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CENTRAL FLORIDA PIPELINE CORPORATION
subsidiary of
GATX TERMINALS CORPORATION

1904 Hemlock Avenue
Tampa, FL 33605
813-248-8361
Telecopier: 813-247-2476

April 30, 1991

Mr. C. H. Fancy
Bureau Chief of Air Section
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Central Florida Pipeline Corporation
AC48-188406
Installation of John Zink Flare Unit
Notice of Intent to Issue

Dear Mr. Fancy:

In accordance with the requirements set forth in Section 403.815, F.S. and DER Rule 17-103.150, F.A.C., Central Florida Pipeline Corporation (CFPL) herewith submits proof of publication of the Notice of Intent to issue construction permits for a John Zink Flare Unit at its Taft, Florida terminal.

This notice was published in the April 17, 1991 issue of the Orlando Sentinel. CFPL received proof of publication in a timely manner, however, the proof was attached to the newspaper's invoice and inadvertently sent to the wrong department. CFPL regrets any inconvenience this may have caused.

Sincerely,
CENTRAL FLORIDA PIPELINE CORPORATION

Caren I. Lennie

Caren I. Lennie
Environmental Coordinator

CIL/th
dergatx3

cc: C. Collins, Central District
M. Baig

813-248-2148

GATX APR 24 1991

The Orlando Sentinel

Published Daily
Orlando, Orange County, Florida

ADVERTISING CHARGE $188.24

State of Florida } ss.
COUNTY OF ORANGE

Before the undersigned authority personally appeared Juanita Rosado, who on oath says that she is the Legal Advertising Representative of the Orlando Sentinel, a Daily newspaper published at Orlando, in Orange County, Florida; that the attached copy of advertisement, being a notice of intent in the matter of Permit No. AC 48-188406 in the ______ Court, was published in said newspaper in the issues of April 17, 1991

Affiant further says that the said Orlando Sentinel is a newspaper published at Orlando, in said Orange County, Florida, and that the said newspaper has heretofore been continuously published in said Orange County, Florida, each Week Day and has been entered as second-class mail matter at the post office in Orlando, in said Orange County, Florida for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he/she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Juanita Rosado

Sworn to and subscribed before me this 17th day of April A.D., 19 91

Naomi R. Lucas

~~Notary Public, State of Florida at Large~~ Notary Public
My Commission Expires August 28, 1994
Bonded Thru Brown & Brown, Inc.

Seal

FORM NO. AD-262

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

The Department of Environmental Regulation gives notice of its intent to issue a permit to Central Florida Pipeline Corporation, 100 GATX Drive, Tampa, Florida 33605 to install a John Zink Model GV-LH-8400-2 flare to control VOC emissions being emitted during gasoline and diesel tank truck loading operations from existing loading racks TN6 and C4. Currently the VOC emissions from these racks are being controlled by a carbon adsorption vapor recovery unit. The maximum thoughput from these loading racks is not to exceed 128,000 gallons per hour and 12,000,000 barrels per year. This gasoline bulk terminal is located at 9919 Palm Avenue, Taft, Orange County, Florida. A determination of Best Available Control Technology (BACT) was not required. The Department is issuing this intent to issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department'e proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) pursuant to Section 120.57, Florida Statutes.

The petition shall contain the following information:

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

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

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

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

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

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

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

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

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

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

Department of Environmental Regulation
Cental District
3319 Maguire Blvd., Suite 232
Orlando, Florida 32803-3767

Orange County Environmental Protection Department
2002 E. Michigan Avenue
Orlando, Florida 32806

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

CL-299 Apr.17,1991

GATX

CENTRAL FLORIDA PIPELINE CORPORATION
subsidiary of
GATX TERMINALS CORPORATION

1904 Hemlock Avenue
Tampa, FL 33605
813-248-8361
Telecopier: 813-247-2476

March 22, 1991

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

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

Re: Central Florida Pipeline Corporation
Modification to Existing Air Pollution Source
TN6 and C4 Flare (AC48-188406)

Dear Mr. Fancy:

Central Florida Pipeline Corporation (CFPL), a subsidiary of GATX Terminals Corporation (GATX), as requested by Mirza Baig per telephone conversation on March 19, 1991, is herewith submitting additional attachments in support of GATX's response letter for request of additional information dated December 31, 1990.

The attachments are relative to the compliance test method GATX proposes to use for the proposed installation of a flare unit at the Taft facility, Orange County, Florida.

Please reference the Department's request for additional information letter dated November 15, 1990, specifically Question 8:

8. To meet the 35 mg/l VOC emission standard, the flare should be enclosed so that appropriate compliance testing can be conducted. Please submit a stack drawing showing sampling locations.

   Response: EPA has established an alternative performance standard for flares to ensure compliance with the 35 mg/l standard. The flare testing procedure is contained in 40 CFR 60.18 (copy attached). This alternative method was developed to avoid having to stack test flares using conventual stack testing techniques. Under this method all measurement/samples are taken upstream of the burner prior to combustion. Therefore, enclosure of the flame is not necessary. See Attachment IV for an example of the proposed alternative method. This procedure has been approved and has been used for compliance testing of the flare at our Tampa facility.

CFPL herewith provides a copy of Method 2A (Appendix A), as well as the Specific Conditions for the flare unit (FDER Permit No. AC29-128572) at the Tampa facility and copies of the compliance test results performed on the Tampa flare unit in accordance with to the permit specific conditions.

I trust this additional information completes CFPL's construction permit application. Please contact me at (813) 248-2148 with any questions or concerns.

Sincerely,
CENTRAL FLORIDA PIPELINE CORPORATION

Tom Rigg
Florida Operations Manager

TR:mr
cl-6fan

c: M. Baig, FDER
C. Collins, FDER Central District
D. Nester, Orange County EPD

thermometric fixed points. e.g., ice bath and boiling water (corrected for barometric pressure) may be used. For temperatures above 405° C (761° F), use an NBS-calibrated reference thermocouple-potentiometer system or an alternate reference, subject to the approval of the Administrator.

If, during calibration, the absolute temperatures measured with the gauge being calibrated and the reference gauge agree within 1.5 percent, the temperature data taken in the field shall be considered valid. Otherwise, the pollutant emission test shall either be considered invalid or adjustments (if appropriate) of the test results shall be made, subject to the approval of the Administrator.

4.4 Barometer. Calibrate the barometer used against a mercury barometer.

5. *Calculations*

Carry out calculations, retaining at least one extra decimal figure beyond that of the acquired data. Round off figures after final calculation.

5.1 Nomenclature.

A = Cross-sectional area of stack, m² (ft²).
B_{ws} = Water vapor in the gas stream (from Method 5 or Reference Method 4), proportion by volume.
C_p = Pitot tube coefficient, dimensionless.
K_p = Pitot tube constant,

$$34.97 \frac{\text{m}}{\text{sec}} \left[\frac{(g/g\text{-mole})(\text{mm Hg})}{(°\text{K})(\text{mm H}_2\text{O})}\right]^{1/2}$$

for the metric system and

$$85.49 \frac{\text{ft}}{\text{sec}} \left[\frac{(\text{lb/lb-mole})(\text{in. Hg})}{(°\text{R})(\text{in. H}_2\text{O})}\right]^{1/2}$$

for the English system.

M_d = Molecular weight of stack gas, dry basis (see Section 3.6) g/g-mole (lb/lb-mole).
M_s = Molecular weight of stack gas, wet basis, g/g-mole (lb/lb-mole).

$$= M_d (1 - B_{ws}) + 18.0 B_{ws}$$

Eq. 2-5

P_{bar} = Barometric pressure at measurement site, mm Hg (in. Hg).
P_g = Stack static pressure, mm Hg (in. Hg).
P_s = Absolute stack gas pressure, mm Hg (in. Hg).

$$= P_{bar} + P_g$$

Equation 2-6

P_{std} = Standard absolute pressure, 760 mm Hg (29.92 in. Hg).
Q_{sd} = Dry volumetric stack gas flow rate corrected to standard conditions, dscm/hr (dscf/hr).
t_s = Stack temperature, °C (°F).
T_s = Absolute stack temperature, °K, (°R).

$$= 273 + t_s \text{ for metric}$$

Equation 2-7

$$= 460 + t_s \text{ for English}$$

Equation 2-8

T_{std} = Standard absolute temperature, 293 °K (528° R)
v_s = Average stack gas velocity, m/sec (ft/sec).
Δ_p = Velocity head of stack gas, mm H_2O (in. H_2O).
3,600 = Conversion factor, sec/hr.
18.0 = Molecular weight of water, g/g-mole (lb/lb-mole).

5.2 Average stack gas velocity.

$$v_s = K_p C_p (\sqrt{\Delta p})_{avg} \sqrt{\frac{T_{s(avg)}}{P_s M_s}}$$

Equation 2-9

5.3 Average stack gas dry volumetric flow rate.

$$Q_{sd} = 3{,}600(1 - B_{ws}) v_s A \frac{T_{std}}{T_{s\,(avg)}} \frac{P_s}{P_{std}}$$

Equation 2-10

To convert Q_{sd} from dscm/hr (dscf/hr) to dscm/min (dscf/min), divide Q_{sd} by 60.

[5.3 amended by 52 FR 34639, September 14, 1987]

6. *Bibliography*

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3. Shigehara, R. T., W. F. Todd, and W. S. Smith. Significance of Errors in Stack Sampling Measurements. U.S. Environmental Protection Agency, Research Triangle Park, N.C. (Presented at the Annual Meeting of the Air Pollution Control Association, St. Louis, Mo., June 14-19, 1970.)

4. Standard Method for Sampling Stacks for Particulate Matter. In: 1971 Book of ASTM Standards, Part 23. Philadelphia, Pa. 1971. ASTM Designation D-2928-71.

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6. Fluid Meters—Their Theory and Application. American Society of Mechanical Engineers, New York, N.Y. 1959.

7. ASHRAE Handbook of Fundamentals. 1972. p. 208.

8. Annual Book of ASTM Standards, Part 26. 1974. p. 648.

9. Vollaro, R. F. Guidelines for Type S Pitot Tube Calibration. U.S. Environmental Protection Agency. Research Triangle Park, N.C. (Presented at 1st Annual Meeting, Source Evaluation Society, Dayton, Ohio, September 18, 1975.)

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11. Vollaro, R. F. The Effects of Impact Opening Misalignment on the Value of the Type S Pitot Tube Coefficient. U.S. Environmental Protection Agency, Emission Measurement Branch, Research Triangle Park, N.C. October 1976.

12. Vollaro, R. F. Establishment of a Basline Coefficient Value for Properly Constructed Type S Pitot Tubes. U.S. Environmental Protection Agency, Emission Measurement Branch, Research Triangle Park N.C. November 1976.

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15. Smith, Marvin L. Velocity Calibration of EPA Type Source Sampling Probe. United Technologies Corporation, Pratt and Whitney Aircraft Division, East Hartford, Conn. 1975.

16. Vollaro, R. F. Recommended Procedure for Sample Traverses in Ducts Smaller than 12 Inches in Diameter. U.S. Environmental Protection Agency, Emission Measurement Branch, Research Triangle Park N.C. November 1976.

17. Ower, E. and R. C. Pankhurst. The Measurement of Air Flow, 4th Ed., London, Pergamon Press. 1966.

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METHOD 2A—DIRECT MEASUREMENT OF GAS VOLUME THROUGH PIPES AND SMALL DUCTS

1. *Applicability and Principle.*

1.1 Applicability. This method applies to the measurement of gas flow rates in pipes and small ducts, either in-line or at exhaust positions, within the temperature range of 0 to 50°C.

1.2 Principle. A gas volume meter is used to measure gas volume directly. Temperature and pressure measurements are made to correct the volume to standard conditions.

2. *Apparatus.*

Specifications for the apparatus are given below. Any other apparatus that has been demonstrated (subject to approval of the Administrator) to be capable of meeting the specifications will be considered acceptable.

2.1 Gas Volume Meter. A positive displacement meter, turbine meter, or other direct volume measuring device capable of measuring volume to within 2 percent. The meter shall be equipped with a temperature gauge (± 2 percent of the minimum absolute temperature) and a pressure gauge (±2.5 mm Hg). The manufacturer's recommended capacity of the meter shall be sufficient for the expected maximum and minimum flow rates at the sampling conditions. Temperature, pressure, corrosive characteristics, and pipe size are factors necessary to consider in choosing a suitable gas meter.

[2.1 amended by 52 FR 34639, September 14, 1987]

2.2 Barometer. A mercury, aneroid, or other barometer capable of measuring atmospheric pressure to within 2.5 mm Hg. In many cases, the barometric reading may be obtained from a nearby national weather service station, in which case the station value (which is the absolute barometric pressure) shall be requested, and an adjustment for elevation differences between the weather station and the sampling point shall be applied at a rate of minus 2.5 mm Hg per 30-meter elevation increase, or vice-versa for elevation decrease.

2.3 Stopwatch. Capable of measurement to within 1 second.

3. *Procedure.*

3.1 Installation. As there are numerous types of pipes and small ducts that may be subject to volume measurement, it would be difficult to describe all possible installation schemes. In general, flange fittings should be used for all connections wherever possible. Gaskets or other seal materials should be used to assure leak-tight connections. The volume meter should be located so as to avoid severe vibrations and other factors that may affect the meter calibration.

3.2 Leak Test. A volume meter installed at a location under positive pressure may be leak-checked at the meter connections by using a liquid leak detector solution containing a surfactant. Apply a small amount of the solution to the connections. If a leak exists, bubbles will form, and the leak must be corrected.

A volume meter installed at a location under negative pressure is very difficult to test for leaks without blocking flow at the inlet of the line and watching for meter movement. If this procedure is not possible, visually check all connections and assure tight seals.

3.3 Volume Measurement.

3.3.1 For sources with continuous, steady emission flow rates, record the initial meter volume reading, meter temperature(s), meter pressure, and start the stopwatch. Throughout the test period, record the meter temperature(s) and pressure so that average values can be determined. At the end of the test, stop the timer and record the elapsed time, the final volume reading, meter temperature(s), and pressure. Record the barometric pressure at the beginning and end of the test run. Record the data on a table similar to Figure 2A-1.

Plant ______________________________

Date ______________ Run Number ______________

Sample Location ______________________________

Barometric Pressure mm Hg Start ________ Finish ________

Operators ______________________________

Meter Number ______________ Meter Calibration Coefficient ________

Last Date Calibrated ______________

Time Run/clock	Volume Meter reading	Static pressure mm Hg	Temperature °C	 °K
Average				

Figure 2A-1. Volume flow rate measurement data.

[Appendix A, Method 2A]

3.3.2 For sources with noncontinuous, non-steady emission flow rates, use the procedure in 3.3.1 with the addition of the following: Record all the meter parameters and the start and stop times corresponding to each process cyclical or noncontinuous event.

4. *Calibration.*

4.1 Volume Meter. The volume meter is calibrated against a standard reference meter prior to its initial use in the field. The reference meter is a spirometer or liquid displacement meter with a capacity consistent with that of the test meter.

Alternatively, a calibrated, standard pitot may be used as the reference meter in conjunction with a wind tunnel assembly. Attach the test meter to the wind tunnel so that the total flow passes through the test meter. For each calibration run, conduct a 4-point traverse along one stack diameter at a position at least eight diameters of straight tunnel downstream and two diameters upstream of any bend, inlet, or air mover. Determine the traverse point locations as specified in Method 1. Calculate the reference volume using the velocity values following the procedure in Method 2, the wind tunnel cross-sectional area, and the run time.

[4.1 amended by 55 FR 47472, November 14, 1990]

Set up the test meter in a configuration similar to that used in the field installation ...., in relation to the flow moving device). Connect the temperature and pressure gauges as they are to be used in the field. Connect the reference meter at the inlet of the flow line, if appropriate for the meter, and begin gas flow through the system to condition the meters. During this conditioning operation, check the system for leaks.

The calibration shall be run over at least three different flow rates. The calibration flow rates shall be about 0.3, 0.6, and 0.9 times the test meter's rated maximum flow rate.

For each calibration run, the data to be collected include: reference meter initial and final volume readings, the test meter initial and final volume reading, meter average temperature and pressure, barometric pressure, and run time. Repeat the runs at each flow rate at least three times.

Calculate the test meter calibration coefficient, Y_m,' for each run as follows:

$$Y_m = \frac{(V_{rf}-V_{ri})(t_r+273)}{(V_{mf}-V_{mi})(t_m+273)} \quad \frac{P_b}{(P_b+P_g)}$$

Eq. 2A-1

Where:

Y_m=Test volume meter calibration coefficient, dimensionless.

V_r=Reference meter volume reading, m^3.

V_m=Test meter volume reading, m^3.

t_r=Reference meter average temperature, °C.

t_m=Test meter average temperature, °C.

P_b=Barometric pressure, mm Hg.

P_g=Test meter average static pressure, mm Hg.

f=Final reading for run.

i=Initial reading for run.

Compare the three Y_m values at each of the flow rates tested and determine the maximum and minimum values. The difference between the maximum and minimum values at each flow rate should be no greater than 0.030. Extra runs may be required to complete this requirement. If this specification cannot be met in six successive runs, the test meter it not suitable for use. In addition, the meter coefficients should be between 0.95 and 1.05. If these specifications are met at all the flow rates, average all the Y_m values from runs meeting the specifications to obtain an average meter calibration coefficient, Y_m.

The procedure above shall be performed at least once for each volume meter. Thereafter, an abbreviated calibration check shall be completed following each field test. The calibration of the volume meter shall be checked by performing three calibration runs at a single, intermediate flow rate (based on the previous field test) with the meter pressure set at the average value encountered in the field test. Calculate the average value of the calibration factor. If the calibration has changed by more than 5 percent, recalibrate the meter over the full range of flow as described above.

NOTE.—If the volume meter calibration coefficient values obtained before and after a test series differ by more than 5 percent, the test series shall either be voided, or calculations for the test series shall be performed using whichever meter coefficient value (i.e., before or after) gives the greater value of pollutant emission rate.

4.2 Temperature Gauge. After each test series, check the temperature gauge at ambient temperature. Use an American Society for Testing and Materials (ASTM) mercury-in-glass reference thermometer, or equivalent, as a reference. If the gauge being checked agrees within 2 percent (absolute temperature) of the reference, the temperature data collected in the field shall be considered valid. Otherwise, the test data shall be considered invalid or adjustments of the test results shall be made, subject to the approval of the Administrator.

4.3 Barometer. Calibrate the barometer used against a mercury barometer prior to the field test.

5. *Calculations.*

Carry out the calculations, retaining at least one extra decimal figure beyond that of the acquired data. Round off figures after the final calculation.

5.1 Nomenclature

P_b=Barometric pressure, mm Hg.

P_g=Average static pressure in volume meter, mm Hg.

Q_s=Gas flow rate, m^3/min, standard conditions.

T_m=Average absolute meter temperature, °K.

V_m=Meter volume reading, m^3.

Y_m=Average meter calibration coefficient, dimensionless.

f=Final reading for test period.

i=Initial reading for test period.

s=Standard conditions, 20° C and 760 mm Hg.

θ=Elapsed test period time, min.

5.2 Volume.

$$V_{ms} = 0.3853\ Y_m\ (V_{mf}-V_{mi})\frac{(P_b+P_g)}{T_m}$$

Eq. 2A-2

5.3 Gas Flow Rate.

$$Q_s = \frac{V_{ms}}{\theta}$$

Eq. 2A-3

6. *Bibliography.*

[Redesignates 6.1-6.3 as 1.-3. by 47472, November 14, 1990]

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3. Westlin, P.R. and R.T. Shigehara. Procedure for Calibrating and Using Dry Gas Volume Meters as Calibration Standards. Source Evaluation Society Newsletter. Vol. 3, No. 1. February 1978.

METHOD 2B—DETERMINATION OF EXHAUST GAS VOLUME FLOW RATE FROM GASOLINE VAPOR INCINERATORS

1. *Applicability and principle*

1.1 Applicability. This method applies to the measurement of exhaust volume flow rate from incinerators that process gasoline vapors consisting primarily of alkanes, alkenes, and/or arenes (aromatic hydrocarbons). It is assumed that the amount of auxiliary fuel is negligible.

1.2 Principle. The incinerator exhaust flow rate is determined by carbon balance. Organic carbon concentration and volume flow rate are measured at the incinerator inlet. Organic carbon, carbon dioxide (CO_2), and carbon monoxide (CO) concentrations are measured at the outlet. Then the ratio of total carbon at the incinerator inlet and outlet is multiplied by the inlet volume to determine the exhaust volume and volume flow rate.

2. *Apparatus.*

2.1 Volume Meter. Equipment described in Method 2A.

2.2 Organic Analyzers (2). Equipment described in Method 25A or 25B.

2.3 CO Analyzer. Equipment described in Method 10.

(50) ASTM D1835-86, Standard Specification for Liquefied Petroleum (LP) Gases, IBR approved for §§60.41b; 60.41c.

[60.17(a)(50) amended by 55 FR 37683, September 12, 1990]

(51) ASTM D3286-85, Standard Test Method for Gross Calorific Value of Coal and Coke by the Isothermal-Jacket Bomb Calorimeter, IBR approved for Appendix A to Part 60, Method 19.

(52) ASTM D4057-81, Standard Practice for Manual Sampling of Petroleum and Petroleum Products, IBR approved for Appdenix A to Part 60, Method 19.

(53) ASTM D4239-85, Standard Test Methods for Sulfur in the Analysis Sample of Coal and Coke Using High Temperature Tube Furnace Combustion Methods, IBR approved for Appendix A to Part 60, Method 19.

[60.17 (a)(54) and (55) added by 53 FR 5872, February 26, 1988]

(54) ASTM D2016-74 (Reapproved 1983), Standard Test Methods for Moisture Content of Wood • • • for Appendix A, Method 28.

(55) ASTM D4442-84, Standard Test Methods for Direct Moisture Content Measurement in Wood and Wood-base ...erials • • • for Appendix A, Method 28.

[60.17(a)(56) - (59) added by 54 FR 34026, August 17, 1989; amended by 55 FR 40175, October 2, 1990]

(56) ASTM D129-64 (Reapproved 1978), Standard Test Method for Sulfur in Petroleum Products (General Bomb Method), IBR approved August 17, 1989 for §60.106(j)(2).

(57) ASTM D1552-83, Standard Test Method for Sulfur in Petroleum Products (High-Temperature Method), IBR approved August 17, 1989, for §60.106(j)(2).

(58) ASTM D2622-87, Standard Test Method for Sulfur in Petroleum Products by X-Ray Spectrometry, IBR approved August 17, 1989, for §60.106(j)(2).

(59) ASTM D1266-87, Standard Test Method for Sulfur in Petroleum Products (Lamp Method), IBR approved August 17, 1989, for §60.106(j)(2).

(b) The following material is available for purchase from the Association of Official Analytical Chemists, 1111 North 19th Street, Suite 210, Arlington, Virginia 22209.

(1) AOAC Method 9, Official Methods of Analysis of the Association of Official Analytical Chemists, 11th edition, 1970, pp. 11-12, IBR approved January 27, 1983 for §§60.204(d)(2), 60.214(d)(2), 60.224(d)(2), 60.234(d)(2), 60.244(f)(2).

(c) The following material is available for purchase from the American Petroleum Institute, 1220 L Street, N.W., Washington, D.C. 20037.

[60.17(c) introductory paragraph and (1) amended by 52 FR 11428, April 8, 1987]

(1) API Publication 2517, Evaporation Loss from External Floating Roof Tanks, Second Edition, February 1980, IBR approved January 27, 1983 for §§60.111(i), 60.111a(f), 60.111a(f)(1) and 60.116b (e)(2)(i).

(d) The following material is available for purchase from the Technical Association of the Pulp and Paper Industry (TAPPI), Dunwoody Park, Atlanta, Georgia 30341.

(1) TAPPI Method T624 os-68, IBR approved January 27, 1983 for §60.285(d)(4).

(e) The following material is available for purchase from the Water Pollution Control Federation (WPCF), 2626 Pennsylvania Avenue NW., Washington, D.C. 20037.

(1) Method 209A, Total Residue Dried at 103-105 °C, in *Standard Methods for the Examination of Water and Wastewater*, 15th Edition, 1980, IBR approved February 25, 1985 for §60.683(b).

(2) [Reserved]

[60.17(e) added by 50 FR 7699, February 25, 1985]

[60.17 (f) and (g) added by 53 FR 5872, February 26, 1988]

(f) The following material is available for purchase from the following address: Underwriter's Laboratories, Inc. (UL), 333 Pfingsten Road, Northbrook, Illinois 60062.

(1) UL 103, Sixth Edition revised as of September 3, 1986, Standard for Chimneys, Factory-built, Residential Type and Building Heating Appliance.

(g) The following material is available for purchase from the following address: West Coast Lumber Inspection Bureau, 6980 SW. Barnes Road, Portland, Oregon 97223.

(1) West Coast Lumber Standard Grading Rules No. 16, pages 5-21 and 90 and 91, September 3, 1970, revised 1984.

(h) The ASME *Power Test Codes* 4.1, 8 August 1972, is available for purchase from the following address: The American Society of Mechanical Engineers, 22 Law Drive, Box 2350, Fairfield, New Jersey 07007-2350.

[60.17(h) added by 54 FR 51824, December 18, 1989]

§60.18 General control device requirements.

[60.18 added by 51 FR 2701, January 21, 1986]

(a) *Introduction.* This section contains requirements for control devices used to comply with applicable subparts of Part 60 and Part 61. The requirements are placed here for administrative convenience and only apply to facilities covered by subparts referring to this section.

(b) *Flares.* Paragraphs (c) through (f) apply to flares.

(c)(1) Flares shall be designed for and operated with no visible emissions as determined by the methods specified in paragraph (f), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

(2) Flares shall be operated with a flame present at all times, as determined by the methods specified in paragraph (f).

(3) Flares shall be used only with the net heating value of the gas being combusted being 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value

of the gas being combusted being 7.45 MJ/scm (200 Btu/scf) or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the methods specified in paragraph (f).

(4)(i) Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4), less than 18.3 m/sec (60 ft/sec), except as provided in paragraph (b)(4)(ii) and (iii).

(ii) Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4), equal to or greater than 18.3 m/sec (60 ft/sec) but less than 122 m/sec (400 ft/sec) are allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf).

(iii) Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4), less than the velocity, V_{max1} as determined by the method specified in paragraph (f)(5), and less than 122 m/sec (400 ft/sec) are allowed.

(5) Air-assisted flares shall be designed and operated with an exist velocity less than the velocity. V_{max} as determined by the method specified in paragraph (f)(6).

(6) Flares used to comply with this section shall be steam-assisted, air-assisted, or nonassisted.

(d) Owners or operators of flares used to comply with the provisions of this subpart shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs. Applicable subparts will provide provisions stating how owners or operators of flares shall monitor these control devices.

(e) Flares used to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

(f)(1) Reference Method 22 shall be used to determine the compliance of flares with the visible emission provisions of this subpart. The observation period is 2 hours and shall be used according to Method 22.

(2) The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

(3) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K \sum_{i=1}^{n} C_i H_i$$

where:

H_T=Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 °C;

$$K = \text{Constant, } 1.740 \times 10^{-7} \left(\frac{1}{ppm}\right) \left(\frac{g\ mole}{scm}\right) \left(\frac{MJ}{kcal}\right)$$

where the standard temperature for $\left(\frac{g\ mole}{scm}\right)$ is 20°C;

C_i=Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77 (Incorporated by reference as specified in § 60.17); and

H_i=Net heat of combustion of sample component i, kcal/g mole at 25 °C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382-76 (incorporated by reference as specified in § 60.17) if published values are not available or cannot be calculated.

(4) The actual exist velocity of a flare shall be determined by dividing the volumetric flowrate (in units of standard temperature and pressure), as determined by Reference Methods 2, 2A, 2C, or 2D as appropriate; by the unobstructed (free) cross sectional area of the flare tip.

(5) The maximum permitted velocity, V_{max}, for flares complying with paragraph (c)(4)(iii) shall be determined by the following equation.

$$\text{Log}_{10}(V_{max})=(H_T+28.8)/31.7$$

V_{max}=Maximum permitted velocity, M/sec
28.8=Constant
31.7=Constant
H_T=The net heating value as determined in paragraph (f)(3).

(6) The maximum permitted velocity, V_{max}, for air-assisted flares shall be determined by the following equation.

$$V_{max}=8.706+0.7084\ (H_T)$$

V_{max}=Maximum permitted velocity, m/sec
8.706=Constant
0.7084=Constant
H_T=The net heating value as determined in paragraph (f)(3).

Subpart B—Adoption and Submittal of State Plans for Designated Facilities

§ 60.20 Applicability.

The provisions of this subpart apply to States upon publication of a final guideline document under § 60.22(a).

§ 60.21 Definitions.

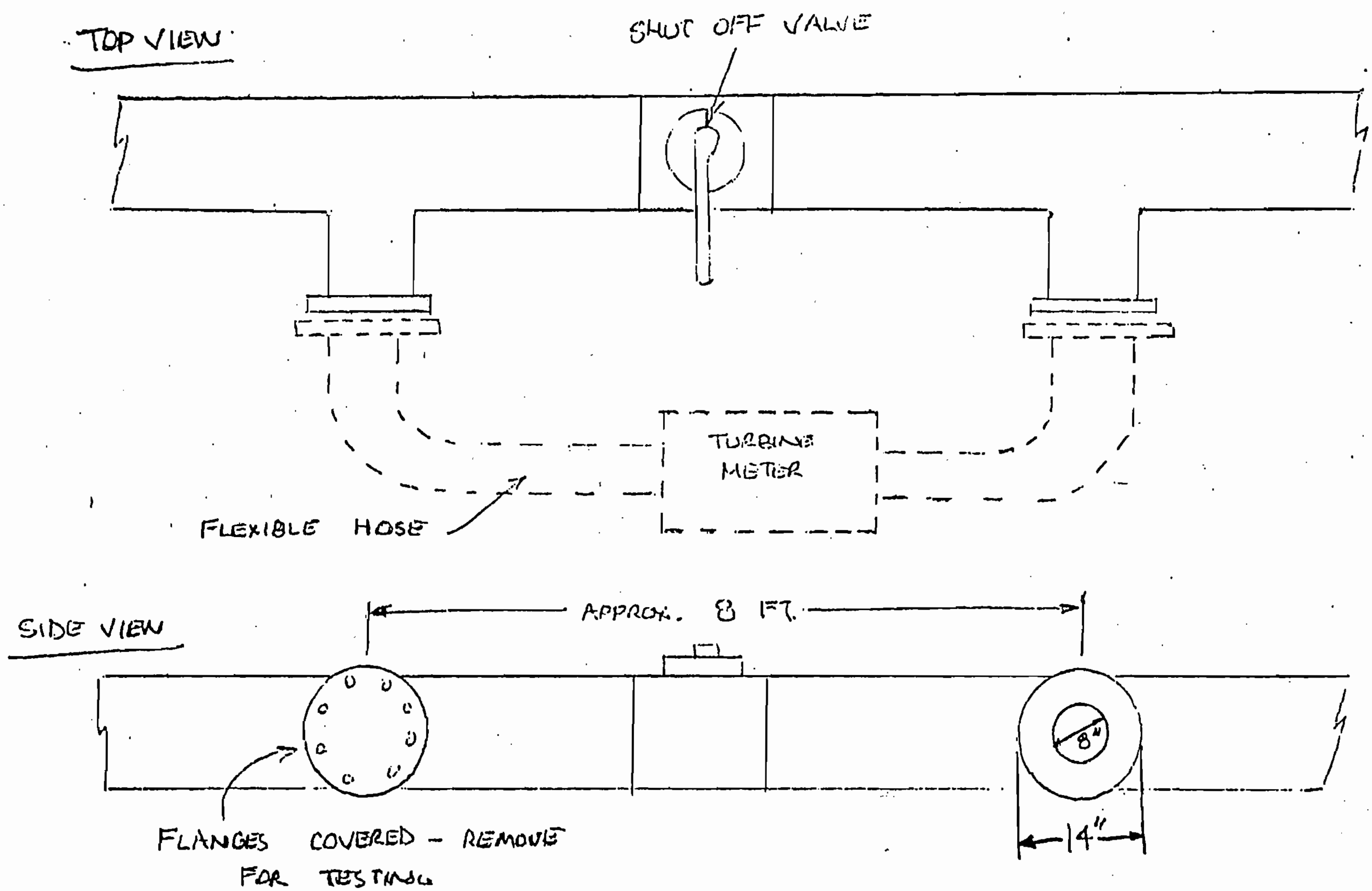
Terms used but not defined in this subpart shall have the meaning given them in the Act and in Subpart A:

(a) "Designated pollutant" means any air pollutant, emissions of which are subject to a standard of performance for new stationary sources but for which air quality criteria have not been issued, and which is not included on a list published under section 108(a) or section 112(b)(1)(A) of the Act.

(b) "Designated facility" means any existing facility (see § 60.2(aa)) which emits a designated pollutant and which would be subject to a standard of performance for that pollutant if the existing facility were an affected facility (see § 60.2(e)).

(c) "Plan" means a plan under section 111(d) of the Act which establishes emission standards for designated pollutants from designated facilities and provides for the implementation and enforcement of such emission standards.

(d) "Applicable plan" means the plan, or most recent revision thereof, which has been approved under § 60.27(b) or promulgated under § 60.27(d).



ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

CONSULTING ENGINEERS and ENVIRONMENTAL SCIENTISTS

TURBINE METER BY-PASS SYSTEM FOR FLARE TESTING

1-25-88

CFF

VOC EMISSIONS TEST REPORT
BULK GASOLINE TERMINAL
GATX TERMINALS CORPORATION
TAMPA, FLORIDA
AUGUST 23, 1990

Prepared For:

GATX TERMINALS CORPORATION
100 GATX DRIVE
TAMPA, FLORIDA 33619

Prepared By:

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.
5119 NORTH FLORIDA AVENUE
TAMPA, FLORIDA 33603

SEPTEMBER 17, 1990

TABLE OF CONTENTS

I. SUMMARY

On August 23, 1990 Environmental Engineering Consultants, Inc. performed the annual compliance test on the truck loading rack at GATX Terminals Corporation's Tampa facility. VOC emissions were controlled by a John Zink Company Model GV-LH-8400-2 open flame flare unit.

The test was conducted by Carl Fink, Byron Burrows, and John Wallace of Environmental Engineering Consultants, Inc. with the assistance and cooperation of the employees of GATX Terminals Corporation.

A summary of the test results is shown in Table 1. The average heating value for the gas burned was 700 BTU/scf.

The maximum 5 minute average velocity at the flare tip was 9.7 ft/sec. which was less than the maximum allowable velocity of 89.4 ft/sec.

A two hour visible emissions test was performed using EPA Method 22 procedures. No emissions were observed.

The vapor collection system pressure, measured at the truck rack vapor recovery line, was less than 18 inches of water for all trucks loaded during the test. The maximum pressure recorded was 11 inches of water.

All emission rates were determined according to the procedures prescribed by the Florida Department of Environmental Regulation and the tested source was found to be in compliance with applicable emissions standards.

I hereby certify that these results are true and correct and were obtained by the procedures and methods described herein.

Respectfully Submitted;

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

Carl F. Fink
Senior Environmental Engineer

TABLE 1

VAPOR FLARE RESULTS

PLANT: GATX TERMINALS INC.
TAMPA TERMINAL

DATE: AUGUST 23, 1990

AVERAGE HEAT VALUE (HT) (BTU/SCF)	MAXIMUM ALLOWABLE ORIFICE VELOCITY (ft/sec)*	MAXIMUM ORIFICE VELOCITY (ft/sec)**
700	89.4	9.7

* Vmax = 28.75 + 0.0867 (HT)

From EPA Guidance: Use of Flares at Bulk Gasoline Terminals, June 21, 1985.

** Based on data recorded at 5 minute intervals of test.

TABLE 2

TEST SUMMATION

VAPOR FLARE

PLANT: GATX TERMINALS INC. DATE: AUGUST 23, 1990

Average Barometric Pressure;	30.03 in. Hg
Average Meter Temperature;	30.7 C
Average Static Pressure:	3.9 in. H2O
Total Volume Exhausted @ 20 C 29.92 in. Hg:	27643 cu. ft.
Total Gasoline Dispensed	156936 gallons
Total Product Dispensed	224996 gallons
Average Heat Value:	700 BTU/scf
Maximum Allowable Orifice Velocity:	89.4 ft/sec
Maximum Orifice Velocity:	9.7 ft/sec

TABLE 3

TEST SUMMATION

LEAK CHECKS AT LOADING RACKS

PLANT: GATX TERMINALS INC.
TAMPA TERMINAL

DATE: AUGUST 23, 1990

Loading Positions	5
Total Trucks Checked	22
No. with Leaks	5
No. with no Leaks	17

II. SOURCE DESCRIPTION

GATX Terminals Corporation's Tampa facility, which is located on Hooker's Point in Tampa, is comprised of both petroleum liquid storage and a bulk gasoline terminal. The terminal has four (4) loading positions (one pumping jet fuel only) each equipped with a vapor recovery line. During loading of the trucks, which are submerged filled using the bottom loading method, the displaced vapors are routed to a surge tank and then to the vapor flare.

The vapor flare manufactured by the John Zink Company, is an air-assisted type with a two stage burner unit. Vapors from the loading racks pass through a hydraulic seal and a flame arrestor prior to the combustion area. The burner automatically switches to the dual stage mode with a greater orifice area when the delivery line back pressure exceeds a pre-set value.

An automatic pilot light fueled by propane is monitored ensuring that loading during flare operation cannot be accomplished unless a flame is present.

III. METHODS AND PROCEDURES

The sampling and analytical procedures used for determining compliance are those prescribed by the Florida Department of Environmental Regulation. The specific procedures are described in 40 CFR 60.503 and an EPA Guidance titled "Use of Flares at Gasoline Terminals" dated June 21, 1985. These procedures utilize EPA Methods 2A, 18 and 22. In addition, trucks being loaded were monitored for leaks using EPA Method 21.

Sampling time was at least six hours during which a minumum of 80,000 gallons of gasoline were loaded into the tank trucks. Compliance was determined using the velocity/heating value relationship described in the EPA Guidance listed above.

The velocity of vapors at the flare burner tips was determined by measuring the total vapor volume with dual six inch Rockwell turbine meters and dividing by the total orifice area as reported by the manufacturer. Temperature and static pressure measurements were made at the inlet of the meter for correction of the volume to standard conditions. Throughout the testing period, volume system measurements were recorded at five minute intervals.

Heating value of the vapor delivered to the flare was determined from integrated bag samples collected through a port at the exit of the water seal. The sample was pumped into Tedlar gas sample bags with a teflon lined diaphragm pump at a rate controlled by a stainless steel valve on an indicating flowmeter. All gas sample lines were teflon with stainless steel fittings.

Gas flowrate to the flare was monitored using a standard pitot tube placed in the inlet of the turbine meters and attached to a magnehelic. Sample flowrate was adjusted to be proportional with the gas flowrate to the flare.

The heating value of the collected gas samples was determined using EPA Method 18 procedures by Pace Laboratories in Tampa, Florida under the direction of Dr. James O'Neal. The results were reported as BTU/scf.

For each five minute interval the standard volume calculated was divided by the total flare orifice area to obtain average velocities for each interval. The maximum permitted velocities were calculated from the heating value results using the EPA Alternate Criteria Method and compared to the actual maximum velocity to determine compliance.

Prior to testing the vapor flare, terminal vapor recovery lines and testing ductwork were checked for leaks with a combustible gas detector. If a leak was found, it was repaired before testing. During the test, each tank truck was tested for leaks. Dome and boot leaks, which were greater than or equal to 10,000 ppm methane, were documented on field sheets.

The combustible gas detector used to test for leaks was a Gastech Model 1238. The instrument was calibrated with zero air and 2.2% propane calibration gas and checked with 10,000 ppm methane calibration gas. Probe diameter was 1/4 inch. During testing, the probe inlet was 2.5 cm from the potential leak source and probe movement was 2.0 cm per second. If there was any meter deflection at a potential leak source, the probe was moved to locate the point of highest meter response.

APPENDIX A

TEST DATA

TIME	VOLUME READING #1	#2	PRESSURE "H2O	DUCT TEMPERATURE	BAROMETRIC PRESSURE
0 (0700)	0	577230			30.00
5	140	577370	4.6	28.2	
10	900	578210	4.8	28.5	
15	1470	578870	7.2	28.4	
20	1800	579310	7.5	28.4	
25	1880	579350	2.5	28.3	
30	2360	579850	4.5	28.8	
35	2500	580080	6.4	28.6	
40	2850	580450	6.4	28.5	
45	2860	580460	0.0	28.9	
50	2860	580460	0.0	28.9	
55	2860	580460	0.0	29.0	
60	2860	580460	0.0	29.0	
65	3060	580690	5.0	29.1	
70	3200	580840	5.2	29.4	
75	3300	580940	5.2	29.5	
80	3520	581180	5.2	29.5	
85	3710	581400	5.1	29.5	
90	3910	581610	5.0	29.9	
95	3950	581660	0.0	30.8	
100	3950	581660	0.0	30.8	
105	3950	581660	0.0	30.6	
110	3950	581660	0.0	30.6	
115	4030	581750	4.0	31.2	
120	4210	581930	4.0	31.5	
TOTAL					
AVERAGE					

PLANT GATX

LOCATION TAMPA

DATE 8-23-90

OPERATOR(S) BURROWS/WALLACE

VOC TESTING DATA

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

CONSULTING ENGINEERS, ENVIRONMENTAL SCIENTISTS

TIME	VOLUME READING		PRESSURE	DUCT TEMPERATURE	BAROMETRIC PRESSURE
125	4660	582350	5.0	31.5	30.03
130	5010	582800	7.8	31.5	
135	5470	583290	8.2	31.3	
140	5600	583430	6.0	31.9	
145	5770	583630	8.5	31.6	
150	6190	584070	5.0	31.9	
155	6370	584260	4.0	32.4	
160	6380	584270	0.0	34.0	
165	6530	584430	3.5	32.9	
170	6540	584440	0.0	33.6	
175	6610	584520	5.0	34.1	
180	6660	584560	2.0	35.5	
185	6710	584620	6.0	34.7	
190	7110	585060	8.0	32.5	
195	7290	585240	5.0	32.6	
200	7310	585270	1.0	33.0	
205	7480	585450	5.0	32.7	
210	7680	585670	6.0	32.8	
215	7790	585800	5.0	32.8	
220	7790	585800	0.0	32.8	
225	7990	586040	BB 4.0	32.5	
230	8100	586130	6.0	32.8	
235	8550	586630	6.5	32.7	
240	8710	586810	5.0	33.7	
TOTAL					
AVERAGE					

PLANT GATX TERMINALS INC.

LOCATION TAMPA, FL

DATE 8-23-90

OPERATOR(S) BURROWS/WALLACE

VOC TESTING DATA

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

CONSULTING ENGINEERS, ENVIRONMENTAL SCIENTISTS

TIME	VOLUME READING		PRESSURE	DUCT TEMPERATURE	BAROMETRIC PRESSURE
245	9300	587470	6.4	32.2	30.05
250	9570	587710	5.5	32.3	
255	9890	588070	5.0	32.6	
260	10080	588270	5.0	32.7	
265	10220	588420	3.0	32.6	
270	10340	588550	5.0	32.4	
275	10670	588910	5.0	31.7	
280	10920	589190	6.0	31.5	
285	11250	589540	6.4	31.3	
290	11470	589790	6.2	31.4	
295	11880	590240	5.8	31.1	
300	12150	590530	5.2	31.1	
305	12740	591060	3.0	30.3	
310	12990	591340	5.0	29.8	
315	13080	591440	3.0	28.9	
320	13080	591440	0.0	28.2	
325	13080	591440	0.0	27.4	
330	13080	591440	0.0	26.9	
335	13080	591440	0.0	26.9	
340	13080	591440	0.0	26.8	
345	13080	591440	0.0	26.7	
350	13080	591440	0.0	26.7	
355	13260	591640	5.0	27.8	
360	13510	591900	3.2	27.7	
TOTAL					
AVERAGE					

PLANT GATX TERMINALS INC

LOCATION TAMPA FL

DATE 8-23-90

OPERATOR(S) Burrows/Wallace

VOC TESTING DATA

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

CONSULTING ENGINEERS, ENVIRONMENTAL SCIENTISTS

Best Available Copy

COMPANY NAME	TRUCK NO.	DER STICKER NO.	TIME	GALLONS LOADED	PRODUCT: THIS LOAD	PRODUCT: PREVIOUS LOAD	V.R. BACK PRESS (H_2O)	LEAK LOCATIONS	LEAK	NO LEAK
TOC RETAIL	20107	010379	7:00	8600	2600 Prem 1000 Un 2600 mid	gas	6	B-5	✓	
Fleet	195603	009857	7:05	8000	4300 Un 1700 super	gas	9	D-2, B-5	✓	
McKENZIE	A061967	011828	7:00	8000	Unlead	gas	7			✓
KENAN	5694	010350	7:20	8500	6800 Un 1700 Prem	gas	5			✓
McKenzie	A061842	011848	7:30	8600	6680 Un 1920 Prem	gas	5	D-2, D-4	✓	
McKENZIE	A063031	011050	8:00	8400	7840 Un 560 Prem	gas	9			✓
Tri-State	2100	009151	8:50	7600	DIESEL	DIESEL				
American Petroleum	001	011094	9:00	8000	Prem.	—	6			✓
Petro-chemical	3002	009882	9:01	1500	SUPER	gas	6			✓
Fleet	184701	011849	9:05	8100	2600 plus 3800 prem 1700 Unl	gas	11			✓
Fleet	194564	011835	9:08	8500	7400 Un 1100 Prem	gas	8	B-1, D-2, D-3	✓	
AVIATION	1872	016486			JET					
TOTAL				33700 42500						

TRUCK LEAK CHECKS

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

CONSULTING ENGINEERS & ENVIRONMENTAL SCIENTISTS

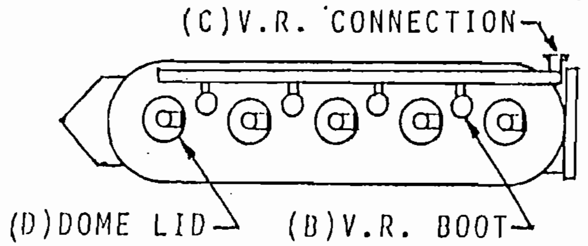
PLANT GATX

DATE 3-23-90

OPERATOR John Wallace

INSTRUMENT [illegible] 1238

LEAK LOCATION DIAGRAM



COMPANY NAME	TRUCK NO.	DER STICKER NO.	TIME	GALLONS LOADED	PRODUCT THIS LOAD	PRODUCT PREVIOUS LOAD	V.R. BACK PRESS (H_2O)	LEAK LOCATIONS	LEAK	NO LEAK
Florida Rock + Tank Lines	0149	009926	9:20	8000	4000 Prem 4000 un	gas	9			✓
PCT	7344	009875	9:57	1000	Prem.	Diesel Unleaded	5			✓
T.J. CAMPBELL	4	009168	10:05	8600	5300 Un 2000 Prem 1300 Mid	gas	11			✓
Clardy Oil	101	011863	10:20	8200	4200 Mid 3000 Un 1000 Super	water	7			✓
McKinzie	17063031	011050	10:45	8000	3700 Mid 4300 Un	gas	8			✓
Kenan	5461	009152	10:55	8500	5300 Un 3000 Super	gas	10	D-1	✓	
AVIATION	1076	011816		8000	JET					
Fleet	194548	01459	11:00	8300	5300 Un 1100 Prem 2000 Plus		10		[illegible]	✓
AirCraft Service	7552	010268	[illegible]	960	DIESEL	DIESEL				
PCT	7342	009889		7700	Bonded	JET				
AVIATION	1872	010486		8000	JET					
PCT	7340	009888		1000	Super	DIESEL				✓
TOTAL				8500 43100	[illegible]					

TRUCK LEAK CHECKS

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

CONSULTING ENGINEERS & ENVIRONMENTAL SCIENTISTS

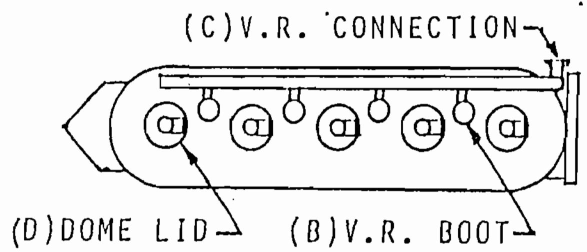
PLANT GATX

DATE 8-23-90

OPERATOR John Wallace

INSTRUMENT

LEAK LOCATION DIAGRAM



COMPANY NAME	TRUCK NO.	DER STICKER NO.	TIME	GALLONS LOADED	PRODUCT THIS LOAD	PRODUCT PREVIOUS LOAD	V.R. BACK PRESS (H_2O)	LEAK LOCATIONS	LEAK	NO LEAK
McKenzie	A061843	011848	11:35	8200.	6000 UW 1400 Prem 800 Diesel	gas	11			✓
T.J. CAMBELL	1	011817	11:50	7800	4900 PREM 2900 Un	gas	10			✓
Citgo	7051	011102		7300	DIESEL	gas	5			✓
Grimsley	9700	009145	12:05	8800	5000 Un 1400 mid 2400 Dsm	gas	6			✓
American Petroleum	001.	011094	12:50	8500	3800 ~~Plus~~ Pum 4700 ~~Un~~ Plus	gas	5			✓
TOTAL					33300	good				

TRUCK LEAK CHECKS

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

CONSULTING ENGINEERS & ENVIRONMENTAL SCIENTISTS

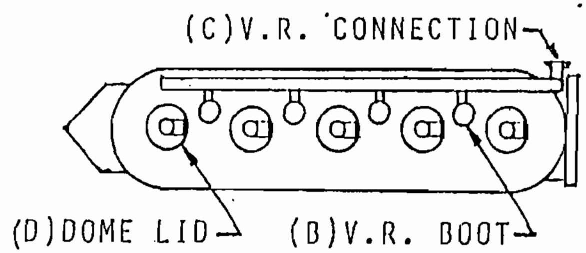
PLANT: GATX TERMINALS

DATE: 8-23-90

OPERATOR:

INSTRUMENT:

LEAK LOCATION DIAGRAM



LOADING POSITION	PRODUCT	FINAL READING	INITIAL READING	VOLUME GALLONS
D-1	93 UL	1114751	1098122	16629
D-2	89 UL	816791	803291	13500
D-3	87 UL	4100133	4078333	21800
D-5	92 U/L	350580	350580	0
D-6	DIES	~~894862~~	~~886302~~	~~8560~~
C-1	93 UL	1334086	1325986	8100
C-2	89 UL	885469	881469	4000
C-3	87 UL	4674895	4633055	41840
C-5	92 UL	312589	310629	1960
C-6	DIES	~~615236~~	~~603436~~	~~11800~~
B-1	93 UL	669007	657300	11707
B-2	89 UL	517224	514624	2600
B-3	87 UL	2904840	2875960	28880
B-5	92 UL	314705	308785	5920
B-6	DIES	~~483487~~	~~483487~~	~~0~~
TOTAL			GASOLINE DIESEL	156936 20,360

PLANT GATX

LOCATION TAMPA

DATE 8-23-90

OPERATOR(S) JW

PRODUCT DISPENSING DATA

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

CONSULTING ENGINEERS, ENVIRONMENTAL SCIENTISTS

LOADING POSITION	PRODUCT	FINAL READING	INITIAL READING	VOLUME GALLONS
Bonded JET	JET-BONDED	614063	598363	15,700
A-7	JET	2043757	2011757	32000
TOTAL			JET	47,700

PLANT GATY

LOCATION TAMPA

DATE 8-23-90

OPERATOR(S) JW

PRODUCT DISPENSING DATA

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

CONSULTING ENGINEERS, ENVIRONMENTAL SCIENTISTS

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

Consulting

Engineers • Chemists • Industrial Hygienists • Environmental Scientists

FUGITIVE OR SMOKE EMISSION INSPECTION
OUTDOOR LOCATION

Company: GATX TERMINALS CO.
Location: TAMPA, FL
Company representative: KAREN

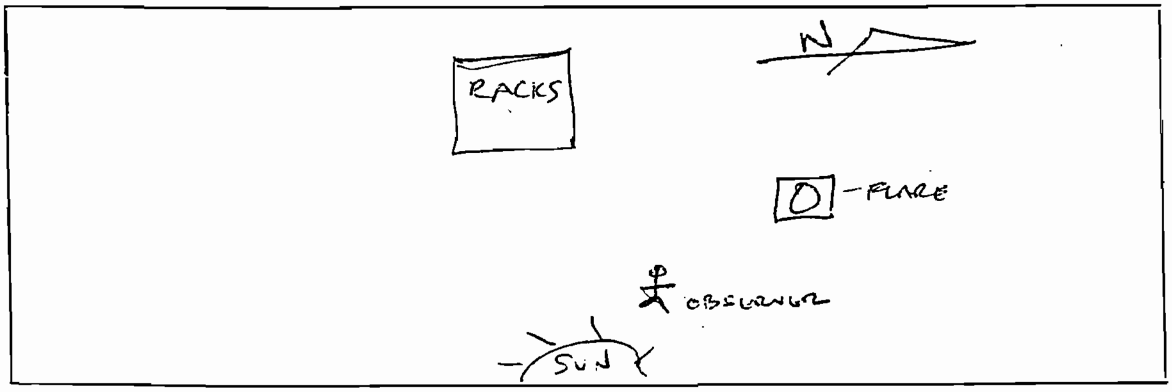
Observer: BYRON BURROWS
Affiliation: EEC INC
Date: 8-23-90

Sky Conditions: CLEAR
Precipitation: NONE

Wind direction: SE
Wind speed: 3-5 MPH

Industry: BULK PETROLEUM TERMINAL
Process unit: VAPOR FLARE

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



OBSERVATIONS

	Clock time	Observation period duration, min:sec	Accumulated emission time, min:sec.
Begin Observation	0730		
	0800	30:00	0:00
	0830	30:00	0:00
	0900	30:00	0:00
	0930	30:00	0:00
	TOTAL	120:00	0:00
End observation			

pace INCORPORATED THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Environmental Engineering Consultants
5119 N. Florida Avenue
P.O. Box 7854
Tampa, FL 33673

September 07, 1990
PACE Project
Number: 200824517

Attn: Mr. Byron Burrows

GATX Terminals Inc.

PACE Sample Number:	90 0622066	90 0622074	90 0622082
Date Collected:	08/23/90	08/23/90	08/23/90
Date Received:	08/24/90	08/24/90	08/24/90
	Tedlar Bag #1 0700-0900	Tedlar Bag #2 0900-1100	Tedlar Bag #3 1100-1300

BACKGROUND

Three (3) sealed Tedler bags containing gasoline vapor were received by R. Niles Bashaw at PACE Inc. PACE Inc. was requested to analyze for the gasoline content and calculate the Btu value of the gasoline vapors.

ANALYSIS

Samples of gasoline vapor in the Tedlar bags were injected into a DB-5 megabore column equipped with a flame ionization detector. Gasoline standards were also injected and the gasoline content was calculated based on the peaks areas.

Btu calculations were based on 19,000 Btu per pound of gasoline.

RESULTS

Sample ID	Btu per ft3
#1 90 0622066	840
#2 90 0622074	630
#3 90 0622082	630

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my supervision.

Dr. James M. O'Neal

Dr. James M. O'Neal
Director, Sampling and Analytical Services

APPENDIX B

CALCULATIONS

EQUATIONS

CONVERSION FACTORS

GALLONS * 3.785 = LITERS
K = 273 + C
"H2O * 0.0735 = "Hg

VOLUME

$$Ves = 9.79278 * Ym * (Vmf - Vmi)[(Pb + Pg)/Tm]$$

Ves = Meter volume corrected to standard conditions (ft3 @ 20 c, 29.92 "Hg)

Ym = Meter calibration coefficient

Vmf = Final meter volume reading

Vmi = Initial meter volume reading

Pb = Barometric pressure ("Hg)

Pg = Average static pressure in volume meter ("Hg)

Tm = Average absolute meter temperature (K)

VELOCITY

$$Qs = 300 * Ves * As$$

Qs = Duct velocity corrected to standard conditions (m3 @ 20 c, 29.92 "Hg)

As = Cross sectional area of duct (ft2)

VAPOR FLARE CALCULATIONS

PLANT: GATX TERMINALS INC.
TAMPA TERMINAL

DATE: AUGUST 23, 1990

TIME (min)	VOLUME READING (cu.ft.) METER 1	METER 2	PRESSURE ("H2O)	DUCT TEMP. (deg C)	BAROMETER (in.Hg)	VOLUME (ft3 @ STP)	VELOCITY (ft/sec.)	AVERAGE HRLY. VEL.
0	0	77230						
5	140	77370	4.6	28.2	30.00	276.18	1.70	
10	900	78210	4.8	28.5	30.00	1577.39	9.73	
15	1470	78870	7.2	28.4	30.00	1220.07	7.53	
20	1800	79310	7.5	28.4	30.00	764.34	4.72	
25	1880	79350	2.5	28.3	30.00	117.72	0.73	
30	2360	79850	4.5	28.8	30.00	964.49	5.95	
35	2500	80080	6.4	28.6	30.00	366.06	2.26	
40	2850	80450	6.4	28.5	30.00	712.58	4.40	
45	2860	80460	0.0	28.9	30.00	19.46	0.12	
50	2860	80460	0.0	28.9	30.00	0.00	0.00	
55	2860	80460	0.0	29.0	30.00	0.00	0.00	
60	2860	80460	0.0	29.0	30.00	0.00	0.00	3.09
65	3060	80690	5.0	29.1	30.00	423.29	2.61	
70	3200	80840	5.2	29.4	30.00	285.33	1.76	
75	3300	80940	5.2	29.5	30.00	196.71	1.21	
80	3520	81180	5.2	29.5	30.00	452.44	2.79	
85	3710	81400	5.1	29.5	30.00	403.16	2.49	
90	3910	81610	5.0	29.9	30.00	402.53	2.48	
95	3950	81660	0.0	30.8	30.00	87.03	0.54	
100	3950	81660	0.0	30.8	30.00	0.00	0.00	
105	3950	81660	0.0	30.6	30.00	0.00	0.00	
110	3950	81660	0.0	30.6	30.00	0.00	0.00	
115	4030	81750	4.0	31.2	30.00	165.79	1.02	
120	4210	81930	4.0	31.5	30.00	350.74	2.16	1.42
125	4600	82350	5	31.5	30.03	791.85	4.89	
130	5010	82800	7.8	31.5	30.03	846.43	5.22	
135	5470	83290	8.2	31.3	30.03	936.52	5.78	
140	5600	83430	6.0	31.9	30.03	264.24	1.63	
145	5770	83630	8.5	31.6	30.03	364.65	2.25	
150	6190	84070	5.0	31.9	30.03	839.63	5.18	
155	6370	84260	4.0	32.4	30.03	359.77	2.22	
160	6380	84270	0.0	34.0	30.03	19.16	0.12	
165	6530	84430	3.5	32.9	30.03	300.57	1.85	
170	6540	84440	0.0	33.6	30.03	19.18	0.12	
175	6610	84520	5.0	34.1	30.03	145.40	0.90	
180	6660	84560	2.0	35.5	30.03	86.21	0.53	

VAPOR FLARE CALCULATIONS

PLANT: GATX TERMINALS INC.
TAMPA TERMINAL

DATE: AUGUST 23, 1990

TIME (min)	VOLUME READING (cu.ft.) METER 1	METER 2	PRESSURE ("H2O)	DUCT TEMP. (deg C)	BAROMETER (in.Hg)	VOLUME (ft3 @ STP)	VELOCITY (ft/sec.)	AVERAGE HRLY. VE
185	6710	84620	6.0	34.7	30.03	106.67	0.66	
190	7110	85060	8.0	32.5	30.03	824.43	5.09	
195	7290	85240	5.0	32.6	30.03	350.67	2.16	
200	7310	85270	1.0	33.0	30.03	48.17	0.30	
205	7480	85450	5.0	32.7	30.03	340.81	2.10	
210	7680	85670	6.0	32.8	30.03	409.83	2.53	
215	7790	85800	5.0	32.8	30.03	233.63	1.44	
220	7790	85800	0.0	32.8	30.03	0.00	0.00	1.47
225	7990	86040	4.0	32.5	30.03	427.70	2.64	
230	8100	86130	6.0	32.8	30.03	195.16	1.20	
235	8550	86630	6.5	32.7	30.03	928.43	5.73	
240	8710	86810	5.0	33.7	30.03	330.00	2.04	
245	9300	87470	6.4	32.2	30.05	1224.12	7.55	
250	9570	87710	5.5	32.3	30.05	498.20	3.07	
255	9890	88070	5.0	32.6	30.05	662.81	4.09	
260	10080	88270	5.0	32.7	30.05	380.02	2.34	
265	10220	88420	3.0	32.6	30.05	281.30	1.74	
270	10340	88550	5.0	32.4	30.05	243.84	1.50	
275	10670	88910	5.0	31.7	30.05	674.54	4.16	
280	10920	89190	6.0	31.5	30.05	519.72	3.21	3.27
285	11250	89540	6.4	31.3	30.05	667.89	4.12	
290	11470	89790	6.2	31.4	30.05	461.26	2.85	
295	11880	90240	5.8	31.1	30.05	844.02	5.21	
300	12150	90530	5.2	31.1	30.05	548.80	3.39	
305	12740	91060	3.0	30.3	30.05	1094.64	6.75	
310	12990	91340	5.0	29.8	30.05	521.38	3.22	
315	13080	91440	3.0	28.9	30.05	186.56	1.15	
320	13080	91440	0.0	28.2	30.05	0.00	0.00	
325	13080	91440	0.0	27.4	30.05	0.00	0.00	
330	13080	91440	0.0	26.9	30.05	0.00	0.00	
335	13080	91440	0.0	26.9	30.05	0.00	0.00	
340	13080	91440	0.0	26.8	30.05	0.00	0.00	
345	13080	91440	0.0	26.7	30.05	0.00	0.00	
350	13080	91440	0.0	26.7	30.05	0.00	0.00	
355	13260	91640	5.0	27.8	30.05	376.30	2.32	
360	13510	91900	3.2	27.7	30.05	503.01	3.10	
SUM	13510	14530				27642.82		
AVERAGE			3.872222	30.70416	30.02666		2.368611	2.315678

APPENDIX C

CALIBRATION DATA

D..ESSER MEASUREMENT DIVISION
DRESSER INDUSTRIES, INC.

ROOTS® PROVER DATA SHEET

ME-05

LOCATION Envirometal Engineering
FIELD METER SIZE T-30
FIELD METER SERIAL 612956

READ - 0122295

ROOTS PROVER SERIAL P060216
OPERATOR R. SWILLEY
DATE 1/16/90

RUN NUMBER	TIME OF DAY	FIELD PRESET COUNT	FLOW RANGE SELECTOR	INDICATED FLOW RATE CFH	PROVER PRESET COUNT	RUNNING TIME SECONDS	CALCULATED FLOW RATE CFH	UNCORR. PROOF PERCENT	Δ P PERCENT	Δ T PERCENT	CORRECTED PROOF PERCENT	ACCURACY PERCENT	COMMENTS
1		01	H	10,000	18	35.5	100%	102.2	1.15	0.0	101.05		
2		01	H	10,000	18	35.6	100%	102.3	1.15	0.0	101.15		SPIN TEST
3		01	H	8,000	18	44.9	70%	101.4	.75	0.0	100.65		89.00
4		01	H	8,000	18	45.6	70%	101.4	.75	0.0	100.65	AS FOUND	89.00
5		01	m	6,000	18	60.0	50%	99.3	.40	0.0	98.9		92.00
6		01	m	6,000	18	60.0	50%	99.4	.40	0.0	99.0		AVG. 90.00
7		01	L	2,000	18	188.2	20%	100.9	.05	0.0	100.85		
8		01	L	2,000	18	186.6	20%	100.1	.05	0.0	100.05		
1		01	H	10,000	18	35.7	100%	101.8	1.25	0.0	100.55		
2		01	H	10,000	18	35.9	100%	101.8	1.25	0.0	100.55		SPIN TEST
3		01	H	8,000	18	45.6	70%	101.4	.75	0.0	100.65		98.00
4		01	H	8,000	18	45.8	70%	101.4	.75	0.0	100.65	AS LEFT	99.00
5		01	m	6,000	18	60.3	50%	100.2	.40	0.0	99.8		99.00
6		01	m	6,000	18	60.4	50%	100.3	.40	0.0	99.9		AVG. 98.66
7		01	L	2,000	18	188.1	20%	100.5	.05	0.0	100.45		
8		01	L	2,000	18	189.1	20%	100.5	.05	0.0	100.45		

615261
T-30 MK II (L.P.)

CUSTOMER: EQUIPMENT CONTROLS CO
NORCROSS GA
ORDER #: 01899

METER TYPE: T-30 MK II (L.P.)
WORKING PRESSURE: 175 PSI
SERIAL NUMBER: 615261
COMMENDED MINIMUM
FIELD SPIN TIME: 90 SECONDS
CHANGE GEARS: 76/49

COMMENTS:

TEST PRESSURE: VACUUM

POINT #	FLOW RATE(ACFH) AIR	ERROR (%)
1	26720	-0.1
2	1220	-0.4
3	3510	+0.3
4	7160	-0.4
5	14520	-0.7
6	21980	-0.3

ROCKWELL ORDER #: DuBOIS G13-45895
TESTED BY-LINE: E.D.S.-LPL#1
DATE & TIME: 9/11/89 11:54:03
METRIC-SPECC: N - 0
PVRSV-PVRST-SSN: PL14.2 - 31 - 06762
DISK#-ENTRY#: 40 - 17

****
* ROCKWELL INTERNATIONAL *
MEASUREMENT & FLOW CONTROL DIVISION
* P. O. BOX 528 *
* DuBOIS PA 15801 *
****

The Former MEASUREMENT & FLOW CONTROL DIVISION of Rockwell International is now part of BTR DUNLOP, INC.

Rockwell International

Measurement & Flow Control Division

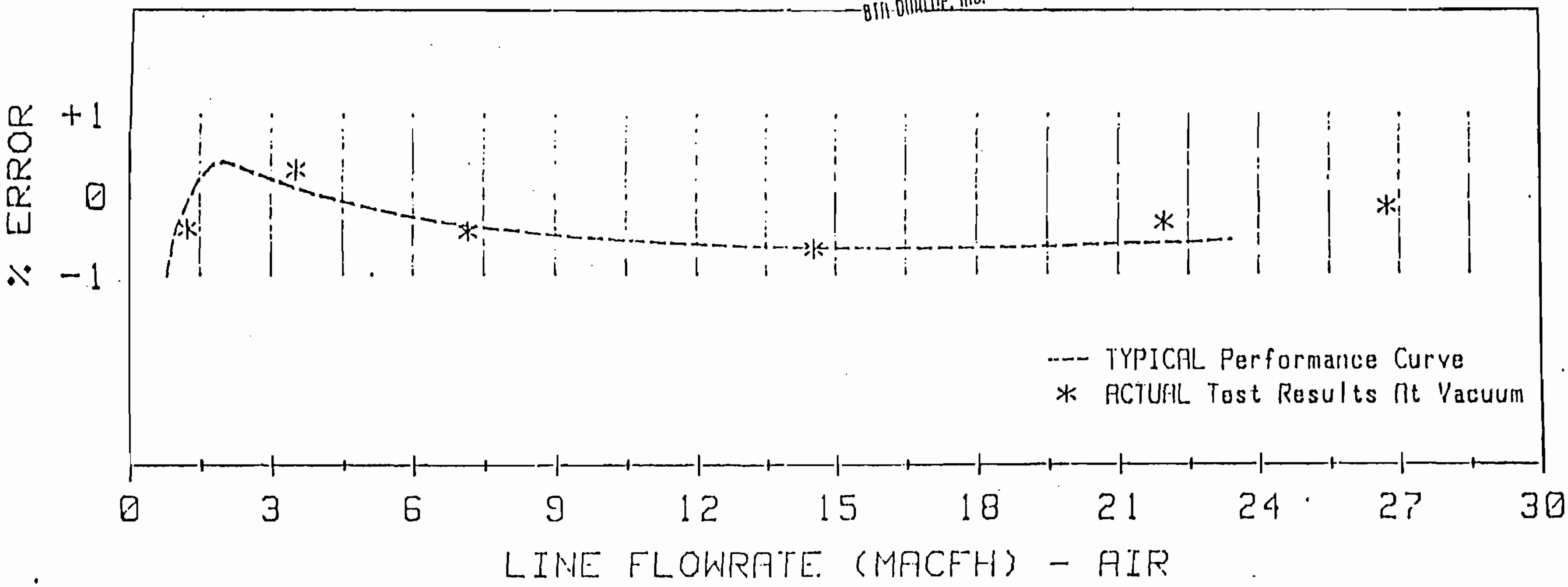
DuBois, PA U.S.A.

The former MEASUREMENT & FLOW CONTROL DIVISION of Rockwell International is now part of BTR-DUNLOP, INC.

CALIBRATION TEST DATA

ROCKWELL TURBO-METER

T-30 MK II (L.P.)



Customer:	EQUIPMENT CONTROLS CO NORCROSS GA
Customer Order #:	01899
Meter Type:	T-30 MK II (L.P.)
Working Pressure:	175 PSI
S/N:	615261
Change Gears:	76/49
Rockwell Order #:	G13-45895
Test Date:	9/11/89
Tested By:	E.D.S.-LPL#1

Calibration Factor: pulses/cu. ft.

Pulse Frequency: pulses/sec.

Recommended minimum field spin time, complete meter less index: 90 seconds

T-30 MK II (L.P.)

615261

MC-8022-8

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

Combustible Gas Detector Calibration

Instrument

Manufacture: Gastech

Model No.: 1238

Serial No.: E0365

Range: 0-100% LEL

Zero Air Cylinder

Manufacture: Air Products, Inc.

Cylinder No.: 16941C

Concentration: <0.1 ppm THC

Calibration System

Manufacture: EEC, Inc.

Type: Gas Dilution

Propane Cylinder

Manufacture: Air Products Inc.

Cylinder No.:

Concentration: 99.5% (vol)

Date Purchased: 11-9-89

Methane Cylinder

Manufacture: Scott's Specialty Gases Inc.

Cylinder No.: 109100

Concentration: 10,000 ppm

Date Purchased: 2/90

Date: 7-6-90

Signature: [signature]

Point	Dilution Flow (cc/min)	Gas Flow (cc/min)	Obs. Conc. (% LEL C3H8)	Cal. Conc. (% LEL C3H8)	% Difference
Zero	2000	0.0	0.0	0.0	0.0
Propane	6630	149.9	100	100	0.0
Methane	NA	NA	15	NA	NA

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

Combustible Gas Detector Calibration

Instrument

Manufacture: Gastech

Model No.: GP204

Serial No.: 0057G

Range: 0-100% LEL

Zero Air Cylinder

Manufacture: Air Products, Inc.

Cylinder No.: 16941C

Concentration: (0.1 ppm THC

Calibration System

Manufacture: EEC, Inc.

Type: Gas Dilution

Propane Cylinder

Manufacture: Air Products Inc.

Cylinder No.:

Concentration: 99.5% (vol)

Date Purchased: 11-9-89

Methane Cylinder

Manufacture: Scott's Specialty Gases Inc.

Cylinder No.: 109100

Concentration: 10,000 ppm

Date Purchased: 2/90

Date: 7-6-90

Signature: [signature]

Point	Dilution Flow (cc/min)	Gas Flow (cc/min)	Obs. Conc. (% LEL C3H8)	Cal. Conc. (% LEL C3H8)	% Difference
Zero	2000	0.0	0.0	0.0	0.0
Propane	6630	149.9	100	100	0.0
Methane	NA	NA	15	NA	NA

Environmental Engineering Consultants, Inc.

Magnehelic Calibration

Manufacture DWYER INSTRUMENTS

Serial No. R808059MR7

Range 0-20

Location EEC

Calibration Date 7-20-90

Calibrated By [signature]

Magnehelic Inches H_2O	Water Manometer Inches H_2O	% Difference
Zero	0	0
4.1	4.0	+ 2.5
7.7	8.0	- 3.8
11.5	12.0	- 4.2
15.8	16.0	- 1.3

Environmental Engineering Consultants, Inc.

Magnehelic Calibration

Manufacture DWYER INSTRUMENTS INC.

Serial No. R50524CMV14

Range 0-5

Location E.E.C WEST

Calibration Date 7-20-90

Calibrated By John Wallace

Magnehelic Inches H_2O	Water Manometer Inches H_2O	% Difference
Zero	0	0%
1.0	1.0	0%
2.0	2.0	0%
3.0	3.0	0%
3.9	4.0	2.5%
4.8	5.0	4.0%

Environmental Engineering Consultants, Inc.

Magnehelic Calibration

Manufacture DWYER INSTRUMENTS INC

Serial No. R890829RR101

Range 0-20

Location E.E.C WEST

Calibration Date 7-20-90

Calibrated By John Wallace

Magnehelic Inches H_2O	Water Manometer Inches H_2O	% Difference
Zero	0	0%
4.0	4.0	0%
8.0	8.0	0%
12.0	12.0	0%
16.0	16.0	0%

Environmental Engineering Consultants, Inc.

Magnehelic Calibration

Manufacture DWYER INSTRUMENTS INC.

Serial No. R 81012 MR39

Range 0 - 20

Location E.E.C. WEST

Calibration Date 7-20-90

Calibrated By John Wallace

Magnehelic Inches H_2O	Water Manometer Inches H_2O	% Difference
Zero	0	0%
2.0	2.0	0%
4.0	4.0	0%
8.0	8.0	0%
12.0	12.0	0%
16.0	16.0	0%

PYROMETER/THERMOMETER CALIBRATION

IDENTIFICATION	DATE	REFERENCE TEMP. °F(ASTM-Hg)	INDICATION TEMP. °F	REFERENCE MEDIUM	CORRECTION
FLUKE PORTABLE	3-26-90	26.0/79.0	26.0/79.0	AMBIENT AIR	0.0/0.0
		426.0/218.9	427.8/219.8	BOILING WATER	0.2/0.2

VOC EMISSIONS TEST REPORT
BULK GASOLINE TERMINAL
GATX TERMINALS CORPORATION
TAMPA, FLORIDA
JULY 18, 1989

Prepared For:

GATX TERMINALS CORPORATION
100 GATX DRIVE
TAMPA, FLORIDA 33619

Prepared By:

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.
5119 NORTH FLORIDA AVENUE
TAMPA, FLORIDA 33603

AUGUST 22, 1989

TABLE OF CONTENTS

I. SUMMARY

On July 18, 1989, Environmental Engineering Consultants, Inc. performed an initial compliance test on the truck loading rack (Permit No. AC29-151060) at GATX Terminals Corporation's Tampa facility. VOC emissions were controlled by a John Zink Company Model GV-LH-8400-2 open flame flare unit.

The test was conducted by Carl Fink, Byron Burrows, and Greg Sears of Environmental Engineering Consultants, Inc. with the assistance and cooperation of the employees of GATX Terminals Corporation.

A summary of the test results is shown in Table 1. The average heating value for the gas burned was 438 BTU/scf.

The maximum calculated velocity (based on total pumps used during test) at the flare tip was 19.8 ft/sec. which was less than the maximum allowable velocity of 66.7 ft/sec.

A two hour visible emissions test was performed using EPA Method 22 procedures. No emissions were observed.

The vapor collection system pressure, measured at the truck rack vapor recovery line, was less than 18 inches of water for all trucks loaded during the test. The maximum pressure recorded was 11 inches of water.

All emission rates were determined according to the procedures prescribed by the Florida Department of Environmental Regulation and the tested source was found to be in compliance with applicable emissions standards.

I hereby certify that these results are true and correct and were obtained by the procedures and methods described herein.

Respectfully Submitted;

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

Carl F. Fink
Senior Environmental Engineer

TABLE 1

TEST SUMMATION

VAPOR FLARE RESULTS

PLANT: GATX - Tampa TEST DATE: July 18, 1989

Average Heat Value (BTU/scf)	Max. Allowable Velocity (ft/sec)*	Max. Orifice Velocity (ft/sec)**
438	66.7	19.8

*
Vmax = 28.75 + 0.0867 (Ht)

From EPA Guidance: Use of Flares at Bulk Gasoline Terminals, June 21, 1985.

**
Based on maximum loading rate: 8 pumps @ 600 gal./min.
and maximum orifice area: 77.8 sq. in.

TABLE 2

TEST SUMMATION

LEAK CHECKS AT LOADING RACKS

PLANT: GATX - Tampa TEST DATE: July 18, 1989

Loading Positions	2
Total Trucks Checked	10
No. W/Leaks *	2
No. W/Zero Leaks	8

* Leak defined as any reading of greater than 30% LEL (as propane) when checking tank truck with combustible gas detector during product loading.

II. SOURCE DESCRIPTION

GATX Terminals Corporation's Tampa facility, which is located on Hooker's Point in Tampa, is comprised of both petroleum liquid storage and a bulk gasoline terminal. The terminal has three (3) loading positions (one pumping jet fuel only) each equipped with a vapor recovery line. During loading of the trucks, which are submerged filled using the bottom loading method, the displaced vapors are routed to a surge tank and then to the vapor flare.

The vapor flare manufactured by the John Zink Company, is an air-assisted type with a two stage burner unit. Vapors from the loading racks pass through a hydraulic seal and a flame arrestor prior to the combustion area. The burner automatically switches to the dual stage mode with a greater orifice area when the delivery line back pressure exceeds a pre-set value.

An automatic pilot light fueled by propane is monitored ensuring that loading during flare operation cannot be accomplished unless a flame is present.

III. METHODS AND PROCEDURES

The sampling and analytical procedures used for determining compliance are those prescribed by the Florida Department of Environmental Regulation. The specific procedures are described in 40 CFR 60.503 and an EPA Guidance titled "Use of Flares at Gasoline Terminals" dated June 21, 1985.

The test was conducted for eight hours to meet the throughput requirement of 300,000 liters of gasoline. During the test a two hour Method 22 visible emissions determination was made and samples of the inlet vapors were collected for heating value measurements. Compliance was determined using the velocity/heating value relationship described in the EPA Guidance listed above.

Heating value of the vapor delivered to the flare was determined from four bag samples, each integrated over two hours, collected through a port prior to the gas flow dividing for the separate burner stages. The sample was pumped into Tedlar gas sample bags with a teflon lined diaphragm pump at a constant rate controlled by a stainless steel valve on an indicating flowmeter. All gas sample lines were teflon with stainless steel fittings and were leak checked prior to the test. Sample flow rate was constant at approximately 150 cc/min. during periods when vapor was being delivered to the flare.

The heating value of the collected gas samples was determined using gas chromatograph techniques by Pace

Laboratories in Tampa, Florida under the direction of Michael W. Palmer. The results were reported as BTU/scf.

The maximum possible velocity of vapors at the flare burners was determined by calculating the maximum vapor displacement rate from the loading racks (assuming that all pumps used during the test were loading simultaneously) and dividing by the total orifice area at maximum flow. The maximum allowable velocity was calculated from the average heating value of the gas samples using the EPA Alternate Criteria Method. The maximum allowable velocity was compared to the calculated maximum velocity to determine compliance.

APPENDIX A

FLARE DATA AND CALCULATIONS

FLOWRATE/VELOCITY CALCULATIONS

PLANT: GATX - Tampa DATE: July 18, 1989

During the vapor flare test, eight pumps were used in dispensing product, including diesel, into the trucks. To estimate the maximum possible throughput during the test, assume that all eight pumps were operating simultaneously at their maximum output of 600 gallons per minute. The maximum velocity at the flare tip would be the maximum flow rate divided by the total orifice area at the tip.

Maximum Flow Rate = (8)(600 gal/min)
= 4,800 gal/min. (641.7 CFM)

Orifice Area: Stage 1: 38.9 sq. in.
Stage 2: 38.9 sq. in.
Total: 77.8 sq. in. (0.5403 sq. ft.)

Maximum Velocity = (641.7 CFM)/(0.5403 sq. ft.)(60 sec/min)
= 19.8 Ft/sec

LOADING POSITION	PRODUCT	FINAL READING	INITIAL READING	VOLUME GALLONS
LANE B				
B-1	93 U/L	022990	0000022990	0
B-2	89 U/L	008379	0000008379	0
B-3	87 U/L	0912753	0000877073	35,680
B-4	REG LD.	0250730	0000245530	5,200
B-5	92 U/L	0225817	0000217997	7,820
B-6	DIES.	0572673	0000558073	* 14,600
LANE C				
C-1	93 U/L	09638	0009638	0
C-2	89 U/L	09010	0009010	0
C-3	87 U/L	1120438	1100638	19,800
C-4	REG. LD.	0222681	0210681	12,000
C-5	92 U/L	0347344	0345344	2,000
C-6	DIES.	0760658	0753458	* 7,200
TOTAL			GASOLINE DIESEL	82,500 GAL 21,800 GAL

PLANT GATX

LOCATION TAMPA

DATE 7-18-89

OPERATOR(S) FINK / BURROWS

PRODUCT DISPENSING DATA

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

CONSULTING ENGINEERS, ENVIRONMENTAL SCIENTISTS

pace laboratories, inc.

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas

Environmental Engineering Consultants
5119 North Florida Avenue
Tampa, FL 33603

August 01, 1989
PACE Project Number: 290720501

Attn: Mr. Carl Fink

GATX Terminals

Date Sample(s) Collected: 07/18/89
Date Sample(s) Received: 07/20/89

PACE Sample Number: 566920 #1, 566930 #2, 566940 #3, 566950 #4

Re: Determine Btu Value of Gasoline Vapor

BACKGROUND

Four (4) sealed Tedlar bags containing gasoline vapor were received by R. Niles Bashaw at PACE Laboratories, Inc. PACE Laboratories was requested to analyze for the gasoline content and calculate the Btu value of the gasoline vapors.

ANALYSIS

Samples of gasoline vapor in the Tedlar bags were injected into a DB-5 megabore column equipped with a flame ionization detector. Gasoline standards were also injected and the gasoline content was calculated based on the peak areas.

Btu calculations were based on 19,000 Btu per pound of gasoline.

RESULTS

Sample ID	Btu per ft^3
566920 #1	305
566930 #2	870
566940 #3	350
566950 #4	225

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my direct supervision.

Michael W. Palmer

Michael W. Palmer
Organic Chemistry Manager

COMPANY NAME	~~TRUCK~~ TRAILER NO.	DER STICKER NO.	TIME	GALLONS LOADED	PRODUCT THIS LOAD	PRODUCT PREVIOUS LOAD	V.R. BACK PRESS (H_2O)	LEAK LOCATIONS	LEAK	NO LEAK
CIRCLE-K	5660 M-30818	008772 ~~M-30818~~	7:07 AM	8800	GAS	GAS	8			✓
McKenzie	A063031 AL-808J	007515 ~~AL-808J~~	7:12 AM	~~540 640 720 810~~ 8800	GAS	GAS	~~8~~ 11	D2	✓	
CIRCLE-K	194647 U-18874	008702	7:34 AM	8800	GAS	GAS	9	D3 20% LEL	~~✓~~ VERY SLIGHT	6.5 ✓
McKenzie	A061467 AL 869K	007420	8:13 AM	8000	GAS	DIESEL	9			✓
FLEET	194648 U-18875	008714	8:30 AM	8500	GAS	DIESEL	6			✓
TRANSPORT SOUTH INC.	090 A53-89I	007222	9:00 AM	7000	DIESEL	DIESEL	~~8~~ 8			✓
FLEET	194718 AR-785I	008886	9:08 AM	8500	GAS	GAS	6	D4 100% LEL	✓	
MCKENZIE	A06197	007420	10:27	6000	GAS	GAS	10			✓
FLEET	194647	008702	1326	8800	GAS	GAS	9			✓
PETROLEUM TRANSPORT	0040	007434	1355	9000	GAS	GAS	10			✓
TRANSPORT SOUTH	090	007222	1415	7200	DIESEL	DIESEL	6			
TRI-STATE CARRIERS	2100	007098	1420	7600	DIESEL	DIESEL	7			
TOTAL										

TRUCK LEAK CHECKS

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

CONSULTING ENGINEERS & ENVIRONMENTAL SCIENTISTS

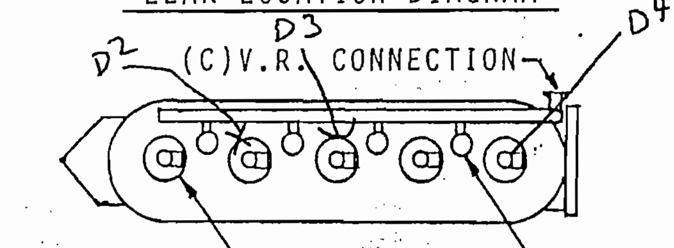
PLANT GATX - TAMPA

DATE 7-18-89

OPERATOR G.S.

INSTRUMENT GASTECH 1238

LEAK LOCATION DIAGRAM



COMPANY NAME	TRUCK NO.	DER STICKER NO.	TIME	GALLONS LOADED	PRODUCT THIS LOAD	PRODUCT PREVIOUS LOAD	V.R. BACK PRESS (H_2O)	LEAK LOCATIONS	LEAK	NO LEAK
FLA. ROCK & TANK LINES	T&E 8191	007472	1435	8000	GAS	GAS	7			✓
TOTAL										

TRUCK LEAK CHECKS

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

CONSULTING ENGINEERS & ENVIRONMENTAL SCIENTISTS

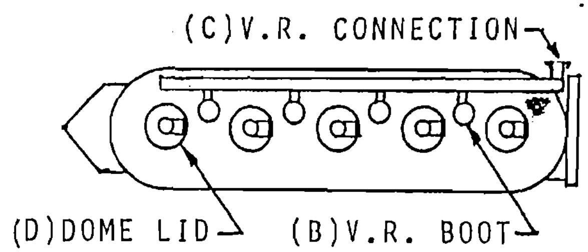
PLANT GATX – TAMPA

DATE 7-18-89

OPERATOR Carl [illegible]

INSTRUMENT GASTECH 1238

LEAK LOCATION DIAGRAM



APPENDIX B

VISIBLE EMISSIONS TEST REPORT

5:45 / 7:29

ENVIRONMENTAL ENGINEERING CONSULTANTS, INC.

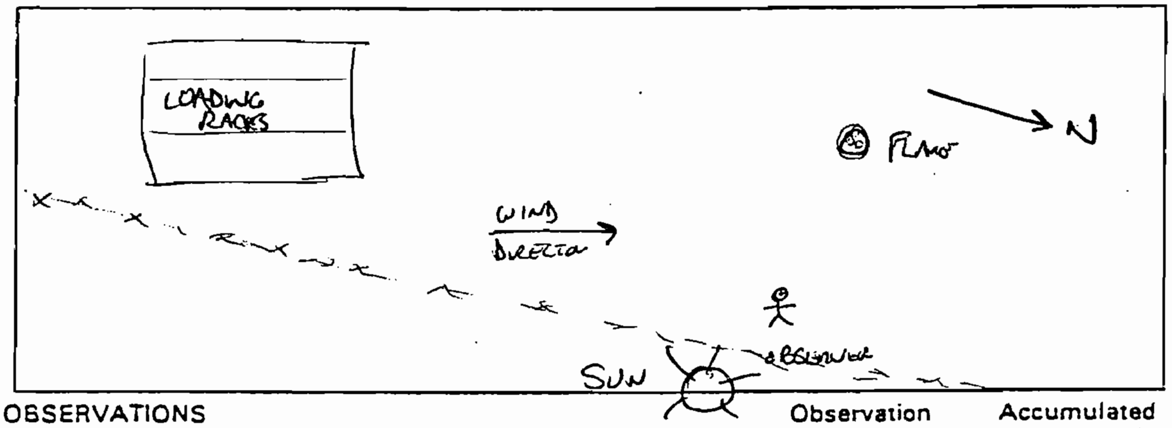
Consulting

Engineers • Chemists • Industrial Hygienists • Environmental Scientists

FUGITIVE OR SMOKE EMISSION INSPECTION
OUTDOOR LOCATION

Company GATX	Observer CARL FINK
Location TAMPA	Affiliation E. E. C. INC
Company representative E. MACINSKI / T. RIGG	Date 7-18-89
Sky Conditions 50% OVERCAST	Wind direction SOUTH
Precipitation NONE	Wind speed 3-5 MPH
Industry BULK GASOLINE TERMINAL	Process unit VAPOR FLARE

Sketch process unit; indicate observer position relative to source and sun; indicate potential emission points and/or actual emission points.



OBSERVATIONS

	Clock time	Observation period duration, min:sec	Accumulated emission time, min:sec.
Begin Observation	0730	30:00	0:00
	0800	30:00	0:00
	0830	30:00	0:00
	0900	30:00	0:00
	0930		
End observation			

5119 N. FLORIDA AVENUE • P.O. BOX 7854 • TAMPA, FLORIDA 33603 (813) 237-3781

APPENDIX C

CALIBRATION DATA

Environmental Engineering Consultants, Inc.

Combustible Gas Detector Calibration

Instrument

Manufacture GASTECH

Model No. 1238

Serial No. E0365

Range 0 - 100 % LEL

Propane Cylinder

Manufacture AIR PRODUCTS

Cylinder No. 7822D

Concentration 99.5 % (VOL)

Date Purchased 10-31-88

Calibration System

Manufacture EEC, INC

Type GAS DILUTION

Zero Air Cylinder

Manufacturer AIR PRODUCTS

THC Concentration < 0.1 PPM

Serial No. SG 6927C

Date 5-24-89 Signature Carl [signature] Location EEC, INC

Point	Dilution Flow (cc/min)	C_3H_8 Flow (cc/min)	Obs. Conc. % ([redacted]) LEL	Cal. Conc. % C_3H_8 ([redacted]) % LEL		% Difference
Zero	2000	0	0 %	0		0
Span	6192	140	100.0 %	2.20	100.0	0

NEXT CALIBRATION DUE 8-24-89

Environmental Engineering Consultants, Inc.

Sample Chain of Custody

Plant GATX TERMINALS, INC.

Source Sampled VAPOR FLARE Date Sampled 7-18-89

Sample Recovery

Sample Code and Description	Recovery Location	Date and Time of Recovery
#1 - TEDLAR BAG w/GAS VAPOR	GATX	7-18-89/0700-0900
#2	↓	7-18-89/0900-1100
#3	↓	7-18-89/1100-1300
#4	↓	7-18-89/1300-1500

Sample Recovery By: [signature] Title ENVR. SPECIALIST

Sample Received By: SAME Title "
(Upon Recovery)

Date & Time of Recept. ____ Sample Storage TEDLAR BAGS

Sample Received By: ____ Title ____
(For Analysis)

Date & Time of Recept. ____ Sample Storage ____

Analysis

Sample Code	Method of Analysis	Date & Time of Analysis	Signature of Analyst