Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

Bethlehem
STRUCTURAL PRODUCTS DIVISION

BETHLEHEM STEEL CORPORATION
BETHLEHEM, PA 18016

October 17, 1991

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

RECEIVED

OCT 28 1991

CASE DEVELOPMENT SECTION
EPA Region III

Dr. David B. McGuigan
U.S. EPA - Region III
Air Management Branch
841 Chestnut Building
Philadelphia, PA 19107

Dear Dr. McGuigan:

Attached is the report on the compliance demonstration conducted on August 21-23, 1991 at Bethlehem Steel Corporation's Coke Oven Gas Desulfurization System in Bethlehem, PA. Also attached is a letter from BCM dated October 14, 1991, which supports the use of five liter Tedlar sample bags during the demonstrations.

As shown by the Summary of Results and Relevant Emission Data presented by the Executive Summary on page 1 of the report, the desulfurized coke ovens gas hydrogen sulfide content did not equal or exceed 50 grains of hydrogen sulfide per 100 dry standard cubic feet of coke oven gas.

If you have any questions, please call me at (215) 694-7450.

Very truly yours,

BETHLEHEM STEEL CORPORATION

T E Kreichelt

T. E. Kreichelt
Superintendent
Environment, Safety & Health

Attachment

cc: Regional Counsel (3RCOO)
U.S. EPA - Region III
841 Chestnut Building
Philadelphia, PA 19107

Louise Thompson, Chief
PA-DER
Office of Chief Counsel-S.E. Region
Lee Park - 555 E. North Lane
Suite SC15
Conshohocken, PA 19428-2233

T. A. DiLazaro
PA-DER
Bureau of Air Quality Control
4530 Bath Pike
Bethlehem, PA 18017-9010

b1611017.tek

BCM

BCM Engineers

Engineers, Planners, Scientists and Laboratory Services

5777 Baum Boulevard • Pittsburgh, PA 15206 • (412) 361-6000

October 14, 1991

Mr. Thomas Kreichelt, Superintendent
Environmental Safety and Health
Bethlehem Steel Corporation
4th and Emery Streets
Bethlehem, PA 18105

Subject: Coke Oven Gas Desulfurization Facility
Coke Oven Gas Testing
Final Report
BCM No. 00-4021-33

Dear Mr. Kreichelt:

In response to your request, this letter will explain the reasons for the use of 5-liter tedlar sampling bags for the collection of sweet gas samples during the recent test at the Coke Oven Gas Desulfurization Facility.

One-liter mylar gas sampling bags were specified in the negotiated Consent Decree from Civil Action 87-5438. A decision was made the week prior to field sampling to use a sampling bag constructed of tedlar. This was based on Bethlehem Steel laboratory's unsuccessful attempt to acquire the 1-liter mylar bags from a supplier by the scheduled test date. A decision was made to purchase 1-liter tedlar sampling bags from SKC Inc. A copy of the SKC Inc. description of the tedlar sampling bags from their 1991 catalog is attached. Tedlar is a superior material to mylar because of its better impermeability and low absorption properties to gases. A decision was made in the field to switch from the 1-liter tedlar bags to 5-liter tedlar bags which the laboratory had in stock. This decision was based on the discovery of the laboratory using 200 milliliters of the sample for dilution and injection into the gas chromatograph. Only four injection opportunities would have been available with a 1-liter sampling bag. The 5-liter bags were selected because a greater sample volume would be available if needed.

In conclusion, the 5-liter tedlar bags used in the sampling program could only result in obtaining higher quality data. If you have any questions, please do not hesitate to call.

Very truly yours,

Paul Jadlowiec

Paul Jadlowiec
Section Manager

PJ/dc
Attachment

Properties of SKC Sample Bags

SKC Air Sample Bags

SKC Air Sample Bags are the finest quality bags in the industry at the lowest price. They are widely used to collect air samples for air pollution and industrial hygiene studies to determine instantaneous TWA concentrations. SKC sample bags are used for personal and area monitoring.

Features

- Impermeable to gases
- Low sample loss in storage
- Low memory of previous sample
- Tough, flexible, fatigue-resistant
- Can be reused
- Can be used for water samples
- Large sample port for flushing
- Three convenient eyelets
- Available in a wide variety of sizes

Impermeable to Gases; Low Adsorption

The tight, smooth surface of the Tedlar® film prevents the permeation of gases and has very low surface adsorption, assuring negligible sample loss and composition change.

Mechanically Strong

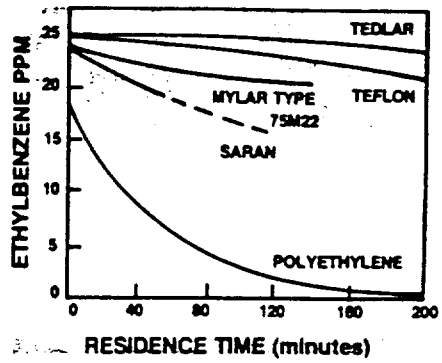
Tedlar® film retains its tensile strength, toughness and fatigue resistance over a wide temperature range, assuring SKC sample bags a long service life.

High and Low Ambient Temperatures

SKC sample bags can be used in any climate from very cold to extremely hot. Bags can be "baked out" at 80° C for the highest accuracy at sub-ppm and ppb levels.

Fabricated from Chemically Inert Film

SKC sample bags are fabricated from PVF (Tedlar®) film, a material that's inert to a wide range of chemicals. Tedlar is manufactured without plasticizers; hence there is no bleed off. SKC sample bags can be used for collecting air containing all common solvents, hydrocarbons, chlorinated solvents and many other classes of chemicals.



The above graph shows that, of the materials used for sample bags, Tedlar® has the lowest sample loss in storage. They also have low memory (carryover) of the previous sample and, unlike Teflon bags, they have no permeation in or out.

Construction

Eyelets

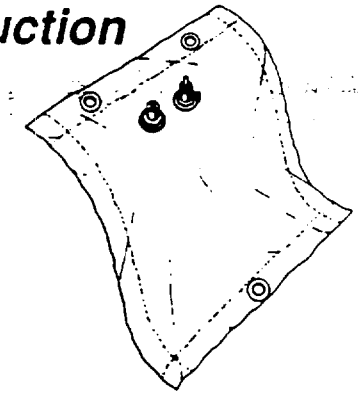
The three grommeted eyelets, exclusively on SKC sample bags, simplify attaching a sample bag to a worker (for personal sampling) and facilitate storage of bags (they can be hung from the eyelets).

Fittings

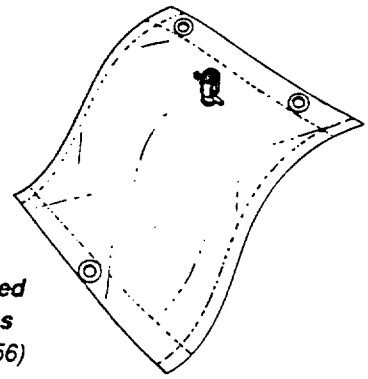
The exclusive SKC fittings are engineered for simple, positive sample filling and removal.

Stainless Steel: The 231-Series feature dual stainless steel fittings — a hose/valve and replaceable septum units.

Polypropylene: The 232-Series utilizes a patented single fitting made of inert polypropylene that combines the hose/valve and septum holder into one unit. The lower cost of the polypropylene fittings makes these bags economical for single use applications.



231-Series with Stainless Steel Fittings



232-Series with Patented Polypropylene Fittings (patent number 4,915,356)

® *Tedlar is a registered tradename of DuPont Corporation*

EMISSIONS EVALUATION

OF

COKE OVEN GAS DESULFURIZATION FACILITY

AT

BETHLEHEM STEEL CORPORATION
BETHLEHEM, PENNSYLVANIA

BCM NO. 00-4021-33

SEPTEMBER 13, 1991

PREPARED BY

PAUL JADLOWIEC
SECTION MANAGER

APPROVED BY

DAVID G. NICHOLS, P.E.
VICE PRESIDENT

BCM ENGINEERS INC.
5777 BAUM BOULEVARD
PITTSBURGH, PENNSYLVANIA 15206

BCM

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Appendix A Tail Gas Analysis Strip Chart
Appendix B Strip Chart Recordings and Field Data Sheets
Appendix C Sweet Gas Analytical Data
Appendix D Calculations

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1.0 EXECUTIVE SUMMARY

Bethlehem Steel Corporation (Bethlehem Steel) retained BCM Engineers Inc. (BCM) to conduct an emissions evaluation of the Coke Oven Gas Desulfurization Facility. The results of the testing will be used to determine the compliance limitation of 50 equivalent grains of hydrogen sulfide per 100 dry standard cubic feet of coke oven gas (50 eq. gr. H_2S/100 dscf COG) as set forth in the Pennsylvania Department of Environmental Resources (PADER) Rules and Regulations, Chapter 123, paragraph 123.23(b). The procedures utilized for this test program were described in the negotiated Consent Decree from Civil Action 87-5438. Three complete tests were conducted on each of three consecutive calendar days, and the results are as follows:

Date	Result
August 21, 1991	29.47 eq. gr. H_2S/100 dscf COG
August 22, 1991	30.01 eq. gr. H_2S/100 dscf COG
August 23, 1991	34.68 eq. gr. H_2S/100 dscf COG

2.0 SCOPE AND OBJECTIVES

The scope of the project was to sample and analyze the desulfurized coke oven gas (sweet gas) and the Claus plant tail gas. The sweet gas is used as fuel in other facilities of the plant and as fuel to the Dutch ovens in the Claus plant. The summation of the sweet gas and tail gas concentrations of eq. gr. H_2S/100 dscf COG indicates the effectiveness of the desulfurization facility to strip sulfur compounds from the raw coke oven gas and to determine compliance with air emission regulations.

3.0 PROCEDURES

3.1 TEST PERSONNEL

The BCM test crew consisted of Paul Jadlowiec (Project Manager) and Daniel Petrovay. Mr. Jadlowiec coordinated the test program and collected all gas flow and analytical data. Mr. Petrovay collected the sweet gas samples and transported them to the laboratory for analysis.

Mr. Robert Price coordinated the operation of the coke oven gas desulfurization facility during the tests and provided other Bethlehem Steel personnel for technical assistance. Mr. Lawrence Kriegler acted as the company liaison.

The sweet gas analysis was conducted under the direction of Messrs. David Mack and Glenn Gold of Bethlehem Steel.

3.2 TEST SCHEDULE

One complete test was conducted on three consecutive calendar days, August 21, 22, and 23, 1991. On each day, the test started at 8:00 a.m. and continued for four hours, with the exception of August 22, 1991, when the test started at 8:45 a.m. Each test constituted the collection and analysis of 16 samples.

3.3 SWEET GAS SAMPLING

The sweet gas samples were collected after the monoethanolamine (MEA) contactor at an existing sample tap which was under pressure and controlled by a valve. One sample was collected at the start of the first hour, and the remaining fifteen samples were collected every 15 minutes thereafter. The samples were collected into a 5-liter tedlar gas sampling bag after filling and emptying the bag three times with sample gas. After the collection of two to four samples, the bags were submitted to the laboratory for analysis.

3.4 TAIL GAS SAMPLING

The tail gas was sampled by a DuPont 4620 Photometric Analyzer. The measured concentration of hydrogen sulfide (H_2S) and sulfur dioxide (SO_2) was recorded on a chart and was averaged for sixteen 15-minute periods during each test. Copies of the charts are contained in Appendix A. For H_2S, the chart recorded in percent H_2S on the scale of 0 to 2 percent. For SO_2, the chart recorded in percent SO_2 on the scale of 0 to 1 percent.

3.5 GAS FLOW DATA

Various data were collected to determine the gas flow in dry standard cubic feet per minute for the sweet gas, tail gas, and Dutch oven burner gas flows. Copies of recorder charts and field data sheets are contained in Appendix B.

3.5.1 Sweet Gas

The following summarizes the method of data collection. Unless otherwise stated, an average was taken over each 15-minute sampling period:

- Gas Flow--Recorded on a chart as standard cubic feet per minute (scfm).
- Gas Temperature--Recorded on a chart in degrees Fahrenheit (^{o}F).
- Gas Pressure--Recorded on a chart in inches of water (in. H_2O).
- Gas Moisture--Determined by assuming the gas stream is saturated and using a psychrometric chart and correcting for pressure.

3.5.2 Tail Gas

- Gas Flow--Recorded on a chart as actual cubic feet per minute (acfm).
- Gas Temperature--Recorded on a chart in degrees Fahrenheit (^{o}F).
- Gas Pressure--Measured by a water manometer at sample tap once every 15-minute period.
- Gas Moisture--The moisture was determined by calculation using a wet bulb and dry bulb temperature measured once for each test.

3.5.3 Dutch Oven Burner Gas

- Gas Flow--Recorded on a chart as acfm.
- Gas Temperature--Assumed to be the same as the sweet gas corrected for the increase in pressure.
- Gas Pressure--Indicated on a digital display in pounds per square inch (psi) and recorded on the data sheet once every 15 minutes in in. H_2O.
- Gas Moisture--Assumed to be as saturated as the sweet gas at the sweet gas temperature.

3.6 OTHER PERTINENT DATA

- Barometric Pressure--Obtained from the National Weather Service once every hour and correct for elevation.
- Primary Air Flow To Dutch Oven Burners--Recorded on a chart as acfm.
- Secondary Air Flow To Dutch Oven Burners--Recorded on a chart as acfm.
- Acid Gas Flow--Recorded on a chart as acfm.
- Reflux Flow--Recorded on a chart as gallons per minute (gpm).
- Still Column Temperature--Measured three times each test by thermocouple.
- Claus Plant Sulfur Production--Measured once each day by a dipstick in gallons.

3.7 SWEET GAS ANALYSIS

The principles of EPA Method 15--Determination of Hydrogen Sulfide, Carbonyl Sulfide, and Carbon Disulfide Emissions from Stationary Sources were used to analyze the sweet gas target compounds. Bethlehem Steel personnel and equipment were used on all analysis. A Varian 3600 gas chromatograph (GC) equipped with a flame photometric detector (FPD) was used. The GC contained a Porapac QS 30-inch x 1/8-inch column. The instrument was calibrated each day with standard permeation tubes. The calibration data was used to develop calibration curves for response factors. All copies of the chromatograms, calibration curves, and analyst log are contained in Appendix C.

3.8 TAIL GAS ANALYSIS

The Model 4620 Analyzer, which is an optimization of the Model 466 DuPont Photometric Analyzer, is designed to measure H_2S and SO_2 in the Claus plant tail gas and provide closed-loop feedback control of the burner. It will measure low levels of H_2S and SO_2 in hydrocarbon gas streams that contain significant and variable levels of potentially interfering by-product compounds. The analyzer operation is based on the absorption of electromagnetic radiation over specific wavelengths covered by the analyzer. The analyzer automatically performs an hourly internal calibration with the use of an optical calibration filter corresponding to a fixed H_2S and SO_2 concentration. The following are the instruments' performance specifications:

- Photometric Accuracy--$\pm$2% of full scale
- Photometric Reproducibility--1% of full scale
- Analyzer System Accuracy--$\pm$5% of full scale
- Zero Standardization--Automatic every hour
- Calibration--An optical calibration filter corresponding to a fixed standard

4.0 CALCULATIONS

Calculations were completed by using a Lotus 123 spread sheet. Copies of the spread sheets and a sample calculation are contained in Appendix D.

The sweet gas and tail gas loadings were calculated by converting the analytical data from percent to eq. gr. H_2S/100 dscf COG by considering the molecular weights of the target compounds and correcting measured gas flows from acfm to dscfm.

Because the loading of the sweet gas is already accounted for, the Dutch oven burner loading contribution, which uses the sweet gas for fuel, is subtracted from the tail gas loading. The tail gas loading was calculated in terms of eq. gr. H_2S/100 dscfm COG.

5.0 DESULFURIZATION AND SULFUR RECOVERY FACILITY DESCRIPTION

The desulfurization and sulfur recovery facilities in the Bethlehem Plant Coke Division have been designed to process 2.8 M m^3 (100 M scf) per day of COG and to have a 5:1 turndown ratio. Figure 1 shows a schematic representation of the facility, which consists of two packed contactors, each capable of processing 1.7 M m^3 (60 M ft^3) per day of gas; a still, with appended reboiler, reclaimer, and surge tank; two cyanide destruct reactors, each designed to handle the full acid gas flow; and a four-reactor Claus unit.

The contactors are packed with polypropylene saddles. The raw coke oven gas is passed into the bottom of the column and scrubbed with a 13-18 percent MEA solution. Depending upon the circulation rate, the temperature of the solution, and the reboiler steam rate, raw COG containing 7.4-8.6 g/m^3 (325-375 gr H_2S/100 scf) has been sweetened to sulfur loadings of from 0.08 g/m^3 (3.5 gr H_2S/100 scf) to 0.91 g/m^3 (40 gr H_2S/100 scf).

The rich MEA solution then passes to the still where the acid gases are steam stripped. The amine solution is then carried to the reboiler where the remaining acid gas components are removed. A side stream from the reboiler, representing about 2 percent of the solution per day, is transferred to the reclaimer for purification by steam distillation.

The vapors produced in the reboiler and reclaimer are employed in the stripping operation in the still. The still overhead is passed through a condenser and then into an accumulator, where the acid gases are separated. The condensate or reflux is returned to the still, while the acid gases are passed to the decyanide preheater.

The acid gases, which contain some aerosoled reflux, are heated to above 120°C (250°F) and then passed into the cyanide destruct reactor. In this reactor the hydrogen cyanide, via a complex series of reactions involving both oxidation and hydrolysis, is converted into ammonia, carbon disulfide, carbonyl sulfide, and carbon dioxide.

The gases then pass into the Claus burner and Dutch oven, where one-third of the hydrogen sulfide present is oxidized to sulfur dioxide. To accommodate all turndown conditions, the burner is equipped with two acid gas nozzles, a fuel gas nozzle, and a means of bypassing acid gas directly into the Dutch oven. By proper utilization of these operating options, the desired minimum Dutch oven temperature of 1040°C (1900°F) can be maintained.

The Claus unit consists of four catalytic reactors followed by condensers and reheaters. The first reactor is placed with Kaiser 501 promoted activated/aluminum catalyst and operated at an inlet temperature of 315°C (600°F). This temperature is attained by bypassing a portion of the hot gas around the heat recovery units and recombining it with the cooler gases. The primary purpose of this reactor is the decomposition of the organic sulfur compounds produced in the burner.

The remaining three reactors are packed with Kaiser 201 activated alumina catalyst and are operated at inlet temperatures of 232°C (450°F), 221°C (430°F), and 210°C (410°F), respectively. After passing through the first, second, and third reactors, the gases are cooled to 160°C (320°F), then reheated to the desired temperature in an indirect oil reheater. The gas from the final reactor and condenser, at 140°C (285°F), passes through a tail gas separator, which contains a heated mist eliminator pad and then on to the incinerator.

6.0 RESULTS

The total coke oven gas loadings for the three test runs conducted on three consecutive days were: 29.47, 30.01, and 34.68 eq. gr. H_2S/100 dscf COG. Tables 1 through 3 summarize the results of the sampling indicating the loading for each component of the system. A summary of other pertinent process data is summarized in Table 4.

BCM

TABLE 1

COKE OVEN GAS TESTING SUMMARY

AUGUST 21, 1991

Sample No.	Total Sweet Gas Concentration	Tail Gas Loading	Dutch Oven Burner Contribution	Tail Gas Concent. Corr. For Burners	Total COG Loading
		(eq. gr. H_2S/100 dscf COG)			
1	30.3	5.9	3.3	2.6	32.9
2	30.3	3.9	3.2	0.7	31.0
3	26.3	2.4	2.5	-0.2	26.1
4	24.9	2.4	2.4	0.0	24.9
5	32.4	2.8	3.1	-0.3	32.1
6	29.7	2.5	3.3	-0.8	28.9
7	27.0	2.8	2.5	0.3	27.3
8	27.6	2.3	2.6	-0.3	27.3
9	26.3	2.6	2.5	0.2	26.5
10	28.3	3.2	2.7	0.5	28.8
11	30.3	2.7	2.8	-0.1	30.2
12	27.0	2.7	2.5	0.2	27.2
13	26.3	2.6	2.3	0.3	26.6
14	35.7	3.0	3.1	-0.1	35.6
15	32.4	4.1	2.8	1.3	33.7
16	32.4	2.9	2.8	0.1	32.5
				Average	29.47

BCM

TABLE 2

COKE OVEN GAS TESTING SUMMARY

AUGUST 22, 1991

Sample No.	Total Sweet Gas Concentration	Tail Gas Loading	Dutch Oven Burner Contribution	Tail Gas Concent. Corr. For Burners	Total COG Loading
	(eq. gr. H_2S/100 dscf COG)				
1	23.6	3.8	2.5	1.2	24.8
2	34.4	3.9	3.7	0.2	34.5
3	29.0	4.0	3.0	0.9	29.9
4	25.6	2.5	2.2	0.3	25.9
5	26.3	2.1	2.0	0.1	26.4
6	27.6	3.6	2.3	1.3	28.9
7	31.0	3.2	2.8	0.4	31.4
8	27.0	2.8	2.4	0.4	27.4
9	35.7	3.3	3.4	-0.1	35.7
10	35.7	3.8	3.1	0.7	36.5
11	24.3	3.6	1.9	1.8	26.0
12	29.7	3.0	2.3	0.7	30.4
13	31.0	3.0	2.7	0.3	31.3
14	28.3	2.4	2.5	-0.1	28.2
15	26.3	1.8	2.4	-0.6	25.7
16	37.8	2.5	3.1	-0.6	37.1
				Average	30.01

BCM

TABLE 3

COKE OVEN GAS TESTING SUMMARY

AUGUST 23, 1991

Sample No.	Total Sweet Gas Concentration	Tail Gas Loading	Dutch Oven Burner Contribution	Tail Gas Concent. Corr. For Burners	Total COG Loading
		(eq. gr. H_2S/100 dscf COG)			
1	33.7	3.2	4.0	-0.9	32.8
2	28.3	1.4	2.5	-1.1	27.2
3	30.3	1.9	2.7	-0.7	29.6
4	30.3	1.8	2.7	-0.9	29.5
5	37.1	2.0	3.3	-1.4	35.7
6	27.6	2.8	2.4	0.4	28.0
7	34.4	4.6	2.8	1.7	36.1
8	33.0	2.0	2.8	-0.9	32.2
9	36.4	1.9	3.2	-1.3	35.1
10	30.3	3.0	2.8	0.2	30.5
11	41.8	2.9	4.0	-1.1	40.7
12	30.3	4.9	2.9	2.0	32.4
13	35.7	3.6	3.3	0.3	36.1
14	46.5	3.1	3.8	-0.7	45.8
15	42.5	3.0	3.8	-0.8	41.6
16	41.8	3.7	3.9	-0.2	41.6
				Average	34.68

BCM

TABLE 4

PERTINENT PROCESS DATA

	8/21/91	8/22/91	8/23/91
Primary Air Flow To Burner (acfm)	452.2	444.8	435.0
Secondary Air Flow To Burner (acfm)	80.6	107.8	84.0
Acid Gas Flow (acfm)	536.9	556.2	539.4
Reflux Flow (gpm)	34.2	22.0	17.7
Still Column Temperature (^{o}F)	221.0	223.3	223.3

BETHLEHEM PLANT DESULFURIZER AND SULFUR RECOVERY FACILITIES

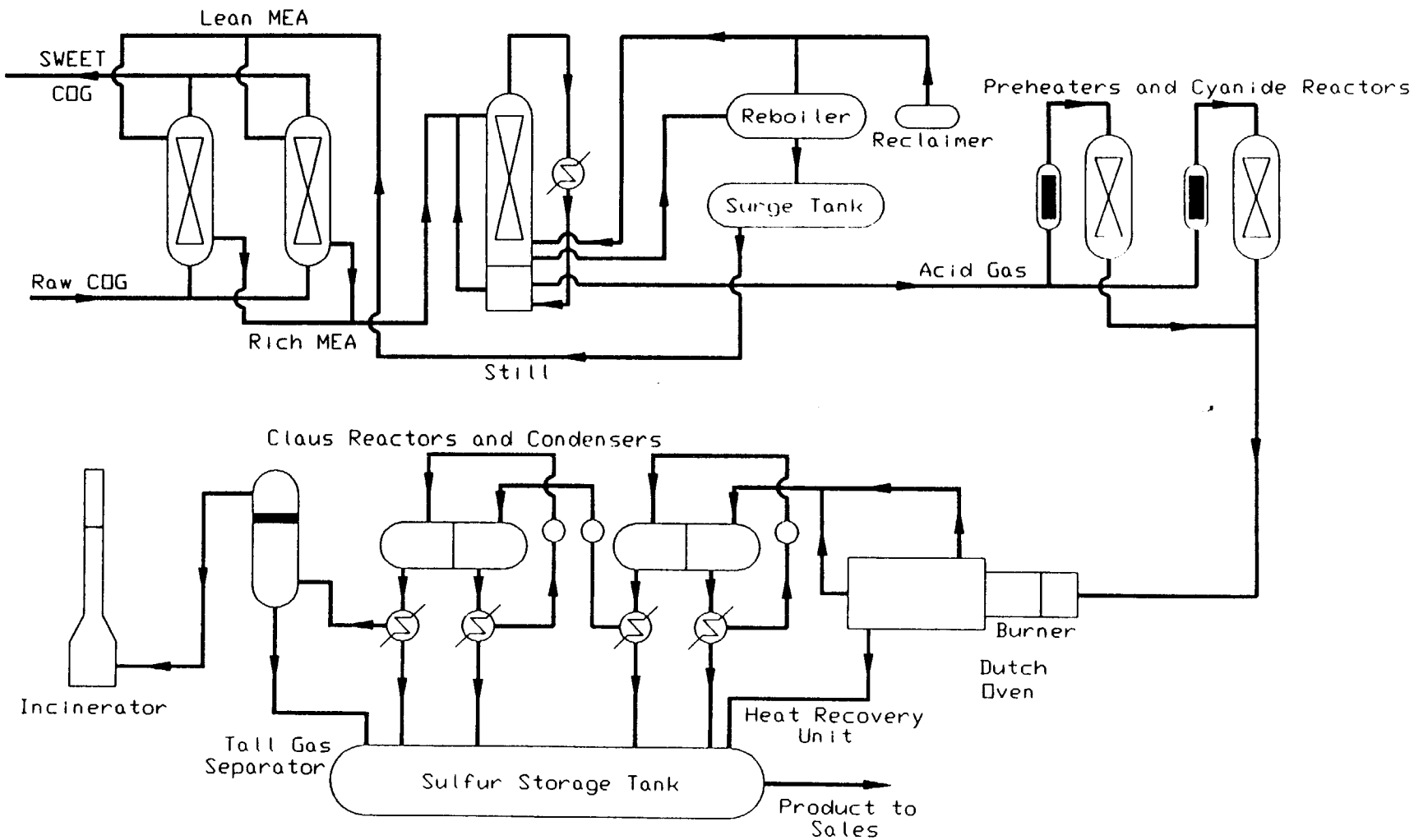
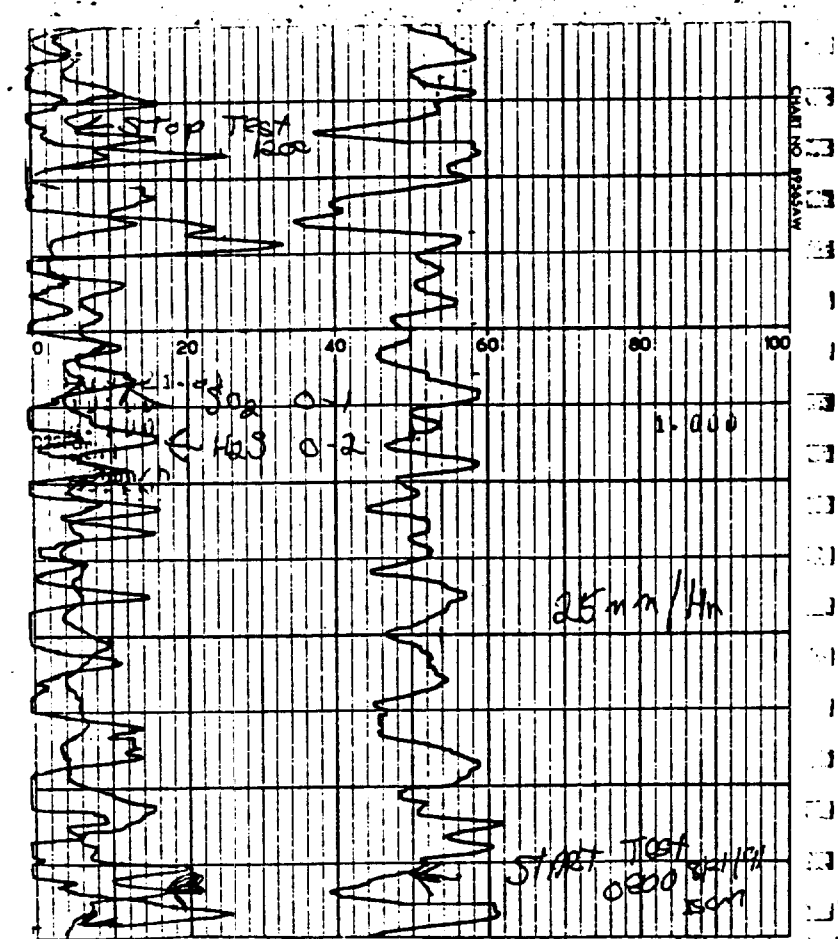


FIGURE I

APPENDIX A

TAIL GAS ANALYSIS STRIP CHART



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H2S 0-2
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Start Test
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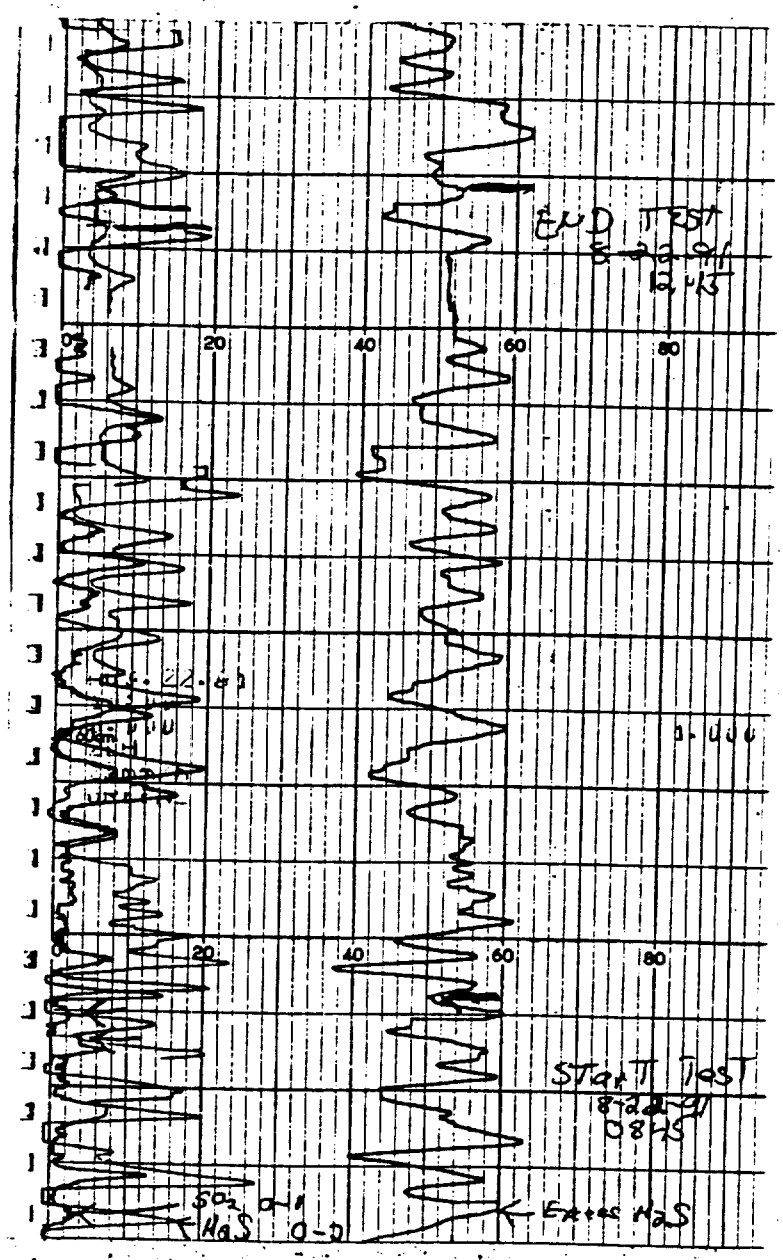
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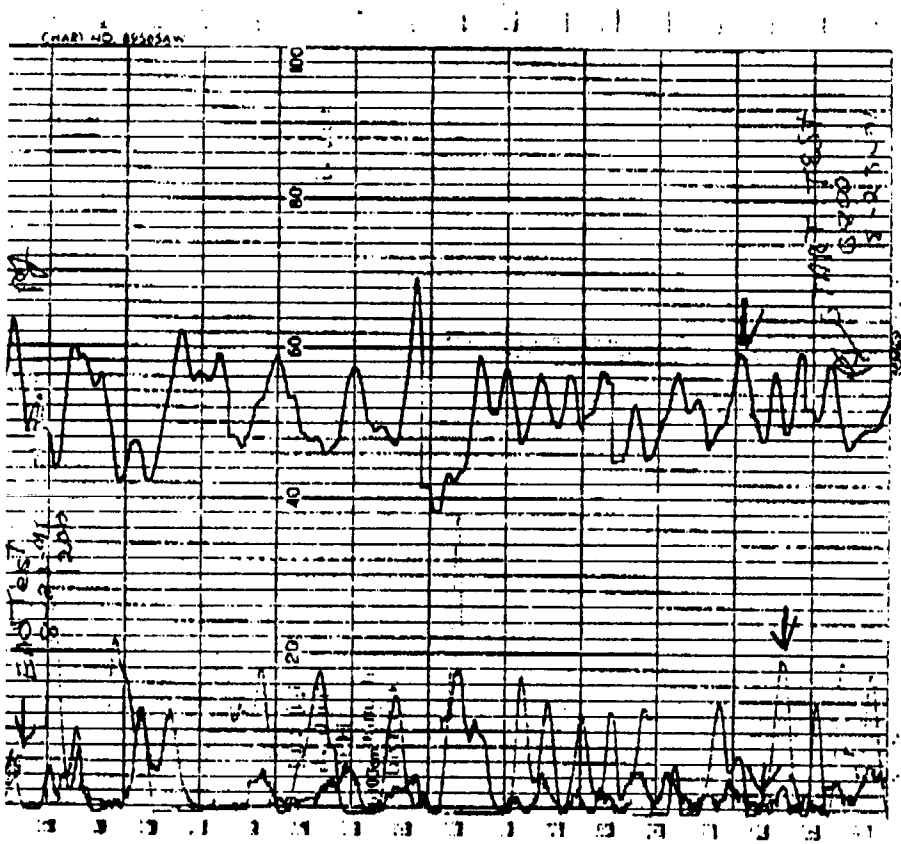
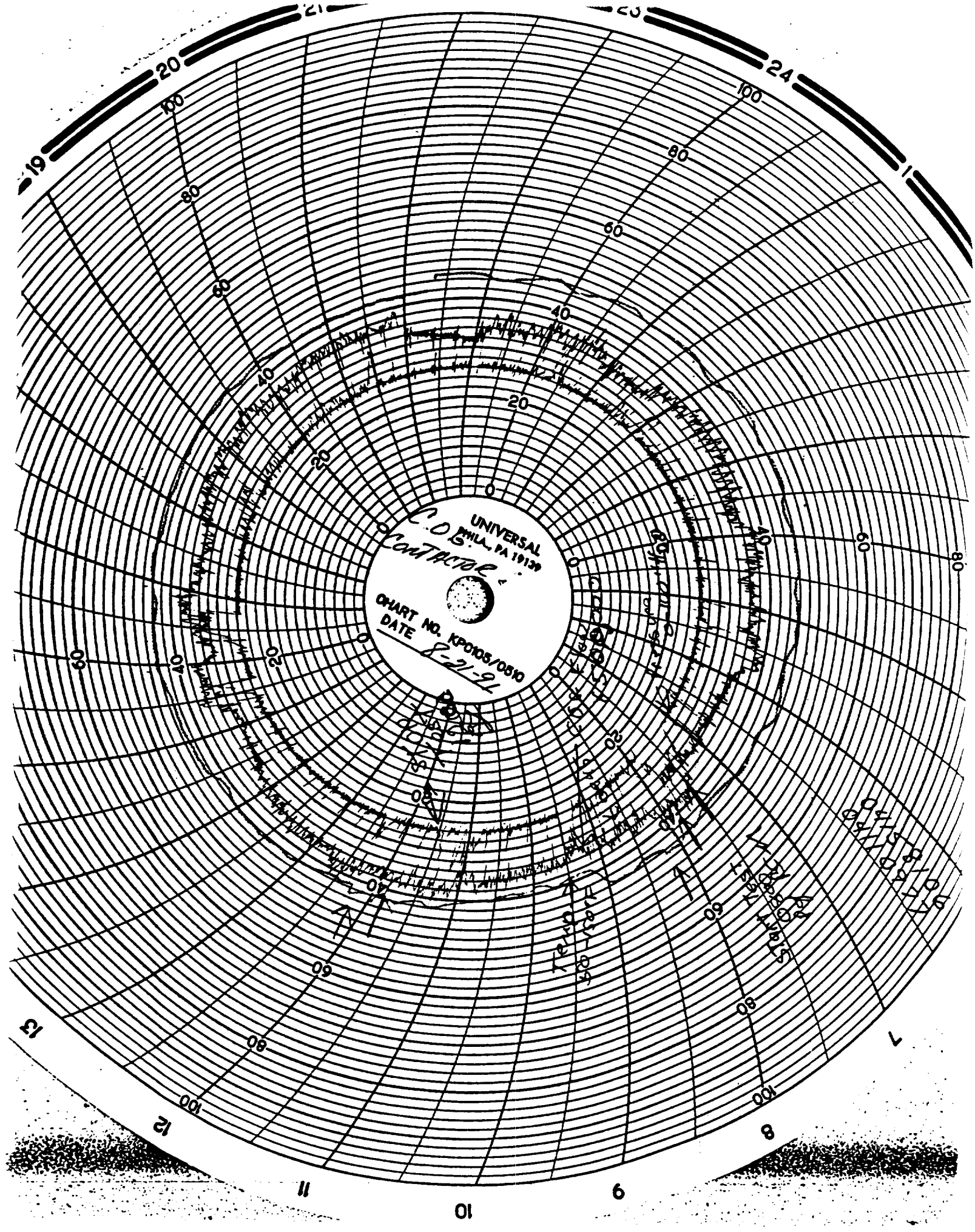
Excess H2S



Dupont

APPENDIX B

STRIP CHART RECORDINGS AND FIELD DATA SHEETS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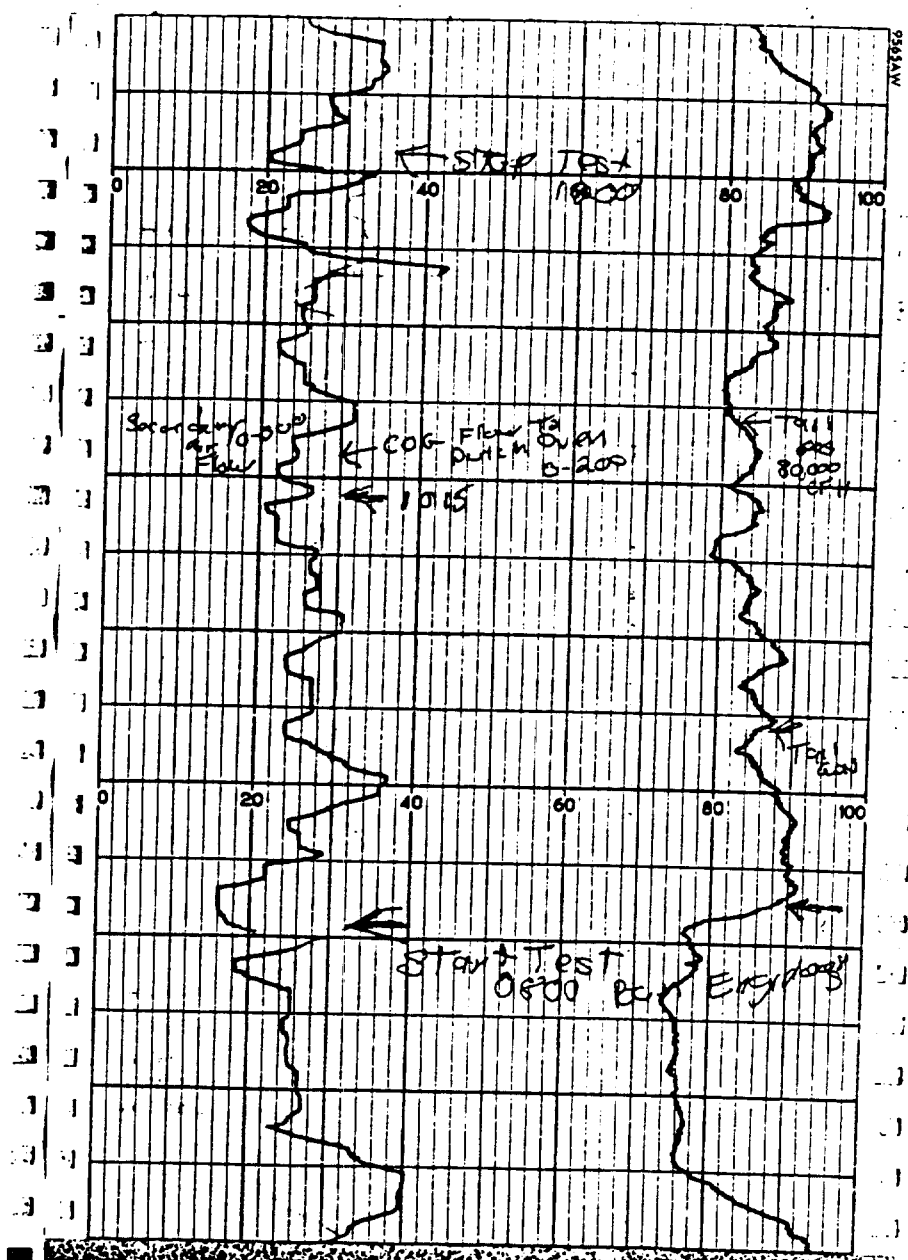
PHILA., PA 19139
CHART NO. KP0105/0510
DATE 8-21-91



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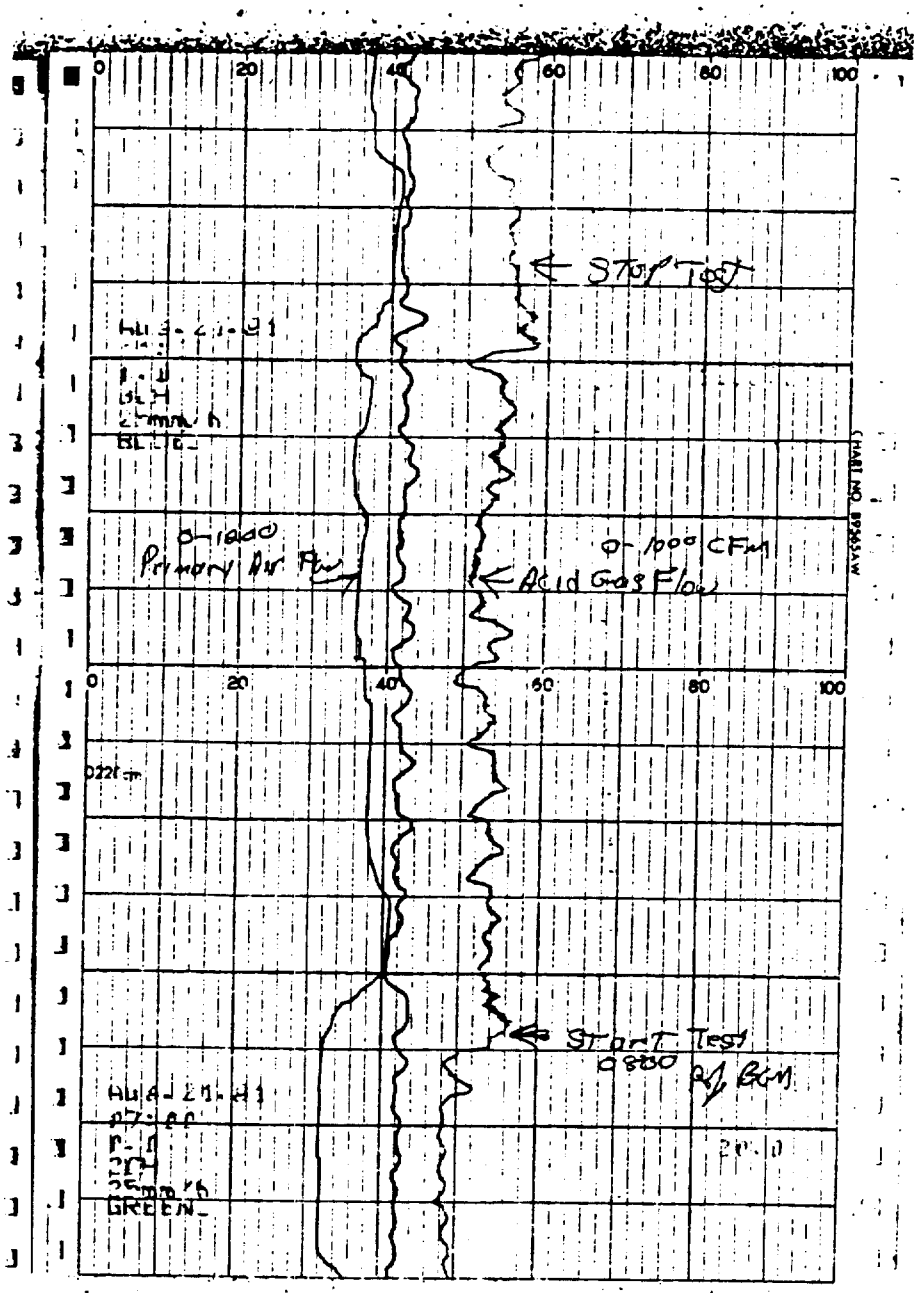
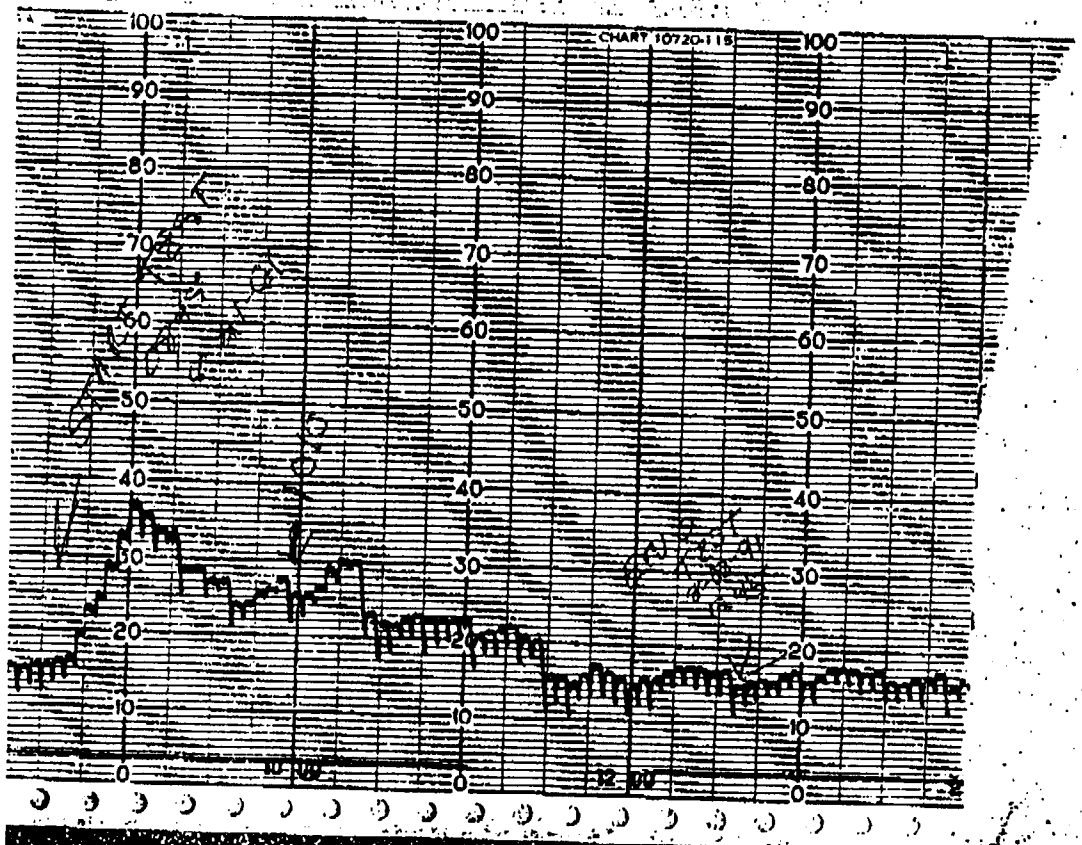
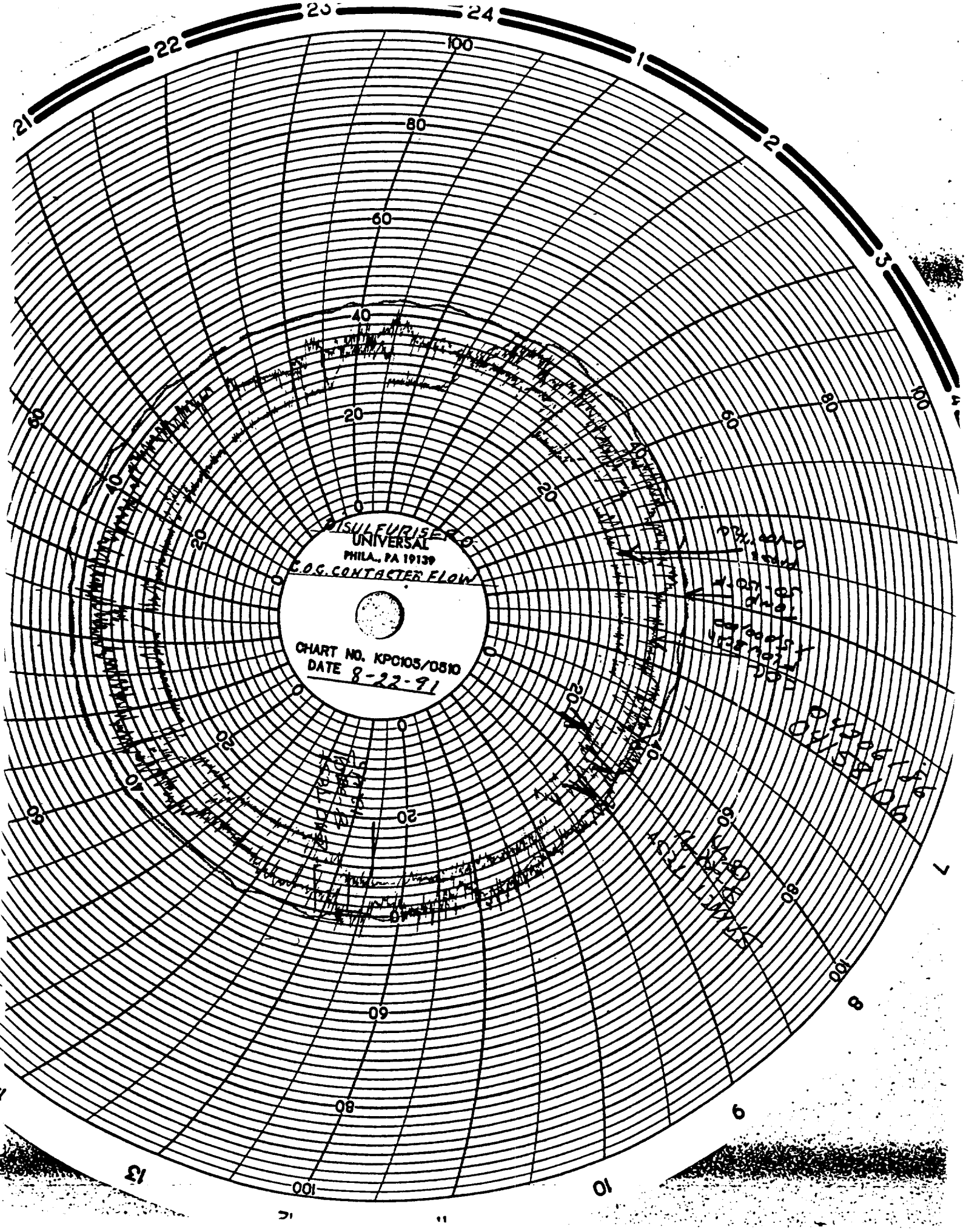
20
40
60
80
100
Start Test
0800 Bar Engineers

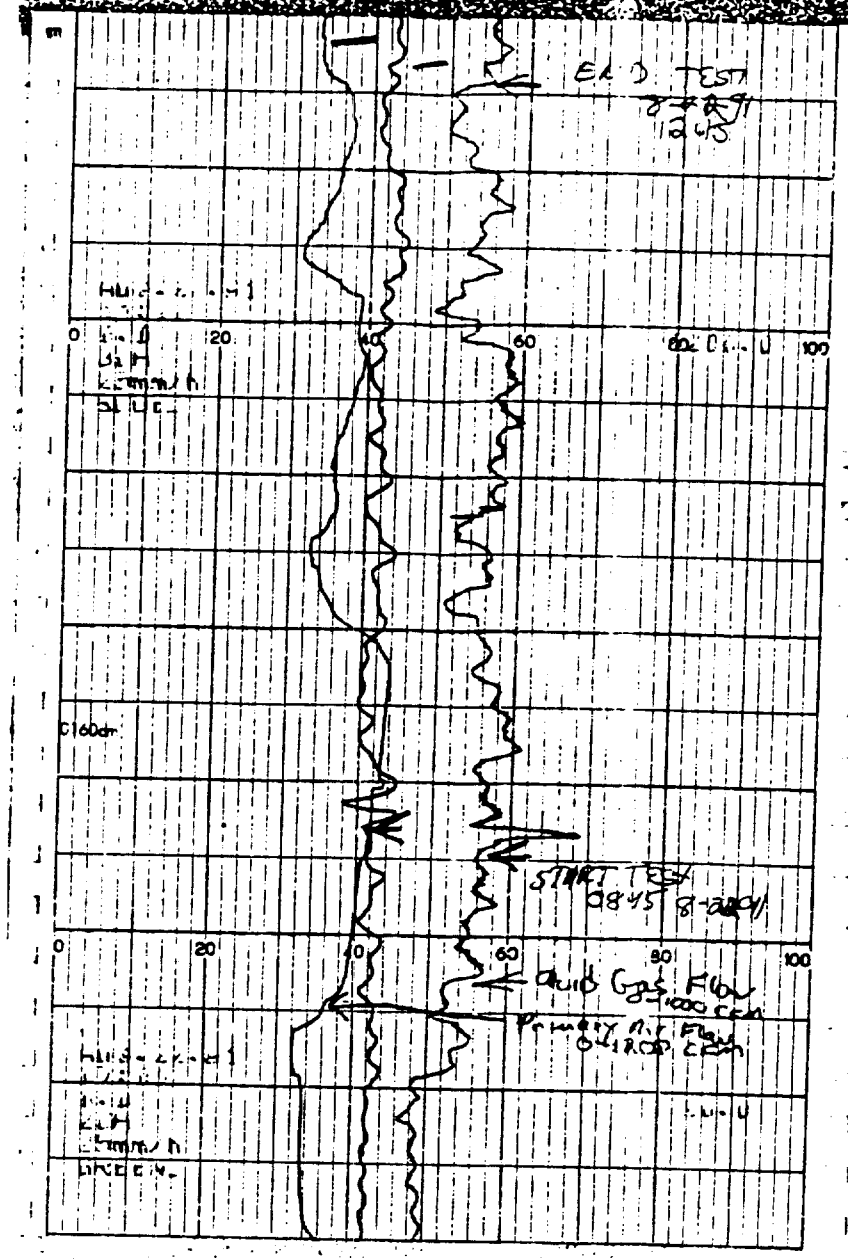


0
20
40
60
80
100
← Stop Test
0-1000
Primary Air Flow
0-1000 CFM
← Acid Gas Flow
0
20
40
60
80
100
← Start Test
0800
GREEN

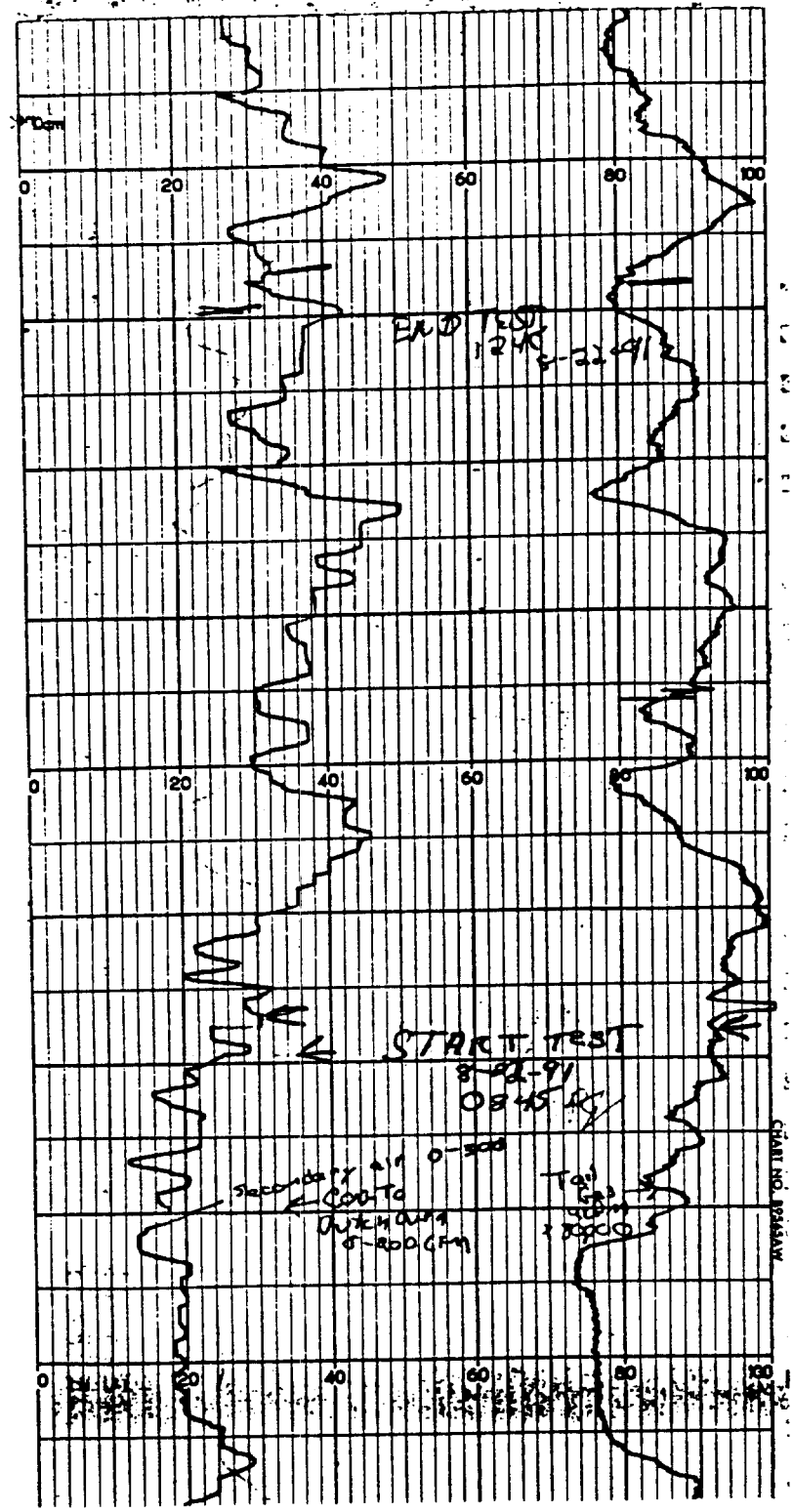


Reflux

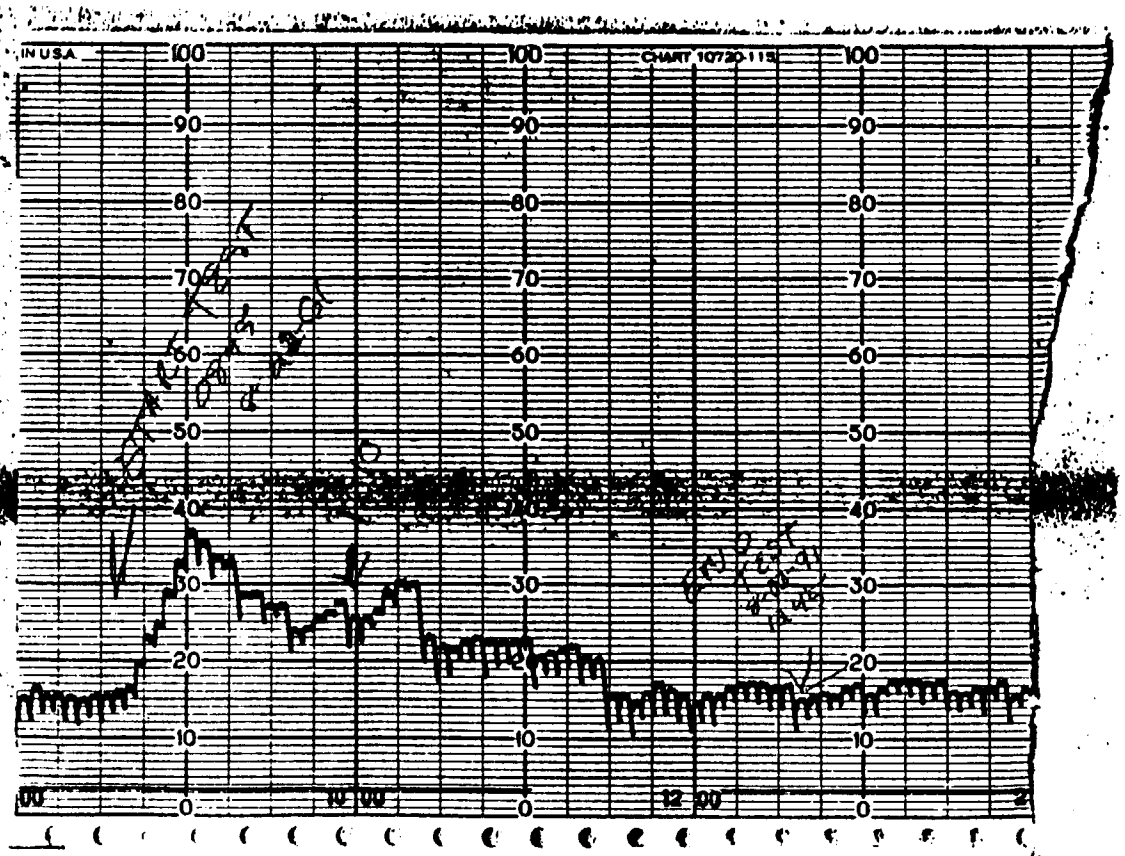

UNIVERSAL
PHILA., PA 19139
C.O.G. CONTACTER FLOW
CHART NO. KPC105/0810
DATE 8-22-91

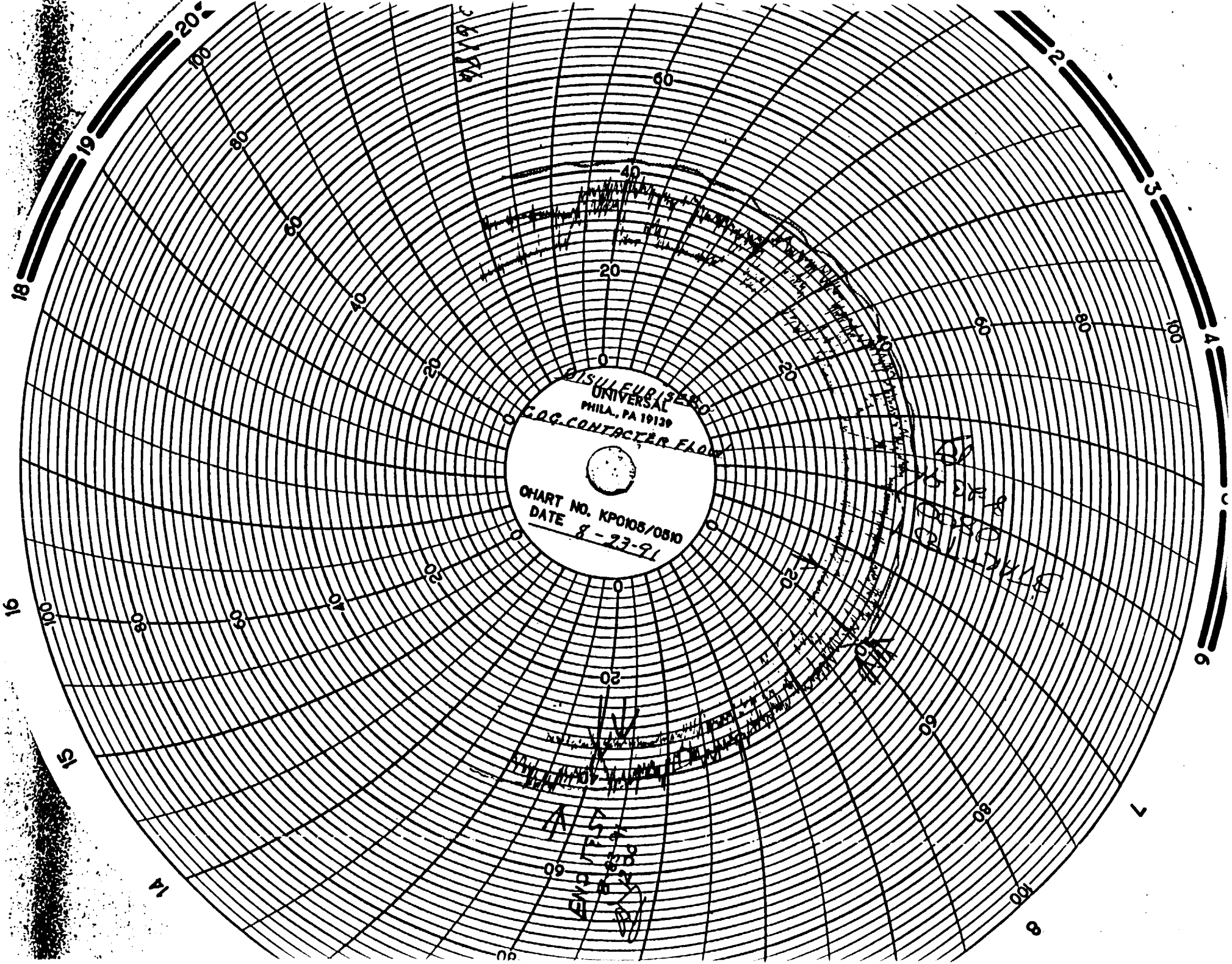


END TEST
1245
0
20
40
60
80
100
C160dm
START TEST
0845 8-22-91
0
20
40
60
80
100
Fluid Gas Flow
1000 CFM
Primary Air Flow

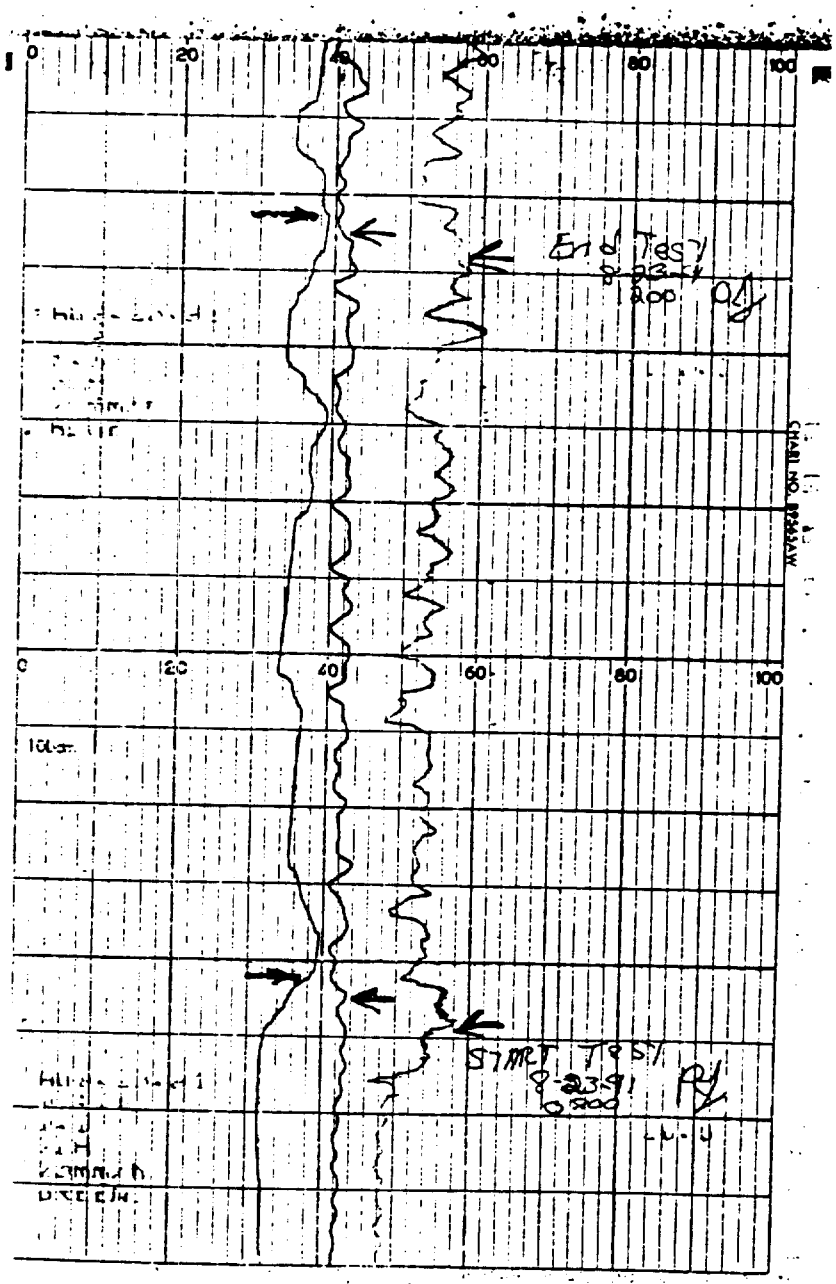


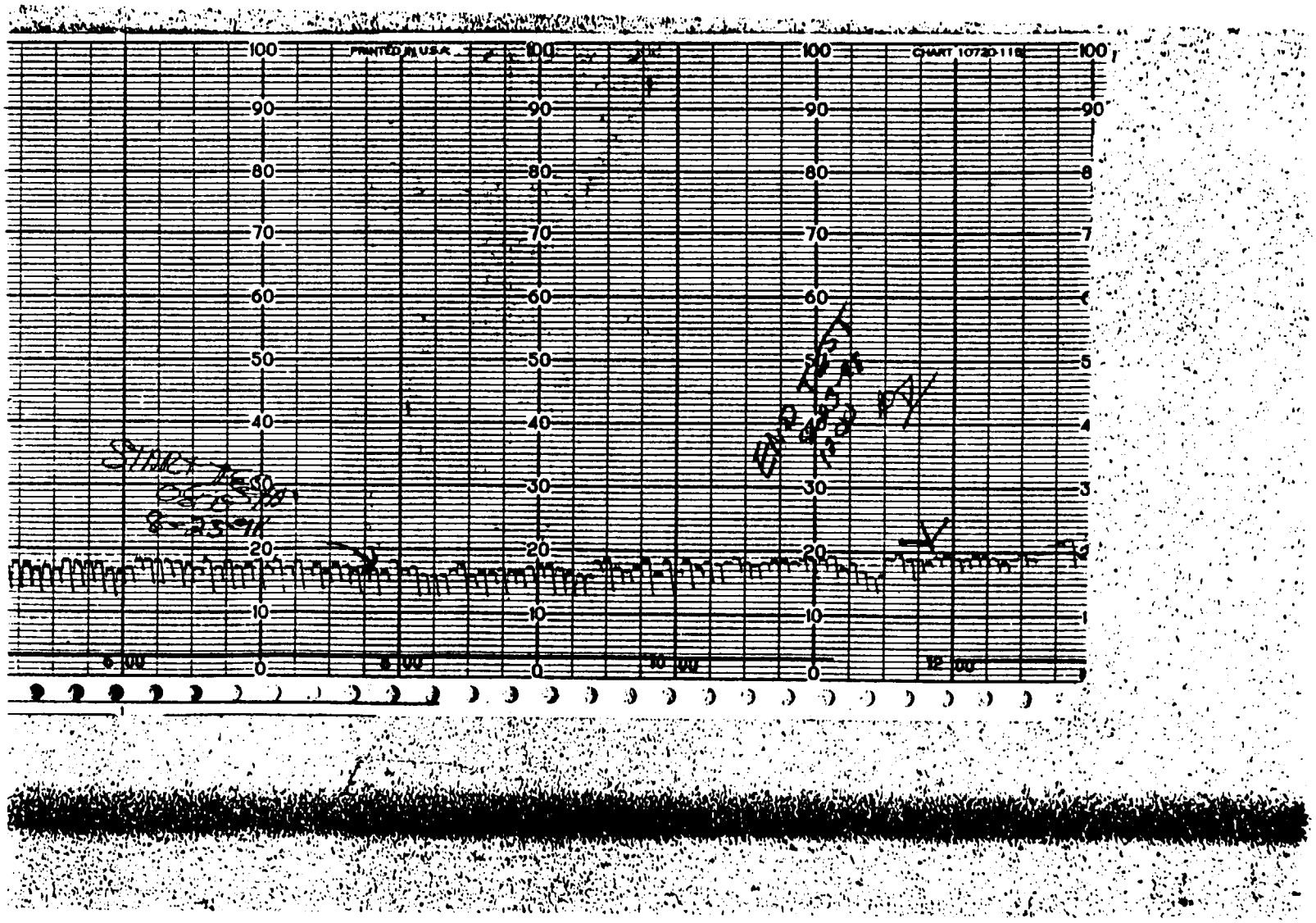
0
20
40
60
80
100
END TEST
12 HR
8-22-91
START TEST
8-22-91
0845 HR
Secondary air 0-300
Cool to
Outchoung
0-200 GPM
Tail
Gas
CHART NO. B9565AW


IN U.S.A.
CHART 10720-115
100
90
80
70
60
50
40
30
20
10
0
10 00
12 00


UNIVERSAL
PHILA., PA 19139
CHART NO. KP0105/0810
DATE 8-23-91

END TEST
1200
START TEST
0800
0
20
40
60
80
100


0
20
40
60
80
100
End Test
8-23-91
1200
0
20
40
60
80
100
START TEST
8-23-91
0800


PRINTED IN U.S.A.
CHART 10720-118
100
90
80
70
60
50
40
30
20
10
0
6 00
8 00
10 00
12 00
8-23-91

23 August 91

Sulfur Production

8/21 1379 gallons

8/22 457 gallons

8/23 12 midnight to 12 30 PM 478 gallons

BP

BETHLEHEM STEEL CORPORATION
BETHLEHEM PENNSYLVANIA
COKE OVEN GAS DESULFURIZATION FACILITY
TAIL GAS
DATE: 8-21-91
TECHNICIAN: Paul Fadlowen

Burner

Injection No	Sample Time	TG Flow (acfm)	Burner COG Flow (acfm) PSI	TG Press "H_2O	TG Temp °F	TG Moisture % by Vol.	Concentration (%) H_2S	SO_2	~~Remarks~~ See Air Flow to Burner	Primary Air Flow
1	0800	1200	70 / ~~1.5~~ 1.9	2.75	263		.30	~~.02~~ .10	90	480
2	0815	1200	68 / ~~1.5~~ 1.9	2.75	263		.20	.05	96	480
3	0830	1147	60 / ~~1.5~~ 1.9	2.75	263		.08	.08	84	456
4	0845	1120	58 / ~~1.4~~ 1.9	2.75	263		.10	.06	78	456
5	0900	1147	60 / ~~1.4~~ 1.9	2.75	263		.14	.05	84	456
6	0915	963	58 / ~~1.4~~ 1.9	2.75	263		.12	.07	~~44~~ 81	456
7	0930	1120	56 / ~~1.2~~ 1.9	2.75	263		.12	.08	~~70~~ 69	444
8	0945	1093	56 / ~~1.2~~ 1.9	2.75	263		.12	.04	72	432
9	1000	1107	56 / ~~1.2~~ 1.9	2.75	263		.14	.04	84	432
10	1015	1093	56 / ~~1.2~~ 1.9	2.50	263		.20	.02	84	432
11	1030	1080	54 / ~~1.2~~ 1.9	2.50	263		.10	.09	72	432
12	1045	1120	56 / ~~1.3~~ 1.9	2.25	263		.16	.03	75	432
13	1100	1133	54 / ~~1.4~~ 1.9	2.50	263		.16	.02	96	414
14	1115	1133	54 / ~~1.3~~ 1.9	2.75	263		.12	.10	75	456
15	1130	1173	64 / ~~1.5~~ 1.9	2.50	263		.24	.05	75	468
16	1145	1200	66 / ~~1.5~~ 1.9	3.00	263		.16	.04	75	480
									80.6	452.2

16.9

Tail Gas

~~Wet~~ Dry Bulb	~~Dry~~ Wet Bulb
268.2	156.6
268.6	156.0
267.6	156.8
267.5	156.5

PSI To "H_2O multiply by 27.68

BCM

COMPUTATION SHEET

Name of Client
Project
Description

Sheet Number 12 Of
Date
Job Number
Computed by
Checked by

BETHLEHEM STEEL CORPORATION
BETHLEHEM PENNSYLVANIA
COKE OVEN GAS DESULFURIZATION FACILITY
CONTACTOR OUTLET
DATE: 8-21-91
TECHNICIAN: Paul [illegible]

Injection No	Sample Time	Flow ~~(acfm)~~ (scfm)	Temp. (°F)	Press. ("H_2O)	Pb ("Hg)	Masture (% by Vol.)	Concentration (PPM) H_2S	COS	CS_2	Remarks ~~Reflux Flow (GPM)~~
1	0800	31,667	92	33	29.63	4.9	.042	.002	.001	
2	0815	30,000	92	28	29.63	4.9	.042	.002	.001	
3	0830	30,000	92	26	29.64	4.9	.036	.002	.001	
4	0845	29,167	91	26	29.64	4.8	.034	.002	.001	~~35~~
5	0900	30,000	90	26	29.65	4.7	.045	.002	.001	~~34~~
6	0915	28,333	89	28	29.65	4.6	.041	.002	.001	~~36~~
7	0930	30,833 ~~31,667~~	90	28	29.65	4.7	.036	.003	.001	~~35~~
8	0945	29,167	90	30	29.64	4.7	.038	.002	.001	35
9	1000	29,167	90	29	29.64	4.7	.035	.003	.001	34
10	1015	29,167	90	26	29.64	4.7	.038	.002	.002	34
11	1030	29,167 ~~[illegible]~~	89	26	29.64	4.6	.042	.002	.001	35
12	1045	30,000	90	26	29.65	4.7	.037	.002	.001	33
13	1100	30,000	91	26	29.65	4.8	.036	.002	.001	35
14	1115	31,667	92	29	29.65	4.9	.050	.002	.001	33
15	1130	31,667	92	28	29.65	4.9	.045	.002	.001	35
16	1145	31,667	92	28	29.65	4.9	.045	.002	.001	35

STill Temp - 218 °F
224 °F

BCM

COMPUTATION SHEET

Name of Client
Project
Description

Sheet Number ____ Of ____
Date
Job Number
Computed by ____ Checked by ____

BETHLEHEM STEEL CORPORATION
BETHLEHEM PENNSYLVANIA
COKE OVEN GAS DESULFURIZATION FACILITY
CONTACTOR OUTLET
DATE: 8-22-91
TECHNICIAN: Paul Fadlowicz

Injection No	Sample Time	Flow (scfm)	Temp. (°F)	Press. ("H_2O)	Pb ("Hg)	Moisture (% by Vol.)	Concentration (PPM) H_2S	COS	CS_2	Remarks
1	0845	30000	86	27	4.2	~~4.2~~ 29.81	.033	.001	.001	
2	0900	30833	86	29	4.2	29.81	.048	.002	.001	
3	0915	31667	86	30	4.2	29.81	.039	.002	.002	
4	0930	31667	86	30	4.2	29.81	.035	.002	.001	
5	0945	30833	87	28	4.3	29.81	.036	.002	.001	
6	1000	30833	88	30	4.4	29.81	.037	.002	.002	
7	1015	31667	88	31	4.4	29.81	.042	.002	.001	
8	1030	32500	89	33	4.5	29.81	.037	.002	.001	
9	1045	32500	90	33	4.6	29.80	.049	.002	.001	
10	1100	31667	89	33	4.5	29.80	.049	.002	.002	
11	1115	31667	89	32	4.5	29.80	.033	.002	.001	
12	1130	32500	90	33	4.6	29.80	.041	.002	.001	
13	1145	32500	90	33	4.6	29.79	.043	.002	.001	
14	1200	32500	90	33	4.6	29.79	.038	.002	.002	
15	1215	30833	90	33	4.6	29.78	.036	.002	.001	
16	1230	33333	90	33	4.6	29.77	.053	.002	.001	

Tail Gas
Wet Bulb 159.0 Dry Bulb 270.2

BCM

COMPUTATION SHEET

Name of Client
Project
Description

Sheet Number ___ of ___
Date
Job Number
Computed by ___ Checked by ___

BETHLEHEM STEEL CORPORATION
BETHLEHEM PENNSYLVANIA
COKE OVEN GAS DESULFURIZATION FACILITY
TAIL GAS
DATE: 8-22-91
TECHNICIAN: Paul Fadlowine

INJECTION NO	SAMPLE TIME	Burner Sweet Gas Flow (acfm)	Burner Press. ("H2O)	Burner Gas Temp (°F)	TG FLOW (acfm)	TG Press "H2O	TG Temp. °F	TG Moisture % by VOL.	CONCENTRATION H2S %	CONCENTRATION SO2 %	REMARKS
1	0845	~~[illegible]~~ 70	~~52.5~~ 41.52 1661		1253	3.00	268		.14	.10	
2	0900	72	~~52.5~~ 45.67 1661		1293	3.00	270		.22	.03	
3	0915	70	~~52.5~~ 49.82 1661		1293	3.00	271		.24	.02	
4	0930	56	~~52.5~~ 41.52 1661		1267	2.50	271		.14	.03	
5	0945	44	~~52.5~~ 37.37 1661		1107	2.75	271		.08	.08	
6	1000	48	~~52.5~~ 37.37 1661		1133	2.75	271		.18	.08	
7	1015	52	52.59		1120	3.00	271		.18	.06	
8	1030	54	58.13		1200	3.25	272		.16	.04	
9	1045	60	60.89		1240	3.25	274		.20	.03	
10	1100	56	60.89		1253	3.25	274		.22	.04	
11	1115	48	47.06		1187	2.00	273		.16	.10	
12	1130	44	52.54		1093	2.50	271		.14	.10	
13	1145	50	55.12		1120	2.75	270		.16	.07	
14	1200	54	50.13		1173	2.75	269		.16	.02	
15	1215	56	49.82		1160	2.25	268		.14	.02	
16	1230	48	49.82		1093	2.50	266		.10	.10	

BCM

COMPUTATION SHEET

Name of Client _____
Project _____
Description _____

Sheet Number _____ Of _____
Date _____
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Computed by _____ Checked by _____

BETHLEHEM STEEL CORPORATION
BETHLEHEM PENNSYLVANIA
COKE OVEN GAS DESULFURIZATION FACILITY
OTHER PERTINANT DATA
DATE: 8-22-91
TECHNICIAN: Paul Fullowiec

INJECTION NO	PRIMARY AIR FLOW TO BURNER (ACFM)	SECONDARY AIR FLOW TO BURNER (ACFM)	ACID GAS FLOW (ACFM)	REFLUX FLOW (GPM)	STILL COLUMN TEMP. (°F)
1	504	75	590	22	
2	516	90	590	32	
3	516	120	580	31	
4	468	126	570	26	
5	396	105	530	26	
6	396	105	550	26	220 °F
7	432	102	550	25	
8	444	111	550	22	
9	456	114	550	22	
10	468	126	550	21	220°F
11	420	126	550	20	
12	408	105	520	15	
13	408	96	540	16	
14	432	102	560	15	230°F
15	444	114	540	17	
16	408	105	520	16	
	444.8	107.8	56.2	220	223.3

BCM

COMPUTATION SHEET

Name of Client
Project
Description

Sheet Number ___ Of ___
Date
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Computed by ___ Checked by ___

BETHLEHEM STEEL CORPORATION
BETHLEHEM PENNSYLVANIA
COKE OVEN GAS DESULFURIZATION FACILITY
CONTACTOR OUTLET
DATE: 8-23-01
TECHNICIAN: Paul Fadlowicz

Injection No	Sample Time	Flow (scfm)	Temp. (°F)	Press. ("H_2O)	Pb ("Hg)	Moisture (% by Vol.)	Concentration (PPM) H_2S	COS	CS_2	Remarks
1	0800	31667	89	26	29.84		.047	.002	.001	
2	0815	30833	88	26	29.84		.039	.002	.001	
3	0830	30833	88	27	29.84		.042	.002	.001	
4	0845	30000	86	29	29.85		.043	.001	.001	
5	0900	30833	86	29	29.85		.052	.002	.001	
6	0915	30833	86	30	29.85		.038	.002	.001	
7	0930	30833	87	30	29.85		.049	.001	.001	
8	0945	30000	87	30	29.86		.046	.002	.001	
9	1000	30833	86	32	29.86		.050	.002	.001	
10	1015	30833	88	33	29.86		.041	.002	.001	
11	1030	31667	89	33	29.86		.059	.002	.001	
12	1045	30833	90	33	29.87		.043	.001	.001	
13	1100	31667	90	33	29.87		.050	.002	.001	
14	1115	32500	90	33	29.87		.066	.002	.001	
15	1130	33333	90	33	29.86		.060	.002	.001	
16	1145	32500	92	33	29.86		.059	.002	.001	

Glenn Gold - Chemist
Dave Mack - Chemist Supervisor

BCM

COMPUTATION SHEET

Name of Client
Project
Description

Sheet Number ___ Of ___
Date
Job Number
Computed by ___ Checked by ___

BETHLEHEM STEEL CORPORATION
BETHLEHEM PENNSYLVANIA
COKE OVEN GAS DESULFURIZATION FACILITY
TAIL GAS
DATE: 8-23-91
TECHNICIAN: Paul Sadowski

INJECTION NO	SAMPLE Time	Burner Sweet Gas Flow (acfm)	Burner Press. (" H_2O)	Burner Gas Temp (°F)	TG FLOW (acfm)	TG Press " H_2O	TG Temp. °F	TG Moisture % by vol.	CONCENTRATION H_2S	CONCENTRATION SO_2	Remarks
1	0800	~~1176~~	52.54	~~263~~	~~550~~ 1173	3.25	263		.20	.02	
2	0815	~~1054~~	49.82		1107	3.25	263		.08	.02	
3	0830	62	49.82		1093	3.25	263		.12	.02	
4	0845	52	52.54		1093	3.25	263		.11	.02	
5	0900	54	52.54		1120	2.75	263		.12	.02	
6	0915	52	44.29		1107	2.25	263		.16	.04	
7	0930	48	47.06		1067	2.25	263		.28	.10	
8	0945	50	52.54		1080	2.25	263		.12	.02	
9	1000	52	49.82		1080	2.50	263		.12	.02	
10	1015	56	52.54		1120	2.75	263		.19	.02	
11	1030	56	58.13		1107	3.00	263		.19	.02	
12	1045	60	55.36		1173	2.50	263		.32	.01	
13	1100	56	47.06		1120	2.25	263		.20	.06	
14	1115	50	58.13		1120	2.75	263		.20	.03	
15	1130	56	60.89		1160	3.25	264		.18	.04	
16	1145	60	58.13		1107	3.00	264		.24	.02	

Tail Gas

Wet Bulb	Dry Bulb
156.6	241.6

BCM

COMPUTATION SHEET

Name of Client
Project
Description

Sheet Number ____ Of ____
Date
Job Number
Computed by ____ Checked by ____

BETHLEHEM STEEL CORPORATION
BETHLEHEM PENNSYLVANIA
COKE OVEN GAS DESULFURIZATION FACILITY
OTHER PERTINANT DATA
DATE: 8-23-91
TECHNICIAN: Paul Sadlowne

INJECTION NO	PRIMARY AIR FLOW TO BURNER (ACFM)	SECONDARY AIR FLOW TO BURNER (ACFM)	ACID GAS FLOW (ACFM)	REFLUX FLOW (GPM)	STILL COLUMN TEMP. (°F)
1	~~665~~ 456	84	550	17	
2	444	81	550	17	
3	432	72	530	17	
4	432	78	530	17	224
5	432	81	530	17	
6	444	90	530	17	
7	408	73	520	18	
8	408	78	520	18	
9	420	69	530	18	
10	432	69	540	18	223
11	414	73	540	18	
12	456	99	550	18	
13	432	96	520	19	
14	420	90	550	17	223
15	444	93	560	18	
16	456	108	570	19	
	435.0	84.0	539.4	17.7	223.3

BCM

COMPUTATION SHEET

Name of Client
Project
Description

Sheet Number ____ Of ____
Date
Job Number
Computed by ____ Checked by ____

APPENDIX C

SWEET GAS ANALYTICAL DATA

CG-20Q113

ANALYST: KNECHT-108

GC FLAME CURVE

	SECOND PER 15 ML	ML PER MIN	CALC. PPM GAS	COUNTS	SQUARE ROOT HEIGHT	C/SRH
FLOW = 68						
H2S	10.49	85.88	596 / ML/MIN = 6.9	70070	129.2	542
	10.44					
	10.50					
AVERAGE	10.48					
COS			377.6 / ML/MIN = 4.4	23399	63.2	370
CS2			308 / ML/MIN = 3.6	268417	216.6	1239
*********	*********	*********	*********	*********	*********	*********
FLOW = 38						
H2S	21.82	41.28	596 / ML/MIN = 14.4	333193	281.6	1183
	21.80					
	21.79					
AVERAGE	21.80					
COS			377.6 / ML/MIN = 9.1	100703	130.4	772
CS2			308 / ML/MIN = 7.5	863130	387.3	2229
*********	*********	*********	*********	*********	*********	*********
FLOW = 18						
H2S	42.50	21.19	596 / ML/MIN = 28.1	1268190	543	2336
	42.57					
	42.40					
AVERAGE	42.47					
COS			377.6 / ML/MIN = 17.8	366729	248.5	1476
CS2			308 / ML/MIN = 14.5	2744516	685.3	4005
*********	*********	*********	*********	*********	*********	*********

ANALYST: KNECHT-108

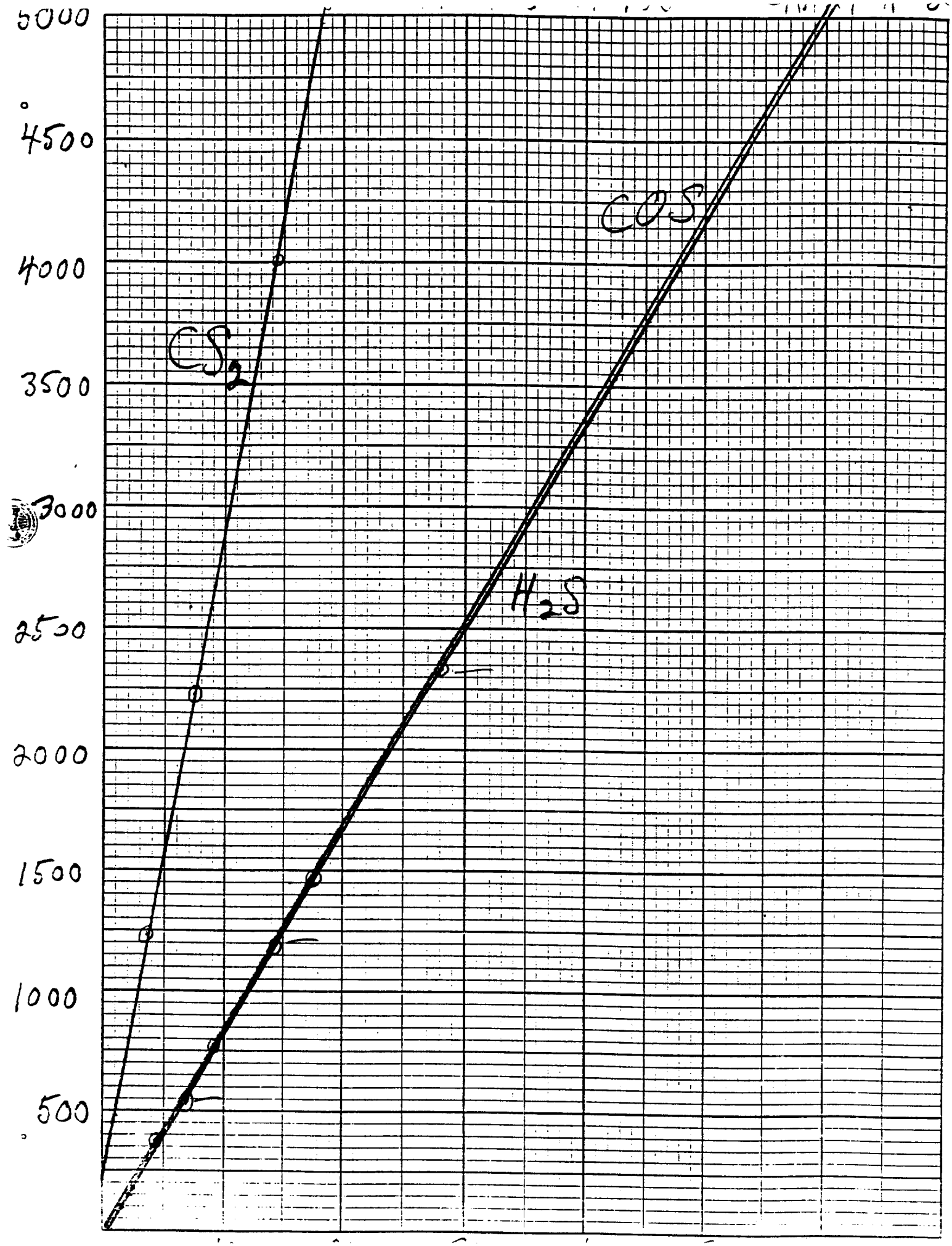
GC FLAME CURVE

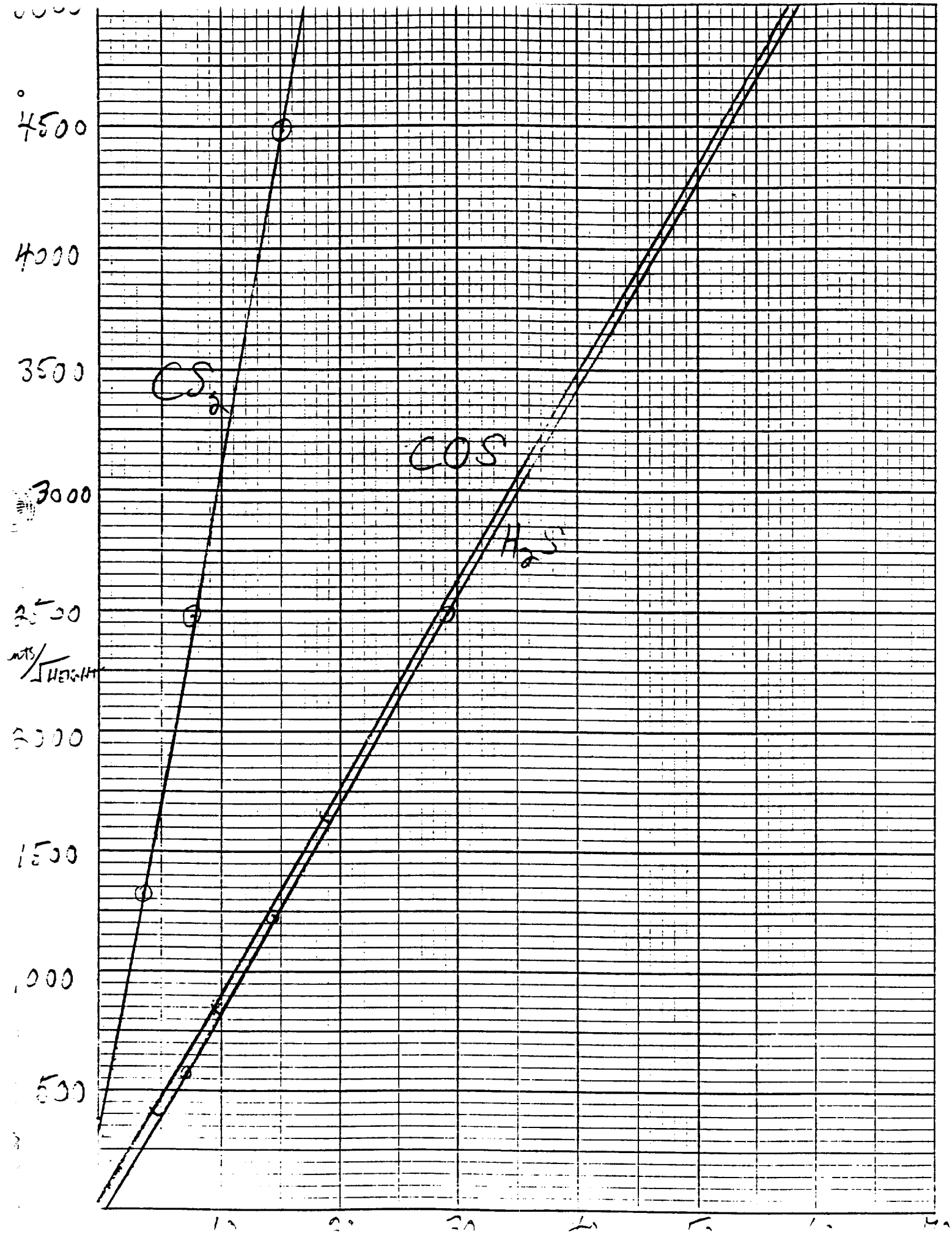
	SECOND PER 15 ML	ML PER MIN.	CALC. PPM GAS		COUNTS	SQUARE ROOT HEIGHT	C/SRH
FLOW = 68							
H2S	10.62	84.59	596 / ML/MIN.	= 7.0	78915	136.5	578
	10.64						
	10.66						
AVERAGE	10.64						
COS			377.6 / ML/MIN.	= 4.5	28633	70	409
CS2			306 / ML/MIN.	= 3.6	304632	230.6	1321
*********	*********	*********	*********	*********	*********	*********	*********
FLOW = 38							
H2S	21.81	41.25	596 / ML/MIN.	= 14.4	357821	291	1236
	21.87						
	21.84						
AVERAGE	21.82						
COS			377.6 / ML/MIN.	= 7.2	119007	142	838
CS2			306 / ML/MIN.	= 7.5	1066184	430.8	2475
*********	*********	*********	*********	*********	*********	*********	*********
FLOW = 16-17							
H2S	44.01	20.46	596 / ML/MIN.	= 29.1	1434775	5755	2493
	44.03						
	43.90						
AVERAGE	43.98						
COS			377.6 / ML/MIN.	= 18.5	452816	275.3	1645
CS2			306 / ML/MIN.	= 15.1	3426661	763.9	4486
*********	*********	*********	*********	*********	*********	*********	*********

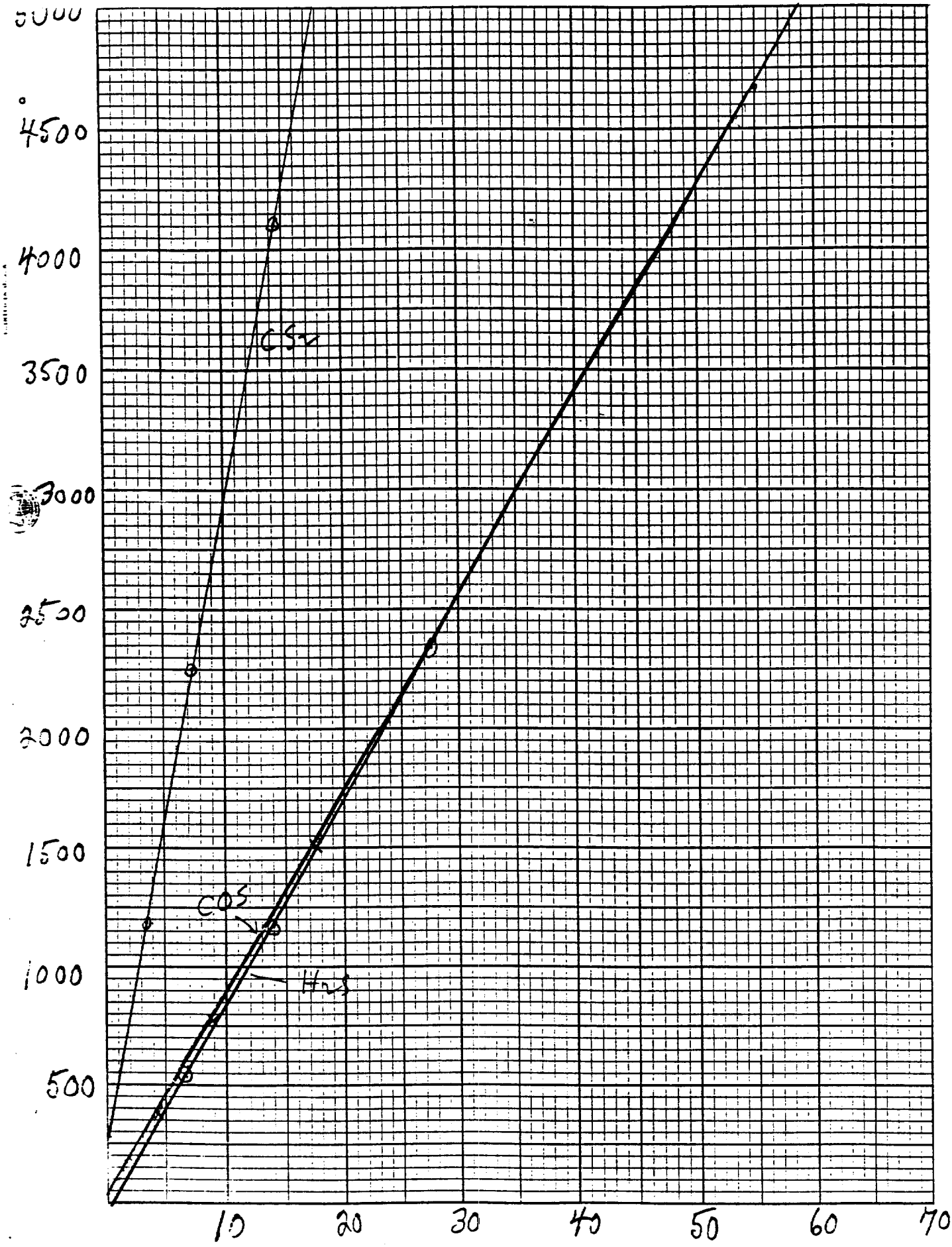
ANALYST: KNECHT-108

GC FLAME CURVE

	SECOND PER 15 ML	ML PER MIN.	CALC. PPM GAS		COUNTS	SQUARE ROOT HEIGHT	C/SRH
FLOW = 70							
H2S	10.23	87.80	596 / ML/MIN.	= 6.8	70236	128.7	546
	10.27						
	10.26						
AVERAGE	10.25						
COS			377.6 / ML/MIN.	= 4.3	24083	64.1	376
CS2			306 / ML/MIN.	= 3.5	245954	207.1	1188
FLOW = 40							
H2S	21.10	42.61	596 / ML/MIN.	= 14.0	320718	274.8	1167
	21.14						
	21.12						
AVERAGE	21.12						
COS			377.6 / ML/MIN.	= 8.9	99527	130.3	764
CS2			306 / ML/MIN.	= 7.2	890391	3958	2250
FLOW = 16-17							
H2S	41.95	21.42	596 / ML/MIN.	= 27.8	1269930	541.3	2346
	42.06						
	42.04						
AVERAGE	42.02						
COS			377.6 / ML/MIN.	= 17.6	383520	254.8	1504
CS2			306 / ML/MIN.	= 14.4	2894754	705	4106


5000
4500
4000
3500
3000
2500
2000
1500
1000
500
COS
CS2
H2S


4500
4000
3500
3000
2500
2000
1500
1000
500
CS2
COS
H2S


5000
4500
4000
3500
3000
2500
2000
1500
1000
500
CS2
COS
H2S
10
20
30
40
50
60
70

8-19-91-KNECHT-108

FLAME SIDE

	H_2S	COS	CS_2
1-OUTLET-8/17/91-6:30 AM-C.W.			
CT./SQ.RT.+HT.	N.D.	284	859
PPM	—	4.0	3.1
DIL-200/l	—	20	15.5
%	N.D.	.002	.002
2-OUTLET-8/17/91-6:30 AM-C.W.			
CT./SQ.RT.+HT.	N.D.	1691	4645
PPM	—	22.7	25.3
NO DILUTION	—	22.7	25.3
%	N.D.	.002	.003
3-OUTLET-8/18/91-NO TIME GIVEN-C.W.			
CT./SQ.RT.+HT.	2574	344	727
PPM	36.0	4.7	2.4
DIL-200/l	180	23.5	12
%	.018	.002	.001
4-OUTLET-8/19/91-7:13 AM-C.W.			
CT./SQ.RT.+HT.	3439	336	757
PPM	47.8	4.5	2.5
DIL-200/l	239	22.5	12.5
%	.024	.002	.001

8-21-91-KNECHT-108

FLAME SIDE

1-FLOW	68	VOL 15	SEC. 10.96, 10.96, 10.95	AVE. 10.96	MODE	✓
2-FLOW	38	" 15	" 22.43, 22.46, 22.48	" 22.46	"	✓
3-FLOW	16	" 15	" 44.27, 44.34, 44.41	" 44.34	"	✓
4-FLOW	68	" 15	" 10.49, 10.44, 10.50	" 10.48	"	✓
5-FLOW	38	" 15	" 21.82, 21.80, 21.79	" 21.80	"	✓
6-FLOW	18	" 15	" 42.50, 42.57, 42.40	" 42.47	"	✓
7-OUTLET-8/21/91-BAG #1-DIL 200/l				—	"	✓
8-OUTLET-8/21/91-BAG #1-DIL 100/l				—	"	✓
9-OUTLET-8/21/91-BAG #2-DIL 100/l				—	"	✓
10-OUTLET-8/21/91-BAG #3-DIL 100/l				—	"	✓
11-OUTLET-8/21/91-BAG #3-DIL 200/l				—	"	✓

FAME
SIDE

12 - OUTLET - 8/21/91 - BAG # 4 - DIL 100/l — ✓
13 - OUTLET - 8/21/91 - BAG # 5 - DIL 100/l — ✓
14 - OUTLET - 8/21/91 - BAG # 5 - DIL 300/l — ✓
15 - OUTLET - 8/21/91 - BAG # 5 - DIL 100/l — ✓
16 - OUTLET - 8/21/91 - BAG # 6 - DIL 100/l — ✓
17 - OUTLET - 8/21/91 - BAG # 7 - DIL 100/l — ✓
18 - OUTLET - 8/21/91 - BAG # 8 - DIL 100/l — ✓
19 - OUTLET - 8/21/91 - BAG # 8 - DIL 300/l — ✓
20 - OUTLET - 8/21/91 - BAG # 9 - DIL 100/l — ✓
21 - OUTLET - 8/21/91 - BAG # 10 - DIL 100/l — ✓
22 - OUTLET - 8/21/91 - BAG # 10 - DIL 300/l — ✓
23 - OUTLET - 8/21/91 - BAG # 11 - DIL 100/l — ✓
24 - OUTLET - 8/21/91 - BAG # 12 - DIL 100/l — ✓
25 - OUTLET - 8/21/91 - BAG # 12 - DIL 300/l — ✓
26 - OUTLET - 8/21/91 - BAG # 13 - DIL 100/l — ✓
27 - OUTLET - 8/21/91 - BAG # 14 - DIL 200/l — ✓
28 - OUTLET - 8/21/91 - BAG # 14 - DIL 100/l — ✓
29 - OUTLET - 8/21/91 - BAG # 15 - DIL 100/l — ✓
30 - OUTLET - 8/21/91 - BAG # 16 - DIL 100/l — ✓

$\boxed{\text{DIL} - \frac{\text{PPM}}{100/l}\ \%}$ = H_2S $\frac{2854462}{809.7} = 3525$

42.4 ppm × 10 = 424 ppm ≈ .042 %

COS $\frac{5267}{30.4} = 173$

2.5 ppm × 10 = 25 ppm ≈ .002 %

CS_2 $\frac{38325}{80.7} = 475$

1.0 ppm × 10 = 10 ppm ≈ .001 %

BAG #2

100/l H_2S $\frac{2818812}{801.1} = 3579$

42.3 ppm × 10 423 ppm = .042 %

COS $\frac{4999}{29.8} = 168$

2.4 ppm × 10 = 24 ppm = .002 %

CS_2 $\frac{38235}{80.4} = 476$

1.0 × 100 = 10 = .001 %

BAG #3

100/l H_2S $\frac{2052860}{690.7} = 2972$

35.9 × 10 = 359 ppm = .036 %

300/l COS $\frac{50866}{92.4} = 550$ $\frac{6.8 \times 1000}{300} = 22.7 = .002\%$

300/l CS_2 $\frac{340457}{242.9} = 1402$ $\frac{4.3 \times 1000}{300} = 14.3 = .001\%$

BAG #4

100/l H_2S $\frac{1859731}{656.9} = 2831$

34 × 100 = 340 = .034 %

COS $\frac{5104}{30.8} = 166$

2.4 × 10 = 240 = .002 %

CS_2 $\frac{42801}{85.3} = 502$

1.1 × 10 = 11 = .001 %

134

BAG #5

100/l H_2S $\frac{315471}{850.7} = 371$ $44.9 \times 10 = 449 = .045\%$

300/l COS $\frac{57974}{93.7} = 555$ $\frac{6.9 \times 1000}{300} = 23 = .002\%$

300/l CS_2 $\frac{337910}{243.3} = 1389$ $\frac{43 \times 1000}{300} = 143 = .01\%$

BAG #6

100/l H_2S $\frac{2588195}{768.9} = 3366$ $40.6 \times 10 = 406 = .041\%$

COS $\frac{4610}{28.7} = 161$ $2.2 \times 10 = 22 = .002\%$

CS_2 $\frac{37329}{79.4} = 408$ $1 \times 10 = 10 = .001\%$

BAG #7

100/l H_2S $\frac{2051800}{690} = 2974$ $35.8 \times 10 = 358 = .036\%$

COS $\frac{5706}{32.1} = 178$ $2.6 \times 10 = 26 = .003\%$

CS_2 $\frac{43123}{86} = 501$ $1.4 \times 10 = 14 = .001\%$

BAG #8

100/l H_2S - $\frac{2269177}{725.4} = 3128$ $37.5 \times 10 = 375 = .0387\%$

300/l COS $\frac{50686}{92.7} = 547$ $\frac{7 \times 1000}{300} = 23.3 = .0027$

300/l CS_2 $\frac{302584}{229.7} = 1317$ $\frac{4 \times 1000}{300} = 13.3 = .0017$

BAG #9

100/l H_2S $\frac{1939186}{669.9} = 2895$ $34.9 \times 10 = 349 = .0359$

COS $\frac{5476}{81.5} = 174$ $2.6 \times 10 = 26 = .003\%$

CS_2 $\frac{42159}{855} = 493$ $1 \times 10 = 10 = .001\%$

BAG #11	100/l	H_2S	$\frac{2[illegible]}{731.7} = 3143$	$38.2 \times 10 = 382 =$	.038%
	300/l	COS	$\frac{[illegible]}{94.8} = 560$	$\frac{6.9 \times 1000}{300} = 23 =$	.002%
	300/l	CS_2	$\frac{369253}{253.8} = 1455$	$\frac{4.7 \times 1000}{300} = 15.7 =$	.002%
BAG #11	100/l	H_2S	$\frac{2769231}{794.3} = 3486$	$41.9 \times 10 = 419 =$	.042%
		COS	$\frac{5157}{30.6} = 169$	$2.2 \times 10 = 22 =$	.002%
		CS_2	$\frac{43050}{85.8} = 502$	$1.1 \times 10 = 11 =$	.001%
BAG #12	100/l	H_2S	$\frac{2230424}{715.4} = 3118$	$37.4 \times 10 = 374 =$	.037%
	300/l	COS	$\frac{51875}{94.2} = 551$	$\frac{6.2 \times 1000}{300} = 20.7 =$	.002%
	300/l	CS_2	$\frac{306599}{231.5} = 1324$	$\frac{4.1 \times 1000}{300} = 13.7 =$	.001%
BAG #13	100/l	H_2S	$\frac{2020799}{682.0} = 2963$	$35.8 \times 10 = 358 =$	.036%
		COS	$\frac{6083}{32.3} = 188$	$2.3 \times 10 = 23 =$	.002%
		CS_2	$\frac{42253}{84.8} = 498$	$1 \times 10 = 10 =$	.001%
BAG #14	100/l	H_2S	$\frac{3958296}{943.6} = 4195$	$50.1 \times 10 = 501 =$	.050%
	200/l	COS	$\frac{21173}{59.4} = 356$	$\frac{4.5 \times 1000}{200} = 22.5 =$	.002%
	200/l	CS_2	$\frac{135507}{153.5} = 883$	$\frac{2.5 \times 1000}{200} = 12.5 =$	.001%
BAG #15	100/l	H_2S	$\frac{3136869}{842.1} = 3725$	$44.8 \times 10 = 448 =$	.045%
		COS	$\frac{4241}{28.3} = 150$	$2.2 \times 10 = 22 =$	.002%
		CS_2	$\frac{35565}{77.5} = 459$	$1.0 \times 10 = 10 =$	.001%

136

BAG # 16

$\frac{[illegible]}{850.5} = 376$ 45.1 X 10 = 45 = .045%

CCS $\frac{4507}{29.3} = 154$ 2.1 X 10 = 21 = .002%

CS_2 $\frac{40382}{83.2} = 485$ 1.1 X 10 = 11 = .001%

8-22 11-[illegible]

FLAME SIDE

	FLOW	SECONDS AVE.	MODE	BA
1	65	11.01	1 ✓	
2	39	22.97	1 ✓	
3	15	50.87	1 ✓	
4	68	10.64	1 ✓	
5	38	21.82	1 ✓	
6	16-17	43.98	1 ✓	BA
7	OUTLET - 8/22/91 - BAG #1 - DIL 100/l -		1 ✓	
8	OUTLET - 8/22/91 - BAG # 2 - DIL 100/l -		1 ✓	
9	OUTLET - 8/22/91 - BAG # 3 - DIL 100/l -		1 ✓	
10	OUTLET - 8/22/91 - BAG # 3 - DIL 300/l -		1 ✓	BA
11	OUTLET - 8/22/91 - BAG # 4 - DIL 100/l -		1 ✓	
12	OUTLET - 8/22/91 - BAG # 5 - DIL 100/l -		1 ✓	
13	AIR SAMPLE RUN THROUGH		1 ✓	
14	OUTLET - 8/22/91 - BAG # 6 - DIL 100/l -		1 ✓	
15	OUTLET - 8/22/91 - BAG # 7 - DIL 100/l -		1 ✓	B
16	OUTLET - 8/22/91 - BAG # 8 - DIL 100/l -		1 ✓	
17	OUTLET - 8/22/91 - BAG # 9 - DIL 100/l -		1 ✓	
18	OUTLET - 8/22/91 - BAG # 10 - DIL 100/l -		1 ✓	
19	OUTLET - 8/22/91 - BAG # 10 - DIL 300/l -		1 ✓	
20	OUTLET - 8/22/91 - BAG # 11 - DIL 100/l -		1 ✓	B
21	OUTLET - 8/22/91 - BAG # 15 - DIL 100/l -		1 ✓	
22	OUTLET - 8/22/91 - BAG # 12 - DIL 100/l -		1 ✓	
23	OUTLET - 8/22/91 - BAG # 13 - DIL 100/l -		1 ✓	
24	OUTLET - 8/22/91 - BAG # 13 - DIL 300/l -		1 ✓	

24- OUTLET - 8/22/91 - BAG #14 - DIL 100/l - | ✓
25- OUTLET - 8/22/91 - BAG #14 - DIL 300/l - | ✓
26- OUTLET - 8/22/91 - BAG #16 - DIL 100/l - | ✓
27- AIR SAMPLE RUN THROUGH - | ✓
28- OUTLET - 8/20/91 - 6 3/4 m - C.W. - DIL - 200/l - | ✓
29- OUTLET - 8/20/91 - 6 3/4 m - C.W. - NO DILUTION - | ✓

BAG #1	100/l	H_2S	$\frac{1849651}{665.6} = 2821$	$33.1 \times 10 = 331 =$	.033%
8-22-91		COS	$\frac{4105}{28.1} = 146$	$1.4 \times 10 = 14 =$	.001%
		CS_2	$\frac{67179}{107.4} = 626$	$12 \times 10 = 12 =$	.001%
BAG #2	100/l	H_2S	$\frac{3763142}{920.5} = 4089$	$47.9 \times 10 = 479 =$	.048%
		COS	$\frac{5582}{30.7} = 182$	$1.8 \times 10 = 18 =$	.002%
		CS_2	$\frac{71864}{111.3} = 646$	$12 \times 10 = 12 =$	.001%
BAG #3	100/l	H_2S	$\frac{2536798}{764.2} = 3320$	$39 \times 10 = 390 =$	.039%
	300/l	COS	$\frac{51986}{93.8} = 554$	$6.1 \times \frac{1000}{300} = 20.3 =$	.002%
	300/l	CS_2	$\frac{626780}{330.1} = 1899$	$5.9 \times \frac{1000}{300} = 19.7 =$	.002%
BAG #4	100/l	H_2S	$\frac{2063850}{689.8} = 2992$	$35.1 \times 10 = 351 =$	.035%
		COS	$\frac{5227}{30.6} = 171$	$2.2 \times 10 = 22 =$	.002%
		CS_2	$\frac{75664}{114.6} = 660$	$1.2 \times 10 = 12 =$	.001%
BAG #5	100/l	H_2S	$\frac{2185798}{707.7} = 3088$	$36 \times 10 = 360 =$	.036%
		COS	$\frac{5363}{30.8} = 174$	$1.7 \times 10 = 17 =$	.002%
		CS_2	$\frac{74317}{112.9} = 658$	$1.3 \times 10 = 13 =$	.001%

138 BAG #6 8-22-71	100/l	H_2S	$\frac{2265857}{719.3} = 3150$	$36.9 \times 10 = 369 =$	.037%
	300/l	COS	$\frac{49867}{92.5} = 539$	$\frac{5.9 \times 1000}{300} = 19.7 =$	.002%
	300/l	CS_2	$\frac{533946}{305.3} = 1749$	$\frac{5.1 \times 1000}{300} = 17 =$	.002%
BAG #7	100/l	H_2S	$\frac{2914410}{813} = 3585$	$41.9 \times 10 = 419 =$	.042%
		COS	$\frac{5089}{29.5} = 173$	$1.7 \times 10 = 17 =$	.002%
		CS_2	$\frac{67380}{107.5} = 627$	$1.1 \times 10 = 11 =$	.001%
BAG #8	100/l	H_2S	$\frac{2261798}{719.5} = 3144$	$36.8 - 368 =$	.037%
		COS	$\frac{5286}{30.5} = 173$	$1.7 - 17 =$	.002%
		CS_2	$\frac{77917}{116.2} = 671$	$1.2 - 12 =$	.001%
BAG #9	100/l	H_2S	$\frac{3454043}{941.2} = 4201$	$49.1 - 491 =$	.049%
		COS	$\frac{4997}{29.7} = 168$	$1.9 - 19 =$	.002%
		CS_2	$\frac{67260}{107.6} = 625$	$1.2 - 12 =$	.001%
BAG #10	100/l	H_2S	$\frac{3913126}{941} = 4158$	$48.9 - 489 =$	.049%
	300/l	COS	$\frac{52857}{94.5} = 559$	$\frac{6.2 \times 1000}{300} = 20.7 =$	.002%
	300/l	CS_2	$\frac{510000}{297.4} = 1715$	$\frac{5.1 \times 1000}{300} = 17 =$	.002%
BAG #11	100/l	H_2S	$\frac{1772055}{639} = 2773$	$32.8 = 328 =$	.033%
		COS	$\frac{5288}{31.2} = 169$	$1.9 - 19 =$	.002%
		CS_2	$\frac{50627}{93.6} = 541$	$1.0 - 10 =$	.001%
BAG #12	100/l	H_2S	$\frac{2744177}{789.7} = 3475$	$40.7 - 407 =$	.041%
		COS	$\frac{5499}{31.1} = 177$	$1.8 - 18 =$	.002%
		CS_2	$\frac{43171}{85.5} = 505$	$0.9 \quad 9 =$	.001%

BAG # 13	100/l	H_2S	$\frac{3000030}{823.1} = 3645$	429-429=	.043% 139
	300/l	COS	$\frac{48943}{91.7} = 534$	$\frac{5.8 \times 1000}{300} = 19.3$	= .002%
	300/l	CS_2	$\frac{312392}{2326} = 1343$	$\frac{3.9 \times 1000}{300} = 13$	= .001%
BAG # 14	100/l	H_2S	$\frac{3243686}{832.4} = 3200$	37.5-375=	.038%
	300/l	COS	$\frac{46534}{88.6} = 525$	$\frac{5.8 \times 1000}{300} = 19.3$	= .002%
	300/l	CS_2	$\frac{319077}{234.9} = 1358$	$\frac{4.9 \times 1000}{300} = 16.3$	= .002%
BAG # 15	100/l	H_2S	$\frac{2107957}{695.1} = 3033$	35.6-356=	.036%
		COS	$\frac{5061}{30.4} = 166$	1.5-15 =	.002%
		CS_2	$\frac{42675}{85.5} = 499$	0.9-9 =	.001%
BAG # 16	100/l	H_2S	$\frac{4568808}{1009.6} = 4525$	53.0-530 =	.053%
		COS	$\frac{6675}{33.9} = 197$	1.9-19 =	.002%
		CS_2	$\frac{46002}{89.6} = 513$	1.0-1 =	.001%

8-23-81- KNECHT- 108

	1- FLOW	67	- SECONDS	AVE. (TEST RUN)	- MODE	✓
FLAME SIDE	2- FLOW	67	-	11.78	-	✓
	3- FLOW	35	-	22.74	-	✓
	4- FLOW	18	-	45.67	-	✓
	5- FLOW	70	-	10.25	-	✓
	6- FLOW	40	-	21.12	-	✓
	7- FLOW	16-17	-	42.02	-	✓
	8- OUTLET- 8/23/91- BAG #1- DIL 100/l				-	✓
	9- OUTLET- 8/23/91- BAG #2- DIL 100/l				-	✓
	10- OUTLET- 8/23/91- BAG #3- DIL 100/l				-	✓
	11- OUTLET- 8/23/91- BAG #4- DIL 100/l				-	✓
	12- OUTLET- 8/23/91- BAG #5- DIL 100/l				-	✓

13 - OUTLET - 8/23/91 - BAG # 6 - DIL 100/l — | ✓
14 - AIR SAMPLE RUN THROUGH — | ✓
15 - OUTLET - 8/23/91 - BAG # 7 - DIL 100/l — | ✓
8-23-91 16 - OUTLET - 8/23/91 - BAG # 8 - DIL 100/l — | ✓
17 - OUTLET - 8/23/91 - BAG # 9 - DIL 100/l — | ✓
18 - OUTLET - 8/23/91 - BAG # 10 - DIL 100/l — | ✓
19 - OUTLET - 8/23/91 - BAG # 11 - DIL 100/l — | ✓
20 - OUTLET - 8/23/91 - BAG # 12 - DIL 100/l — | ✓
21 - OUTLET - 8/23/91 - BAG # 13 - DIL 100/l — | ✓
22 - OUTLET - 8/23/91 - BAG # 14 - DIL 100/l — | ✓
23 - OUTLET - 8/23/91 - BAG # 15 - DIL 100/l — | ✓
24 - OUTLET - 8/23/91 - BAG # 16 - DIL 100/l — | ✓
25 - AIR SAMPLE RUN THROUGH — | ✓
FLOW

BAG # 1	100/l	H_2S	$\frac{3527371}{889.9} = 3964$	46.7 - 467 =	.047 %
8-23-91		COS	$\frac{6500}{33.8} = 192$	1.8 - 18 =	.002 %
		CS_2	$\frac{45523}{88.1} = 517$	1.0 - 10 =	.001 %
BAG # 2	100/l	H_2S	$\frac{2468445}{750.7} = 3288$	38.5 - 385 =	.039 %
		COS	$\frac{6880}{34.4} = 200$	1.9 - 19 =	.002 %
		CS_2	$\frac{44664}{87.8} = 509$	1.0 - 10 =	.001 %
BAG # 3	100/l	H_2S	$\frac{2954480}{819.1} = 3607$	42.3 - 423 =	.042 %
		COS	$\frac{6027}{33.6} = 179$	1.8 - 18 =	.002 %
		CS_2	$\frac{48063}{90.4} = 532$	1.0 - 10 =	.001 %

[illegible]	[illegible]	H_2S	$\frac{[illegible]}{824.7}$ = [illegible]	42.[illegible]-42[illegible]	$\frac{[illegible]}{141}$ [illegible]
[illegible]		COS	$\frac{5113}{31.7}$ = 161	1.3-13 =	.001%
		CS_2	$\frac{35764}{44.2}$ = 455	0.8 = 8 =	.001%
BAG #5	100/l	H_2S	$\frac{4366749}{987.9}$ = 4420	51.8-518 =	.052%
		COS	$\frac{6844}{34.2}$ = 200	1.9-19 =	.002%
		CS_2	$\frac{46944}{90.2}$ = 520	1.0-10	.001%
BAG #6	100/l	H_2S	$\frac{2388762}{737.8}$ = 3238	38.0-380 =	.038%
		COS	$\frac{5421}{32.1}$ = 169	1.6-16 =	.002%
		CS_2	$\frac{45628}{88.2}$ = 517	1.0-10 =	.001%
BAG #7	100/l	H_2S	$\frac{3869338}{930.6}$ = 4158	48.8-488 =	.049%
		COS	$\frac{4636}{30.4}$ = 153	1.2-12 =	.001%
		CS_2	$\frac{40129}{83.2}$ = 482	1.0-10 =	.001%
BAG #8	100/l	H_2S	$\frac{3431311}{877.1}$ = 3912	46.0-460 =	.046%
		COS	$\frac{6287}{32.8}$ = 192	1.8-18 =	.002%
		CS_2	$\frac{42672}{85.6}$ = 499	1.0-10 =	.001%
BAG #9	100/l	H_2S	$\frac{3998104}{943.9}$ = 4236	49.7-497 =	.050%
		COS	$\frac{5800}{32.1}$ = 181	1.6-16 =	.002%
		CS_2	$\frac{46162}{88.7}$ = 520	1.0-10 =	.001%
BAG #10	100/l	H_2S	$\frac{2818876}{799.4}$ = 3526	41.4-414 =	.041%
		COS	$\frac{5668}{31.7}$ = 179	1.8-18 =	.002%
		CS_2	$\frac{43265}{86.2}$ = 502	1.0-10 =	.001%

142

BAG #11 8-23-91	100/l	H_2S	$\frac{5477601}{1102.2} = 4970$	58.5-58.5 =	.059%
		COS	$\frac{6555}{33.5} = 196$	1.9-19 =	.002%
		CS_2	$\frac{46469}{89} = 522$	1.0-10 =	.001%
BAG #12	100/l	H_2S	$\frac{3015469}{824.2} = 3659$	43.0-430 =	.043%
		COS	$\frac{5023}{31.1} = 162$	1.3-13 =	.001%
		CS_2	$\frac{43555}{87.1} = 500$	1.0-10 =	.001%
BAG #13	100/l	H_2S	$\frac{4082686}{952.2} = 4288$	50.1-501 =	.050%
		COS	$\frac{6509}{33.5} = 195$	1.9-19 =	.002%
		CS_2	$\frac{44872}{88} = 510$	1.0-10 =	.001%
BAG #14	100/l	H_2S	$\frac{7061786}{1244.9} = 5673/2 = 2837$	33.2×2=664	664 = .066%
		COS	$\frac{6556}{33.3} = 197$	1.9-19 =	.002%
		CS_2	$\frac{44570}{87.6} = 509$	1.0-10 =	.001%
BAG #15	100/l	H_2S	$\frac{5711594}{1120} = 5100$	59.9=599=	.060%
		COS	$\frac{5663}{32.5} = 174$	1.7=17=	.002%
		CS_2	$\frac{47162}{89.6} = 526$	1.0=10=	.001%
BAG #16	100/l	H_2S	$\frac{5549279}{1105.7} = 5019$	59.2-592=	.059%
		COS	$\frac{5802}{31.9} = 182$	1.8-18 =	.002%
		CS_2	$\frac{44129}{87.1} = 507$	1.0-10=	.001%

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2060 REDALC
TIME 14:27 27 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	80 RT HEIGHT
1		0.984	41.7989	535.2
2		1.555	18.3049	234.7
3		4.414	39.8961	510.8
TOTALS:			100.0000	1280.4

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 189.4 OFFSET: -3

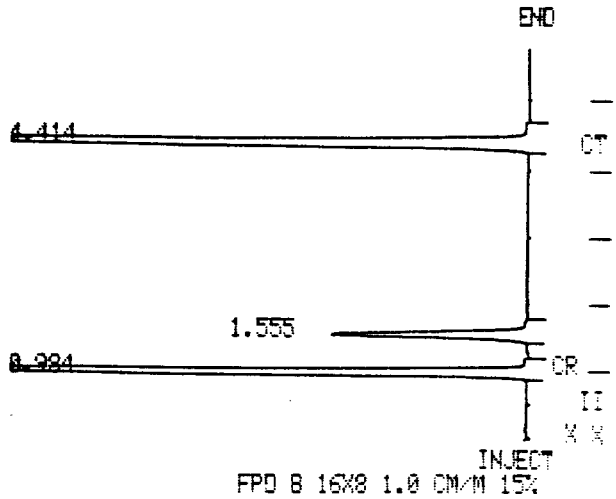
ERROR LOG:
ANNOTATION OMITTED

METHOD 4 RUN 2060
TIME 14:27 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.984	40.3715	1245710
2		1.555	10.5439	325345
3		4.414	49.0845	1514558
TOTALS:			100.0000	3085615

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 189.4 OFFSET: -3

ERROR LOG:
ANNOTATION OMITTED



NOISE = 189.4

FLOW -19
MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2059 RECALC
TIME 14:16 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

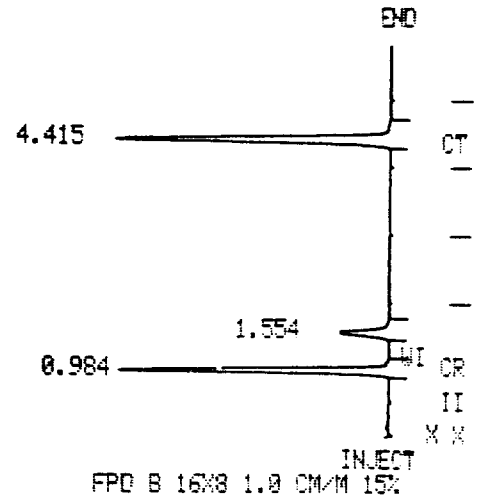
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.984	40.9051	271.4
2		1.554	17.8864	118.6
3		4.415	41.2083	273.4
TOTALS:			100.0000	663.6

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE [illegible]

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2059
TIME 14:16 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.984	38.0753	314374
2		1.554	10.0392	82890
3		4.415	51.8853	428399
TOTALS:			100.0000	825664

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -9



FPD B 16X8 1.0 CM/M 15%

NOISE = 169.1

FLOW 3 9
MODE 1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2058 RECALC
TIME 14:04 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

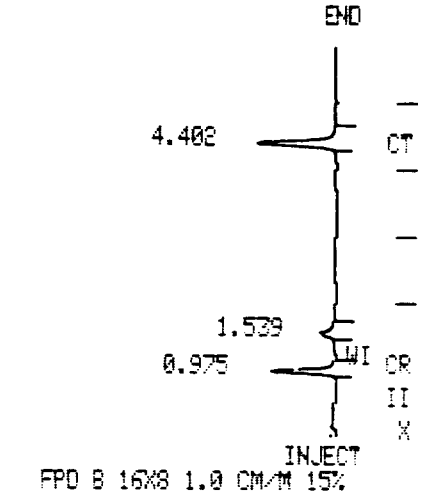
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.975	39.1861	132.4
2		1.539	17.5832	59.4
3		4.402	43.2306	146.1
TOTALS:			100.0000	338.0

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -31

TIME 14:04 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.975	34.1259	73826
2		1.539	9.5677	20698
3		4.402	56.3062	121810
TOTALS:			100.0000	216335

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -31



NOISE = 182.6

FLOW-68
MODEL

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2057 RECALC
TIME 13:06 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

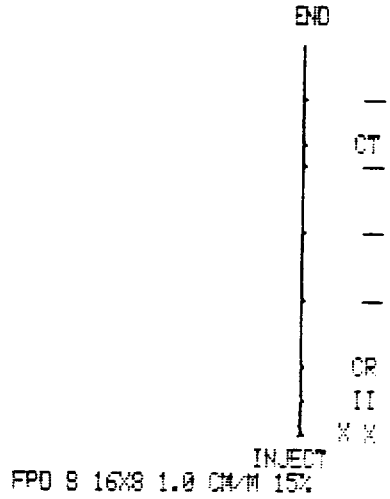
DETECTED PEAKS: 0 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -10

ERROR LOG:
NO PEAKS

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2057
TIME 13:06 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

DETECTED PEAKS: 0 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -10

ERROR LOG:
NO PEAKS



NOISE = 175.8

AIR SAMPLE
MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2056 RECALC
TIME 12:53 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

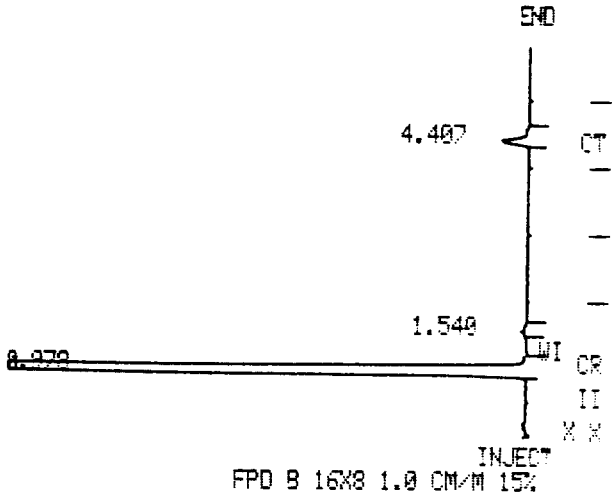
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.978	90.2749	1105.7
2		1.540	2.6879	31.9
3		4.407	7.1171	87.1
TOTALS:			100.0000	1224.9

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -5

TIME 12:53 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.978	99.1082	5549279
2		1.540	0.1036	5802
3		4.407	0.7881	44129
TOTALS:			100.0000	5599211

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -5



NOISE = 169.1

BAG#16
DIL-1001R

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2055 RECALC
TIME 12:41 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

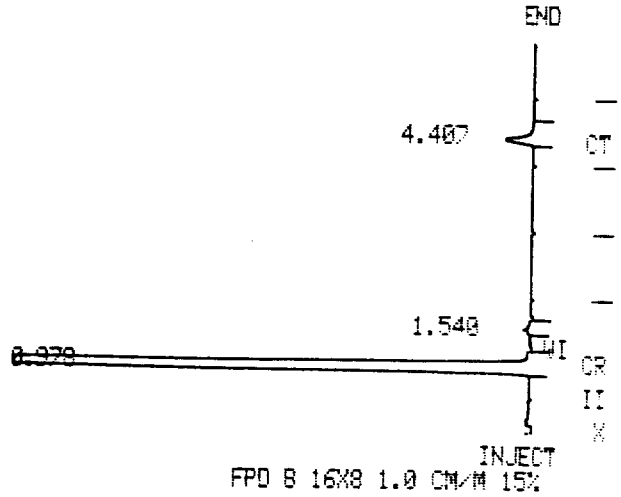
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.978	90.1623	1120.0
2		1.540	2.6199	32.5
3		4.407	7.2177	89.6
TOTALS:			100.0000	1242.2

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -20

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2055
TIME 12:41 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.978	99.0835	5711594
2		1.540	0.0982	5663
3		4.407	0.8181	47162
TOTALS:			100.0000	5764419

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -20



NOISE = 162.3

BAG #15
DIL-100/2

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2054 RECALC
TIME 12:30 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

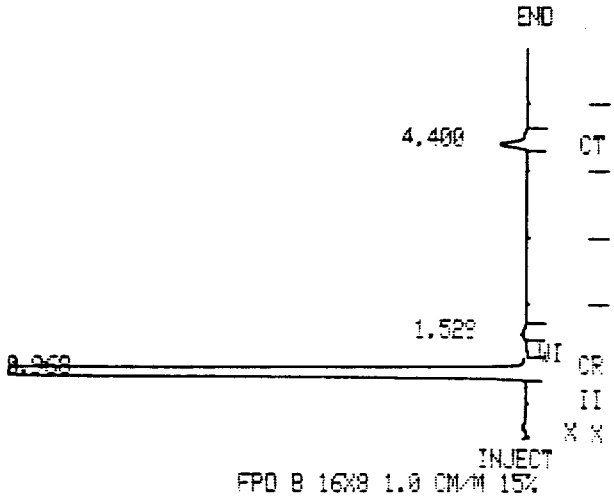
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.968	91.1413	1244.9
2		1.528	2.4421	33.3
3		4.400	6.4164	87.6
TOTALS:			100.0000	1365.9

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -10

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2054
TIME 12:30 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.968	99.2812	7061786
2		1.528	0.0921	6556
3		4.400	0.6266	44570
TOTALS:			100.0000	7112913

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -10



NOISE = 169.1

BAG #14
OIL-100/2

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2053 RECALC
TIME 11:57 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

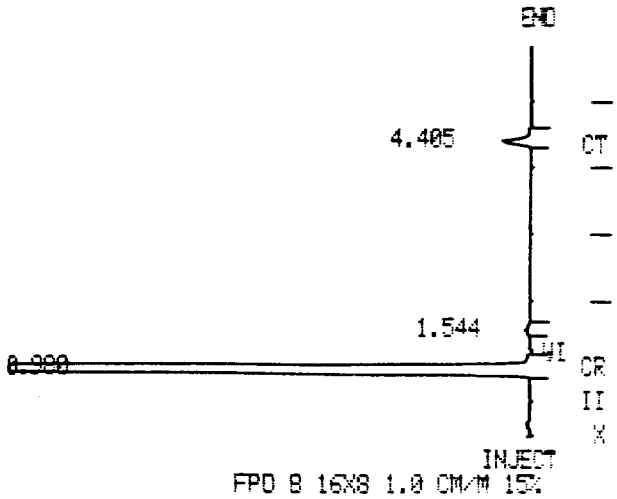
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.980	88.6802	952.2
2		1.544	3.1198	33.5
3		4.405	8.1999	88.0
TOTALS:			100.0000	1073.8

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -2

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2053
TIME 11:57 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.980	98.7566	4082526
2		1.544	0.1579	6529
3		4.405	1.0854	44872
TOTALS:			100.0000	4134087

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -2



NOISE = 169.1

BAG #13
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2052 RECALC
TIME 11:45 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

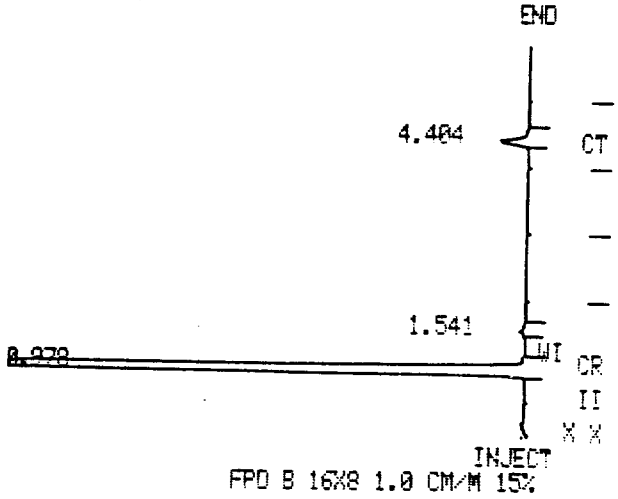
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.978	87.4504	824.2
2		1.541	3.3066	31.1
3		4.404	9.2429	87.1
TOTALS:			100.0000	942.5

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 155.5 OFFSET: -3

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2052
TIME 11:45 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.978	98.4145	3015469
2		1.541	0.1639	5023
3		4.404	1.4215	43555
TOTALS:			100.0000	3064048

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 155.5 OFFSET: -3



NOISE = 155.5

BAG #12
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2051 RECALC
TIME 11:34 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

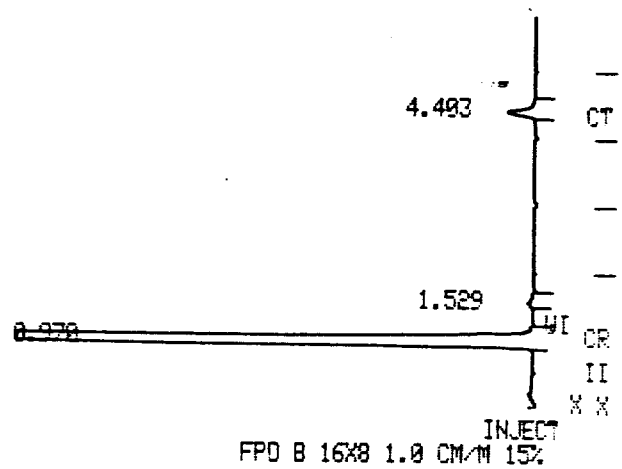
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.970	89.9933	1102.2
2		1.529	2.7391	33.5
3		4.403	7.2674	89.0
TOTALS:			100.0000	1224.8

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -22

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2051
TIME 11:34 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.970	99.0412	5477601
2		1.529	0.1185	6555
3		4.403	0.8402	46469
TOTALS:			100.0000	5530626

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -23



FPD B 16X8 1.0 CM/M 15%

NOISE = 175.8

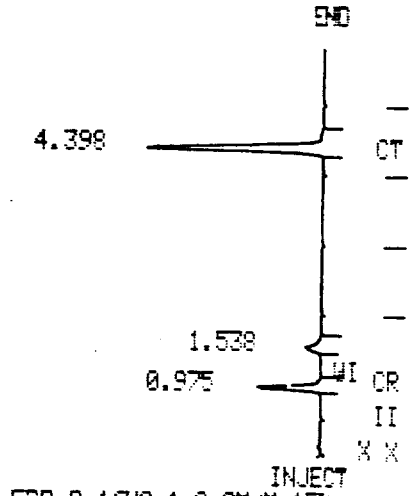
BAG #11
DIL-100/2

8-23-91 B

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 1966
TIME 08:32 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.975	19.3625	70070
2		1.538	6.4660	23399
3		4.398	74.1714	268417
TOTALS:			100.0000	361888

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -17



FPD B 16X8 1.0 CM/M 15%

NOISE = 175.8

8-21-91

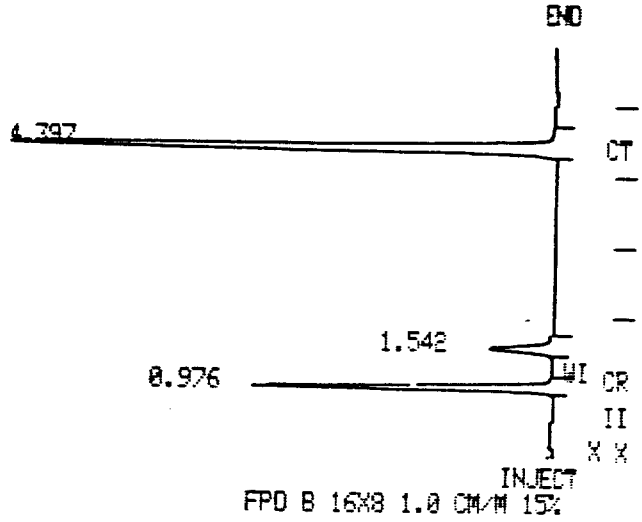
FLOW-68
MODE-1

B

TIME 08:55 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.976	25.6889	333193
2		1.542	7.7641	100703
3		4.397	66.5468	863130
TOTALS:			100.0000	1297026

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -43



NOISE = 162.3

FLOW-38
MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1966 RECALC
TIME 08:32 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.975	31.5962	129.2
2		1.538	15.4490	63.2
3		4.398	52.9547	216.6
TOTALS:			100.0000	409.1

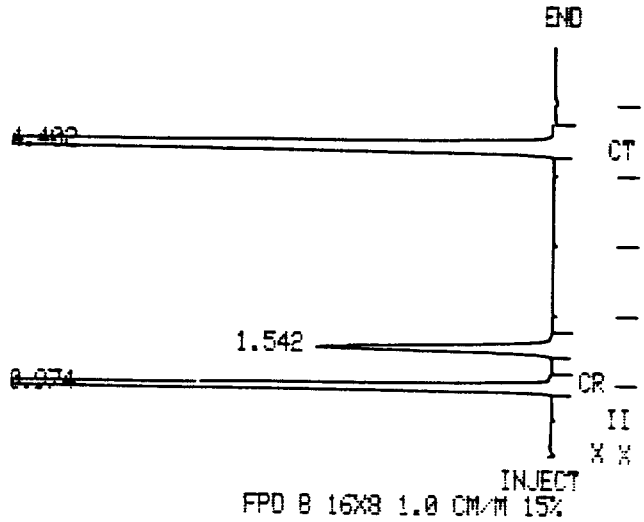
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -17

TIME 09:07 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.974	28.9578	1268190
2		1.542	8.3738	366729
3		4.402	62.6682	2744516
TOTALS:			100.0000	4379436

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -13

ERROR LOG:
ANNOTATION OMITTED



NOISE = 182.6

FLOW-18
MODE 1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1968 RECALC
TIME 08:55 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.976	35.2320	281.6
2		1.542	16.3205	130.4
3		4.397	48.4473	387.3
TOTALS:			100.0000	799.4

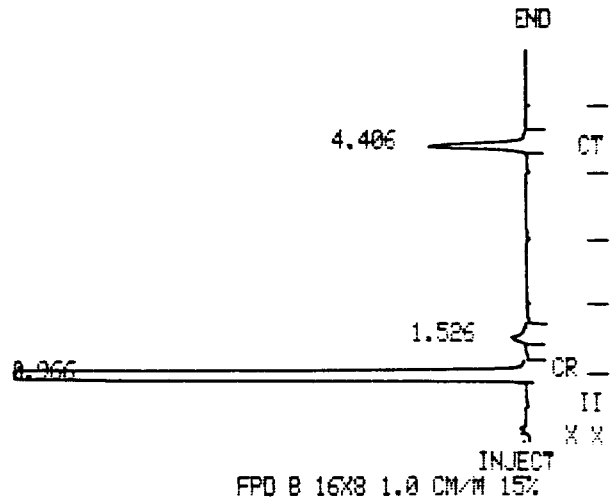
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -43

METHOD 4 RUN 1970
TIME 09:23 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.966	98.2658	10081329
2		1.526	0.2192	22493
3		4.406	1.5149	155420
TOTALS:			100.0000	10259244

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -28

ERROR LOG:
ANNOTATION OMITTED



NOISE = 175.8

BAG#1-OUTLET-8/21/91
DIL-200/L-MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1969 RECALC
TIME 09:07 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.974	36.7674	543.0
2		1.542	16.8301	248.5
3		4.402	46.4023	685.3
TOTALS:			100.0000	1477.0

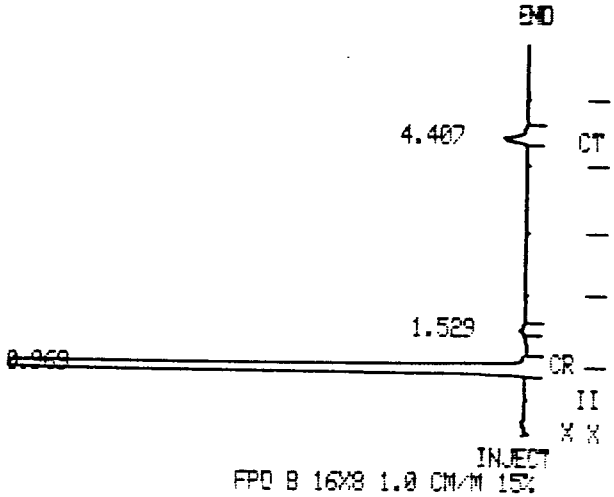
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.5 OFFSET: -13

SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.969	98.4957	2854462
2		1.529	0.1817	5267
3		4.407	1.3224	38325
TOTALS:			100.0000	2898055

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -7

ERROR LOG:
ANNOTATION OMITTED



NOISE = 182.6

BAC #1 ~8/21/91
DIL~100/2 ~MODE~1
REPEAT

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1970 RECALC
TIME 09:23 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.966	86.7176	1481.4
2		1.526	3.6280	61.9
3		4.406	9.6543	164.9
TOTALS:			100.0000	1708.3

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -29

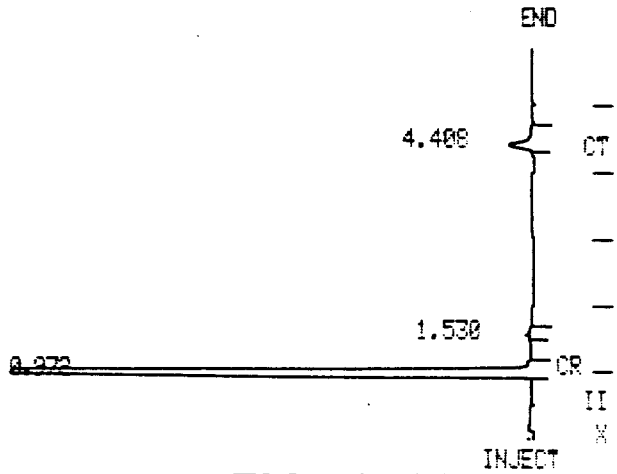
ERROR LOG:
[illegible]

METHOD 4 RUN 1972
TIME 09:49 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.972	98.4893	2818812
2		1.530	0.1746	4999
3		4.408	1.3359	38235
TOTALS:			100.0000	2862047

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -28

ERROR LOG:
ANNOTATION OMITTED



FPD B 16X8 1.0 CM/M 15%

NOISE = 169.1

BAG #2-8/21/91-
DIL-100/l-MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1971 RECALC
TIME 09:37 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

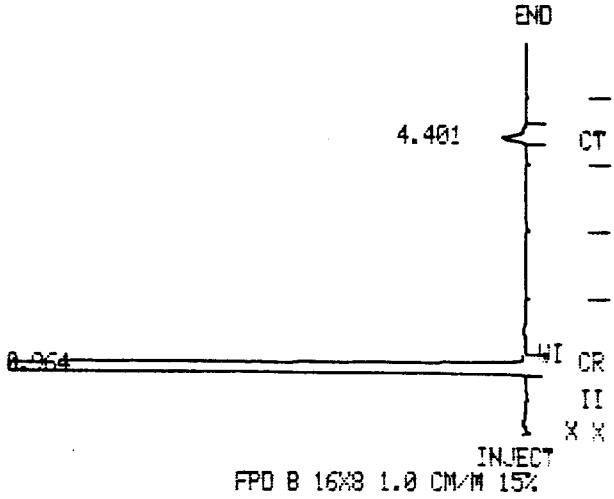
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.969	87.9331	809.7
2		1.529	3.3015	30.4
3		4.407	8.7653	80.7
TOTALS:			100.0000	920.9

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: [illegible] OFFSET: [illegible]

METHOD 4 RUN 1973
TIME 10:18 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.964	98.2888	2052860
2		4.401	1.7111	35739
TOTALS:			100.0000	2088599

DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -9



NOISE = 175.8

BAG #3 - 8/21/91
DIL-100/l-MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1972 RECALC
TIME 09:49 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.972	87.9044	801.1
2		1.530	3.2701	29.8
3		4.408	8.8253	80.4
TOTALS:			100.0000	911.3

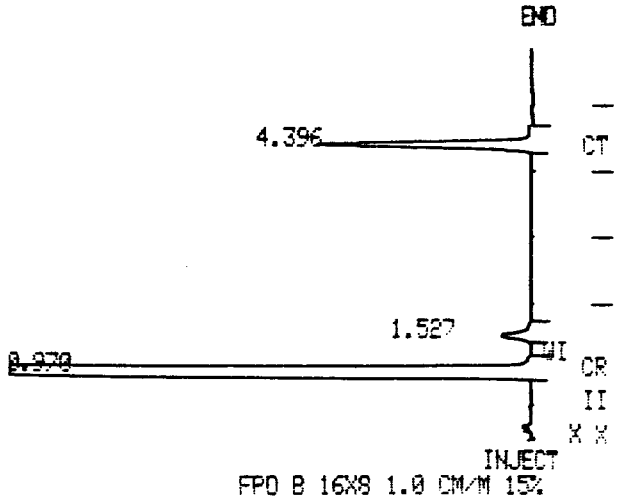
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -28

ERROR LOG:
ANNOTATION OMITTED

METHOD 4 RUN 1974
TIME 10:29 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.970	97.5374	15499582
2		1.527	0.3200	50866
3		4.396	2.1424	340457
TOTALS:			100.0000	15890906

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -14



NOISE = 148.8

BAG #3 - 8/21/91
DIL-300(Q-MODE-)
REPEAT

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1973 RECALC
TIME 10:18 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

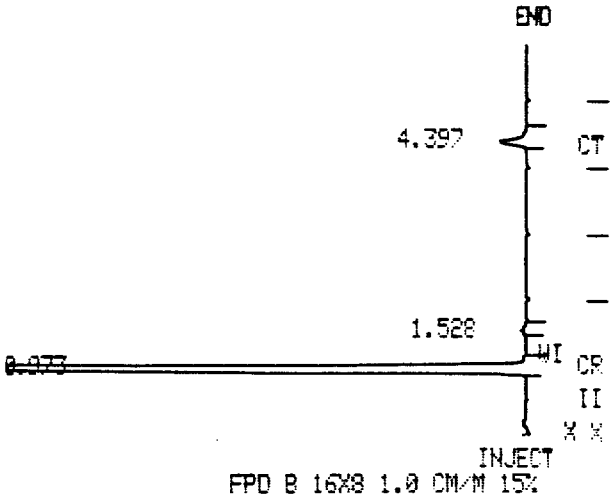
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.964	89.7906	690.7
2		4.401	10.2093	78.5
TOTALS:			100.0000	769.2

DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -9

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 1975
TIME 10:41 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.973	97.4887	1859731
2		1.528	0.2675	5104
3		4.397	2.2437	42801
TOTALS:			100.0000	1907637

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -15



FPD B 16X8 1.0 CM/M 15%

NOISE = 162.3

BAG #4
100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1974 RECALC
TIME 10:29 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

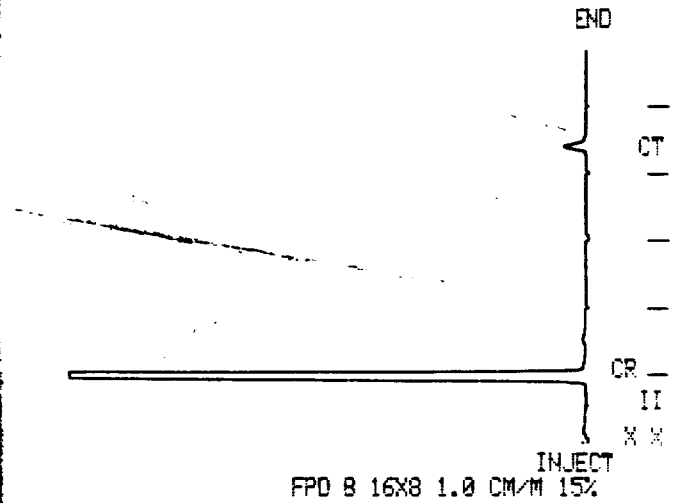
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.970	84.3584	1808.8
2		1.527	4.3100	92.4
3		4.396	11.3314	242.9
TOTALS:			100.0000	2144.1

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.9 OFFSET: -14

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 1976
TIME 10:52 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

DETECTED PEAKS: 0 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 127736 OFFSET: -19

ERROR LOG:
NO PEAKS



NOISE = 127736

BAG #5 - 8/21/91
DIL-1/66/2-MODE)

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1975 RECALC
TIME 10:41 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

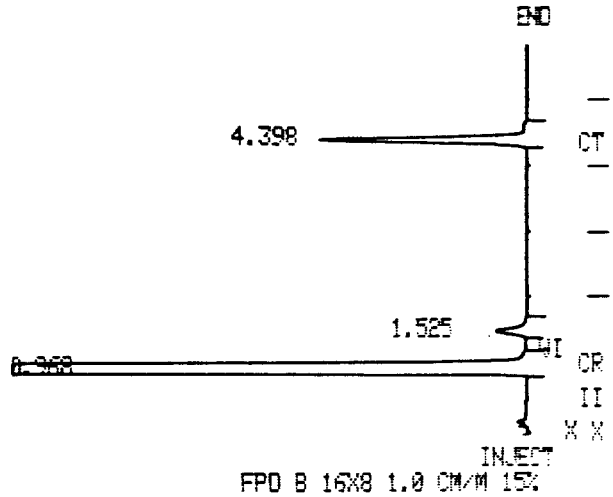
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.973	84.9679	656.9
2		1.528	3.9944	30.8
3		4.397	11.0375	85.3
TOTALS:			100.0000	773.2

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -15

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 1977
TIME 11:05 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.968	98.1895	21145941
2		1.525	0.2413	51974
3		4.398	1.5690	337910
TOTALS:			100.0000	21535726

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -17



NOISE = 182.6

BAG #5 - 8/21/91
DIL - 300/l - MODE 1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1976 RECALC
TIME 10:52 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

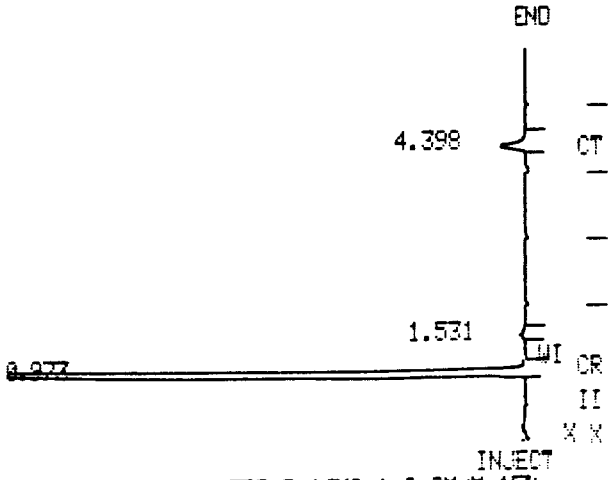
DETECTED PEAKS: 0 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 127736 OFFSET: -19

ERROR LOG:
NO PEAKS

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 1978
TIME 11:16 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.973	98.5503	3184971
2		1.531	0.1876	6063
3		4.398	1.2620	40786
TOTALS:			100.0000	3231822

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 155.5 OFFSET: -30



FPD B 16X8 1.0 CM/M 15%

NOISE = 155.5

BAG #5 8/21/91
DIL-100/Q MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1977 RECALC
TIME 11:05 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.968	86.1718	2100.4
2		1.525	3.8449	93.7
3		4.398	9.9832	243.3
TOTALS:			100.0000	2437.5

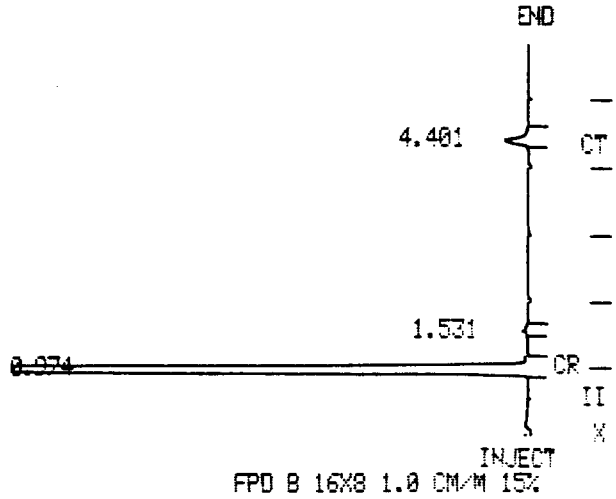
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.5 OFFSET: -17

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 1979
TIME 11:28 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.974	98.4053	2588195
2		1.531	0.1753	4610
3		4.401	1.4193	37329
TOTALS:			100.0000	2630135

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -19

ERROR LOG:
ANNOTATION OMITTED



FPD B 16X8 1.0 CM/M 15%

NOISE = 148.8

BAG #6 8/21/91
DIL -100/l MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1978 RECALC
TIME 11:16 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

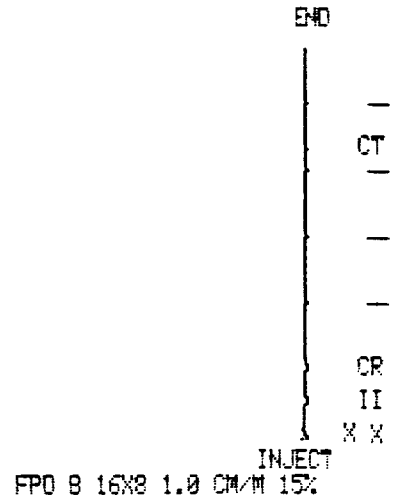
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.973	88.0778	850.7
2		1.531	3.2896	31.7
3		4.398	8.6325	83.3
TOTALS:			100.0000	965.9

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 155.5 OFFSET: -30

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 1980
TIME 11:39 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

DETECTED PEAKS: 0 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -21

ERROR LOG:
NO PEAKS



NOISE = 182.6

AIR

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1979 RECALC
TIME 11:28 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.974	87.6280	768.9
2		1.531	3.2820	28.7
3		4.401	9.0898	79.7
TOTALS:			100.0000	877.4

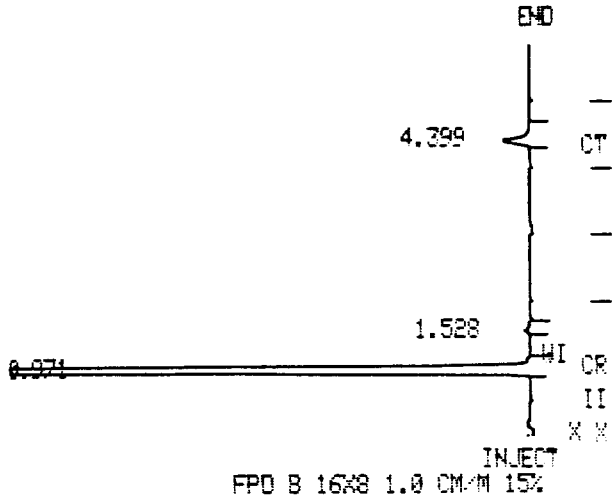
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -19

ERROR LOG:
ANNOTATION OMITTED

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 1981
TIME 11:53 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.971	97.6754	2051800
2		1.528	0.2716	5706
3		4.399	2.0528	43123
TOTALS:			100.0000	2100630

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -19



NOISE = 162.3

BAG #7 8/21/91
DIL-100/R- MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1980 RECALC
TIME 11:39 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

DETECTED PEAKS: 0 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -21

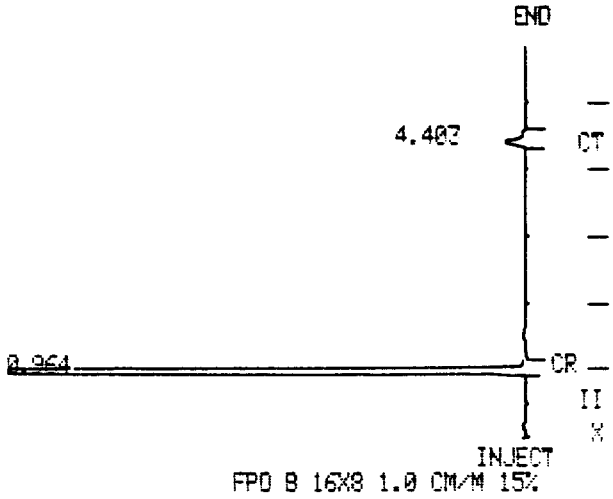
ERROR LOG:
NO PEAKS

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 1982
TIME 12:26 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.964	98.6284	2269177
2		4.403	1.3715	31556
TOTALS:			100.0000	2300733

DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -18

ERROR LOG:
ANNOTATION OMITTED



NOISE = 169.1

BAG# 8 8/21/91
DIL-100/l MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1981 RECALC
TIME 11:53 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

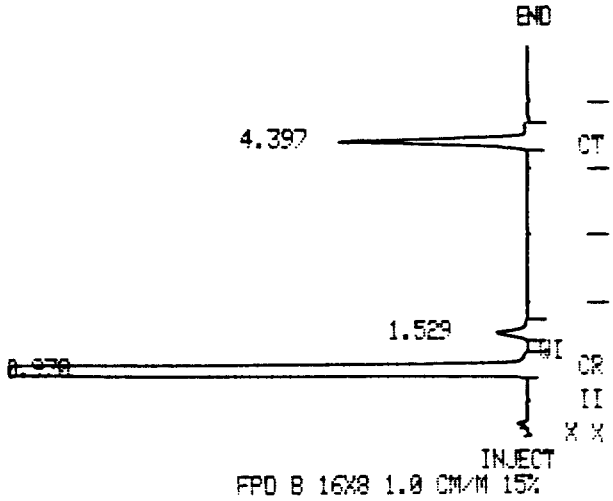
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.971	85.3705	690.0
2		1.528	3.9782	32.1
3		4.399	10.6511	86.0
TOTALS:			100.0000	808.2

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -19

YARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 1983
TIME 12:39 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.970	98.0545	17805846
2		1.529	0.2791	50686
3		4.397	1.6662	302584
TOTALS:			100.0000	18159117

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 128.5 OFFSET: -7



NOISE = 128.5

BAG #8 8/21/91
DIL-300/2 MODE-1

YARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1982 RECALC
TIME 12:26 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.964	90.7819	725.4
2		4.403	9.2180	73.6
TOTALS:			100.0000	799.0

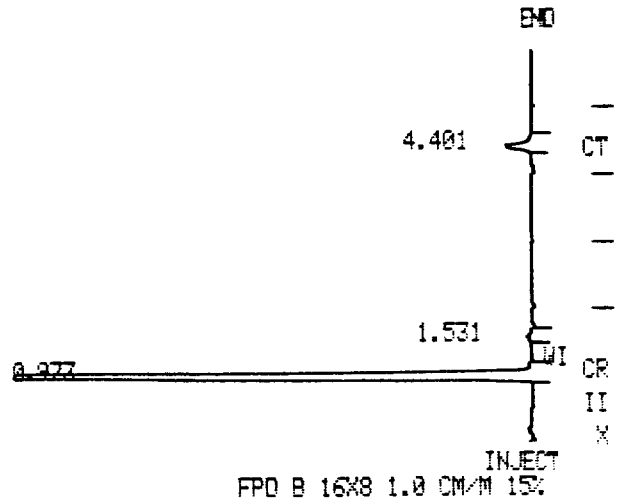
DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -18

ERROR LOG:
ANNOTATION OMITTED

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 1984
TIME 12:51 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.973	97.6023	1939186
2		1.531	0.2756	5476
3		4.401	2.1219	42159
TOTALS:			100.0000	1986823

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -25



NOISE = 162.3

BAG #9
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1983 RECALC
TIME 12:39 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.970	85.7194	1935.8
2		1.529	4.1082	92.7
3		4.397	10.1723	229.7
TOTALS:			100.0000	2258.3

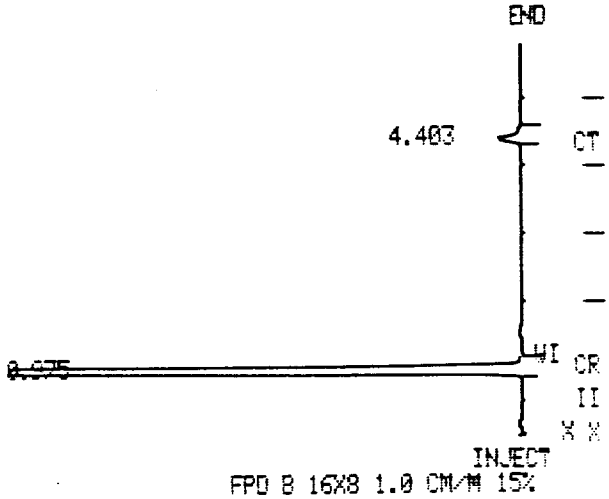
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 128.5 OFFSET: -7

[redacted]

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 1985
TIME 13:02 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.975	98.4600	2336572
2		4.403	1.5399	36545
TOTALS:			100.0000	2373117

DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 189.4 OFFSET: -19



NOISE = 189.4

BAG #10
DIC-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1984 RECALC
TIME 12:51 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.973	85.1233	669.9
2		1.531	4.0112	31.5
3		4.401	10.8654	85.5
TOTALS:			100.0000	787.0

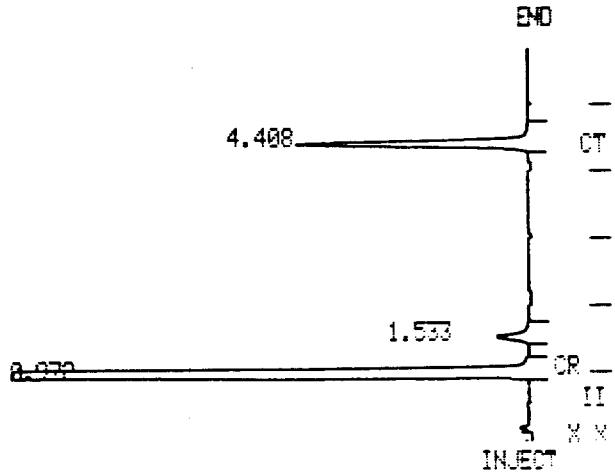
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -25

METHOD 4 RUN 1986
TIME 13:13 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.972	97.7375	18246803
2		1.533	0.2845	53127
3		4.408	1.9778	369253
TOTALS:			100.0000	18669184

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 142.0 OFFSET: -28

ERROR LOG:
ANNOTATION OMITTED



FPD B 16X8 1.0 CM/M 15%

NOISE = 142.0

BA6 #10 8/21/91
DIL-300/l MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1985 RECALC
TIME 13:02 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.975	90.2524	731.7
2		4.403	9.7475	79.0
TOTALS:			100.0000	810.7

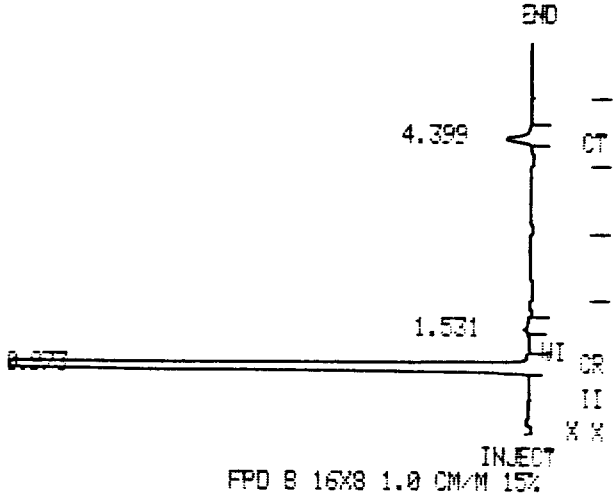
DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 189.4 OFFSET: -19

[redacted]

TIME 13:25 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.973	98.2889	2769231
2		1.531	0.1830	5157
3		4.399	1.5280	43050
TOTALS:			100.0000	2817439

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -17



NOISE = 182.6

BAG #11
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1986 RECALC
TIME 13:13 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.972	84.8671	1955.3
2		1.533	4.1152	94.8
3		4.408	11.0176	253.8
TOTALS:			100.0000	2304.0

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 142.0 OFFSET: -28

ERROR LOG:
ANNOTATION OMITTED

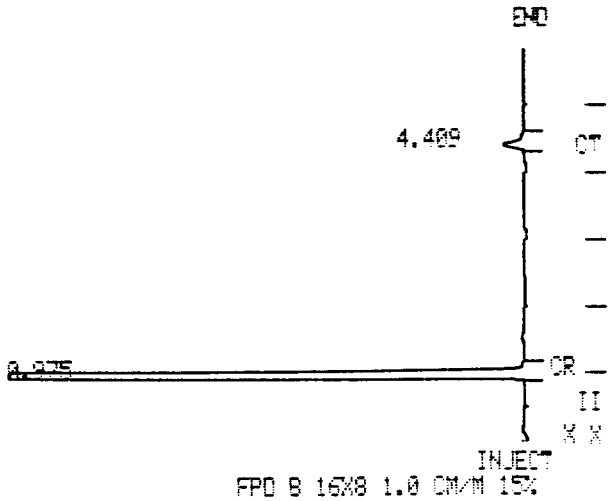
[redacted]

METHOD 3 RUN 1987
TIME 13:37 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.975	98.4870	2230424
2		4.409	1.5129	34264
TOTALS:			100.0000	2264688

DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -22

ERROR LOG:
ANNOTATION OMITTED



NOISE = 162.3

BAG #12
100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1987 RECALC
TIME 13:25 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.973	87.2157	794.3
2		1.531	3.3618	30.6
3		4.399	9.4224	85.8
TOTALS:			100.0000	910.8

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.5 OFFSET: -1

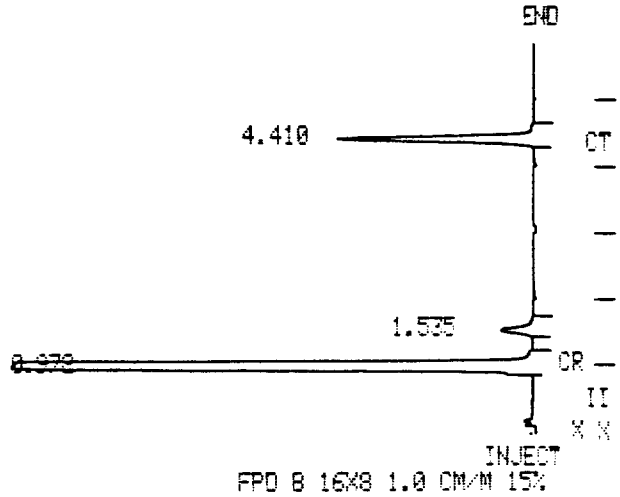
[redacted]

METHOD 4 RUN 1989
TIME 13:49 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.972	98.1193	18702659
2		1.535	0.2721	51875
3		4.410	1.6085	306599
TOTALS:			100.0000	19061133

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 155.5 OFFSET: -22

ERROR LOG:
ANNOTATION OMITTED



NOISE = 155.5

BAB #12
DIL-300/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1988 RECALC
TIME 13:37 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.975	90.3047	715.4
2		4.409	9.6952	76.8
TOTALS:			100.0000	792.2

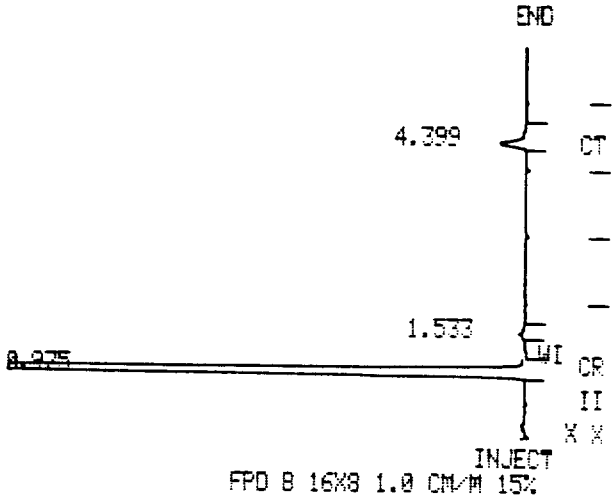
DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -22

[redacted]

TIME 14:00 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.975	97.6638	2020799
2		1.533	0.2940	6083
3		4.399	2.0421	42253
TOTALS:			100.0000	2069136

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -19



NOISE = 169.1

BA6 #13
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1989 RECALC
TIME 13:49 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.972	85.8592	1978.1
2		1.535	4.0911	94.2
3		4.410	10.0496	231.5
TOTALS:			100.0000	2303.8

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 155.5 OFFSET: -28

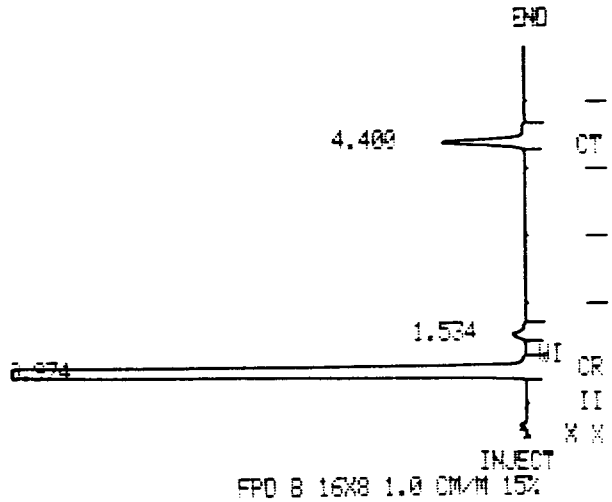
ERROR LOG:
ANNOTATION OMITTED

[redacted]

TIME 14:11 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.974	98.6709	11632480
2		1.534	0.1796	21173
3		4.400	1.1494	135507
TOTALS:			100.0000	11789161

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 155.5 OFFSET: -11



NOISE = 155.5

BAG #14
DCL-208/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1990 RECALC
TIME 14:00 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.975	85.3280	682.0
2		1.533	4.0515	32.3
3		4.399	10.6204	84.8
TOTALS:			100.0000	799.3

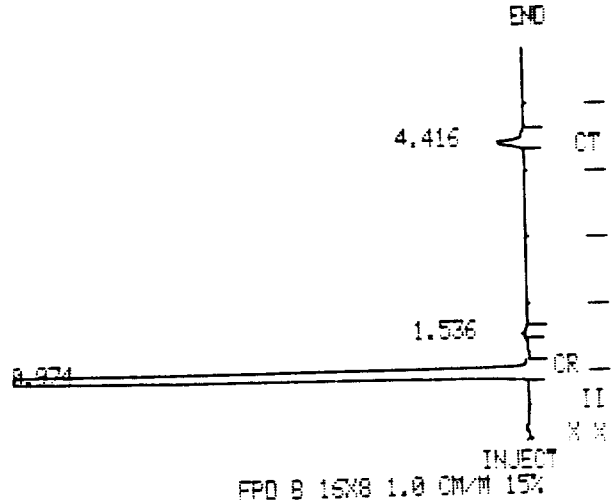
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -19

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 1992
TIME 14:23 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.974	98.7966	3958296
2		1.536	0.1189	4765
3		4.416	1.0843	43443
TOTALS:			100.0000	4006506

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 189.4 OFFSET: -14

ERROR LOG:
ANNOTATION OMITTED



NOISE = 189.4

BAG #14
DIL-100/2

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1991 RECALC
TIME 14:11 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

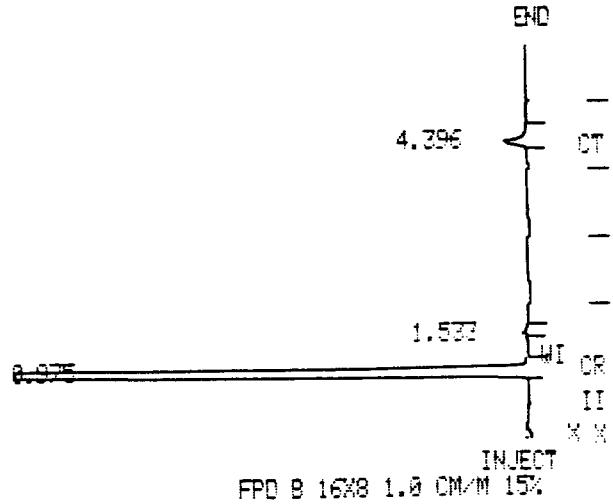
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.974	88.1054	1577.8
2		1.534	3.3218	59.4
3		4.400	8.5727	153.5
TOTALS:			100.0000	1790.9

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000

SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.975	98.7468	3136869
2		1.533	0.1335	4241
3		4.396	1.1195	35565
TOTALS:			100.0000	3176676

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -15



FPD B 16X8 1.0 CM/M 15%

NOISE = 169.1

BAG #15
DIL-100|l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1992 RECALC
TIME 14:23 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.974	88.9671	943.6
2		1.536	2.8613	30.7
3		4.416	8.1715	86.6
TOTALS:			100.0000	1060.6

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 189.4 OFFSET: -14

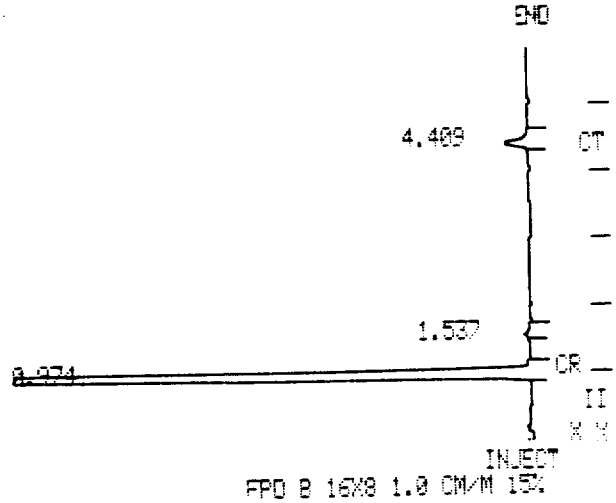
ERROR LOG:
ANNOTATION OMITTED

METHOD 4 RUN 1994
TIME 14:46 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.974	98.6160	3199586
2		1.537	0.1389	4507
3		4.409	1.2449	40382
TOTALS:			100.0000	3243576

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -29

ERROR LOG:
ANNOTATION OMITTED



NOISE = 175.8

BA6 #16
DIL-100 l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1993 RECALC
TIME 14:34 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.975	88.8305	842.1
2		1.533	2.9884	28.3
3		4.396	8.1810	77.5
TOTALS:			100.0000	947.9

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
[illegible]

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 1994 RECALL
TIME 14:46 21 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	% OF HEIGHT
1		0.974	88.3032	850.5
2		1.527	3.0500	29.7
3		4.409	8.6467	83.2
TOTALS:			100.0000	963.2

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -29

ERROR LOG:
ANNOTATION OMITTED

FLOW-68
MODE-1 8/20/91

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2002 RECALC
TIME 08:33 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

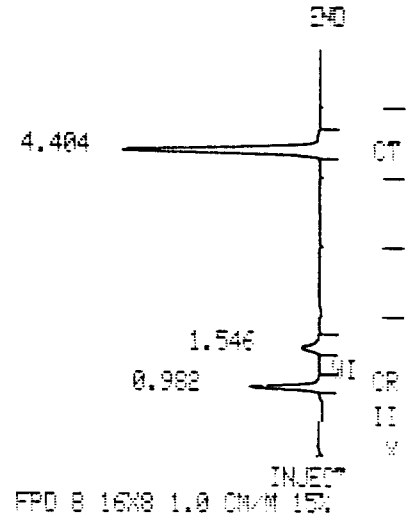
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.982	31.2305	136.5
2		1.546	16.0244	70.0
3		4.404	52.7449	230.6
TOTALS:			100.0000	437.2

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -20

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2002
TIME 08:33 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.982	19.1458	78915
2		1.546	6.9468	28633
3		4.404	73.9073	304632
TOTALS:			100.0000	412181

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -20



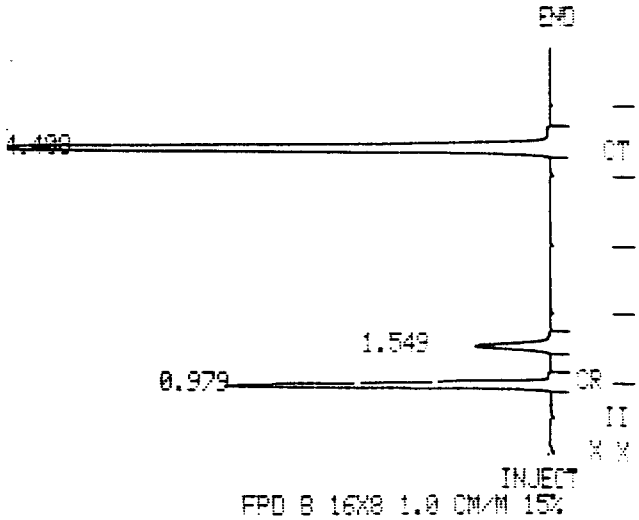
NOISE = 148.8

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2003
TIME 08:44 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.979	23.2892	359921
2		1.549	7.7026	119007
3		4.408	69.0081	1066184
TOTALS:			100.0000	1545012

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -11

ERROR LOG:
ANNOTATION OMITTED



NOISE = 182.6

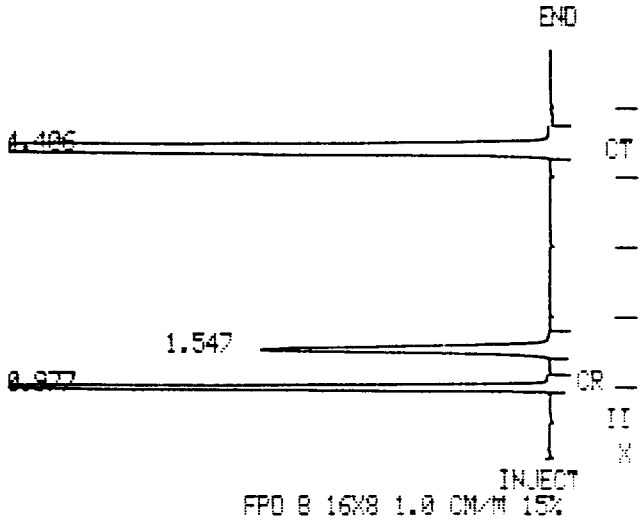
FLOW-38
MODE-1

SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.977	26.9986	1434775
2		1.547	8.5207	452816
3		4.406	64.4805	3426661
TOTALS:			100.0000	5314253

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 155.5 OFFSET: 3

ERROR LOG:
ANNOTATION OMITTED



NOISE = 155.5

FLOW-16-17
MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2003 RECALC
TIME 08:44 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

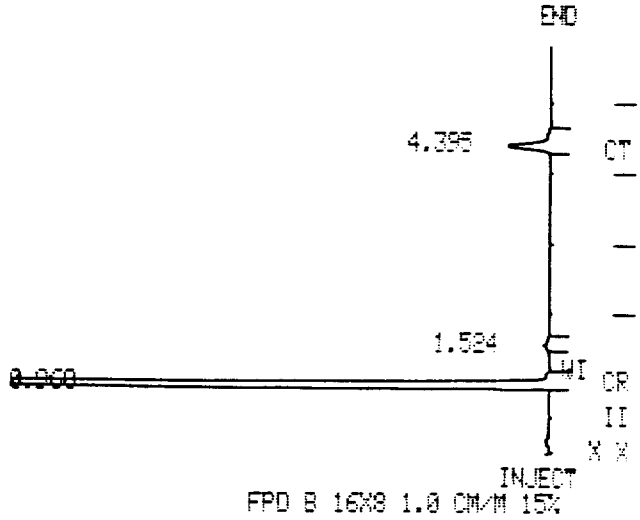
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.979	33.6894	291.0
2		1.549	16.4410	142.0
3		4.408	49.8694	430.8
TOTALS:			100.0000	863.9

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -11

TIME 09:18 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.968	96.2990	1849651
2		1.524	0.2136	4105
3		4.395	3.4872	67179
TOTALS:			100.0000	1920936

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.00000000 DIVISOR: 1.0000000
NOISE: 114.9 OFFSET: -5



NOISE = 114.9

BAG#1
DIL- 100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2004 RECALC
TIME 08:57 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.977	35.6403	575.5
2		1.547	17.0510	275.3
3		4.406	47.3086	763.9
TOTALS:			100.0000	1614.8

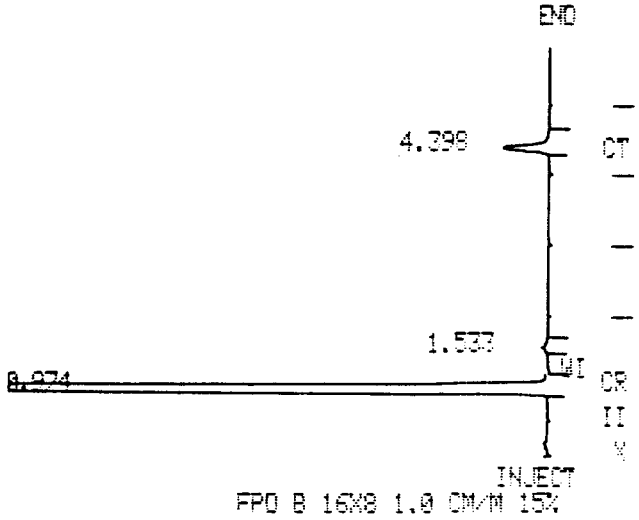
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.00000000 DIVISOR: 1.0000000
NOISE: 155.5 OFFSET: 3

ERROR LOG:
ANNOTATION OMITTED

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2006
TIME 09:30 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.974	97.9837	3763142
2		1.533	0.1453	5582
3		4.398	1.8709	71854
TOTALS:			100.0000	3840579

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -22



NOISE = 148.8

BAG # 2
DIL-100/2

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2005 RECALC
TIME 09:18 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

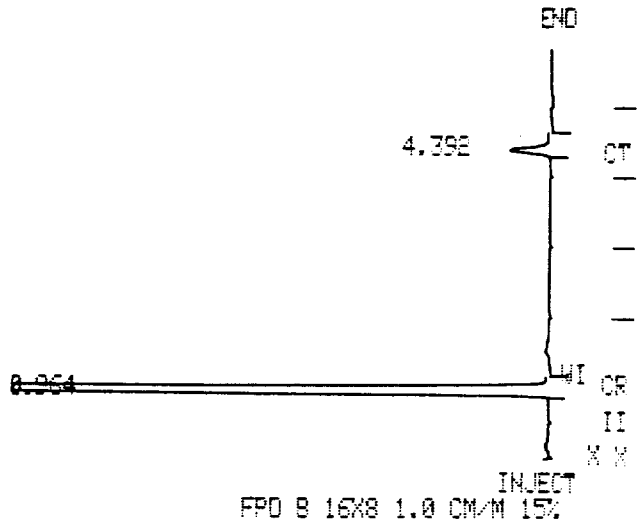
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.968	82.8616	655.6
2		1.524	3.5557	28.1
3		4.395	13.5830	107.4
TOTALS:			100.0000	791.2

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 114.9 OFFSET: -5

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2007
TIME 10:06 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.964	97.5378	2536798
2		4.392	2.4621	64035
TOTALS:			100.0000	2600833

DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 196.1 OFFSET: 6



NOISE = 196.1

BAG #3
D/L-100l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2006 RECALC
TIME 09:30 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.974	86.6269	920.3
2		1.533	2.8963	30.7
3		4.398	10.4766	111.3
TOTALS:			100.0000	1062.4

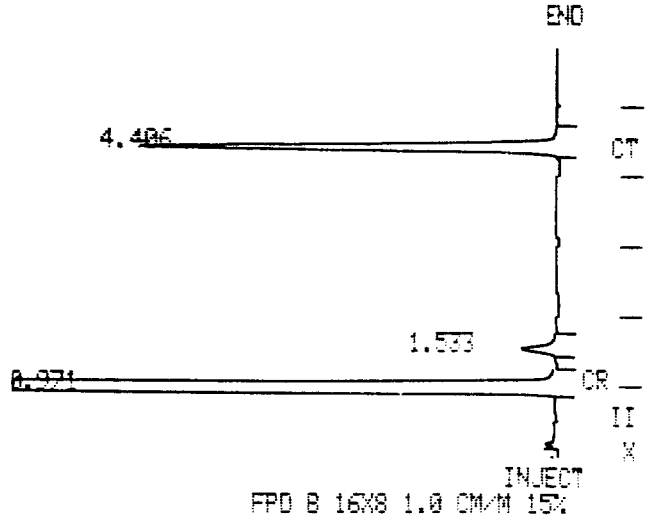
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -32

TIME 10:18 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.971	96.3256	17794308
2		1.533	0.2814	51986
3		4.406	3.3929	626780
TOTALS:			100.0000	18473075

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 142.0 OFFSET: -22

ERROR LOG:
ANNOTATION OMITTED



NOISE = 142.0

BAG #3
DIL-300/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2007 RECALC
TIME 10:06 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

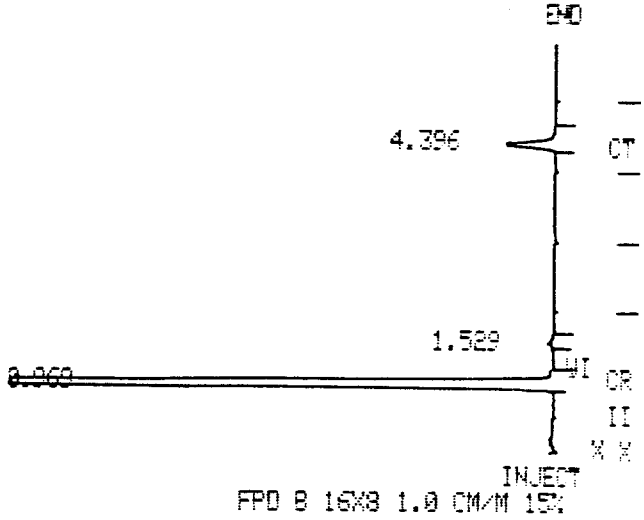
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.964	87.9587	764.2
2		4.392	12.0412	104.6
TOTALS:			100.0000	868.8

DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 196.1 OFFSET: 6

METHOD 4 RUN 2009
TIME 10:32 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.969	96.2283	2063350
2		1.529	0.2437	5227
3		4.396	3.5279	75664
TOTALS:			100.0000	2144742

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -26



NOISE = 182.6

BAG #4
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2008 RECALC
TIME 10:18 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.971	82.0017	1931.8
2		1.533	3.9853	93.9
3		4.406	14.0129	330.1
TOTALS:			100.0000	2355.8

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 142.0 OFFSET: -22

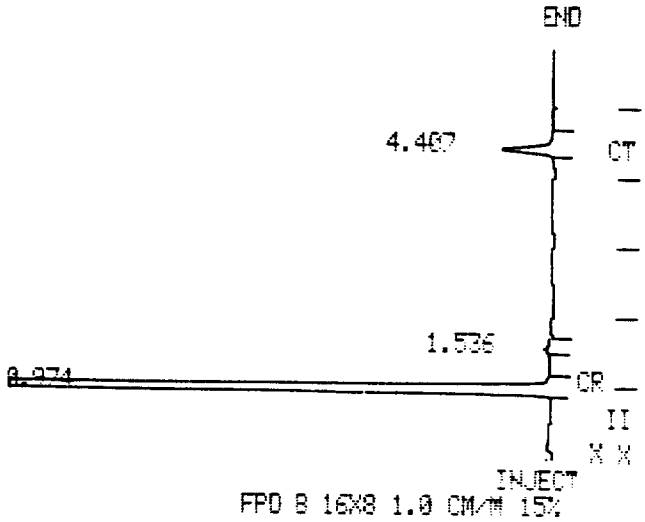
ERROR LOG:
ANNOTATION OMITTED

METHOD 4 RUN 2010
TIME 10:44 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.974	96.4818	2185178
2		1.536	0.2368	5363
3		4.407	3.2813	74317
TOTALS:			100.0000	2264859

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -26

ERROR LOG:
ANNOTATION OMITTED



NOISE = 169.1

BAG # 5
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2009 RECALC
TIME 10:32 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

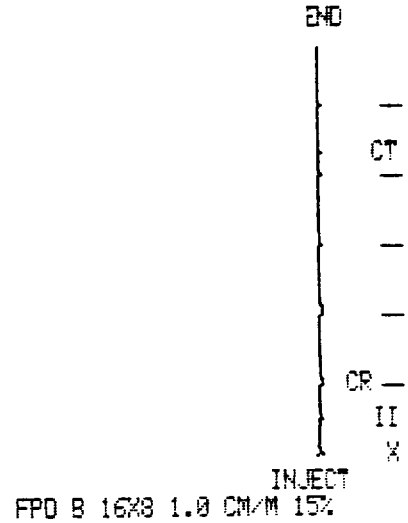
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.969	82.6029	689.8
2		1.529	3.6719	30.6
3		4.396	13.7251	114.6
TOTALS:			100.0000	835.1

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 198.5 OFFSET: -26

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2011
TIME 10:55 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

DETECTED PEAKS: 0 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -16

ERROR LOG:
NO PEAKS



NOISE = 162.3

AIR SAMPLE
MODE 1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2010 RECALC
TIME 10:44 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.974	83.1131	707.7
2		1.536	3.6172	30.8
3		4.407	13.2695	112.9
TOTALS:			100.0000	851.5

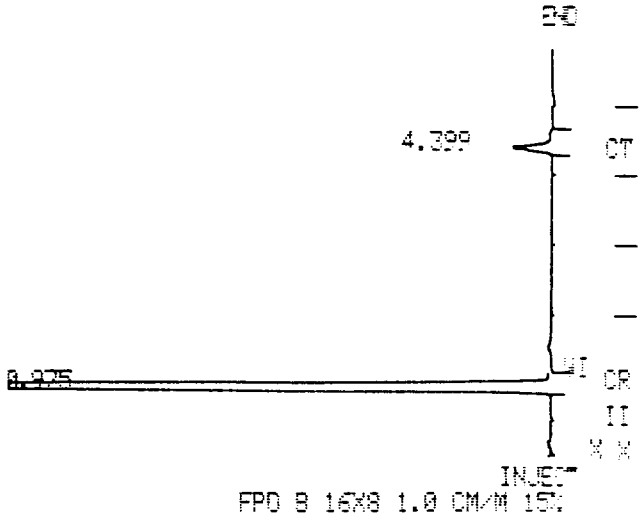
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -26

ERROR LOG:
ANNOTATION OMITTED

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2012
TIME 11:07 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.975	97.4161	2265859
2		4.399	2.5839	60098
TOTALS:			100.0000	2325957

DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.00000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -12



NOISE = 175.8

BAG #6
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2011 RECALC
TIME 10:55 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

DETECTED PEAKS: 0 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.00000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -16

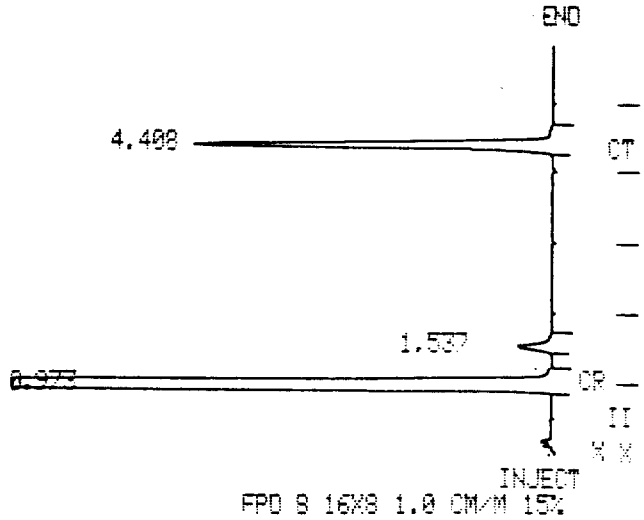
ERROR LOG:
NO PEAKS

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2017
TIME 11:18 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.973	96.5443	16310564
2		1.537	0.2951	49867
3		4.408	3.1604	533946
TOTALS:			100.0000	16894378

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -16

ERROR LOG:
ANNOTATION OMITTED



NOISE = 182.6

BAG #6
DIL-300/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2012 RECALC
TIME 11:07 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SD RT HEIGHT
1		0.975	87.5907	719.3
2		4.399	12.4092	101.9
TOTALS:			100.0000	821.3

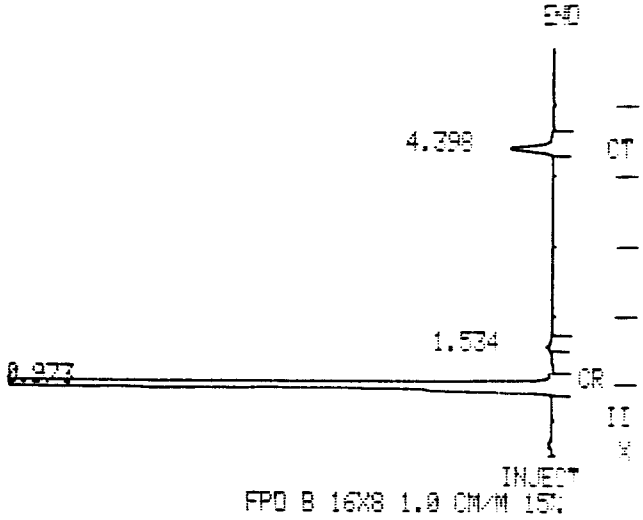
DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -12

RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.973	97.5737	2914410
2		1.534	0.1703	5089
3		4.398	2.2556	67390
TOTALS:			100.0000	2986890

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -15

ERROR LOG:
ANNOTATION OMITTED



NOISE = 162.3

BAG #7
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2013 RECALC
TIME 11:18 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.973	82.3084	1851.4
2		1.537	4.1149	92.5
3		4.408	13.5765	305.3
TOTALS:			100.0000	2249.4

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 192.6 OFFSET: -16

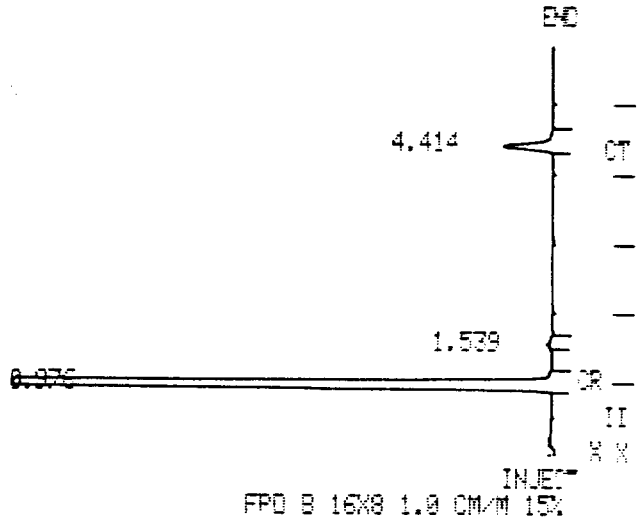
ERROR LOG:
ANNOTATION OMITTED

METHOD 4 RUN 2015
TIME 11:42 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.976	96.4518	2261798
2		1.539	0.2254	5286
3		4.414	3.3226	77917
TOTALS:			100.0000	2345001

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -32

ERROR LOG:
ANNOTATION OMITTED



NOISE = 169.1

BAG # 8
DCL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2014 RECALC
TIME 11:31 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ FT HEIGHT
1		0.973	85.5691	813.0
2		1.534	3.1109	29.5
3		4.398	11.3198	107.5
TOTALS:			100.0000	950.1

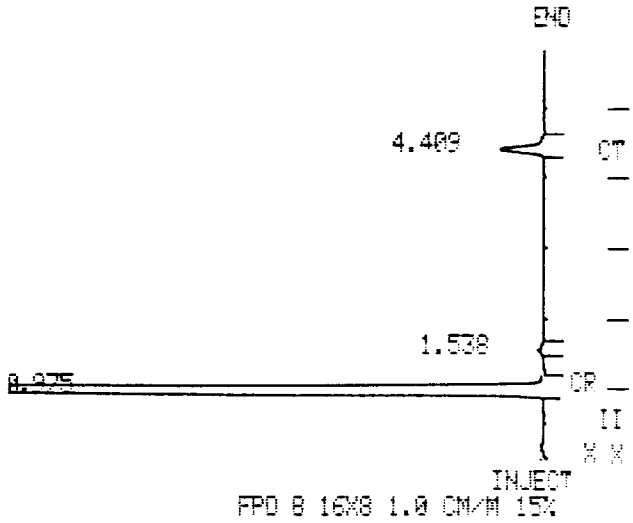
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.7 OFFSET: -15

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2016
TIME 11:54 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.975	98.2053	3954043
2		1.538	0.1241	4997
3		4.409	1.6705	67260
TOTALS:			100.0000	4026301

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 128.5 OFFSET: -9

ERROR LOG:
ANNOTATION OMITTED



NOISE = 128.5

BAG #9
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2015 PEDALC
TIME 11:42 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

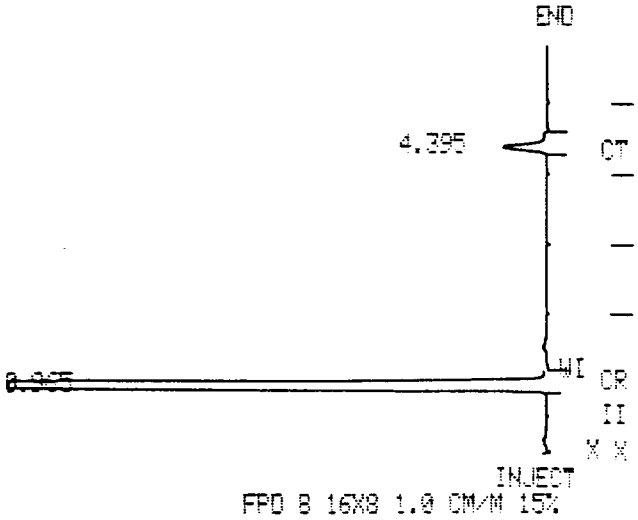
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.976	83.0494	719.5
2		1.539	3.5294	30.5
3		4.414	13.4211	116.2
TOTALS:			100.0000	866.3

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: [illegible] OFFSET: [illegible]

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 3017
TIME 12:32 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.965	98.3619	3913126
2		4.395	1.6380	65165
TOTALS:			100.0000	3978291

DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 209.6 OFFSET: -4



NOISE = 209.6

BAG #10
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2015 RECALC
TIME 11:54 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.975	87.2579	941.2
2		1.538	2.7595	29.7
3		4.409	9.9824	107.6
TOTALS:			100.0000	1078.6

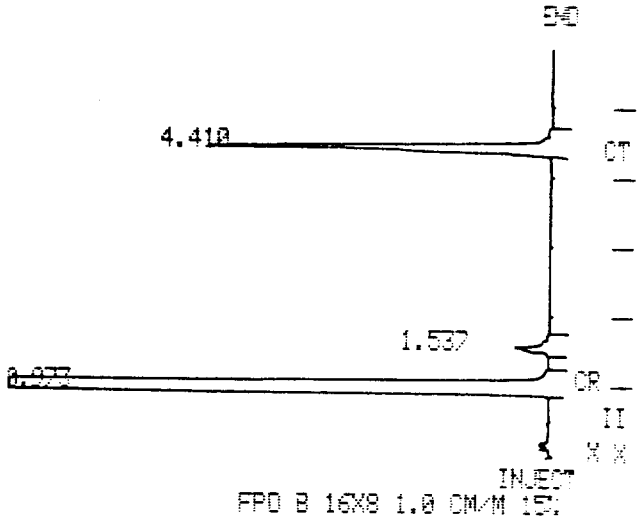
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 128.5 OFFSET: -3

METHOD 4 RUN 2016
TIME 12:43 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.973	97.8408	25505323
2		1.537	0.2027	52857
3		4.410	1.9563	510000
TOTALS:			100.0000	26068181

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.00000000 DIVISOR: 1.0000000
NOISE: 196.1 OFFSET: -16

ERROR LOG:
ANNOTATION OMITTED



NOISE = 196.1

BAG #10
OIL-300/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2017 RECALC
TIME 12:32 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

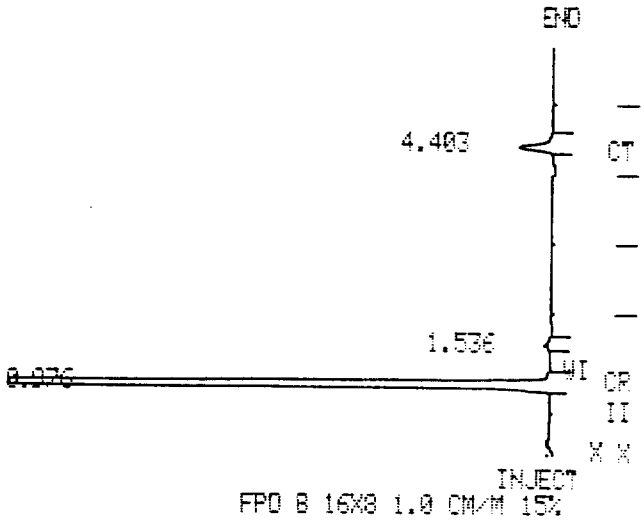
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SB RT HEIGHT
1		0.965	89.8166	941.0
2		4.395	10.1833	106.6
TOTALS:			100.0000	1047.7

DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 209.6 OFFSET: -4

METHOD 4 RUN 2012
TIME 12:54 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.976	96.9410	1772057
2		1.536	0.2893	5288
3		4.403	2.7695	50627
TOTALS:			100.0000	1827972

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -18



NOISE = 182.6

BAG # 11
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2018 RECALC
TIME 12:43 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.973	85.3917	2291.2
2		1.537	3.5228	94.5
3		4.410	11.0854	297.4
TOTALS:			100.0000	2683.2

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 196.1 OFFSET: -15

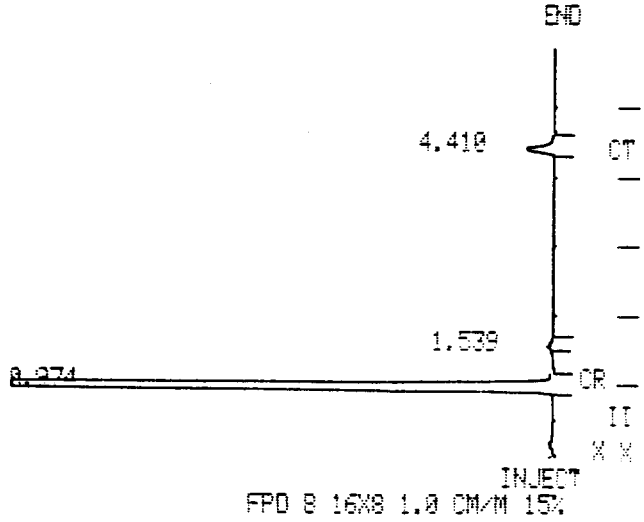
ERROR LOG:
ANNOTATION OMITTED

METHOD 4 RUN 2025
TIME 13:06 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.974	97.7855	2107957
2		1.539	0.2749	5961
3		4.410	1.9796	42675
TOTALS:			100.0000	2155594

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -9

ERROR LOG:
ANNOTATION OMITTED



NOISE = 182.6

BAB #15
100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2019 RECALC
TIME 12:54 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

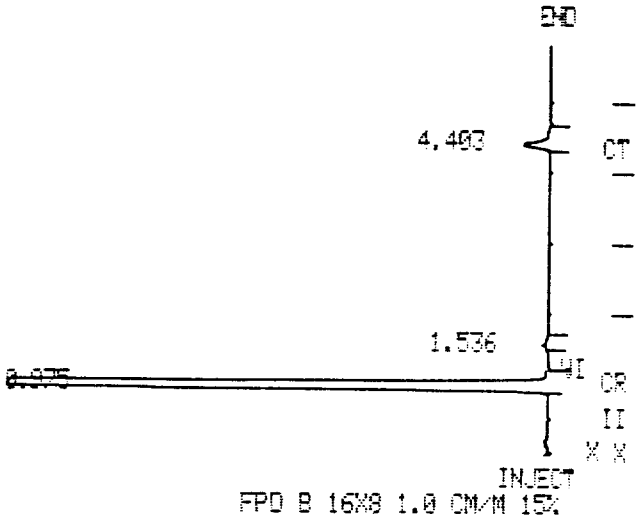
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.976	83.6485	639.0
2		1.536	4.0960	31.2
3		4.403	12.2554	93.6
TOTALS:			100.0000	764.0

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -19

METHOD 4 RUN 2021
TIME 13:17 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.975	98.2573	2744177
2		1.536	0.1968	5499
3		4.403	1.5457	43171
TOTALS:			100.0000	2792848

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.00000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -11



NOISE = 175.8

BAG #12
DIL-1001l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2020 RECALC
TIME 13:06 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.974	85.6946	695.1
2		1.539	3.7567	30.4
3		4.410	10.5485	85.5
TOTALS:			100.0000	811.1

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -9

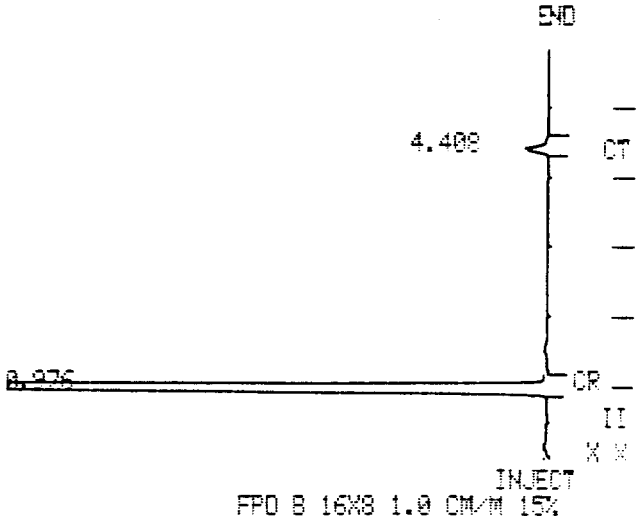
ERROR LOG:
ANNOTATION OMITTED

TIME 13:29 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.976	98.9192	3000030
2		4.408	1.0897	33052
TOTALS:			100.0000	3033082

DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 189.4 OFFSET: -19

ERROR LOG:
ANNOTATION OMITTED



NOISE = 189.4

BAG # 13
DIL-100/L

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2021 RECALC
TIME 13:17 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.975	87.1252	789.7
2		1.536	3.4361	31.1
3		4.403	9.4395	85.5
TOTALS:			100.0000	906.4

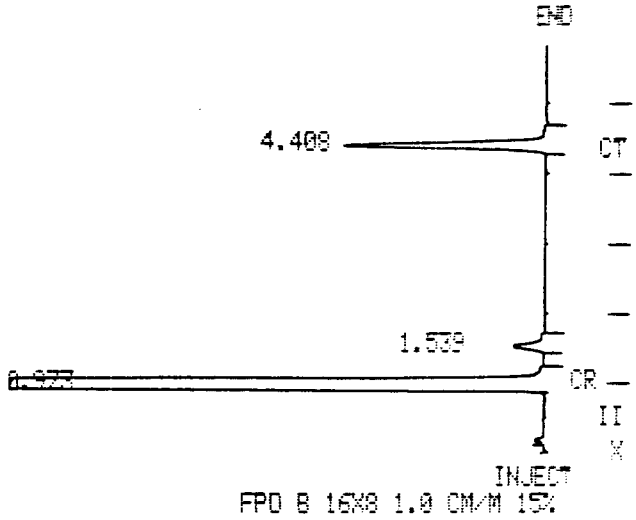
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -11

TIME 13:40
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.973	98.4433	22851579
2		1.539	0.2108	48947
3		4.408	1.3457	312392
TOTALS:			100.0000	23212915

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -4

ERROR LOG:
ANNOTATION OMITTED



NOISE = 162.3

BAG#13
DIL-300/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2022 RECALC
TIME 13:29 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.976	91.6024	823.1
2		4.408	8.3975	75.4
TOTALS:			100.0000	898.6

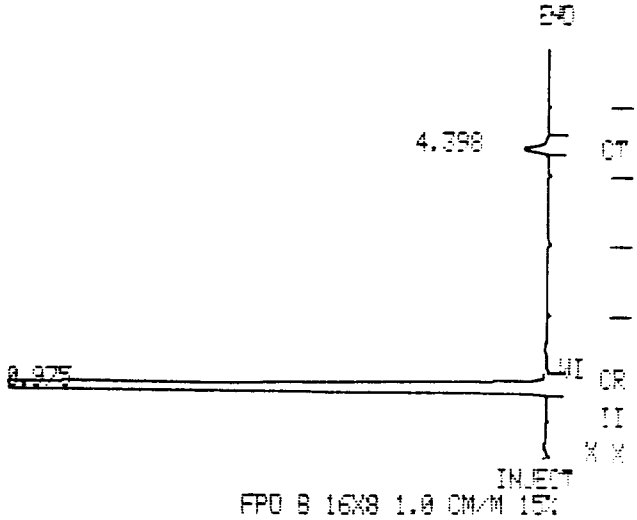
DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.00000000
MULTIPLIER: 1.00000000 DIVISOR: 1.00000000
NOISE: 189.4 OFFSET: -19

ERROR LOG:
ANNOTATION OMITTED

TIME 13:53 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.975	98.3486	2343586
2		4.398	1.6517	39351
TOTALS:			100.0000	2382938

DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 196.1 OFFSET: -14



NOISE = 196.1

BAG #14
DIL- 100/R

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2023 RECALC
TIME 13:40 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.973	87.0095	2173.2
2		1.539	3.6753	91.7
3		4.408	9.3150	232.6
TOTALS:			100.0000	2497.7

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.00000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -4

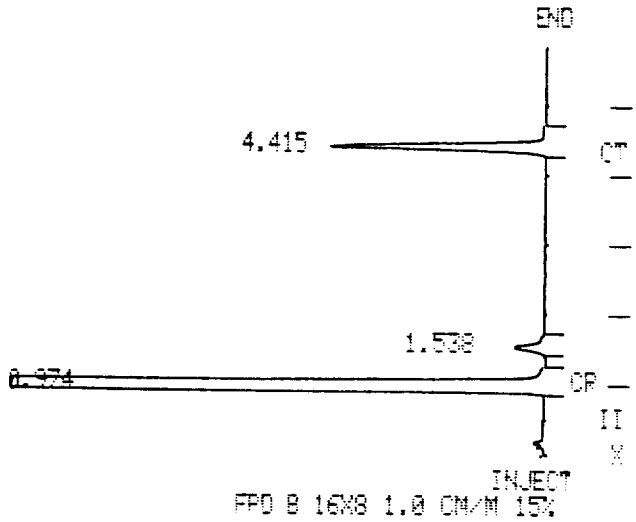
ERROR LOG:
ANNOTATION OMITTED

METHOD 4 RUN 2025
TIME 14:04 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.974	97.9195	17207612
2		1.538	0.2647	46524
3		4.415	1.8157	319077
TOTALS:			100.0000	17573213

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 108.2 OFFSET: -14

ERROR LOG:
ANNOTATION OMITTED



NOISE = 108.2

BAG #14
D/L-300/2

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2024 RECALC
TIME 13:53 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

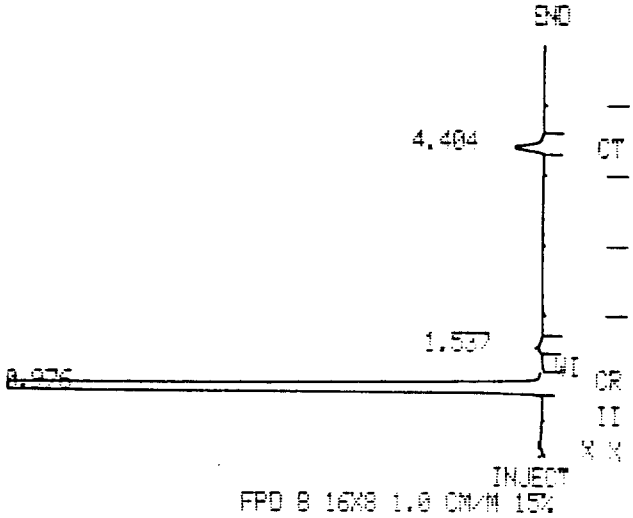
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.975	89.9353	732.4
2		4.398	10.0646	81.9
TOTALS:			100.0000	814.4

DETECTED PEAKS: 2 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 196.1 OFFSET: -14

METHOD 4 RUN 2026
TIME 14:16 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.976	98.8621	4568208
2		1.537	0.1444	6675
3		4.404	0.9954	46003
TOTALS:			100.0000	4621487

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -19



NOISE = 148.8

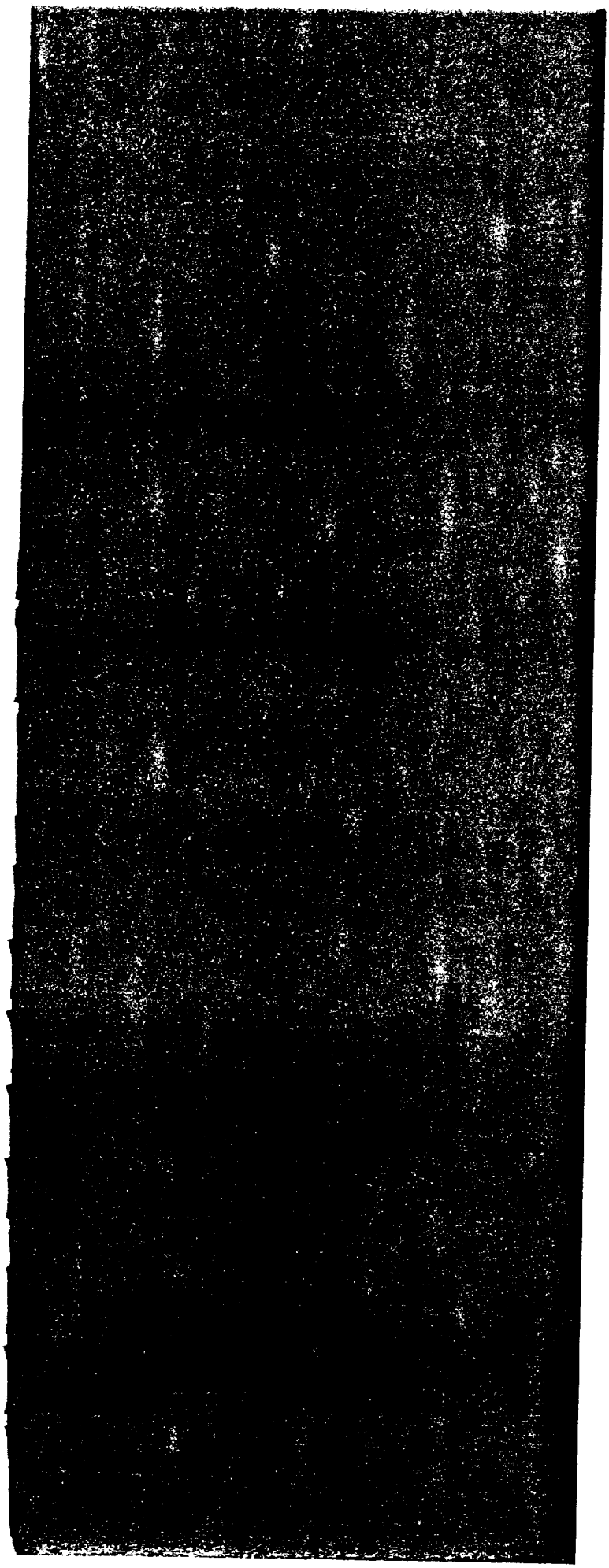
BAG #16
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2025 RECALC
TIME 14:04 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.974	85.4438	1899.5
2		1.538	3.9860	88.6
3		4.415	10.5700	234.9
TOTALS:			100.0000	2223.1

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 108.2 OFFSET: -14

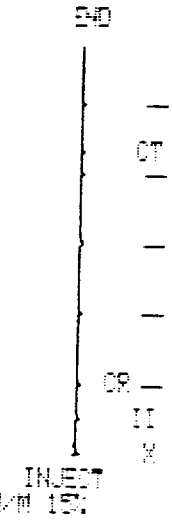
ERROR LOG:
ANNOTATION OMITTED



VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2027
TIME 14:31 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

DETECTED PEAKS: 0 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -18

ERROR LOG:
NO PEAKS



FPO B 16X8 1.0 CM/M 15:

NOISE = 175.8

AIR SAMPLE
MODE 1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2026 RECALC
TIME 14:16 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.976	89.0927	1009.6
2		1.537	2.9961	33.9
3		4.404	7.9110	89.6
TOTALS:			100.0000	1133.2

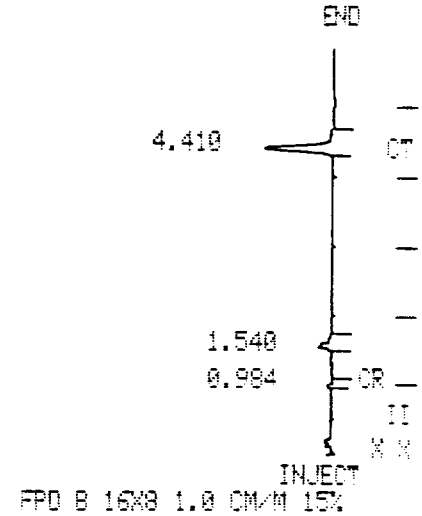
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -19

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2022
TIME 14:43 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.984	4.0254	4979
2		1.540	13.4642	16654
3		4.410	82.5102	102059
TOTALS:			100.0000	123693

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: 1

ERROR LOG:
ANNOTATION OMITTED



NOISE = 175.8

OUTLET - 8/20/91 - 630 Am - C.W.
DCL-200/2 - MODE-)

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2027 RECALC
TIME 14:31 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

DETECTED PEAKS: 0 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -18

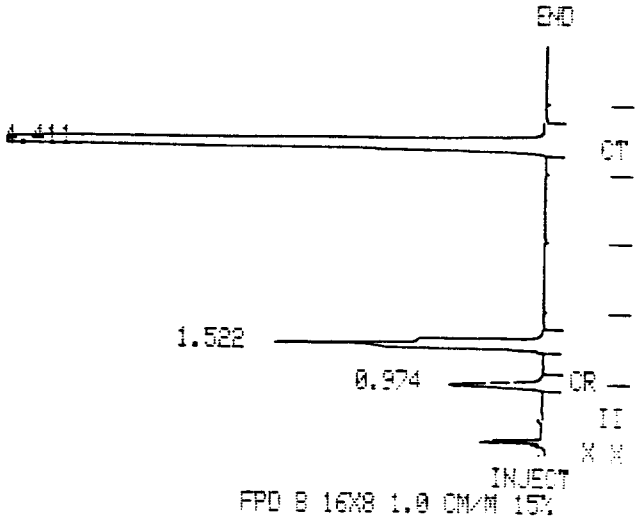
ERROR LOG:
NO PEAKS

METHOD 4 RUN 2027
TIME 14:55 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.974	3.4576	103847
2		1.522	14.2650	429435
3		4.411	82.2772	2471101
TOTALS:			100.0000	3003383

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -15

ERROR LOG:
ANNOTATION OMITTED



NOISE = 148.8

OUTLET - 8/20/91 ~6:30 AM - C.W
NO DILUTION - MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2028 RECALC
TIME 14:43 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

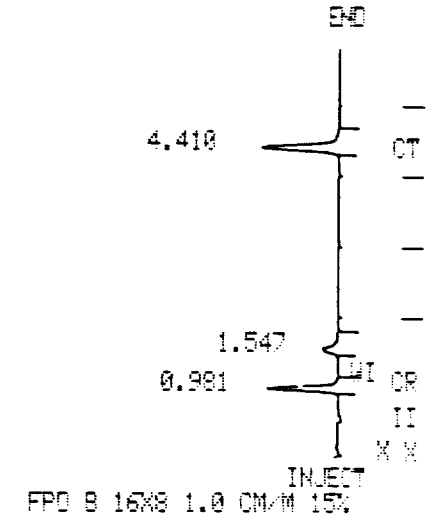
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.984	16.0132	35.6
2		1.540	24.2200	57.9
3		4.410	59.7666	133.0
TOTALS:			100.0000	222.5

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: 1

TIME 15:07 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.981	35.8901	79779
2		1.547	11.0385	24537
3		4.410	53.0712	117970
TOTALS:			100.0000	222287

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.00000000 DIVISOR: 1.00000000
NOISE: 223.2 OFFSET: -15



NOISE = 223.2

FLOW - 67

MODE - 1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2029 RECALC
TIME 14:55 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.974	14.7116	158.2
2		1.522	24.9146	269.0
3		4.411	60.3737	649.5
TOTALS:			100.0000	1075.8

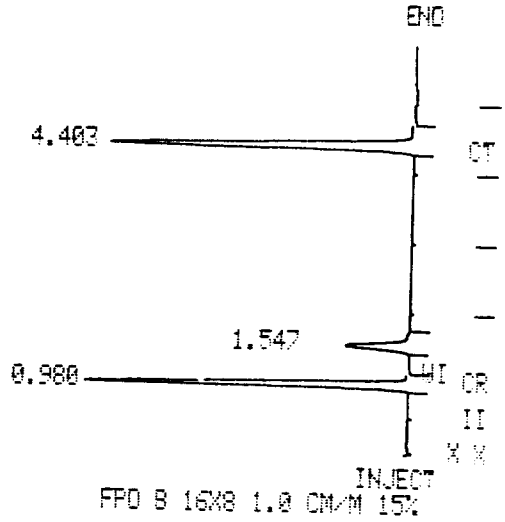
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.00000000 DIVISOR: 1.00000000
NOISE: 148.8 OFFSET: -15

ERROR LOG:
ANNOTATION OMITTED

METHOD 4 RUN 2031
TIME 15:19 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.980	39.4606	360585
2		1.547	10.7497	98229
3		4.403	49.7896	454970
TOTALS:			100.0000	913765

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -5



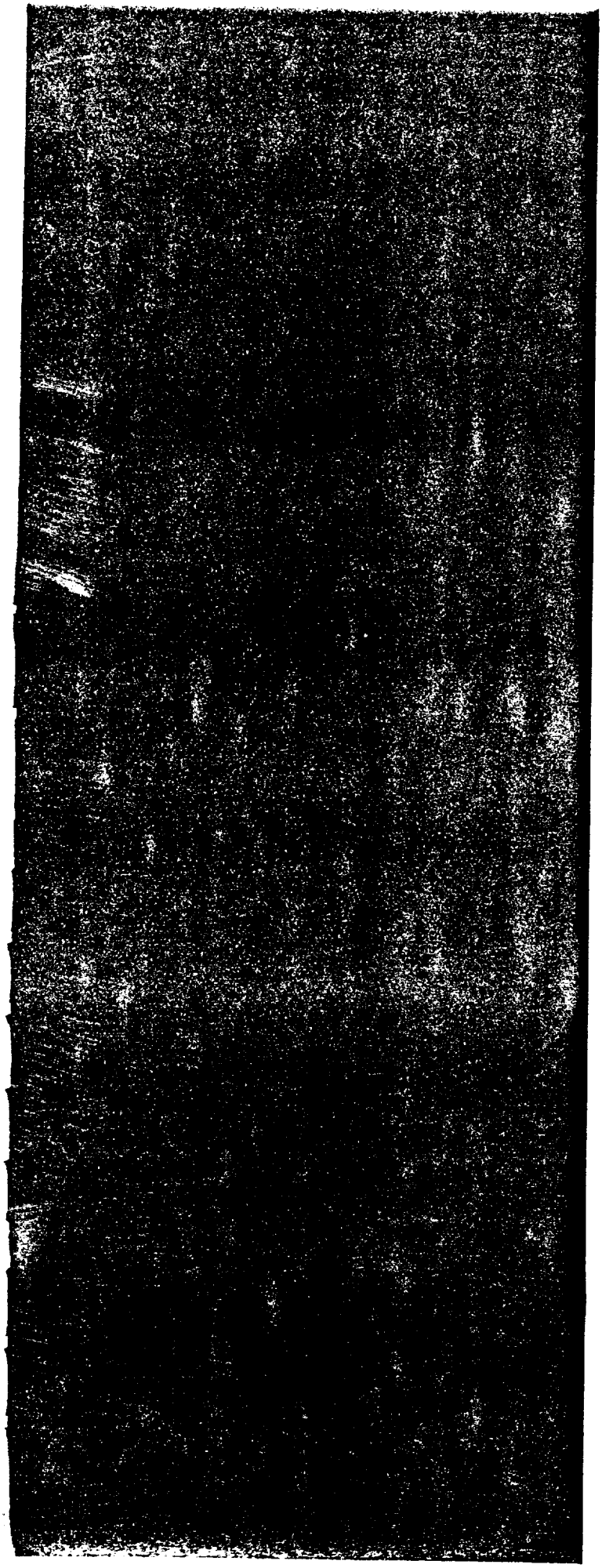
NOISE = 175.8

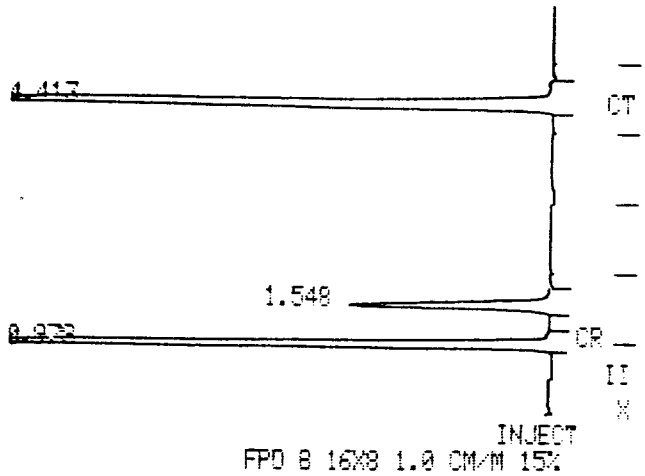
FLOW-37
MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2030 RECALC
TIME 15:07 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.981	39.8527	137.2
2		1.547	18.5232	63.7
3		4.410	41.6239	143.3
TOTALS:			100.0000	344.3

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 223.2 OFFSET: -15





NOISE = 162.3

FLOW-17-18

MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2031 RECALC
TIME 15:19 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.980	41.4845	291.9
2		1.547	18.3558	129.1
3		4.403	40.1595	282.5
TOTALS:			100.0000	703.6

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 175.8 OFFSET: -5

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2031
TIME 15:19 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.980	39.4686	360585
2		1.547	19.7497	[illegible]
3		4.403	[illegible]	[illegible]

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2032 RECALC
TIME 15:31 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ FT HEIGHT
1		0.978	42.0579	523.0
2		1.548	18.4822	229.8
3		4.413	39.4597	490.5
TOTALS:			100.0000	1243.3

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -18

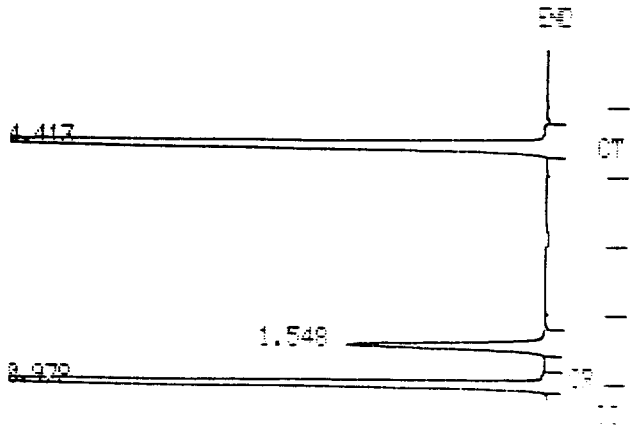
ERROR LOG:
ANNOTATION OMITTED

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2032
TIME 15:31 22 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.978	41.0349	1183193
2		1.548	10.9162	314[illegible]
3		4.413	48.0488	1385431
TOTALS:			100.0000	2883331

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -18

ERROR LOG:
ANNOTATION OMITTED

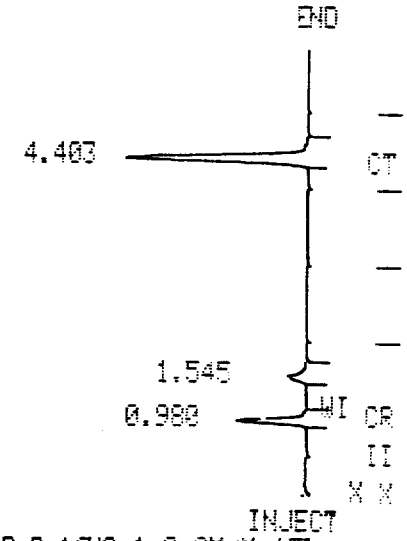


DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -20

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2037
TIME 08:28 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.980	20.6412	70236
2		1.545	7.0776	24083
3		4.403	72.2811	245954
TOTALS:			100.0000	340274

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -20



FPD S 16X8 1.0 CM/M 15%

NOISE = 182.6

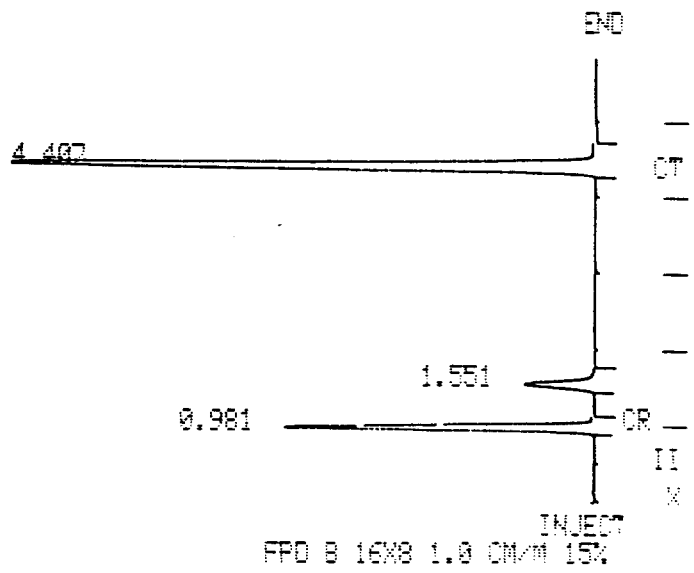
FLOW-70
MODE-1
8-23-91
B

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2038
TIME 08:40 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.981	24.4704	320718
2		1.551	7.5938	99527
3		4.407	67.9357	890391
TOTALS:			100.0000	1310637

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 189.4 OFFSET: -10

ERROR LOG:
ANNOTATION OMITTED

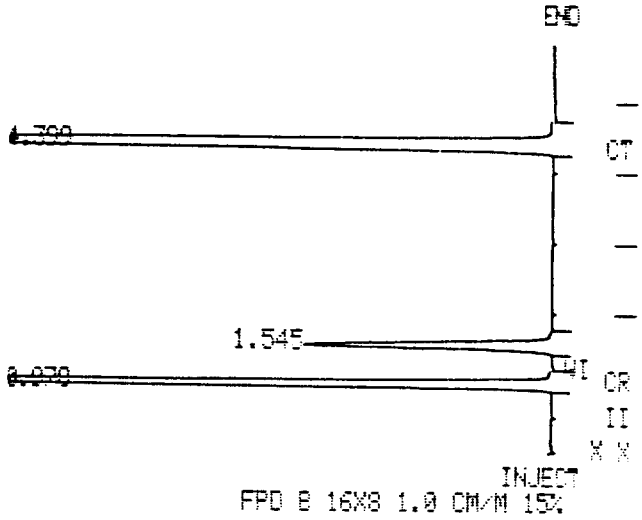


NOISE = 189.4

TIME 08:51 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.978	27.9927	1269930
2		1.545	8.4283	383320
3		4.399	63.6488	2894754
TOTALS:			100.0000	4548005

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.00000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -14



NOISE = 148.8

FLOW-16-17
MODE-1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2038 RECALC
TIME 08:40 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.981	34.3144	274.8
2		1.551	16.2717	130.3
3		4.407	49.4137	395.8
TOTALS:			100.0000	801.0

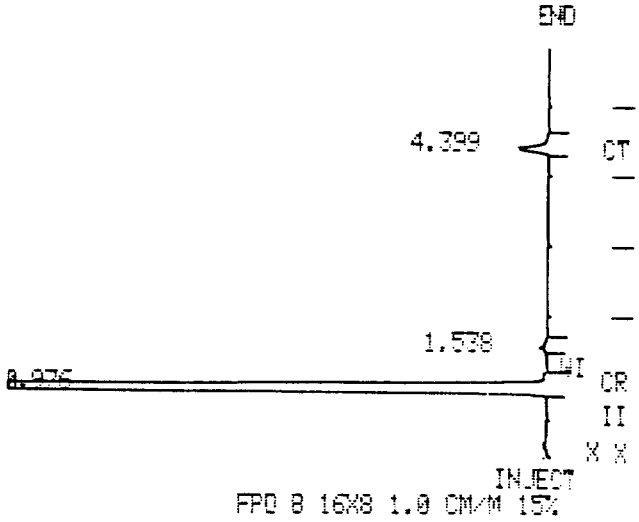
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.00000000 DIVISOR: 1.0000000
NOISE: 189.4 OFFSET: -10

ERROR LOG:
ANNOTATION OMITTED

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2040
TIME 09:03 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.976	98.5465	3527371
2		1.538	0.1815	6500
3		4.399	1.2718	45523
TOTALS:			100.0000	3579395

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -10



NOISE = 148.8

BAG #1
1:10 DILUTION

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2039 RECALC
TIME 08:51 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.978	36.0581	541.3
2		1.545	16.9753	254.8
3		4.399	46.9664	705.0
TOTALS:			100.0000	1501.2

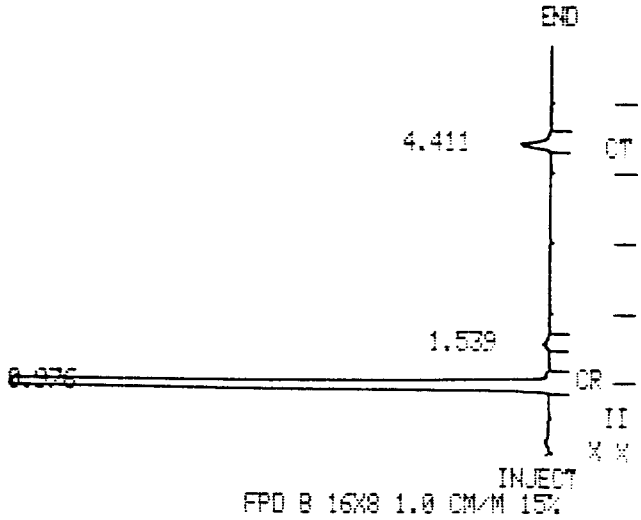
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -14

TIME 09:15 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.976	97.9545	2468445
2		1.539	0.2730	6880
3		4.411	1.7724	44664
TOTALS:			100.0000	2519991

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 135.2 OFFSET: -11

ERROR LOG:
ANNOTATION OMITTED



NOISE = 135.2

BAG #2
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2040 RECALC
TIME 09:03 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

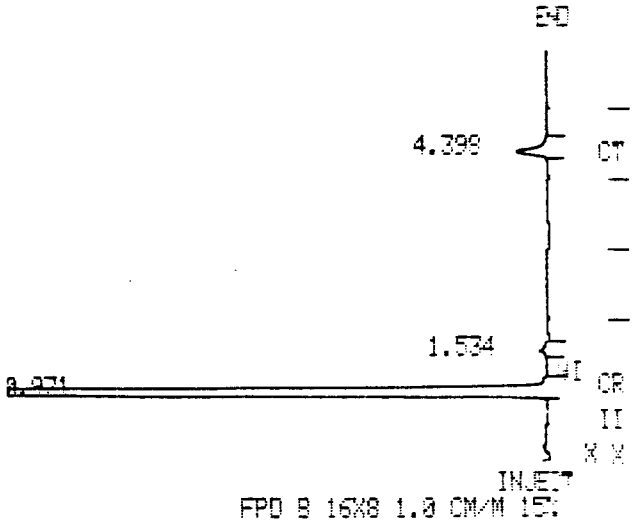
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.976	87.9470	889.9
2		1.538	3.3421	33.8
3		4.399	8.7108	88.1
TOTALS:			100.0000	1011.9

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 149.8 OFFSET: -10

TIME 09:31 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.971	98.2021	2954430
2		1.534	0.2003	6027
3		4.398	1.5975	48063
TOTALS:			100.0000	3008571

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 155.5 OFFSET: -26



NOISE = 155.5

KAB #3
100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2041 RECAL
TIME 09:15 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.976	85.9926	758.7
2		1.539	3.9408	34.4
3		4.411	10.0665	87.8
TOTALS:			100.0000	873.0

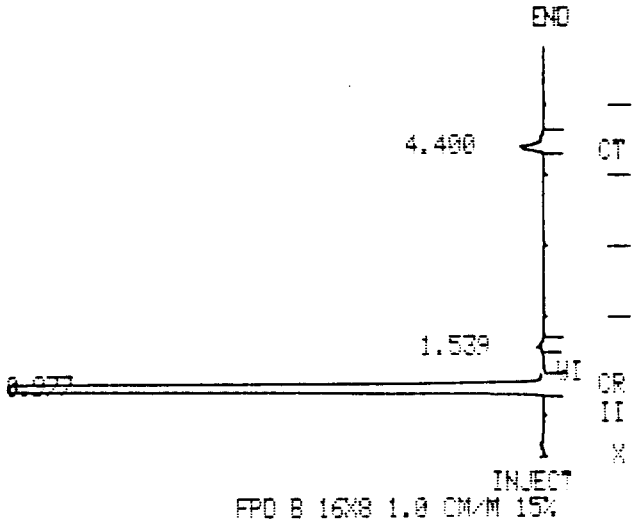
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 135.2 OFFSET: -11

ERROR LOG:
ANNOTATION OMITTED

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2043
TIME 09:42 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.977	98.6781	3006769
2		1.539	0.1679	5113
3		4.400	1.1540	35164
TOTALS:			100.0000	3047047

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.00000000
NOISE: 169.1 OFFSET: -15



NOISE = 169.1

Blk #4
100l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2042 RECALC
TIME 09:31 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

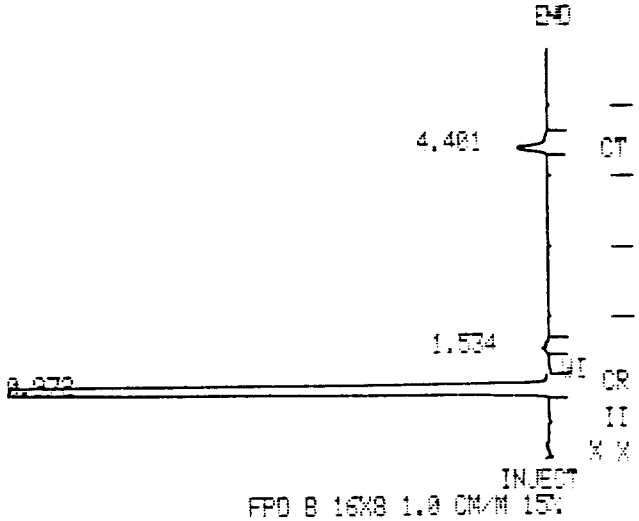
PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.971	86.8417	819.1
2		1.534	3.5650	33.6
3		4.398	9.5931	90.4
TOTALS:			100.0000	943.2

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 155.5 OFFSET: -26

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2044
TIME 09:56 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.972	98.7871	4366749
2		1.534	0.1548	6844
3		4.401	1.0619	46944
TOTALS:			100.0000	4420538

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 135.2 OFFSET: 0



NOISE = 135.2

BAG #5
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2043 RECALC
TIME 09:42 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.977	88.3223	824.7
2		1.539	3.4835	31.7
3		4.400	8.2741	77.2
TOTALS:			100.0000	933.7

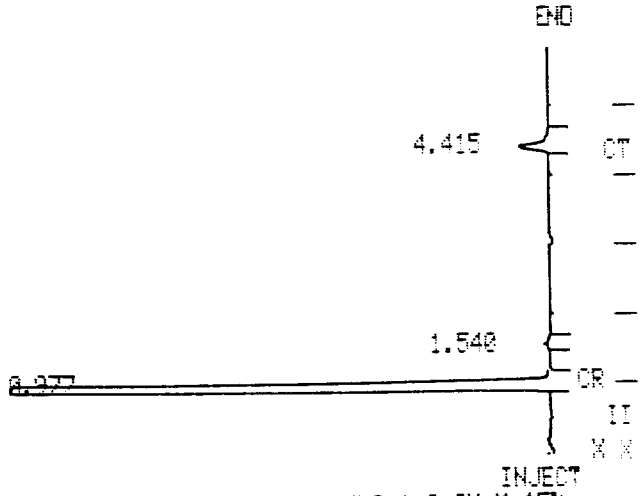
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 169.1 OFFSET: -15

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2045
TIME 10:08 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.977	97.9076	2388762
2		1.540	0.2222	5421
3		4.415	1.8701	45628
TOTALS:			100.0000	2439812

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -12

ERROR LOG:
ANNOTATION OMITTED



FPD B 16X8 1.0 CM/M 15%

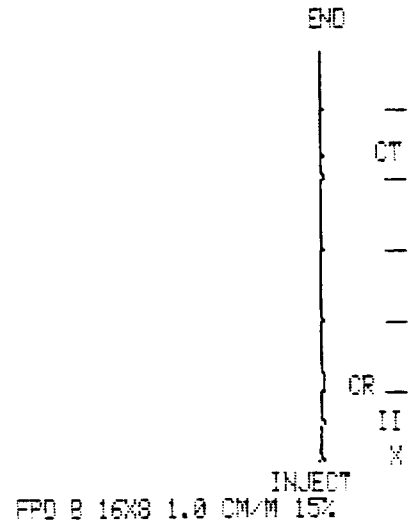
NOISE = 162.3

BAG #6
DIL - 1001l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2046
TIME 10:20 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

DETECTED PEAKS: 0 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 189.4 OFFSET: -11

ERROR LOG:
NO PEAKS



NOISE = 189.4

AIR SAMPLE
MODE 1

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2045 RECALC
TIME 10:08 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.977	85.9709	737.8
2		1.540	3.7502	32.1
3		4.415	10.2787	88.2
TOTALS:			100.0000	858.2

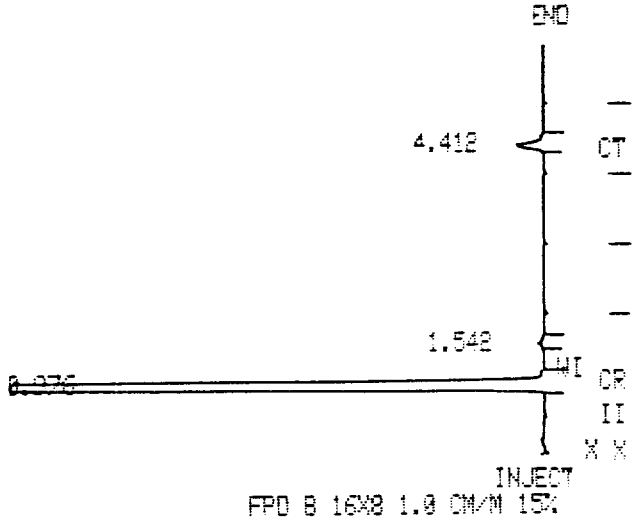
DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -12

ERROR LOG:
ANNOTATION OMITTED

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 3947
TIME 10:32 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.976	98.8562	3869238
2		1.542	0.1184	4636
3		4.412	1.0252	40129
TOTALS:			100.0000	3914104

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -11



NOISE = 162.3

BAG #7
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2046 RECALC
TIME 10:20 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

DETECTED PEAKS: 0 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 189.4 OFFSET: -11

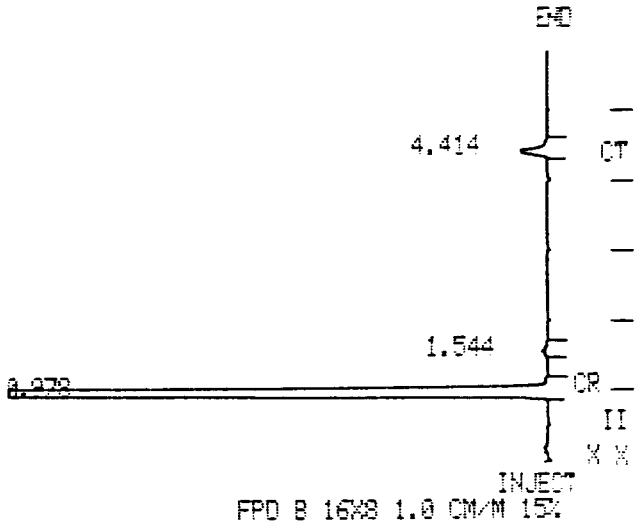
ERROR LOG:
NO PEAKS

TIME 10:44 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.978	98.5932	3431311
2		1.544	0.1806	6287
3		4.414	1.2261	42672
TOTALS:			100.0000	3480271

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.00000000 DIVISOR: 1.0000000
NOISE: 135.2 OFFSET: -11

ERROR LOG:
ANNOTATION OMITTED



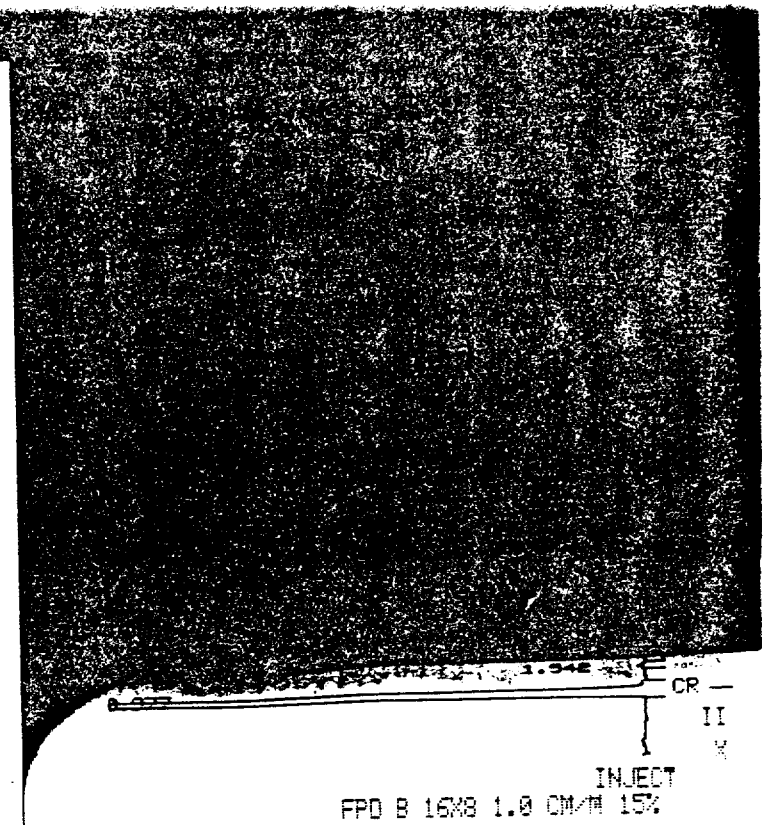
NOISE = 135.2

BAG #8
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2047 RECALC
TIME 10:32 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.976	89.1120	930.6
2		1.542	2.9161	30.4
3		4.412	7.9718	83.2
TOTALS:			100.0000	1044.3

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 162.3 OFFSET: -11



NOISE = 148.8

BAG #9
DIL-100/l

WARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2048 RECALC
TIME 10:44 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.978	88.0947	877.1
2		1.544	3.2987	32.8
3		4.414	8.6065	85.6
TOTALS:			100.0000	995.7

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 135.2 OFFSET: -11

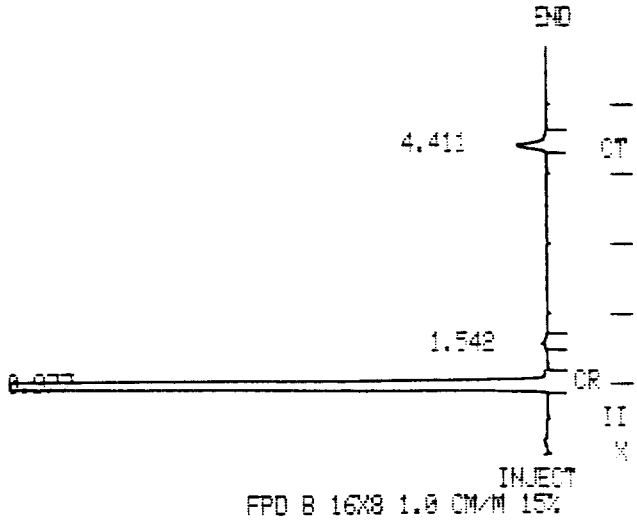
ERROR LOG:
ANNOTATION OMITTED

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2049
TIME 10:55 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.977	98.7170	3998104
2		1.542	0.1432	5800
3		4.411	1.1397	46162
TOTALS:			100.0000	4050066

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -18

ERROR LOG:
ANNOTATION OMITTED



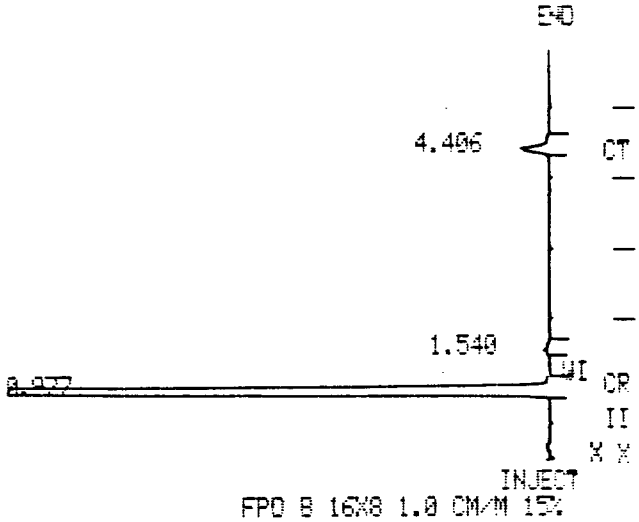
NOISE = 148.8

BAG #9
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2048 RECALC
TIME 10:44 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

3	4.406	1.5086	[illegible]
TOTALS:		100.0000	286[illegible]811

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 182.6 OFFSET: -5



NOISE = 182.6

BAG #10
DIL-100/l

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2049 RECALC
TIME 10:55 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.977	88.6451	943.9
2		1.542	3.0183	32.1
3		4.411	8.3364	88.7
TOTALS:			100.0000	1064.8

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 148.8 OFFSET: -18

ERROR LOG:
ANNOTATION OMITTED

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 3 RUN 2050 RECALC
TIME 11:08 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	SQ RT HEIGHT
1		0.977	87.1361	799.4
2		1.540	3.4587	31.7
3		4.406	9.4050	86.3
TOTALS:			100.0000	917.5

DETECTED PEAKS: 3 REJECTED PEAKS: 0
AMOUNT STANDARD: 1.0000000
MULTIPLIER: 1.0000000 DIVISOR: 1.0000000
NOISE: 102.5 OFFSET: -5

VARIAN 3600 GAS CHROMATOGRAPH
METHOD 4 RUN 2050
TIME 11:08 23 AUG 91
SAMPLE:
RUN MODE: ANALYSIS
CALCULATION TYPE: PERCENT

PEAK NO.	PEAK NAME	TIME MIN	RESULT	AREA COUNTS
1		0.977	98.2936	2818876
2		1.540	0.1976	5668
3		4.406	1.5086	43255
TOTALS:			100.0000	2867811

DETECTED PEAKS: 3 REJECTED PEAKS: 0

APPENDIX D

CALCULATIONS

BCM

COMPUTATION SHEET

Name of Client: Bethlehem Steel Corporation

Project: Desulfurization Test

Description: Sample Calculation August 21, 1991 Sample No. 1

Sheet Number 1 Of 5

Date 9-9-91

Job Number 00-4021-33

Computed by DJ Checked by JB

Percent H_2S at Contactor Outlet converted to equivalent grains of H_2S per 100 dry standard cubic feet of coke oven gas (eq. gr. H_2S/100 dscf COG)

$$0.042\% \times \frac{10{,}000\ ppm}{1\ \%} \times \frac{1\ ul}{1\ L\ gas} \times \frac{28.32\ L\ gas}{ft^3\ gas} \times \frac{1 \times 10^{-6}\ L}{ul} \times \frac{1\ mole}{22.042\ L}$$

$$\times \frac{34\ gm\ H_2S}{mole} \times \frac{1\ lb}{453.593\ gm} \times \frac{7000\ gr}{1\ lb} \times \frac{100\ dscf\ COG}{1} \times \frac{34\ gm\ H_2S}{mole} \Big/ \frac{34\ gm\ H_2S}{mole}$$

$$= \underline{\underline{28.3\ eq.\ gr.\ H_2S/100\ dscf\ COG}}$$

Percent COS at Contactor Outlet converted to eq. gr. H_2S/100 dscf COG

$$0.002\% \times \frac{10{,}000\ ppm}{1\ \%} \times \frac{1\ ul}{1\ L\ gas} \times \frac{28.32\ L\ gas}{ft^3\ gas} \times \frac{1 \times 10^{-6}\ L}{ul} \times \frac{1\ mole}{22.042\ L}$$

$$\times \frac{60\ gm\ COS}{mole} \times \frac{1\ lb}{453.593\ gm} \times \frac{7000\ gr}{1\ lb} \times \frac{100\ dscf\ COG}{1} \times \frac{34\ gm\ H_2S}{mole} \Big/ \frac{60\ gm\ COS}{mole}$$

$$= \underline{\underline{1.3\ eq.\ gr.\ H_2S/100\ dscf\ COG}}$$

Percent CS_2 at Contactor Outlet converted to eq. gr H_2S/100 dscf COG

$$0.001\% \times \frac{10{,}000\ ppm}{1\ \%} \times \frac{1\ ul}{1\ L\ gas} \times \frac{28.32\ L\ gas}{ft^3\ gas} \times \frac{1 \times 10^{-6}}{ul} \times \frac{1\ mole}{22.042\ L}$$

$$\times \frac{76\ gm\ CS_2}{mole} \times \frac{1\ lb}{453.593\ gm} \times \frac{7000\ gr}{1\ lb} \times \frac{100\ dscf\ COG}{1} \times \frac{34\ gm\ H_2S}{mole} \Big/ \frac{76\ gm\ CS_2}{mole}$$

$$= \underline{\underline{0.7\ eq.\ gr\ H_2S/100\ dscf\ COG}}$$

BCM

COMPUTATION SHEET

Name of Client: Bethlehem Steel Corporation

Project: Desulfurization Test

Description: Sample Calculation August 21, 1991 Sample No 1

Sheet Number 2 Of 5

Date 9-9-91

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Computed by PJ Checked by JB

Total Loading at Contactor Outlet = 28.3 eq. gr. H_2S / 100 dscf COG — H_2S

1.3 eq. gr. H_2S / 100 dscf COG — COS

0.7 eq. gr. H_2S / 100 dscf COG — CS_2

30.3 eq. gr. H_2S / 100 dscf COG

Percent H_2S in tail gas converted to eq. gr H_2S / 100 dscf

$$0.30\% \times \frac{10{,}000\ ppm}{1\%} \times \frac{1\ ul}{1\ L\ gas} \times \frac{28.32\ L\ gas}{ft^3\ gas} \times \frac{1 \times 10^{-6}\ L}{1\ ul} \times \frac{1\ mole}{22.042\ L}$$

$$\times \frac{34\ gm\ H_2S}{mole} \times \frac{1\ lb}{453.593\ gms} \times \frac{7000\ gr}{1\ lb} \times \frac{100\ dscf}{1} \times \frac{34\ gm\ H_2S}{mole} \Big/ \frac{34\ gm\ H_2S}{mole}$$

= 202.2 eq. gr H_2S / 100 dscf

Percent SO_2 in tail gas converted to eq. gr H_2S / 100 dscf

$$0.10\% \times \frac{10{,}000\ ppm}{1\%} \times \frac{1\ ul}{1\ L\ gas} \times \frac{28.32\ L\ gas}{ft^3\ gas} \times \frac{1 \times 10^{-6}\ L}{1\ ul} \times \frac{1\ mole}{22.042\ L}$$

$$\times \frac{64\ gm\ SO_2}{mole} \times \frac{1\ lb}{453.593\ gm} \times \frac{7000\ gr}{1\ lb} \times \frac{100\ dscf}{1} \times \frac{34\ gm\ H_2S}{mole} \Big/ \frac{64\ gm\ SO_2}{mole}$$

= 67.4 eq. gr H_2S / 100 dscf

BCM

COMPUTATION SHEET

Name of Client: Bethlehem Steel Corporation
Project: Desulfurization Test
Description: Sample Calculation August 21, 1991 Sample No1

Sheet Number 3 Of 5
Date 9-9-91
Job Number 00-4021-33
Computed by PJ Checked by JB

Contactor Outlet Flow (dscfm)

$$\text{scfm}^{①} \times (1-(\%H_2O^{②}/100)) = 31{,}667 \text{ scfm} \times (1-(5.25/100)) = \underline{\underline{30{,}005 \text{ dscfm}}}$$

① Chart reads in standard cubic feet per minute (scfm)

② Percent moisture obtained by assuming the contactor outlet gas is saturated. The temperature is measured by a thermocouple and recorded on a chart. The recorded temperature is used to obtain percent moisture from a psychrometric chart (Figure 1) expressing volume of water vapor by percent. The value is corrected for actual gas pressure by the following equation:

$$4.9\% H_2O \times \frac{29.63 \text{ in Hg} + \frac{33 \text{ in } H_2O}{13.6 \text{ in } H_2O/\text{in Hg}}}{29.92 \text{ in Hg}} = 5.25\% H_2O$$

Tail Gas Flow (dscfm)

$$\text{acfm} \times (1-(\%H_2O^{③}/100)) \times \frac{528°R}{\text{Temp.} + 460°R} \times \frac{\text{Press. in Hg}}{29.92 \text{ in Hg}}$$

$$1200 \times (1-(25.4/100)) \times \frac{528°R}{263+460°R} \times \frac{29.63 + \frac{2.75 \text{ in } H_2O}{13.6 \text{ in } H_2O/\text{in Hg}}}{29.92 \text{ in Hg}} = \underline{\underline{652 \text{ dscfm}}}$$

③ Percent moisture obtained from the measurement of the wet bulb and dry bulb temperatures of the tail gas. The following equation④ is used:

wet bulb temperature = 267.5°F
dry bulb temperature = 156.5°F
gas pressure = 2.75 in H_2O

$$\%H_2O = \text{Vapor Press. at}^{⑤} \text{ Wet Bulb Temp, in Hg} - \left[(3.67\times10^{-4})(P_{abs})(\text{Dry Bulb Temp} - \text{Wet Bulb Temp})\left(1 + \frac{\text{Wet Bulb Temp.} - 32}{1571}\right)\right] / P_{abs}$$

$$= 8.874 - \left[(3.67\times10^{-4})\left(29.63 + \frac{2.75}{13.6}\right)(267.5-156.5)\left(1+\frac{156.5-32}{1571}\right)\right] / \left(29.63 + \frac{2.75}{13.6}\right) = 25.4\%$$

④ Air Pollution Training Institute, "Source Sampling For Particulate Pollutants", September 1977, p. 104

⑤ Vapor Pressure Table 1

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COMPUTATION SHEET

Name of Client: Bethlehem Steel Corporation

Project: Desulfurization Test

Description: Sample Calculation August 21, 1991 Sample No. 1

Sheet Number 4 Of 6

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Computed by PJ Checked by JB

Dutch Oven Burner Gas Flow (dscfm)

$$acfm \times (1-(\%\ H_2O^{(6)}/100)) \times \frac{528°R}{Temp.^{(7)} + 460°R} \times \frac{Press.\ in\ Hg}{29.92\ in\ Hg}$$

$$60\ acfm \times (1-(5.25/100)) \times \frac{528°R}{99.6 + 460°R} \times \frac{29.63\ in\ Hg + \frac{54.5\ in\ H_2O}{13.6\ in\ H_2O/in\ Hg}}{29.92\ in\ Hg} = \underline{\underline{71\ dscfm}}$$

(6) Percent moisture obtained by assuming the gas is saturated as the contactor outlet gas.

(7) Dutch oven burner gas temperature is assumed to be the same as the sweet gas temperature corrected for the increase in pressure by the following formula:

$$T_2 = T_1 \times \left(\frac{P_2}{P_1}\right)^{\frac{\gamma - 1}{\gamma}}$$

$$= (92°F + 460°R) \times \left(\frac{29.63\ in\ Hg + \frac{54.5\ in\ H_2O}{13.6\ in\ H_2O/in\ Hg}}{29.63\ in\ Hg + \frac{33.0\ in\ H_2O}{13.6\ in\ H_2O/in\ Hg}}\right)^{\frac{1.4-1}{1.4}} - 460°R$$

$= 99.6\ °F$ γ = adiabatic expansion coefficient for diatomic molecules

Tail Gas Loading

$$\frac{(H_2S\ eq.\ gr.\ H_2S/100\ dscf + SO_2\ eq.\ gr\ H_2S/100\ dscf) \times Tail\ Gas\ Flow\ dscfm}{Contactor\ Outlet\ Flow\ dscfm\ COG}$$

$$\frac{(202.2 + 67.4\ eq.\ gr\ H_2S/100\ dscf) \times 652\ dscfm}{30{,}005\ dscf\ COG} = \underline{\underline{5.9\ eq.\ gr.\ H_2S/100\ dscf\ COG}}$$

BCM

COMPUTATION SHEET

Name of Client: Bethlehem Steel Corporation

Project: Desulfurization Test

Description: Sample Calculation August 21, 1991 Sample No 1

Sheet Number	5 Of 6
Date	9-9-91
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Computed by	PJ
Checked by	JB

Dutch Oven Burner Loading

$$\frac{\text{Sweet Gas Loading} \times \text{Dutch Oven Burner Flow}}{\text{Tail Gas Flow}} = \frac{30.3 \text{ eq. gr } H_2S/100 \text{ dscf COG} \times 71 \text{ dscfm}}{652 \text{ dscfm}}$$

$= \underline{\underline{3.3 \text{ eq. gr. } H_2S/100 \text{ dscf COG}}}$

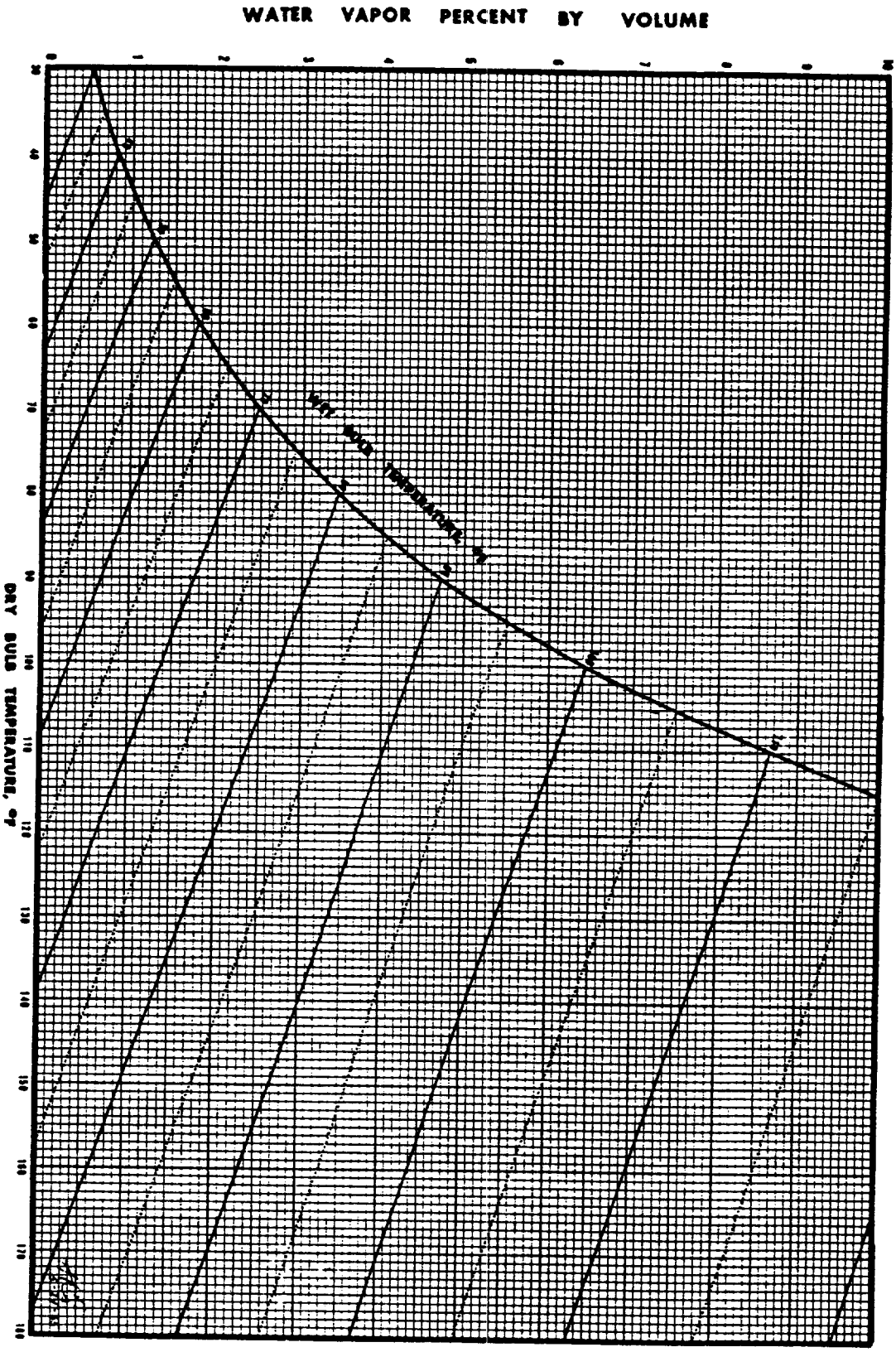
Total COG Loading

Contactor Outlet Loading + Tail Gas Loading − Dutch Oven Burner Contribution Loading

$(30.3 + 5.9 - 3.3)$ eq. gr. H_2S/100 dscf COG

$= \underline{\underline{32.9 \text{ eq. gr } H_2S/100 \text{ dscf COG}}}$

FIGURE 1



Psychrometric chart expressing volume of water vapor by %.

TABLE 1

VAPOR PRESSURES OF WATER

In Inches of Mercury

Temp. Deg. F.	0	1	2	3	4	5	6	7	8	9
—20	.0126	.0119	.0112	.0106	.0100	.0095	.0089	.0084	.0080	.0075
—10	.0222	.0209	.0199	.0187	.0176	.0168	.0158	.0150	.0142	.0134
— 5	.0376	.0359	.0339	.0324	.0306	.0289	.0275	.0259	.0247	.0233
0	.0376	.0398	.0417	.0441	.0463	.0489	.0517	.0541	.0571	.0598
10	.0631	.0660	.0696	.0728	.0768	.0810	.0846	.0892	.0932	.0982
20	.1025	.1080	.1127	.1186	.1248	.1302	.1370	.1429	.1502	.1567
30	.1647	.1716	.1803	.1878	.1955	.2035	.2118	.2203	.2292	.2383
40	.2478	.2576	.2677	.2782	.2891	.3004	.3120	.3240	.3364	.3493
50	.3626	.3764	.3906	.4052	.4203	.4359	.4520	.4686	.4858	.5035
60	.5218	.5407	.5601	.5802	.6009	.6222	.6442	.6669	.6903	.7144
70	.7392	.7648	.7912	.8183	.8462	.8750	.9046	.9352	.9666	.9989
80	1.032	1.066	1.102	1.138	1.175	1.213	1.253	1.293	1.335	1.378
90	1.422	1.467	1.513	1.561	1.610	1.660	1.712	1.765	1.819	1.875
100	1.932	1.992	2.052	2.114	2.178	2.243	2.310	2.379	2.449	2.521
110	2.596	2.672	2.749	2.829	2.911	2.995	3.081	3.169	3.259	3.351
120	3.446	3.543	3.642	3.744	3.848	3.954	4.063	4.174	4.289	4.406
130	4.525	4.647	4.772	4.900	5.031	5.165	5.302	5.442	5.585	5.732
140	5.881	6.034	6.190	6.350	6.513	6.680	6.850	7.024	7.202	7.384
150	7.569	7.759	7.952	8.150	8.351	8.557	8.767	8.981	9.200	9.424
160	9.652	9.885	10.12	10.36	10.61	10.86	11.12	11.38	11.65	11.92
170	12.20	12.48	12.77	13.07	13.37	13.67	13.98	14.30	14.62	14.96
180	15.29	15.63	15.98	16.34	16.70	17.07	17.44	17.82	18.21	18.61
190	19.01	19.42	19.84	20.27	20.70	21.14	21.59	22.05	22.52	22.99
200	23.47	23.96	24.46	24.97	25.48	26.00	26.53	27.07	27.62	28.18
210	28.75	29.33	29.92	30.52	31.13	31.75	32.38	33.02	33.67	34.33
220	35.00	35.68	36.37	37.07	37.78	38.50	39.24	39.99	40.75	41.52
230	42.31	43.11	43.92	44.74	45.57	46.41	47.27	48.14	49.03	49.93
240	50.84	51.76	52.70	53.65	54.62	55.60	56.60	57.61	58.63	59.67
250	60.72	61.79	62.88	63.98	65.10	66.23	67.38	68.54	69.72	70.92
260	72.13	74.36	74.61	75.88	77.16	78.46	79.78	81.11	82.46	83.83
270	85.22	86.63	88.06	89.51	90.97	92.45	93.96	95.49	97.03	98.61
280	100.2	101.8	103.4	105.0	106.7	108.4	110.1	111.8	113.6	115.4
290	117.2	119.0	120.8	122.7	124.6	126.5	128.4	130.4	132.4	134.4
300	136.4	138.5	140.6	142.7	144.8	147.0	149.2	151.4	153.6	155.9
310	158.2	160.5	162.8	165.2	167.6	170.0	172.5	175.0	177.5	180.0
320	182.6	185.2	187.8	190.4	193.1	195.8	198.5	201.3	204.1	206.9
330	209.8	212.7	215.6	218.6	221.6	224.6	227.7	230.8	233.9	237.1
340	240.3	243.5	246.8	250.1	253.4	256.7	260.1	263.6	267.1	270.6
350	274.1	277.7	281.3	284.9	288.6	292.3	296.1	299.9	303.8	307.7
360	311.6	315.5	319.5	323.5	327.6	331.7	335.9	340.1	344.4	348.7
370	353.0	357.4	361.8	366.2	370.7	375.2	379.8	384.4	389.1	393.8
380	398.6	403.4	408.2	413.1	418.1	423.1	428.1	433.1	438.2	443.4
390	448.6	453.9	459.2	464.6	470.0	475.5	481.0	486.6	492.2	497.9
400	503.6	509.3	515.1	521.0	526.9	532.9	538.9	545.0	551.1	557.3

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COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 21,1991

SAMPLE NO.	SAMPLE TIME clock	FLOW scfm	SWEET GAS TEMP. deg. F	PRESS. in. H20	MOISTURE % by vol.	MOISTURE PRESS. CORR. % by vol.	FLOW dscfm
1	0800	31667	92	33	4.9	5.25	30005
2	0815	30000	92	28	4.9	5.19	28443
3	0830	30000	92	26	4.9	5.17	28450
4	0845	29167	91	26	4.8	5.06	27691
5	0900	30000	90	26	4.7	4.96	28513
6	0915	28333	89	28	4.6	4.88	26952
7	0930	30833	90	28	4.7	4.98	29298
8	0945	29167	90	30	4.7	5.00	27708
9	1000	29167	90	29	4.7	4.99	27711
10	1015	29167	90	26	4.7	4.96	27721
11	1030	29167	89	26	4.6	4.85	27752
12	1045	30000	90	26	4.7	4.96	28513
13	1100	30000	91	26	4.8	5.06	28481
14	1015	31667	92	29	4.9	5.20	30019
15	1030	31667	92	28	4.9	5.19	30023
16	1045	31667	92	28	4.9	5.19	30023

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. DO-4021-33
AUGUST 21,1991

SAMPLE NO.	TAIL GAS FLOW acfm	TEMP. deg. F	PRESS. in. H2O	MOISTURE %by vol.	FLOW dscfm
1	1200	263	2.75	25.4	652
2	1200	263	2.75	25.4	652
3	1147	263	2.75	25.4	623
4	1120	263	2.75	25.4	608
5	1147	263	2.75	25.4	623
6	963	263	2.75	25.4	523
7	1120	263	2.75	25.4	608
8	1093	263	2.75	25.4	593
9	1107	263	2.75	25.4	601
10	1093	263	2.50	25.4	593
11	1080	263	2.50	25.4	586
12	1120	263	2.25	25.4	608
13	1133	263	2.50	25.4	615
14	1133	263	2.75	25.4	616
15	1173	263	2.50	25.4	637
16	1200	263	3.00	25.4	652

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 21,1991

SAMPLE NO.	DUTCH OVEN BURNERS FLOW acfm	TEMP. deg. F	PRESS. in. H2O	MOISTURE %by vol.	TEMP. PRESS. CORR. deg. F	FLOW dscfm	BARO. PRESS in. Hg
1	70	92	54.50	5.25	99.6	71	29.63
2	68	92	54.50	5.19	101.5	68	29.63
3	60	92	54.50	5.17	102.2	60	29.64
4	58	91	54.50	5.06	101.2	58	29.64
5	60	90	54.50	4.96	100.2	60	29.65
6	58	89	54.50	4.88	98.4	59	29.65
7	56	90	54.50	4.98	99.5	56	29.64
8	56	90	54.50	5.00	98.7	57	29.64
9	56	90	54.50	4.99	99.1	57	29.64
10	56	90	54.50	4.96	100.2	56	29.64
11	54	89	54.50	4.85	99.2	54	29.64
12	56	90	54.50	4.96	100.2	56	29.65
13	54	91	54.50	5.06	101.2	54	29.65
14	54	92	54.50	5.20	101.1	54	29.65
15	56	92	54.50	5.19	101.5	56	29.65
16	56	92	54.50	5.19	101.5	56	29.65

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 21,1991

SAMPLE NO.	SWEET GAS CONCENTRATION %H2S	EQ. GR/100	%COS	EQ. GR\100	%CS2	EQ. GR/100	TOTAL SWEET GAS CONCENTRATION EQ. GR. H2S/100 DSCF COG
1	0.042	28.3	0.002	1.3	0.001	0.7	30.3
2	0.042	28.3	0.002	1.3	0.001	0.7	30.3
3	0.036	24.3	0.002	1.3	0.001	0.7	26.3
4	0.034	22.9	0.002	1.3	0.001	0.7	24.9
5	0.045	30.3	0.002	1.3	0.001	0.7	32.4
6	0.041	27.6	0.002	1.3	0.001	0.7	29.7
7	0.036	24.3	0.003	2.0	0.001	0.7	27.0
8	0.038	25.6	0.002	1.3	0.001	0.7	27.6
9	0.035	23.6	0.003	2.0	0.001	0.7	26.3
10	0.038	25.6	0.002	1.3	0.002	1.3	28.3
11	0.042	28.3	0.002	1.3	0.001	0.7	30.3
12	0.037	24.9	0.002	1.3	0.001	0.7	27.0
13	0.036	24.3	0.002	1.3	0.001	0.7	26.3
14	0.050	33.7	0.002	1.3	0.001	0.7	35.7
15	0.045	30.3	0.002	1.3	0.001	0.7	32.4
16	0.045	30.3	0.002	1.3	0.001	0.7	32.4

AVERAGE	29.20
MINIMUM	24.94
MAXIMUM	35.73

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 21,1991

SAMPLE NO.	TAIL GAS CONCENTRATION %H2S	EQ. GR/100	%SO2	EQ. GR/100	TAIL GAS LOADING EQ. GR. H2S/100 DSCF COG
1	0.30	202.2	0.10	67.4	5.9
2	0.20	134.8	0.05	33.7	3.9
3	0.08	53.9	0.08	53.9	2.4
4	0.10	67.4	0.06	40.4	2.4
5	0.14	94.4	0.05	33.7	2.8
6	0.12	80.9	0.07	47.2	2.5
7	0.12	80.9	0.08	53.9	2.8
8	0.12	80.9	0.04	27.0	2.3
9	0.14	94.4	0.04	27.0	2.6
10	0.20	134.8	0.02	13.5	3.2
11	0.10	67.4	0.09	60.7	2.7
12	0.16	107.9	0.03	20.2	2.7
13	0.16	107.9	0.02	13.5	2.6
14	0.12	80.9	0.10	67.4	3.0
15	0.24	161.8	0.05	33.7	4.1
16	0.16	107.9	0.04	27.0	2.9

AVERAGE	3.05
MINIMUM	2.31
MAXIMUM	5.86

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 21, 1991

SAMPLE NO.	DUTCH OVEN CONTRIBUTION EQ. GR. H2S/100 DSCF COG	TAIL GAS CONCENT. CORR. FOR BURNERS EQ. GR. H2S/100 DSCF COG	TOTAL COG LOADING EQ. GR. H2S/100 DSCF COG
1	3.3	2.6	32.9
2	3.2	0.7	31.0
3	2.5	-0.2	26.1
4	2.4	0.0	24.9
5	3.1	-0.3	32.1
6	3.3	-0.8	28.9
7	2.5	0.3	27.3
8	2.6	-0.3	27.3
9	2.5	0.2	26.5
10	2.7	0.5	28.8
11	2.8	-0.1	30.2
12	2.5	0.2	27.2
13	2.3	0.3	26.6
14	3.2	-0.1	35.6
15	2.9	1.3	33.7
16	2.8	0.1	32.5
AVERAGE	2.79	0.28	29.47
MINIMUM	2.32	-0.80	24.94
MAXIMUM	3.32	2.60	35.63

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 22, 1991

SAMPLE NO.	SAMPLE TIME clock	FLOW scfm	TEMP. deg. F	SWEET GAS PRESS. in. H2O	MOISTURE % by vol.	MOISTURE PRESS. CORR. % by vol.	FLOW dscfm
1	0845	30000	86	27	4.2	4.46	28661
2	0900	30833	86	29	4.2	4.48	29450
3	0915	31667	86	30	4.2	4.49	30244
4	0930	31667	86	30	4.2	4.49	30244
5	0945	30833	87	28	4.3	4.58	29421
6	1000	30833	88	30	4.4	4.71	29381
7	1015	31667	88	31	4.4	4.72	30173
8	1030	32500	89	33	4.5	4.85	30924
9	1045	32500	90	33	4.6	4.95	30890
10	1100	31667	89	33	4.5	4.85	30132
11	1015	31667	89	32	4.5	4.84	30136
12	1030	32500	90	33	4.6	4.95	30890
13	1045	32500	90	33	4.6	4.95	30890
14	1100	32500	90	33	4.6	4.95	30890
15	1115	39833	90	33	4.6	4.95	37861
16	1130	33333	90	33	4.6	4.95	31682

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 22, 1991

SAMPLE NO.	TAIL GAS FLOW acfm	TEMP. deg. F	PRESS. in. H2O	MOISTURE %by vol.	FLOW dscfm
1	1253	268	3.00	27.0	670
2	1293	270	3.00	27.0	682
3	1293	271	3.00	27.0	682
4	1267	271	2.50	27.0	667
5	1107	271	2.75	27.0	584
6	1133	271	2.75	27.0	597
7	1120	271	3.00	27.0	591
8	1200	272	3.25	27.0	633
9	1240	274	3.25	27.0	654
10	1253	274	3.25	27.0	661
11	1187	273	2.00	27.0	625
12	1093	271	2.50	27.0	576
13	1120	270	2.75	27.0	590
14	1173	269	2.75	27.0	618
15	1160	268	2.25	27.0	619
16	1093	266	2.50	27.0	584

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 22,1991

SAMPLE NO.	DUTCH OVEN BURNERS FLOW acfm	TEMP. deg. F	PRESS. in. H2O	MOISTURE %by vol.	TEMP. PRESS. CORR. deg. F	FLOW dscfm	BARO. PRESS in. Hg
1	70	86	54.50	4.46	95.7	72	29.81
2	72	86	54.50	4.48	95.0	74	29.81
3	70	86	54.50	4.49	94.6	72	29.81
4	56	86	54.50	4.49	94.6	58	29.81
5	44	87	54.50	4.58	96.4	45	29.81
6	48	88	54.50	4.71	96.6	49	29.81
7	52	88	52.59	4.72	95.6	53	29.81
8	54	89	58.13	4.85	97.8	56	29.81
9	60	90	60.89	4.95	99.8	61	29.80
10	56	89	60.89	4.85	98.8	57	29.80
11	48	89	47.06	4.84	94.3	48	29.80
12	44	90	52.59	4.95	96.9	45	29.80
13	50	90	55.12	4.95	97.8	51	29.79
14	54	90	58.13	4.95	98.8	55	29.79
15	56	90	49.82	4.95	96.0	57	29.78
16	48	90	49.82	4.95	96.0	48	29.79

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 22, 1991

SAMPLE NO.	SWEET GAS CONCENTRATION %H2S	EQ. GR/100	%COS	EQ. GR\100	%CS2	EQ. GR/100	TOTAL SWEET GAS CONCENTRATION EQ. GR. H2S/100 DSCF COG
1	0.033	22.2	0.001	0.7	0.001	0.7	23.6
2	0.048	32.4	0.002	1.3	0.001	0.7	34.4
3	0.039	26.3	0.002	1.3	0.002	1.3	29.0
4	0.035	23.6	0.002	1.3	0.001	0.7	25.6
5	0.036	24.3	0.002	1.3	0.001	0.7	26.3
6	0.037	24.9	0.002	1.3	0.002	1.3	27.6
7	0.042	28.3	0.003	2.0	0.001	0.7	31.0
8	0.037	24.9	0.002	1.3	0.001	0.7	27.0
9	0.049	33.0	0.003	2.0	0.001	0.7	35.7
10	0.049	33.0	0.002	1.3	0.002	1.3	35.7
11	0.033	22.2	0.002	1.3	0.001	0.7	24.3
12	0.041	27.6	0.002	1.3	0.001	0.7	29.7
13	0.043	29.0	0.002	1.3	0.001	0.7	31.0
14	0.038	25.6	0.002	1.3	0.002	1.3	28.3
15	0.036	24.3	0.002	1.3	0.001	0.7	26.3
16	0.053	35.7	0.002	1.3	0.001	0.7	37.8

AVERAGE	29.58
MINIMUM	23.60
MAXIMUM	37.75

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 22, 1991

SAMPLE NO.	TAIL GAS CONCENTRATION %H2S	EQ. GR/100	%SO2	EQ. GR/100	TAIL GAS LOADING EQ. GR. H2S/100 DSCF COG
1	0.14	94.4	0.10	67.4	3.8
2	0.22	148.3	0.03	20.2	3.9
3	0.24	161.8	0.02	13.5	4.0
4	0.14	94.4	0.03	20.2	2.5
5	0.08	53.9	0.08	53.9	2.1
6	0.18	121.3	0.08	53.9	3.6
7	0.18	121.3	0.06	40.4	3.2
8	0.16	107.9	0.04	27.0	2.8
9	0.20	134.8	0.03	20.2	3.3
10	0.22	148.3	0.04	27.0	3.8
11	0.16	107.9	0.10	67.4	3.6
12	0.14	94.4	0.10	67.4	3.0
13	0.16	107.9	0.07	47.2	3.0
14	0.16	107.9	0.02	13.5	2.4
15	0.14	94.4	0.02	13.5	1.8
16	0.10	67.4	0.10	67.4	2.5

AVERAGE	3.08
MINIMUM	1.76
MAXIMUM	3.95

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 22,1991

SAMPLE NO.	DUTCH OVEN BURNER CONTRIBUTION EQ. GR. H2S/100 DSCF COG	TAIL GAS CONCENT. CORR. FOR BURNERS EQ. GR. H2S/100 DSCF COG	TOTAL COG LOADING EQ. GR. H2S/100 DSCF COG
1	2.5	1.2	24.8
2	3.7	0.2	34.5
3	3.1	0.9	29.9
4	2.2	0.3	25.9
5	2.0	0.1	26.4
6	2.3	1.3	28.9
7	2.8	0.4	31.4
8	2.4	0.4	27.4
9	3.4	-0.1	35.7
10	3.1	0.7	36.5
11	1.9	1.8	26.0
12	2.3	0.7	30.4
13	2.7	0.3	31.3
14	2.5	-0.1	28.2
15	2.4	-0.6	25.7
16	3.1	-0.6	37.1
AVERAGE	2.65	0.43	30.01
MINIMUM	1.87	-0.65	24.84
MAXIMUM	3.74	1.76	37.10

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 23, 1991

SAMPLE NO.	SAMPLE TIME clock	FLOW scfm	TEMP. deg. F	SWEET GAS PRESS. in. H2O	MOISTURE % by vol.	MOISTURE PRESS. CORR. % by vol.	FLOW dscfm
1	0800	31667	89	26	4.6	4.88	30121
2	0815	30833	88	26	4.5	4.78	29361
3	0830	30833	88	27	4.5	4.79	29357
4	0845	30000	86	29	4.2	4.49	28653
5	0900	30833	86	29	4.2	4.49	29449
6	0915	30833	86	30	4.2	4.50	29446
7	0930	30833	87	30	4.3	4.61	29413
8	0945	30000	87	30	4.3	4.61	28617
9	1000	30833	88	32	4.5	4.84	29339
10	1015	30833	88	33	4.5	4.86	29336
11	1030	31667	89	33	4.6	4.96	30095
12	1045	30833	90	33	4.7	5.07	29269
13	1100	31667	90	33	4.7	5.07	30060
14	1015	32500	90	33	4.7	5.07	30851
15	1030	33333	90	33	4.7	5.07	31642
16	1045	32500	92	33	4.9	5.29	30782

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 23, 1991

SAMPLE NO.	TAIL GAS FLOW acfm	TEMP. deg. F	PRESS. in. H2O	MOISTURE %by vol.	FLOW dscfm
1	1173	263	3.25	25.0	645
2	1107	263	2.25	25.0	608
3	1093	263	2.25	25.0	600
4	1093	263	2.25	25.0	600
5	1120	263	2.75	25.0	616
6	1107	263	2.25	25.0	608
7	1067	263	2.25	25.0	586
8	1080	263	2.25	25.0	594
9	1080	263	2.50	25.0	594
10	1120	263	2.75	25.0	616
11	1107	263	3.00	25.0	609
12	1173	263	2.50	25.0	645
13	1120	263	2.25	25.0	616
14	1120	263	2.75	25.0	616
15	1160	264	3.25	25.0	639
16	1187	264	3.00	25.0	653

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. DD-4021-33
AUGUST 23, 1991

SAMPLE NO.	DUTCH OVEN BURNERS FLOW acfm	TEMP. deg. F	PRESS. in. H2O	MOISTURE %by vol.	TEMP. PRESS. CORR. deg. F	FLOW dscfm	BARO. PRESS in. Hg
1	76	89	52.59	4.88	98.5	77	29.84
2	54	88	49.82	4.78	96.5	55	29.84
3	52	88	49.82	4.79	96.1	53	29.84
4	52	86	52.59	4.49	94.3	53	29.85
5	54	86	52.59	4.49	94.3	56	29.85
6	52	86	44.29	4.50	91.1	53	29.85
7	48	87	47.06	4.61	93.0	48	29.85
8	50	87	52.59	4.61	95.0	51	29.86
9	52	88	49.82	4.84	94.3	53	29.86
10	56	88	52.59	4.86	94.9	57	29.86
11	56	89	58.13	4.96	97.8	58	29.86
12	60	90	55.36	5.05	97.9	61	29.87
13	56	90	47.06	5.07	95.0	56	29.87
14	50	90	58.13	5.07	98.8	51	29.87
15	56	90	60.89	5.07	99.8	57	29.86
16	60	92	58.13	5.29	100.8	61	29.86

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 23, 1991

SAMPLE NO.	SWEET GAS CONCENTRATION %H2S	EQ. GR/100	%COS	EQ. GR\100	%CS2	EQ. GR/100	TOTAL SWEET GAS CONCENTRATION EQ. GR. H2S/100 DSCF COG
1	0.047	31.7	0.002	1.3	0.001	0.7	33.7
2	0.039	26.3	0.002	1.3	0.001	0.7	28.3
3	0.042	28.3	0.002	1.3	0.001	0.7	30.3
4	0.043	29.0	0.001	0.7	0.001	0.7	30.3
5	0.052	35.1	0.002	1.3	0.001	0.7	37.1
6	0.038	25.6	0.002	1.3	0.001	0.7	27.6
7	0.049	33.0	0.001	0.7	0.001	0.7	34.4
8	0.046	31.0	0.002	1.3	0.001	0.7	33.0
9	0.050	33.7	0.003	2.0	0.001	0.7	36.4
10	0.041	27.6	0.002	1.3	0.002	1.3	30.3
11	0.059	39.8	0.002	1.3	0.001	0.7	41.8
12	0.043	29.0	0.001	0.7	0.001	0.7	30.3
13	0.050	33.7	0.002	1.3	0.001	0.7	35.7
14	0.066	44.5	0.002	1.3	0.001	0.7	46.5
15	0.060	40.4	0.002	1.3	0.001	0.7	42.5
16	0.059	39.8	0.002	1.3	0.001	0.7	41.8

AVERAGE	35.01
MINIMUM	27.64
MAXIMUM	46.52

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 23, 1991

SAMPLE NO.	DUTCH OVEN BURNER CONTRIBUTION	TAIL GAS CONCENT. CORR. FOR BURNERS	TOTAL COG LOADING
	EQ. GR. H2S/100 DSCF COG	EQ. GR. H2S/100 DSCF COG	EQ. GR. H2S/100 DSCF COG
1	4.0	-0.9	32.8
2	2.5	-1.1	27.2
3	2.7	-0.7	29.6
4	2.7	-0.9	29.5
5	3.3	-1.4	35.7
6	2.4	0.4	28.0
7	2.8	1.7	36.1
8	2.8	-0.9	32.2
9	3.2	-1.3	35.1
10	2.8	0.2	30.5
11	4.0	-1.1	40.7
12	2.9	2.0	32.3
13	3.3	0.3	36.1
14	3.8	-0.7	45.8
15	3.8	-0.8	41.6
16	3.9	-0.2	41.6
AVERAGE	3.19	-0.34	34.68
MINIMUM	2.41	-1.37	27.17
MAXIMUM	4.04	2.01	45.77

COKE OVEN GAS DESULFURIZATION FACILITY
COMPLIANCE TESTING
BCM PROJECT NO. 00-4021-33
AUGUST 23, 1991

SAMPLE NO.	TAIL GAS CONCENTRATION %H2S	EQ. GR/100	%SO2	EQ. GR/100	TAIL GAS LOADING EQ. GR. H2S/100 DSCF COG
1	0.20	134.8	0.02	13.5	3.2
2	0.08	53.9	0.02	13.5	1.4
3	0.12	80.9	0.02	13.5	1.9
4	0.11	74.2	0.02	13.5	1.8
5	0.12	80.9	0.02	13.5	2.0
6	0.16	107.9	0.04	27.0	2.8
7	0.24	161.8	0.10	67.4	4.6
8	0.12	80.9	0.02	13.5	2.0
9	0.12	80.9	0.02	13.5	1.9
10	0.19	128.1	0.02	13.5	3.0
11	0.19	128.1	0.02	13.5	2.9
12	0.32	215.7	0.01	6.7	4.9
13	0.20	134.8	0.06	40.4	3.6
14	0.20	134.8	0.03	20.2	3.1
15	0.18	121.3	0.04	27.0	3.0
16	0.24	161.8	0.02	13.5	3.7

AVERAGE	2.85
MINIMUM	1.40
MAXIMUM	4.90