE:

5934 ÷ 545 Sq.Ft./Gal. = 9.27 Gal./Hr. Citrus Lining

3956 ÷ 640 Sq.Ft./Gal. = 6.18 Gal./Hr. #1 Lining

ACTUAL APPLICATION RATE (5% OVERSPRAY)

9.27 ÷ .95 = 9.75 Gal./Hr. Citrus Lining

6.18 ÷ .95 = 6.50 Gal./Hr. #1 Lining

VOC = 4.5#/Gal. Citrus Lining

VOC = 4.84#/Gal. #1 Lining

CITRUS LINING VOC/HR. = 9.75 x 4.5 = 43.87#/HR.

#1 LINING VOC/HR. = 6.5 x 4.84 = 31.48#/HR.

AIR FLOW AND INCINERATION MUST BE BASED ON MAXIMUM RATE; USE 43.87 LBS./HR.

PERCENT OF TOTAL EMISSION FROM SPRAY PROCESS (FROM "CONTROLLING POLLUTION FROM THE MANUFACTURING AND COATING OF METAL PRODUCTS", VOL. 1., EPA, 1977):

SPRAY BOOTH	50%
PRE/DRY FLASH-OFF	10%
BAKE OVEN	40%
	100%

Whittaker

Batavia Coatings & Chemicals Division
Whittaker Corporation
1500 Lathem Street
PO Box 428
Batavia, Illinois 60510
312/879-6800 TWX 910-236-0948

November 8, 1984

Mr. Thomas Ernst
Natico Incorporated
7425 Industrial Road
Florence, Kentucky 41042

Dear Mr. Ernst:

This letter is in response to your recent inquiry on the distribution of solvent emissions during drum manufacturing.

As you outlined, the solvents used in paint and lining applications are volatilizing at different stages. Solvents are released at time of application (spray booth), in transit from booth to oven, and in the baking oven.

Laboratory tests were conducted to simulate and monitor solvent loss at the three stations outlined above. Our test results established a maximum loss of solvent in the spray station and conveyor at 60%.

Experimental Setting

1) An electronic single pan balance was used to weigh panels to which our coating had been applied, and checks were made for solvent weight loss.

2) The weight loss of solvent from spray gun to painted part was determined in the following manner. Lining was applied to a standard Q panel via a wire wound rod (direct - no application evaporation) and another panel sprayed (evaporation in application process). For equivalent dry films per square inch the weight difference can be calculated as percent lost in application.

3) The determination of solvent loss in transit (conveyor) was made by allowing the weighed panel to air dry for 90 seconds. The weight difference applied to total weight and then checked against the cured film yielded the percent lost in transit.

4) The final area of solvent loss in the oven is calculated from the weight loss between the 90 second air dry weight and final baked weight.

Experimental Data

Lining 108 T 19 — Panel weight 106 g. after 15 minute bake

A - 1 25% Loss (Evaporation) — 106.4 g. initial wet paint weight (Bar Applied)
.1 g. Loss @ 90 seconds

A - 1 Total .4 g. of solvent

A - 2 25% Loss (Evaporation) 106.9 g. initial wet paint weight (Spray Applied)
.1 g. Loss @ 90 seconds
Baked weight 106.6

A - 2 Total .3 g. solvent loss

B. With .3 g. (A-2) being solvent loss on sprayed paint versus .4 g. (A-1) loss on direct applied, we find a 25% loss in spray gun to painted part.

Calculation of Loss at each station

1) Initial paint 5 pounds per gallon (V.O.C.) at gun.

2) 20% Loss to 80% transfer efficiency.
First loss in spray booth 1 pound.

3) Of the remaining 4 pounds

a. 25% Loss (A above) 1 pound

b. 25% Loss (B above) 1 pound

4) Total Loss before oven

1 pound (2) + 1 pound (3a) + 1 pound (3b) = 3 pounds
Total Solvent Loss = 3 pounds ÷ 5 pounds = 60%

Summary

The lab test closely duplicates you line conditions. The 108 T 19 data is presented in that it reflects the worst case level (highest V.O.C.). Tests were also run with 105 G 4, where the pre oven loss was closer to 50%.

In our opinion, supported by these results, the maximum solvent loss (i.e. transfer efficiency and evaporation) prior to entering the oven is 60%.

If you have any questions or need additional information, please contact me.

Sincerely,

Batavia Coatings Division
WHITTAKER CORPORATION

Edwin F. Poland

Edwin F. Poland
Business Manager
Container and Industrial Coatings

EFP:kg

cc: Mr. Ron Heringer - Natico - Chicago, Illinois
Mr. Al Ters - Natico - Chicago, Illinois
Frank Kenyon
Bill Conway
Bob Woodruff