Clean Air Engineering

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20 Miles West of Green River
Green River, Wyoming 82935

REPORT ON COMPLIANCE TESTING

Performed for:

SOLVAY MINERALS, INC.
EP-1 & 2 CALCINER STACK
EP-5 CALCINER STACK
GREEN RIVER, WYOMING

Client Reference No: C 02216
CAE Project No: 7473-1
Revision 0: July 20, 1995

To the best of our knowledge, the data presented in this report are accurate and complete.

Submitted by,

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SOLVAY2015_5_000251

PROJECT OVERVIEW

Solvay Minerals, Inc. (Solvay) contracted Clean Air Engineering (CAE) to perform emissions testing at their facility located west of Green River, Wyoming. The purpose of the test program was to further quantify specific volatile organic compounds(VOC's). The facility processes trona into soda ash, which is used in a variety of manufacturing processes. Testing was conducted April 24 through 28 1995.

Three to four analyses were performed for each Method 18 test run. When an injection was reported below detection limit (BDL), the value of zero was used to calculate the average concentration of that run.

The testing was performed at the coal fired calciners (EP-1&2) stack and at the gas fired calciner (EP-5) stack. Three one hour runs at each location utilizing EPA Methods 1-4, 10, 18 and 25A were used to determine emissions of carbon monoxide, volatile organic compounds and total hydrocarbons (THC).

Quantitation of 1,3 butadiene was not possible for runs 1 and 2 at the EP-5 stack. The large quantity of methane(and other light hydrocarbons) present in the gas stream co-eluted with butadiene making detection impossible. The methane concentration decreased during the last half of run 3, allowing butadiene to be detected. The average reported is based upon those runs where butadiene was measured.

Standards were not available for field calibration of acrylonitrile and trichloroethene. Duplication of chromatographic conditions used in the field was attempted at CAE's laboratory in Palatine, Illinois. Exact duplication was not possible due to atmospheric differences between the laboratory and the field.

At similar conditions in the laboratory, acrylonitrile standards were observed to interfere with toluene standards. Trichloroethene standards were observed to co-elute with benzene standards. Quantification of acrylonitrile and trichloroethene concentrations from field data is therefore not attainable. As a result, data for these compounds for this project is unavailable.

Coordinating the field testing were:

Dolly Potter - Solvay
Steve Ferguson - Clean Air Engineering

A table of source identification is shown in table 1-1 and 1-2

PROJECT OVERVIEW

Table 1-1:
EP-1&2 Calciner Profile

Unit Identification Number	**AQD #17, EP-1&2**
Process	Calciner
Fuel	Subbituminous Coal
Heat Content	10084 Btu/lb
Sulfur Content	0.47%
Ash Content	6.89%
Stack Height	180.5 feet
Stack Diameter	144 inches
Diameters to Upstream Disturbance	Approximately 3.6
Diameters to Downstream Disturbance	Approximately 4.4
Primary Control Equiptment	2-Buell ESP

Table 1-2:
EP-5 Calciner Profile

Unit Identification Number	**AQD #48, EP-5**
Process	Calciner
Fuel	Natural Gas
Heat Content	1080 Btu/ft^3
Stack Height	180feet
Stack Diameter	125.5 inches
Diameters to Upstream Disturbance	Approximately 5.5
Diameters to Downstream Disturbance	Approximately 9.0
Primary Control Equiptment	Flakt ESP

A table showing chemical abstract service(CAS) No are listed in table 1-3

Table 1-3:
Volatile Organic Compound (CAS) Numbers

Compound Name	**CAS No.**	**Molecular Weight**
Benzene	71-43-2	78.11
1,3 Butadiene	106-99-0	54.09
Ethylbenzene	100-41-4	106.17
Hexane	110-54-3	86.18
1,1,1-Trichloroethane	71-55-6	71-55-6
2-Butanone	78-93-3	72.10
Methylene chloride	75-09-2	84.94
Styrene	100-42-5	104.14
Toluene	108-88-3	92.14
Xylene	1330-20-7	106.16

SOLVAY2016_6_000254

PROJECT OVERVIEW

A summary and comparison of the test results is shown in Table 1-4.

Table 1-4:
Summary of Test Results

Source Constituent	Sampling Method	Average Emission (ppmdv)	Average Emission (lb/hr)	Average Emission (lb/ton of trona)
EP-1 & 2 Calciner Stack(262 tons/hr feed rate)				
Volumetric flow rate	EPA M 1-4			
Carbon Monoxide	EPA M 10	526	541.9	2.068
Volatile Organic Compounds	EPA M 18			
2-Butanone[1]		0.04	0.12	4.54E-04
Benzene		0.45	1.30	4.95E-03
1,3 Butadiene		1.19	2.38	9.07E-03
Ethyl Benzene		BDL	BDL	BDL
Hexane[2]		0.19	0.62	2.37E-03
Methylene Cloride		1.09	3.39	1.29E-02
Styrene		0.10	0.39	1.49E-03
Toluene		1.20	4.07	1.55E-02
1,1,1-Trichloroethane		1.11	5.41	2.06E-02
Xylene		1.29	5.04	1.92E-02
Total Hydrocarbons(propane)	EPA M 25A	55.3	89.8	0.343
Total Non-Methane Hydrocarbons (propane)			89.8	0.343
EP-5 Calciner Stack(157 tons/hr feed rate)				
Volumetric flow rate	EPA M 1-4			
Carbon Monoxide	EPA M 10	425	82.7	5.27E-01
Volatile Organic Compounds	EPA M 18			
2-Butanone		BDL	BDL	BDL
Benzene		3.43	1.85	1.18E-02
1,3 Butadiene[1]		9.52	3.74	2.38E-02
Ethyl Benzene[2]		0.54	0.39	2.47E-03
Hexane		2.26	1.34	8.55E-03
Methylene Cloride		2.66	1.57	1.00E-02
Styrene		0.87	0.62	3.96E-03
Toluene		6.54	4.18	2.66E-02
1,1,1-Trichloroethane		4.39	4.01	2.56E-02
Xylene		6.51	4.79	3.05-02
Total Hydrocarbons(propane)	EPA M 25A	245	76	0.483
Total Non-Methane Hydrocarbons (propane)			54.8	0.349

[1] Two test runs were below the detection limit.

[2] One test run was below the detection limit.

The test conditions and results of analysis are presented in Tables 2-1 through 2-4 on pages 2-1 through 2-4.

SOLVAY2016_6_000255

Results

SOLVAY2016_6_000256

RESULTS

Table 2-1:
EP-1&2-Total Hydrocarbons, Runs 1-3

Run No.		1	2	3	Average
Date (1995)		April 28	April 28	April 28	
Start Time (approx.)		08:04	09:42	11:13	
Stop Time (approx.)		09:04	10:42	12:13	
Process Conditions					
	Feed rate (ton of trona/hr)	262	262	262	262
Gas Conditions[1]					
T_s	Stack temperature (°F)	441	432	440	**438**
B_{wo}	Moisture in sample (% by volume)	17.68	17.98	18.33	**18.00**
O_2	Oxygen (dry volume %)	15.0	15.3	15.5	**15.5**
CO_2	Carbon dioxide (dry volume%)	7.1	6.9	7.3	**7.3**
Flow Conditions					
Q_a	Volumetric flow rate, actual (acfm)	626,400	621,000	616,300	**621,233**
Q_{std}	Volumetric flow rate, standard (dscfm)	238,000	237,600	232,700	**236,100**
Continuous Emissions Monitoring					
Carbon Monoxide					
C	Concentration (ppmdv)	526	527	525	**526**
E	Emission rate (lb/hr)	546.1	546.4	533.2	**541.9**
E	Emission rate (lb/ton of trona)	2.084	2.086	2.035	**2.068**
Total Hydrocarbons(as propane)					
C	Concentration (ppmdv)	66.5	54.6	44.8	**55.3**
E	Emission rate (lb/hr)	108.6	89.2	71.7	**89.8**
E	Emission rate (lb/ton of trona)	0.415	0.340	0.274	**0.343**
Methane					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**

BDL indicates the value was below the detection limit. A value of zero was used for BDL in the average calculation.
[1] Gas conditions are taken from simultaneous velocity-moisture test.

RESULTS

Table 2-2:
EP-1&2 VOCs , Runs 1-3

Run No.	1	2	3	Average
Date (1995)	April 28	April 28	April 28	
Start Time (approx.)	08:05	10:05	11:14	
Stop Time (approx.)	09:11	10:48	12:19	
Process Conditions				
Feed rate(tons of trona/hr)	262	262	262	**262**
Gas Conditions				
B_{wo} Moisture (% by volume)	17.68	17.98	18.33	**17.99**
Q_{std} Volumetric flow rate, standard (dscfm)	238,000	237,600	232,700	**236,100**
2-Butanone				
C Concentration (ppmdv)	0.13	BDL	BDL	**0.04**
E Emission rate (lb/hr)	0.36	BDL	BDL	**0.12**
E Emission rate(lb/ton of trona)	1.36E-03	BDL	BDL	**4.54E-04**
Benzene				
C Concentration (ppmdv)	0.44	0.46	0.44	**0.45**
E Emission rate (lb/hr)	1.27	1.37	1.25	**1.30**
E Emission rate(lb/tons of trona)	4.83E-03	5.25E-03	4.76E-03	**4.95E-03**
1,3 Butadiene				
C Concentration (ppmdv)	1.77	0.59	1.22	**1.19**
E Emission rate (lb/hr)	3.56	1.17	2.40	**2.38**
E Emission rate(lb/ton of trona)	1.36E-02	4.47E-03	9.16E-03	**9.07E-03**
Ethyl Benzene				
C Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E Emission rate(lb/ton of trona)	BDL	BDL	BDL	**BDL**
Hexane				
C Concentration (ppmdv)	0.13	0.45	BDL	**0.19**
E Emission rate (lb/hr)	0.43	1.44	BDL	**0.62**
E Emission rate(lb/ton of trona)	1.63E-03	5.49E-03	BDL	**2.37E-03**
Methylene Chloride				
C Concentration (ppmdv)	0.97	1.19	1.09	**1.09**
E Emission rate (lb/hr)	3.06	3.75	3.35	**3.39**
E Emission rate(lb/ton of trona)	1.17E-02	1.43E-02	1.28E-02	**1.29E-02**
Styrene				
C Concentration (ppmdv)	0.23	0.06	0.01	**0.10**
E Emission rate (lb/hr)	0.89	0.23	0.05	**0.39**
E Emission rate(lb/ton of trona)	3.40E-03	8.96E-04	1.76E-04	**1.49E-03**
Toluene				
C Concentration (ppmdv)	1.42	1.19	0.98	**1.20**
E Emission rate (lb/hr)	4.85	4.07	3.27	**4.07**
E Emission rate(lb/ton of trona)	1.85E-02	1.55E-02	1.25E-02	**1.55E-02**
1,1,1 - Trichloroethane				
C Concentration (ppmdv)	0.80	0.88	1.64	**1.11**
E Emission rate (lb/hr)	3.96	4.33	7.93	**5.41**
E Emission rate(lb/ton of trona)	1.51E-02	1.65E-02	3.03E-02	**2.06E-02**
Xylene				
C Concentration (ppmdv)	1.68	1.37	0.82	**1.29**
E Emission rate (lb/hr)	6.60	5.36	3.16	**5.04**
E Emission rate(lb/ton of trona)	2.52E-02	2.05E-02	1.20E-02	**1.92E-02**

BDL indicates the value was below the detection limit. A value of zero was uded for BDL in the average calculation.
Gas conditions are taken from simultaneous velocity-moisture test.

RESULTS

Table 2-3:
EP-5-Total Hydrocarbons, Runs 1-3

Run No.	1	2	3	Average
Date (1995)	April 27	April 27	April 27	
Start Time (approx.)	13:06	14:34	16:25	
Stop Time (approx.)	14:06	15:34	17:25	
Process Conditions				
Feed rate (ton of trona/hr)	157	157	157	**157**
Gas Conditions[1]				
T_s Stack temperature (°F)	288	291	289	**289**
B_{wo} Moisture in sample (% by volume)	36.36	36.21	36.12	**36.23**
O_2 Oxygen (dry volume %)	8.4	8.4	8.4	**8.4**
CO_2 Carbon dioxide (dry volume%)	14.4	14.4	14.4	**14.4**
Flow Conditions				
Q_a Volumetric flow rate, actual (acfm)	117,500	132,200	130,900	**126,867**
Q_{std} Volumetric flow rate, standard (dscfm)	41,750	46,880	46,640	**45,090**
Continuous Emissions Monitoring				
Carbon Monoxide				
C Concentration (ppmdv)	533	390	351	**425**
E Emission rate (lb/hr)	97.0	79.8	71.4	**82.7**
E Emission rate (lb/ton of trona)	0.618	0.508	0.455	**5.27E-01**
Total Hydrocarbons(as propane)				
C Concentration (ppmdv)	316	229	191	**245**
E Emission rate (lb/hr)	90.6	73.7	63.4	**76**
E Emission rate (lb/ton of trona)	0.577	0.469	0.404	**0.483**
Methane				
C Concentration (ppmdv)	197	185	180	**187**
E Emission rate (lb/hr)	20.5	21.7	21.0	**21.1**
Total Non-Methane Hydrocarbons(as propane)				
E Emission rate (lb/hr)	70.1	52.0	42.4	**54.8**
E Emission rate (lb/ton of trona)	0.446	0.331	0.270	**0.349**

[1] Gas conditions are taken from simultaneous velocity-moisture test.

RESULTS

Table 2-4:
EP 5 VOCs , Runs 1-3

Run No.		1	2	3	Average
Date (1995)		April 27	April 27	April 27	
Start Time (approx.)		13:07	14:35	16:26	
Stop Time (approx.)		14:13	15:41	17:33	
Process Conditions					
	Feed rate(ton of trona/hr)	157	157	157	157
Gas Conditions[1]					
B_{wo}	Moisture (% by volume)	36.36	36.21	36.12	**36.23**
Q_{std}	Volumetric flow rate, standard (dscfm)	41,750	46,880	46,640	**45,090**
2-Butanone					
C	Concentration (ppmdv)	BDL	BDL	BDL	**BDL**
E	Emission rate (lb/hr)	BDL	BDL	BDL	**BDL**
E	Emission rate(lb/ton of trona)	BDL	BDL	BDL	**BDL**
Benzene					
C	Concentration (ppmdv)	5.06	3.56	1.66	**3.43**
E	Emission rate (lb/hr)	2.57	2.03	0.94	**1.85**
E	Emission rate(lb/ton of trona)	1.64E-02	1.29E-02	6.00E-03	**1.18E-02**
1,3 Butadiene					
C	Concentration (ppmdv)	INT	INT	9.52	**9.52**
E	Emission rate (lb/hr)	INT	INT	3.74	**3.74**
E	Emission rate(lb/ton of trona)	INT	INT	2.38E-02	**2.38E-02**
Ethyl Benzene					
C	Concentration (ppmdv)	1.08	0.53	BDL	**0.54**
E	Emission rate (lb/hr)	0.75	0.41	BDL	**0.39**
E	Emission rate(lb/ton of trona)	4.77E-03	2.63E-03	BDL	**2.47E-03**
Hexane					
C	Concentration (ppmdv)	3.52	2.27	1.00	**2.26**
E	Emission rate (lb/hr)	1.97	1.43	0.63	**1.34**
E	Emission rate(lb/ton of trona)	1.26E-02	9.11E-03	3.99E-03	**8.55E-03**
Methylene Chloride					
C	Concentration (ppmdv)	3.27	2.76	1.94	**2.66**
E	Emission rate (lb/hr)	1.80	1.71	1.20	**1.57**
E	Emission rate(lb/ton of trona)	1.15E-02	1.09E-02	7.63E-03	**1.00E-02**
Styrene					
C	Concentration (ppmdv)	1.34	0.83	0.44	**0.87**
E	Emission rate (lb/hr)	0.90	0.63	0.33	**0.62**
E	Emission rate(lb/ton of trona)	5.76E-03	4.02E-03	2.11E-03	**3.96E-03**
Toluene					
C	Concentration (ppmdv)	8.92	7.24	3.46	**6.54**
E	Emission rate (lb/hr)	5.35	4.87	2.32	**4.18**
E	Emission rate(lb/ton of trona)	3.41E-02	3.10E-02	1.47E-02	**2.66E-02**
1,1,1 - Trichloroethane					
C	Concentration (ppmdv)	7.42	3.62	2.14	**4.39**
E	Emission rate (lb/hr)	6.43	3.53	2.08	**4.01**
E	Emission rate(lb/ton of trona)	4.10E-02	2.25E-02	1.32E-02	**2.56E-02**
Xylene					
C	Concentration (ppmdv)	8.96	6.68	3.90	**6.51**
E	Emission rate (lb/hr)	6.18	5.18	3.01	**4.79**
E	Emission rate(lb/ton of trona)	3.94E-02	3.30E-02	1.91E-02	**3.05E-02**

BDL indicates the value was below the detection limit. A value of zero was used for BDL in the average calculation.
INT-indicates quantitation not possible due to an analytical interferent.
[1] Gas conditions are taken from simultaneous velocity-moisture test.

Description of Installation

SOLVAY2016_6_000261

DESCRIPTION OF INSTALLATION

Solvay Minerals, Inc., located near Green River, Wyoming, is a mining, refining and chemical manufacturing facility with corporate offices in Houston, Texas. Soda ash operations at the Green River, Wyoming facility began initial production in May of 1982. On May 27, 1992 Solvay S.A. of Belgium purchased the Green River facilities from Tenneco, Inc. and changed the name to Solvay Minerals, Inc.

The primary raw material for the Green River facility is sodium sesquicarbonate which is commonly referred to as trona. The trona is mined at the plant site from an ore bed located 1,500 feet below the surface. The mined trona is transferred via shuttle cars and conveyor belts into an underground storage bin. The trona is hoisted from the storage bin to the surface. Once on the surface, the trona is crushed and fed to one of three soda ash calciners or to the trona products packaging area.

The caustic/sulfite system is fed unfiltered saturated sodium carbonate solution from the soda ash process. Insolubles are separated by settling and filtration. At this point the caustic carbonate liquor is reacted with lime forming caustic soda. The remaining sodium carbonate liquor is reacted with sulfur dioxide forming sodium sulfite. At the completion of the refining processes the caustic soda and the sodium sulfite are stored pending shipment.

The trona that is fed to the soda ash calciners is heated, resulting in thermal calcination of the sodium sesquicarbonate forming a crude soda ash. The crude soda ash is dissolved in water and the insolubles are separated from the solution by settling and filtration. The insolubles are disposed of in the mine void. The solution is then treated to remove organic materials and fine insolubles. This series of processing steps yields a high-purity saturated solution of sodium carbonate. The solution is then fed to crystallizers where a large amount of water is removed and a slurry of sodium carbonate monohydrate crystals is formed. This slurry is then further dewatered and washed by a series of cyclones and centrifuges. The resulting monohydrate crystals are fed through dryers forming high quality soda ash ready for storage and shipment.

The plant is equipped with bag houses, scrubbers and electrostatic precipitators to control emissions. The coal-fired calciners (EP-1& 2) are equipped with two separate model BA1.1 x 50I, 4334-4.T electrostatic precipitators.

The gas-fired calciner (EP5) is controlled with an ABB Flakt Model FAAGX x 37.5 - 120-110-520-CL-026 electrostatic precipitator and the gas-fired dryer (EP6) is equipped with an ABB Flakt Model FAA 4 x 30H-87-100-AL electrostatic precipitator.

SOLVAY2016_6_000262

Methodology

METHODOLOGY

The sampling followed procedures as detailed in U.S. Environmental Protection Agency (EPA) Methods 1, 2, 3, 4, 10, 18 and 25A. The following table summarizes the methods and their respective sources.

Table 4-1:
Summary of Sampling Procedures

Title 40 CFR Part 60 Appendix A	
Method 1	"Sample and Velocity Traverses for Stationary Sources"
Method 2	"Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)"
Method 3	"Gas Analysis for the Determination of Dry Molecular Weight"
Method 4	"Determination of Moisture Content in Stack Gases"
Method 10	"Determination of Carbon Monoxide Emissions from Stationary Sources"
Method 18	"Measurement of Gaseous Organic Compound Emissions by Gas Chromatography"
Method 25A	"Determination of Total Gaseous Organic Concentrations using a Flame Ionization Analyzer (FIA)"

These methods appear in detail in Title 40 of the Code of Federal Regulations (CFR).

These sampling, recovery and analytical procedures are summarized on pages 4-2 through 4-9.

All equipment was calibrated at the Clean Air Engineering laboratory prior to shipment to the job site. A post calibration was performed on each meter box at the conclusion of testing to verify that calibration was maintained throughout the test program. Calibration sheets can be found in Appendix Section C.

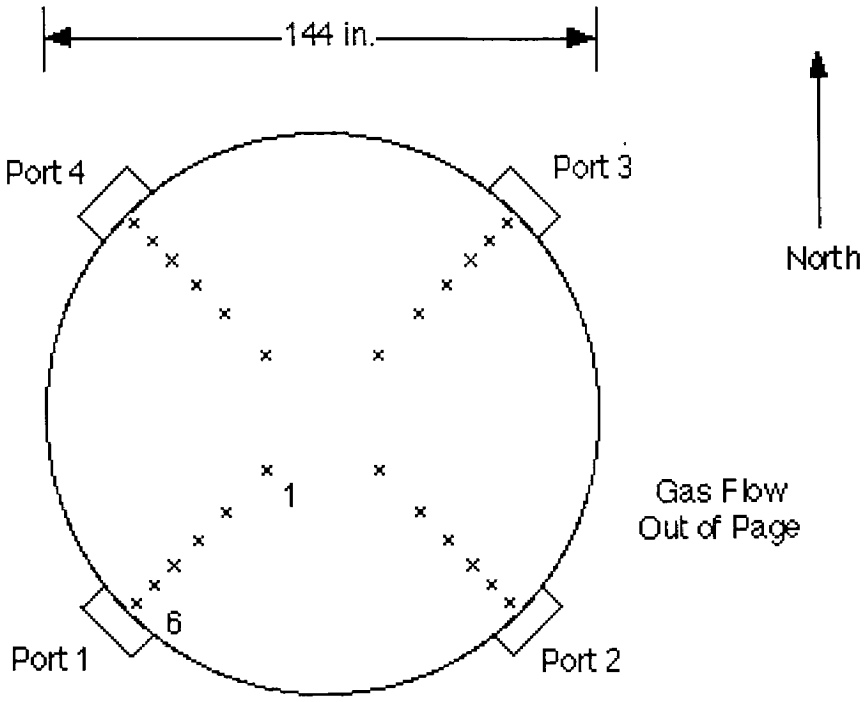
SOLVAY2016_6_000264

METHODOLOGY

SAMPLING POINT DETERMINATION

Sampling point locations were determined according to EPA Method 1.

Figures 4-1 and 4-2 illustrate the sampling points and orientation of sampling ports for each of the sources tested in the program.



Sampling Point	Port to Point Distance (in.)
1	51.3
2	36.0
3	25.5
4	17.0
5	9.6
6	3.0

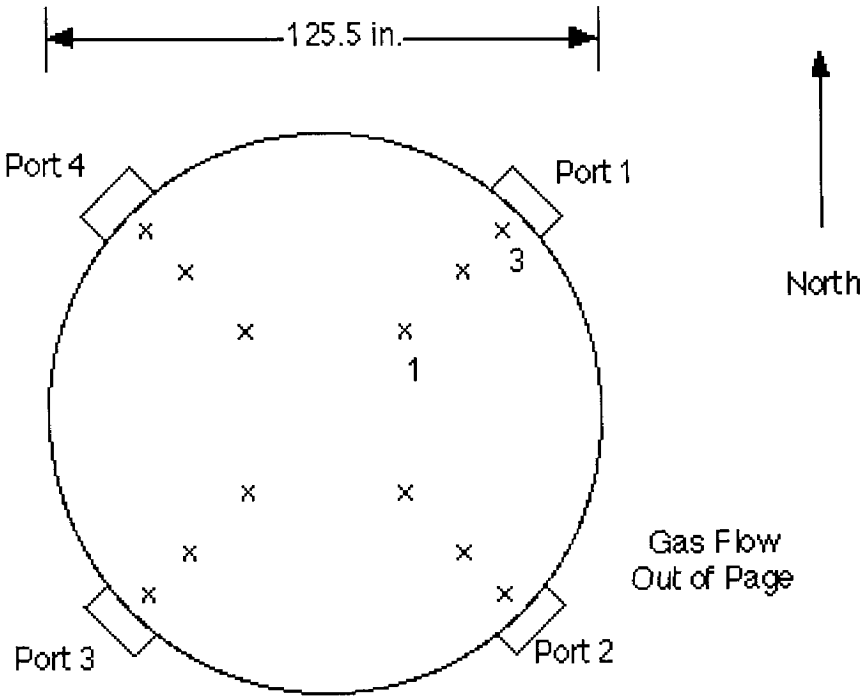
Diameters to upstream disturbance: 3.6 Limit: 2.0
Diameters to downstream disturbance: 4.4 Limit: 0.5

Figure 4-1: EP-1&2 Calciner Stack Sampling Point Determination (EPA Method 1)

SOLVAY2016_6_000265

METHODOLOGY

SAMPLING POINT DETERMINATION (CONTINUED)



Sampling Point	Port to Point Distance (in.)
1	37.1
2	18.3
3	5.5

Diameters to upstream disturbance: 9.0 Limit: 2.0
Diameters to downstream disturbance: 5.5 Limit: 0.5

Figure 4-2: EP-5 Calciner Stack Sampling Point Determination (EPA Method 1)

SOLVAY2016_3_000266

METHODOLOGY

VELOCITY AND VOLUMETRIC FLOW RATE - EPA METHOD 2

EPA Methods 1-4 were used in conjunction with EPA Methods 10, 18, and 25A to determine the gas velocity and volumetric flow rate at the EP-1&2 Calciner Stack,and EP-5 Calciner Stack. Figure 4-3 includes the components of the EPA Method 2 sampling apparatus.

Each set of velocity determinations included the measurement of gas velocity pressure and gas temperature at each of the EPA Method 1 traverse points. The velocity pressures were measured with a Type S pitot tube. Gas temperature measurements were made using a Type K thermocouple and digital pyrometer.

GAS COMPOSITION AND MOLECULAR WEIGHT - EPA METHOD 3

In order to determine the oxygen (O_2) concentration, carbon dioxide (CO_2) concentration and gas molecular weight, a time-integrated sample of the gas was obtained and analyzed in accordance with EPA Method 3. The gas sample was collected into a vinyl sample bag from the EPA Method 4 sampling train. The contents of the bag were analyzed for O_2 and CO_2 concentrations using an Orsat gas analyzer.

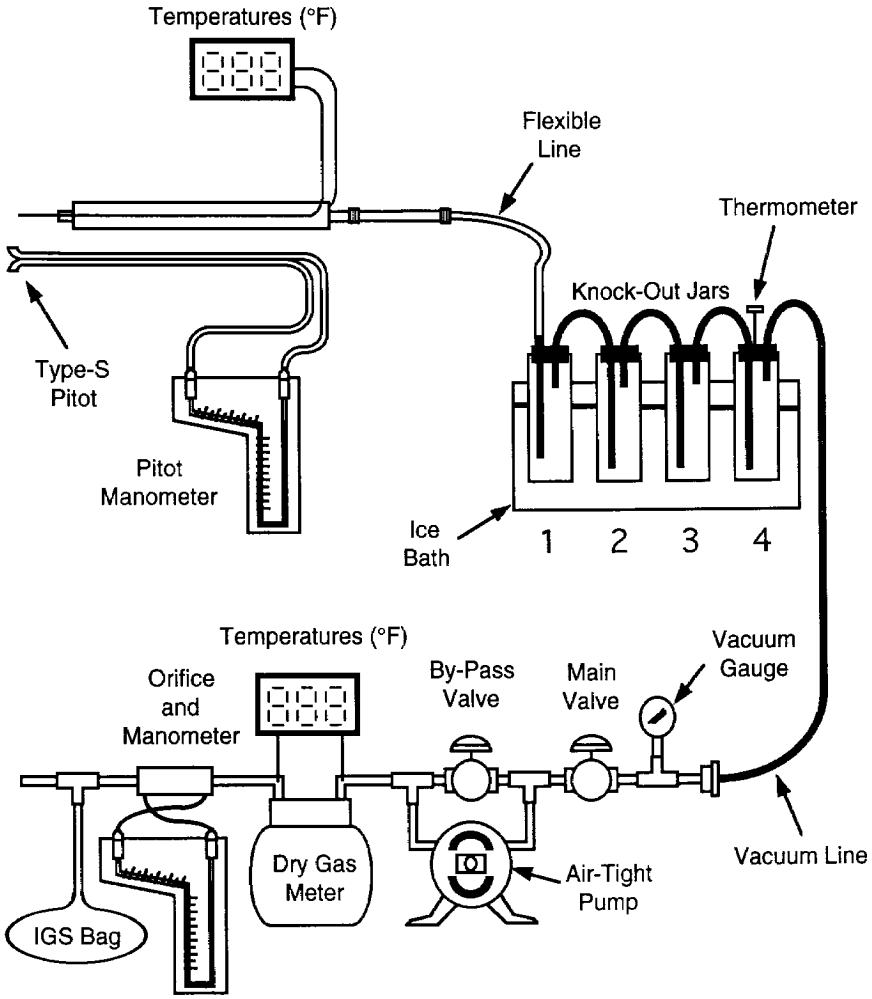
MOISTURE CONTENT - EPA METHOD 4

The flue gas moisture content at the EP-1 & 2 Calciner Stack, EP-5 Calciner Stack was determined in accordance with EPA Method 4. Figure 4-3 includes the components of the EPA Method 4 sampling apparatus. The gas moisture was determined by quantitatively condensing the water in chilled knock-out jars. The amount of moisture condensed was determined gravimetrically. A dry gas meter was used to measure the volume of gas sampled. The amount of water condensed and the volume of gas sampled were used to calculate the gas moisture content in accordance with EPA Method 4.

SOLVAY2016_5_000267

METHODOLOGY

MOISTURE CONTENT (CONTINUED)



Knock-Out Jars Contents

1)	100 ml water
2)	100 ml water
3)	empty
4)	silica gel

Figure 4-3: Moisture Sampling Apparatus (EPA Method 2-4)

SOLVAY2016_5_000268

METHODOLOGY

VOLATILE EMISSIONS TESTING - EPA METHOD 18

The analytical method used for on-site gas chromatography for air is detailed in the U.S. EPA Method 18: "Measurement of gaseous organic compound emissions by gas chromatography."

One gas chromatograph, a Hewlett Packard benchtop gas chromatograph (GC) equipped with an FID (flame ionization detector) and TCD (thermal conductivity detector), was calibrated with a standard mixture containing the compounds of interest. An initial calibration consisting of five points is performed immediately after mobilization to the site. A known concentration of each compound is injected into the GC via a gas sampling valve. A continuous flow of gas is pushed through the valve at a constant rate and a one milliliter sample loop is filled with calibration gas.

In addition, MTI 200 Gas Chromatograph coupled with a thermal conductivity detector was used for methane measurements.

At each test location a heated sample line was connected to the source and fed to the on-site GC. Data from the chromatograms was reduced by first identifying peaks. Peaks from the sample gas are matched with retention times of the peaks from the known standards. Areas are calculated using a computing integrator. The area of the each peak is mathematically compared to the concentration for the standard most similar in area or the average response factor. Results were calculated in ppm of each analyte.

SOLVAY2015_6_000269

METHODOLOGY

CONTINUOUS EMISSIONS MONITORING

Monitoring carbon monoxide (CO) and total hydrocarbons (THC) emissions at the EP-1&2 and EP- 5 was performed using a combination of EPA Methods 10 and 25A. A gas sample was continuously extracted from the stack and delivered to the gas analyzers which measured the pollutant concentration of the gas concentrations in the gas. The analyzers were calibrated on-site using certified mixtures of calibration gases.

Figure 4-4 contains a general schematic of the continuous emissions monitoring (CEM) system. The system utilized a heated stainless steel probe for gas withdrawal. The probe tip was equipped with a sintered stainless steel filter for particulate removal. The end of the probe was connected to a heated Teflon sample line which delivered the sample gases from the stack to the CEM system. The heated sample line was designed to maintain the gas temperature above 250°F in order to prevent condensation of stack gas moisture within the line.

Table 4-2 lists the analyzers used to perform the continuous emissions monitoring.

Table 4-2
Gas Analyzers

GAS	METHOD	REFERENCE ANALYZER MANUFACTURER	PRINCIPLE OF OPERATION
CO	EPA 10	TECO 48	Gas Filter Correlation NDIR
THC	EPA 25A	J.U.M. Engineering VE-7	Flame Ionization Detection (FID)

DETERMINATION OF CO CONCENTRATIONS
EPA METHODS 10

Before entering the analyzer, the gas sample was split into two streams. One stream passed directly into a refrigerated condenser which cooled the gas to approximately 35°F to remove the stack gas moisture. After passing through the condenser, the dry gas entered a Teflon-head diaphragm pump and a flow control panel which delivered the gas to the CO analyzer. The analyzer measured the gas concentrations on a dry volumetric basis.

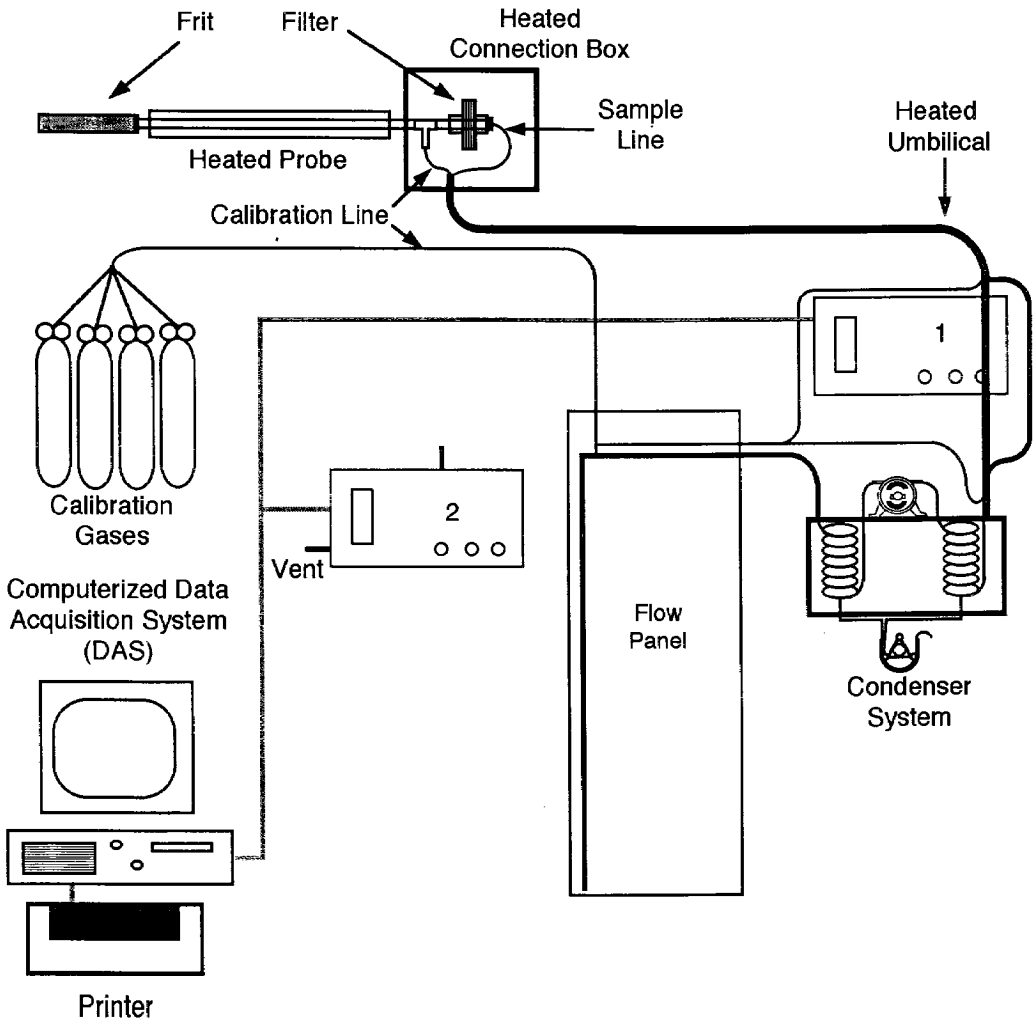
DETERMINATION OF THC CONCENTRATIONS
EPA METHOD 25A

The other gas stream remained heated and was transported through a Teflon line directly into the THC analyzer, which measured the gas on a wet volumetric basis. The THC analyzer contained a separate heated pump for gas delivery.

SOLVAY2016 6 000270

METHODOLOGY

CONTINUOUS EMISSIONS MONITORING (CONTINUED)



No	Gas	Monitor	Range Used	Calibration Gas Concentrations
1)	THC	J.U.M. Engineering VE-7	0-100 0-1000	24.78, 55.43, 84.81 250.1, 558.2, 847.1
2)	CO	TECO 48	0-500 0-5000	150.2, 281.9 1508, 3972

Figure 4-4: CEM Apparatus (EPA Methods 10 and 25A)

SOLVAY2015_5_000271

METHODOLOGY

CONTINUOUS EMISSIONS MONITORING (CONTINUED)

Each of the analyzers was calibrated according to the respective reference method procedures. Before testing, each analyzer was checked for calibration error by introducing a zero, mid-level and high-level certified calibration gas directly into the analyzer. All of the reference method criteria for calibration error were demonstrated for each analyzer before testing could proceed.

EPA Protocol No. 1 certified calibration mixtures were used to calibrate the analyzers. The THC analyzer was calibrated with propane. All calibration gases were blended with nitrogen.

Before and after each of the three test runs, the zero gas and one up-scale gas for each analyzer was introduced into the sampling line at the exit of the heated probe to check for sampling system bias and calibration drift. The demonstration of reference method criteria for bias (pre- and post-test) and calibration drift was required for a valid test run. The results of the pre-test and post-test bias checks were used to correct the average flue gas concentration measured during each test run for analyzer drift during that period.

SOLVAY2016_3_000272

Appendix

APPENDIX

SAMPLE CALCULATIONS ..... A
PARAMETERS ..... B
CALIBRATION DATA C
FIELD DATA ..... D
FIELD DATA PRINTOUTS ..... E

A

SAMPLE CALCULATIONS

A

SAMPLE CALCULATIONS
EP 5 CALCINER STACK-EPA METHOD 1-4, 10, 18 AND 25A - RUN 1

(Note: results are taken from computer analysis)

1. Volume of water collected (wscf)

$$V_{wstd} = (0.04707)(V_{lc})$$
$$= (0.04707)(341.5)$$
$$= 16.07 \text{ wscf}$$

Where:

V_{lc}	total volume of liquid collected in impingers and silica gel (ml)
V_{wstd}	volume of water collected at standard conditions (ft^3)
0.04707	conversion factor (ft^3/ml)

2. Volume of gas metered, standard conditions (dscf)

$$V_{mstd} = \frac{(17.64)(V_m)\left(P_{bar} + \frac{\Delta H}{13.6}\right)(Y_d)}{(460 + T_m)}$$

$$= \frac{(17.64)(36.21)\left(23.71 + \frac{1.80}{13.6}\right)(0.9966)}{(460 + 79)}$$

$$= 28.14 \text{ dscf}$$

Where:

P_{bar}	barometric pressure (in. Hg)
T_m	average dry gas meter temperature (°F)
V_m	volume of gas sample through the dry gas meter at meter conditions (ft^3)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft^3)
Y_d	gas meter correction factor (dimensionless)
ΔH	average pressure drop across meter box orifice (in. H_2O)
17.64	conversion factor (°R/in. Hg)
13.6	conversion factor (in. H_2O/in. Hg)
460	°F to °R conversion constant

SAMPLE CALCULATIONS (CONTINUED)

3. Sample gas pressure (in. Hg)

$$P_s = P_{bar} + \left(\frac{P_g}{13.6}\right)$$

$$= 23.71 + \left(\frac{-0.4}{13.6}\right)$$

$$= 23.68 \text{ in. Hg}$$

Where:

P_{bar}	barometric pressure (in. Hg)
P_g	sample gas static pressure (in. H_2O)
P_s	absolute sample gas pressure (in. Hg)
13.6	conversion factor (in. H_2O/in. Hg)

4. Actual vapor pressure (in. Hg)[1]

$$P_v = P_s$$

$$= 23.68 \text{ in. Hg}$$

Where:

P_v	vapor pressure, actual (in. Hg)
P_s	absolute sample gas pressure (in. Hg)

5. Moisture content (%)

$$B_{wo} = \frac{V_{wstd}}{V_{mstd} + V_{wstd}}$$

$$= \frac{16.07}{28.14 + 16.07}$$

$$= 0.3636$$

$$\times 100\% = 36.36\ \%$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume (%)
V_{mstd}	volume of gas sample through the dry gas meter at standard conditions (ft^3)
V_{wstd}	volume of water collected at standard conditions (ft^3)

[1] For effluent gas temperatures over 212°F, P_v is assumed to be equal to P_s.

SOLVAY2016_6_000278

SAMPLE CALCULATIONS (CONTINUED)

6. Saturated moisture content (%)

$$B_{ws} = \frac{(P_v)}{(P_s)}$$

$$= \frac{(23.68)}{(23.68)}$$

$$= 1.0$$

$$\times 100\% = 100\ \%$$

Where:

B_{ws}	proportion of water vapor in the gas stream by volume at saturated conditions (%)
P_s	absolute sample gas pressure (in. Hg)
P_v	vapor pressure, actual (in. Hg)

Whichever moisture value is smaller is used for B_{wo} in the following calculations.

7. Molecular weight of dry gas stream (lb/lb·mole)

$$M_d = M_{CO_2}\frac{(CO_2)}{(100)} + M_{O_2}\frac{(O_2)}{(100)} + M_{CO-N_2}\frac{(CO+N_2)}{(100)}$$

$$= 44.0\frac{(14.4)}{(100)} + 32.0\frac{(8.4)}{(100)} + 28.0\frac{(77.2)}{(100)}$$

$$= 30.64\ \frac{\text{lb}}{\text{lb}\cdot\text{mole}}$$

Where:

Md	dry molecular weight of sample gas (lb/lb·mole)
M_{CO_2}	molecular weight of carbon dioxide (lb/lb·mole)
M_{O_2}	molecular weight of oxygen (lb/lb·mole)
$M_{CO}+N_2$	molecular weight of carbon monoxide and nitrogen (lb/lb·mole)
CO_2	proportion of carbon dioxide in the gas stream by volume (%)
O_2	proportion of oxygen in the gas stream by volume (%)
$CO+N_2$	proportion of carbon monoxide and nitrogen in the gas stream by volume (%)
100	conversion factor (%)

SAMPLE CALCULATIONS (CONTINUED)

8. Molecular weight of sample gas (lb/lb·mole)

$$M_s = (M_d)(1 - B_{wo}) + (M_{H_2O})(B_{wo})$$
$$= (30.64)(1 - 0.3636) + (18.0)(0.3636)$$
$$= 26.04 \frac{\text{lb}}{\text{lb} \cdot \text{mole}}$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume
M_d	dry molecular weight of sample gas (lb/lb·mole)
M_{H_2O}	molecular weight of water (lb/lb·mole)
M_s	molecular weight of sample gas, wet basis (lb/lb·mole)

9. Velocity of sample gas (ft/sec)

$$V_s = (K_p)(C_p)\left(\overline{\sqrt{\Delta P}}\right)\left(\sqrt{\frac{(\overline{T_s} + 460)}{(M_s)(P_s)}}\right)$$
$$= (85.49)(0.84)(0.288)\left(\sqrt{\frac{(288 + 460)}{(26.04)(23.68)}}\right)$$
$$= 22.8 \frac{\text{ft}}{\text{sec}}$$

Where:

C_p	velocity pressure coefficient (dimensionless)
K_p	pitot tube constant
M_s	molecular weight of sample gas, wet basis (lb/lb·mole)
P_s	absolute sample gas pressure (in. Hg)
T_s	average sample gas temperature (°F)
V_s	sample gas velocity (ft/sec)
$\overline{\sqrt{\Delta P}}$	average square roots of velocity heads of sample gas (in. H_2O)
460	°F to °R conversion constant

10. Total flow of sample gas (acfm)

$$Q_a = (60)(A_s)(V_s)$$
$$= (60)(85.90)(22.8)$$
$$= 117{,}500 \text{ acfm}$$

Where:

A_s	cross sectional area of sampling location (ft^2)
Q_a	volumetric flow rate at actual conditions (acfm)
V_s	sample gas velocity (ft/sec)
60	conversion factor (sec/min)

SAMPLE CALCULATIONS (CONTINUED)

11. Total flow of sample gas (dscfm)

$$Q_{std} = \frac{(Q_a)(P_s)(17.64)(1-B_{wo})}{(\overline{T_s}+460)}$$

$$= \frac{(117,500)(23.68)(17.64)(1-0.3636)}{(288+460)}$$

$$= 41,750 \text{ dscfm}$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume
P_s	absolute sample gas pressure (in. Hg)
Q_a	volumetric flow rate at actual conditions (acfm)
Q_{std}	volumetric flow rate at standard conditions, dry basis (dscfm)
T_s	average sample gas temperature (°F)
17.64	conversion factor (°R/in. Hg)
460	°F to °R conversion constant

12. Continuous emissions monitoring for total hydrocarbons as propane(drift corrected in ppmwv)[1]

$$C_{gas} = \left((C_{avg}) - \left(\frac{C_{oi}+C_{of}}{2}\right)\right)\frac{(C_{ma})}{\left(\left(\frac{C_{mi}+C_{mf}}{2}\right) - \left(\frac{C_{oi}+C_{of}}{2}\right)\right)}$$

$$= \left((209.5) - \left(\frac{4.9+7.6}{2}\right)\right)\frac{(558.2)}{\left(\left(\frac{566.2+574.6}{2}\right) - \left(\frac{4.9+7.6}{2}\right)\right)}$$

$$= 201.2 \text{ ppmwv}$$

Where:

C_{gas}	concentration corrected for drift (ppmwv)
C_{avg}	measured concentration in the gas stream (ppmwv)
C_{ma}	actual concentration of the upscale calibration gas (ppm)
C_{mi}	initial system calibration bias check response for the upscale calibration gas (ppm)
C_{mf}	final system calibration bias check response for the upscale calibration gas (ppm)
C_{oi}	initial system calibration bias check response for the zero gas (ppm)
C_{of}	final system calibration bias check response for the zero gas (ppm)

[1] The calculation carbon monoxide were performed in a similar manner, using the appriate molecular weight.

SAMPLE CALCULATIONS (CONTINUED)

13. Continuous emissions monitoring for total hydrocarbons as propane (moisture corrected to ppmdv)[1]

$$C_{ppmdv} = \frac{(C_{ppmwv})}{(1 - B_{wo})}$$

$$= \frac{(201.2)}{(1 - 0.3636)}$$

$$= 316.1 \text{ppmdv}$$

Where:

B_{wo}	proportion of water vapor in the gas stream by volume
C_{ppmdv}	concentration calibrated for drift (ppmdv)
C_{ppmwv}	concentration calibrated for drift (ppmwv)

14. Continuous emissions monitoring for total hydrocarbons as propane (lb/hr)[1]

$$E_{lb/hr} = \frac{(C_{ppm})(M_{THC})(Q_{std})(60)}{(385.3)(10^6)}$$

$$= \frac{(316.1)(44.10)(41,750)(60)}{(385.3)(10^6)}$$

$$= 90.6 \frac{lb}{hr}$$

Where:

C	measured concentration in the gas stream (ppmdv)
$E_{lb/hr}$	emission rate (lb/hr)
Q_{std}	volumetric flow rate at standard conditions, dry basis (dscfm)
M_{THC}	molecular weight of total hydrocarbons
10^6	conversion factor (ppm)
385.3	conversion factor (ft^3/lb·mole)
60	conversion factor (min/hr)

[1] The calculation carbon monoxide and volatile organic compounds were performed in a similar manner, using the appriate molecular weights.

SAMPLE CALCULATIONS (CONTINUED)

15. Continuous emissions monitoring for total hydrocarbons (lb/ton of trona)[1]

$$E_{lb/ton\ of\ trona} = \frac{(E_{lb/hr})}{(E_{ton\ of\ trona/hr})}$$

$$= \frac{(90.6)}{(157)}$$

$$= 0.577 \frac{lb}{ton\ of\ trona}$$

Where:

$E_{lb/hr}$	emission rate (lb/hr)
$E_{ton\ of\ trona/hr}$	production rate (ton of trona/hr)
$E_{lb/ton\ of\ trona}$	emission rate (lb/ton of trona)

[1] The calculation carbon monoxide and volatile organic compounds were performed in a similar manner, using the appriate molecular weights.

B

PARAMETERS

B

SOLVAY2016_5_000285

SOLVAY MINERALS INC.
CAE Project No: 7473
EP-1&2

VELOCITY AND MOISTURE PARAMETERS

Run No.		1	2	3
Date (1995)		April 28	April 28	April 28
Start Time (approx.)		08:05	09:53	11:13
Stop Time (approx.)		09:11	10:28	11:58
Sampling Conditions				
Y_d	Dry gas meter correction factor	0.9966	0.9966	0.9966
C_p	Pitot tube coefficient	0.84	0.84	0.84
	Static pressure (in. H_2O)	-1.0	-1.0	-1.0
A_s	Sample location area (ft^2)	113.10	113.10	113.10
P_b	Barometric pressure (in. Hg)	23.66	23.66	23.66
O_2	Oxygen (dry volume %)	15.0	15.3	15.5
CO_2	Carbon dioxide (dry volume %)	7.1	6.9	7.3
V_{lc}	Liquid collected (ml)	132.4	136.8	138.4
V_m	Volume metered, meter conditions (ft^3)	35.97	36.50	36.33
T_m	Dry gas meter temperature (°F)	58	60	63
T_s	Stack temperature (°F)	441	432	440
ΔH	Meter box orifice pressure drop (in. H_2O)	1.80	1.80	1.80
Flow Results				
V_{wstd}	Volume of water collected (ft^3)	6.23	6.44	6.51
V_{mstd}	Volume metered, standard (ft^3)	29.02	29.38	29.03
P_s	Sample gas pressure, absolute (in. Hg)	23.59	23.59	23.59
P_v	Vapor pressure, actual (in. Hg)	23.59	23.59	23.59
B_{wo}	Moisture in sample (% by volume)	17.68	17.98	18.33
B_{ws}	Saturated moisture (% by volume)	100.00	100.00	100.00
$\sqrt{\Delta P}$	Velocity head ($\sqrt{\text{in. } H_2O}$)	1.094	1.089	1.076
M_d	MW of sample gas, dry (lb/lb-mole)	29.74	29.72	29.79
M_s	MW of sample gas, wet (lb/lb-mole)	27.66	27.61	27.63
V_s	Velocity of sample (ft/sec)	92.3	91.5	90.8
Q_a	Volumetric flow rate, actual (acfm)	626,400	621,000	616,400
Q_{std}	Volumetric flow rate, standard (dscfm)	238,000	237,600	232,700

SOLVAY MINERALS INC.
CAE Project No: 7473
EP-1&2

VOLATILE ORGANICS PARAMETERS

Run No.		1	2	3
Date (1995)		April 28	April 28	April 28
Start Time (approx.)		8:05	10:05	11:14
Stop Time (approx.)		9:11	10:48	12:19
Gas Conditions[2]				
B_{wo}	Moisture (% by volume)	17.68	17.98	18.33
Q_{std}	Volumetric flow rate, standard (dscfm)	238,000	237,600	232,700
2-Butanone				
C	Concentration (ppmwv)	0.11	BDL	BDL
C	Concentration (ppmdv)	0.13	BDL	BDL
E	Emission rate(lb/hr)	0.36	BDL	BDL
E	Emission rate(lb/tons of trona)[1]	1.36E-03	BDL	BDL
Benzene				
C	Concentration (ppmwv)	0.36	0.39	0.36
C	Concentration (ppmdv)	0.44	0.48	0.44
E	Emission rate(lb/hr)	1.27	1.37	1.25
E	Emission rate(lb/tons of trona)[1]	4.83E-03	5.25E-03	4.76E-03
1,3 Butadiene				
C	Concentration (ppmwv)	1.46	0.48	1.00
C	Concentration (ppmdv)	1.77	0.59	1.22
E	Emission rate(lb/hr)	3.56	1.17	2.40
E	Emission rate(lb/tons of trona)[1]	1.36E-02	4.47E-03	9.16E-03
Ethyl Benzene				
C	Concentration (ppmwv)	BDL	BDL	BDL
C	Concentration (ppmdv)	BDL	BDL	BDL
E	Emission rate(lb/hr)	BDL	BDL	BDL
E	Emission rate(lb/tons of trona)[1]	BDL	BDL	BDL
Hexane				
C	Concentration (ppmwv)	0.11	0.37	BDL
C	Concentration (ppmdv)	0.13	0.45	BDL
E	Emission rate(lb/hr)	0.43	1.44	BDL
E	Emission rate(lb/tons of trona)[1]	1.63E-03	5.49E-03	BDL
Methylene Chloride				
C	Concentration (ppmwv)	0.80	0.98	0.89
C	Concentration (ppmdv)	0.97	1.19	1.09
E	Emission rate(lb/hr)	3.06	3.75	3.35
E	Emission rate(lb/tons of trona)[1]	1.17E-02	1.43E-02	1.28E-02
Styrene				
C	Concentration (ppmwv)	0.19	0.05	0.01
C	Concentration (ppmdv)	0.23	0.06	0.01
E	Emission rate(lb/hr)	0.89	0.23	0.05
E	Emission rate(lb/tons of trona)[1]	3.40E-03	8.95E-04	1.76E-04
Toluene				
C	Concentration (ppmwv)	1.17	0.98	0.80
C	Concentration (ppmdv)	1.42	1.19	0.98
E	Emission rate(lb/hr)	4.85	4.07	3.27
E	Emission rate(lb/tons of trona)[1]	1.85E-02	1.55E-02	1.25E-02
1,1,1 - Trichloroethane				
C	Concentration (ppmwv)	0.66	0.72	1.34
C	Concentration (ppmdv)	0.80	0.88	1.64
E	Emission rate(lb/hr)	3.96	4.33	7.93
E	Emission rate(lb/tons of trona)[1]	1.51E-02	1.65E-02	3.03E-02
Xylene				
C	Concentration (ppmwv)	1.38	1.12	0.67
C	Concentration (ppmdv)	1.68	1.37	0.82
E	Emission rate(lb/hr)	6.60	5.36	3.16
E	Emission rate(lb/tons of trona)[1]	2.52E-02	2.05E-02	1.20E-02

BDL indicates the value was below the detection limit.

[1] Calculations based on 8,760 operating hours per year.
[2] Gas conditions are taken from simultaneous velocity-moisture test.

SOLVAY MINERALS, INC.
CAE Project No: 7473
EP-5

CEM PARAMETERS

Run No.		1	2	3
Date (1995)		April 27	April 27	April 27
Start Time (approx.)		13:06	14:34	16:25
Stop Time (approx.)		14:06	15:34	17:25
Gas Conditions[1]				
O_2	Oxygen (dry volume %)	8.4	8.4	8.4
CO_2	Carbon Dioxide (dry volume %)	14.4	14.4	14.4
B_{wo}	Moisture in sample (% by volume)	36.36	36.21	36.12
Q_{std}	Volumetric flow rate, standard (dscfm)	41,750	46,880	46,580
TOTAL HYDROCARBONS				
Data Acquisition				
C	Effluent gas concentration (ppmwv)	209.5	150.9	129.3
Calibration Gases				
C_{oi}	Calibration bias check, initial zero gas	4.9	7.6	2.7
C_{mi}	Calibration bias check, initial upscale gas	566.2	574.6	550.5
C_{of}	Calibration bias check, final zero gas	7.6	2.7	6.0
C_{mf}	Calibration bias check, final upscale gas	574.6	550.5	560.0
C_{ma}	Actual concentration of upscale gas	558.2	558.2	558.2
Calculated Results				
C_{gas}	Concentration drift corrected (ppmwv)	201.2	146.0	126.6
C_{gas}	Concentration moisture corrected (ppmdv)	316.1	228.8	198.2
E	Emission rate (lb/hr)	90.6	73.7	63.4
E	Emission rate (lb/ton of trona)	0.577	0.469	0.404
CARBON MONOXIDE				
Data Acquisition				
C	Effluent gas concentration (ppmdv)	526.5	381.1	337.8
Calibration Gases				
C_{oi}	Calibration bias check, initial zero gas	6.1	6.1	1.2
C_{mi}	Calibration bias check, initial upscale gas	1479.5	1479.5	1444.4
C_{of}	Calibration bias check, final zero gas	6.1	1.2	1.2
C_{mf}	Calibration bias check, final upscale gas	1479.5	1444.4	1446.5
C_{ma}	Actual concentration of upscale gas	1508.0	1508.0	1508.0
Calculated Results				
C_{gas}	Concentration drift corrected (ppmdv)	532.6	390.3	351.5
E	Emission rate (lb/hr)	97.0	79.8	71.4
E	Emission rate (lb/ton of trona)	0.618	0.508	0.455
METHANE				
Calculated Results				
C_{gas}	Concentration (ppmdv)	197	185	180
E	Emission rate (lb/hr)	20.5	21.7	20.9

[1] Gas conditions are taken from simultaneous velocity-moisture test.

SOLVAY MINERALS INC.
CAE Project No: 7473
EP-5

VELOCITY AND MOISTURE PARAMETERS

Run No.		1	2	3
Date (1995)		April 27	April 27	April 27
Start Time (approx.)		13:07	14:35	16:26
Stop Time (approx.)		13:52	15:20	17:11
Sampling Conditions				
Y_d	Dry gas meter correction factor	0.9966	0.9966	0.9966
C_p	Pitot tube coefficient	0.84	0.84	0.84
	Static pressure (in. H_2O)	-0.4	-0.4	-0.4
A_s	Sample location area (ft^2)	85.90	85.90	85.90
P_b	Barometric pressure (in. Hg)	23.71	23.71	23.71
O_2	Oxygen (dry volume %)	8.4	8.4	8.4
CO_2	Carbon dioxide (dry volume %)	14.4	14.4	14.4
V_{lc}	Liquid collected (ml)	341.5	341.7	339.6
V_m	Volume metered, meter conditions (ft^3)	36.21	36.62	36.16
T_m	Dry gas meter temperature (°F)	79	82	76
T_s	Stack temperature (°F)	288	291	289
ΔH	Meter box orifice pressure drop (in. H_2O)	1.80	1.80	1.80
Flow Results				
V_{wstd}	Volume of water collected (ft^3)	16.07	16.08	15.98
V_{mstd}	Volume metered, standard (ft^3)	28.14	28.34	28.28
P_s	Sample gas pressure, absolute (in. Hg)	23.68	23.68	23.68
P_v	Vapor pressure, actual (in. Hg)	23.68	23.68	23.68
B_{wo}	Moisture in sample (% by volume)	36.36	36.21	36.12
B_{ws}	Saturated moisture (% by volume)	100.00	100.00	100.00
$\sqrt{\Delta P}$	Velocity head ($\sqrt{\text{in. } H_2O}$)	0.288	0.324	0.321
M_d	MW of sample gas, dry (lb/lb-mole)	30.64	30.64	30.64
M_s	MW of sample gas, wet (lb/lb-mole)	26.04	26.06	26.08
V_s	Velocity of sample (ft/sec)	22.8	25.6	25.4
Q_a	Volumetric flow rate, actual (acfm)	117,500	132,200	130,900
Q_{std}	Volumetric flow rate, standard (dscfm)	41,750	46,880	46,660

SOLVAY MINERALS INC.
CAE Project No: 7473
EP-5

VOLATILE ORGANICS PARAMETERS

Run No.	1	2	3
Date (1995)	April 27	April 27	April 27
Start Time (approx.)	13:07	14:35	16:26
Stop Time (approx.)	14:13	15:41	17:33
Gas Conditions:			
B_{wo} Moisture (% by volume)	36.36	36.21	36.12
C_{sd} Volumetric flow rate, standard (dscfm)	41,750	46,880	46,640
2-Butanone			
C Concentration (ppmwv)	BDL	BDL	BDL
C Concentration (ppmdv)	BDL	BDL	BDL
E Emission rate(lb/hr)	BDL	BDL	BDL
E Emission rate(lb/ton of trona)	BDL	BDL	BDL
Benzene			
C Concentration (ppmwv)	3.22	2.27	1.06
C Concentration (ppmdv)	5.06	3.56	1.66
E Emission rate(lb/hr)	2.57	2.03	0.94
E Emission rate(lb/ton of trona)	1.64E-02	1.29E-02	6.00E-03
1,3 Butadiene			
C Concentration (ppmwv)	INT	INT	6.08
C Concentration (ppmdv)	INT	INT	9.52
E Emission rate(lb/hr)	INT	INT	3.74
E Emission rate(lb/ton of trona)	INT	INT	2.38E-02
Ethyl Benzene			
C Concentration (ppmwv)	0.69	0.34	BDL
C Concentration (ppmdv)	1.08	0.53	BDL
E Emission rate(lb/hr)	0.75	0.41	BDL
E Emission rate(lb/ton of trona)	4.77E-03	2.63E-03	BDL
Hexane			
C Concentration (ppmwv)	2.24	1.45	0.64
C Concentration (ppmdv)	3.52	2.27	1.00
E Emission rate(lb/hr)	1.97	1.43	0.63
E Emission rate(lb/ton of trona)	1.26E-02	9.11E-03	3.99E-03
Methylene Chloride			
C Concentration (ppmwv)	2.08	1.76	1.24
C Concentration (ppmdv)	3.27	2.76	1.94
E Emission rate(lb/hr)	1.80	1.71	1.20
E Emission rate(lb/ton of trona)	1.15E-02	1.09E-02	7.63E-03
Styrene			
C Concentration (ppmwv)	0.65	0.53	0.28
C Concentration (ppmdv)	1.04	0.83	0.44
E Emission rate(lb/hr)	0.90	0.63	0.33
E Emission rate(lb/ton of trona)	5.76E-03	4.02E-03	2.11E-03
Toluene			
C Concentration (ppmwv)	5.68	4.62	2.21
C Concentration (ppmdv)	8.92	7.24	3.46
E Emission rate(lb/hr)	5.35	4.87	2.32
E Emission rate(lb/ton of trona)	3.41E-02	3.10E-02	1.47E-02
1,1,1 - Trichloroethane			
C Concentration (ppmwv)	4.72	2.31	1.37
C Concentration (ppmdv)	7.42	3.62	2.14
E Emission rate(lb/hr)	6.43	3.53	2.08
E Emission rate(lb/ton of trona)	4.10E-02	2.25E-02	1.32E-02
Xylene			
C Concentration (ppmwv)	5.70	4.26	2.49
C Concentration (ppmdv)	8.96	6.68	3.90
E Emission rate(lb/hr)	6.18	5.18	3.01
E Emission rate(lb/ton of trona)	3.94E-02	3.30E-02	1.91E-02

BDL indicates value was below the detection limit. A value of zero was used for BDL in the average calculation.
INT indicates quantitation not possible due to analytical interferent.

* Gas conditions are taken from simultaneous velocity-moisture test.

SOLVAY MINERALS INC.
CAE Project No: 7473
EP-1&2

VOLATILE ORGANICS PARAMETERS

Run No.		1	2	3
Date (1995)		April 25	April 25	April 28
Start Time (approx.)		8:05	10:05	11:14
Stop Time (approx.)		9:11	10:46	12:19
Gas Conditions*				
B_{wo}	Moisture (% by volume)	17.68	17.98	18.33
Q_{std}	Volumetric flow rate, standard (dscfm)	238,000	237,600	232,700
2-Butanone				
C	Concentration (ppmwv)	0.11	BDL	BDL
C	Concentration (ppmdv)	0.13	BDL	BDL
E	Emission rate(lb/hr)	0.36	BDL	BDL
E	Emission rate(lb/tons of trona)	1.36E-03	BDL	BDL
Benzene				
C	Concentration (ppmwv)	0.36	0.39	0.36
C	Concentration (ppmdv)	0.44	0.48	0.44
E	Emission rate(lb/hr)	1.27	1.37	1.25
E	Emission rate(lb/tons of trona)	4.83E-03	5.25E-03	4.76E-03
1,3 Butadiene				
C	Concentration (ppmwv)	1.46	0.48	1.00
C	Concentration (ppmdv)	1.77	0.59	1.22
E	Emission rate(lb/hr)	3.56	1.17	2.40
E	Emission rate(lb/tons of trona)	1.36E-02	4.47E-03	9.15E-03
Ethyl Benzene				
C	Concentration (ppmwv)	BDL	BDL	BDL
C	Concentration (ppmdv)	BDL	BDL	BDL
E	Emission rate(lb/hr)	BDL	BDL	BDL
E	Emission rate(lb/tons of trona)	BDL	BDL	BDL
Hexane				
C	Concentration (ppmwv)	0.11	0.37	BDL
C	Concentration (ppmdv)	0.13	0.45	BDL
E	Emission rate(lb/hr)	0.43	1.44	BDL
E	Emission rate(lb/tons of trona)	1.63E-03	5.49E-03	BDL
Methylene Chloride				
C	Concentration (ppmwv)	0.80	0.98	0.89
C	Concentration (ppmdv)	0.97	1.19	1.09
E	Emission rate(lb/hr)	3.06	3.75	3.35
E	Emission rate(lb/tons of trona)	1.17E-02	1.43E-02	1.28E-02
Styrene				
C	Concentration (ppmwv)	0.19	0.05	0.01
C	Concentration (ppmdv)	0.23	0.06	0.01
E	Emission rate(lb/hr)	0.89	0.23	0.05
E	Emission rate(lb/tons of trona)	3.40E-03	8.96E-04	1.76E-04
Toluene				
C	Concentration (ppmwv)	1.17	0.98	0.80
C	Concentration (ppmdv)	1.42	1.19	0.98
E	Emission rate(lb/hr)	4.85	4.07	3.27
E	Emission rate(lb/tons of trona)	1.85E-02	1.55E-02	1.25E-02
1,1,1 - Trichloroethane				
C	Concentration (ppmwv)	0.66	0.72	1.34
C	Concentration (ppmdv)	0.80	0.88	1.64
E	Emission rate(lb/hr)	3.96	4.33	7.93
E	Emission rate(lb/tons of trona)	1.51E-02	1.65E-02	3.03E-02
Xylene				
C	Concentration (ppmwv)	1.38	1.12	0.67
C	Concentration (ppmdv)	1.68	1.37	0.82
E	Emission rate(lb/hr)	6.60	5.36	3.16
E	Emission rate(lb/tons of trona)	2.52E-02	2.05E-02	1.20E-02

BDL indicates the value was below the detection limit.

* Gas conditions are taken from simultaneous velocity-moisture test.

CALIBRATION DATA

C

Meter Box Full Test Calibration

Date: 11-20-94

Operator: M. RIVERA

Meter Box No.: 0-7	Meter Box ΔH@: 1.8228	Meter Box Yd: 0.9966	Barometric Pressure: 28.93

				Standard Meter Gas Volume			Meter Box Gas Volume (ft^3)			Std. Meter Temperature (°F)			Meter Box Temperature (°F)					
Q	ΔH	ΔP	Y_{ds}	Initial	Final	V_{ds} Net	Initial	Final	V_d Net	In	Out	T_{ds} Ave.	In	T_o Out	T_d Ave.	Θ Time	Y_d	ΔH@
0.38	0.5	-1.8	1.0000	0	5.12	5.12	365.837	371.185	5.348	68	68	68	87	83	85	12.75	0.9824	1.7523
0.38	0.5	-1.8	1.0000	0	5.00	5.00	371.185	376.415	5.23	68	68	68	89	84	87	12.44	0.9846	1.7489
0.93	3.0	-3.9	1.0000	0	15.50	15.50	390.00	405.718	15.718	68	68	68	99	86	93	16.03	1.0148	1.8025
0.93	3.0	-3.9	1.0000	0	18.6	18.6	408.975	427.95	18.975	68	68	68	101	89	95	19.26	1.0124	1.8001
0.63	1.5	-2.5	1.0000	0	10.40	10.40	431.00	441.918	10.918	68	68	68	102	90	96	15.71	0.9928	1.9135
0.64	1.5	-2.5	1.0000	0	10.00	10.00	441.918	452.418	10.50	68	68	68	102	90	96	15.10	0.9927	1.9115
																Average	0.9966	1.8228

Nomenclature

P_b	Barometric Pressure (in. Hg)
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential (in. H_20)
ΔP	Inlet Pressure Differential (in. H_20)
V_d	Gas Meter Volume - Dry (ft^3)
V_{ds}	Standard Meter Volume - Dry (ft^3)
T_d	Average Meter Box Temperature (°F)
T_o	Outlet Meter Box Temperature (°F)
T_{ds}	Average Standard Meter Temperature (°F)
Y_d	Meter Correction Factor (unitless)
Y_{ds}	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential giving 0.75 cfm of air at 68°F and 29.92 in. Hg (in. H_20)

Equations

$$Y_d = (Y_{ds})\left[\frac{V_{ds}}{V_d}\right]\left[\frac{T_d + 460}{T_{ds} + 460}\right]\left[\frac{P_b + \Delta P / 13.6}{P_b + \Delta H / 13.6}\right]$$

$$\Delta H@ = \frac{0.0319(\Delta H)}{P_b(T_o + 460)}\left[\frac{(T_{ds} + 460)\Theta}{(V_{ds})(Y_{ds})}\right]^2$$

$$Q = \frac{17.64\ (V_{ds})(P_b)}{(T_{ds} + 460)(\Theta)}$$

Calibrations

Vacuum Gauge

Standard (in. Hg)	Vacuum Gauge
5.3	5
10.6	10
15.5	15
20.4	20
23.5	23.5

Thermometers

Standard (°F)	Inlet	Outlet

CS 001 Full Test-English
CNVS/TRG.R2-2/7/94

Clean Air Engineering

SOLVAY2016_6_000294

POST-TEST DGM CALIBRATION CHECK
BY CRITICAL ORIFICE

Client/Owner: Solvay Minerals, Inc
CAE Project No: 7473
Post-Test Cal. Date: 4/28/95

Meterbox I.D. No: D-7
Full-Test Cal. Date: 11/20/94
Post Test Calibration by: Ron Luikaart

Average Field Test Data
Sample Rate: 1.75 ΔH
Highest Vacuum: 6 "Hg

(+) Leak check ok?	Yes	(-) Leak check ok?	Yes	Orifice I. D. no:	B2	Orifice K'=	0.6501	Orifice rated cfm:	0.84

Trial No:	Elapsed Time Min.	Meterbox Gas Volume Initial cu. ft.	Final cu. ft.	Vm cu. ft.	ΔH "H2O	Vacuum "Hg	Pb "Hg	Temperatures Ti °F	To °F	Tavg °F	Tamb °F	Post Test Yc	Full Test Yd	Error %
1	5.00	266.80	270.93	4.13	1.75	14	23.66	64	62	63	63	1.0148	0.9966	-1.8
2	5.00	270.93	275.08	4.15	1.75	14	23.66	61	60	61	56	1.0129	0.9966	-1.6
3	5.00	275.08	279.21	4.13	1.75	14	23.66	62	61	62	60	1.0160	0.9966	-1.9
		Average cfm =		4.14								Average % Error =		-1.8

Calculations

Vmstd = 17.64 * Vm * ((Pb +(ΔH/13.6)) / (Tm + 460))
Vcr std = K' * Pb * min / √(Tamb + 460)
Yc = Vcr std / Vmstd
% Error = 100 * (Yd - Yc) / Yd

Where:

Vm = Gas Volume Metered, cu. ft.
ΔH = Meterbox Orifice Setting, in. H2O
Pb = Barometric Pressure, in. Hg
Tm = Meterbox Temp. (avg. of Ti & To), °F
Ti = Meterbox Inlet Temp., °F
To = Meterbox Outlet Temp., °F
Tamb = Ambient Temp. °F
Yc = DGM Calibration Coeffcient based on orifice data
Yd = DGM Calibration Coeffcient from Full Test Calibration
K' = Orifice Coeffcient

**Acceptance Criteria: The average percent error must not be greater than 5%. See 40CFR60, Method 5, sections 5.3.2 & 5.3.3.*

SOLVAY2016_6_000295

Meter Box Critical Orifice
Post Test Data Sheet

CAE Project No. 7473

Location SOLVAY MINERALS

Date 4/28/95

Meter # ~~64~~ - D7
RML 65

Meter Yd .9966

Meter ΔH@ 1.8228

Full Test Cal. Date _____

Critical Orifice Cal. Date _____

Pbar 23.66

K' 0.6501

Orifice Used B2

Volume	Elapsed Time	Tmi	Tmo	Tamb	ΔH	Vacuum
266.80	.....	62	61	.....	.....	.....
270.93	5	64	62	63	1.75	14
275.08	10	61	60	56	1.75	14
279.21	15	62	61	60	1.75	14
12.41	15	61.6		60	1.75	14

Calibrated by RON M. LUIKAART

Clean Air Engineering

CS 005 Critical Orifice
EXCL/D61.R1-2/9/94

Critical Orifice Calibration Data Sheet

Meter 61 - 10

Meter Yd 0.9964

Meter ΔH@ 0.995

Full Test Cal. Date - - 1/20/94

Critical Orfice Cal. Date 7/5/94

Pbar 29.26

Orifice Calibrated B-2

Run #	Volume	Elapsed Time	Tmi	Tmo	Tamb	ΔH	Vacuum
Initial	287.06		79	78			
1	291.33	5.0	79	78	71	2.4	18
2	295.65	10.0	81	78	69	2.4	18
3	299.96	15.0	81	79	69	2.4	18

Run #	K'	Difference from Avg.
1	0.6467	-0.52%
2	0.6528	0.42%
3	0.6508	0.11%
avg	0.6501	

SAMPLE PROBE CALIBRATION DATA

Probe Type & I.D. number: 6' S-TYPE PITOT 12.8.94.4

D. Chiarone 1.5.95

Thermocouple Calibration

Reference Type: _____ Reference I.D. No: _____ Pyrometer I.D. No: _____ Degrees: F / C

Point No.	Target Temp.	Reference Temp	Indicated Temp	Temp Difference	% Difference
1	ice-32F				
2	ambient-70F				
3	hot oil-150F				
4	boiling H2O-212F				
5	hot oil-320F				

Specification

%Difference ≤ 1.5

Does assembly meet specifications? YES / NO → If "NO" thermocouple must be replaced.

Geometric Pitot Calibration — diagrams on reverse

Is pitot assembly in good repair? YES / NO If "NO" explain: _____

[1] "S" Pitot

Measurement				Specification
α1=	1	α2=	1	<10°
β1=	1	β2=	1	<5°
γ=	1	θ=	1	
Pa=	.349	Pb=	.349	Pa + Pb = A
A=	.698	Dt=	.250	

Calculations

z = A sin = .0121 <0.125"

w = A sin = .0121 <0.03125"

[ ] Standard Pitot

Measurement		Specification
Tube O.D.	"	(D)
Static Hole I.D.	"	(D X 0.1)
Length,		
Tip to Static	"	(6 X D Minimum)
Static to Bend	"	(8 X D Minimum)

Does assembly meet specifications? YES / NO

If "YES" "S" pitot Cp=0.84; Std pitot Cp=0.99

Does assembly meet specifications? YES / NO → If "NO" wind tunnel calibration is required.

Wind Tunnel Pitot Calibration

Reference Pitot I.D. No: _____ Reference Pitot Cp: _____

SIDE A:

Trial No.	Reference ΔP	Probe ΔP	Probe Cp	Cp Deviation
1				
2				
3				
		Average Probe Cp=		
		Side A "S" =		

SIDE B:

Trial No.	Reference ΔP	Probe ΔP	Probe Cp	Cp Deviation
1				
2				
3				
		Average Probe Cp=		
		Side B "S" =		

Where,

Probe Cp=√(Reference ΔP / Probe ΔP)

Cp Deviation=Probe Cp - Average Probe Cp

"S" =√((Σ (Reference Cp - Cp Deviation))/2)

Specification

Avg Cp Side A - Avg Cp Side B < 0.01

and

"S" Side A and "S" Side B ≤ 0.02

Does assembly meet specifications? YES / NO → If "YES" Cp=Average of A and B Side Cp values. If "NO" pitot must be replaced.

PROBE Cp = 0.84 Calibrated by: D. Chiarone Date: 1.5.95

Pyrometer Calibration Sheet

Pyrometer No.: D-7

Office: Palestine

Calibrated by: MK

Client:

Date: 11-20-94

Job or Ref No.:

Temperature Scale Used: ☑ Fahrenheit ☐ Celsius

Full Test ☑ Post Test ☐

Calibration Reference Settings for Fahrenheit Scale	Pyrometer Reading	Calibration Reference Settings for Celsius Scale
50 °F	50	25 °C
100 °F	100	50 °C
150 °F	150	75 °C
200 °F	201	100 °C
250 °F	252	125 °C
300 °F	301	150 °C
350 °F	351	175 °C
400 °F	400	200 °C
450 °F	450	225 °C
500 °F	500	250 °C
550 °F	550	275 °C
600 °F	600	300 °C

Calibration Reference Information

Reference Used: Digimite/Other

Serial No.: T-123216

Calibrated By: OMEGA ENGINEERING

Date Calibrated: 4-29-94

Calibration Report No.: 237920

SOLVAY2016_6_000299

Reference Method Sampling System

Client: SOLVAY MINERALS
Plant: GREEN RIVER, WY
Unit: EP-1,2 ? EP-5
Location: STACK
Run #'s: 1-3

Job #: 7473
Operator: S. FERGUSON
Date: 4-26-95
Data Acquisition: Chart / Computer
File Names: RUN00 → BIAS00 →

Instrumentation Data for Reference Method:

	Constituent	Manufacturer	Serial/Asset#	Range Used	Oper. Principle	Units Reported
1	THC	J.U.M.		0 1000/100	FID	PPM
2	CO	TECO	3223	0-5000/500	GFC	PPM
3						
4						
5						
6						

Reference Method System Performance Checks:

System Leak Check Passed: ✓
System Response Time: 5:00 MIN
Calibration Error Check Passed: ✓

RATA: Yes No (circle one)
If yes, circle the units the RATA is based on, and include DS 077 to describe the facility's CEM system.

Calibration Materials Data:

	Constituent	Concentration	Cylinder ID	Protocol?
1	ZERO AIR	NITROGEN	ALM048925	YES / NO
2	CO	150.2	ALM047561	YES / NO
3	CO	281.9	ALM020132	YES / NO
4	CO	1508	ALM09903	YES / NO
5	CO	3972	ALM034231	YES / NO
6	PROPANE	250.1	ALM047573	YES / NO
7	PROPANE	558.2	ALM047541	YES / NO
8	PROPANE	847.1	ALM023336	YES / NO
9	PROPANE	24.78	ALM042121	YES / NO
10	PROPANE	55.43	ALM042200	YES / NO
11	PROPANE	84.81	ALM023879	YES / NO
12				YES / NO
13				YES / NO
14				YES / NO

Comments:

Schematic of Reference Method System:

SOLVAY2016_6_000300

Clean Air Engineering

Scott Specialty Gases, Inc.

OCT 11 1994

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
C A E INSTRUMENT RENTAL
246 WOODWORK LANE
PALATINE, IL 60067

Assay Laboratory
Scott Specialty Gases, Inc
1290 Combermere
Troy, MI 48083

Purchase Order : 12153-71500
Scott Project # : 571378

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : ALM020132
Cylinder Pressure + : 1900 psig
Certificate Date : 10/4/94
Previous Certificate Date : None
Expiration Date : 10/4/97

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Carbon Monoxide	281.9 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM 1681	4/21/96	ALM-024826	966.0 ppm Carbon Monoxide in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
CO : Beckman/864/102528	9/22/94	Non-Dispersive Infrared

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components
Carbon Monoxide

First Triad Analysis

Date: 9/27/94 Response Units: mv

Z1=0.00	R1=100.00	T1=33.20
R2=100.00	Z2=0.00	T2=33.20
Z3=0.00	T3=33.20	R3=100.00

Avg. Conc. of Cust. Cyl. 281.9 ppm

Second Triad Analysis

Date: 10/4/94 Response Units: mv

Z1=0.00	R1=100.00	T1=33.20
R2=100.00	Z2=0.00	T2=33.20
Z3=0.00	T3=33.20	R3=100.00

Avg. Conc. of Cust. Cyl. 281.9 ppm

Calibration Curve

$Concentration = A + Bx + Cx^2 + Dx^3 + Ex^4$

r=1.00000	NTRM 1681
Constants:	A=-0.162760000
B=7.918200000	C=0.017444000
D=0.000000000	E=0.000000000

Special Notes

Customer

Analyst

SOLVAY2016_6_000301

MISP/P-1

Scott Specialty Gases, Inc

AUG 15 19

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
C A E INSTRUMENT RENTAL
246 WOODWORK LANE
PALATINE, IL 60067

Assay Laboratory
Scott Specialty Gases, Inc
1290 Combermere
Troy, MI 48083

Purchase Order : 11785-71500
Scott Project # : 569024

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : ALM047561 **Certificate Date :** 8/6/94 **Expiration Date :** 8/6/97
Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Carbon Monoxide	150.2 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM 1681	4/21/96	ALM-024826	966.0 ppm Carbon Monoxide in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
CO : Beckman/864/102528	7/28/94	Non-Dispersive Infrared

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components
Carbon Monoxide

First Triad Analysis

Date: 7/30/94	Response Units: mv	
Z1=0.00	R1=100.00	T1=18.30
R2=100.00	Z2=0.00	T2=18.30
Z3=0.00	T3=18.30	R3=100.00
Avg. Conc. of Cust. Cyl. 150.6 ppm		

Second Triad Analysis

Date: 8/6/94	Response Units: mv	
Z1=0.00	R1=100.00	T1=18.20
R2=100.00	Z2=0.00	T2=18.20
Z3=0.00	T3=18.20	R3=100.00
Avg. Conc. of Cust. Cyl: 149.7 ppm		

Calibration Curve

Concentration=A+Bx+Cx^2+Dx^3+Ex^4	
r=1.00000	NTRM 1681
Constants:	A=-0.162760000
B=7.918200000	C=0.017444000
D=0.000000000	E=0.000000000

Special Notes

Don Eichler Jr
Analyst

SOLVAY2016_6_000302

MISP/P-1

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
C A E INSTRUMENT RENTAL
246 WOODWORK LANE
PALATINE, IL 60067

Assay Laboratory
Scott Specialty Gases, Inc
1290 Combermere
Troy, MI 48083

Purchase Order : 11072-71500
Scott Project # : 564384

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : ALM042121
Cylinder Pressure + : 1900 psig
Certificate Date : 4/12/94
Previous Certificate Date : None
Expiration Date : 4/12/97

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	24.78 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM 2643A	3/28/98	SX-20290	99.12 ppm Propane in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Propane : Beckman/400/1002059	4/24/94	Flame Ionization Detector

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components
Propane

First Triad Analysis

Date: 4/12/94 Response Units: mv

Z1=0.00	R1=99.10	T1=24.80
R2=99.10	Z2=0.00	T2=24.80
Z3=0.00	T3=24.80	R3=99.10

Avg. Conc. of Cust. Cyl. 24.78 ppm

Second Triad Analysis

Calibration Curve

$Concentration = A + Bx + Cx^2 + Dx^3 + Ex^4$

r=1.00000	SRM 2643A
Constants:	A=-0.034421000
B=1.000500000	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes

Rhonda Lundy
Analyst Rhonda Lundy

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
C A E INSTRUMENT RENTAL
246 WOODWORK LANE
PALATINE, IL 60067

Assay Laboratory
Scott Specialty Gases, Inc
1290 Combermere
Troy, MI 48083

Purchase Order : 12153-71500
Scott Project # : 571394

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : ALM048200 **Certificate Date :** 9/27/94 **Expiration Date :** 9/27/97
Cylinder Pressure + : 1900 psig **Previous Certificate Date :** None

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	55.43 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM 2643A	3/28/98	SX-20290	99.12 ppm Propane in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Propane : Beckman/400/1002059	9/22/94	Flame Ionization Detector

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components
Propane

First Triad Analysis

Date: 9/27/94	Response Units: ppm	
Z1=0.00	R1=99.10	T1=55.25
R2=99.10	Z2=0.00	T2=55.65
Z3=0.00	T3=55.40	R3=99.10
Avg. Conc. of Cust. Cyl. 55.43 ppm		

Second Triad Analysis

Calibration Curve

Concentration=A+Bz+Cz^2+Dz^3+Ez^4	
r=1.00000	SRM 2643A
Constants:	A=-0.034421000
B=1.000500000	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes

Cylinder

Matt L. Buss
Analyst

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
C A E INSTRUMENT RENTAL
246 WOODWORK LANE
PALATINE, IL 60067

Assay Laboratory
Scott Specialty Gases, Inc
1290 Combermere
Troy, MI 48083

Purchase Order : 11475-71500
Scott Project # : 567212

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure .; September, 1993.

Cylinder Number : ALM023879
Cylinder Pressure + : 1900 psig
Certificate Date : 6/16/94
Previous Certificate Date : None
Expiration Date : 6/16/97

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	84.81 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
SRM 2643A	3/28/98	SX-20290	99.12 ppm Propane in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Propane : Beckman/400/1002059	5/25/94	Flame Ionization Detector

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components
Propane

First Triad Analysis

Date 5/16/94 Response Units mv

Z1=0.00	R1=99.10	T1=84.80
R2=99.10	Z2=0.00	T2=84.80
Z3=0.00	T3=84.80	R3=99.10

Avg. Conc. of Cust. Cyl. 84.81 ppm

Second Triad Analysis

Calibration Curve

Concentration=A+Bx+Cx^2+Dx^3+Ex^4

r=1.00000	SRM 2543A
Constants:	A=-0.034421000
B=1.000500000	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes

Analyst Don Eichler Jr.

M/SP/P-1

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
C A E INSTRUMENT RENTAL
246 WOODWORK LANE
PALATINE, IL 60067

Assay Laboratory
Scott Specialty Gases, Inc
1290 Combermere
Troy, MI 48083

Purchase Order : 11785-71500
Scott Project # : 569024

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : ALM047573
Cylinder Pressure + : 1900 psig
Certificate Date : 8/8/94
Previous Certificate Date : None
Expiration Date : 8/8/97

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	250.1 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM 2646	10/14/95	AAL18426	973.2 ppm Propane in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Beckman/400/1002059	8/4/94	Flame Ionization Detection

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components
Propane

First Triad Analysis

Date 8/8/94 Response Units mv

Z1=0.00	R1=97.30	T1=25.00
R2=97.30	Z2=0.00	T2=25.00
Z3=0.00	T3=25.00	R3=97.30

Avg Conc. of Cust. Cyl 250.1 ppm

Second Triad Analysis

Calibration Curve

Concentration=A+Bx+Cx^2+Dx^3+Ex^4

r=1.00000	NTRM 2646
Constants:	A=0.049241000
B=+0.002000000	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes

Ron Eichler Jr
Analyst

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
C A E INSTRUMENT RENTAL
246 WOODWORK LANE
PALATINE, IL 60067

Assay Laboratory
Scott Specialty Gases, Inc
1290 Combermere
Troy, MI 48083

Purchase Order : 11785-71500
Scott Project # : 569024

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : ALM047541
Cylinder Pressure + : 1900 psig
Certificate Date : 8/8/94
Previous Certificate Date : None
Expiration Date : 8/8/97

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	558.2 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM 2646	10/14/95	AAL18426	973.2 ppm Propane in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Beckman/400/1002059	8/4/94	Flame Ionization Detection

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components
Propane

First Triad Analysis

Date: 8/8/94 Response Units: mv

Z1=0.00	R1=97.30	T1=55.80
R2=97.30	Z2=0.00	T2=55.80
Z3=0.00	T3=55.80	R3=97.30

Avg. Conc. of Cust Cyl. 558.2 ppm

Second Triad Analysis

Calibration Curve

Concentration=A+Bx+Cx^2+Dx^3+Ex^4

r=1.00000	NTRM 2646
Constants:	A=0.049241000
B=10.002000000	C=0.000000000
D=0.000000000	E=0.000000000

Special Notes

Don Eichler Jr
Analyst

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (313) 589-2950 FAX: (313) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
CAE INSTRUMENT RENTAL
246 WOODWORK LANE
PALATINE, IL. 60067

Assay Laboratory
Scott Specialty Gases, Inc.
1290 Combermere
Troy, MI 48083

Purchase Order 9294-71500
Scott Project # 555450

ANALYTICAL INFORMATION

Certified to exceed the minimum specifications of EPA Protocol 1 Procedure # G1, Section Number 3.0.4

Cylinder Number ALM-023336
Cylinder Pressure 1900 psig

Certification Date 9-9-93
Previous Certification Dates None

General Exp. Date 9-9-96
Acid Rain Exp. Date 9-9-96

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Propane	847.1 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

*Analytical uncertainty is inclusive of usual known error sources which at least includes reference standard error & precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
CRM 2646	12-31-93	AAL-18432	973.2 ppm Propane in N_2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Prop: Beckman/400/1002059	9-9-93	Flame Ionization Detector

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components	First Triad Analysis	Second Triad Analysis	Calibration Curve
Propane	Date: 9-9-93 Response Units: mv Z1=0.00 R1=96.40 T1=83.90 R2=96.40 Z2=0.00 T2=83.90 Z3=0.00 T3=83.90 R3=96.40 Avg. Conc. of Cust. Cyl. 847.1 ppm		Concentration = $A+Bx+Cx^2+Dx^3+Ex^4$ r=0.99999 CRM 2646 Constants: A=0.7421058 B=10.10758 C=0 D=0 E=0
			Concentration = $A+Bx+Cx^2+Dx^3+Ex^4$
			Concentration = $A+Bx+Cx^2+Dx^3+Ex^4$

Special Notes
If this product is used for Acid Rain Rule Compliance, the *Acid Rain Expiration Date* noted above applies per 40 CFR Part 75, Appendix H. Otherwise, the *General Expiration Date* applies.

SOLVAY2016_6_000308

Don Eichler Jr

Analyst Don Eichler, Jr

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET, TROY, MI 48083 (810) 589-2950 FAX:(810) 589-2134

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
C A E INSTRUMENT RENTAL
246 WOODWORK LANE
PALATINE, IL 60067

Assay Laboratory
Scott Specialty Gases, Inc
1290 Combermere
Troy, MI 48083

Purchase Order : 12153-71500
Scott Project # : 571378

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September, 1993.

Cylinder Number : ALM009903
Cylinder Pressure + : 1900 psig
Certificate Date : 10/4/94
Previous Certificate Date : None
Expiration Date : 10/4/97

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
Carbon Monoxide	1508 ppm	±1% NIST Directly Traceable

Balance Gas: Nitrogen

+Do not use when cylinder presssure is below 150 psig.
*Analytical accuracy is inclusive of usual known error sources which at least include precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
NTRM 2637	6/18/95	ALM-019952	2440 ppm Carbon Monoxide in Nitrogen

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
CO : Beckman/864/102528	9/22/94	Non-Dispersive Infrared

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components
Carbon Monoxide

First Triad Analysis

Date 9/27/94	Response Units: mv	
Z1=0.00	R1=120.00	T1=85.60
R2=120.00	Z2=0.00	T2=85.60
Z3=0.00	T3=85.60	R3=120.00
Avg. Conc. of Cust. Cyl. 1506 ppm		

Second Triad Analysis

Date: 10/4/94	Response Units: mv	
Z1=0.00	R1=120.00	T1=85.80
R2=120.00	Z2=0.00	T2=85.80
Z3=0.00	T3=85.80	R3=120.00
Avg. Conc. of Cust. Cyl. 1511 ppm		

Calibration Curve

Concentration=A+Bx+Cx^2+Dx^3+Ex^4	
r=1.00000	NTRM 2637
Constants	A=0.077551000
B=13.552000000	C=0.024090000
D=0.000270110	E=0.000000000

Special Notes

Customer

Analyst

SOLVAY2016_6_000309

Scott Specialty Gases, Inc.

1290 COMBERMERE STREET
TROY MI 46083
Phone: 313-589-2950 Fax: 313-589-2134

CERTIFICATE OF ANALYSIS

A E INSTRUMENT RENTAL
WOODWORK LANE
ATINE IL 60067

PROJECT #: 05-55452-004
PO#: 9294-71500
ITEM #: 05021453 ZAL
DATE: 9/07/93

YLINDER #: ALM034231 ANALYTICAL ACCURACY: +/-1%

BLEND TYPE : ACUBLEND MASTER GAS

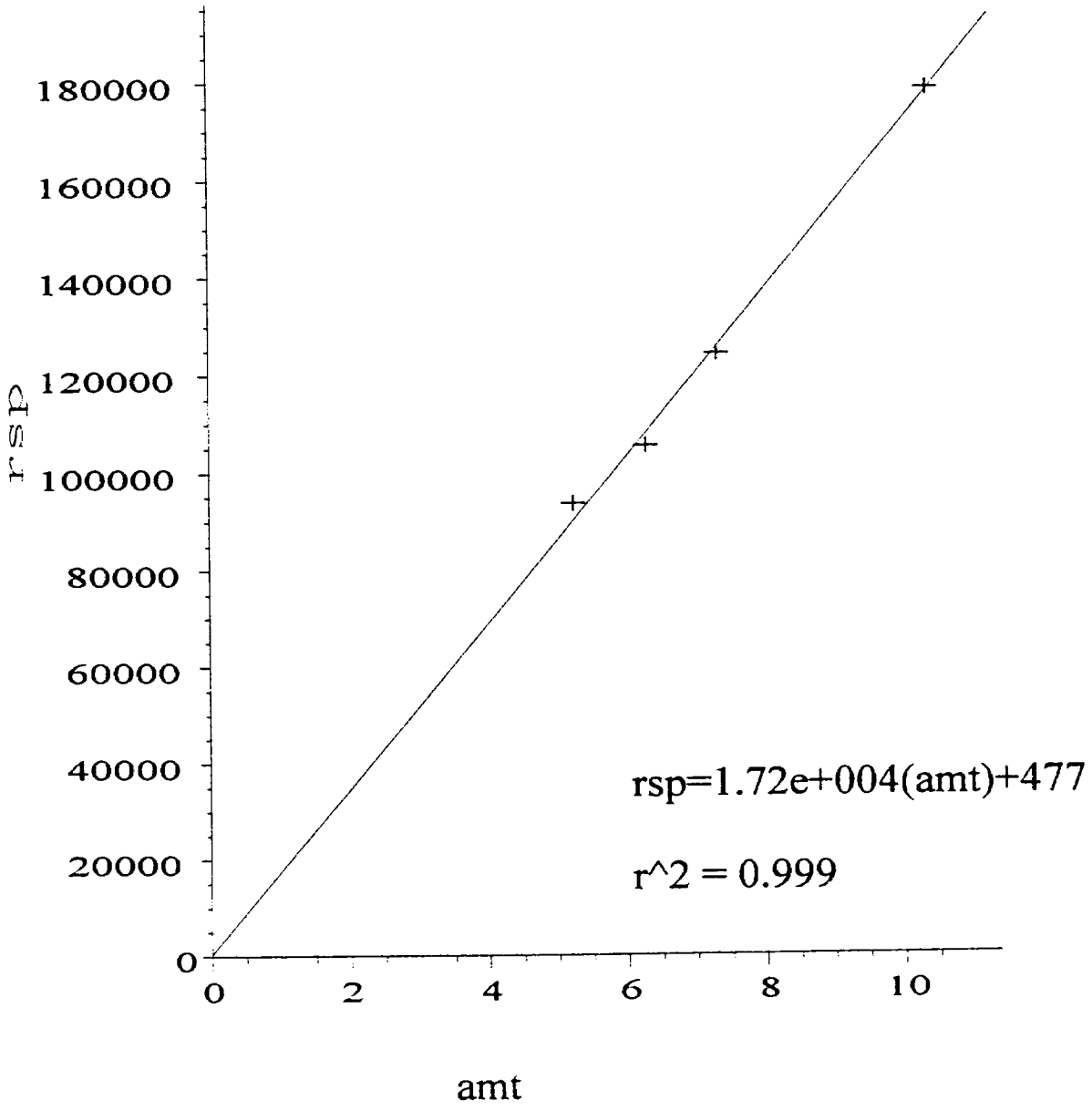
	REQUESTED GAS CONC MOLES		ANALYSIS (MOLES)	
ONENT				
ON MONOXIDE	4,000.	PPM	3,972.	PPM
TROGEN		BAL		BAL

ACUBLEND MASTER GAS
ALM034232 ALM034236

METHOD: AMS
ANALYST: [signature]

SOLVAY2016_6_000310

Butadiene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80000
60000
40000
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rsp
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2
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8
10
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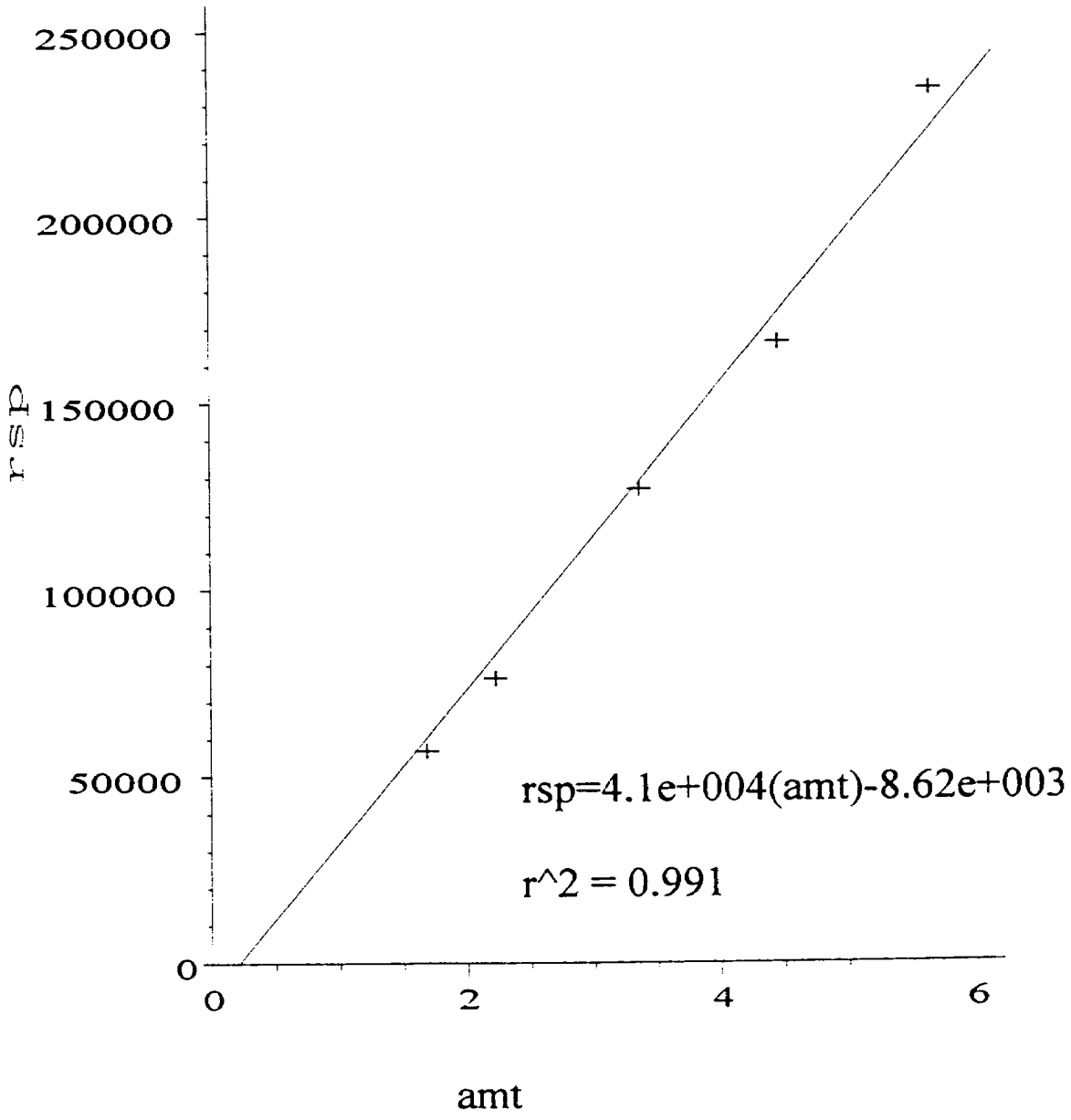
rsp=1.72e+004(amt)+477
r^2 = 0.999

Hexane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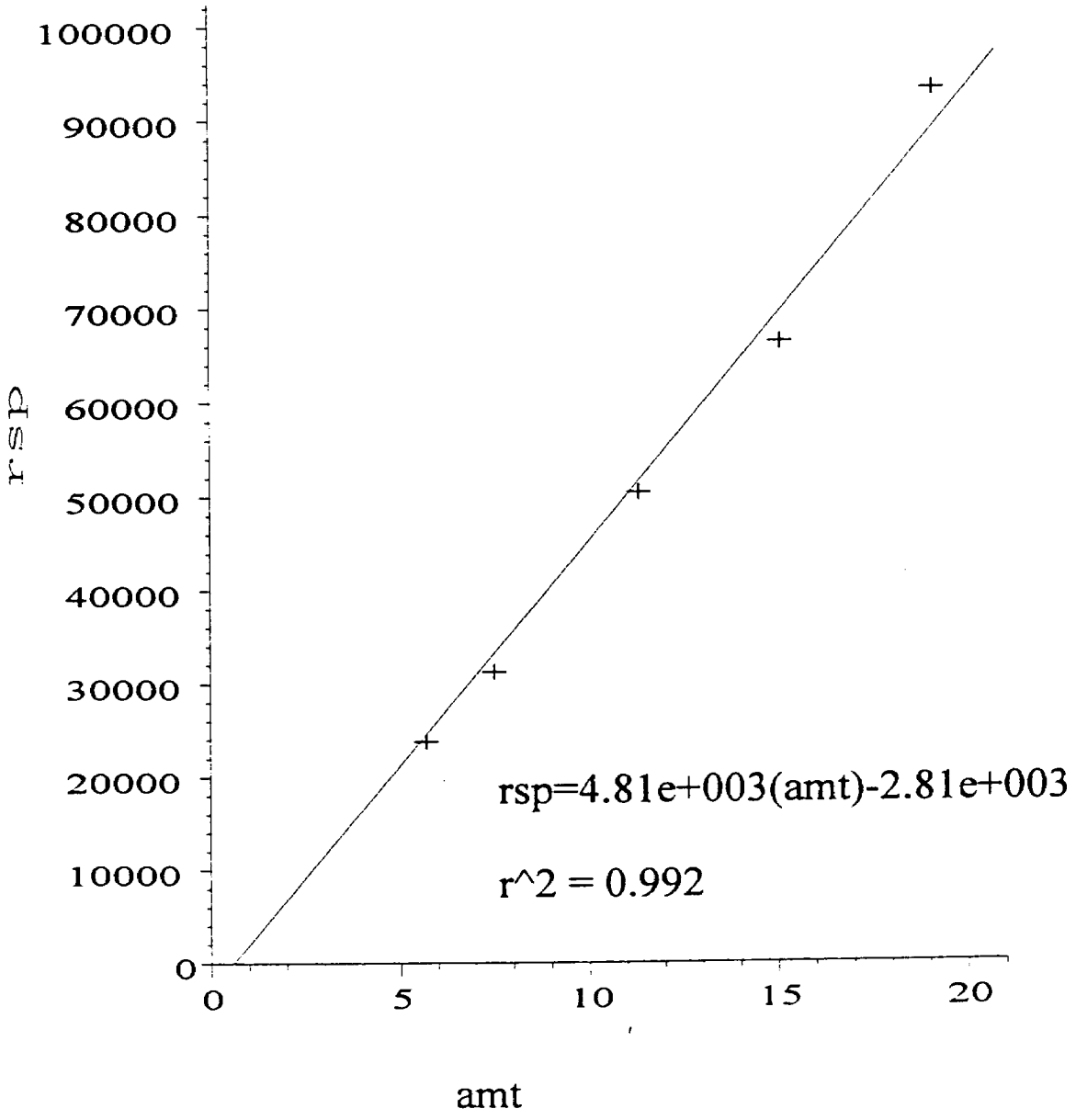
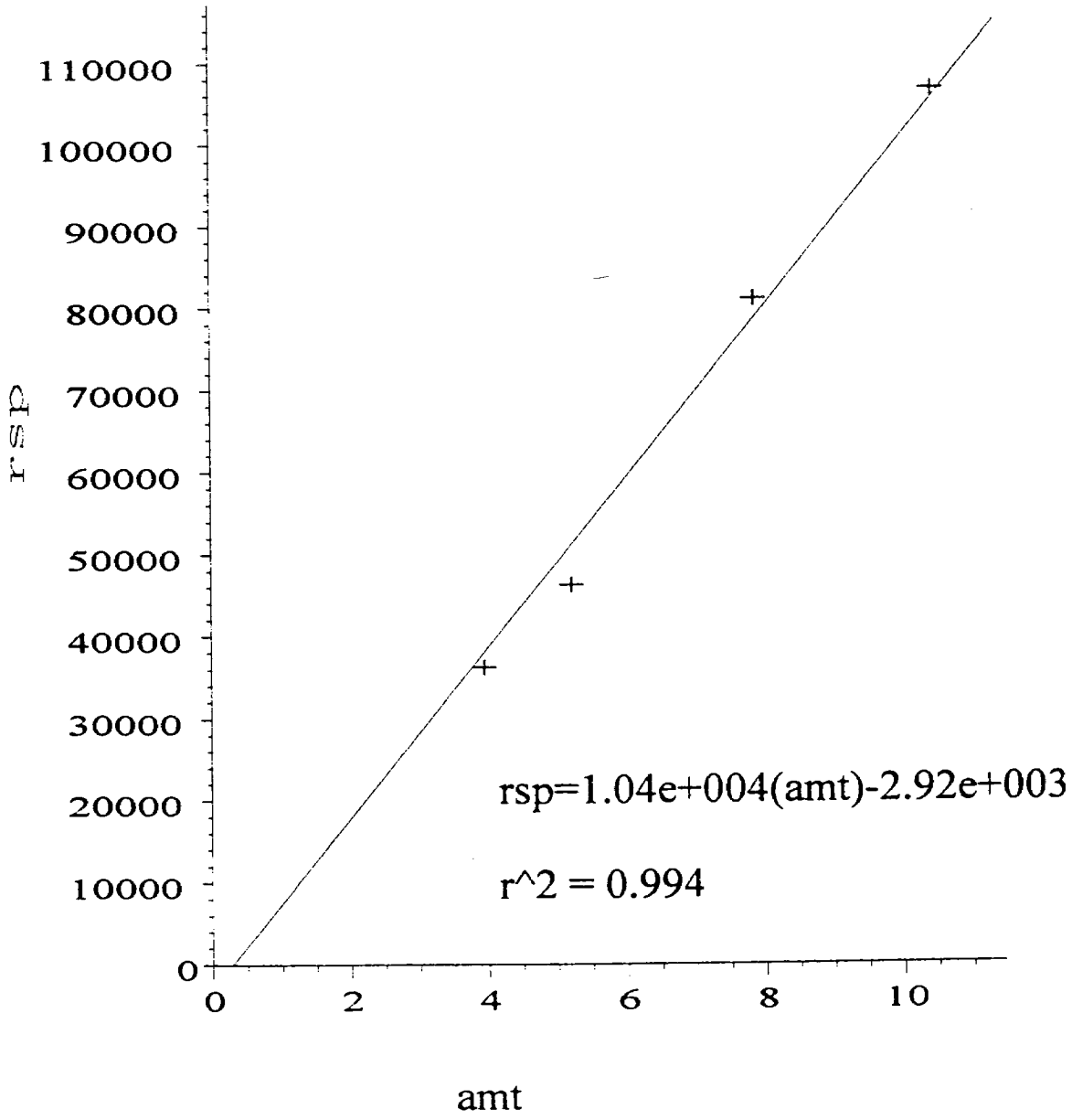
rsp
0
2
4
6
amt
rsp=4.1e+004(amt)-8.62e+003
r^2 = 0.991

Methylene Chloride



TCE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10000
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rsp
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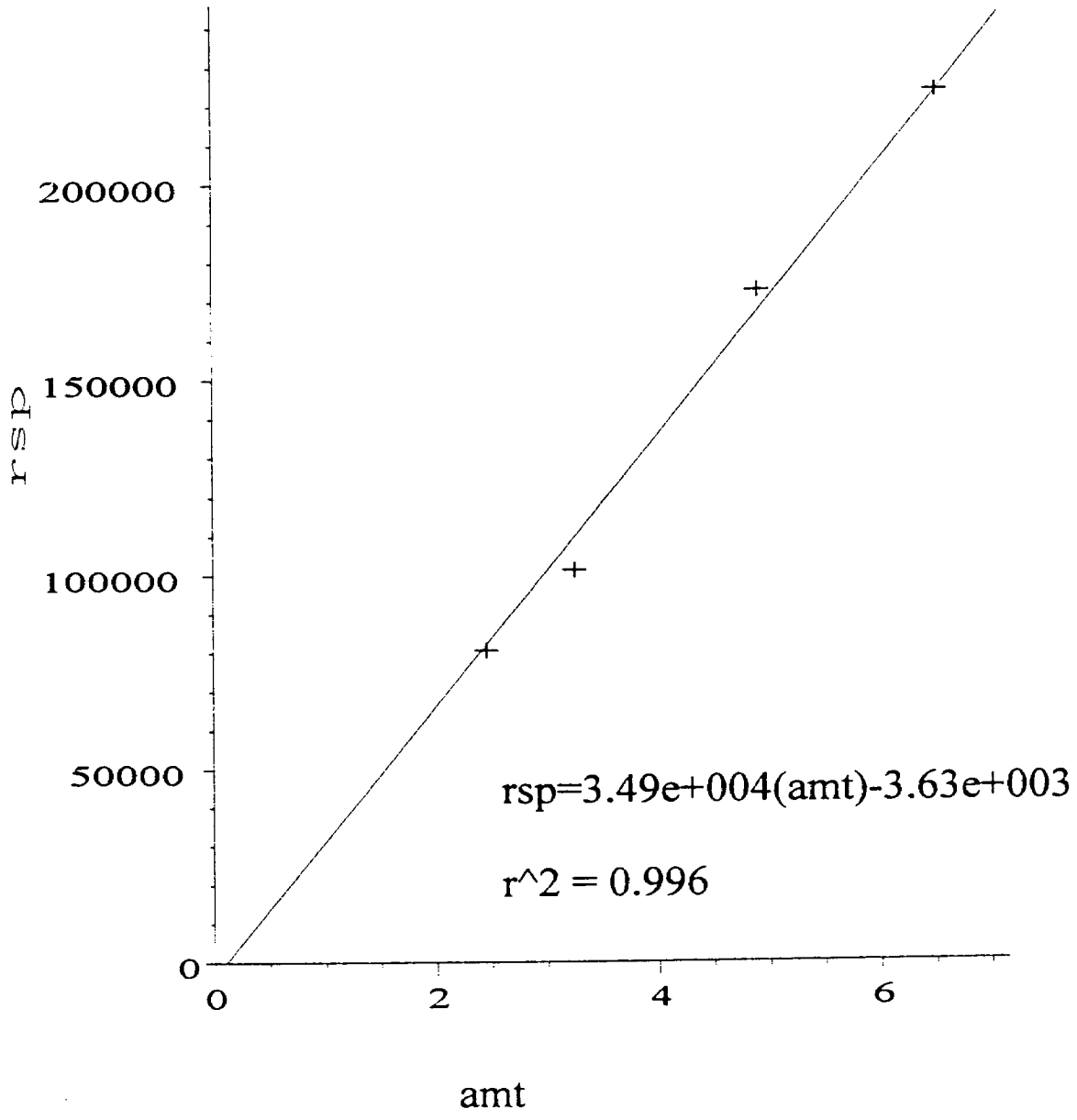
2
4
6
8
10
amt
rsp=1.04e+004(amt)-2.92e+003
r^2 = 0.994

Benzene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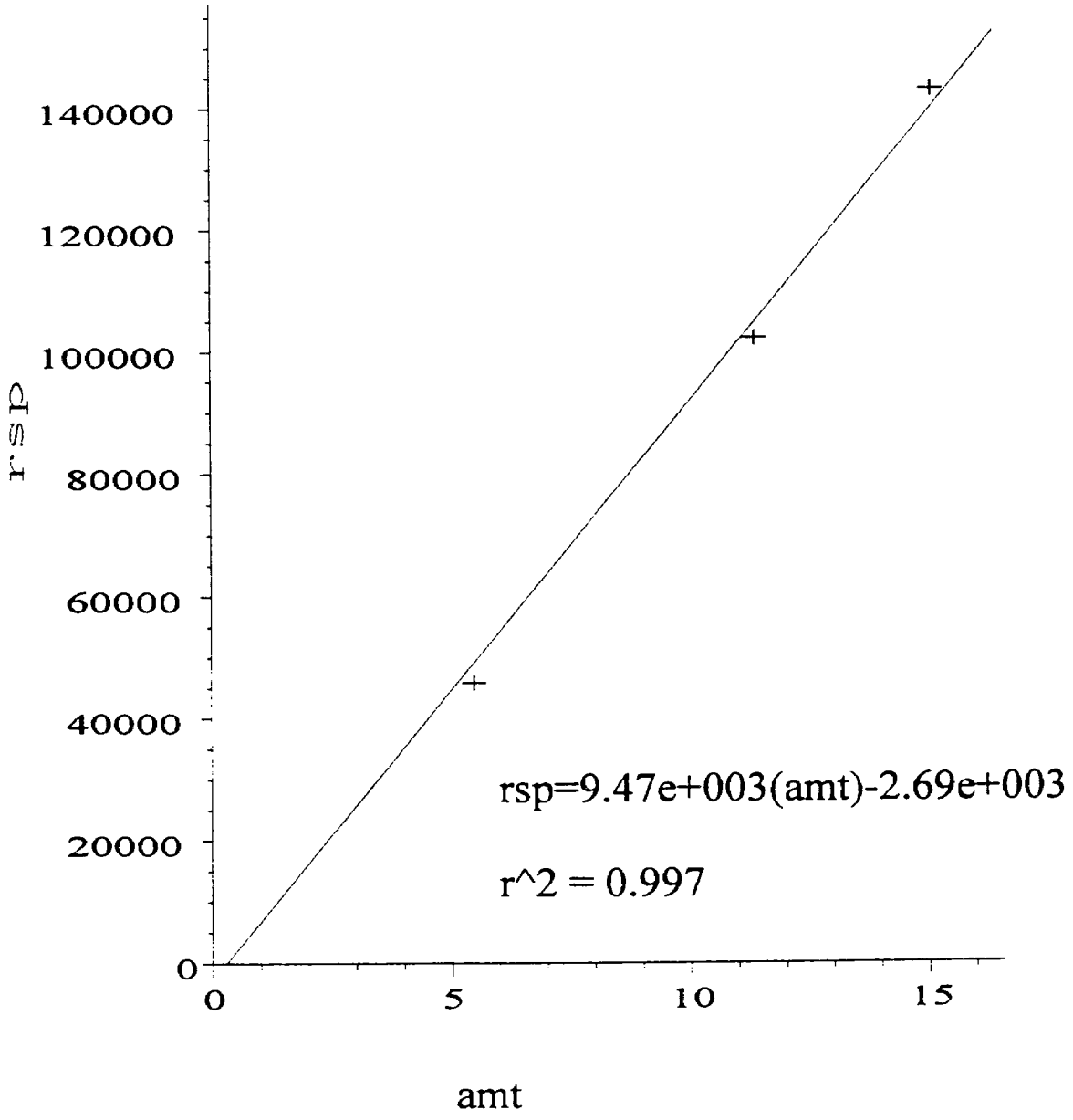
r^2 = 0.996

MEK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20000
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rsp
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amt
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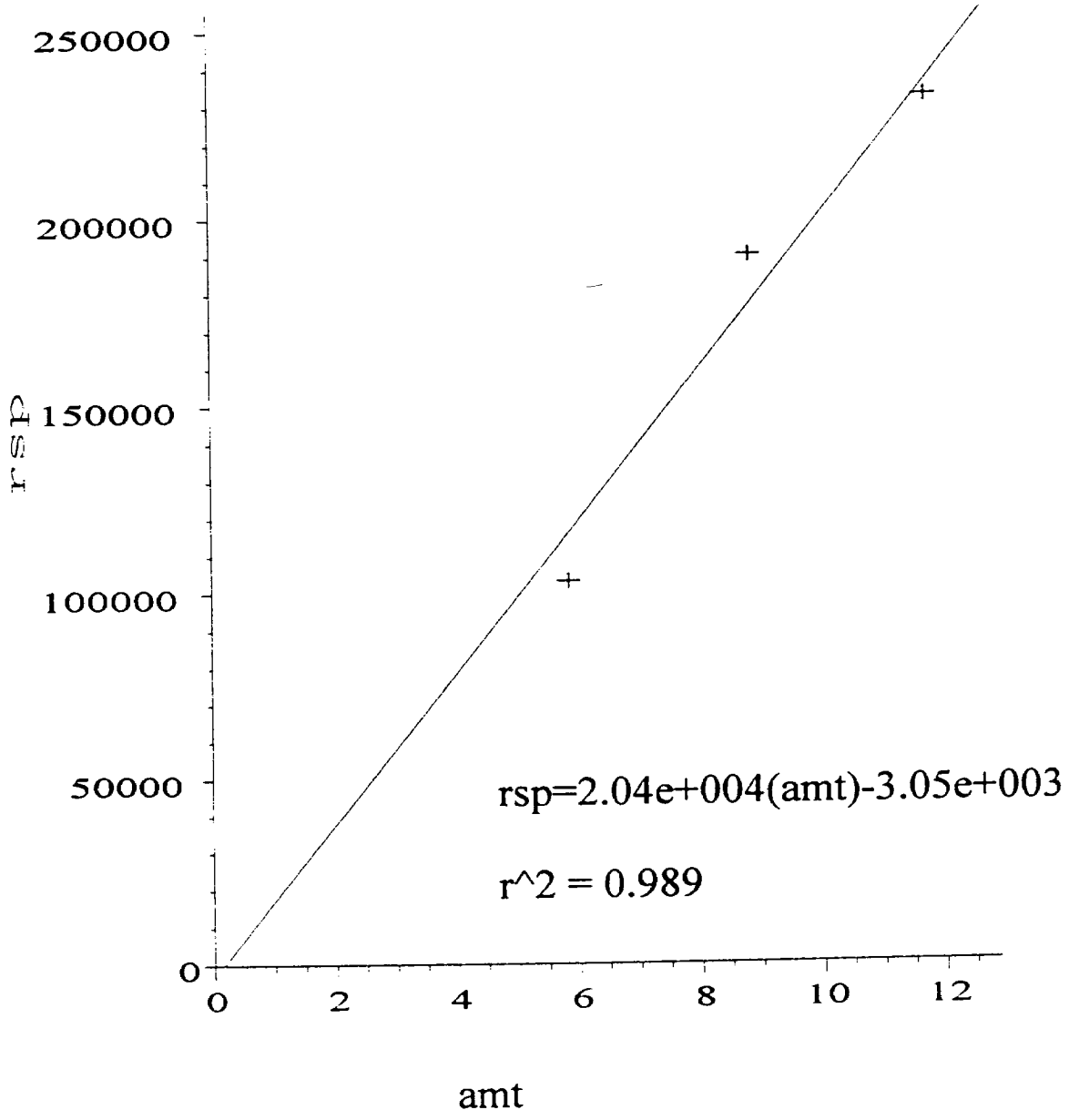
r^2 = 0.997

Toluene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rsp
0
2
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6
8
10
12
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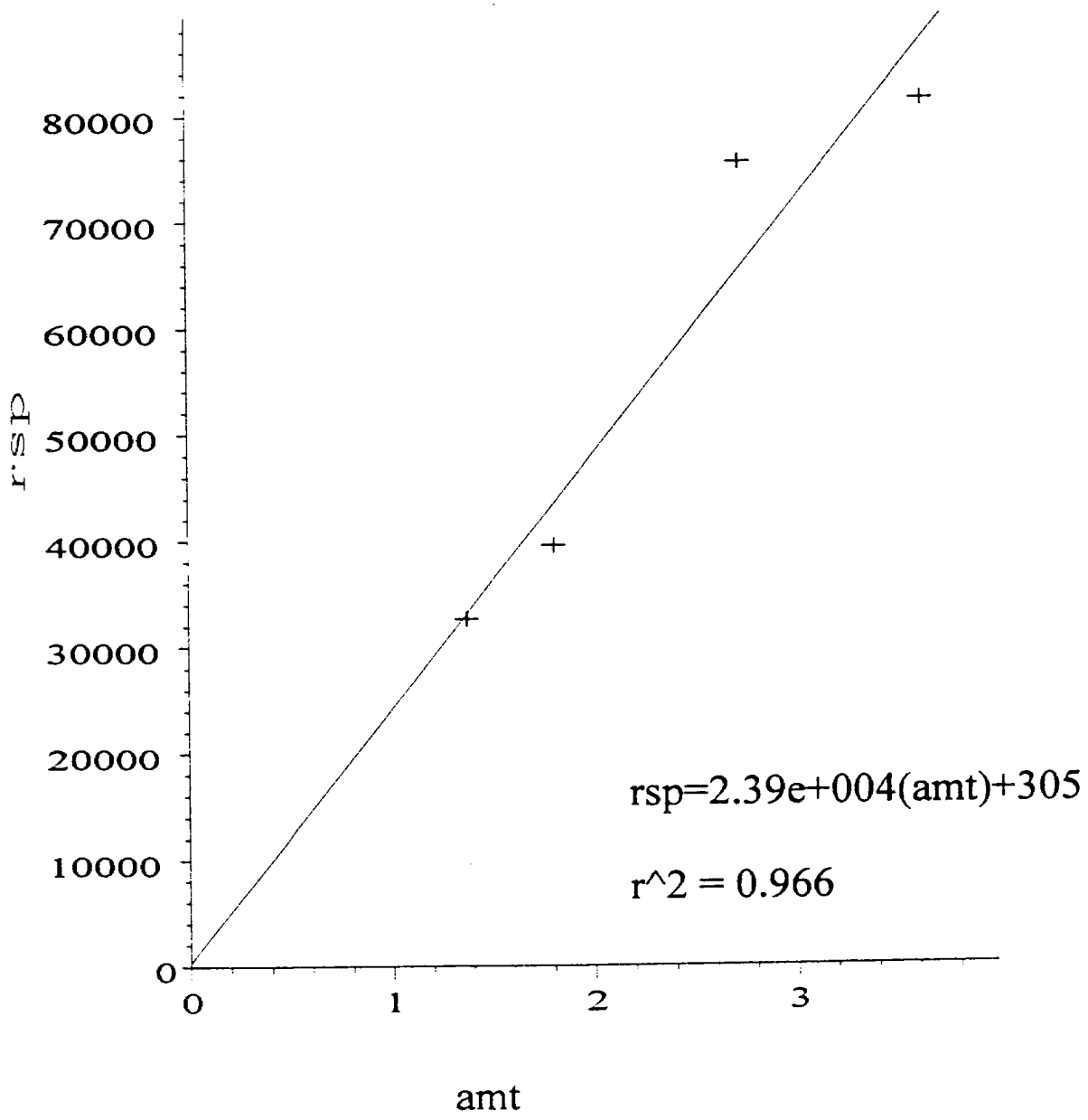
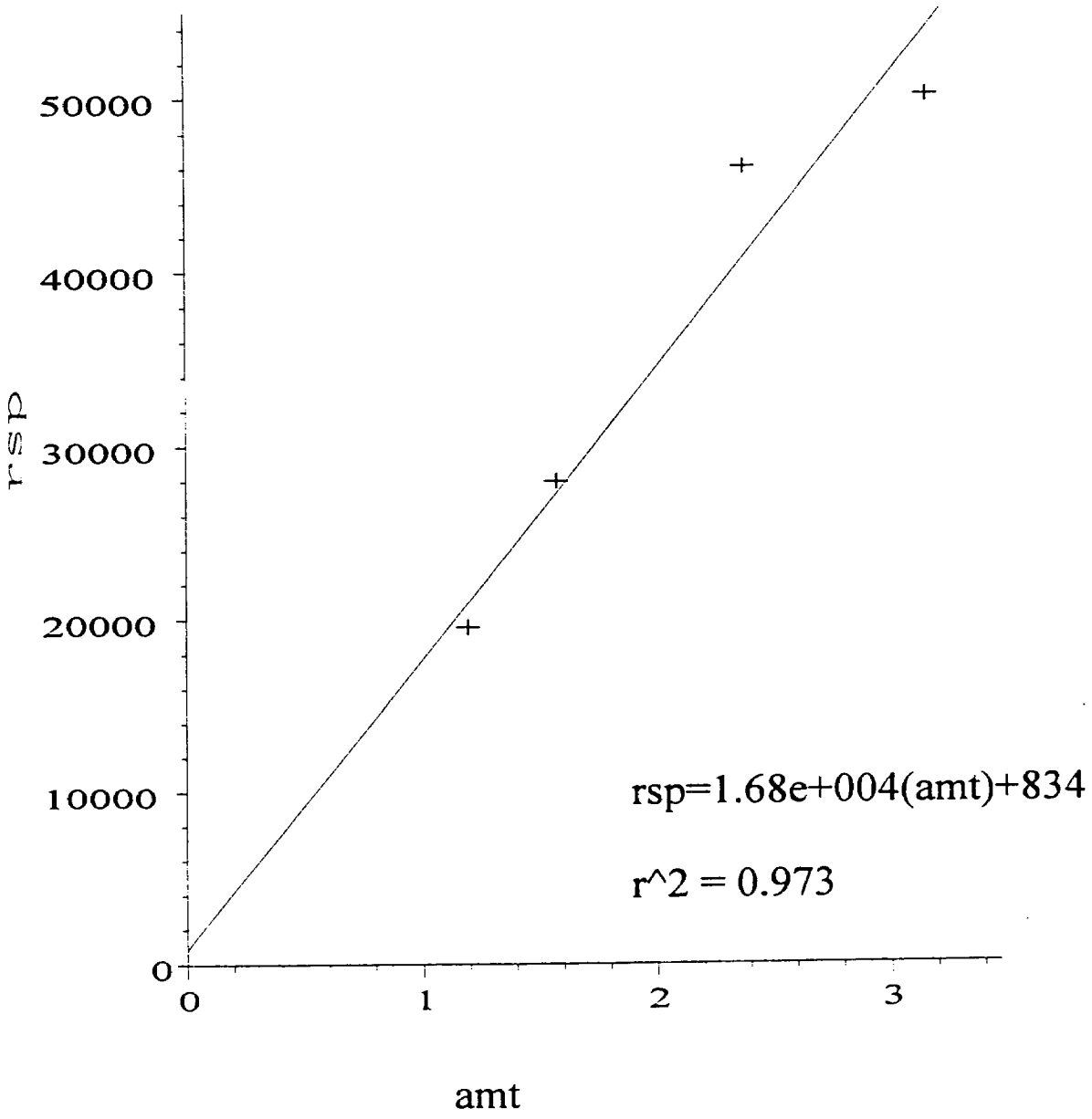
r^2 = 0.989

Ethyl Benzene



p-Xylene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rsp
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2
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amt
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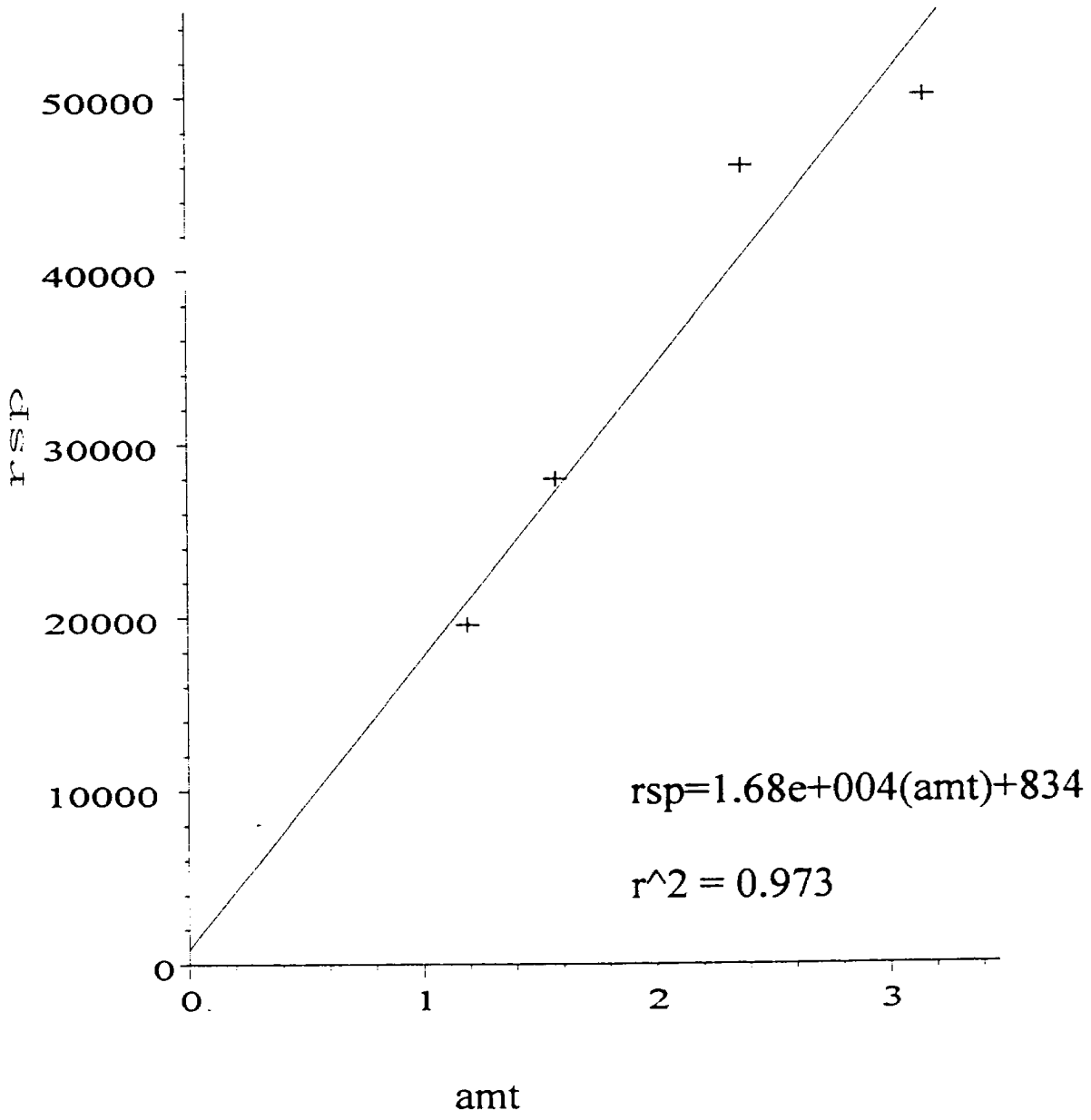
r^2 = 0.973

m-Xylene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rsp
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1
2
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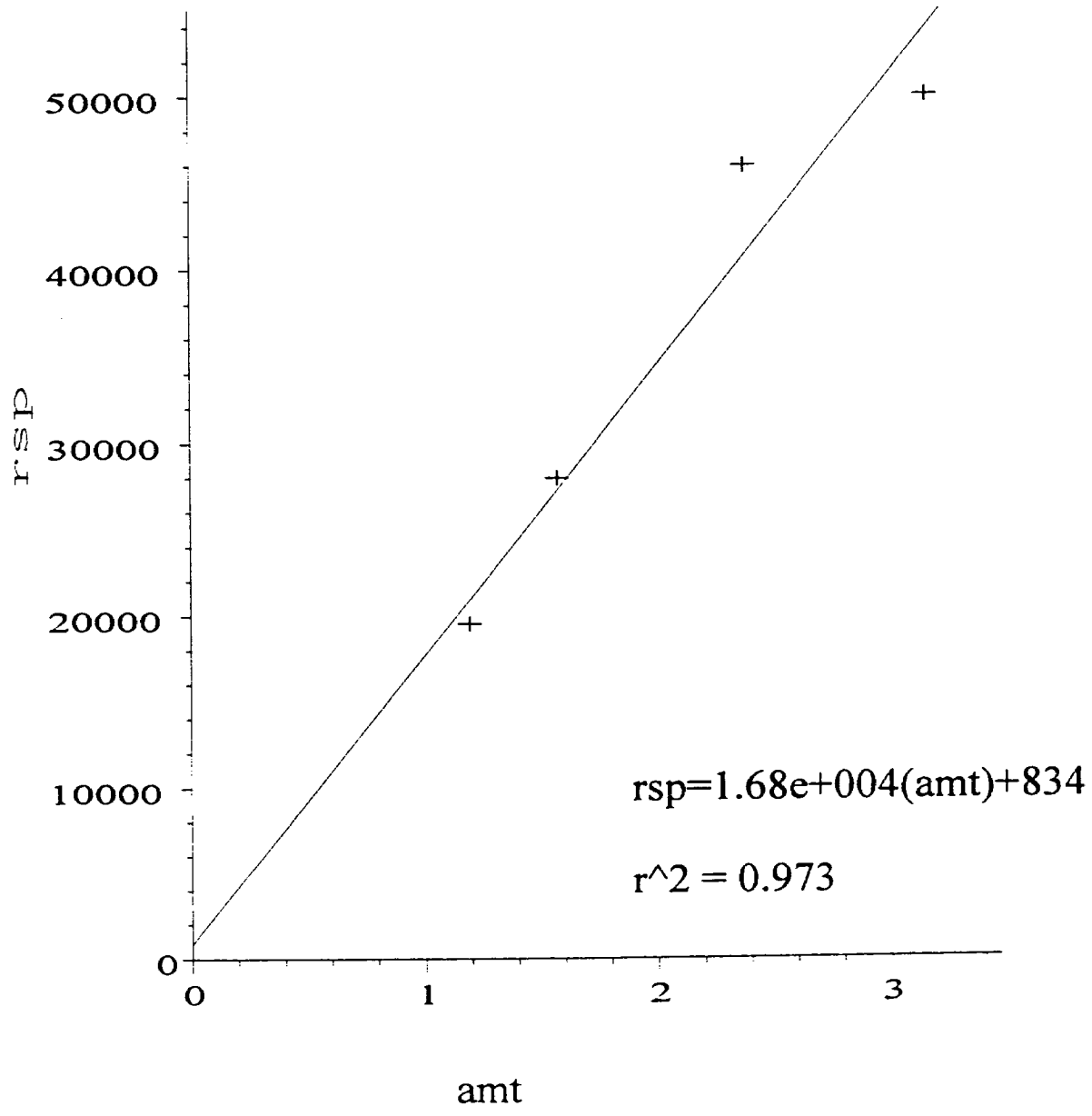
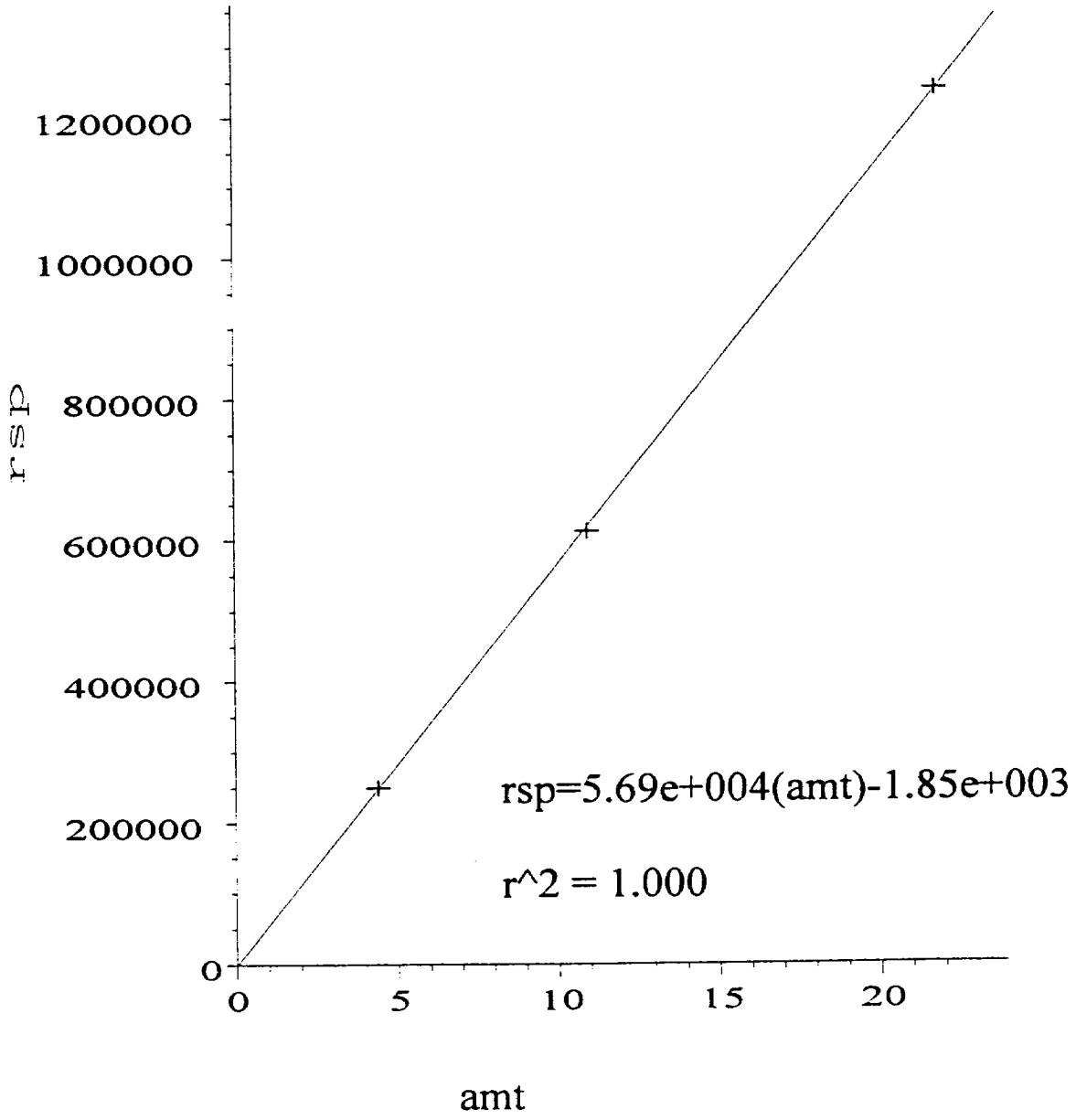
amt
rsp=1.68e+004(amt)+834
r^2 = 0.973

o-Xylene


50000
40000
30000
20000
10000
0
rsp
0
1
2
3
amt
rsp=1.68e+004(amt)+834
r^2 = 0.973

Styrene


1200000
1000000
800000
600000
400000
200000
0
rsp
0
5
10
15
20
amt
rsp=5.69e+004(amt)-1.85e+003
r^2 = 1.000

Calibration Table

#	RT	Lvl	ppm	Amt/Area	Ref Istd	I#	Name
1	1.004	1	10.34	5.796e-005		1	Butadiene
		3	7.29	5.8655e-005			
		4	5.22	5.5687e-005			
		5	6.27	5.9418e-005			
2	1.980	1	5.65	2.4157e-005		1	Hexane
		2	2.22	2.913e-005			
		3	4.45	2.6806e-005			
		4	3.35	2.6402e-005			
		5	1.68	2.9548e-005			
3	3.226	1	19.09	2.0504e-004		1	Methylene Chloride
		2	7.49	2.4014e-004			
		3	15.04	2.2692e-004			
		4	11.31	2.2439e-004			
		5	5.67	2.383e-004			
4	3.869	2	5.19	1.123e-004		1	TCE
		3	10.41	9.7713e-005			
		4	7.83	9.6717e-005			
		5	3.93	1.0868e-004			
5	6.085	2	3.24	3.2029e-005		1	Benzene
		3	6.5	2.9062e-005			
		4	4.89	2.8317e-005			
		5	2.45	3.0432e-005			
6	7.300	1	5.46	1.1927e-004		1	MEK
		3	15.06	1.0532e-004			
		4	11.33	1.1094e-004			
7	11.804	1	11.33	0.0001		1	Acrylonitrile
8	12.132	2	5.83	5.6519e-005		1	Toluene
		3	11.71	5.049e-005			
		4	8.81	4.6413e-005			
9	15.601	2	1.8	4.5547e-005		1	Ethyl Benzene
		3	3.62	4.4538e-005			
		4	2.72	3.6029e-005			
		5	1.37	4.2076e-005			
10	16.004	2	1.57	5.6158e-005		1	p-Xylene
		3	3.15	6.2977e-005			
		4	2.37	5.1558e-005			
		5	1.19	6.0935e-005			
11	16.368	2	1.57	5.6158e-005		1	m-Xylene
		3	3.15	6.2977e-005			
		4	2.37	5.1558e-005			
		5	1.19	6.0935e-005			
12	16.720	2	1.57	5.6158e-005		1	o-Xylene
		3	3.15	6.2977e-005			
		4	2.37	5.1558e-005			
		5	1.19	6.0935e-005			
13	17.771	3	21.75	1.7566e-005		1	Styrene
		4	10.91	1.7822e-005			
		5	4.37	1.7587e-005			

Method Information

Solvay Method for the following compounds: acrylonitrile, benzene, 1,3-butadiene, ethylbenzene, n-hexane, 1,1,1-trichloroethane, methylene chloride, styrene, toluene, xylene, 2-butanone, trichloroethene.
GC Conditions: 5% SP1200, 1.75% Bentone on 100/120 mesh Supplecort.
Init=50 time=5.00 rate=10 final=100 time=2.5 rate=20 final=120 time=7.00 total run time=19.00 Gas Sample Loop=5ml

Integration Events

Events:	Value:	Time:
Initial Area Reject	1	INITIAL
Initial Peak Width	0.040	INITIAL
Shoulder Detection	OFF	INITIAL
Initial Threshold	2	INITIAL
Threshold	0	2.250
Threshold	3	5.134
Threshold	1	7.847
Threshold	4	10.763
Threshold	1	13.312
Threshold	2	14.730
Threshold	0	17.413

Calibration Settings

Title:

Reference window:	5.000 %
Non-reference window:	15.000 %
Units of amount:	ppm
Multiplier:	1.0
DF uncal peaks:	0.0
ISTD# to adjust uncal peaks:	0
Sample Amount:	0.0

Sample ISTD Information

No Sample ISTD Amounts

Multilevel Information

Fit: Linear
Origin: Include

SOLVAY MINERALS
CAE Project No. 7473
4/26/95

Compounds Of Interest

Cmpd	den	mol wt
Butadiene	na	54.09
Hexane	0.663	86.18
Methylene Chloride	1.326	84.94
Trichloroethane	1.442	133.41
Benzene	0.879	78.11
2-Butanone	0.805	72.10
Acrylonitrile	0.806	53.06
Toluene	0.866	92.14
Ethylbenzene	0.867	106.17
Xylene	0.860	106.16
Styrene	0.906	104.14

Stock Standard 1

Air

pre flow (cc/min)	post flow (cc/min)	time (min)	tot vol (ft3)
736	736	13	0.338

Other Constituents

	vol liquid (ul)
Hexane	300
Methylene Chloride	500
Trichloroethane	500
Benzene	300
2-Butanone	200
Toluene	200
Ethylbenzene	200

SOLVAY2016_6_000325

SOLVAY MINERALS
CAE Project No. 7473
4/26/95

Results For Stock Standard 1

Total Gas Volume

(ft3)
0.359

Concentrations

	(ppm)
Hexane	5461
Methylene Chloride	18461
Trichloroethane	12783
Benzene	7985
2-Butanone	5283
Toluene	4447
Ethylbenzene	3864

Stock Standard 2

Air

pre flow (cc/min)	post flow (cc/min)	time (min)	tot vol (ft3)
736	736	13	0.338

Other Constituents

	vol liquid (ul)
Hexane	300
Methylene Chloride	500
Trichloroethane	500
Benzene	300
2-Butanone	700
Toluene	400
Ethylbenzene	200
Xylene	200

SOLVAY2016_6_000326

SOLVAY MINERALS
CAE Project No. 7473
4/26/95

Results For Stock Standard 2

Total Gas Volume

(ft3)
0.367

Concentrations

	(ppm)
Hexane	5346
Methylene Chloride	18072
Trichloroethane	12514
Benzene	7817
2-Butanone	18102
Toluene	14074
Ethylbenzene	4354
Xylene	3783

Working Standards

WS1

air

pre flow (cc/min)	post flow (cc/min)	time (min)
742	744	13.00

other constituents

10 ml stock 1
100 ul Butadiene

concentrations

	(ppm)
Hexane	5.65
Methylene Chloride	19.09
Trichloroethane	13.22
Benzene	8.26
2-Butanone	5.46
Toluene	4.60
Ethylbenzene	4.00
Butadiene	10.34

SOLVAY2016_6_000327

SOLVAY MINERALS
CAE Project No. 7473
4/26/95

WS2

air

pre flow (cc/min)	post flow (cc/min)	time (min)
744	740	13.00

other constituents

4 ml stock 2
0 ul Butadiene

concentrations

	(ppm)
Hexane	2.22
Methylene Chloride	7.49
Trichloroethane	5.19
Benzene	3.24
2-Butanone	7.50
Toluene	5.83
Ethylbenzene	1.80
Xylene	1.57

WS3

air

pre flow (cc/min)	post flow (cc/min)	time (min)
740	738	13.00

other constituents

8 ml stock 2
70 ul Butadiene
1.0 ul Styrene

concentrations

	(ppm)
Hexane	4.45
Methylene Chloride	15.04
Trichloroethane	10.41
Benzene	6.50
2-Butanone	15.06
Toluene	11.71
Ethylbenzene	3.62
Xylene	3.15
Butadiene	7.29
Styrene	21.75

SOLVAY2016_6_000328

SOLVAY MINERALS
CAE Project No. 7473
4/26/95

WS4

air

pre flow (cc/min)	post flow (cc/min)	time (min)
738	736	13.00

other constituents

6 ml stock 2
50 ul Butadiene
0.5 ul Styrene

concentrations

	(ppm)
Hexane	3.35
Methylene Chloride	11.31
Trichloroethane	7.83
Benzene	4.89
2-Butanone	11.33
Toluene	8.81
Ethylbenzene	2.72
Xylene	2.37
Butadiene	5.22
Styrene	10.91

WS5

air

pre flow (cc/min)	post flow (cc/min)	time (min)
736	735	13.00

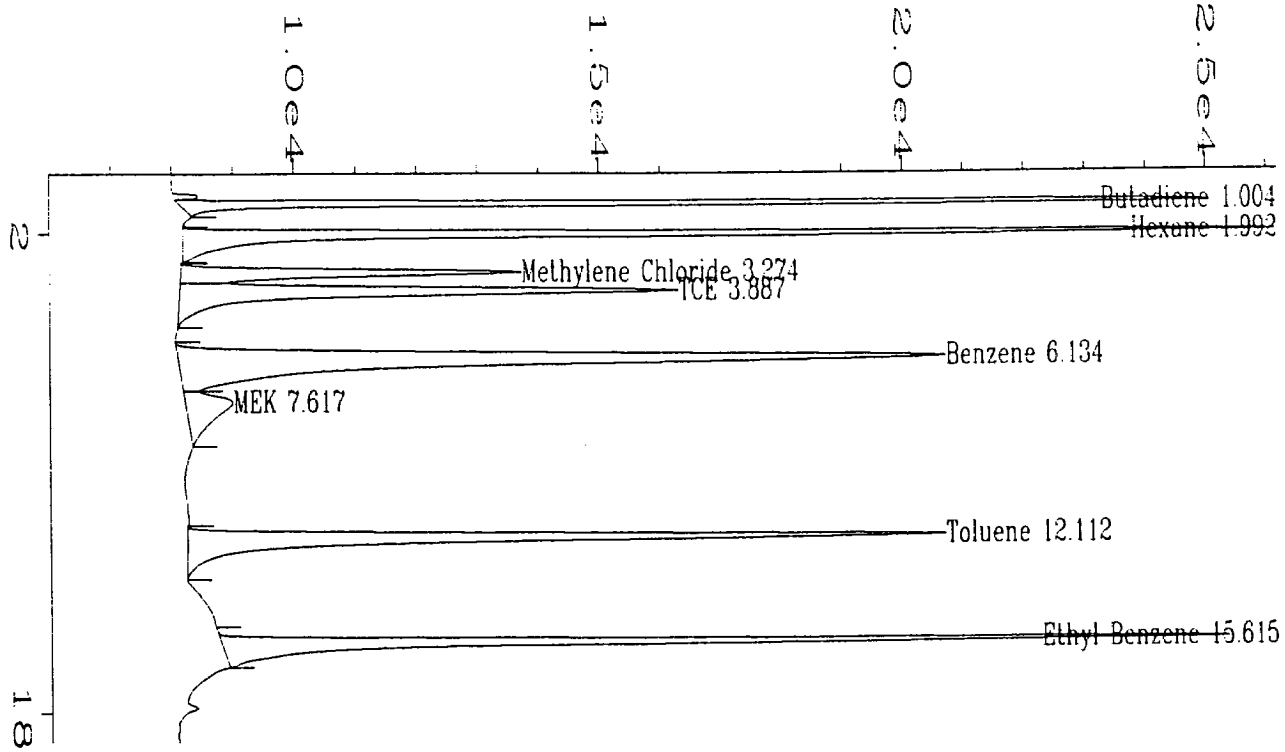
other constituents

3 ml stock 2
20 ul Butadiene
0.2 ul Styrene

concentrations

	(ppm)
Hexane	1.68
Methylene Chloride	5.67
Trichloroethane	3.93
Benzene	2.45
2-Butanone	5.68
Toluene	4.41
Ethylbenzene	1.37
Xylene	1.19
Butadiene	6.27
Styrene	4.37

SOLVAY2016_6_000329



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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS1_0001.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 07:58 PM
Report Created on: 03 May 95 01:20 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Fig. 1 in D:\SOLVAY\CAL\WS1_0001.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.004	182706	16937	PB	0.178	11.6607
2	1.992	241980	17970	BB	0.209	15.4437
3	3.274	94365	5566	BV	0.260	6.0226
4	3.887	167634	8187	VB	0.304	10.6988
5	6.134	361448	12623	BV	0.424	23.0684
6	7.617	43436	780	VB	0.766	2.7722
7	12.112	242742	12476	BV	0.285	15.4924
8	15.615	232540	16576	BB	0.209	14.8412

Total area = 1566851

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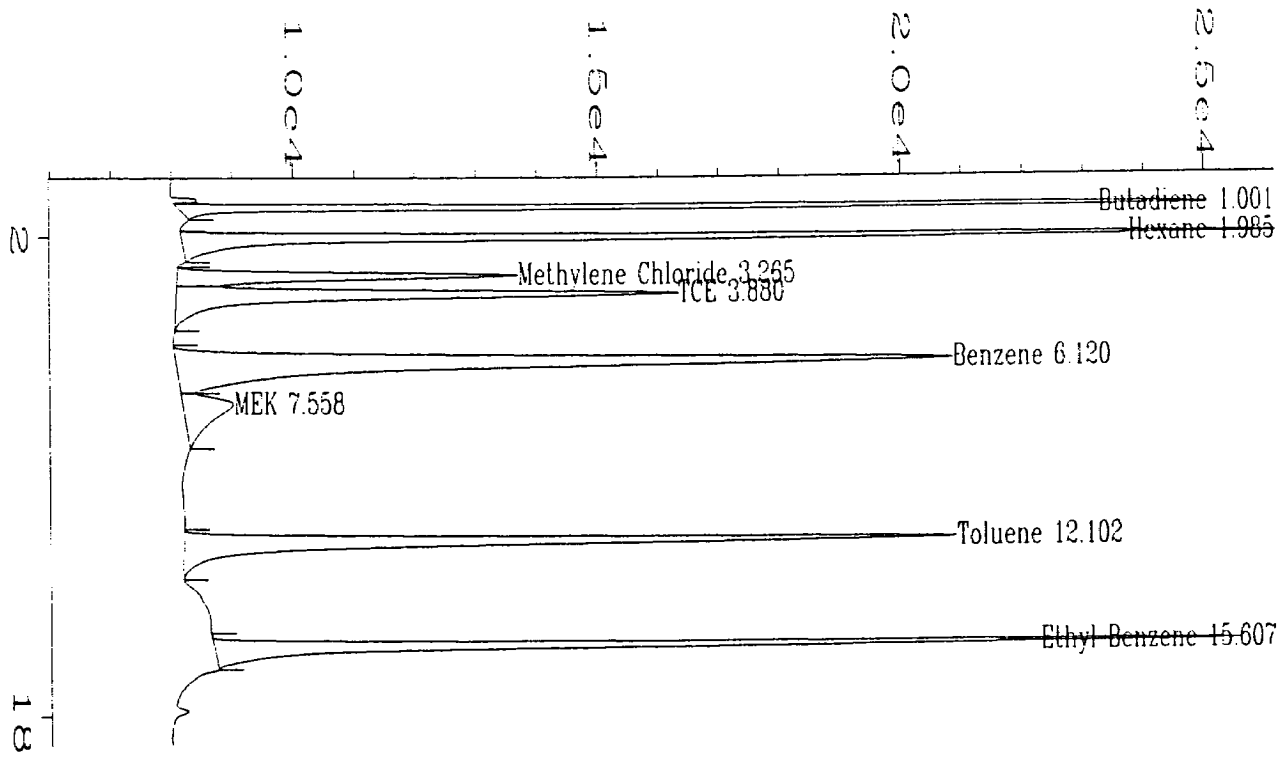

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS1_0002.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 08:44 PM
Report Created on: 03 May 95 01:20 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Sig. 1 in D:\SOLVAY\CAL\WS1_0002.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.001	177140	16943	PB	0.172	11.6522
2	1.985	232002	18321	BB	0.198	15.2610
3	3.265	92746	5594	BV	0.255	6.1008
4	3.880	164285	8257	VB	0.296	10.8066
5	6.120	352436	12789	BV	0.409	23.1830
6	7.558	45167	834	VB	0.737	2.9711
7	12.102	234384	12731	BV	0.272	15.4176
8	15.607	222073	16898	BB	0.198	14.6078

Total area = 1520234

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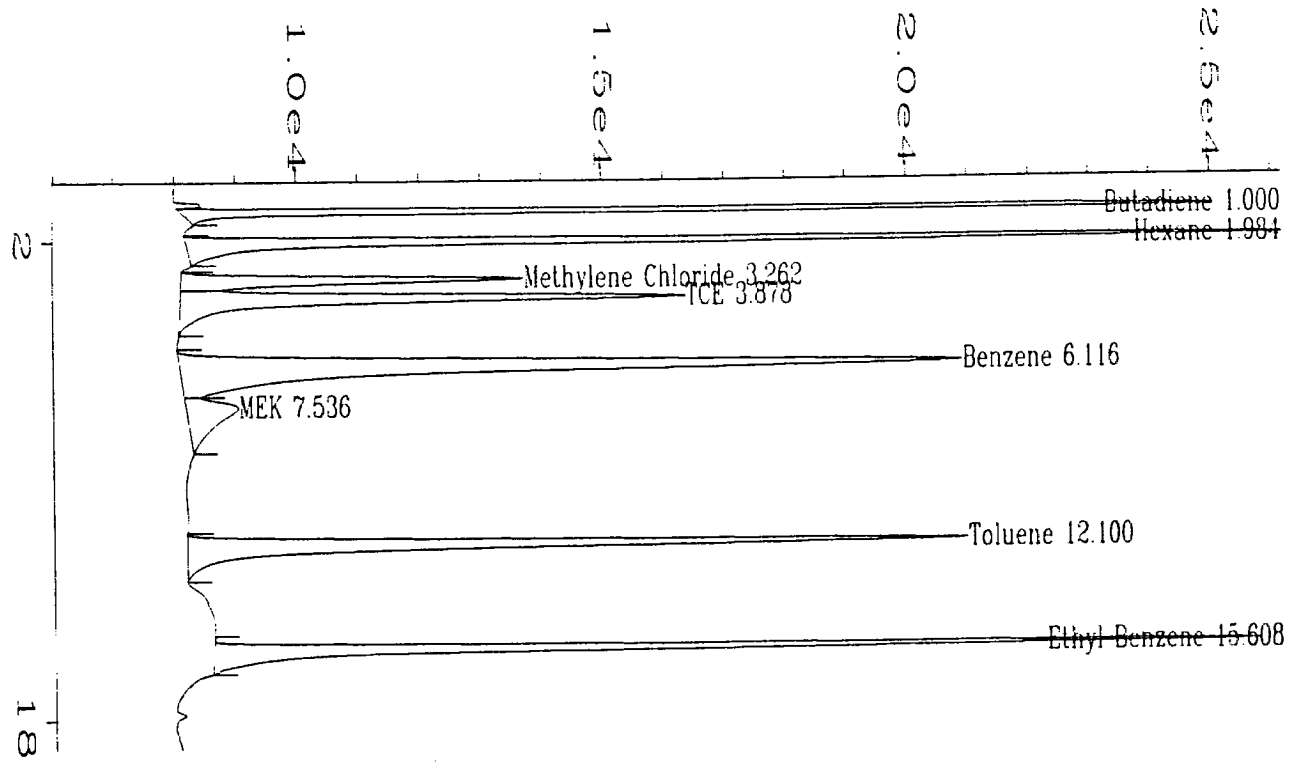

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS1_0003.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 09:06 PM
Report Created on: 03 May 95 01:21 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Fig. 1 in D:\SOLVAY\CAL\WS1_0003.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.000	176692	16943	PB	0.172	11.5141
2	1.984	231132	18352	BB	0.197	15.0617
3	3.262	92774	5610	BV	0.254	6.0456
4	3.878	165137	8286	VB	0.296	10.7611
5	6.116	354632	12843	BV	0.410	23.1096
6	7.536	47390	864	VB	0.750	3.0882
7	12.100	236913	12806	BV	0.273	15.4384
8	15.608	229897	17188	BB	0.201	14.9812

Total area = 1534567

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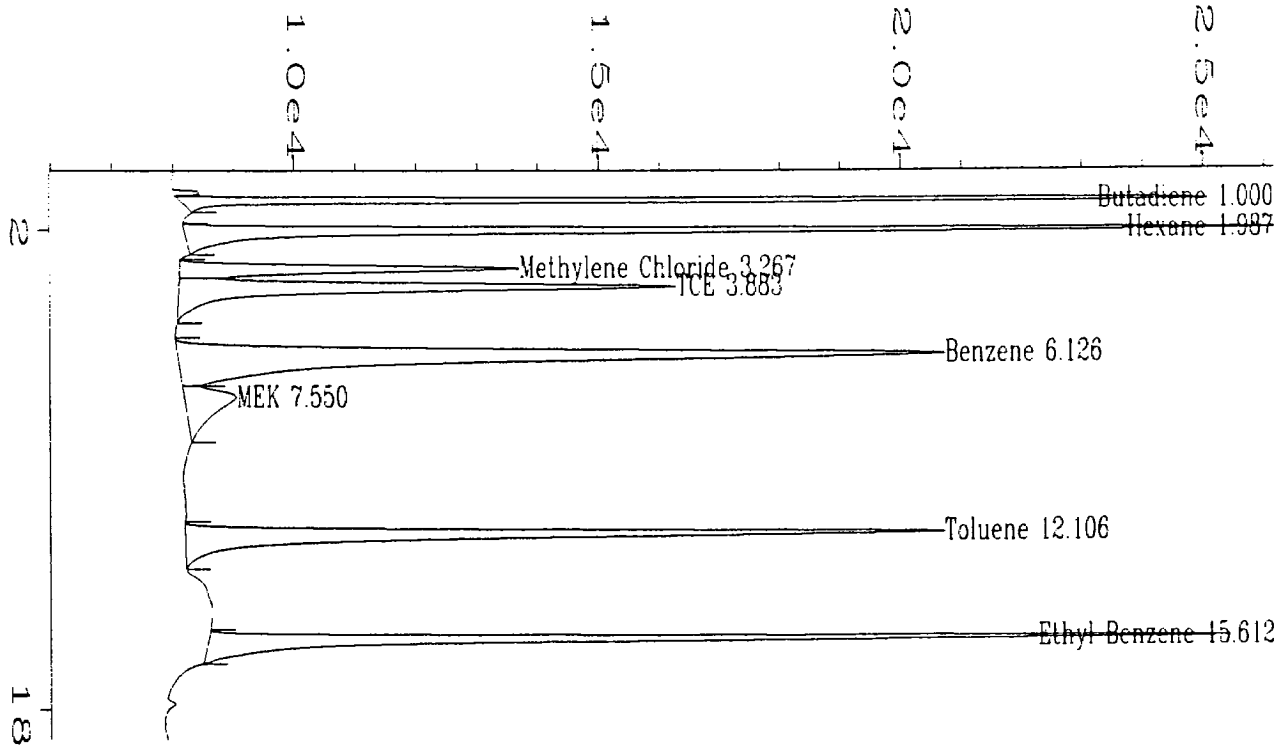

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS1_0004.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 09:28 PM
Report Created on: 03 May 95 01:21 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Sig. 1 in D:\SOLVAY\CAL\WS1_0004.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.000	177063	16951	PB	0.172	11.5335
2	1.987	230451	18140	BB	0.199	15.0111
3	3.267	92525	5568	BV	0.252	6.0269
4	3.883	164862	8181	VB	0.299	10.7388
5	6.126	354532	12656	BV	0.419	23.0935
6	7.550	47119	853	VB	0.745	3.0693
7	12.106	236078	12529	BV	0.277	15.3777
8	15.612	232569	16874	BB	0.206	15.1491

Total area = 1535198

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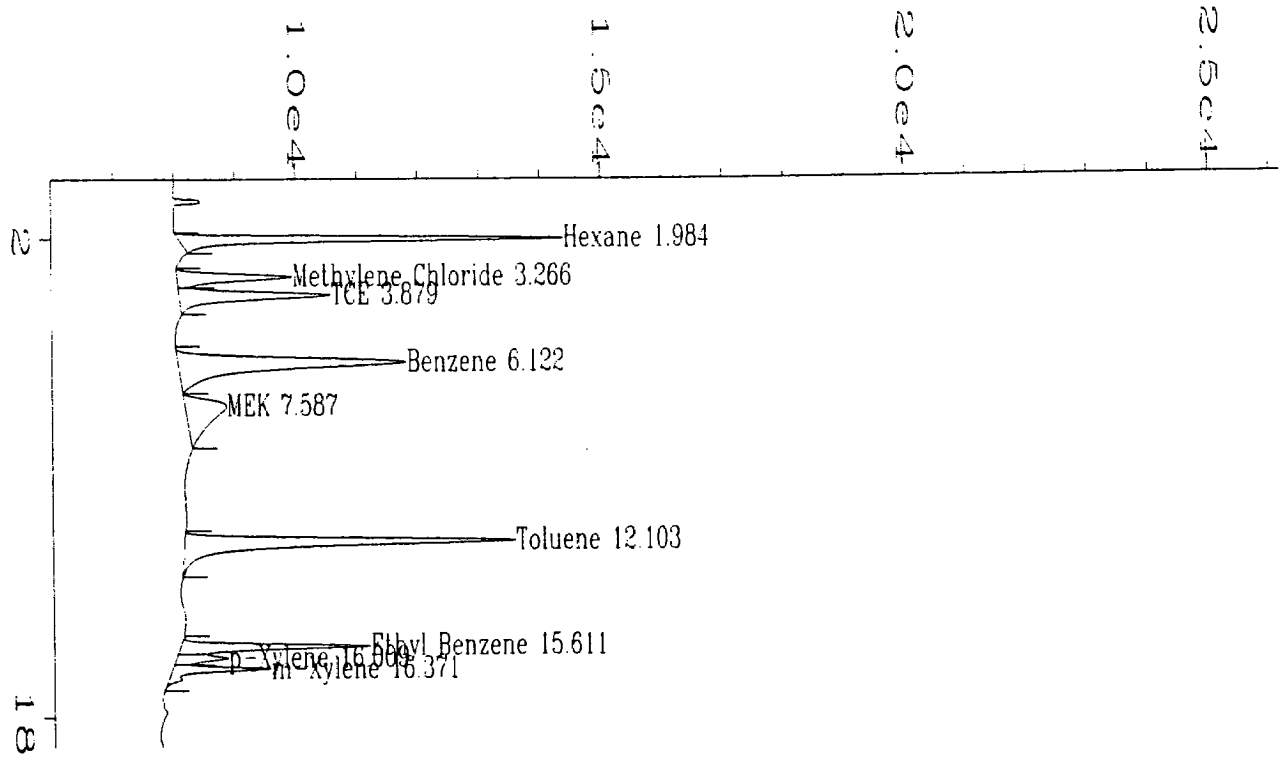

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS2_0001.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 09:50 PM
Report Created on: 03 May 95 01:22 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Sig. 1 in D:\SOLVAY\CAL\WS2_0001.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.984	75406	6309	BB	0.186	16.4308
2	3.266	30904	1890	BV	0.244	6.7338
3	3.879	45547	2489	VB	0.280	9.9246
4	6.122	99521	3743	BV	0.396	21.6853
5	7.587	35482	677	VB	0.728	7.7314
6	12.103	100146	5441	BB	0.272	21.8214
7	15.611	40109	3118	BV	0.195	8.7397
8	16.009	11559	854	VV	0.199	2.5187
9	16.371	20259	1625	VB	0.183	4.4144

Total area = 458932

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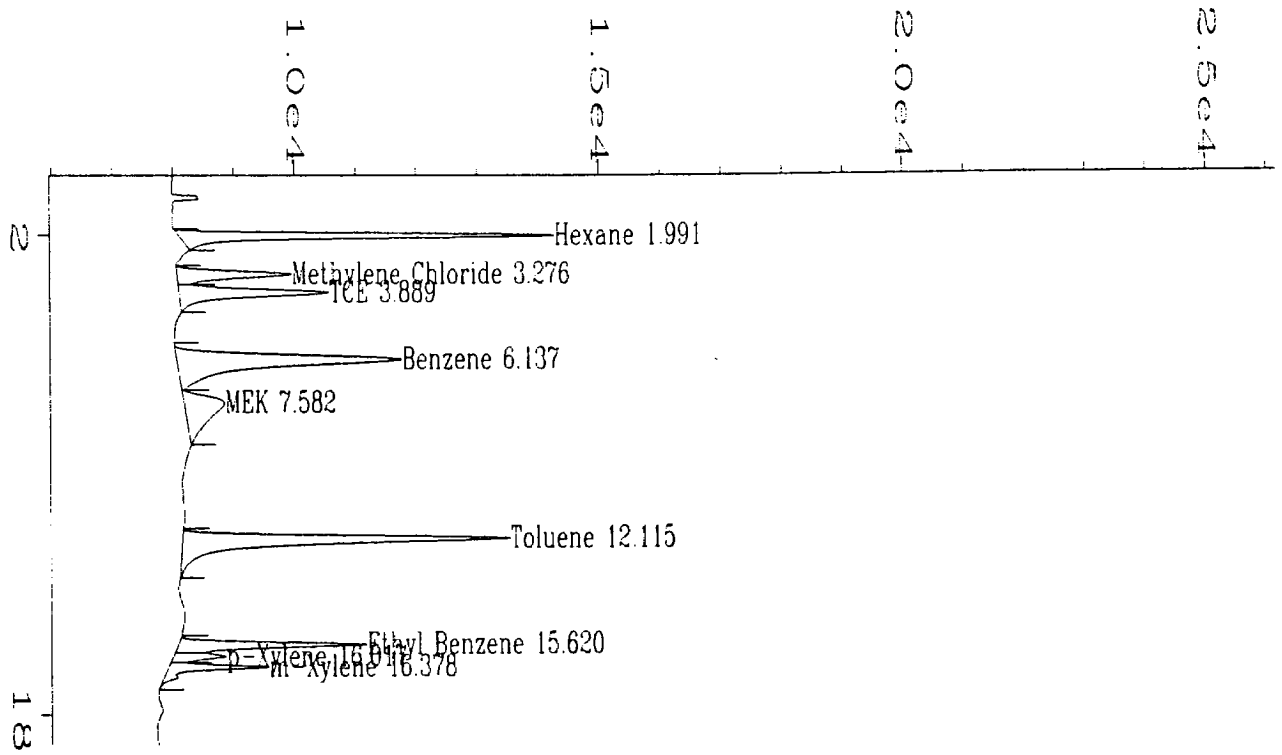

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS2_0002.D
erator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 10:19 PM
Report Created on: 03 May 95 01:23 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Sig. 1 in D:\SOLVAY\CAL\WS2_0002.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.991	76451	6181	BB	0.196	16.1695
2	3.276	31356	1889	BV	0.247	6.6318
3	3.889	46591	2467	VB	0.286	9.8540
4	6.137	102988	3704	BV	0.410	21.7822
5	7.582	35605	665	VB	0.744	7.5306
6	12.115	106595	5386	BB	0.289	22.5450
7	15.620	40641	3107	BV	0.198	8.5956
8	16.017	11752	869	VV	0.200	2.4857
9	16.378	20830	1651	VB	0.185	4.4056

Total area = 472808

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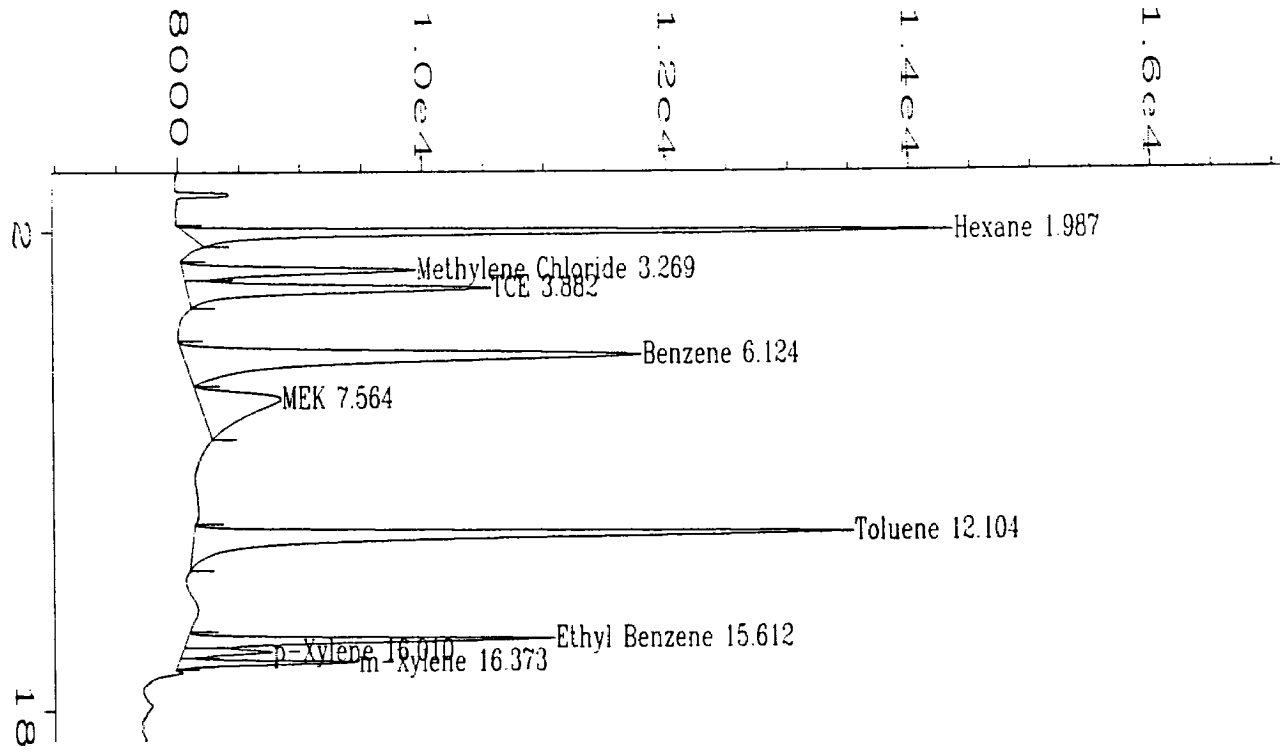

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS2_0003.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 10:41 PM
Report Created on: 03 May 95 01:23 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Fig. 1 in D:\SOLVAY\CAL\WS2_0003.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.987	76522	6305	BB	0.193	16.9996
2	3.269	31131	1906	BV	0.248	6.9159
3	3.882	45935	2494	VB	0.277	10.2045
4	6.124	99844	3756	BV	0.399	22.1806
5	7.564	35187	679	VB	0.728	7.8170
6	12.104	100909	5419	BB	0.274	22.4171
7	15.612	37730	3019	BV	0.191	8.3819
8	16.010	9001	733	VV	0.184	1.9996
9	16.373	13882	1469	VV	0.148	3.0838

Total area = 450140

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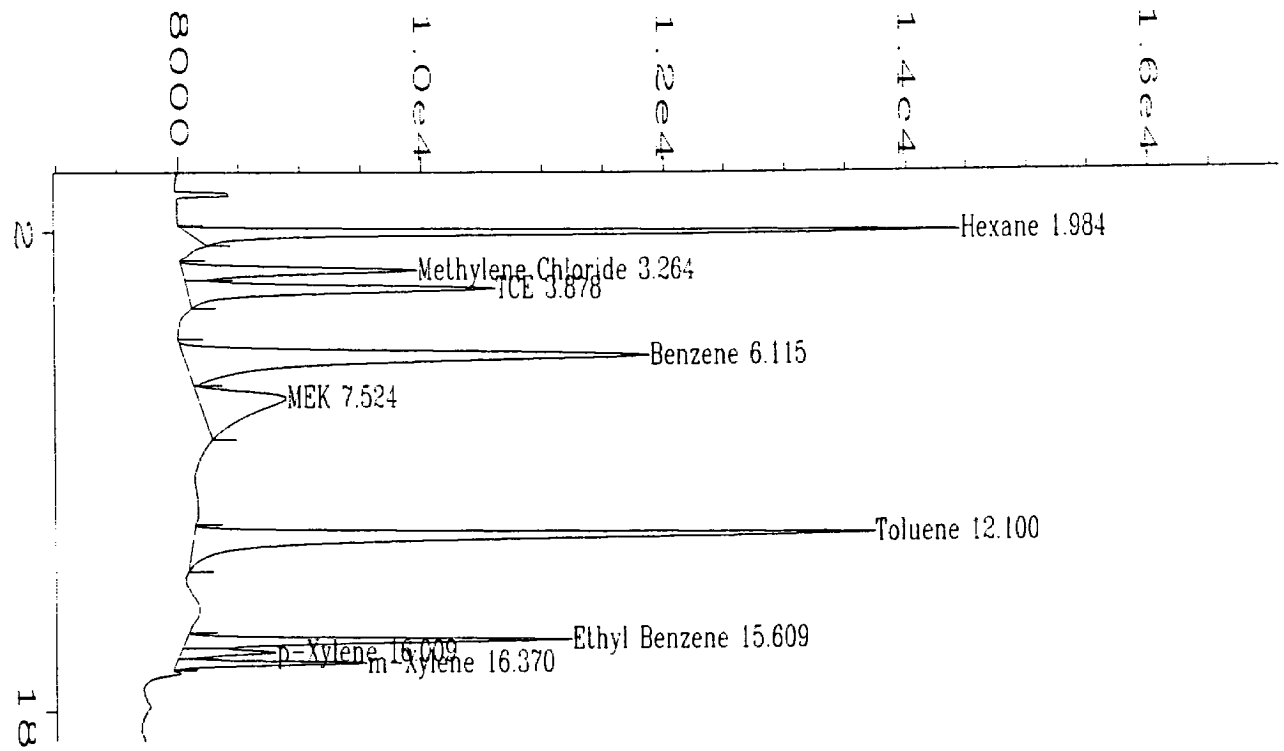

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS2_0004.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 11:03 PM
Report Created on: 03 May 95 01:24 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Sig. 1 in D:\SOLVAY\CAL\WS2_0004.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.984	76461	6367	BB	0.192	16.4855
2	3.264	31367	1929	BV	0.247	6.7630
3	3.878	46796	2541	VB	0.280	10.0896
4	6.115	102273	3836	BV	0.396	22.0507
5	7.524	37811	724	VB	0.722	8.1522
6	12.100	104956	5615	BB	0.275	22.6292
7	15.609	39600	3181	BV	0.190	8.5379
8	16.009	9726	782	VV	0.187	2.0970
9	16.370	14818	1565	VV	0.148	3.1948

Total area = 463809

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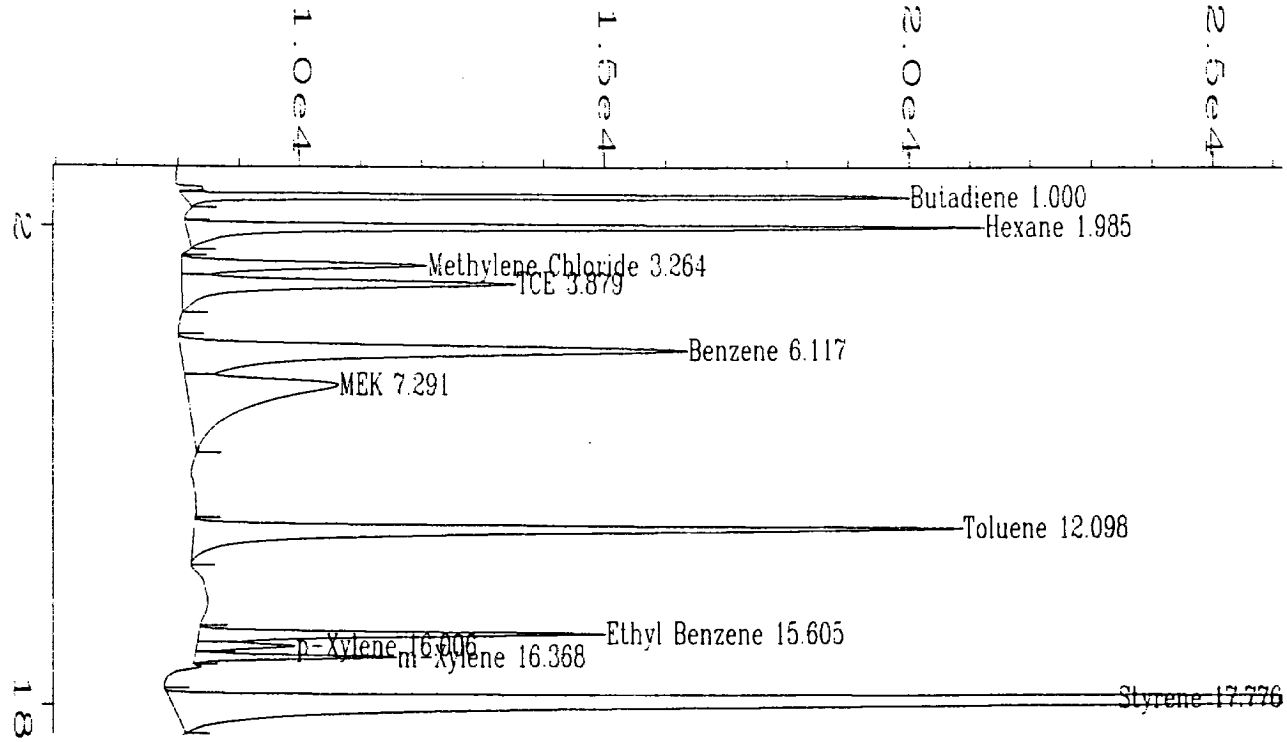

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS3_0001.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 11:25 PM
Report Created on: 03 May 95 02:00 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Fig. 1 in D:\SOLVAY\CAL\WS3_0001.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.000	124339	11910	PB	0.172	5.0589
2	1.985	165687	13114	BB	0.198	6.7412
3	3.264	66429	4023	BV	0.253	2.7027
4	3.879	108275	5475	VB	0.296	4.4053
5	6.117	225356	8321	BV	0.400	9.1689
6	7.291	142258	2502	VB	0.782	5.7880
7	12.098	234213	12632	BV	0.273	9.5292
8	15.605	81748	6696	BV	0.187	3.3260
9	16.006	19657	1625	VV	0.182	0.7998
10	16.368	31059	3308	VV	0.147	1.2637
11	17.776	1258816	90188	BBA	0.210	51.2164

Total area = 2457836

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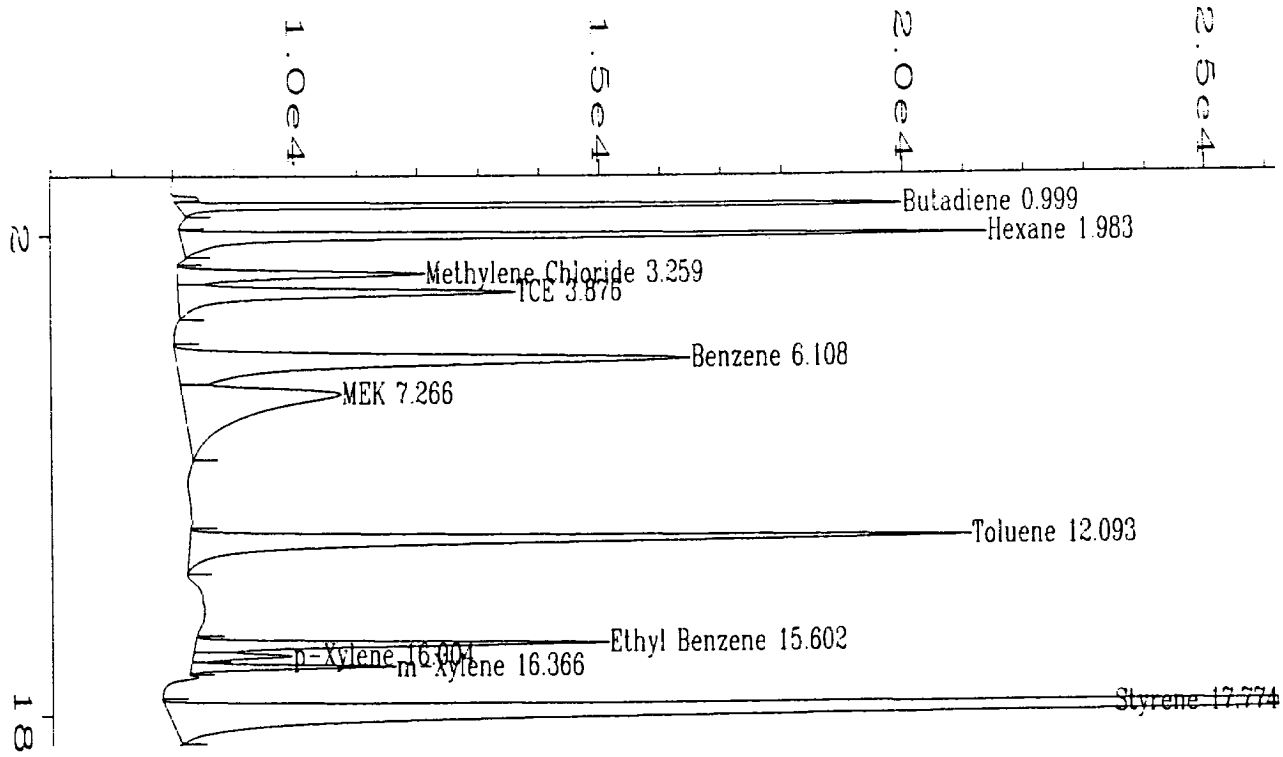

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS3_0002.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 11:47 PM
Report Created on: 03 May 95 02:01 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Sig. 1 in D:\SOLVAY\CAL\WS3_0002.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	0.999	124123	11902	PB	0.172	5.0642
2	1.983	165752	13280	BB	0.196	6.7628
3	3.259	66352	4060	BV	0.248	2.7072
4	3.876	106707	5532	VB	0.290	4.3537
5	6.108	224139	8442	BV	0.393	9.1450
6	7.266	143145	2598	VB	0.777	5.8404
7	12.093	233400	12862	BV	0.268	9.5228
8	15.602	82251	6806	BV	0.186	3.3559
9	16.004	19467	1629	VV	0.181	0.7943
10	16.366	31278	3351	VV	0.146	1.2762
11	17.774	1254345	91288	BBA	0.208	51.1777

Total area = 2450958

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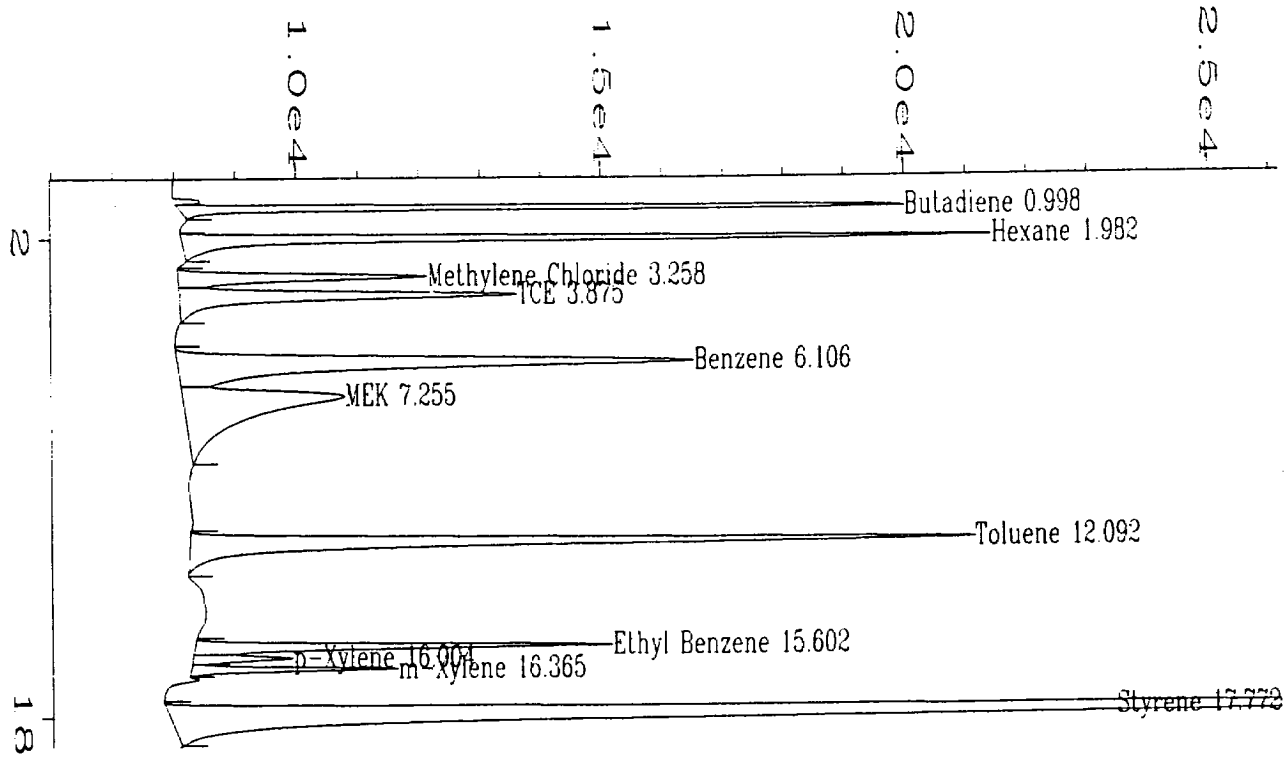

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS3_0003.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 27 Apr 95 00:09 AM
Report Created on: 03 May 95 02:01 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Sig. 1 in D:\SOLVAY\CAL\WS3_0003.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	0.998	123947	11905	PB	0.172	5.0423
2	1.982	165992	13314	BB	0.196	6.7527
3	3.258	66218	4066	BV	0.247	2.6938
4	3.875	105962	5535	VB	0.288	4.3106
5	6.106	224324	8473	BV	0.394	9.1257
6	7.255	145684	2640	VB	0.760	5.9265
7	12.092	233575	12899	BV	0.268	9.5020
8	15.602	82461	6852	BV	0.185	3.3546
9	16.004	19305	1627	VV	0.179	0.7853
10	16.365	31348	3375	VV	0.146	1.2753
11	17.772	1259349	91865	BBA	0.207	51.2312

Total area = 2458166

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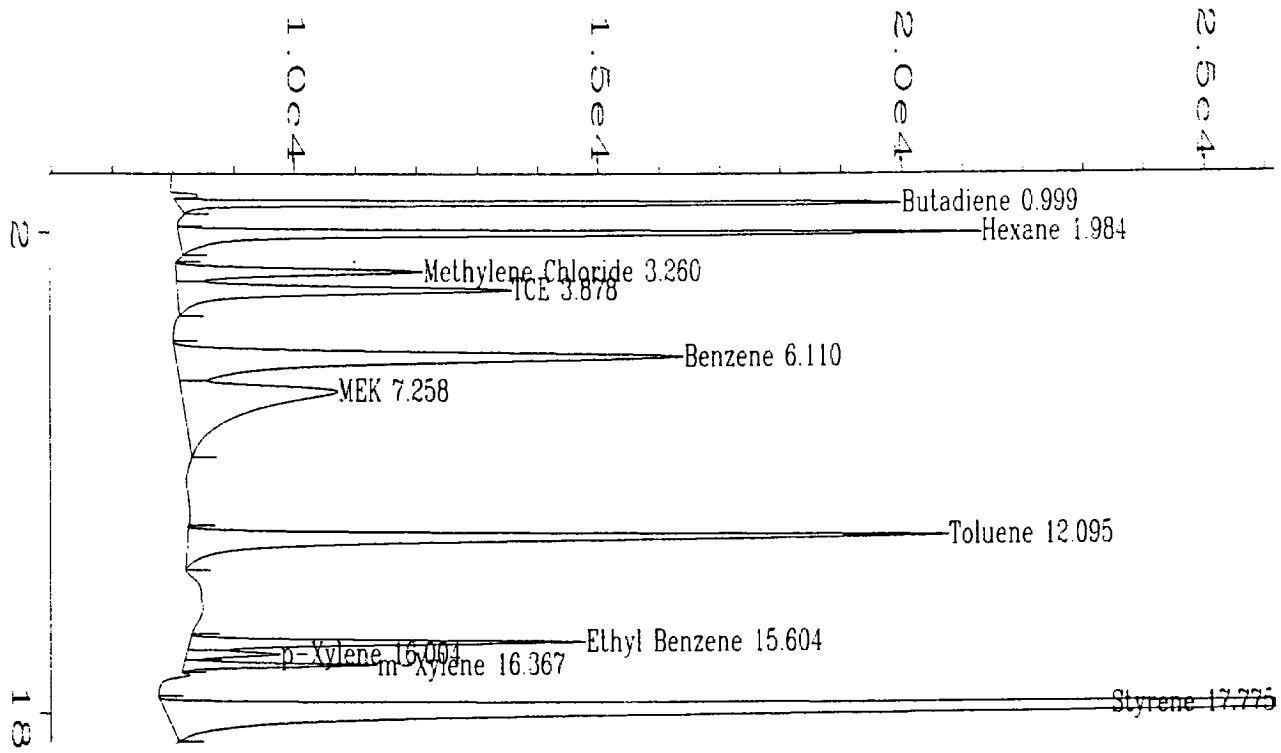

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS3_0005.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 27 Apr 95 00:53 AM
Report Created on: 03 May 95 02:02 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Sig. 1 in D:\SOLVAY\CAL\WS3_0005.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	0.999	124733	11920	PB	0.145	5.2904
2	1.984	166597	13226	BB	0.197	7.0660
3	3.260	66122	4054	BV	0.249	2.8045
4	3.878	105198	5482	VB	0.289	4.4618
5	6.110	220821	8368	BV	0.391	9.3659
6	7.258	140855	2570	VB	0.761	5.9742
7	12.095	226522	12521	BV	0.268	9.6077
8	15.604	78651	6522	BV	0.185	3.3359
9	16.004	18467	1546	VV	0.180	0.7833
10	16.367	29492	3175	VV	0.146	1.2509
11	17.775	1180266	85211	BBA	0.209	50.0596

Total area = 2357722

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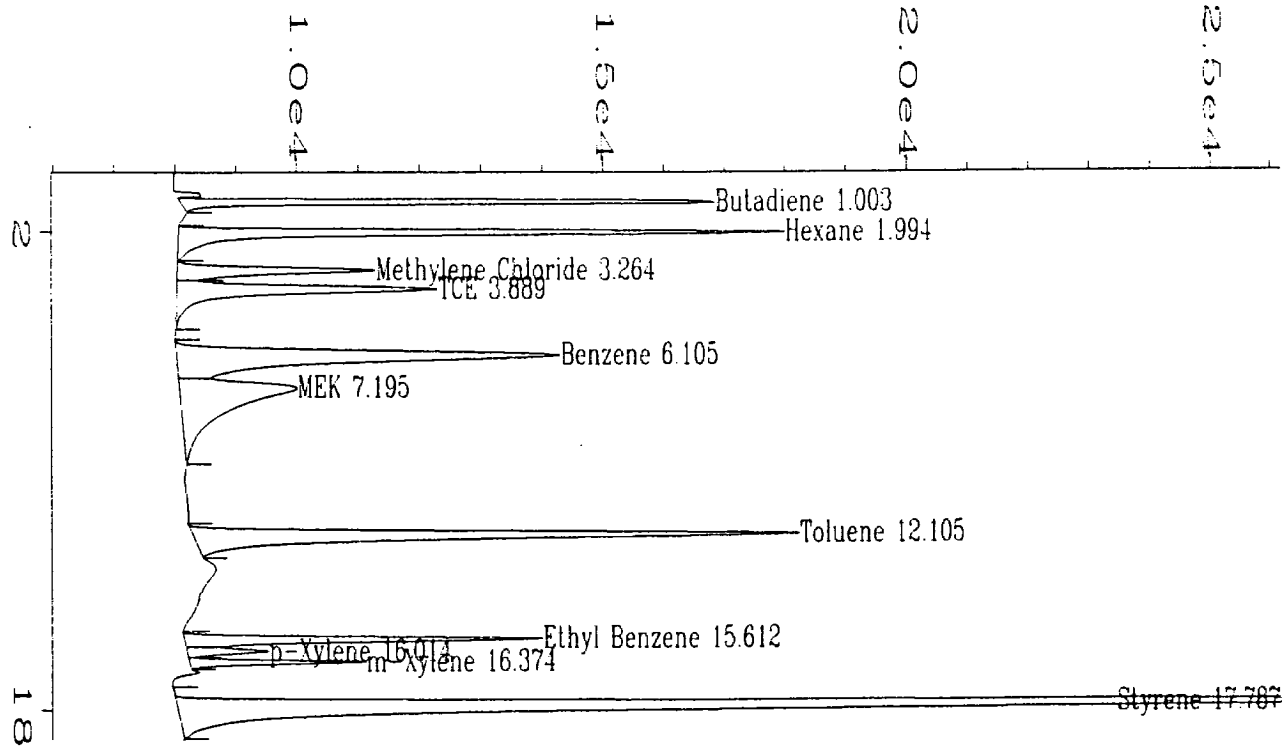

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS4_0001.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Run 1
Run Time Bar Code:
Acquired on : 27 Apr 95 08:57 AM
Report Created on: 04 May 95 11:08 AM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH

Sig. 1 in D:\SOLVAY\CAL\WS4_0001.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.003	94272	8740	PB	0.146	6.1706
2	1.994	132893	9934	BV	0.209	8.6985
3	3.264	51803	3235	VV	0.242	3.3908
4	3.889	85736	4264	VB	0.298	5.6119
5	6.105	171904	6277	BV	0.407	11.2520
6	7.195	114989	1935	VB	0.818	7.5266
7	12.105	180336	9939	BB	0.270	11.8039
8	15.612	71549	5865	BV	0.187	4.6832
9	16.014	15716	1342	VV	0.178	1.0287
10	16.374	27013	2892	VV	0.146	1.7681
11	17.787	581557	40172	BBA	0.217	38.0658

Total area = 1527768

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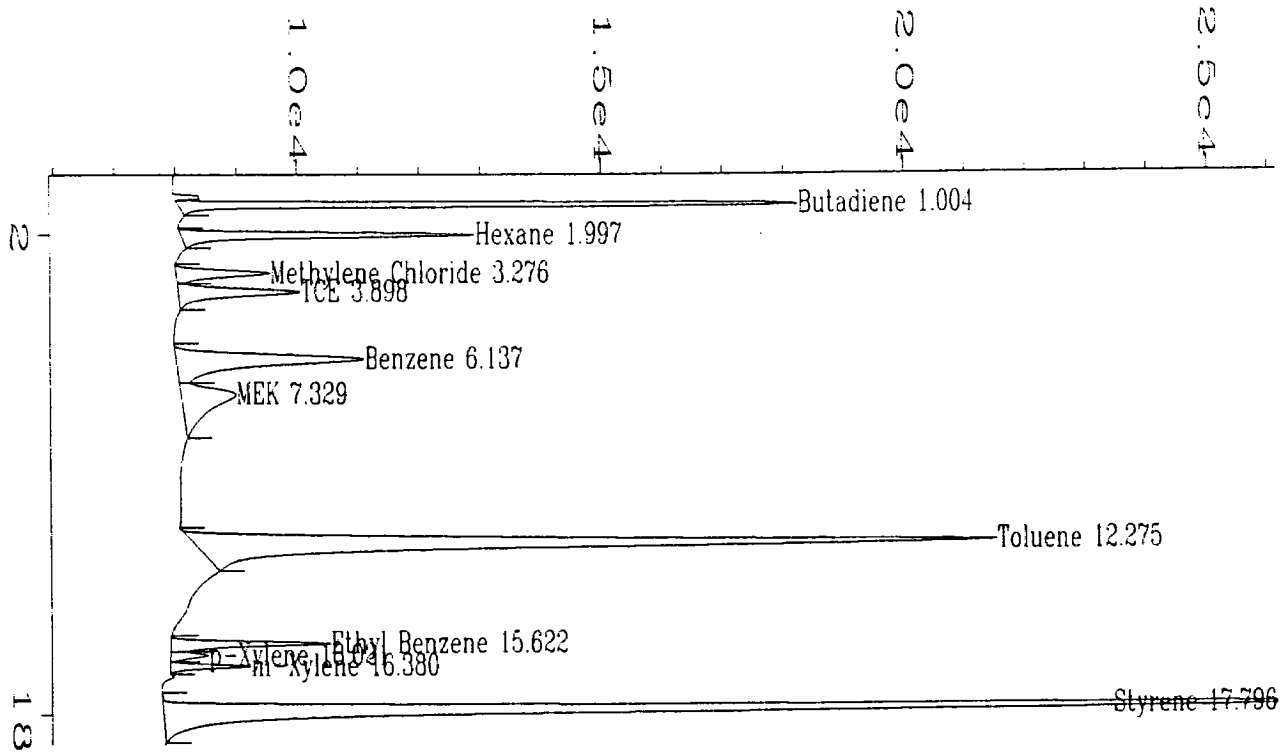

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS5_0001.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 27 Apr 95 09:04 AM
Report Created on: 03 May 95 03:10 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Sig. 1 in D:\SOLVAY\CAL\WS5_0001.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.004	109738	10187	PB	0.146	10.2373
2	1.997	59182	4823	BB	0.194	5.5209
3	3.276	24839	1538	BV	0.248	2.3172
4	3.898	36885	2008	VB	0.279	3.4409
5	6.137	82328	3081	BV	0.400	7.6803
6	7.329	44443	900	VB	0.690	4.1460
7	12.275	285420	13249	BB	0.312	26.6263
8	15.622	32278	2627	BV	0.188	3.0111
9	16.021	7220	611	VV	0.178	0.6736
10	16.380	12358	1310	VV	0.148	1.1528
11	17.796	377258	26115	BBA	0.216	35.1936

Total area = 1071949

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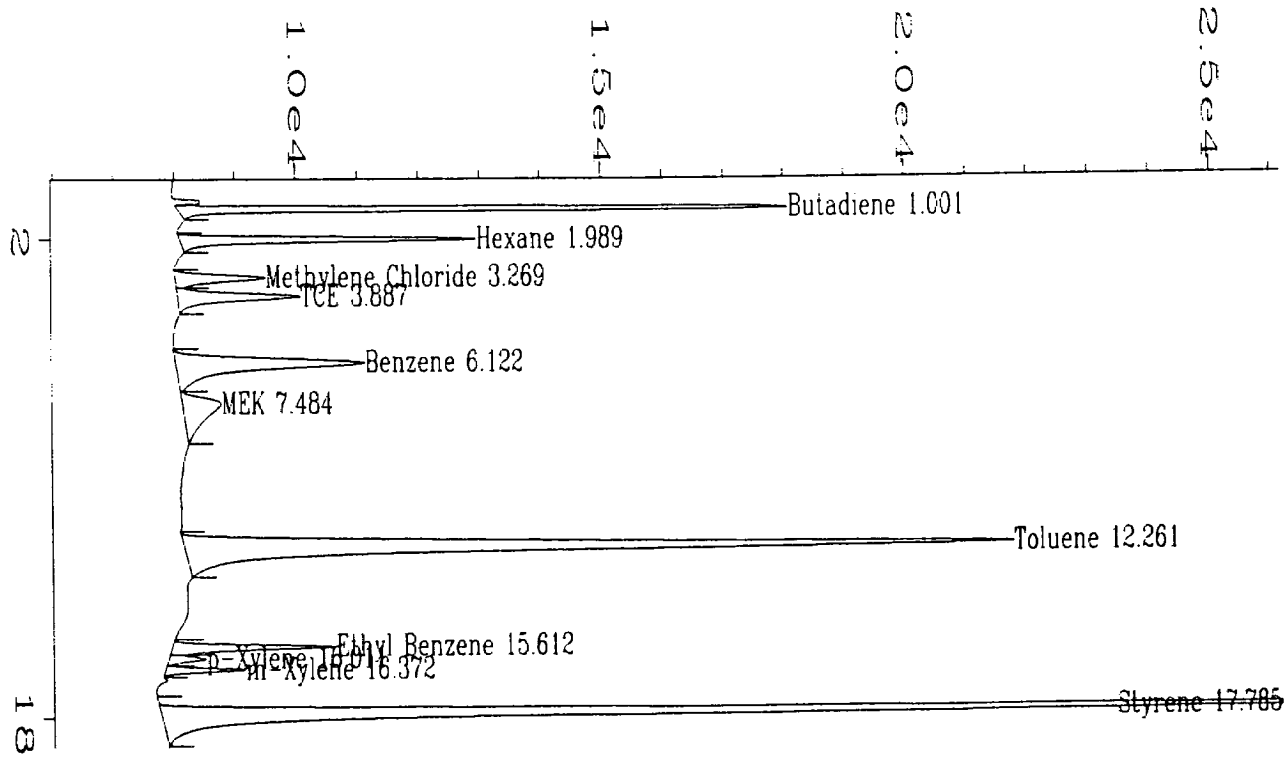

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS5_0002.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 27 Apr 95 09:25 AM
Report Created on: 03 May 95 03:11 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Fig. 1 in D:\SOLVAY\CAL\WS5_0002.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.001	105499	10005	PB	0.144	10.0408
2	1.989	57831	4850	BB	0.190	5.5041
3	3.269	23857	1488	BV	0.244	2.2706
4	3.887	36614	2024	VB	0.276	3.4848
5	6.122	81334	3101	BV	0.390	7.7409
6	7.484	31265	640	VB	0.673	2.9757
7	12.261	294627	13642	BB	0.312	28.0409
8	15.612	32521	2697	BV	0.185	3.0952
9	16.011	7056	611	VV	0.175	0.6716
10	16.372	11997	1325	VV	0.143	1.1418
11	17.785	368100	26299	BBA	0.211	35.0337

Total area = 1050703

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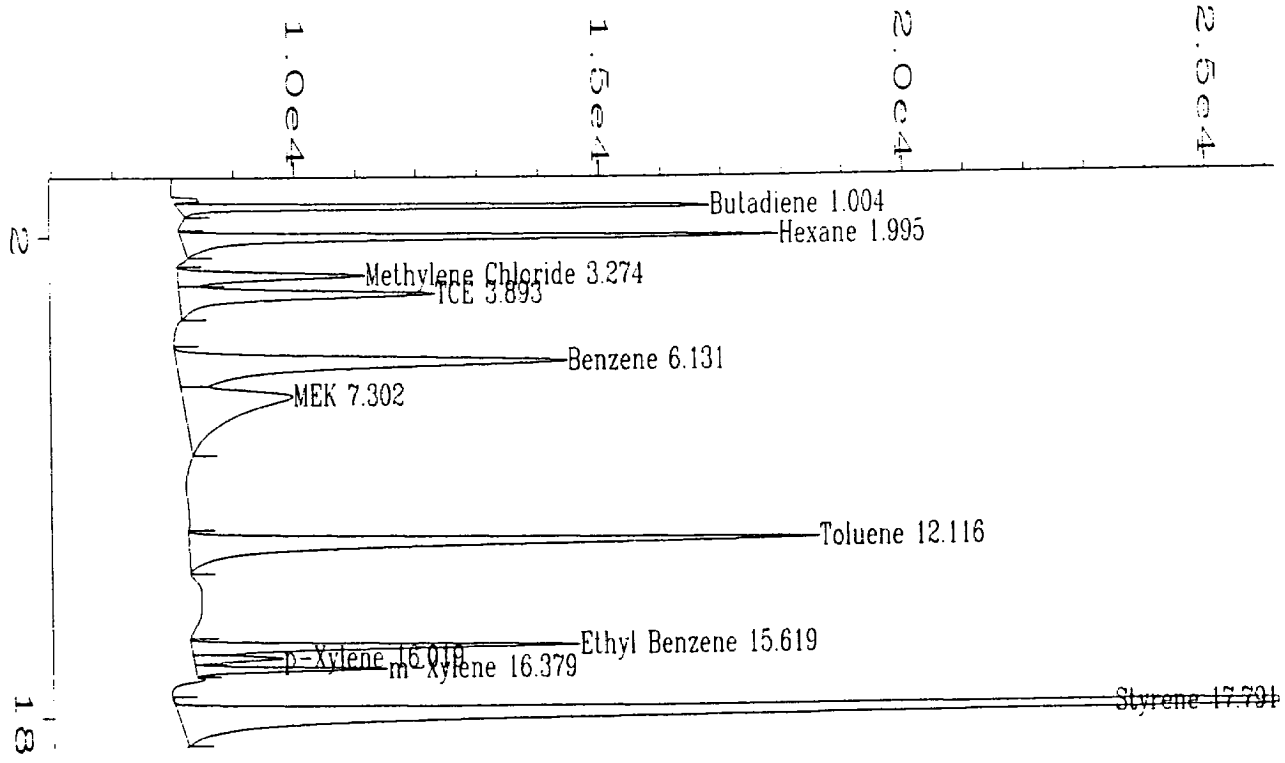

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS4_0002.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Run 1
Run Time Bar Code:
Acquired on : 27 Apr 95 09:26 AM
Report Created on: 03 May 95 02:05 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Sig. 1 in D:\SOLVAY\CAL\WS4_0002.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.004	93696	8726	PB	0.145	5.7839
2	1.995	127239	9819	BB	0.204	7.8545
3	3.274	50452	3073	BV	0.252	3.1144
4	3.893	81962	4198	VB	0.292	5.0596
5	6.131	177254	6419	BV	0.406	10.9419
6	7.302	102751	1814	VB	0.780	6.3428
7	12.116	200660	10372	BV	0.284	12.3868
8	15.619	78785	6380	BV	0.190	4.8634
9	16.019	17219	1474	VV	0.178	1.0629
10	16.379	29316	3159	VV	0.146	1.8097
11	17.791	660620	45467	BBA	0.217	40.7802

Total area = 1619955

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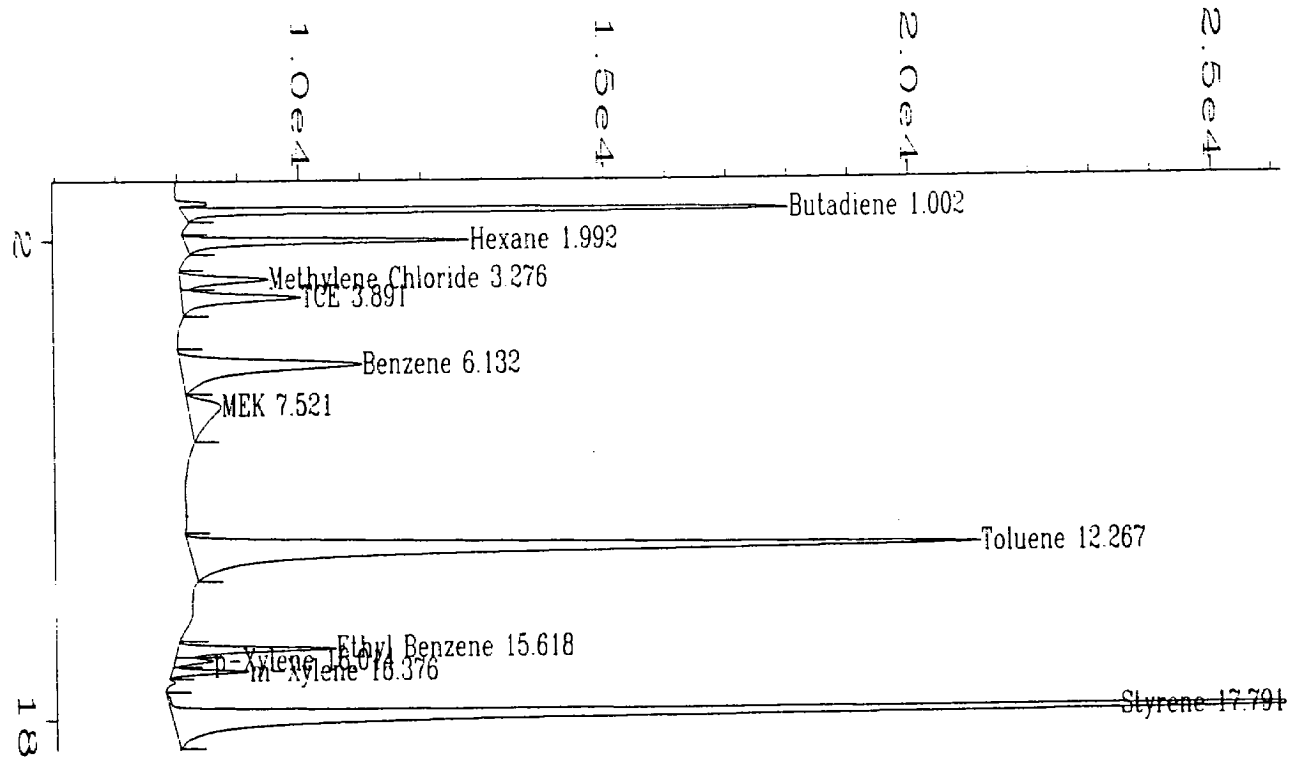

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS5_0003.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 27 Apr 95 09:49 AM
Report Created on: 03 May 95 03:11 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Sig. 1 in D:\SOLVAY\CAL\WS5_0003.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.002	104704	9932	PB	0.147	9.9727
2	1.992	56026	4662	BB	0.190	5.3363
3	3.276	23542	1444	BV	0.252	2.2423
4	3.891	35915	1947	VB	0.281	3.4208
5	6.132	79965	2962	BV	0.403	7.6164
6	7.521	25881	540	VB	0.669	2.4651
7	12.267	293590	13009	BB	0.324	27.9636
8	15.618	32580	2589	BV	0.192	3.1032
9	16.014	7587	629	VV	0.183	0.7226
10	16.376	11829	1266	VV	0.147	1.1267
11	17.791	378280	25780	BBA	0.219	36.0302

Total area = 1049899

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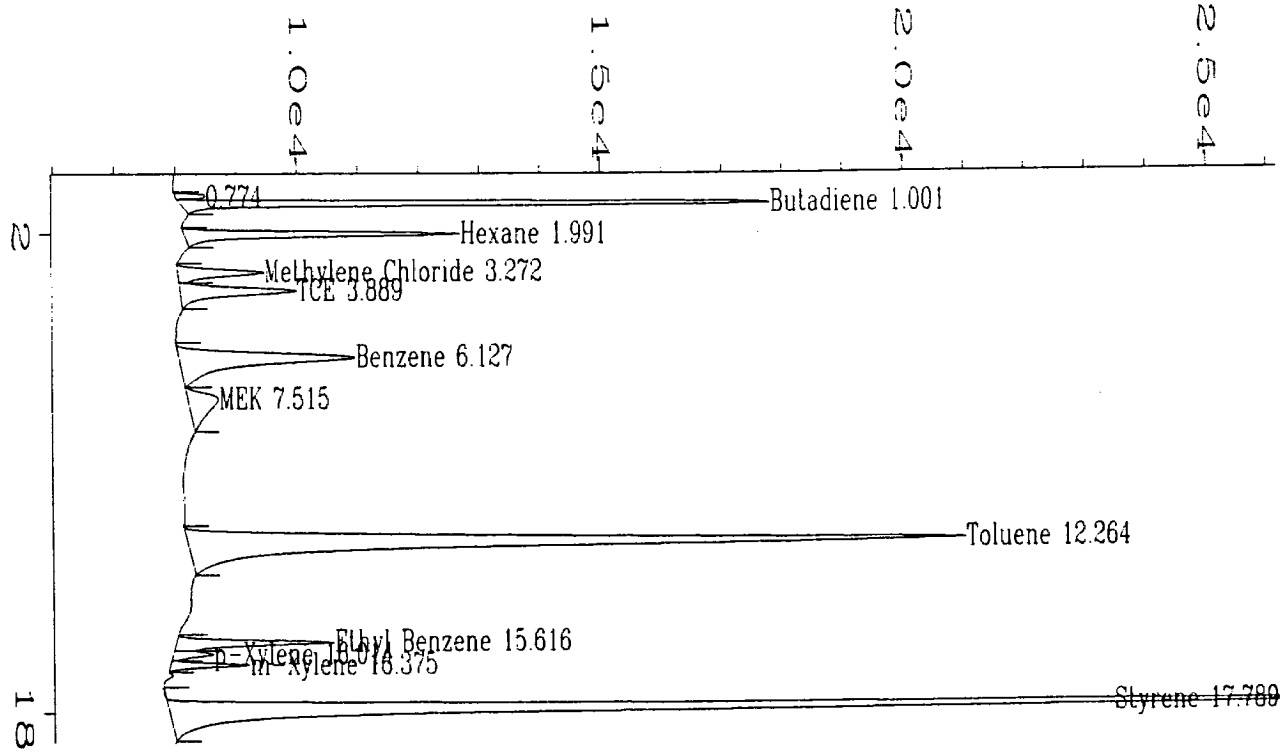

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS5_0004.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 27 Apr 95 10:13 AM
Report Created on: 03 May 95 03:12 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Sig. 1 in D:\SOLVAY\CAL\WS5_0004.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	0.774	4567	473	BV	0.132	0.4346
2	1.001	102151	9700	PB	0.143	9.7195
3	1.991	54385	4541	BB	0.189	5.1747
4	3.272	22936	1410	BV	0.247	2.1823
5	3.889	35234	1907	VB	0.280	3.3524
6	6.127	78405	2893	BV	0.401	7.4601
7	7.515	22299	497	VB	0.648	2.1217
8	12.264	293181	12861	BB	0.327	27.8956
9	15.616	32862	2592	BV	0.193	3.1268
10	16.014	7883	645	VV	0.184	0.7501
11	16.375	12187	1290	VV	0.148	1.1595
12	17.789	384901	26253	BBA	0.219	36.6226

Total area = 1050991

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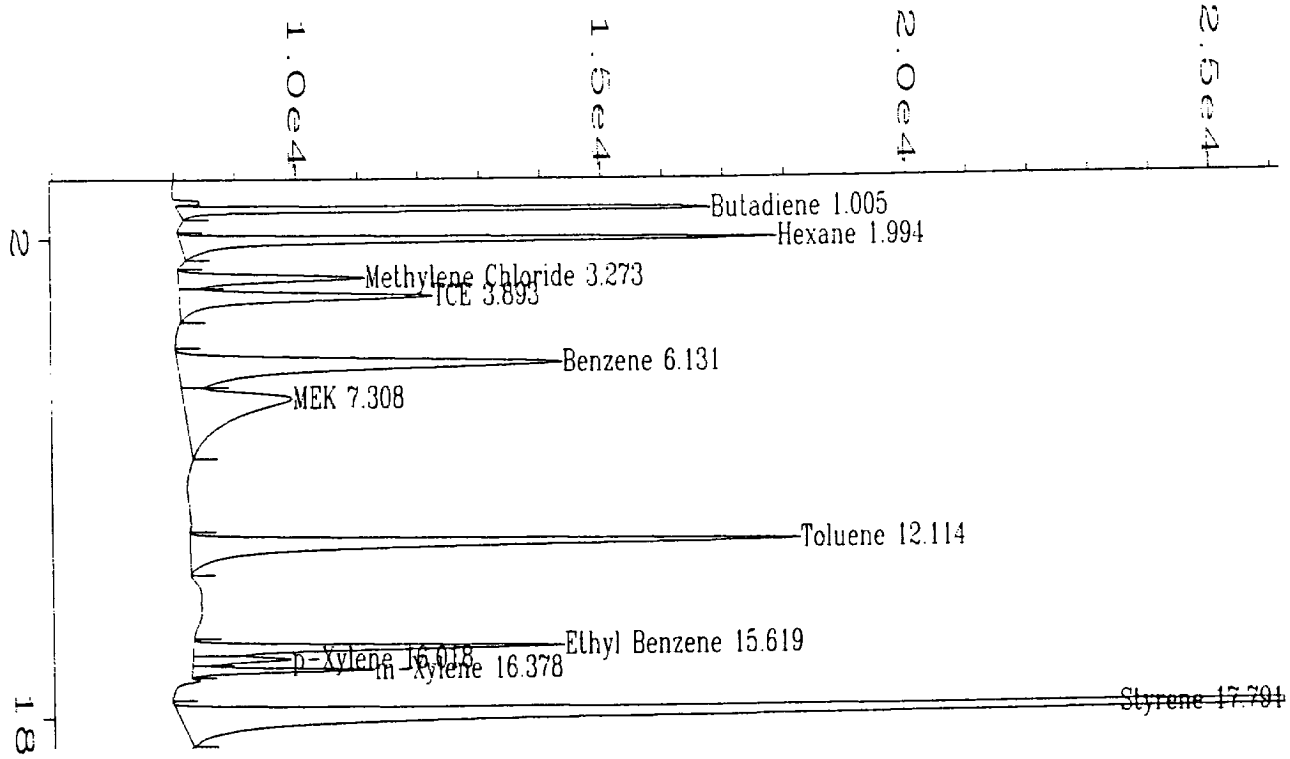

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Area Percent Report

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Data File Name : D:\SOLVAY\CAL\WS4_0004.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Run 1
Run Time Bar Code:
Acquired on : 27 Apr 95 10:19 AM
Report Created on: 03 May 95 02:06 PM

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : SOLVAY.MTH

Sig. 1 in D:\SOLVAY\CAL\WS4_0004.D

Pk#	Ret Time	Area	Height	Type	Width	Area %
1	1.005	93249	8730	PB	0.145	6.0980
2	1.994	126317	9800	BB	0.203	8.2604
3	3.273	50038	3053	BV	0.253	3.2722
4	3.893	80604	4150	VB	0.291	5.2710
5	6.131	170347	6317	BV	0.398	11.1397
6	7.308	100225	1787	VB	0.777	6.5542
7	12.114	188570	10010	BV	0.278	12.3314
8	15.619	76227	6097	BV	0.190	4.9848
9	16.018	20695	1619	VV	0.190	1.3533
10	16.378	28060	2979	VV	0.147	1.8350
11	17.791	594855	40996	BBA	0.217	38.9001

Total area = 1529188

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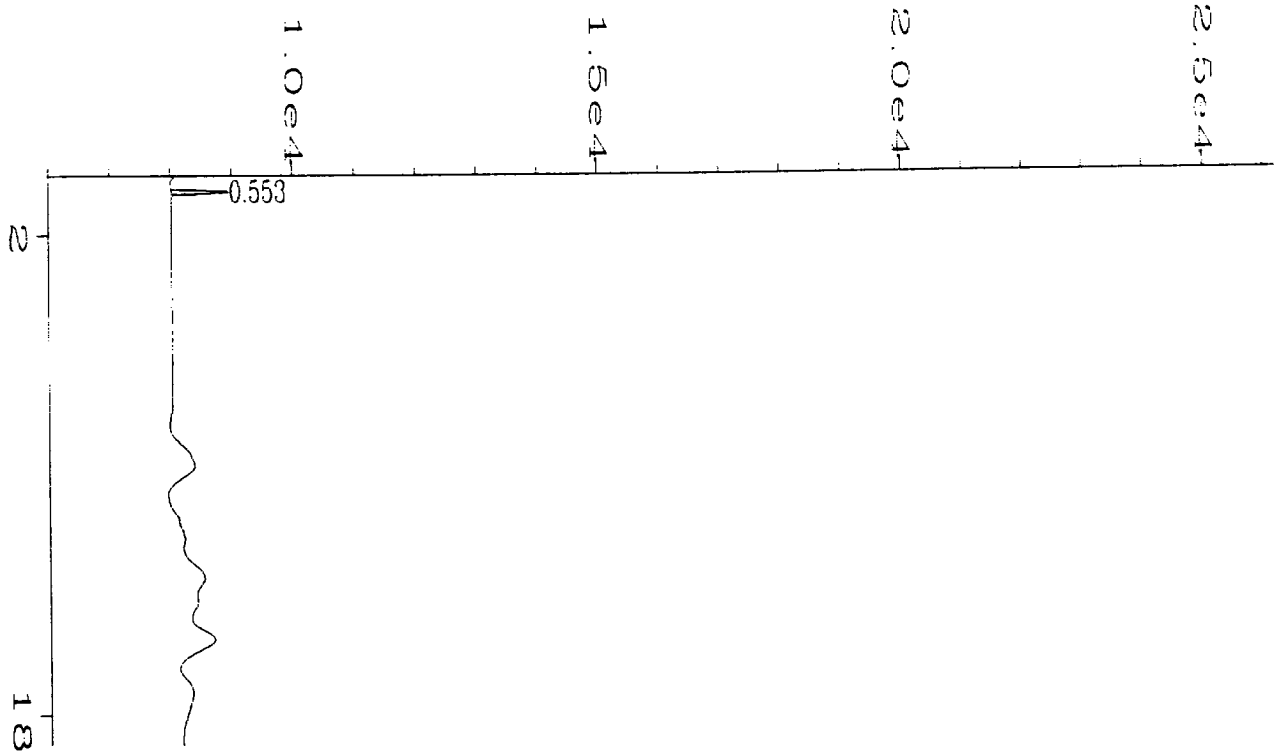

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External Standard Report

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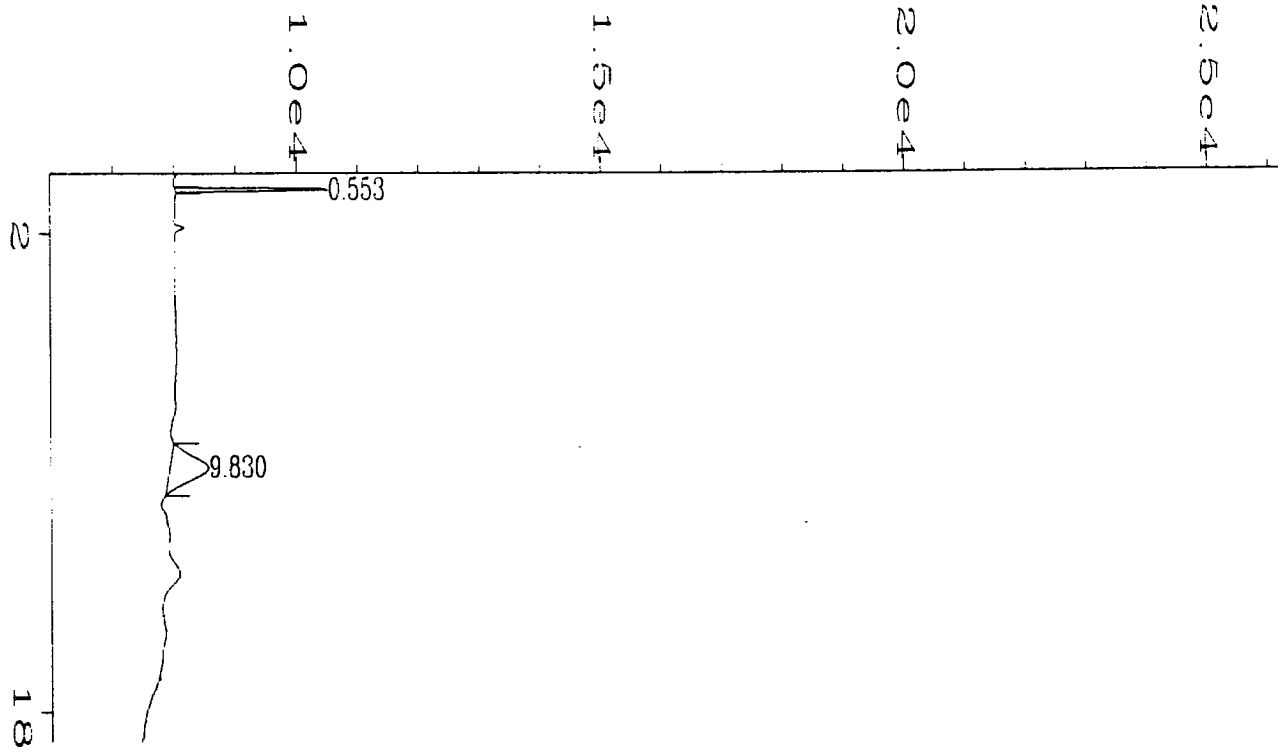
Data File Name	: D:\SOLVAY\CAL\ZERO_001.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: parameters	Injection Number	:
Run Time Bar Code	:	Sequence Line	:
Acquired on	: 26 Apr 95 12:43 PM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 02:36 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\CAL\ZERO_001.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.980	* not found *			1		Hexane
3.226	* not found *			1		Methylene Chloride
3.869	* not found *			1		TCE
6.085	* not found *			1		Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.132	* not found *			1		Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.368	* not found *			1		m-Xylene
16.720	* not found *			1		o-Xylene
17.771	* not found *			1		Styrene

Not all calibrated peaks were found



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External Standard Report

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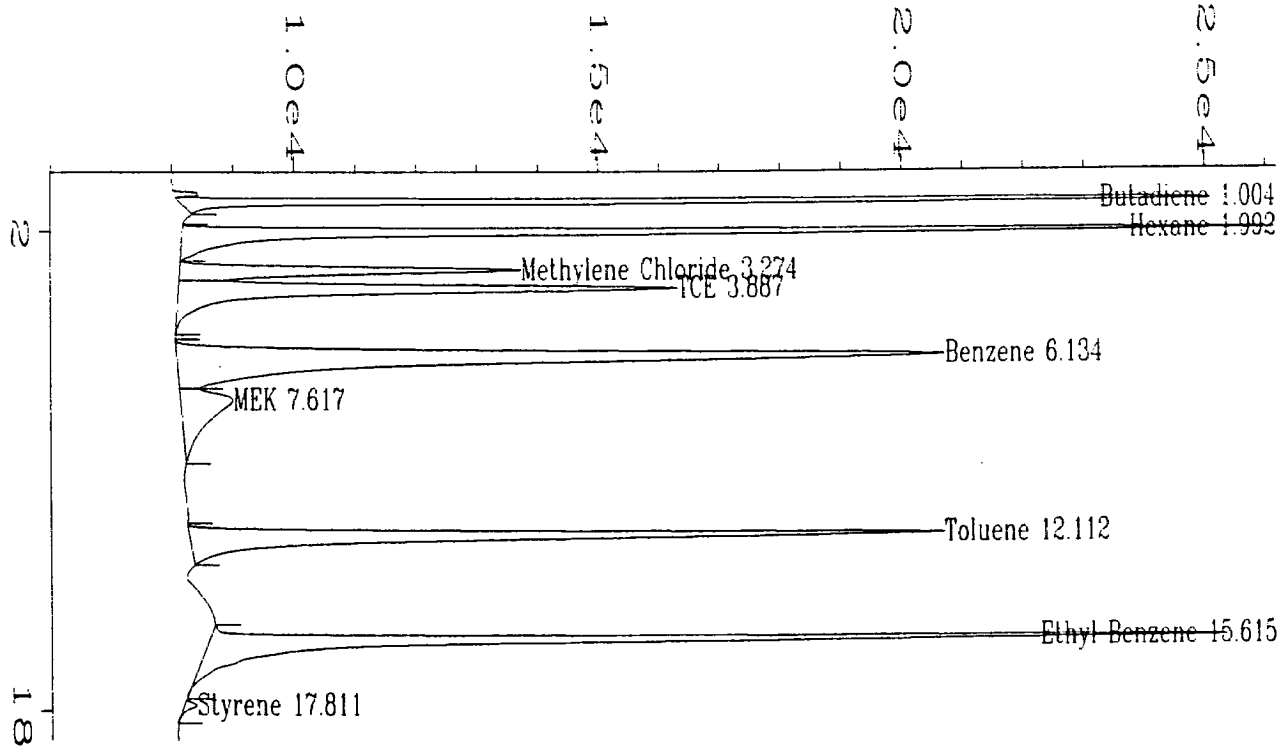
Data File Name	: D:\SOLVAY\CAL\ZERO_002.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: parameters	Injection Number	:
Run Time Bar Code:		Sequence Line	:
Acquired on	: 26 Apr 95 01:07 PM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 02:37 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\CAL\ZERO_002.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.980	* not found *			1		Hexane
3.226	* not found *			1		Methylene Chloride
3.869	* not found *			1		TCE
6.085	* not found *			1		Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.132	* not found *			1		Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.368	* not found *			1		m-Xylene
16.720	* not found *			1		o-Xylene
17.771	* not found *			1		Styrene

Not all calibrated peaks were found



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External Standard Report

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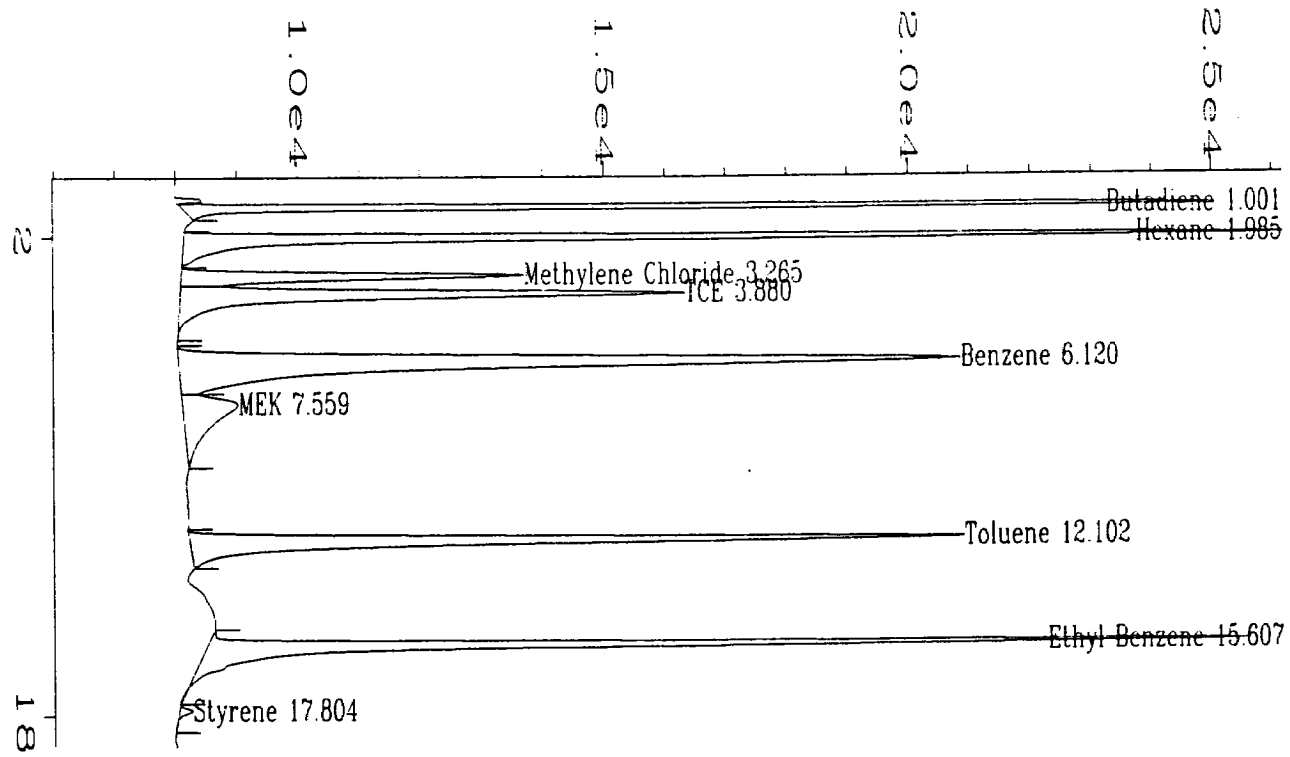
Data File Name	: D:\SOLVAY\CAL\WS1_0001.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: Calibration	Injection Number	:
Run Time Bar Code	:	Sequence Line	:
Acquired on	: 26 Apr 95 07:58 PM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 02:22 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\CAL\WS1_0001.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	182706	PB	0.178	1	10.622	Butadiene
1.992	243154	BV	0.210	1	6.139	Hexane
3.274	95163	VV	0.261	1	20.386	Methylene Chloride
3.887	170305	VB	0.307	1	16.661	TCE
6.134	364566	BV	0.426	1	10.549	Benzene
7.617	56674	VB	0.871	1	6.268	MEK
11.804	* not found *			1		Acrylonitrile
12.112	235879	BB	0.279	1	11.722	Toluene
15.615	258702	BV	0.225	1	10.810	Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.368	* not found *			1		m-Xylene
16.720	* not found *			1		o-Xylene
17.811	2692	PB	0.205	1	0.0798	Styrene

Not all calibrated peaks were found



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External Standard Report

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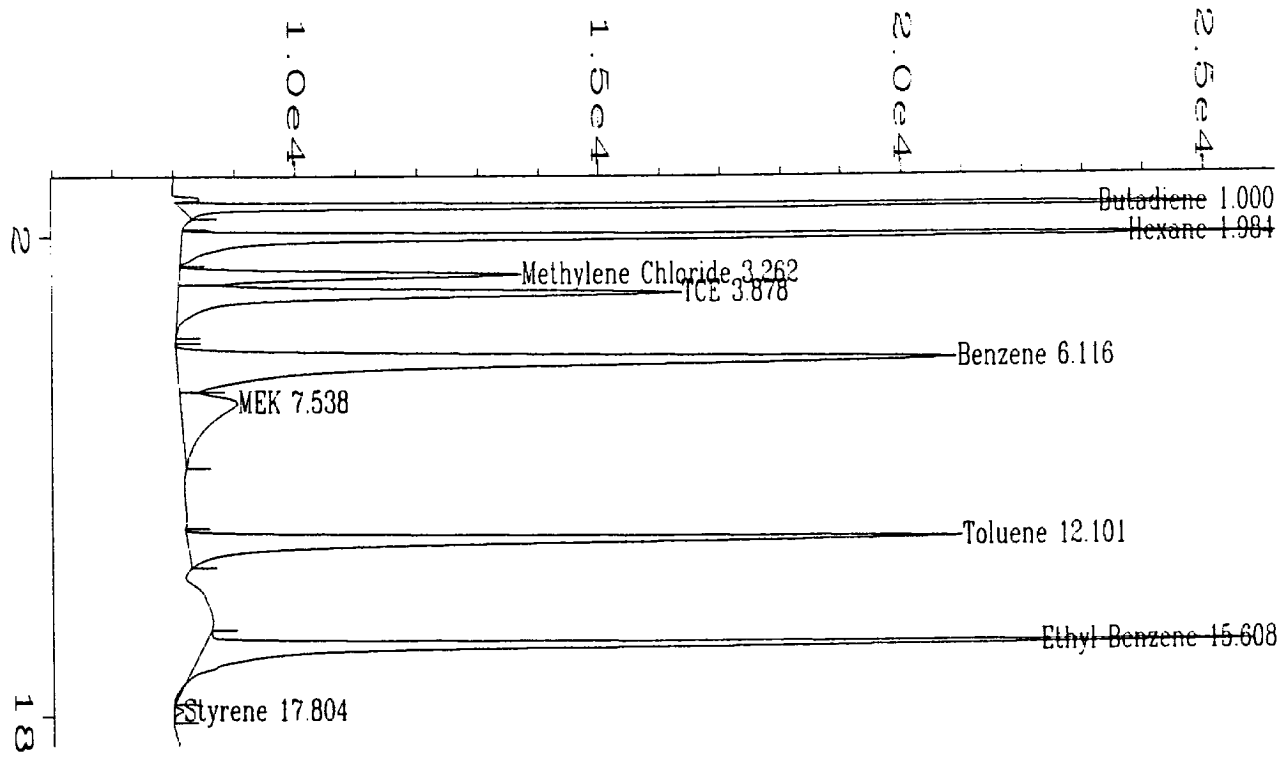
Data File Name : D:\SOLVAY\CAL\WS1_0002.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 08:44 PM
Report Created on: 04 May 95 02:22 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\CAL\WS1_0002.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.001	177140	PB	0.172	1	10.298	Butadiene
1.985	236735	BV	0.201	1	5.982	Hexane
3.265	92879	PV	0.255	1	19.910	Methylene Chloride
3.880	165622	VB	0.298	1	16.211	TCE
6.120	355230	BV	0.411	1	10.282	Benzene
7.559	57544	VB	0.845	1	6.360	MEK
11.804	* not found *			1		Acrylonitrile
12.102	229222	BB	0.267	1	11.395	Toluene
15.607	243513	BV	0.211	1	10.174	Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.368	* not found *			1		m-Xylene
16.720	* not found *			1		o-Xylene
17.804	2660	PB	0.193	1	0.0792	Styrene

Not all calibrated peaks were found



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External Standard Report

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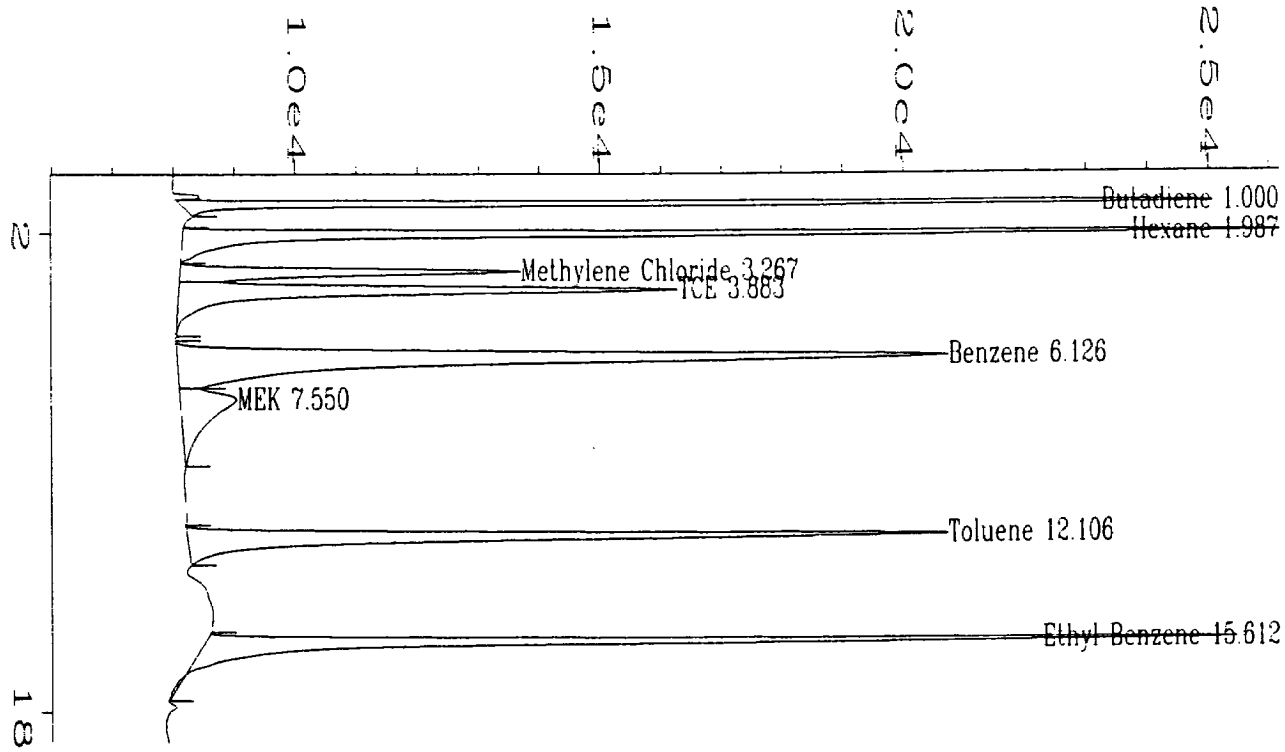
Data File Name : D:\SOLVAY\CAL\WS1_0003.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 09:06 PM
Report Created on: 04 May 95 02:23 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\CAL\WS1_0003.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.000	176692	PB	0.172	1	10.272	Butadiene
1.984	237064	BV	0.201	1	5.990	Hexane
3.262	92923	PV	0.254	1	19.920	Methylene Chloride
3.878	166521	VB	0.298	1	16.297	TCE
6.116	357383	BV	0.412	1	10.343	Benzene
7.538	59847	VB	0.859	1	6.603	MEK
11.804	* not found *			1		Acrylonitrile
12.101	232207	BB	0.269	1	11.542	Toluene
15.608	244444	BV	0.209	1	10.213	Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.368	* not found *			1		m-Xylene
16.720	* not found *			1		o-Xylene
17.804	1857	PB	0.187	1	0.0651	Styrene

Not all calibrated peaks were found



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External Standard Report

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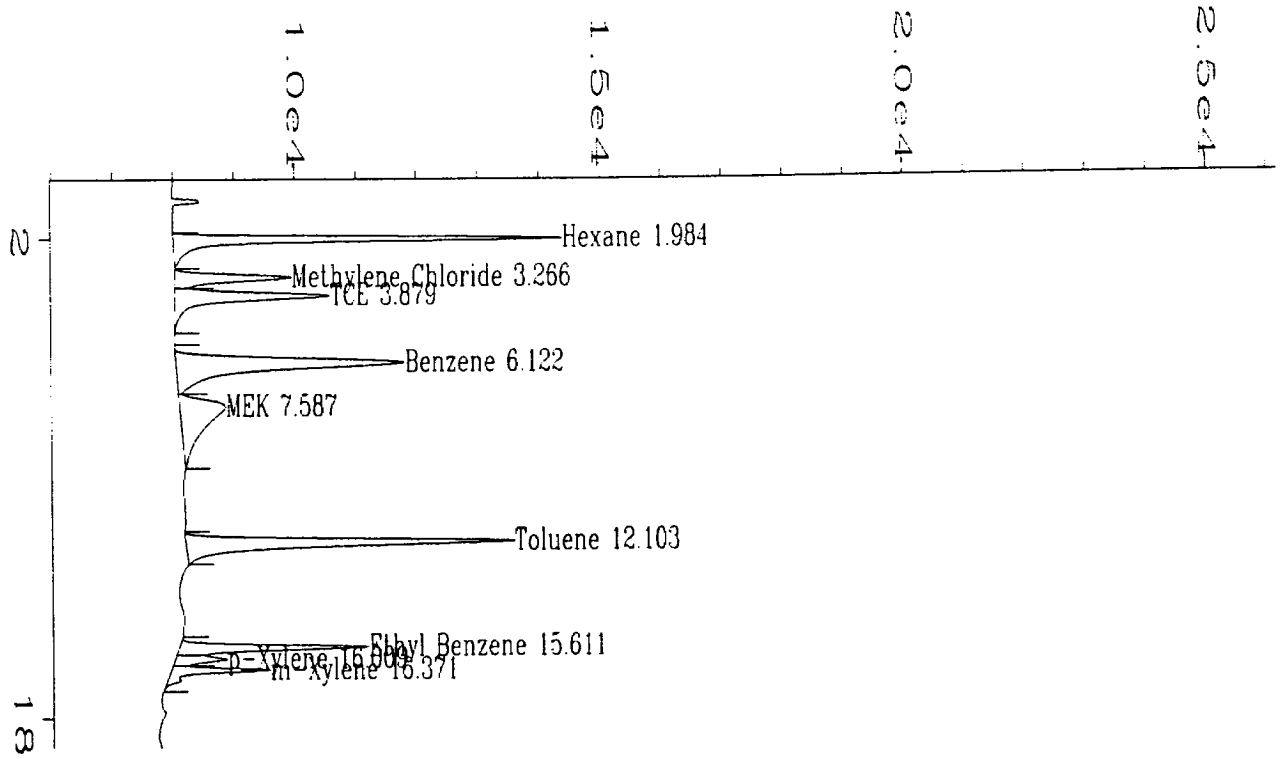
Data File Name : D:\SOLVAY\CAL\WS1_0004.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 09:28 PM
Report Created on: 04 May 95 02:23 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\CAL\WS1_0004.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.000	177063	PB	0.172	1	10.293	Butadiene
1.987	236239	BV	0.202	1	5.970	Hexane
3.267	92713	PV	0.252	1	19.876	Methylene Chloride
3.883	166456	VB	0.301	1	16.291	TCE
6.126	357422	BV	0.421	1	10.344	Benzene
7.550	60715	VB	0.857	1	6.694	MEK
11.804	* not found *			1		Acrylonitrile
12.106	232353	BB	0.274	1	11.549	Toluene
15.612	240135	BB	0.210	1	10.033	Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.368	* not found *			1		m-Xylene
16.720	* not found *			1		o-Xylene
17.771	* not found *			1		Styrene

Not all calibrated peaks were found



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External Standard Report

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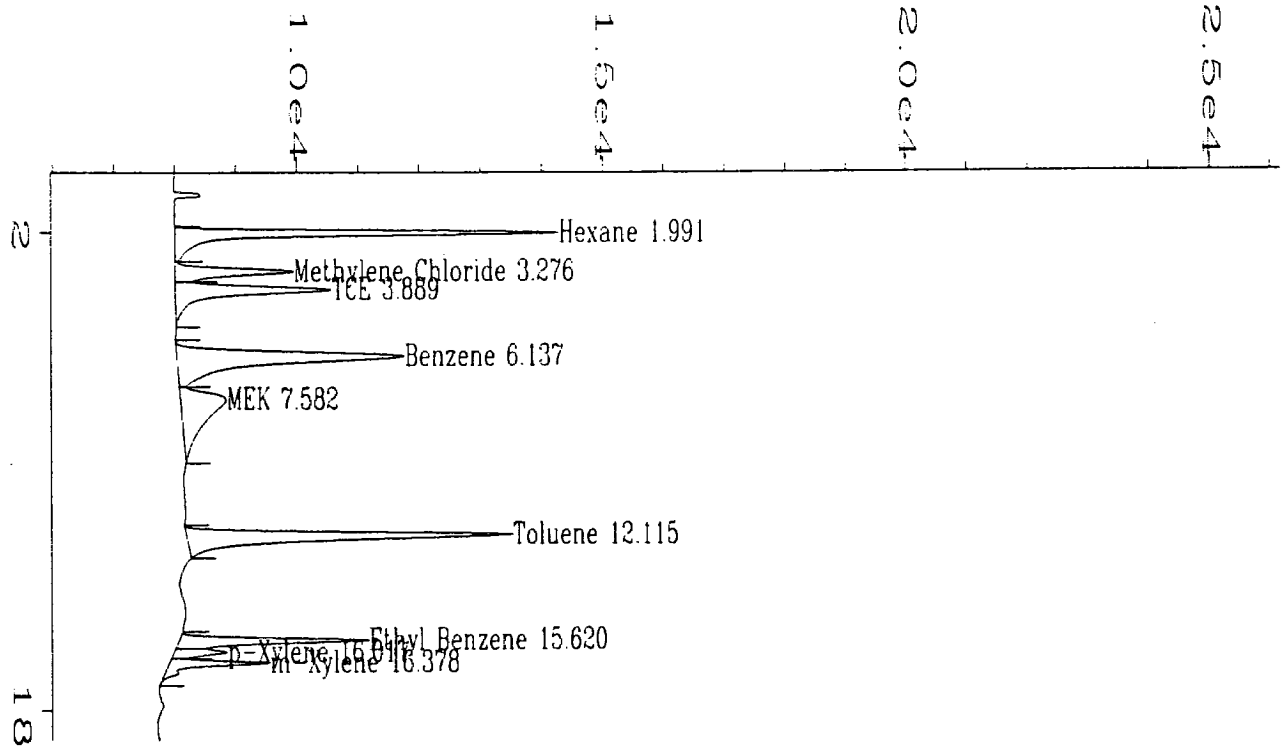
Data File Name	: D:\SOLVAY\CAL\WS2_0001.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: Calibration	Injection Number	:
Run Time Bar Code:		Sequence Line	:
Acquired on	: 26 Apr 95 09:50 PM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 02:26 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\CAL\WS2_0001.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.984	82450	BB	0.198	1	2.221	Hexane
3.266	31729	BV	0.247	1	7.187	Methylene Chloride
3.879	50720	VB	0.299	1	5.159	TCE
6.122	102110	BV	0.403	1	3.029	Benzene
7.587	47530	VB	0.856	1	5.302	MEK
11.804	* not found *			1		Acrylonitrile
12.103	95571	BB	0.264	1	4.838	Toluene
15.611	40109	BV	0.195	1	1.665	Ethyl Benzene
16.009	11559	VV	0.199	1	0.637	p-Xylene
16.371	20259	VB	0.183	1	1.155	m-Xylene
16.720	* not found *			1		o-Xylene
17.771	* not found *			1		Styrene

Not all calibrated peaks were found



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External Standard Report

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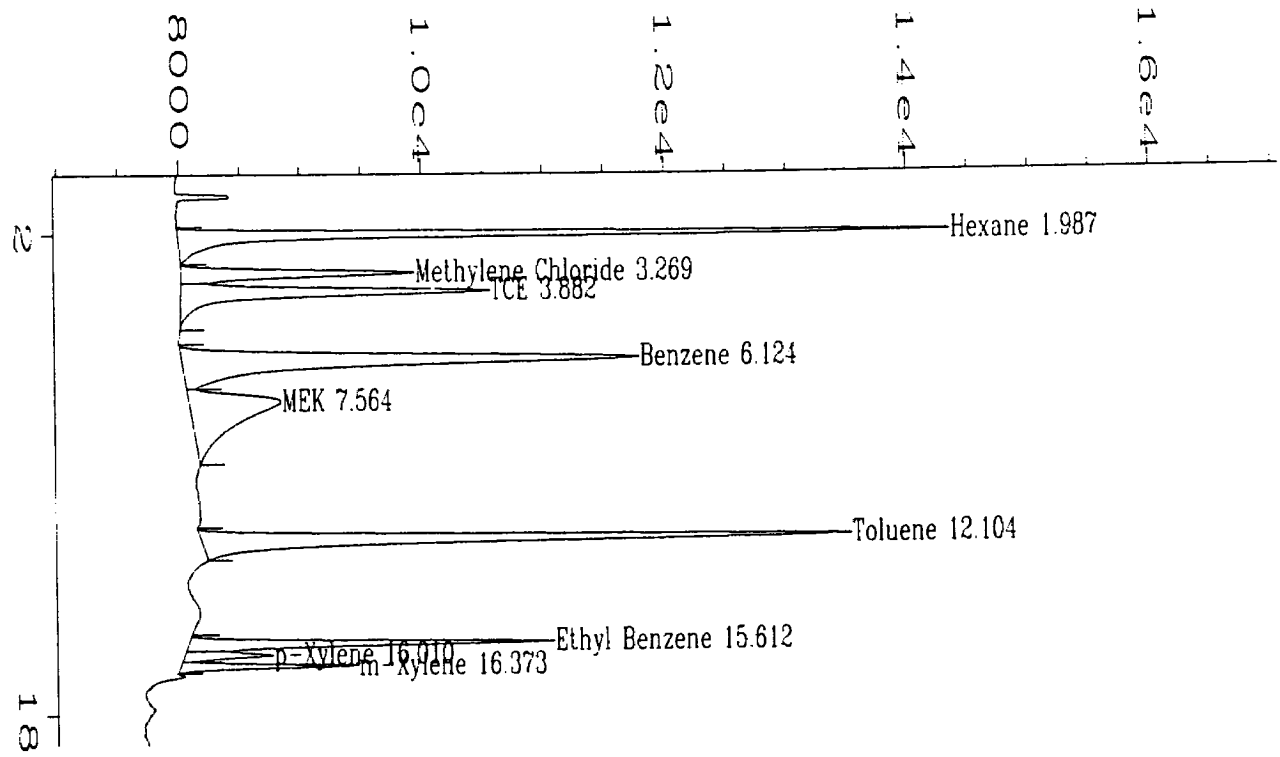
Data File Name	: D:\SOLVAY\CAL\WS2_0002.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: Calibration	Injection Number	:
Run Time Bar Code	:	Sequence Line	:
Acquired on	: 26 Apr 95 10:19 PM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 02:24 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\CAL\WS2_0002.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.991	86353	BV	0.212	1	2.316	Hexane
3.276	33439	VV	0.255	1	7.542	Methylene Chloride
3.889	53554	VB	0.311	1	5.432	TCE
6.137	106134	BV	0.418	1	3.145	Benzene
7.582	50035	VB	0.897	1	5.567	MEK
11.804	* not found *			1		Acrylonitrile
12.115	99753	BB	0.276	1	5.044	Toluene
15.620	40641	BV	0.198	1	1.687	Ethyl Benzene
16.017	11752	VV	0.200	1	0.649	p-Xylene
16.378	20830	VB	0.185	1	1.189	m-Xylene
16.720	* not found *			1		o-Xylene
17.771	* not found *			1		Styrene

Not all calibrated peaks were found



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External Standard Report

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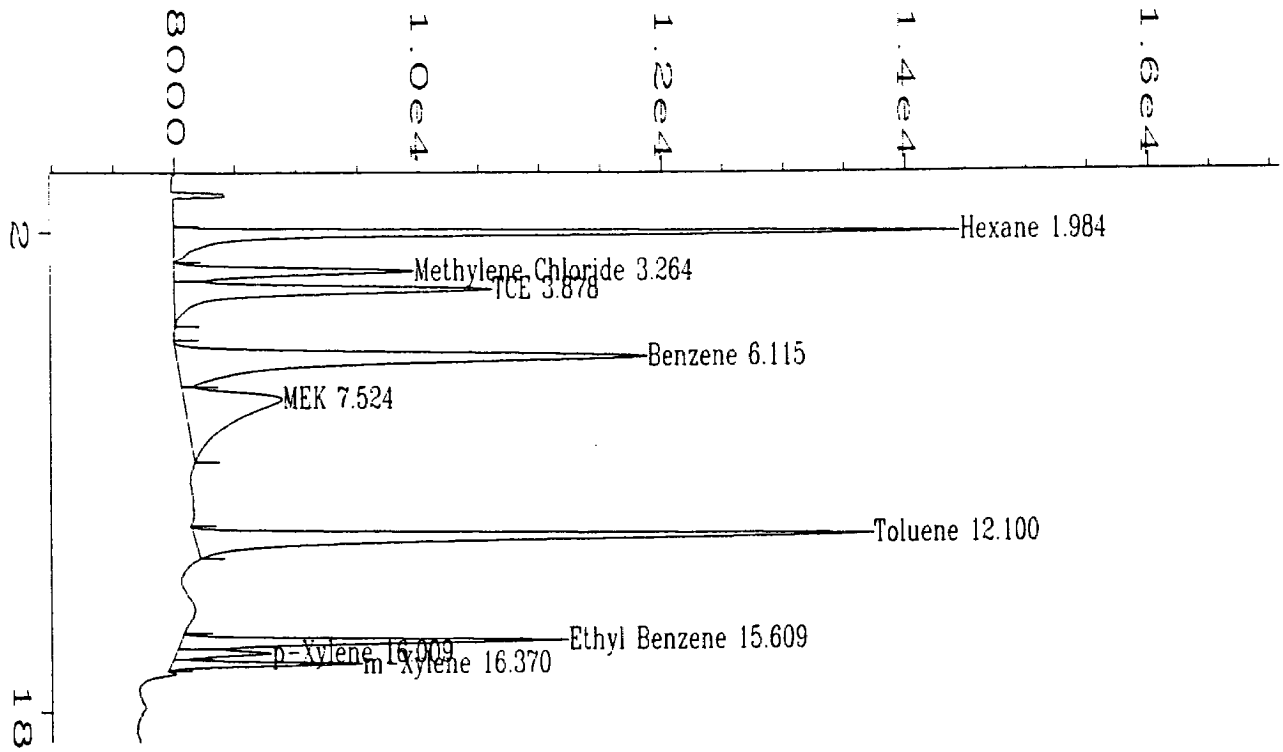
Data File Name : D:\SOLVAY\CAL\WS2_0003.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 10:41 PM
Report Created on: 04 May 95 02:27 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\CAL\WS2_0003.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.987	83460	BB	0.204	1	2.245	Hexane
3.269	31979	BV	0.251	1	7.239	Methylene Chloride
3.882	51003	VB	0.296	1	5.186	TCE
6.124	102766	BV	0.406	1	3.048	Benzene
7.564	48852	VB	0.855	1	5.442	MEK
11.804	* not found *			1		Acrylonitrile
12.104	95545	BB	0.264	1	4.837	Toluene
15.612	37730	BV	0.191	1	1.566	Ethyl Benzene
16.010	9001	VV	0.184	1	0.485	p-Xylene
16.373	13882	VV	0.148	1	0.776	m-Xylene
16.720	* not found *			1		o-Xylene
17.771	* not found *			1		Styrene

Not all calibrated peaks were found



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External Standard Report

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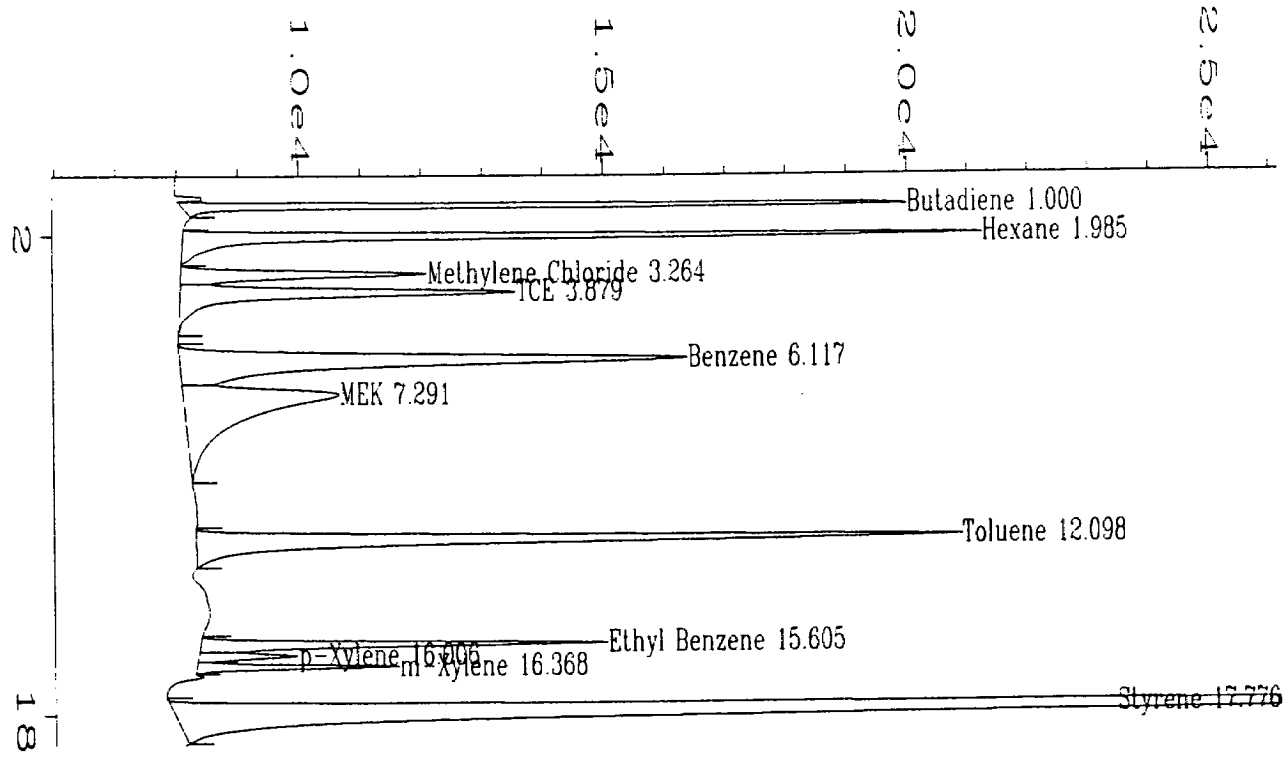
Data File Name : D:\SOLVAY\CAL\WS2_0004.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 11:03 PM
Report Created on: 04 May 95 02:27 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\CAL\WS2_0004.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.984	84598	BV	0.205	1	2.273	Hexane
3.264	32702	VV	0.251	1	7.389	Methylene Chloride
3.878	52629	VB	0.300	1	5.343	TCE
6.115	105164	BV	0.402	1	3.117	Benzene
7.524	51292	VB	0.853	1	5.699	MEK
11.804	* not found *			1		Acrylonitrile
12.100	99855	BB	0.266	1	5.049	Toluene
15.609	39600	BV	0.190	1	1.644	Ethyl Benzene
16.009	9726	VV	0.187	1	0.529	p-Xylene
16.370	14818	VV	0.148	1	0.831	m-Xylene
16.720	* not found *			1		o-Xylene
17.771	* not found *			1		Styrene

Not all calibrated peaks were found



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External Standard Report

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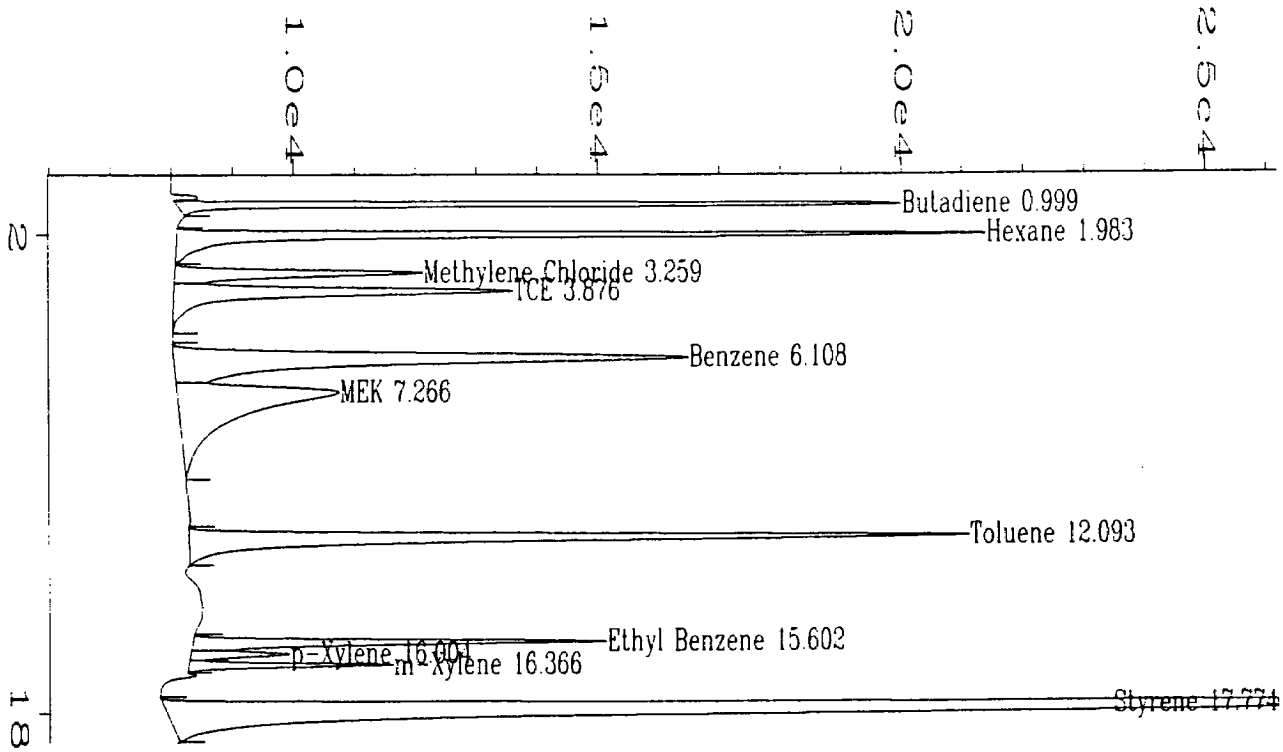
Data File Name : D:\SOLVAY\CAL\WS3_0001.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 11:25 PM
Report Created on: 04 May 95 02:28 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\CAL\WS3_0001.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.000	124339	PB	0.172	1	7.220	Butadiene
1.985	170995	BV	0.203	1	4.379	Hexane
3.264	66803	PV	0.253	1	14.485	Methylene Chloride
3.879	111559	VB	0.302	1	11.011	TCE
6.117	226865	BV	0.401	1	6.604	Benzene
7.291	155839	VB	0.832	1	16.739	MEK
11.804	* not found *			1		Acrylonitrile
12.098	231098	BB	0.271	1	11.487	Toluene
15.605	81731	BV	0.187	1	3.406	Ethyl Benzene
16.006	19640	VV	0.182	1	1.118	p-Xylene
16.368	31030	VV	0.146	1	1.795	m-Xylene
16.720	* not found *			1		o-Xylene
17.776	1258298	BBA	0.210	1	22.155	Styrene

Not all calibrated peaks were found



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External Standard Report

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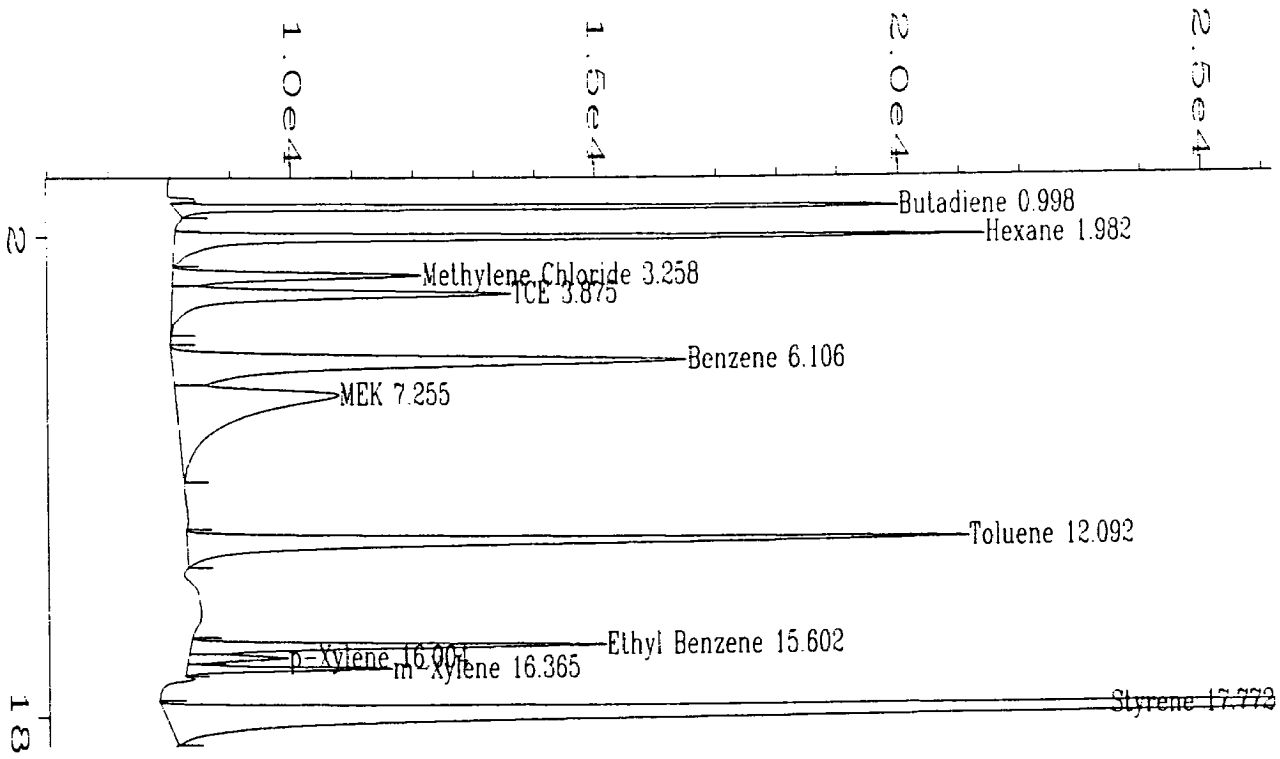
Data File Name : D:\SOLVAY\CAL\WS3_0002.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 26 Apr 95 11:47 PM
Report Created on: 04 May 95 02:28 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\CAL\WS3_0002.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
0.999	124123	PB	0.172	1	7.207	Butadiene
1.983	170989	BV	0.201	1	4.379	Hexane
3.259	66901	PV	0.249	1	14.505	Methylene Chloride
3.876	111181	VB	0.297	1	10.974	TCE
6.108	225898	BV	0.395	1	6.576	Benzene
7.266	158310	VB	0.830	1	16.999	MEK
11.804	* not found *			1		Acrylonitrile
12.093	230437	BB	0.266	1	11.455	Toluene
15.602	82252	BV	0.186	1	3.428	Ethyl Benzene
16.004	19470	VV	0.181	1	1.108	p-Xylene
16.366	31283	VV	0.146	1	1.810	m-Xylene
16.720	* not found *			1		o-Xylene
17.774	1254345	BBA	0.208	1	22.085	Styrene

Not all calibrated peaks were found



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External Standard Report

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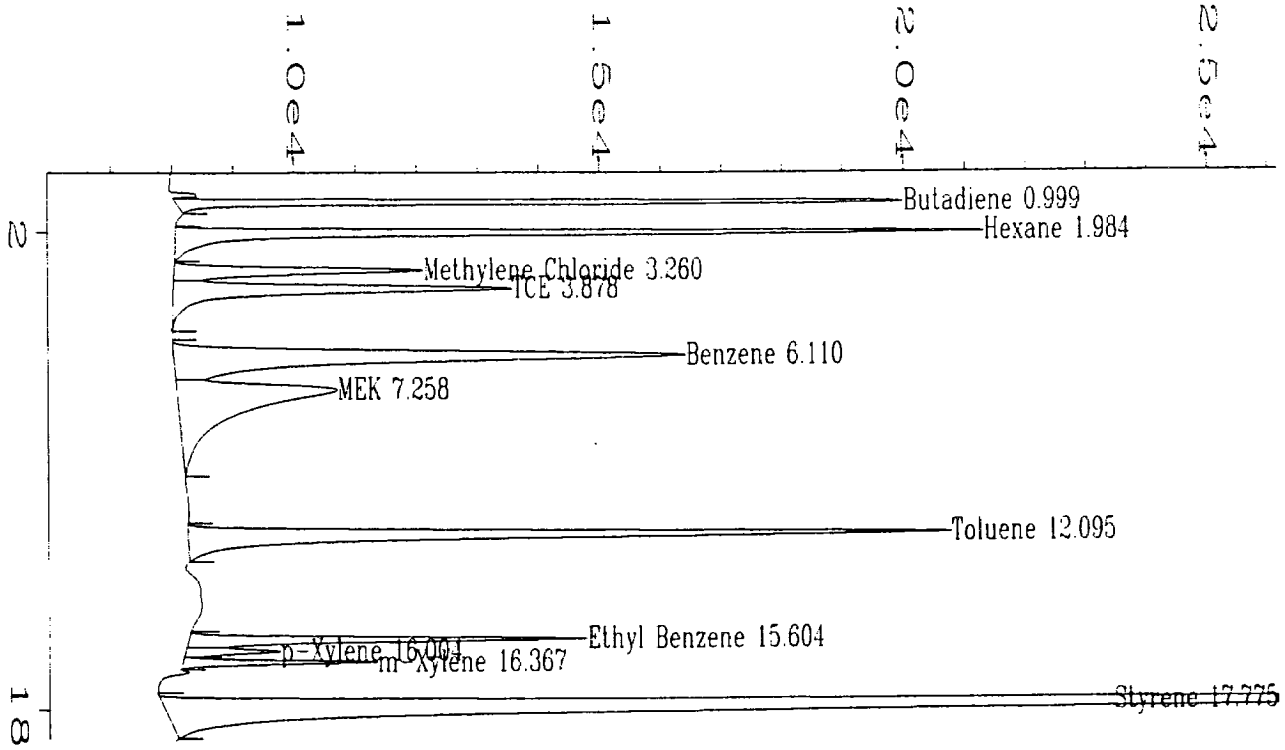
Data File Name : D:\SOLVAY\CAL\WS3_0003.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 27 Apr 95 00:09 AM
Report Created on: 04 May 95 02:29 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\CAL\WS3_0003.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
0.998	123947	PB	0.172	1	7.197	Butadiene
1.982	170954	BV	0.200	1	4.379	Hexane
3.258	66781	PV	0.248	1	14.480	Methylene Chloride
3.875	110839	VB	0.296	1	10.941	TCE
6.106	225726	BV	0.395	1	6.571	Benzene
7.255	158939	VB	0.806	1	17.066	MEK
11.804	* not found *			1		Acrylonitrile
12.092	230680	BB	0.266	1	11.467	Toluene
15.602	82482	BV	0.185	1	3.438	Ethyl Benzene
16.004	19342	VV	0.180	1	1.100	p-Xylene
16.365	31404	VV	0.146	1	1.817	m-Xylene
16.720	* not found *			1		o-Xylene
17.772	1258879	BBA	0.207	1	22.165	Styrene

Not all calibrated peaks were found



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External Standard Report

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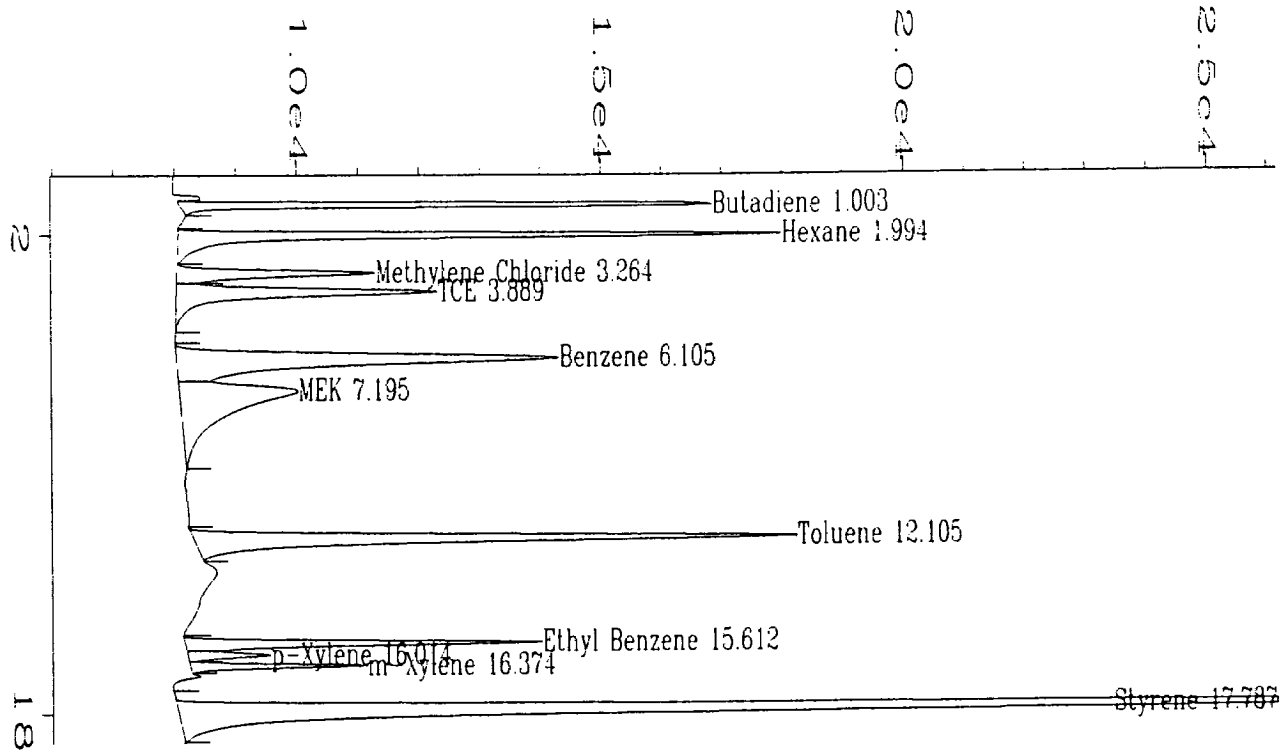
Data File Name : D:\SOLVAY\CAL\WS3_0005.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 27 Apr 95 00:53 AM
Report Created on: 04 May 95 02:29 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\CAL\WS3_0005.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
0.999	124733	PB	0.145	1	7.243	Butadiene
1.984	170835	BV	0.201	1	4.376	Hexane
3.260	66824	PV	0.250	1	14.489	Methylene Chloride
3.878	110137	VB	0.298	1	10.874	TCE
6.110	222608	BV	0.393	1	6.482	Benzene
7.258	156323	VB	0.816	1	16.790	MEK
11.804	* not found *			1		Acrylonitrile
12.095	223978	BB	0.266	1	11.138	Toluene
15.604	78651	BV	0.185	1	3.277	Ethyl Benzene
16.004	18467	VV	0.180	1	1.048	p-Xylene
16.367	29492	VV	0.146	1	1.703	m-Xylene
16.720	* not found *			1		o-Xylene
17.775	1180266	BBA	0.209	1	20.783	Styrene

Not all calibrated peaks were found



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External Standard Report

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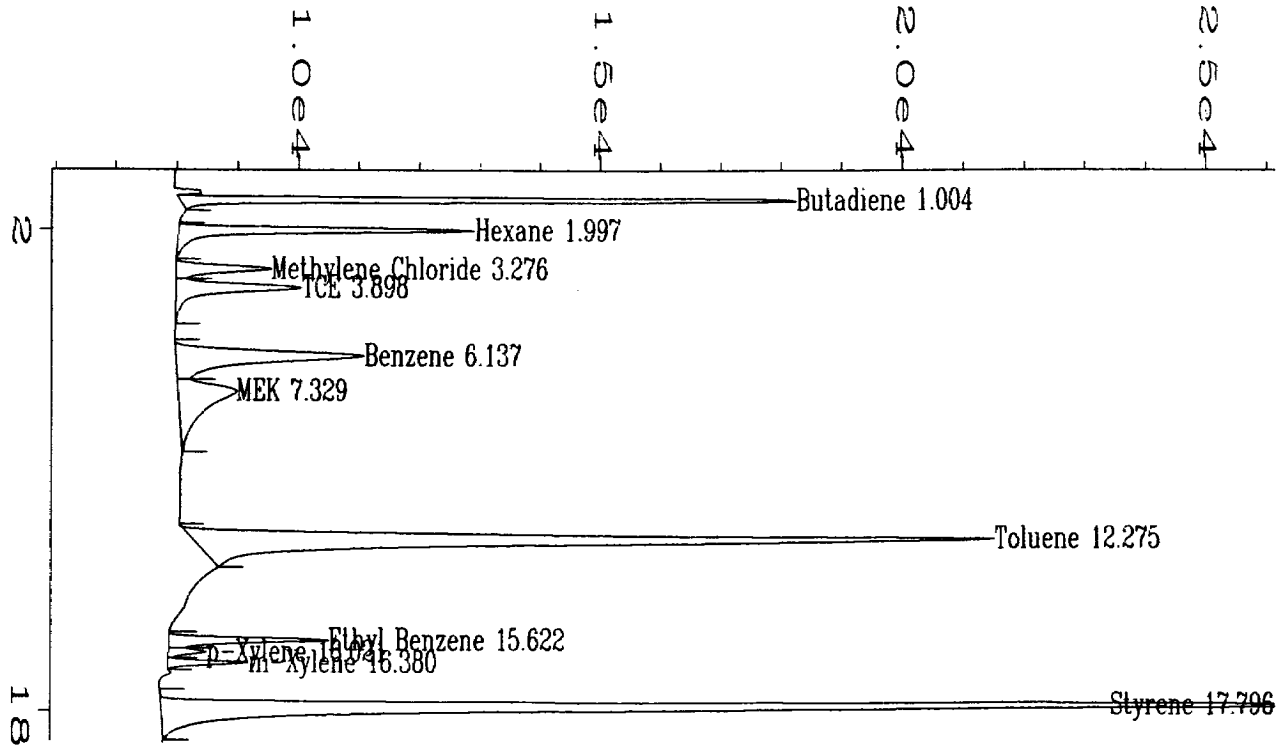
Data File Name : D:\SOLVAY\CAL\WS4_0001.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Run 1
Run Time Bar Code:
Acquired on : 27 Apr 95 08:57 AM
Report Created on: 04 May 95 02:30 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\CAL\WS4_0001.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.003	94272	PB	0.146	1	5.467	Butadiene
1.994	132893	BV	0.209	1	3.450	Hexane
3.264	51803	VV	0.242	1	11.364	Methylene Chloride
3.889	85736	VB	0.298	1	8.527	TCE
6.105	172090	BV	0.407	1	5.034	Benzene
7.195	115643	VB	0.821	1	12.494	MEK
11.804	* not found *			1		Acrylonitrile
12.105	180336	BB	0.270	1	8.997	Toluene
15.612	71549	BV	0.187	1	2.980	Ethyl Benzene
16.014	15716	VV	0.178	1	0.885	p-Xylene
16.374	27013	VV	0.146	1	1.556	m-Xylene
16.720	* not found *			1		o-Xylene
17.787	581557	BBA	0.217	1	10.257	Styrene

Not all calibrated peaks were found



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External Standard Report

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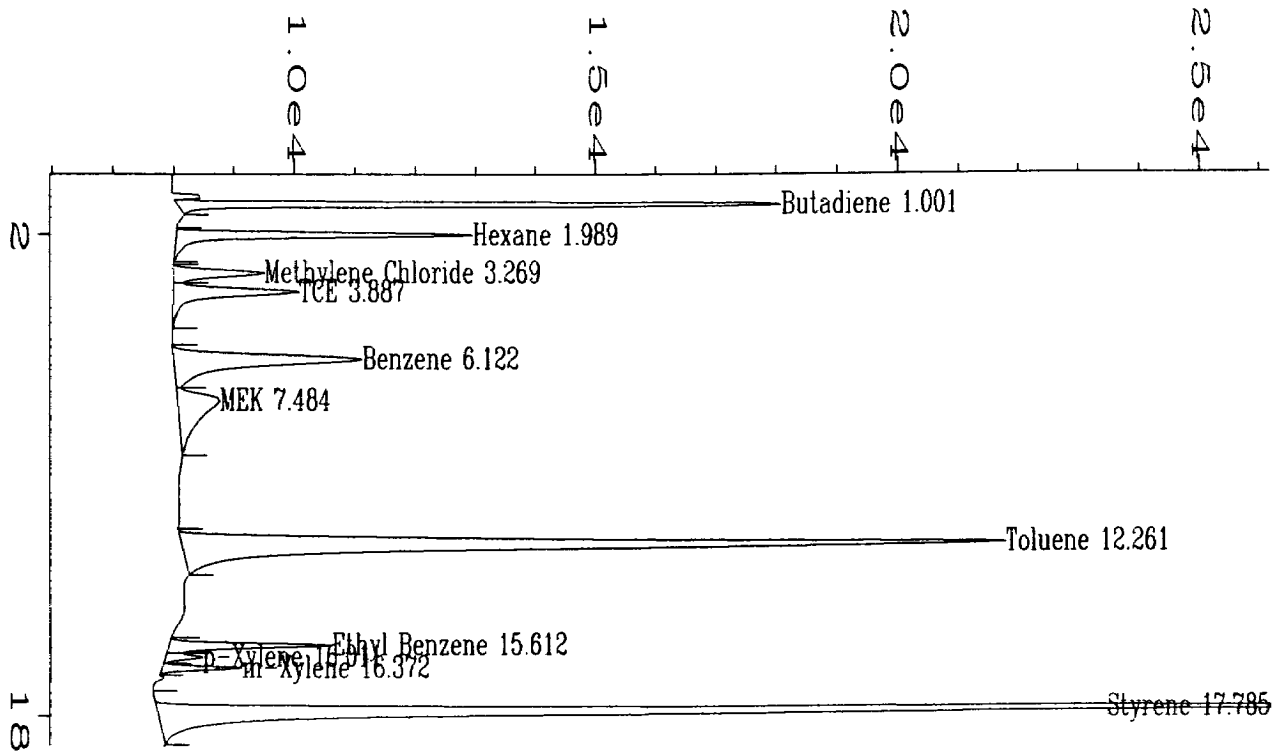
Data File Name	: D:\SOLVAY\CAL\WS5_0001.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: Calibration	Injection Number	:
Run Time Bar Code	:	Sequence Line	:
Acquired on	: 27 Apr 95 09:04 AM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 02:31 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\CAL\WS5_0001.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	109738	PB	0.146	1	6.369	Butadiene
1.997	64677	BB	0.206	1	1.787	Hexane
3.276	25622	BV	0.252	1	5.916	Methylene Chloride
3.898	41873	VB	0.301	1	4.308	TCE
6.137	84094	BV	0.404	1	2.513	Benzene
7.329	54202	VB	0.775	1	6.007	MEK
11.804	* not found *			1		Acrylonitrile
12.275	285420	BB	0.312	1	14.152	Toluene
15.622	32280	BV	0.188	1	1.338	Ethyl Benzene
16.021	7224	VV	0.178	1	0.380	p-Xylene
16.380	12365	VV	0.148	1	0.685	m-Xylene
16.720	* not found *			1		o-Xylene
17.796	377258	BBA	0.216	1	6.665	Styrene

Not all calibrated peaks were found



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External Standard Report

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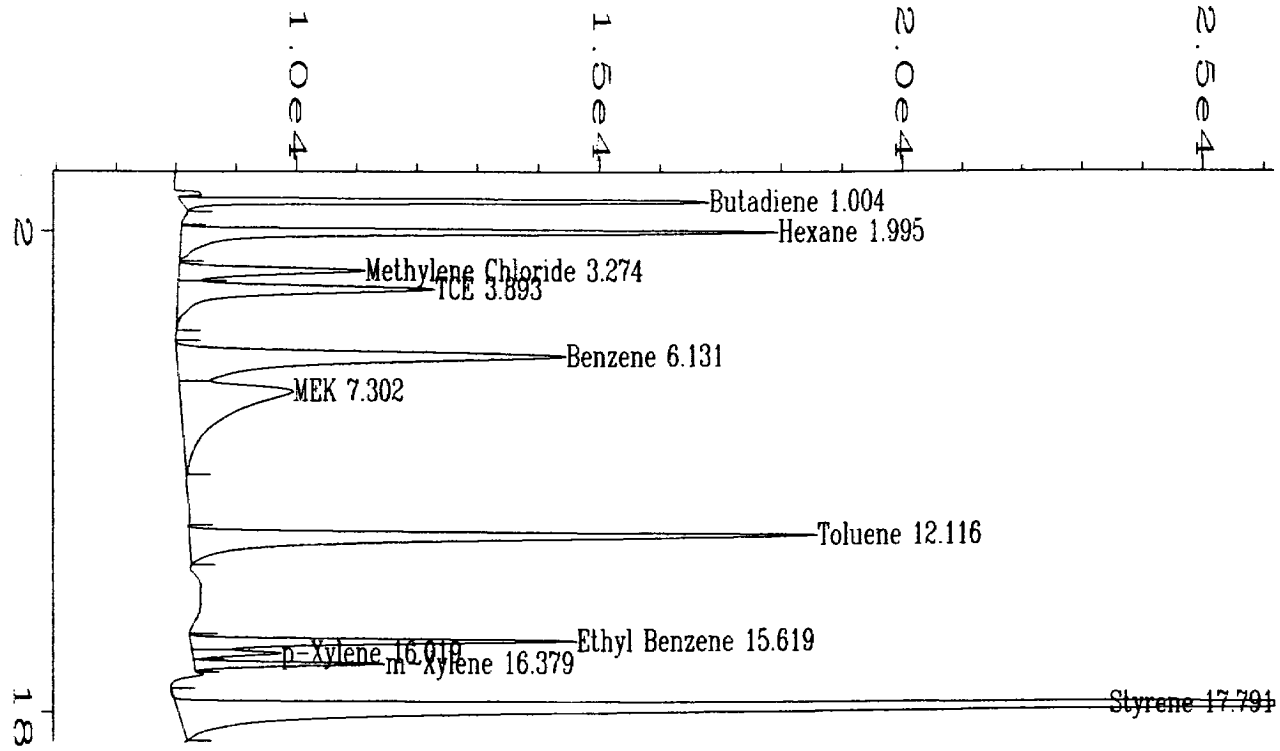
Data File Name : D:\SOLVAY\CAL\WS5_0002.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 27 Apr 95 09:25 AM
Report Created on: 04 May 95 02:33 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\CAL\WS5_0002.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.001	105499	PB	0.144	1	6.122	Butadiene
1.989	62467	BB	0.199	1	1.733	Hexane
3.269	24620	BV	0.247	1	5.708	Methylene Chloride
3.887	41493	VB	0.297	1	4.271	TCE
6.122	83249	BV	0.395	1	2.489	Benzene
7.484	40166	VB	0.774	1	4.525	MEK
11.804	* not found *			1		Acrylonitrile
12.261	294627	BB	0.312	1	14.604	Toluene
15.612	32521	BV	0.185	1	1.348	Ethyl Benzene
16.011	7056	VV	0.175	1	0.370	p-Xylene
16.372	11997	VV	0.143	1	0.664	m-Xylene
16.720	* not found *			1		o-Xylene
17.785	367986	BBA	0.211	1	6.502	Styrene

Not all calibrated peaks were found



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External Standard Report

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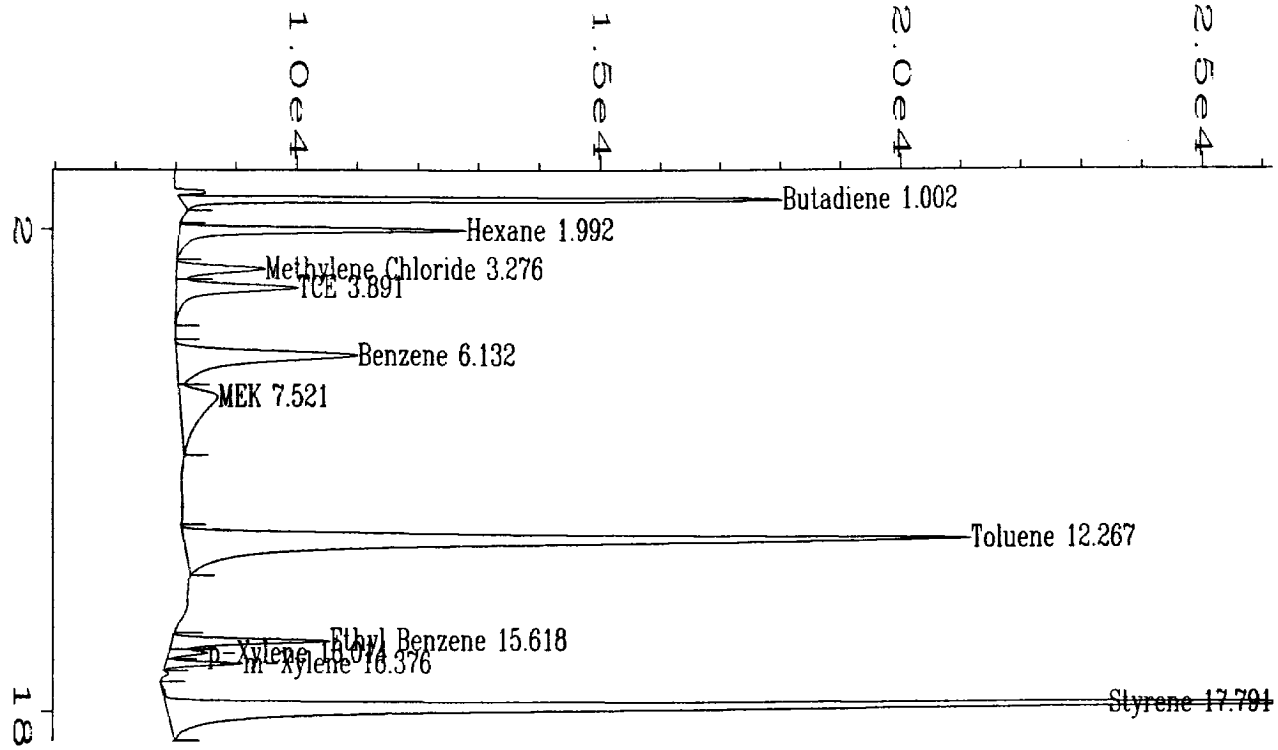
Data File Name : D:\SOLVAY\CAL\WS4_0002.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Run 1
Run Time Bar Code:
Acquired on : 27 Apr 95 09:26 AM
Report Created on: 04 May 95 02:30 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\CAL\WS4_0002.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	93696	PB	0.145	1	5.434	Butadiene
1.995	133442	BV	0.211	1	3.464	Hexane
3.274	51289	PV	0.254	1	11.257	Methylene Chloride
3.893	88054	VB	0.306	1	8.750	TCE
6.131	179354	BV	0.409	1	5.243	Benzene
7.302	119348	VB	0.860	1	12.885	MEK
11.804	* not found *			1		Acrylonitrile
12.116	199557	BB	0.283	1	9.940	Toluene
15.619	78788	BV	0.190	1	3.283	Ethyl Benzene
16.019	17223	VV	0.178	1	0.974	p-Xylene
16.379	29323	VV	0.146	1	1.693	m-Xylene
16.720	* not found *			1		o-Xylene
17.791	660106	BBA	0.217	1	11.638	Styrene

Not all calibrated peaks were found



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External Standard Report

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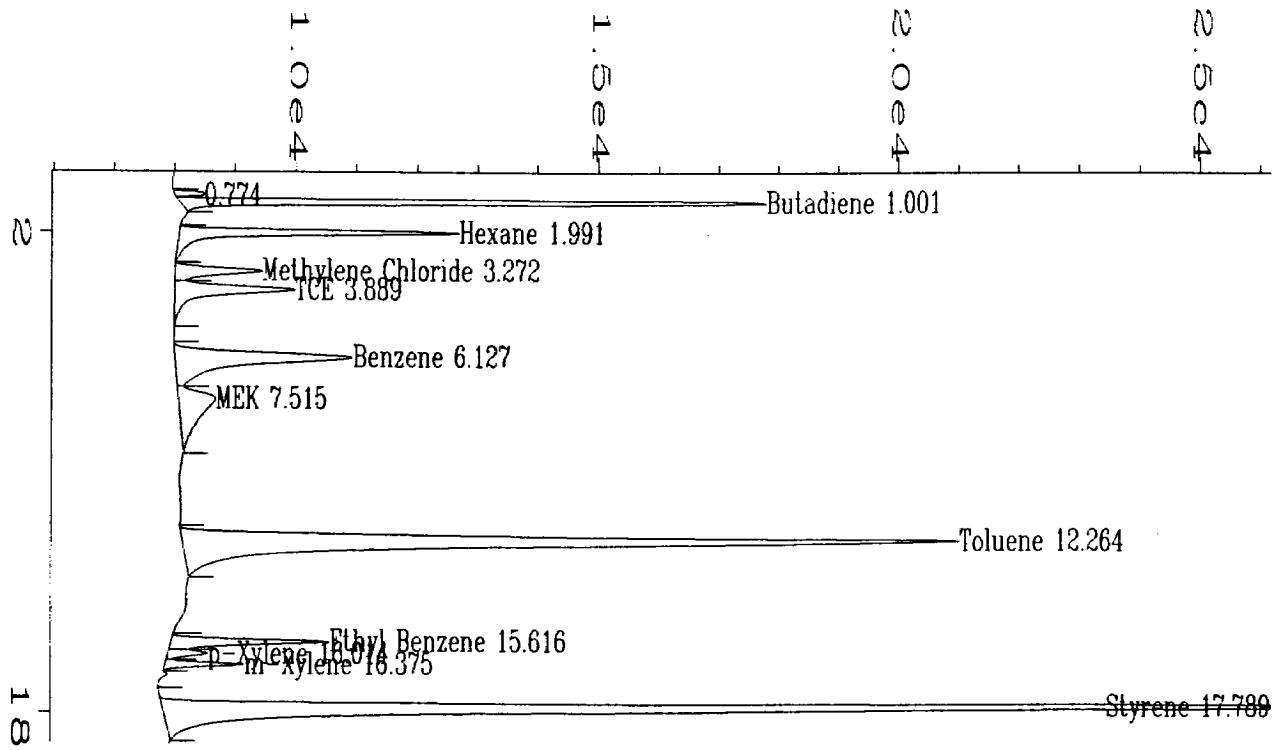
Data File Name : D:\SOLVAY\CAL\WS5_0003.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : Calibration
Run Time Bar Code:
Acquired on : 27 Apr 95 09:49 AM
Report Created on: 04 May 95 02:33 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\CAL\WS5_0003.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.002	104704	PB	0.147	1	6.075	Butadiene
1.992	61637	BB	0.202	1	1.713	Hexane
3.276	24367	BV	0.256	1	5.655	Methylene Chloride
3.891	40992	VB	0.304	1	4.223	TCE
6.132	83081	BV	0.412	1	2.484	Benzene
7.521	38916	VB	0.832	1	4.393	MEK
11.804	* not found *			1		Acrylonitrile
12.267	296204	BB	0.326	1	14.681	Toluene
15.618	32666	BV	0.192	1	1.354	Ethyl Benzene
16.014	7725	VV	0.184	1	0.410	p-Xylene
16.376	12088	VV	0.148	1	0.669	m-Xylene
16.720	* not found *			1		o-Xylene
17.791	377840	PBA	0.219	1	6.675	Styrene

Not all calibrated peaks were found



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External Standard Report

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Data File Name	: D:\SOLVAY\CAL\WS5_0004.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: Calibration	Injection Number	:
Run Time Bar Code	:	Sequence Line	:
Acquired on	: 27 Apr 95 10:13 AM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 02:34 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\CAL\WS5_0004.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.001	102151	PB	0.143	1	5.927	Butadiene
1.991	60107	BB	0.202	1	1.676	Hexane
3.272	23790	BV	0.252	1	5.535	Methylene Chloride
3.889	40660	VB	0.306	1	4.191	TCE
6.127	82411	BV	0.413	1	2.465	Benzene
7.515	37251	VB	0.839	1	4.217	MEK
11.804	* not found *			1		Acrylonitrile
12.264	295527	BB	0.329	1	14.648	Toluene
15.616	32862	BV	0.193	1	1.362	Ethyl Benzene
16.014	7883	VV	0.184	1	0.419	p-Xylene
16.375	12187	VV	0.148	1	0.675	m-Xylene
16.720	* not found *			1		o-Xylene
17.789	385261	BBA	0.219	1	6.806	Styrene

Not all calibrated peaks were found

D

FIELD DATA

D

Location: Calciners Run: 1-2-3

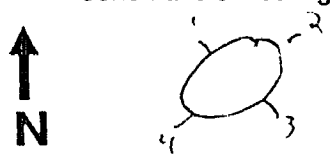
Velocity Determination Field Data Sheet

Page 1 of 2

Client Solvay Minerals	Project Number 7473
Plant Green River WY	Unit EP 1+2
Date 11-28-95	Inlet/Outlet/Stack
Data Recorder E. McGaffick	
Probe Operator R. Lvilkaart	

Pyrometer Number D-7	Pitot Cp .84
Pitot Leak Check: ✓ Before ✓ After	
Static Pressure (inches H_2O) (+/-) -1.0	

Schematic of Testing Location



First point all the way	IN	OUT
Area (ft^2) 113.1	Port Len (in) 6"	Gas Flow IN OUT

Ambient Temp. (°F) 50	Bar. Press. (in. Hg) 23.66
IGS Bag ID Number	
% O_2	% CO_2
% Moisture:	Assumed/Measured
Start Time See Below AM/PM	Stop Time AM/PM

PROBE # 11-19-92-1

R1 - Start - 8:30 End - 8:40 R2 Start 10:10 End 10.20

Traverse Point Number	Veocity Head ΔPs	Stack Temp (°F)	Traverse Point Number	Velocity Head ΔPs	Stack Temp (°F)	Traverse Point Number	Velocity Head ΔPs	Stack Temp (°F)	Traverse Point Number	Velocity Head ΔPs	Stack Temp (°F)	Notes
1-1	1.2	438	4-1	1.2	437	1-1	1.3	433	4-1	1.3	428	
2	1.5	440	2	1.1	435	2	1.3	435	2	1.1	426	
3	1.3	442	3	1.2	433	3	1.4	437	3	1.2	425	
4	1.3	443	4	1.2	434	4	1.3	437	4	1.1	424	
5	1.3	443	5	1.1	432	5	1.3	436	5	1.1	424	
6	1.1	439	6	.92	429	6	1.1	429	6	.89	419	
2-1	1.3	444				2-1	1.3	438				
2	1.3	445				2	1.3	441				
3	1.2	445				3	1.2	443				
4	1.2	447				4	1.2	444				
5	1.2	449				5	1.2	443				
6	.92	441				6	.91	434				
3-1	1.3	447				3-1	1.2	431				
2	1.4	448				2	1.2	430				
3	1.3	447				3	1.3	430				
4	1.2	448				4	1.2	429				
5	1.1	446				5	1.2	426				
6	.96	440				6	.95	424				
Total	26.			26.246	10592					26.1354	10366	
Average				1.0935	441					1.0889	431.9	

SOLVAY2016_6_000371

Location: Calciners Run: 1-2-3

Velocity Determination Field Data Sheet

Client Solvay Minerals	Project Number 7473
Plant Green River WY	Unit EP 1+2
Date 4-28-95	Inlet/Outlet/Stack
Data Recorder E. McGuffick	
Probe Operator R. Luikaart	

Pyrometer Number D-7	Pitot Cp .84
Pitot Leak Check: ✓ Before ✓ After	
Static Pressure (inches H_2O) (+/-) -1.0	

Schematic of Testing Location

N

First point all the way	IN	OUT
Area (ft^2) 113.1	Port Len (in) 6"	Gas Flow IN OUT

Ambient Temp. (°F) 50	Bar. Press. (in. Hg) 23.66
IGS Bag ID Number	
% O_2	% CO_2
% Moisture:	Assumed/Measured
Start Time AM/PM	Stop Time AM/PM

R3 Start - 11:18 End - 11:29

Traverse Point Number	Veocity Head ΔPs	Stack Temp (°F)		Traverse Point Number	Velocity Head ΔPs	Stack Temp (°F)		Traverse Point Number	Velocity Head ΔPs	Stack Temp (°F)		Traverse Point Number	Velocity Head ΔPs	Stack Temp (°F)		Notes
1-1	~~444~~ 1.3	444		4-1	1.2	438										
2	1.3	443		2	1.2	435										
3	1.3	445		3	1.1	434										
4	1.3	446		4	1.2	433										
5	1.2	445		5	1.1	432										
6	1.0	432		6	.88	428										
2-1	1.3	448														
2	1.2	450														
3	1.2	450														
4	1.3	452														
5	1.1	451														
6	.87	435														
3-1	1.2	438														
2	1.2	439														
3	1.2	438														
4	1.2	439														
5	1.1	438														
6	.94	430														
Total					25.8310	10563										
Average					1.0762	440										

SOLVAY2016_6_000372

Location: Calciners Run: 1

Moisture Determination Field Data Sheet

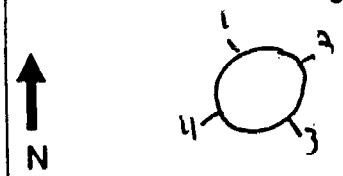
Page 1 of 1

Client: Solvay Minerals	Project Number: 7473
Plant: Green River WY	Unit: EP 1+2
Date: 4-28-95	Inlet/outlet: stack
Meter Operator: E. M'Guffick	
Probe Operator: E. M	

Sample Box Number: Knockouts	
Pyrometer Number: D-7	
Meter Box Number: D-7	
Meter ΔH@: 1.8228	Meter Y_d: .9966

Leak Rate Before:	.001	cc/m cf/m @	16	"Hg
Leak Rate After:	.000	cc/m cf/m @	10	"Hg

Schematic of Testing Location



First point all the way IN/OUT	Method 4	
Area (ft^2): 113.1	Port Len. (in.): 6	Gas Flow IN/OUT
Filter Material: NA		

Ambient Temp. (°F): 50	Bar. Press. (in. Hg): 23.66
Assumed Moisture (%): 17.	

Heater Box Setting: NA	Probe Heater Setting: NA
Probe Length: 3'	Probe Number: NA
Probe Material: SS	

IGS Bag ID Number: R1 EP 1+2	
% O_2: 15.0	% CO_2: 7.06
H_2O (ml): 121	Silica Gel (gm): 11.4
Total V_{lc}: 132.4	

Start Time: 8:05 AM/PM	Stop Time: 8:50 AM/PM

Traverse Point Number	Min/pt 5 / Clock Time 0	Pump Vacuum (in. Hg)	Stack Temp, Ts (°F)	Bath Temp, (°F)	Orifice Setting ΔH (in. H_2O)	Initial Volume 080.40 / Gas Sample Volume V_m Circle one: (L) (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Probe Temp. T_p (°F)			Notes
	5	5	Seal	50	1.8	084.46	53	53	NA			VAP: 1.0935
	10	5	Flow	49		088.40	55	54				TS = 441
	15	5	Data	48		092.40	57	54				B_{wO} = .1767
	20	5		49		096.39	59	55				
	25	5		50		100.37	62	56				
	30	5		51		104.35	63	56				
	35	5		52		108.35	65	57				
	40	5		53		112.35	67	58				
	45	5		53		116.37	69	59				
Average							10	59				
Total						35.97	58.4					

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SOLVAY2016_6_000373

Location: Calciners Run: 2

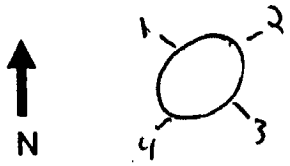
Moisture Determination Field Data Sheet

Client Solvay Minerals	Project Number 7473
Plant Green River WY	Unit EP 1+2
Date 4-28-95	Inlet/outlet/stack
Meter Operator E. McGuffick	
Probe Operator E.M	

Sample Box Number Knock Outs	
Pyrometer Number D-7	
Meter Box Number D-7	
Meter ΔH@ 1.8228	Meter Y_d .9966

Leak Rate Before: .001 cc/m cf/m @	16	"Hg	
Leak Rate After: .000 cc/m cf/m @	10	"Hg	

Schematic of Testing Location



First point all the way IN OUT	Method 4	
Area (ft^2) 113.1	Port Len. (in.) 6"	Gas Flow IN OUT
Filter Material NA		

Ambient Temp. (°F) 50	Bar. Press. (in. Hg) 23.66
Assumed Moisture (%) 17.	

Heater Box Setting NA	Probe Heater Setting NA
Probe Length 3'	Probe Number NA
Probe Material S.S.	

IGS Bag ID Number R2 EP 1.2	
% O_2 15.26	% CO_2 6.9
H_2O (ml) 127	Silica Gel (gm) 9.8
Total V_{lc} 136.8	

Start Time: 9:53 AM PM	Stop Time: 10:28 AM / PM

Traverse Point Number	Min/pt 5 / Clock Time 0	Pump Vacuum (in. Hg)	Stack Temp, Ts (°F)	Bath Temp, (°F)	Orifice Setting ΔH (in. H_2O)	Initial Volume 116.60 / Gas Sample Volume V_m Circle one: (L) (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Probe Temp. T_p (°F)			Notes
3-2	5	5	See	50	1-8	120.69	59	59	NA			$\sqrt{\Delta P}$ = 1.0889
	10	5	Flow	50		124.74	61	60				TS = 431.9
	15	5	Data	48		128.81	59	58				B_{wO} = .1797
	20	5		49		132.89	58	56				
	25	5		50		136.92	61	58				
	30	5		52		140.99	64	59				
	35	5		53		145.02	63	58				
	40	5		55		149.05	62	57				
	45	5		56		153.10	63	58				
Average							10	73				
Total						36.50	59.6					

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SOLVAY2016_6_000374

Location: Calciners Run: 3

Moisture Determination Field Data Sheet

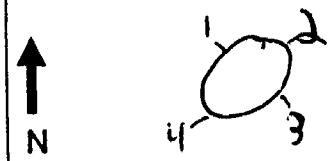
Page 1 of 1

Client: Solvay Minerals	Project Number: 7473
Plant: Green River WY	Unit: EP 1-2
Date: 4-28-95	Inlet/outlet/stack
Meter Operator: E. McGuffick	
Probe Operator: E.M	

Sample Box Number: Knockouts	
Pyrometer Number: D-7	
Meter Box Number: D-7	
Meter ΔH@: 1.8228	Meter Y_d: .9966

Leak Rate Before:	.001 cc/m cf/m @	17	"Hg
Leak Rate After:	.000 cc/m cf/m @	11	"Hg

Schematic of Testing Location



First point all the way IN OUT	Method 4	
Area (ft^2): 113.1	Port Len. (in.): 6"	Gas Flow IN OUT
Filter Material: NA		

Ambient Temp. (°F): 50	Bar. Press. (in. Hg): 23.66
Assumed Moisture (%): 17	

Heater Box Setting: NA	Probe Heater Setting: NA
Probe Length: 3'	Probe Number: NA
Probe Material: SS.	

IGS Bag ID Number: R3EP 1+2	
% O_2: 15.4	% CO_2: 7.4
H_2O (ml): 129	Silica Gel (gm): 9.4
Total V_{lc}: 138.4	

Start Time: 11:13 AM PM	Stop Time: 11:58 AM / PM

Traverse Point Number	Min/pt 5 / Clock Time 0	Pump Vacuum (in. Hg)	Stack Temp, Ts (°F)	Bath Temp, (°F)	Orifice Setting ΔH (in. H_2O)	Initial Volume 153.30 / Gas Sample Volume V_m Circle one: (L) (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Probe Temp. T_p (°F)			Notes
3-2	5	5	Sea	50	1.8	157.35	59	58	NA			√ΔP= 1.0762 (EM)
	10	5	Flow	51		161.40	60	59				TS= 440
	15	5	Data	50		165.42	63	59				BwO=.1831
	20	5		50		169.42	66	61				
	25	5		51		173.47	67	61				
	30	5		52		177.50	72	64				
	35	5		54		181.52	68	62				
	40	5		54		185.57	71	64				
	45	5		56		189.63	66	61				
Average						36.33	11	41				
Total							63					

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SOLVAY2016_6_000375

Orsat Readings

Client Solvay Minerals	Project Number 7473
Plant Green River WY	Unit E1+2 / EP5
Date 4-28-95	Fuel Type
Orsat ID 85	Leak Check? OK

$$F_o = \frac{20.9 - \%O_2}{\%CO_2}$$

F_o = 1.083 to 1.230 (for bituminous coal)

Run Number	Location	Bag ID	Trial	Percent CO_2	Percent $CO_2 + O_2$	Percent O_2	F_o	Sample Time	Analysis Time	Analyst
1	EP 1+2	R1	1	7	22.0	15.0				EM
			2	7.2	22.2	15.0				
			3	7	22.0	15.0				
			Avg.	7.06	22.06	15.0				
2	EP 1+2	R2	1	6.8	22.2	15.4				EM
			2	7	22.2	15.2				
			3	7	22.2	15.2				
			Avg.	6.9	22.2	15.26				
3	EP 1+2	R3	1	7	22.6	15.6				EM
			2	7.4	22.8	15.4				
			3	7.4	22.8	15.4				
			Avg.	7.26	22.7	15.46				
1	EP5 varied Flame	R1 EP5	1	12.6	23.0	10.4				EM
			2	12.6	23.0	10.4				
			3	12.6	23.0	10.4				
			Avg.	12.6	23.0	10.4				
2	EP5 varied Flame	R2 EP5	1	11.2	22.8	11.6				EM
			2	11.2	23.0	11.8				
			3	11.2	22.8	11.6				
			Avg.	11.2	22.86	11.66				
3	EP5 varied flame	R3 EP5	1	12.0	23.0	11.0				EM
			2	12.2	23.0	10.8				
			3	12.0	23.0	11.0				
			Avg.	12.06	23.0	10.9				
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							

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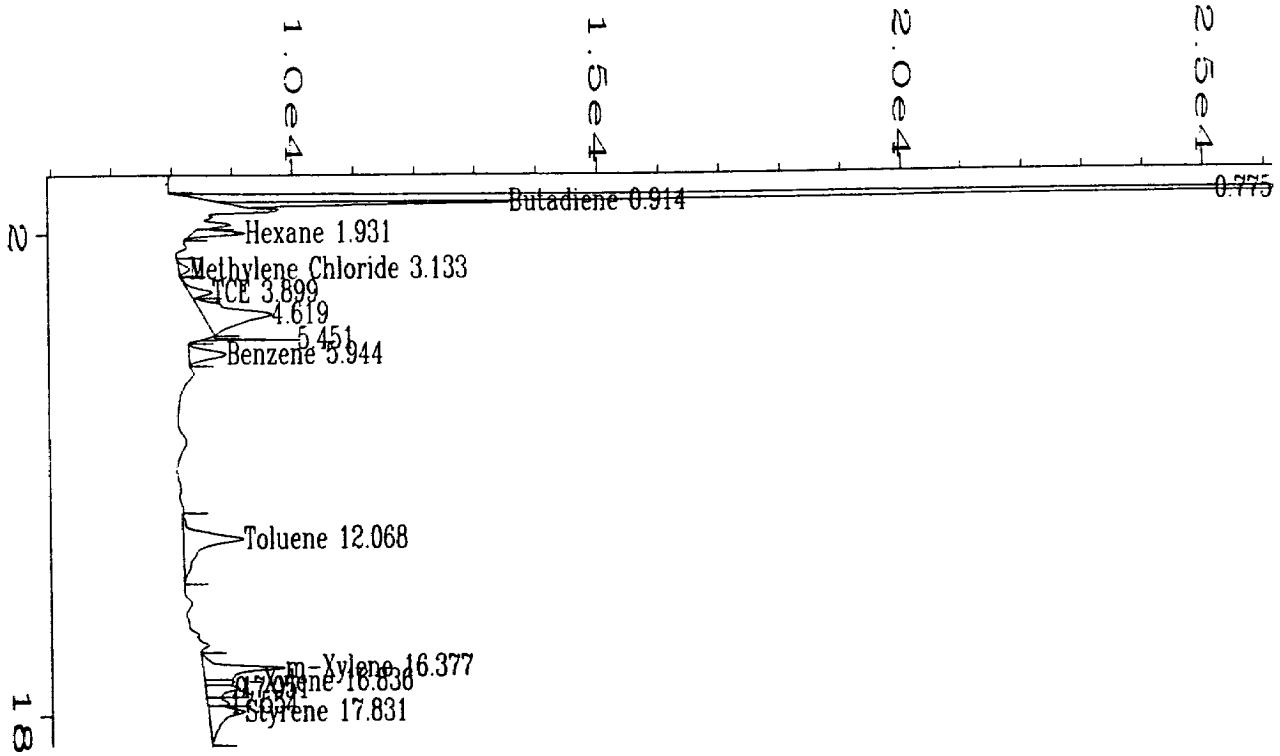

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External Standard Report

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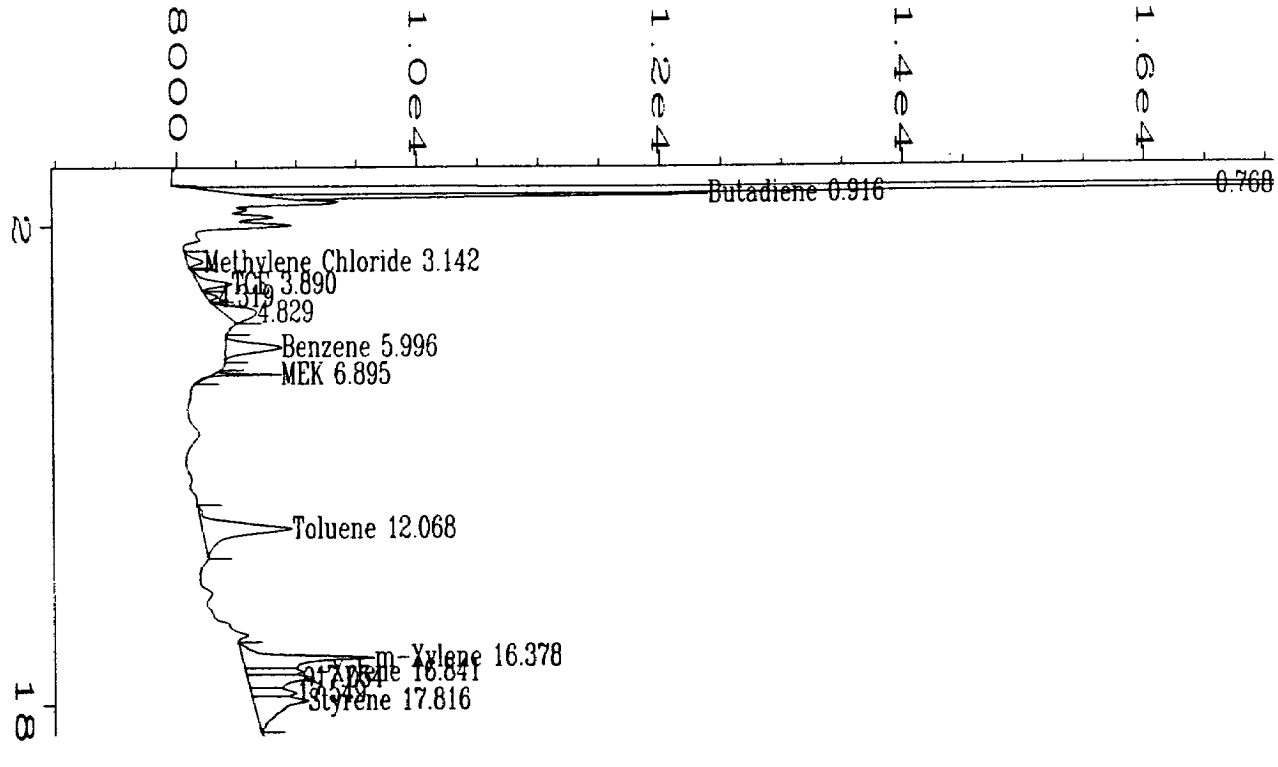
Data File Name	: D:\SOLVAY\EP1-2\RUN1_001.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: run1	Injection Number	:
Run Time Bar Code	:	Sequence Line	:
Acquired on	: 28 Apr 95 08:05 AM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 03:04 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\EP1-2\RUN1_001.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
0.914	31832	VV	0.101	1	1.828	Butadiene
1.931	9340	VB	0.153	1	0.438	Hexane
3.133	2883	BV	0.219	1	1.185	Methylene Chloride
3.899	5853	BV	0.222	1	0.844	TCE
5.944	11973	PV	0.322	1	0.447	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.068	32262	BB	0.425	1	1.732	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.377	24157	BV	0.244	1	1.386	m-Xylene
16.836	4939	VV	0.147	1	0.244	o-Xylene
17.831	16067	VBA	0.365	1	0.315	Styrene

Not all calibrated peaks were found



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External Standard Report

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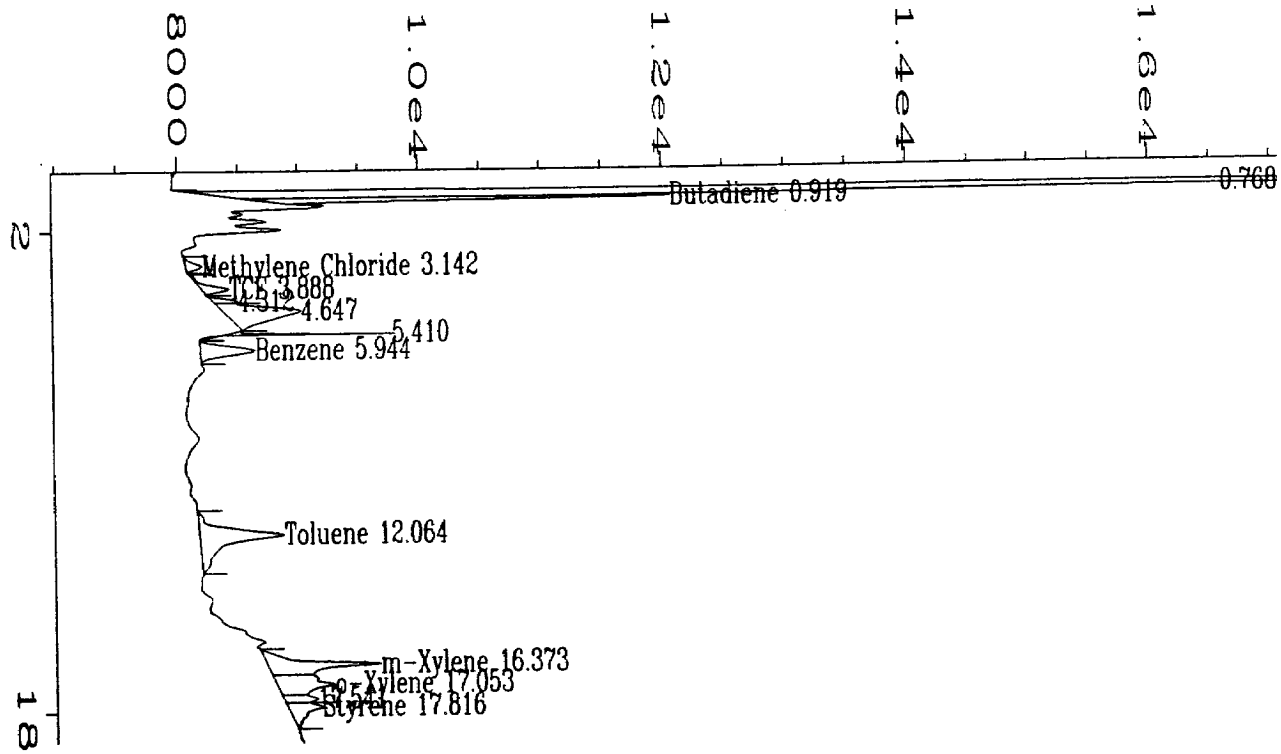
Data File Name	: D:\SOLVAY\EP1-2\RUN1_002.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: run1	Injection Number	:
Run Time Bar Code:		Sequence Line	:
Acquired on	: 28 Apr 95 08:27 AM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 03:11 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\EP1-2\RUN1_002.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
0.916	25873	VV	0.103	1	1.480	Butadiene
1.980	* not found *			1		Hexane
3.142	2031	BV	0.186	1	1.007	Methylene Chloride
3.890	4331	BV	0.193	1	0.697	TCE
5.996	9449	BB	0.283	1	0.375	Benzene
6.895	1493	BB	0.074	1	0.441	MEK
11.804	* not found *			1		Acrylonitrile
12.068	20337	BB	0.370	1	1.147	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.378	19711	BV	0.245	1	1.122	m-Xylene
16.841	5369	VV	0.161	1	0.270	o-Xylene
17.816	13690	VB	0.397	1	0.273	Styrene

Not all calibrated peaks were found



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External Standard Report

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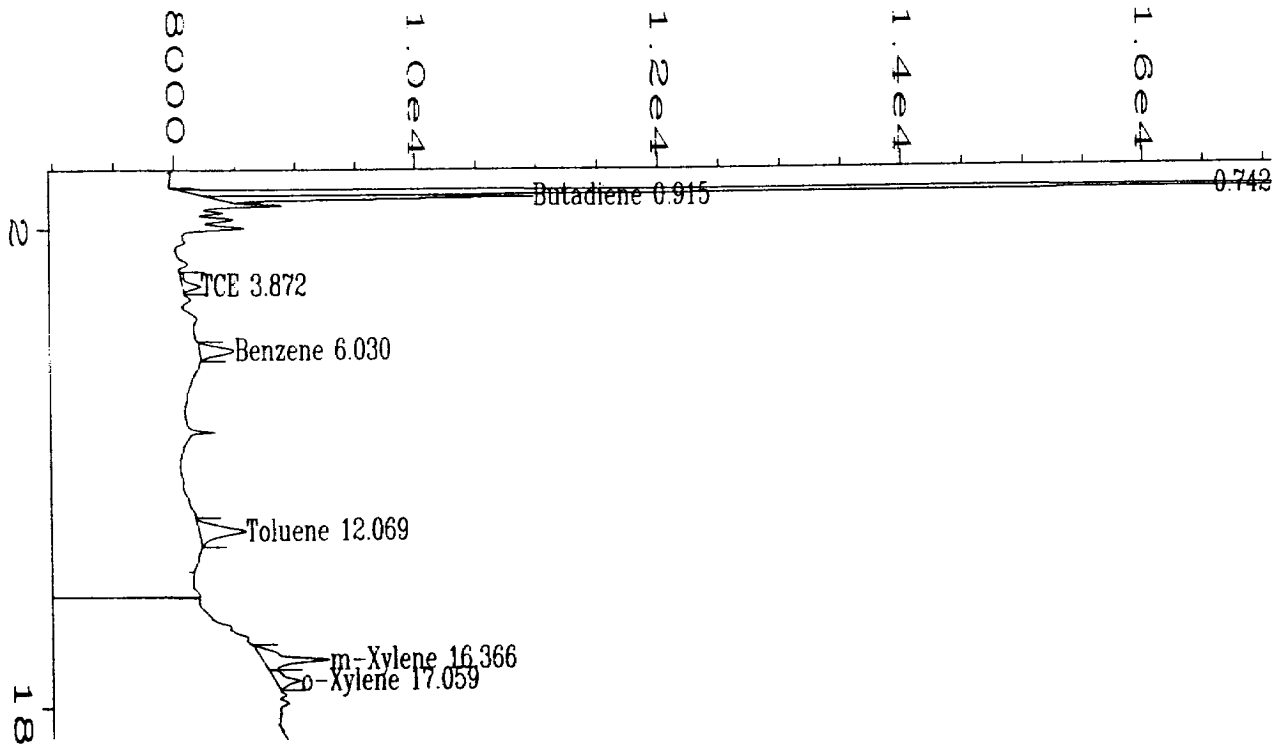
Data File Name : D:\SOLVAY\EP1-2\RUN1_003.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : run1
Run Time Bar Code:
Acquired on : 28 Apr 95 08:49 AM
Report Created on: 04 May 95 03:12 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\EP1-2\RUN1_003.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
0.919	24224	VV	0.104	1	1.384	Butadiene
1.980	* not found *			1		Hexane
3.142	2011	BV	0.199	1	1.003	Methylene Chloride
3.888	3313	BV	0.205	1	0.599	TCE
5.944	8930	BB	0.314	1	0.360	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.064	22244	BB	0.427	1	1.241	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.373	17982	BV	0.259	1	1.019	m-Xylene
17.053	13644	VV	0.375	1	0.761	o-Xylene
17.816	6619	VB	0.322	1	0.149	Styrene

Not all calibrated peaks were found



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External Standard Report

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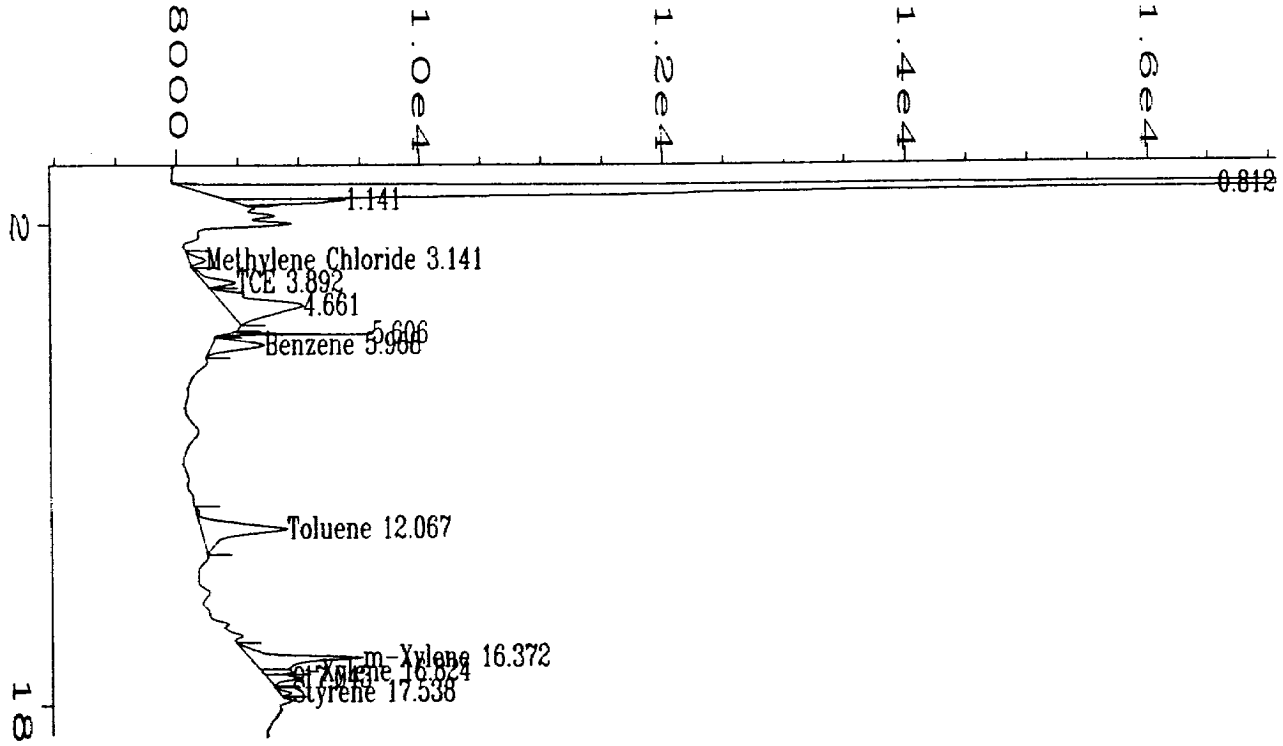
Data File Name : D:\SOLVAY\EP1-2\RUN1_004.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : run1
Run Time Bar Code:
Acquired on : 28 Apr 95 09:11 AM
Report Created on: 04 May 95 03:13 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\EP1-2\RUN1_004.D

Rt Time	Area	Type	Width	Ref#	ppm	Name
0.915	20048	VV	0.100	1	1.141	Butadiene
1.980	* not found *			1		Hexane
3.226	* not found *			1		Methylene Chloride
3.872	2302	BB	0.195	1	0.502	TCE
6.030	5392	BB	0.241	1	0.258	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.069	8569	BB	0.275	1	0.570	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.366	9818	BV	0.220	1	0.534	m-Xylene
17.059	4041	VB	0.239	1	0.191	o-Xylene
17.771	* not found *			1		Styrene

Not all calibrated peaks were found



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External Standard Report

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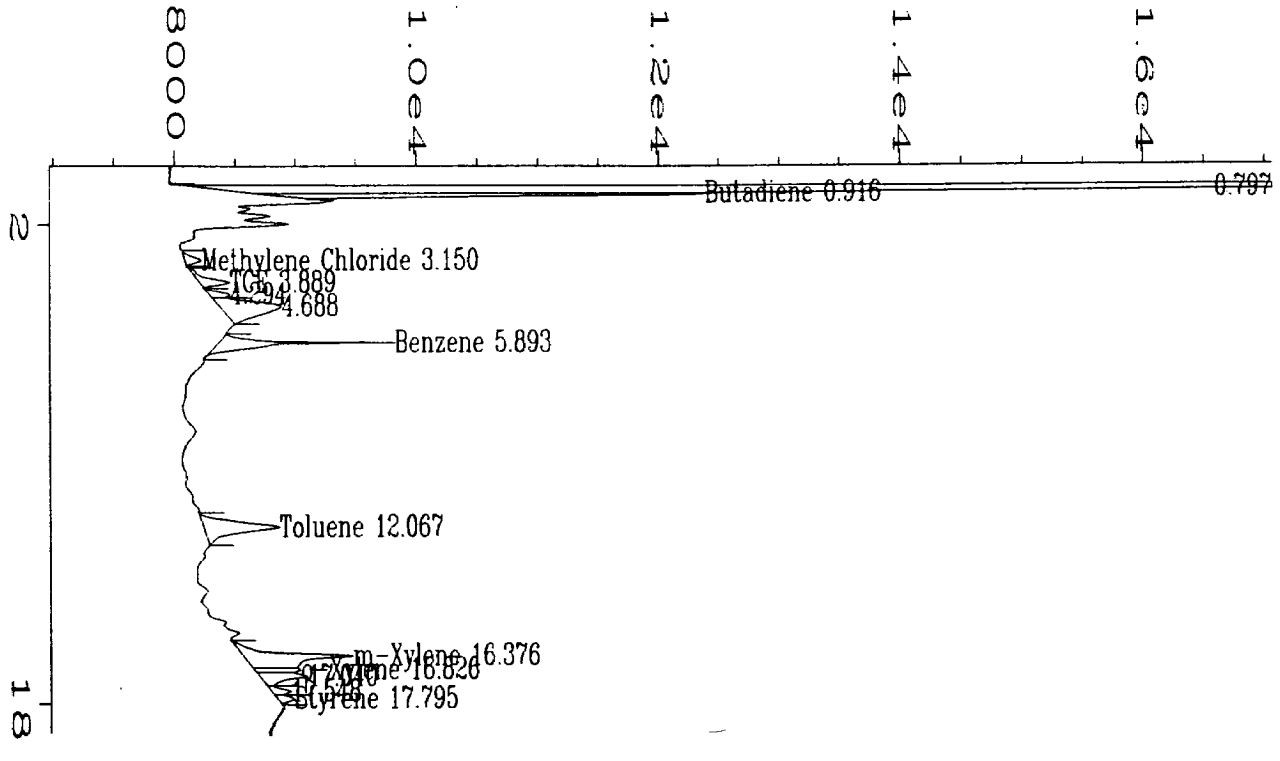
Data File Name : D:\SOLVAY\EP1-2\RUN2_002.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : run2
Run Time Bar Code:
Acquired on : 28 Apr 95 10:05 AM
Report Created on: 04 May 95 03:14 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\EP1-2\RUN2_002.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.980	* not found *			1		Hexane
3.141	1979	BBA	0.188	1	0.996	Methylene Chloride
3.892	4071	BV	0.201	1	0.672	TCE
5.968	8249	BB	0.263	1	0.340	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.067	18639	BB	0.348	1	1.064	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.372	16185	BV	0.239	1	0.912	m-Xylene
16.824	2537	VV	0.147	1	0.101	o-Xylene
17.538	787	BV	0.130	1	0.0463	Styrene

Not all calibrated peaks were found



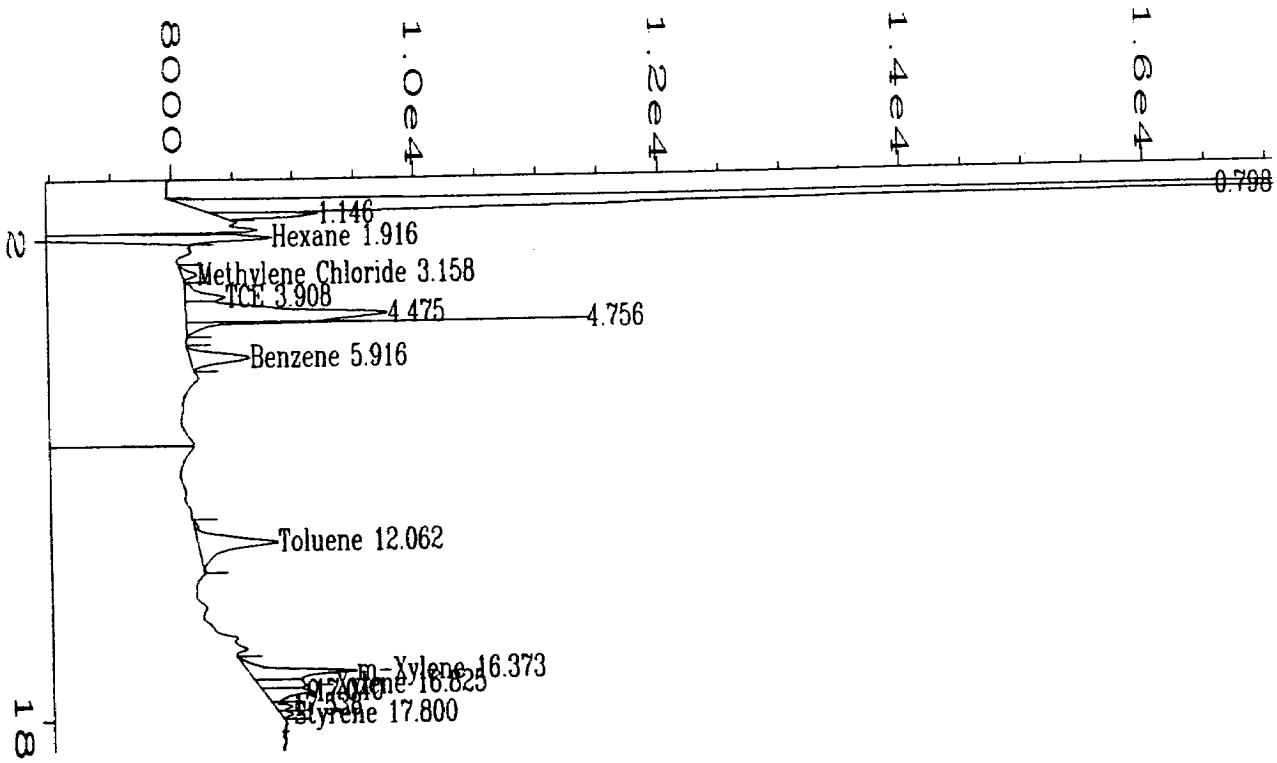
External Standard Report

Data File Name	: D:\SOLVAY\EP1-2\RUN2_003.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: run2	Injection Number	:
Run Time Bar Code	:	Sequence Line	:
Acquired on	: 28 Apr 95 10:26 AM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 03:14 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\EP1-2\RUN2_003.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
0.916	24996	VV	0.086	1	1.429	Butadiene
1.980	* not found *			1		Hexane
3.150	1950	BV	0.190	1	0.991	Methylene Chloride
3.889	3859	BV	0.199	1	0.652	TCE
5.893	11543	BB	0.100	1	0.435	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.067	14481	BB	0.309	1	0.860	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.376	18093	BV	0.271	1	1.026	m-Xylene
16.826	3566	VV	0.138	1	0.162	o-Xylene
17.795	1644	VB	0.169	1	0.0614	Styrene

Not all calibrated peaks were found



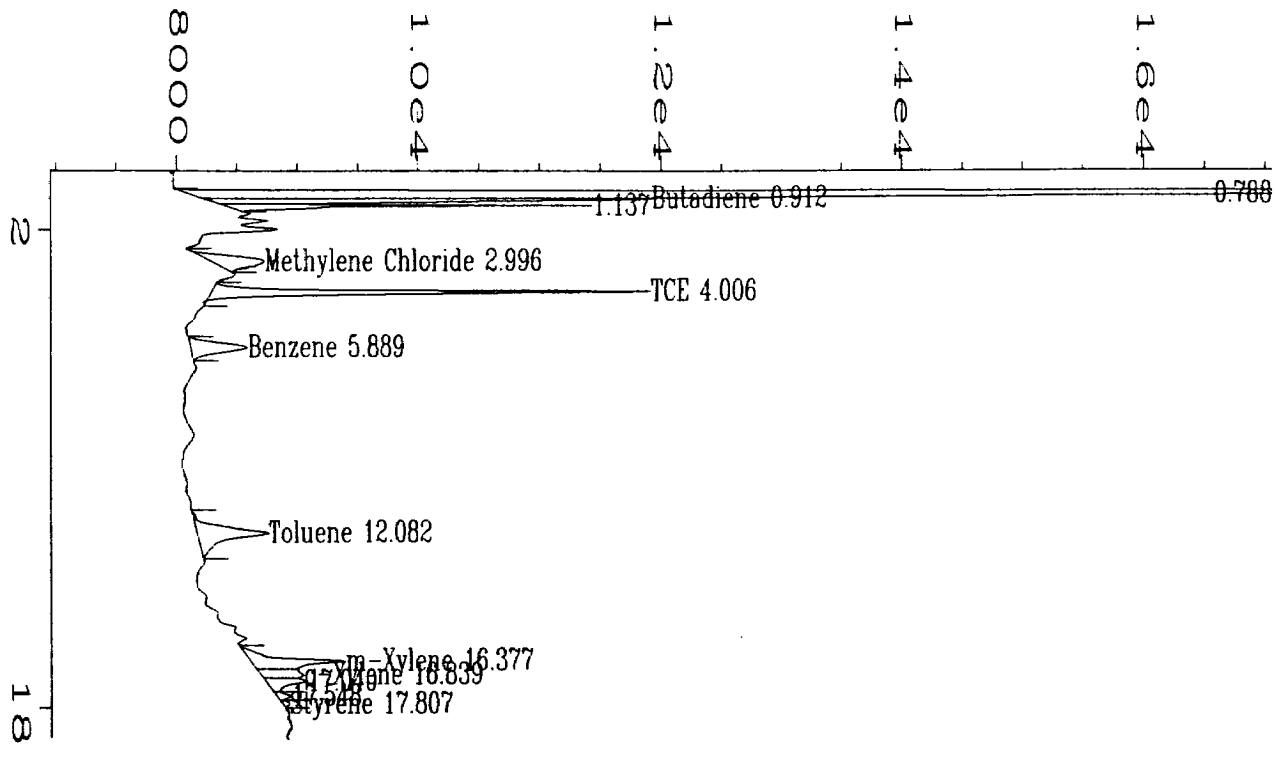
External Standard Report

Data File Name	: D:\SOLVAY\EP1-2\RUN2_004.D	Page Number	: 1
Operator	: J. Kaput	Vial Number	:
Instrument	: HP 5890 N	Injection Number	:
Sample Name	: run2	Sequence Line	:
Run Time Bar Code:		Instrument Method	: SOLVAY.MTH
Acquired on	: 28 Apr 95 10:48 AM	Analysis Method	: METHOD.MTH
Report Created on	: 04 May 95 03:16 PM	Sample Amount	: 0
Last Recalib on	: 26 APR 95 06:11 PM	ISTD Amount	:
Multiplier	: 1		

Sig. 1 in D:\SOLVAY\EP1-2\RUN2_004.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.916	37146	PB	0.214	1	1.116	Hexane
3.158	1736	BBA	0.200	1	0.946	Methylene Chloride
3.908	5957	BV	0.226	1	0.854	TCE
5.916	10484	BB	0.292	1	0.404	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.062	17927	BB	0.365	1	1.029	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.373	14773	BV	0.230	1	0.829	m-Xylene
16.825	6526	VV	0.226	1	0.338	o-Xylene
17.800	1099	VB	0.150	1	0.0518	Styrene

Not all calibrated peaks were found



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External Standard Report

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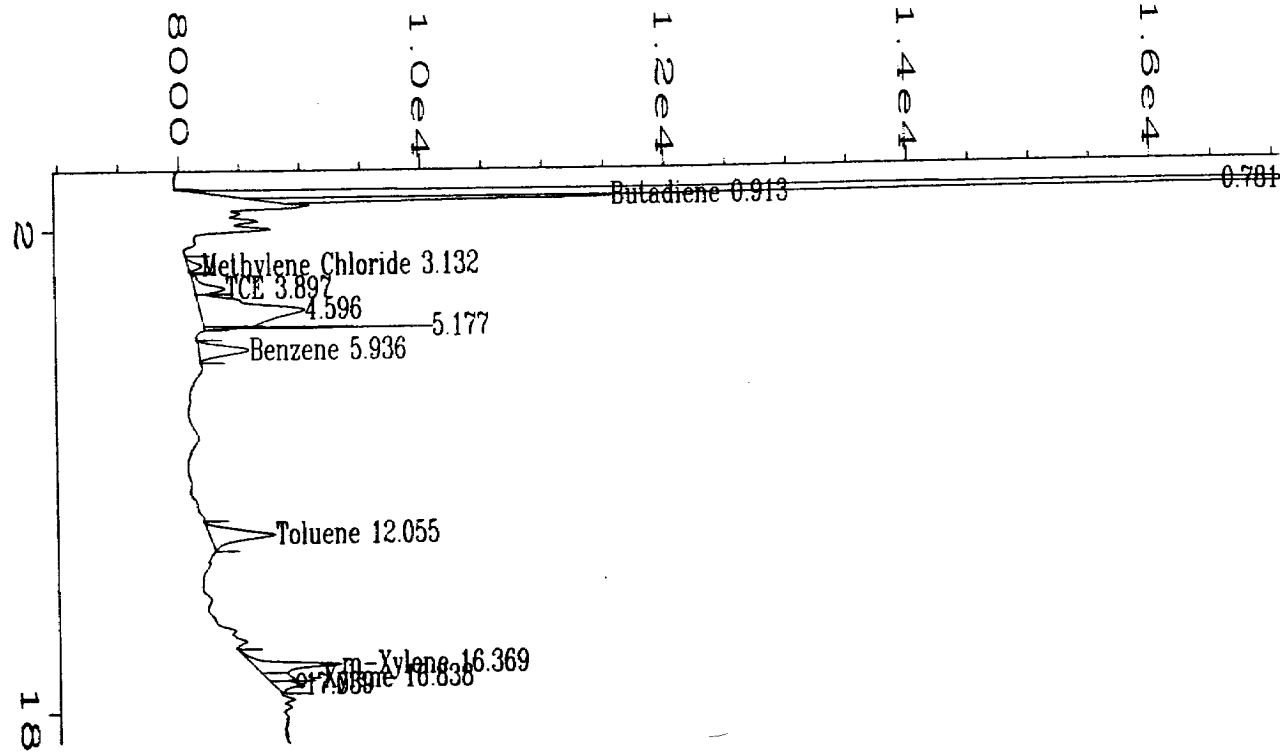
Data File Name	: D:\SOLVAY\EP1-2\RUN3_002.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: run3	Injection Number	:
Run Time Bar Code	:	Sequence Line	:
Acquired on	: 28 Apr 95 11:14 AM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 03:17 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\EP1-2\RUN3_002.D

Rt Time	Area	Type	Width	Ref#	ppm	Name
0.912	28260	VV	0.098	1	1.619	Butadiene
1.980	* not found *			1		Hexane
2.996	9847	BV	0.282	1	2.634	Methylene Chloride
4.006	30348	BB	0.115	1	3.200	TCE
5.889	9991	BB	0.278	1	0.390	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.082	16000	BB	0.362	1	0.935	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.377	12992	BV	0.229	1	0.723	m-Xylene
16.839	6203	VV	0.298	1	0.319	o-Xylene
17.807	585	VV	0.174	1	0.0427	Styrene

Not all calibrated peaks were found



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External Standard Report

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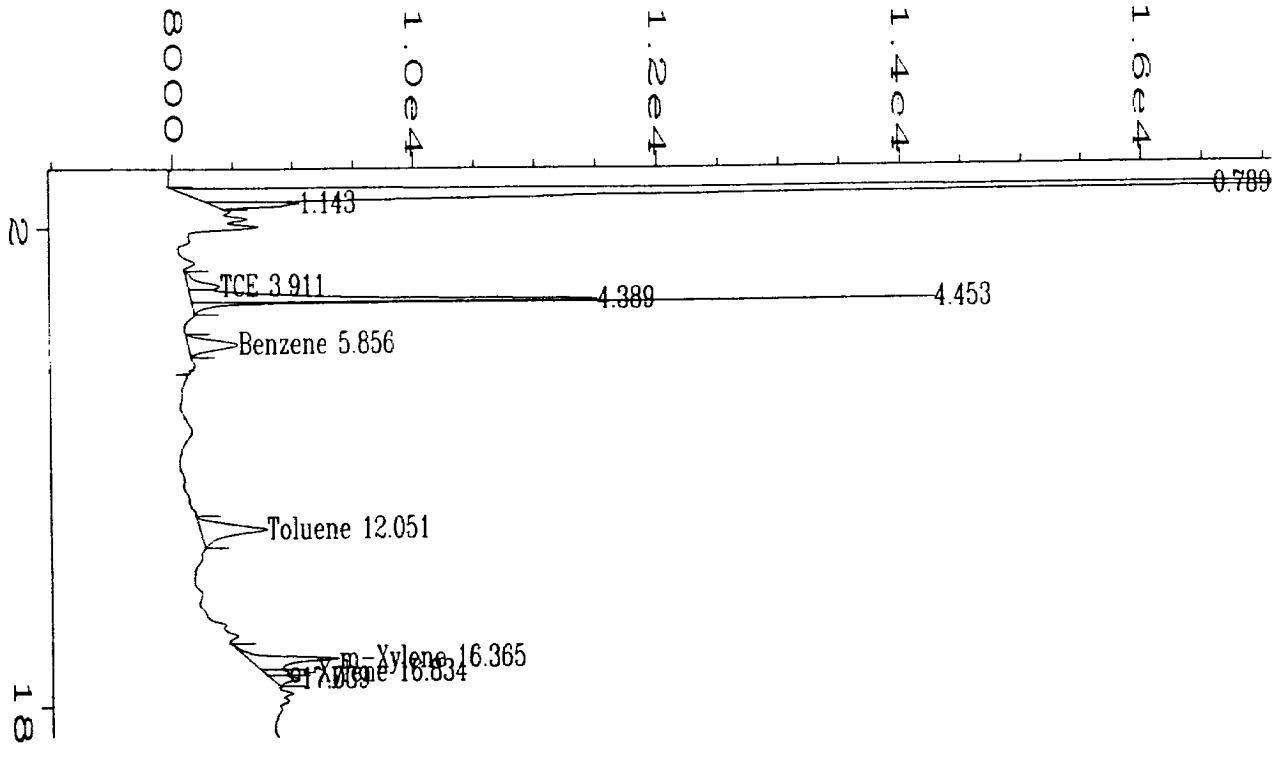
Data File Name : D:\SOLVAY\EP1-2\RUN3_003.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : run3
Run Time Bar Code:
Acquired on : 28 Apr 95 11:35 AM
Report Created on: 04 May 95 03:17 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\EP1-2\RUN3_003.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
0.913	20581	VV	0.115	1	1.172	Butadiene
1.980	* not found *			1		Hexane
3.132	1699	BV	0.188	1	0.938	Methylene Chloride
3.897	4647	BV	0.227	1	0.728	TCE
5.936	8576	BB	0.259	1	0.350	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.055	12102	BB	0.292	1	0.743	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.369	10414	BV	0.201	1	0.569	m-Xylene
16.838	3518	VV	0.205	1	0.160	o-Xylene
17.771	* not found *			1		Styrene

Not all calibrated peaks were found



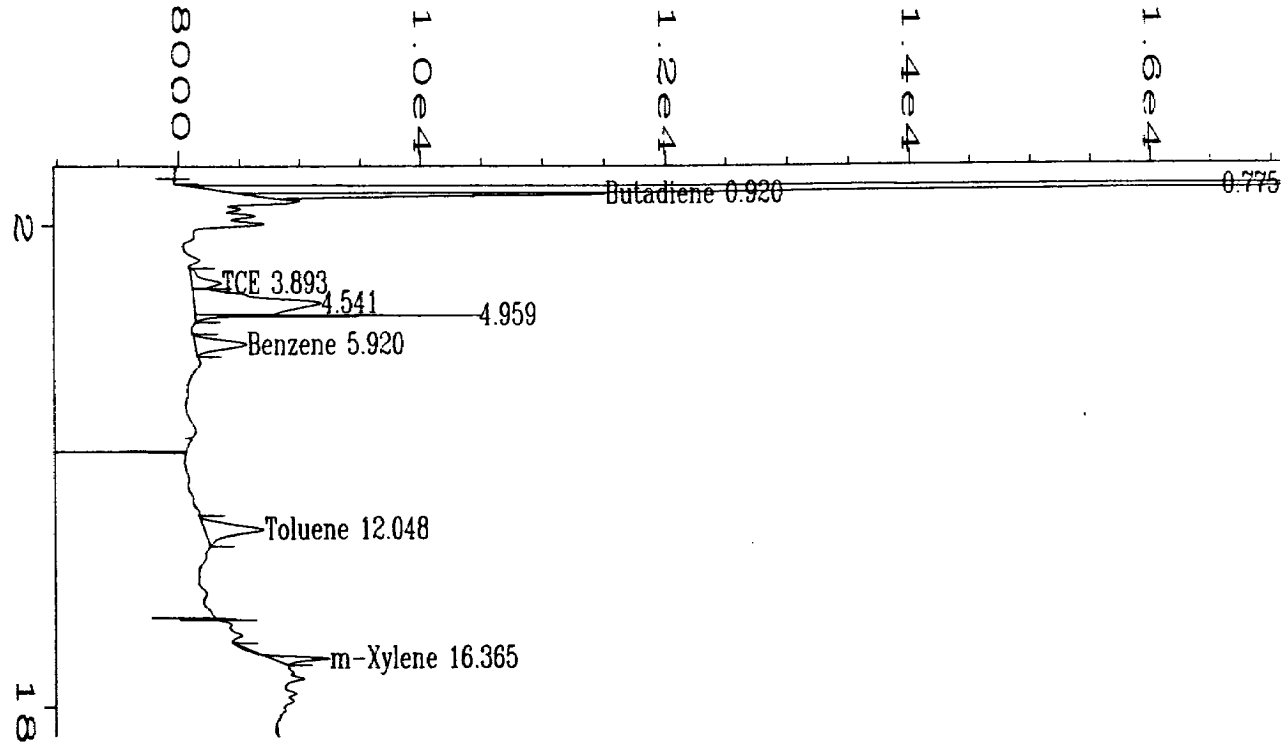
External Standard Report

Data File Name	: D:\SOLVAY\EP1-2\RUN3_004.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: run3	Injection Number	:
Run Time Bar Code	:	Sequence Line	:
Acquired on	: 28 Apr 95 11:57 AM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 03:18 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\EP1-2\RUN3_004.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.980	* not found *			1		Hexane
3.226	* not found *			1		Methylene Chloride
3.911	4281	BV	0.207	1	0.692	TCE
5.856	8951	BB	0.275	1	0.360	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.051	13147	BB	0.292	1	0.795	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.365	11837	BV	0.219	1	0.654	m-Xylene
16.834	2197	VV	0.150	1	0.0810	o-Xylene
17.771	* not found *			1		Styrene

Not all calibrated peaks were found



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External Standard Report

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Data File Name	: D:\SOLVAY\EP1-2\RUN3_005.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: run3	Injection Number	:
Run Time Bar Code	:	Sequence Line	:
Acquired on	: 28 Apr 95 12:19 PM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 03:18 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\EP1-2\RUN3_005.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
0.920	21171	VV	0.106	1	1.206	Butadiene
1.980	* not found *			1		Hexane
3.226	* not found *			1		Methylene Chloride
3.893	4525	BV	0.224	1	0.716	TCE
5.920	8668	BB	0.258	1	0.352	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.048	11305	BB	0.280	1	0.704	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.365	4027	BB	0.105	1	0.190	m-Xylene
16.720	* not found *			1		o-Xylene
17.771	* not found *			1		Styrene

Not all calibrated peaks were found

SOLVAY MINERALS, INC.
CAE Project No: 7473
4/28/95
EP-1&2

CALIBRATION ERROR

Time	THC ppm	CO ppm	Time	THC ppm	CO ppm
07:23:13	1.7	1.1	07:34:43	-0.1	6.4
07:23:28	1.4	1.8	07:34:58	-0.1	4.0
07:23:43	1.2	1.7	07:35:13	-0.2	4.0
07:23:58	1.1	1.8	07:35:28	-0.2	4.0
07:24:13	1.0	1.3	07:35:43	-0.2	4.3
07:24:28	0.9	1.9	07:35:58	-0.2	4.0
07:24:43	0.9	39.0	07:36:13	-0.2	3.7
07:24:58	0.9	109.5	07:36:28	-0.1	4.0
07:25:13	0.9	195.3	07:36:43	0.1	3.8
07:25:28	0.8	249.1	07:36:58	0.2	3.7
07:25:43	0.8	272.0	07:37:13	0.2	3.6
07:25:58	0.9	276.3	07:37:28	0.2	3.5
07:26:13	0.8	277.0	07:37:43	0.2	3.9
07:26:28	0.8	277.7	07:37:58	0.3	3.8
07:26:43	0.8	277.1	07:38:13	81.3	4.3
07:26:58	0.8	278.1	07:38:28	90.0	4.7
07:27:13	0.8	276.4	07:38:43	90.4	5.4
07:27:28	0.8	275.6	07:38:58	90.5	5.5
07:27:43	0.8	240.8	07:39:13	89.0	4.3
07:27:58	0.8	197.5	07:39:28	85.8	3.8
07:28:13	0.8	161.1	07:39:43	84.8	4.3
07:28:28	0.8	147.6	07:39:58	84.9	4.3
07:28:43	0.8	143.7	07:40:13	84.8	4.1
07:28:58	0.8	143.6	07:40:28	84.8	4.0
07:29:13	0.8	142.9	07:40:43	84.9	4.8
07:29:28	0.8	143.0	07:40:58	81.1	5.1
07:29:43	0.8	142.7	07:41:13	56.4	4.7
07:29:58	0.8	143.4	07:41:28	56.0	4.4
07:30:13	0.8	142.8	07:41:43	56.0	4.9
07:30:28	0.8	143.0	07:41:58	56.0	5.3
07:30:43	2.6	143.0	07:42:13	56.0	5.8
07:30:58	0.2	142.6	07:42:28	56.0	5.5
07:31:13	0.0	142.1	07:42:43	29.7	4.9
07:31:28	-0.1	141.4	07:42:58	25.4	4.5
07:31:43	-0.1	138.1	07:43:13	25.3	4.4
07:31:58	-0.1	134.0	07:43:28	25.2	4.3
07:32:13	-0.1	129.9	07:43:43	25.2	4.5
07:32:28	-0.1	126.9	07:43:58	15.0	4.5
07:32:43	-0.1	123.0	07:44:13	0.7	3.7
07:32:58	-0.1	118.4	07:44:28	0.6	4.3
07:33:13	-0.1	114.4	07:44:43	0.5	3.9
07:33:28	-0.1	109.7	07:44:58	0.4	4.1
07:33:43	-0.1	105.0			
07:33:58	-0.1	96.0			
07:34:13	-0.1	50.7			
07:34:28	-0.1	23.2			

SOLVAY MINERALS, INC.
CAE Project No: 7473
EP-1&2
4/28/95

CALIBRATION BIAS 0

Time	THC (ppm)	CO (ppm)
07:46:19	0.4	4.7
07:46:34	0.3	3.5
07:46:49	0.3	4.2
07:47:04	0.3	5.0
07:47:19	0.3	5.0
07:47:34	0.3	4.5
07:47:49	0.3	4.8
07:48:04	0.4	4.2
07:48:19	0.4	4.5
07:48:34	0.4	18.5
07:48:49	0.4	65.7
07:49:04	0.4	125.4
07:49:19	0.4	140.3
07:49:34	0.4	143.7
07:49:49	0.4	144.4
07:50:04	0.4	144.7
07:50:19	0.4	145.0
07:50:34	0.4	144.0
07:50:49	0.4	145.4
07:51:04	0.4	145.0
07:51:19	3.9	145.7
07:51:34	54.2	145.2
07:51:49	55.2	143.2
07:52:04	55.4	105.0
07:52:19	55.5	51.1
07:52:34	55.6	13.1
07:52:49	55.6	5.8
Zero Gas	0.3	4.5
Cal Gas	55.6	145.4

SOLVAY MINERALS, INC.
CAE Project No: 7473
EP-1&2
4/28/95

CALIBRATION BIAS 1

Time	THC (ppm)	CO (ppm)
09:34:18	3.5	5.5
09:34:33	3.4	5.1
09:34:48	3.4	5.0
09:35:03	3.3	4.9
09:35:18	3.2	5.5
09:35:33	3.2	5.1
09:35:48	3.2	5.5
09:36:03	3.1	11.6
09:36:18	3.1	57.6
09:36:33	3.1	120.1
09:36:48	3.0	142.5
09:37:03	3.0	145.0
09:37:18	2.9	145.0
09:37:33	2.9	145.3
09:37:48	2.8	145.1
09:38:03	2.8	145.8
09:38:18	2.8	146.3
09:38:33	16.7	145.9
09:38:48	55.0	145.0
09:39:03	55.4	133.3
09:39:18	55.5	78.0
09:39:33	55.5	24.1
09:39:48	55.5	7.6
09:40:03	55.5	5.8
Zero Gas	2.8	5.2
Cal Gas	55.5	145.7

SOLVAY MINERALS, INC.
CAE Project No: 7473
EP-1&2
4/28/95

CALIBRATION BIAS 2

Time	THC (ppm)	CO (ppm)
10:54:27	4.6	4.3
10:54:42	4.5	4.4
10:54:57	4.4	4.3
10:55:12	4.3	4.5
10:55:27	4.3	4.3
10:55:42	4.2	4.2
10:55:57	4.2	3.9
10:56:12	4.2	8.4
10:56:27	4.1	46.1
10:56:42	4.1	112.2
10:56:57	4.0	140.0
10:57:12	4.0	144.2
10:57:27	3.9	144.3
10:57:42	3.9	144.6
10:57:57	3.8	145.0
10:58:12	3.8	144.2
10:58:27	3.7	144.3
10:58:42	3.7	144.9
10:58:57	11.4	144.8
10:59:12	56.3	145.5
10:59:27	56.9	137.7
10:59:42	57.0	84.0
10:59:57	57.0	27.3
11:00:12	57.0	7.3
11:00:27	57.0	5.0
11:00:42	56.9	5.3
11:00:57	56.9	4.8
11:01:12	56.9	4.7
Zero Gas	3.8	4.3
Cal Gas	56.9	144.7

SOLVAY MINERALS, INC.
CAE Project No: 7473
EP-1&2
4/28/95

CALIBRATION BIAS 3

Time	THC (ppm)	CO (ppm)
12:23:59	4.3	3.3
12:24:14	4.3	2.8
12:24:29	4.2	3.1
12:24:44	4.1	2.9
12:24:59	4.0	3.5
12:25:14	3.9	3.1
12:25:29	3.8	3.4
12:25:44	3.8	6.7
12:25:59	3.7	32.8
12:26:14	3.6	94.6
12:26:29	3.6	127.9
12:26:44	3.5	141.3
12:26:59	3.5	143.0
12:27:14	3.4	143.4
12:27:29	3.4	143.0
12:27:44	3.3	142.8
12:27:59	3.3	142.8
12:28:14	43.1	142.7
12:28:29	45.4	143.0
12:28:44	50.0	127.0
12:28:59	50.9	112.8
12:29:14	51.6	52.1
12:29:29	52.7	15.9
12:29:44	54.1	3.9
12:29:59	54.1	2.9
12:30:14	54.3	2.3
12:30:29	54.3	2.6
12:30:44	54.4	2.6
12:30:59	54.4	2.7
Zero Gas	3.3	3.2
Cal Gas	54.3	142.8

SOLVAY MINERALS, INC.
CAE Project No: 7473
EP-1&2
4/28/95

REFERENCE METHOD RUN 1

Time	THC (ppm)	CO (ppm)
08:05	68.6	497.8
08:06	68.2	497.9
08:07	67.8	497.9
08:08	68.1	497.9
08:09	68.0	497.8
08:10	67.2	497.8
08:11	66.9	497.8
08:12	65.3	497.8
08:13	65.7	497.8
08:14	63.8	497.8
08:15	63.6	497.8
08:16	63.3	497.8
08:17	70.9	497.8
08:18	63.8	497.8
08:19	59.0	497.8
08:20	58.5	497.8
08:21	57.4	497.8
08:22	56.9	497.8
08:23	56.5	497.8
08:24	56.4	497.8
08:25	55.1	497.8
08:26	55.4	497.8
08:27	55.0	497.8
08:28	53.8	497.8
08:29	53.2	497.8
08:30	53.3	497.8
08:31	52.4	497.8
08:32	51.4	488.3
08:33	52.7	497.8
08:34	51.8	497.8
08:35	51.7	497.8
08:36	51.3	497.8
08:37	51.6	497.8
08:38	51.0	497.8
08:39	50.7	497.8
08:40	50.4	497.8
08:41	50.4	497.8
08:42	50.0	497.8
08:43	50.4	497.8
08:44	51.4	497.8
08:45	49.3	497.8
08:46	49.3	497.8
08:47	49.0	497.8
08:48	49.3	497.8
08:49	48.9	497.8
08:50	48.4	497.8
08:51	48.1	497.8
08:52	47.5	497.8
08:53	47.6	497.8
08:54	48.4	497.8
08:55	48.7	497.8
08:56	48.4	497.8
08:57	48.1	497.8
08:58	49.1	497.8
08:59	49.1	497.8
09:00	48.8	497.8
09:01	48.5	497.8
09:02	48.6	497.8
09:03	48.4	497.8
09:04	48.5	497.8
Average	54.8	497.6

REFERENCE METHOD RUN 2

Time	THC (ppm)	CO (ppm)
09:43	44.0	497.8
09:44	44.4	497.8
09:45	44.7	497.8
09:46	45.2	497.8
09:47	45.5	497.8
09:48	46.1	497.8
09:49	46.8	497.8
09:50	47.4	497.8
09:51	47.6	497.8
09:52	47.8	497.8
09:53	47.6	497.8
09:54	48.1	497.8
09:55	47.6	497.8
09:56	48.0	497.8
09:57	47.7	497.8
09:58	46.8	497.8
09:59	46.8	497.8
10:00	46.6	497.8
10:01	46.0	497.8
10:02	45.7	497.8
10:03	45.5	497.8
10:04	45.5	497.8
10:05	44.7	497.8
10:06	45.6	497.8
10:07	45.9	497.8
10:08	46.3	497.8
10:09	46.7	497.8
10:10	47.3	497.8
10:11	47.7	497.8
10:12	47.8	497.8
10:13	47.8	497.8
10:14	47.3	497.8
10:15	46.5	497.8
10:16	46.6	497.8
10:17	46.6	497.8
10:18	46.5	497.8
10:19	46.2	497.8
10:20	46.5	497.8
10:21	45.8	497.8
10:22	45.8	497.8
10:23	46.9	497.8
10:24	46.1	492.7
10:25	47.8	497.8
10:26	47.4	497.8
10:27	47.2	497.8
10:28	46.8	497.8
10:29	46.5	497.8
10:30	45.7	497.8
10:31	46.5	497.8
10:32	46.1	497.8
10:33	45.0	497.8
10:34	44.3	497.8
10:35	43.5	497.8
10:36	43.5	497.8
10:37	43.7	497.8
10:38	43.9	497.8
10:39	44.1	497.8
10:40	43.8	497.8
10:41	43.4	497.8
10:42	43.2	497.8
Average	46.1	497.7

REFERENCE METHOD RUN 3

Time	THC (ppm)	CO (ppm)
11:14	39.1	497.9
11:15	39.8	497.8
11:16	39.7	497.8
11:17	40.1	497.8
11:18	40.4	497.8
11:19	40.0	497.8
11:20	40.1	497.8
11:21	40.1	497.8
11:22	39.4	497.8
11:23	39.4	497.8
11:24	38.8	497.8
11:25	39.0	497.8
11:26	38.8	497.8
11:27	38.4	497.8
11:28	37.7	497.8
11:29	37.6	497.8
11:30	37.6	497.8
11:31	37.6	497.6
11:32	38.1	496.1
11:33	38.3	497.5
11:34	38.5	497.1
11:35	38.6	497.8
11:36	38.3	497.8
11:37	38.3	495.0
11:38	38.5	492.2
11:39	38.4	497.7
11:40	37.8	495.5
11:41	38.2	491.1
11:42	38.2	491.2
11:43	38.2	490.8
11:44	37.5	494.1
11:45	37.4	494.2
11:46	37.2	497.4
11:47	37.3	492.2
11:48	37.4	495.0
11:49	36.9	497.8
11:50	37.9	496.0
11:51	36.3	497.0
11:52	36.0	495.5
11:53	35.6	493.2
11:54	35.4	488.7
11:55	35.7	485.6
11:56	35.7	487.8
11:57	35.7	485.9
11:58	36.1	482.4
11:59	36.5	486.1
12:00	36.0	492.2
12:01	37.1	486.9
12:02	37.3	486.0
12:03	37.4	485.1
12:04	37.0	487.2
12:05	37.4	484.7
12:06	37.6	491.4
12:07	38.0	490.8
12:08	38.3	484.1
12:09	37.8	483.4
12:10	38.4	482.9
12:11	38.7	494.2
12:12	39.0	497.4
12:13	39.2	494.5
Average	37.9	493.5

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Location: Calciner Run: 3

Moisture Determination Field Data Sheet

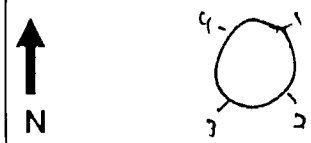
Page 1 of 1

Client Solvay Minerals	Project Number 7473
Plant Green River WY	Unit EP5
Date 4-27-95	Inlet/outlet/stack
Meter Operator E. McLaffick	
Probe Operator R. Luikaart	

Sample Box Number Knockouts	
Pyrometer Number D-7	
Meter Box Number D-7	
Meter ΔH@ 1.8228	Meter Y_d .9966

Leak Rate Before: .001	cc/m	cf/m @	16	"Hg
Leak Rate After: .001	cc/m	cf/m @	15	"Hg

Schematic of Testing Location



First point all the way IN OUT	Method 4	
Area (ft^2) 85.9	Port Len. (in.) 5" and 13"	Gas Flow IN OUT
Filter Material NA		

Ambient Temp. (°F) 60	Bar. Press. (in. Hg) 23.71
Assumed Moisture (%) -36	

Heater Box Setting NA	Probe Heater Setting NA
Probe Length 3"	Probe Number NA
Probe Material SS	

IGS Bag ID Number R3 EP5	
% O_2	% CO_2
H_2O (ml) 320	Silica Gel (gm) 19.6
Total V_{lc} 339.6	

Start Time: 4:26 AM PM	Stop Time: 5:11 AM PM

Traverse Point Number	Min/pt 5 Clock Time 0	Pump Vacuum (in. Hg)	Stack Temp, Ts (°F)	Bath Temp, (°F)	Orifice Setting ΔH (in. H_2O)	Initial Volume 044.210 Gas Sample Volume V_m Circle one: (L) (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Probe Temp. T_p (°F)			Notes
	5	6	See	40	1.8	48.29	81	81	NA			B_wO = .3611
	10	6	Flow	44		52.31	78	80				
	15	6	Data	45 EM		56.33	74	79				
	20	6		47		60.36	71	76				
	25	6		48		64.37	73	76				
	30	6		50		68.37	75	76				
	35	6		49		72.48	76	75				
	40	6		50		76.37	76	73				
	45	6		50		80.365	75	72				
Average							13	67				
Total					1.8	36.155	~~113.9~~	76 EM				

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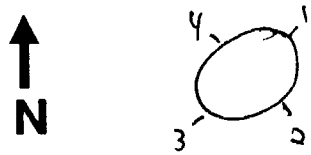
Location: Calciner Run: 1-2-3

Velocity Determination Field Data Sheet

Page 1 of 1

Client Solvay Minerals	Project Number 7473
Plant Green River WY	Unit EP 5
Date 4-28-95 (EM)	Inlet/Outlet/Stack
Data Recorder E. McGaddick	
Probe Operator R. Luikaart	

Schematic of Testing Location



First point all the way (IN) OUT

Ambient Temp. (°F) 60	Bar. Press. (in. Hg) 23.71
IGS Bag ID Number	
% O_2	% CO_2
% Moisture:	Assumed/Measured
Start Time AM/PM	Stop Time AM/PM

11-19-92-1

Pyrometer Number D-7	Pitot Cp .84
Pitot Leak Check: ✓ Before	✓ After
Static Pressure (inches H_2O) (+/-) - .4	

Area (ft^2)	Port Len (in)	Gas Flow IN (OUT)
85.9	5" and 13"	

R1 Start-1:40 End-1:49 R2 Start-3:08 End-3:14 R3 Start-4:46 End-4:52

Traverse Point Number	Velocity Head ΔPs	Stack Temp (°F)		Traverse Point Number	Velocity Head ΔPs	Stack Temp (°F)		Traverse Point Number	Velocity Head ΔPs	Stack Temp (°F)		Traverse Point Number	Velocity Head ΔPs	Stack Temp (°F)		Notes
1-1	.09	288		1-1	.11	287		1-1	.11	285						
2	.10	287		2	.11	288		2	.10	284						
3	.08	287		3	.10	287		3	.09	282						
2-1	.08	287		2-1	.11	290		2-1	.10	287						
2	.07	286		2	.12	294		2	.11	290						
3	.08	287		3	.10	294		3	.10	289						
3-1	.08	289		3-1	.10	295		3-1	.09	291						
2	.08	289		2	.11	297		2	.11	290						
3	.07	289		3	.08	296		3	.10	290						
4-1	.09	291		4-1	.11	289		4-1	.12	291						
2	.10	290		2	.11	290		2	.11	293						
3	.08	290		3	.10	287		3	.10	291						
Total	3.458	3460			3.884	3494			3.854	3463						
Average	.2882	~~2883~~ EM 288			.3236	291			.3211	288.5						

SOLVAY2016_6_000393

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Location: Calciner Run: 1 Page 1 of 1

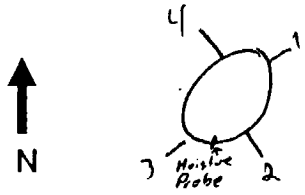
Moisture Determination
Field Data Sheet

Client Solvay Minerals	Project Number 7473
Plant Green River W.Y.	Unit EP 5
Date ~~4-28-95~~ 7/95 RML	Inlet/outlet/stack
Meter Operator E. McGuffick	
Probe Operator R. Luikaart	

Sample Box Number Knockouts	
Pyrometer Number D-7	
Meter Box Number D-7	
Meter ΔH@ 1.8228	Meter Y_d .9966

Leak Rate Before: .001	cc/m cf/m @	15	"Hg
Leak Rate After: .000	cc/m cf/m @	11	"Hg

Schematic of Testing Location



First point all the way IN OUT	Method 4	
Area (ft²) 85.9	Port Len. (in.) 5" and 13"	Gas Flow IN OUT
Filter Material NA		

Ambient Temp. (°F) 60	Bar. Press. (in. Hg) 23.71
Assumed Moisture (%) .36	

Heater Box Setting NA	Probe Heater Setting NA
Probe Length 3'	Probe Number NA
Probe Material SS	

IGS Bag ID Number R1 EP5	
% O_2	% CO_2
H_2O (ml) 324	Silica Gel (gm) 17.5
Total V_{lc} 341.5	

Start Time: 1:07 AM / PM	Stop Time: 1:52 AM / PM

Traverse Point Number	Min/pt 5 / Clock Time 0	Pump Vacuum (in. Hg)	Stack Temp, Ts (°F)	Bath Temp, (°F)	Orifice Setting ΔH (in. H_2O)	Initial Volume 970.900 / Gas Sample Volume V_m Circle one: (L) (ft³)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Probe Temp. T_p (°F)			Notes
1	5	6 cm	See	60	1.8	975.02	79	79	NA			$\sqrt{\Delta P}$ = .2882
	10	6	Flow	59		979.04	81	80				ST = 288
	15	6	Data	58		983.05	80	80				
	20	6		45		987.10	80	79				$B_{w}O$ = .3635
	25	6		40		991.13	81	79				
	30	6		40		995.13	80	78				
	35	6		41		999.13	80	78				
	40	6		41		1003.12	81	77				
	45	6		42		1007.11	80	77				
Average						36.21	14.29					
Total					1.8		79.3					

SOLVAY2016_6_000394

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Location: Calciner Run: 2

Moisture Determination Field Data Sheet

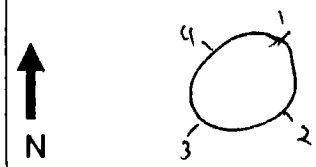
Page 1 of 1

Client Solvay Minerals	Project Number 7473
Plant Green River WY	Unit EP5
Date ~~4-28-95~~ 4-27-95	Inlet/outlet/stack
Meter Operator Ed McKaffick	
Probe Operator Ron Wikaart	

Sample Box Number Knockouts	
Pyrometer Number D-7	
Meter Box Number D-7	
Meter ΔH@ 1.8228	Meter Y_d .9966

Leak Rate Before: .001	cc/m cf/m @	15	"Hg
Leak Rate After: .000	cc/m cf/m @	10	"Hg

Schematic of Testing Location



First point all the way IN OUT	Method 4	
Area (ft^2) 85.9	Port Len. (in.) 5" and 13"	Gas Flow IN OUT
Filter Material NA		

Ambient Temp. (°F) 60	Bar. Press. (in. Hg) 23.71
Assumed Moisture (%) .36	

Heater Box Setting NA	Probe Heater Setting NA
Probe Length 3	Probe Number NA
Probe Material SS	

IGS Bag ID Number R2 EP5	
% O_2	% CO_2
H_2O (ml) 324	Silica Gel (gm) 17.7
Total V_{lc} 341.7	

Start Time: 2:35 AM PM	Stop Time: 3:20 AM PM

Traverse Point Number	Min/pt 5 / Clock Time 0	Pump Vacuum (in. Hg)	Stack Temp, Ts (°F)	Bath Temp, (°F)	Orifice Setting ΔH (in. H_2O)	Initial Volume 007.400 / Gas Sample Volume V_m Circle one: (L) (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Probe Temp. T_p (°F)			Notes
	5	6	See	50	1.8	11.51	78	78	NA			TAP: .3236
	10	6	Flow	47		15.59	79	80				TS: 291
	15	6	Data	48		19.64	81	80				
	20	6		49		23.68	82	81				B_wO = .3620
	25	6		50		27.73	83	81				
	30	6		51		31.79	84	82				
	35	6		52		35.89	86	83				
	40	6		53		39.93	83	81				
	45	6		54		44.015	85	82				
Average							14	69				
Total					1.8	36.615	81.6					

SOLVAY2016_6_000395

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Orsat Readings

Client SOLVAY	Project Number 7473
Plant GREEN RIVER, WY	Unit EP-5, EP-1,2
Date 4-27-95	Fuel Type GAS + COAL CALCINERS
Orsat ID 85	Leak Check?

$F_o = \frac{20.9 - \%O_2}{\%CO_2}$

F_o = 1.083 to 1.230 (for bituminous coal)

Run Number	Location	Bag ID	Trial	Percent CO_2	Percent $CO_2 + O_2$	Percent O_2	F_o	Sample Time	Analysis Time	Analyst
1	EP-5	1	1	14.8 SR	22.8	8.4		1307-1352	1830	SR
			2	14.4	22.8	8.4				
			3	14.4	22.8	8.4				
			Avg.	14.4		8.4				
2	EP-5	2	1	14.4	22.8	8.4		1435, 1526	1830	SR
			2	14.4	22.8	8.4				
			3	14.4	22.8	8.4				
			Avg.	14.4		8.4				
3	EP-5	3	1	14.4	22.8	8.4		1626, 1711	1830	SR
			2	14.4	22.8	8.4				
			3	14.4	22.8	8.4				
			Avg.	14.4		8.4				
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							
			1							
			2							
			3							
			Avg.							

CAE P3 ver 1.0
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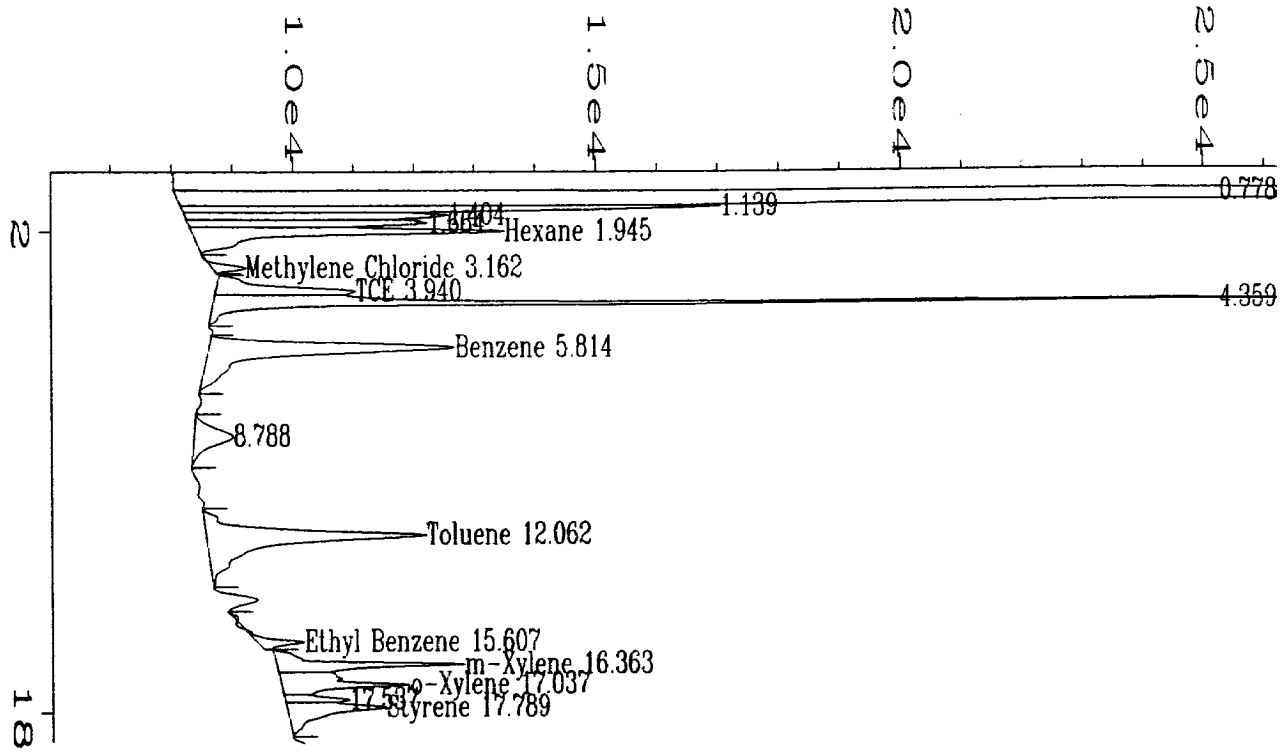

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External Standard Report

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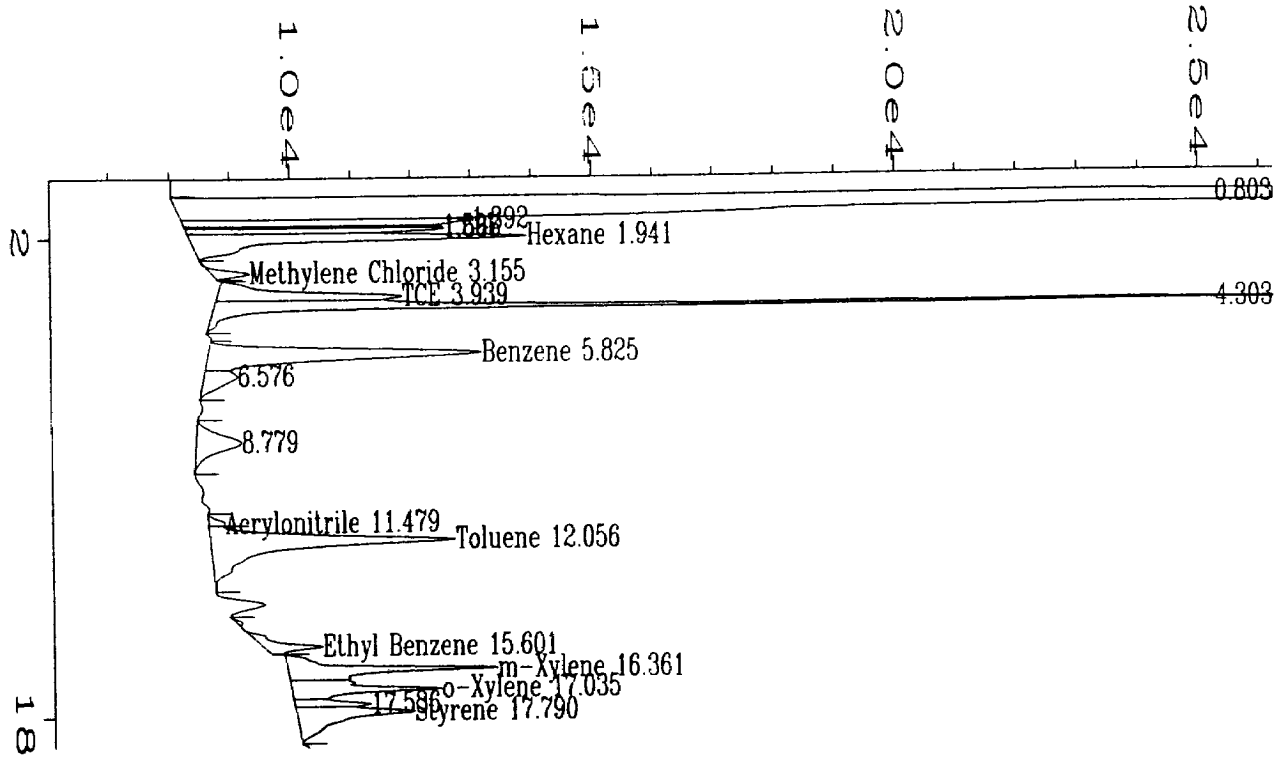
Data File Name : D:\SOLVAY\EP-5\RUN1_005.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : prelim
Run Time Bar Code:
Acquired on : 27 Apr 95 01:07 PM
Report Created on: 04 May 95 02:56 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\EP-5\RUN1_005.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.945	88457	VV	0.251	1	2.367	Hexane
3.162	7083	PV	0.216	1	2.058	Methylene Chloride
3.940	42841	BV	0.273	1	4.401	TCE
5.814	113869	BV	0.418	1	3.366	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.062	115241	BB	0.429	1	5.803	Toluene
15.607	10794	PBA	0.207	1	0.439	Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.363	45865	BV	0.207	1	2.677	m-Xylene
17.037	46990	VV	0.295	1	2.743	o-Xylene
17.789	38825	VV	0.324	1	0.715	Styrene

Not all calibrated peaks were found



External Standard Report

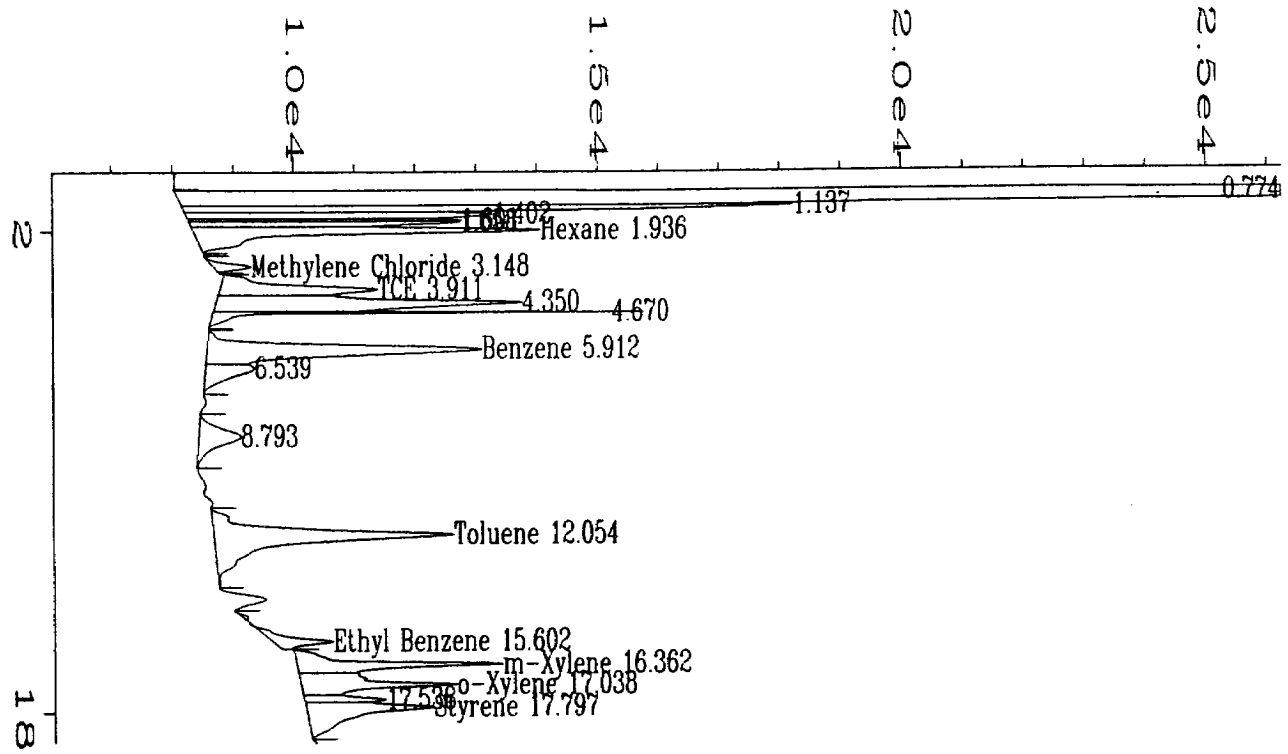
Data File Name : D:\SOLVAY\EP-5\RUN1_006.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : prelim
Run Time Bar Code:
Acquired on : 27 Apr 95 01:29 PM
Report Created on: 04 May 95 02:56 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\EP-5\RUN1_006.D

RT Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.941	99411	VV	0.263	1	2.634	Hexane
3.155	8051	PV	0.207	1	2.260	Methylene Chloride
3.939	55393	BV	0.262	1	5.608	TCE
5.825	112658	BV	0.384	1	3.332	Benzene
7.300	* not found *			1		MEK
11.479	3775	BV	0.234	1	0.377	Acrylonitrile
12.056	119781	VB	0.403	1	6.026	Toluene
15.601	18679	PBA	0.269	1	0.769	Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.361	59228	BV	0.235	1	3.471	m-Xylene
17.035	46397	VV	0.256	1	2.708	o-Xylene
17.790	50209	VV	0.350	1	0.915	Styrene

Not all calibrated peaks were found



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External Standard Report

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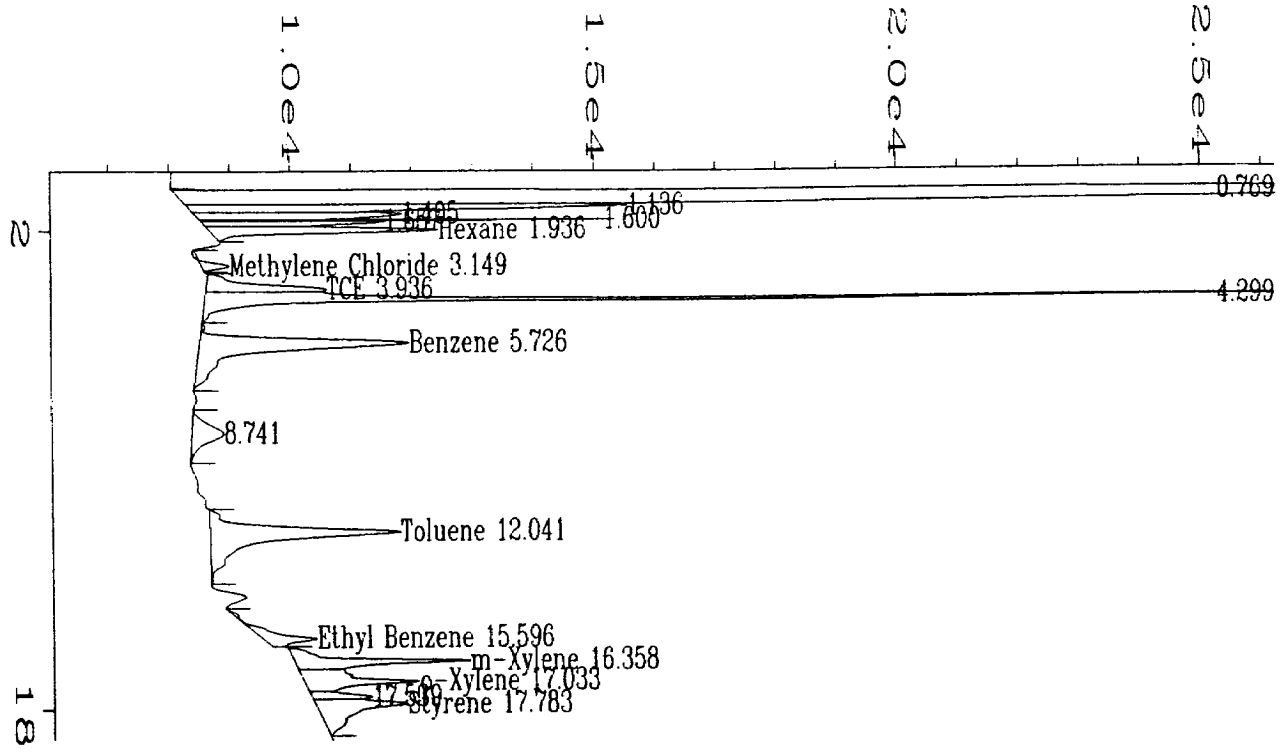
Data File Name	: D:\SOLVAY\EP-5\RUN1_007.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: prelim	Injection Number	:
Run Time Bar Code:		Sequence Line	:
Acquired on	: 27 Apr 95 01:51 PM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 02:57 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\EP-5\RUN1_007.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.936	95653	VB	0.246	1	2.542	Hexane
3.148	8503	BV	0.217	1	2.354	Methylene Chloride
3.911	53157	BV	0.296	1	5.393	TCE
5.912	110845	BV	0.379	1	3.280	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.054	122468	BB	0.418	1	6.158	Toluene
15.602	18400	PBA	0.264	1	0.757	Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.362	52537	BV	0.220	1	3.073	m-Xylene
17.038	55580	VV	0.292	1	3.254	o-Xylene
17.797	55514	VV	0.360	1	1.008	Styrene

Not all calibrated peaks were found



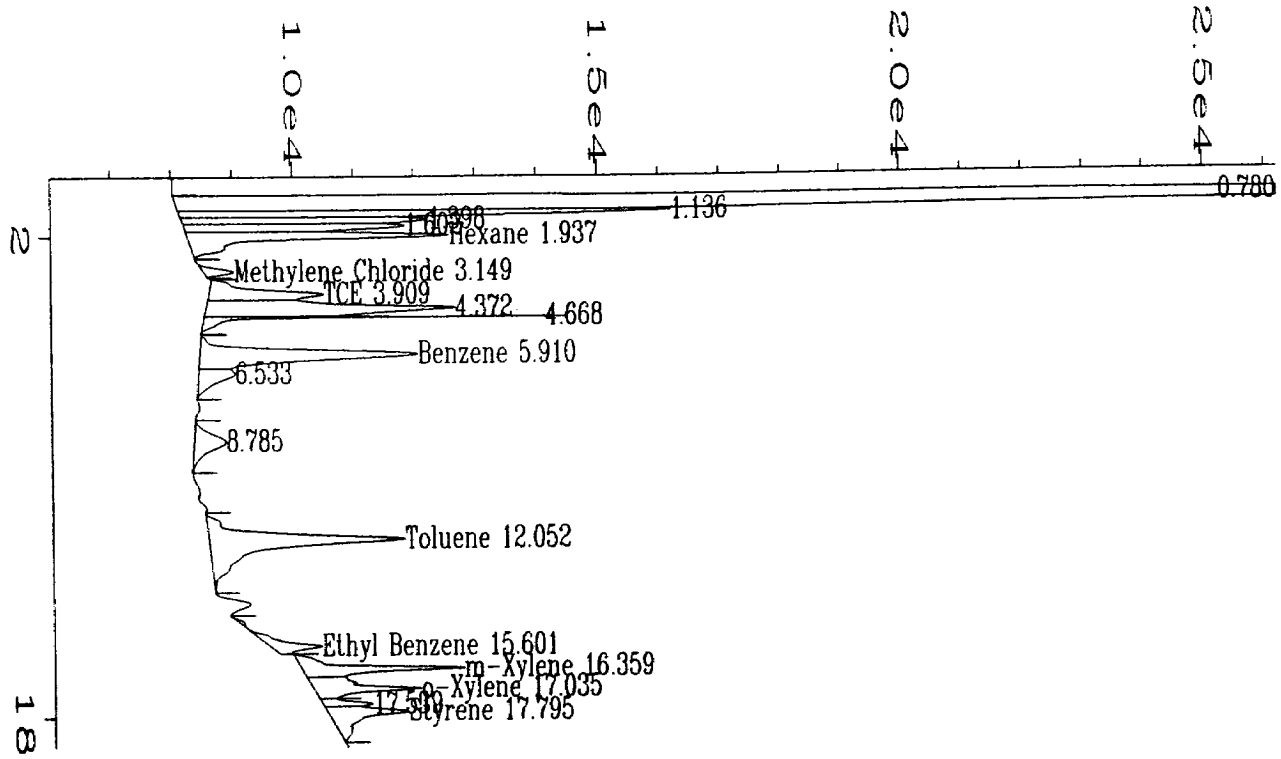
External Standard Report

Data File Name	: D:\SOLVAY\EP-5\RUN1_008.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: prelim	Injection Number	:
Run Time Bar Code:		Sequence Line	:
Acquired on	: 27 Apr 95 02:13 PM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 02:57 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\EP-5\RUN1_008.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.936	48840	VB	0.198	1	1.401	Hexane
3.149	5185	BV	0.188	1	1.664	Methylene Chloride
3.936	32999	BV	0.245	1	3.455	TCE
5.726	97589	VV	0.417	1	2.900	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.041	93523	BB	0.407	1	4.738	Toluene
15.596	19046	PBA	0.294	1	0.784	Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.358	42343	BV	0.206	1	2.467	m-Xylene
17.033	41098	VV	0.292	1	2.393	o-Xylene
17.783	41335	VV	0.369	1	0.759	Styrene

Not all calibrated peaks were found



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External Standard Report

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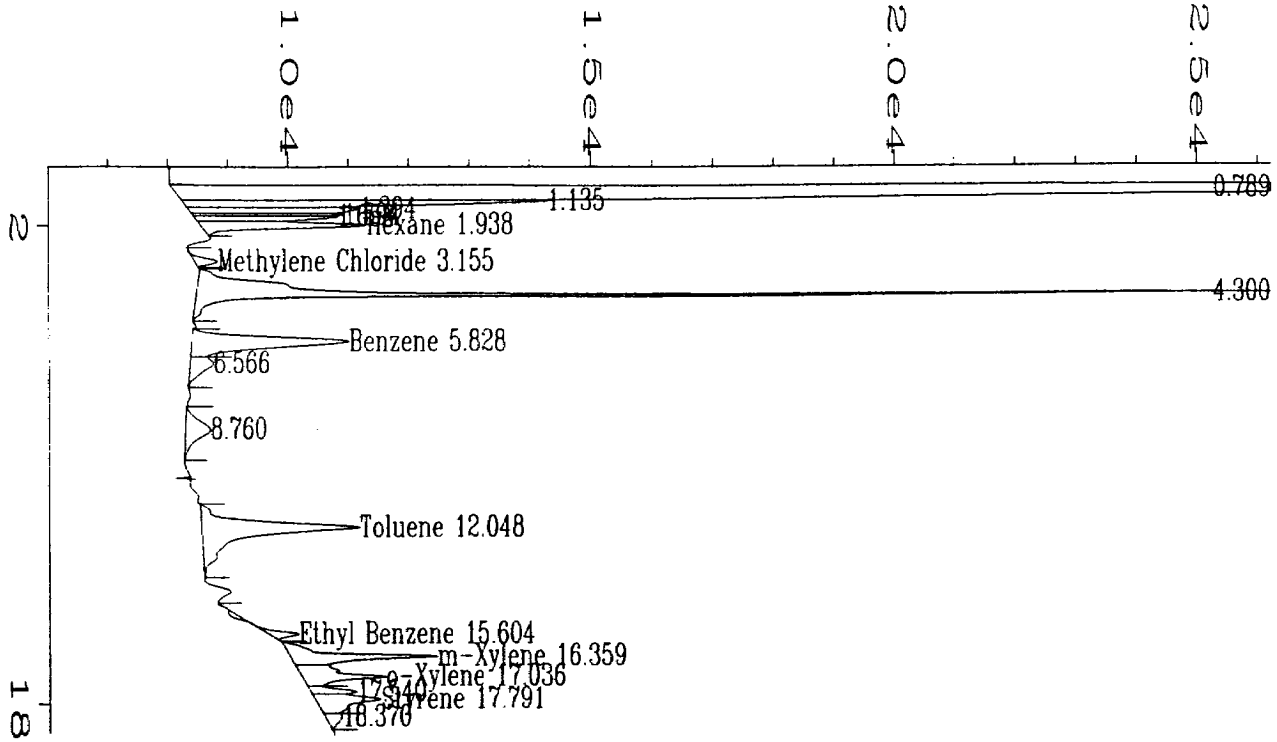
Data File Name : D:\SOLVAY\EP-5\RUN2_001.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : run2
Run Time Bar Code:
Acquired on : 27 Apr 95 02:35 PM
Report Created on: 04 May 95 02:58 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\EP-5\RUN2_001.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.937	73124	VB	0.248	1	1.993	Hexane
3.149	6646	BV	0.208	1	1.968	Methylene Chloride
3.909	38600	BV	0.296	1	3.993	TCE
5.910	87626	BV	0.373	1	2.614	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.052	101540	BB	0.423	1	5.131	Toluene
15.601	17521	PBA	0.290	1	0.720	Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.359	39939	BV	0.212	1	2.324	m-Xylene
17.035	35623	VV	0.274	1	2.068	o-Xylene
17.795	32637	VV	0.334	1	0.606	Styrene

Not all calibrated peaks were found



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External Standard Report

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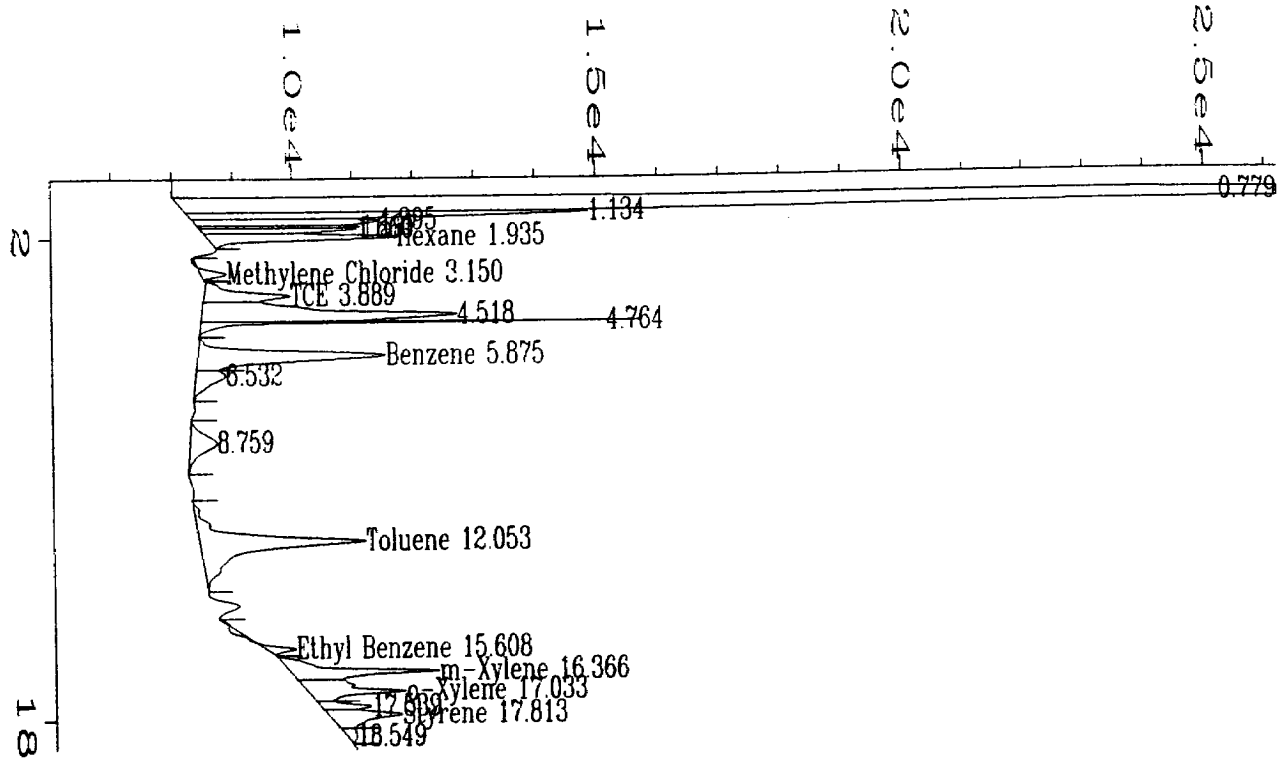
Data File Name	: D:\SOLVAY\EP-5\RUN2_002.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: run2	Injection Number	:
Run Time Bar Code	:	Sequence Line	:
Acquired on	: 27 Apr 95 02:57 PM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 02:58 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\EP-5\RUN2_002.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.938	37714	VB	0.212	1	1.130	Hexane
3.155	5082	PV	0.208	1	1.642	Methylene Chloride
3.869	* not found *			1		TCE
5.828	64812	BV	0.380	1	1.961	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.048	81426	BB	0.420	1	4.144	Toluene
15.604	4066	BBA	0.142	1	0.157	Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.359	37785	BV	0.218	1	2.196	m-Xylene
17.036	29443	VV	0.286	1	1.700	o-Xylene
17.791	24685	VV	0.315	1	0.466	Styrene

Not all calibrated peaks were found



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External Standard Report

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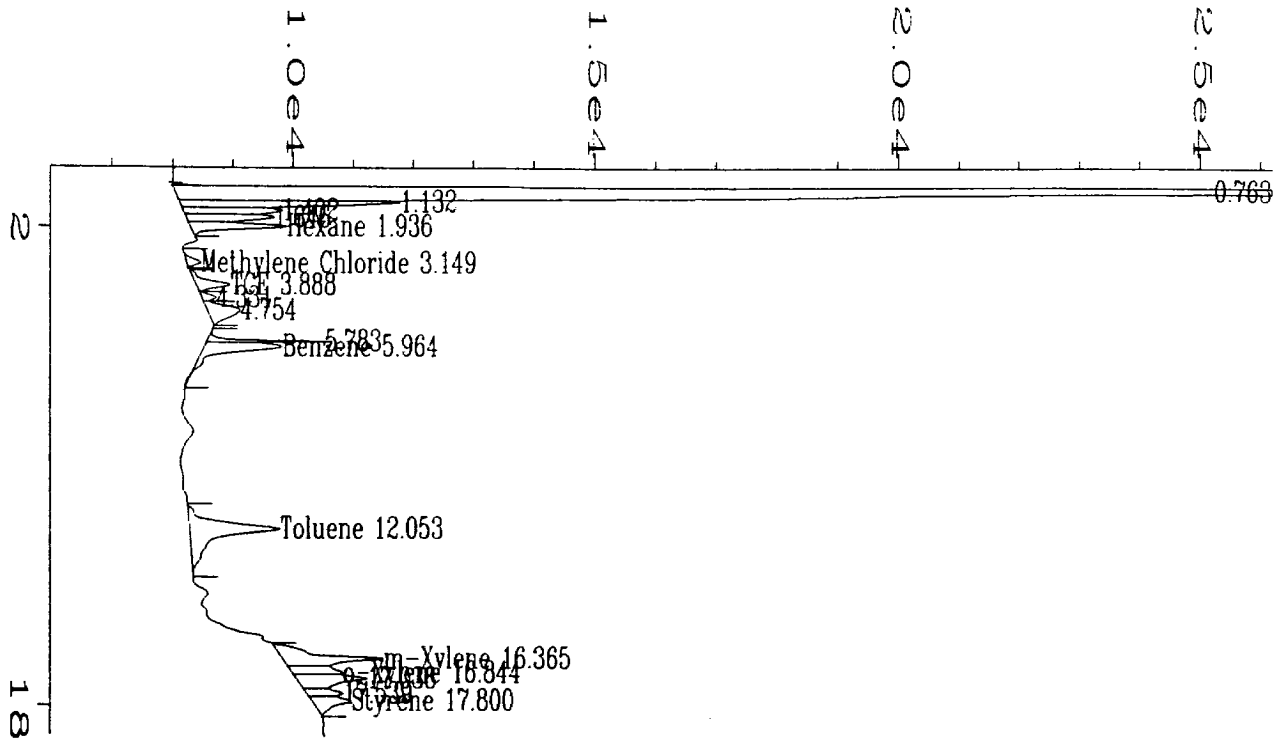
Data File Name : D:\SOLVAY\EP-5\RUN2_004.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : run2
Run Time Bar Code:
Acquired on : 27 Apr 95 03:41 PM
Report Created on: 04 May 95 02:59 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\EP-5\RUN2_004.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.935	42249	VB	0.208	1	1.240	Hexane
3.150	5171	BV	0.192	1	1.661	Methylene Chloride
3.889	27615	BV	0.277	1	2.937	TCE
5.875	74373	BV	0.368	1	2.235	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.053	90279	BB	0.436	1	4.579	Toluene
15.608	3972	BBA	0.139	1	0.153	Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.366	40871	BV	0.231	1	2.380	m-Xylene
17.033	36153	VV	0.297	1	2.099	o-Xylene
17.813	26354	VV	0.303	1	0.496	Styrene

Not all calibrated peaks were found



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External Standard Report

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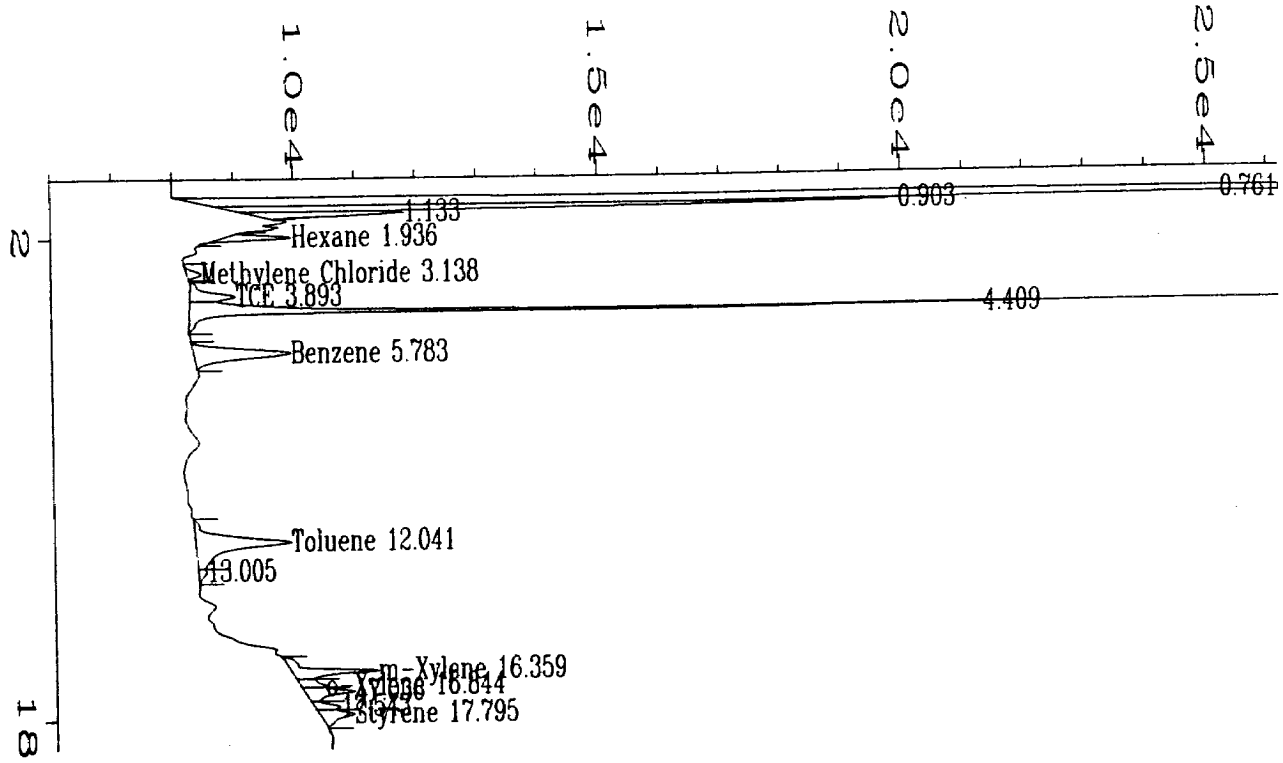
Data File Name	: D:\SOLVAY\EP-5\RUN3_001.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: run3	Injection Number	:
Run Time Bar Code	:	Sequence Line	:
Acquired on	: 27 Apr 95 04:26 PM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 03:00 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\EP-5\RUN3_001.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.936	20412	VV	0.196	1	0.708	Hexane
3.149	3264	BV	0.194	1	1.264	Methylene Chloride
3.888	9550	BV	0.258	1	1.199	TCE
5.964	26034	VB	0.305	1	0.850	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.053	48212	BB	0.426	1	2.515	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.365	32555	BV	0.260	1	1.885	m-Xylene
16.844	12675	VV	0.252	1	0.704	o-Xylene
17.800	12838	VV	0.278	1	0.258	Styrene

Not all calibrated peaks were found



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External Standard Report

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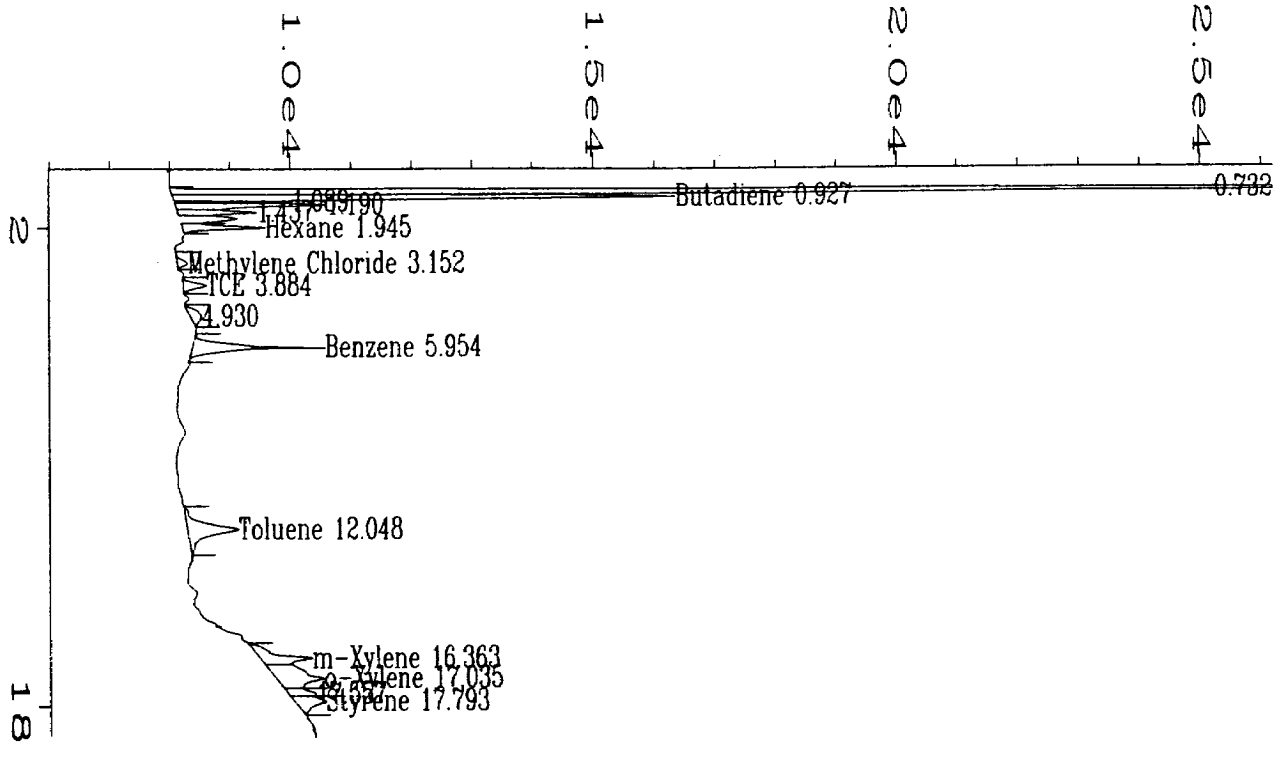
Data File Name : D:\SOLVAY\EP-5\RUN3_002.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : run3
Run Time Bar Code:
Acquired on : 27 Apr 95 04:49 PM
Report Created on: 04 May 95 03:00 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\EP-5\RUN3_002.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
1.004	* not found *			1		Butadiene
1.936	10095	BB	0.151	1	0.456	Hexane
3.138	3251	BV	0.195	1	1.261	Methylene Chloride
3.893	13346	BV	0.260	1	1.564	TCE
5.783	35138	BV	0.339	1	1.111	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.041	45278	BV	0.392	1	2.371	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.359	20024	BV	0.197	1	1.141	m-Xylene
16.844	5493	VV	0.230	1	0.277	o-Xylene
17.795	10738	VV	0.268	1	0.221	Styrene

Not all calibrated peaks were found



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External Standard Report

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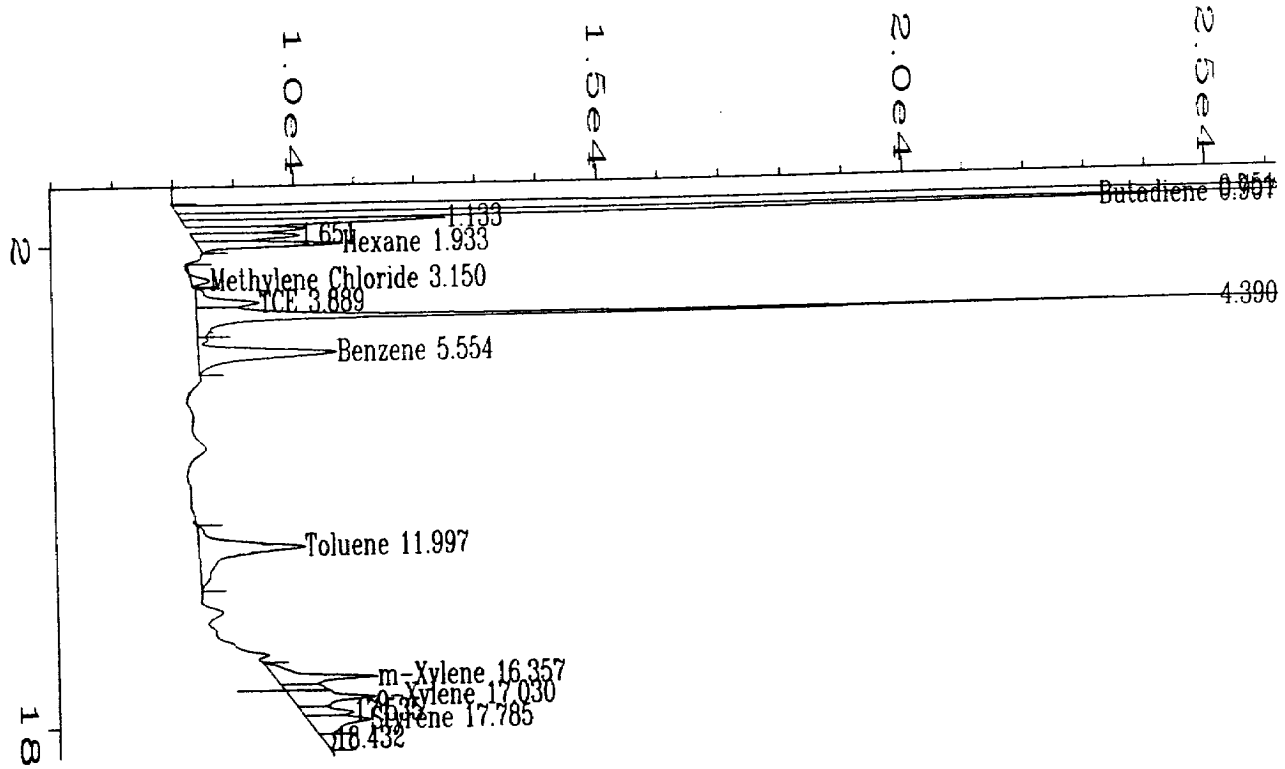
Data File Name	: D:\SOLVAY\EP-5\RUN3_003.D		
Operator	: J. Kaput	Page Number	: 1
Instrument	: HP 5890 N	Vial Number	:
Sample Name	: run3	Injection Number	:
Run Time Bar Code:		Sequence Line	:
Acquired on	: 27 Apr 95 05:11 PM	Instrument Method	: SOLVAY.MTH
Report Created on	: 04 May 95 03:01 PM	Analysis Method	: METHOD.MTH
Last Recalib on	: 26 APR 95 06:11 PM	Sample Amount	: 0
Multiplier	: 1	ISTD Amount	:

Sig. 1 in D:\SOLVAY\EP-5\RUN3_003.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
0.927	75001	VV	0.116	1	4.344	Butadiene
1.945	11949	VB	0.130	1	0.502	Hexane
3.152	2336	BV	0.194	1	1.071	Methylene Chloride
3.884	4979	BV	0.195	1	0.759	TCE
5.954	21432	BB	0.143	1	0.718	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
12.048	22211	BB	0.358	1	1.239	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.363	15144	BV	0.240	1	0.851	m-Xylene
17.035	25106	VV	0.408	1	1.443	o-Xylene
17.793	10615	VV	0.288	1	0.219	Styrene

Not all calibrated peaks were found



External Standard Report

Data File Name : D:\SOLVAY\EP-5\RUN3_004.D
Operator : J. Kaput
Instrument : HP 5890 N
Sample Name : run3
Run Time Bar Code:
Acquired on : 27 Apr 95 05:33 PM
Report Created on: 04 May 95 03:02 PM
Last Recalib on : 26 APR 95 06:11 PM
Multiplier : 1

Page Number : 1
Vial Number :
Injection Number :
Sequence Line :
Instrument Method: SOLVAY.MTH
Analysis Method : METHOD.MTH
Sample Amount : 0
ISTD Amount :

Sig. 1 in D:\SOLVAY\EP-5\RUN3_004.D

Ret Time	Area	Type	Width	Ref#	ppm	Name
0.907	134540	VV	0.122	1	7.815	Butadiene
1.933	28009	VB	0.180	1	0.893	Hexane
3.150	3763	BV	0.156	1	1.368	Methylene Chloride
3.889	17497	BV	0.237	1	1.964	TCE
5.554	50322	VB	0.332	1	1.546	Benzene
7.300	* not found *			1		MEK
11.804	* not found *			1		Acrylonitrile
11.997	52399	BB	0.407	1	2.720	Toluene
15.601	* not found *			1		Ethyl Benzene
16.004	* not found *			1		p-Xylene
16.357	27209	BV	0.220	1	1.568	m-Xylene
17.030	36331	VV	0.338	1	2.110	o-Xylene
17.785	22762	VV	0.306	1	0.433	Styrene

Not all calibrated peaks were found

SOLVAY MINERALS, INC.
CAE Project No: 7473
4/27/95
EP-5

CALIBRATION ERROR

Time	THC ppm	CO ppm	Time	THC ppm	CO ppm
07:31:53	2.1	1.2	07:39:38	1.1	1531.5
07:32:08	1.6	1.2	07:39:53	1.0	1512.9
07:32:23	1.5	1.2	07:40:08	455.3	1269.0
07:32:38	1.7	1.2	07:40:23	834.3	773.7
07:32:53	1.7	1.2	07:40:38	840.8	300.0
07:33:08	1.7	33.9	07:40:53	842.7	131.9
07:33:23	1.7	466.9	07:41:08	844.1	150.0
07:33:38	1.9	1769.0	07:41:23	843.8	126.1
07:33:53	1.8	3115.3	07:41:38	844.6	55.0
07:34:08	1.8	3777.6	07:41:53	845.0	16.1
07:34:23	1.6	3921.8	07:42:08	845.4	5.8
07:34:38	1.7	3938.8	07:42:23	757.1	1.2
07:34:53	1.7	3946.3	07:42:38	558.6	1.2
07:35:08	1.8	3943.2	07:42:53	557.0	1.2
07:35:23	1.9	3937.4	07:43:08	556.5	1.2
07:35:38	1.9	3945.3	07:43:23	556.5	1.2
07:35:53	1.8	3978.4	07:43:38	556.7	1.2
07:36:08	1.8	4002.3	07:43:53	338.5	1.2
07:36:23	1.9	4006.6	07:44:08	252.4	1.2
07:36:38	1.9	4008.5	07:44:23	251.2	1.2
07:36:53	2.0	4008.6	07:44:38	250.6	1.2
07:37:08	2.1	4008.6	07:44:53	250.2	1.2
07:37:23	2.0	3993.5	07:45:08	187.2	1.2
07:37:38	1.9	3670.9	07:45:23	4.6	1.2
07:37:53	1.8	2851.2	07:45:38	2.3	1.2
07:38:08	1.8	1972.7	07:45:53	1.7	1.2
07:38:23	1.5	1600.9	07:46:08	1.4	1.2
07:38:38	1.4	1536.3	07:46:23	1.2	3.8
07:38:53	1.3	1532.5	07:46:38	1.0	6.1
07:39:08	1.3	1530.2			
07:39:23	1.2	1529.5			

SOLVAY MINERALS, INC.
CAE Project No: 7473
EP-5
4/27/95

CALIBRATION BIAS -1

Time	THC (ppm)	CO (ppm)
11:49:33	6.2	6.1
11:49:48	6.1	6.1
11:50:03	6.0	6.1
11:50:18	5.9	4.8
11:50:33	5.7	4.2
11:50:48	5.6	6.1
11:51:03	5.7	6.1
11:51:18	5.8	6.1
11:51:33	5.6	34.7
11:51:48	5.6	306.5
11:52:03	5.5	783.0
11:52:18	5.4	1,252.6
11:52:33	5.4	1,434.4
11:52:48	5.2	1,478.2
11:53:03	5.1	1,482.4
11:53:18	5.1	1,483.1
11:53:33	4.9	1,479.5
11:53:48	4.9	1,479.5
11:54:03	4.9	1,479.5
11:54:18	4.8	1,479.5
11:54:33	345.5	1,479.5
11:54:48	557.5	1,479.5
11:55:03	559.7	1,441.4
11:55:18	562.7	1,135.4
11:55:33	566.3	651.6
11:55:48	566.0	206.8
11:56:03	566.4	47.1
11:56:18	565.7	10.7
Zero Gas	4.9	6.1
Cal Gas	566.2	1,479.5

CALIBRATION BIAS 0

Time	THC (ppm)	CO (ppm)
14:20:21	10.5	1.2
14:20:36	10.4	1.2
14:20:51	10.2	3.5
14:21:06	10.0	6.1
14:21:21	9.9	3.8
14:21:36	9.8	1.9
14:21:51	9.6	6.1
14:22:06	9.5	6.1
14:22:21	9.6	6.1
14:22:36	9.5	10.0
14:22:51	9.3	102.6
14:23:06	9.2	459.6
14:23:21	9.0	995.7
14:23:36	8.8	1,332.4
14:23:51	8.8	1,454.1
14:24:06	8.6	1,477.5
14:24:21	8.5	1,479.5
14:24:36	8.3	1,479.5
14:24:51	8.1	1,479.5
14:25:06	8.0	1,482.7
14:25:21	7.8	1,481.8
14:25:36	7.8	1,484.4
14:25:51	7.7	1,484.4
14:26:06	7.6	1,480.5
14:26:21	7.4	1,479.5
14:26:36	7.3	1,479.5
14:26:51	12.5	1,479.5
14:27:06	553.7	1,483.4
14:27:21	576.7	1,479.8
14:27:36	577.7	1,376.5
14:27:51	578.2	996.3
14:28:06	579.0	481.9
14:28:21	576.0	133.7
14:28:36	574.9	28.6
14:28:51	574.7	8.7
14:29:06	574.2	6.1
Zero Gas	7.6	6.1
Cal Gas	574.6	1,479.5

SOLVAY MINERALS, INC.
CAE Project No: 7473
EP-5
4/27/95

CALIBRATION BIAS 1

Time	THC (ppm)	CO (ppm)
16:10:07	5.4	1.2
16:10:22	4.3	1.2
16:10:37	4.0	1.2
16:10:52	3.8	1.1
16:11:07	3.7	1.2
16:11:22	3.8	1.2
16:11:37	3.8	1.2
16:11:52	3.7	21.4
16:12:07	3.7	233.5
16:12:22	3.6	660.2
16:12:37	3.6	1,145.9
16:12:52	3.5	1,367.9
16:13:07	3.4	1,424.2
16:13:22	3.4	1,438.1
16:13:37	3.4	1,440.0
16:13:52	3.3	1,439.6
16:14:07	3.2	1,439.9
16:14:22	3.2	1,439.9
16:14:37	3.2	1,441.0
16:14:52	3.1	1,444.9
16:15:07	3.1	1,444.7
16:15:22	2.1	1,443.4
16:15:37	2.9	1,440.3
16:15:52	2.9	1,442.7
16:16:07	2.9	1,445.0
16:16:22	2.9	1,444.7
16:16:37	2.8	1,443.4
16:16:52	2.7	1,440.0
16:17:07	2.7	1,439.8
16:17:22	76.5	1,440.1
16:17:37	541.1	1,444.3
16:17:52	546.0	1,441.4
16:18:07	546.9	1,317.3
16:18:22	547.6	970.9
16:18:37	548.0	441.7
16:18:52	548.3	141.8
16:19:07	548.6	25.6
16:19:22	550.4	7.6
16:19:37	550.7	5.6
16:19:52	551.1	5.6
16:20:07	550.8	5.6
16:20:22	550.4	5.4
16:20:37	550.5	5.6
16:20:52	550.1	2.8
16:21:07	550.8	1.2
16:21:22	550.9	1.1
16:21:37	551.3	1.2
16:21:52	551.4	1.2
Zero Gas	2.7	1.2
Cal Gas	550.5	1,444.4

CALIBRATION BIAS 2

Time	THC (ppm)	CO (ppm)
17:38:42	8.0	4.2
17:38:57	7.8	1.5
17:39:12	7.7	1.2
17:39:27	7.6	1.2
17:39:42	7.4	1.2
17:39:57	7.3	1.2
17:40:12	7.2	1.2
17:40:27	7.1	6.5
17:40:42	7.0	89.1
17:40:57	7.1	463.5
17:41:12	7.1	933.1
17:41:27	7.0	1,299.3
17:41:42	6.9	1,413.7
17:41:57	6.6	1,436.4
17:42:12	6.4	1,443.3
17:42:27	6.3	1,446.5
17:42:42	6.1	1,446.9
17:42:57	5.9	1,447.8
17:43:12	5.9	1,445.3
17:43:27	492.6	1,446.4
17:43:42	556.2	1,449.0
17:43:57	557.8	1,364.3
17:44:12	556.8	1,064.6
17:44:27	548.5	528.0
17:44:42	559.4	188.2
17:44:57	559.6	37.8
17:45:12	560.1	10.0
17:45:27	560.2	6.1
Zero Gas	6.0	1.2
Cal Gas	560.0	1,446.5

Revision 0

SOLVAY MINERALS, INC.
CAE Project No: 7473
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REFERENCE METHOD RUN 0

Time	THC (ppm)	CO (ppm)
13:07	195.7	516.9
13:08	197.2	506.8
13:09	192.3	510.9
13:10	199.1	508.1
13:11	200.9	517.1
13:12	197.3	514.0
13:13	198.5	509.8
13:14	202.3	505.8
13:15	230.4	512.9
13:16	200.8	524.3
13:17	201.9	518.8
13:18	202.3	518.8
13:19	201.2	515.4
13:20	203.2	503.8
13:21	202.2	506.3
13:22	205.5	507.1
13:23	205.2	508.3
13:24	202.1	504.4
13:25	202.8	501.1
13:26	203.7	496.8
13:27	205.7	501.5
13:28	206.7	501.7
13:29	204.0	509.6
13:30	213.4	515.1
13:31	212.4	514.2
13:32	224.5	511.2
13:33	246.0	526.6
13:34	217.5	534.7
13:35	219.4	528.6
13:36	219.0	525.8
13:37	219.1	521.0
13:38	218.9	522.6
13:39	221.9	532.8
13:40	220.0	541.4
13:41	223.6	543.4
13:42	235.5	545.1
13:43	241.7	557.2
13:44	221.7	554.5
13:45	225.9	563.3
13:46	229.1	575.6
13:47	226.9	594.6
13:48	223.7	597.4
13:49	214.4	586.6
13:50	221.5	575.8
13:51	218.7	581.6
13:52	214.9	584.6
13:53	216.3	585.1
13:54	213.7	573.8
13:55	206.4	564.5
13:56	206.3	541.5
13:57	197.0	531.6
13:58	200.5	521.5
13:59	198.1	520.3
14:00	198.8	508.4
14:01	194.3	500.0
14:02	191.1	482.9
14:03	191.3	481.7
14:04	192.7	485.6
14:05	187.9	474.2
14:06	187.7	464.2
Average	209.5	526.5

REFERENCE METHOD RUN 1

Time	THC (ppm)	CO (ppm)
14:35	175.2	469.1
14:36	171.3	461.2
14:37	170.8	446.6
14:38	169.5	438.5
14:39	170.2	445.1
14:40	168.0	438.4
14:41	166.0	434.7
14:42	161.9	423.7
14:43	156.5	413.2
14:44	200.6	400.8
14:45	151.6	398.2
14:46	155.5	390.6
14:47	156.2	390.6
14:48	153.2	387.5
14:49	151.1	379.3
14:50	151.3	372.2
14:51	148.8	377.2
14:52	166.0	376.0
14:53	169.0	383.5
14:54	148.4	379.5
14:55	147.8	374.0
14:56	148.6	371.1
14:57	147.2	371.1
14:58	148.3	370.4
14:59	149.2	367.3
15:00	148.1	366.3
15:01	146.2	369.2
15:02	150.4	371.1
15:03	148.2	375.5
15:04	144.1	382.1
15:05	151.4	384.7
15:06	146.9	383.5
15:07	142.3	377.4
15:08	145.6	380.6
15:09	148.0	386.8
15:10	145.0	390.6
15:11	144.8	390.6
15:12	146.2	389.9
15:13	142.6	387.7
15:14	143.2	383.7
15:15	143.0	371.8
15:16	140.1	362.5
15:17	141.0	358.1
15:18	137.9	362.0
15:19	137.9	357.6
15:20	137.5	352.2
15:21	137.1	344.5
15:22	137.9	344.8
15:23	132.9	344.5
15:24	138.7	343.0
15:25	139.8	343.0
15:26	142.1	343.2
15:27	144.3	347.9
15:28	144.5	347.9
15:29	148.3	354.3
15:30	146.0	357.0
15:31	149.6	357.0
15:32	151.4	361.2
15:33	152.5	365.4
15:34	155.5	366.8
Average	150.9	381.1

REFERENCE METHOD RUN 2

Time	THC (ppm)	CO (ppm)
16:26	116.3	274.4
16:27	117.1	281.6
16:28	114.9	279.2
16:29	117.7	285.7
16:30	118.4	292.2
16:31	115.3	295.0
16:32	115.1	299.0
16:33	120.9	306.3
16:34	119.5	312.5
16:35	117.1	311.6
16:36	117.0	307.8
16:37	117.3	305.2
16:38	117.7	302.9
16:39	117.2	301.6
16:40	115.4	299.0
16:41	116.3	295.9
16:42	123.9	289.6
16:43	124.9	289.8
16:44	114.2	288.1
16:45	114.6	288.1
16:46	117.8	288.1
16:47	116.3	290.6
16:48	119.6	289.6
16:49	119.5	285.6
16:50	122.3	285.8
16:51	127.6	294.1
16:52	128.1	300.3
16:53	127.3	302.9
16:54	127.6	305.6
16:55	128.9	308.1
16:56	130.7	315.0
16:57	130.4	327.9
16:58	133.3	341.5
16:59	134.7	343.9
17:00	133.4	352.6
17:01	132.5	357.7
17:02	138.9	364.3
17:03	136.5	367.5
17:04	137.5	368.1
17:05	140.5	375.3
17:06	141.6	382.1
17:07	137.7	382.1
17:08	143.0	386.1
17:09	139.2	395.8
17:10	140.8	396.7
17:11	138.2	397.6
17:12	140.1	398.0
17:13	138.4	386.5
17:14	141.2	391.6
17:15	137.1	400.1
17:16	138.0	401.7
17:17	141.4	406.5
17:18	135.3	406.5
17:19	141.0	401.4
17:20	140.1	396.7
17:21	142.2	392.6
17:22	141.3	395.3
17:23	144.2	398.0
17:24	161.7	393.8
17:25	141.8	389.0
Average	129.3	337.8

SOLVAY2016_6_000411

FIELD DATA PRINTOUTS

E

Field Data Printout

Location: EP-1&2
Test Run: 1
Client: Solvay Minerals Inc.
Project No: 7473
Test Date: 4/28/95
Meter ΔH@: 1.8228
Meter Y_d: 0.9966
Pitot C_p: 0.84
Static P: -1.0
Leak Rate Before: 0.001 cfm @ 16"Hg
Leak Rate After: 0.000 cfm @ 10"Hg

Method: EPA M2-4
Testing Type: Compliance
Area (ft^2): 113.10

Bar. Press. (in. Hg): 23.56
Actual Moisture (%): 17.7
O_2 (dry volume %): 15.0
CO_2 (dry volume %): 7.1
Start Time (approx.): 08:05
Stop Time (approx.): 09:11
H_2O (condensate, ml): 121.0
H_2O (silica, g): 11.4

Traverse Point	Pitot ΔP_s (in. H_2O)	Stack T_s (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.}$ H_2O)	Run Time	Sample ΔH (in. H_2O)	Metered (ft^3)	Dry Gas Meter $T_{m\ in}$ (°F)	Dry Gas Meter $T_{m\ out}$ (°F)	Volume (calculated) (ft^3)
				0.0		80.40			
1-01	1.20	438	1.10	5.0	1.80	84.46	53	53	4.06
1-02	1.50	440	1.22	10.0	1.80	88.40	55	54	3.94
1-03	1.30	442	1.14	15.0	1.80	92.40	57	54	4.00
1-04	1.30	443	1.14	20.0	1.80	96.39	59	55	3.99
1-05	1.30	443	1.14	25.0	1.80	100.37	62	56	3.98
1-06	1.10	439	1.05	30.0	1.80	104.35	63	56	3.98
2-01	1.30	444	1.14	35.0	1.80	108.35	65	57	4.00
2-02	1.30	445	1.14	40.0	1.80	112.35	67	58	4.00
2-03	1.20	445	1.10	45.0	1.80	116.37	69	59	4.02
2-04	1.20	447	1.10						
2-05	1.20	449	1.10						
2-06	0.92	441	0.96						
3-01	1.30	447	1.14						
3-02	1.40	448	1.18						
3-03	1.30	447	1.14						
3-04	1.20	448	1.10						
3-05	1.10	446	1.05						
3-06	0.96	440	0.98						
4-01	1.20	437	1.10						
4-02	1.10	435	1.05						
4-03	1.20	433	1.10						
4-04	1.20	434	1.10						
4-05	1.10	432	1.05						
4-06	0.92	429	0.96						
Final	1.09	441		45.0	1.80	35.97	58		

Field Data Printout

Location: EP-1&2
Test Run: 2
Client: Solvay Minerals Inc.
Project No: 7473
Test Date: 4/28/95
Meter ΔH@: 1.8228
Meter Y_d: 0.9966
Pitot C_p: 0.84
Static P: -1.0
Leak Rate Before: 0.001 cfm @ 16"Hg
Leak Rate After: 0.000 cfm @ 10"Hg

Method: EPA M2-4
Testing Type: Compliance
Area (ft^2): 113.10

Bar. Press. (in. Hg): 23.66
Actual Moisture (%): 18.0
O_2 (dry volume %): 15.3
CO_2 (dry volume %): 6.9
Start Time (approx.): 09:53
Stop Time (approx.): 10:28
H_2O (condensate, ml): 127.0
H_2O (silica, g): 9.8

Traverse Point	Pitot ΔP_s (in. H_2O)	Stack T_s (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.}$ H_2O)	Run Time	Sample ΔH (in. H_2O)	Metered (ft^3)	Dry Gas Meter $T_{m\ in}$ (°F)	Dry Gas Meter $T_{m\ out}$ (°F)	Volume (calculated) (ft^3)
				0.0		116.60			
1-01	1.30	433	1.14	5.0	1.80	120.69	59	59	4.09
1-02	1.30	435	1.14	10.0	1.80	124.74	61	60	4.05
1-03	1.40	437	1.18	15.0	1.80	128.81	59	58	4.07
1-04	1.30	437	1.14	20.0	1.80	132.89	58	56	4.08
1-05	1.30	436	1.14	25.0	1.80	136.92	61	58	4.03
1-06	1.10	429	1.05	30.0	1.80	140.99	64	59	4.07
2-01	1.30	438	1.14	35.0	1.80	145.02	63	58	4.03
2-02	1.30	441	1.14	40.0	1.80	149.05	62	57	4.03
2-03	1.20	443	1.10	45.0	1.80	153.10	63	58	4.05
2-04	1.20	444	1.10						
2-05	1.20	443	1.10						
2-06	0.91	434	0.95						
3-01	1.20	431	1.10						
3-02	1.20	430	1.10						
3-03	1.30	430	1.14						
3-04	1.20	429	1.10						
3-05	1.20	426	1.10						
3-06	0.95	424	0.97						
4-01	1.30	428	1.14						
4-02	1.10	426	1.05						
4-03	1.20	425	1.10						
4-04	1.10	424	1.05						
4-05	1.10	424	1.05						
4-06	0.89	419	0.94						
Final	1.089	432		45.0	1.80	36.50	60		

Field Data Printout

Location: EP-1&2
Test Run: 3
Client: Solvay Minerals Inc.
Project No: 7473
Test Date: 4/28/95
Meter ΔH@: 1.8228
Meter Y_d: 0.9966
Pitot C_p: 0.84
Static P: -1.0
Leak Rate Before: 0.001 cfm @ 17"Hg
Leak Rate After: 0.000 cfm @ 11"Hg

Method: EPA M2-4
Testing Type: Compliance
Area (ft^2): 113.10

Bar. Press. (in. Hg): 23.66
Actual Moisture (%): 18.3
O_2 (dry volume %): 15.5
CO_2 (dry volume %): 7.3
Start Time (approx.): 11:13
Stop Time (approx.): 11:58
H_2O (condensate, ml): 129.0
H_2O (silica, g): 9.4

Traverse Point	Pitot ΔP_s (in. H_2O)	Stack T_s (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.}$ H_2O)	Run Time	Sample ΔH (in. H_2O)	Metered (ft^3)	Dry Gas Meter $T_{m\ in}$ (°F)	Dry Gas Meter $T_{m\ out}$ (°F)	Volume (calculated) (ft^3)
				0.0		153.30			
1-01	1.30	444	1.14	5.0	1.80	157.35	59	58	4.05
1-02	1.30	443	1.14	10.0	1.80	161.40	60	59	4.05
1-03	1.30	445	1.14	15.0	1.80	165.42	63	59	4.02
1-04	1.30	446	1.14	20.0	1.80	169.42	66	61	4.00
1-05	1.20	445	1.10	25.0	1.80	173.47	67	61	4.05
1-06	1.00	432	1.00	30.0	1.80	177.50	72	64	4.03
2-01	1.30	448	1.14	35.0	1.80	181.52	68	62	4.02
2-02	1.20	450	1.10	40.0	1.80	185.57	71	64	4.05
2-03	1.20	450	1.10	45.0	1.80	189.63	66	61	4.06
2-04	1.30	452	1.14						
2-05	1.10	451	1.05						
2-06	0.87	435	0.93						
3-01	1.20	438	1.10						
3-02	1.20	439	1.10						
3-03	1.20	438	1.10						
3-04	1.20	439	1.10						
3-05	1.10	438	1.05						
3-06	0.94	430	0.97						
4-01	1.20	438	1.10						
4-02	1.20	435	1.10						
4-03	1.10	434	1.05						
4-04	1.20	433	1.10						
4-05	1.10	432	1.05						
4-06	0.88	428	0.94						
Final	1.08	440		45.0	1.80	36.33	63		

Solvay Minerals
CAE Job No. 7473-1
5/6/95

Chromatagraphic Data Reduction

Limits of Detection

Compound	(ppm)
Hexane	0.23
Methylene Chloride	0.79
1,1,1-Trichloroethane	0.38
Benzene	0.13
2-Butanone	0.39
Toluene	0.20
Ethylbenzene	0.03
Xylene	0.01
Butadiene	0.03
Styrene	0.05

* LOD's are based on a lowest repeatable area of 1000

EP-1&2 Run 1

Compound	8:05 (ppmwv)	8:27 (ppmwv)	8:49 (ppmwv)	9:11 (ppmwv)	Average
Hexane	0.44	BDL	BDL	BDL	0.11
Methylene Chloride	1.19	1.00	1.00	BDL	0.80
1,1,1-Trichloroethane	0.84	0.70	0.60	0.50	0.66
Benzene	0.45	0.38	0.36	0.26	0.36
2-Butanone	BDL	0.44	BDL	BDL	0.11
Toluene	1.73	1.15	1.24	0.57	1.17
Ethylbenzene	BDL	BDL	BDL	BDL	BDL
Xylene	1.63	1.39	1.78	0.73	1.38
Butadiene	1.83	1.48	1.38	1.14	1.46
Styrene	0.32	0.27	0.15	BDL	0.19

Solvay Minerals, Inc.
CAE Job No. 7473-1
5/6/95

Chromatagraphic Data Reduction

EP-1&2 Run 2

Compound	4/28/95 10:05 (ppmwv)	4/28/95 10:26 (ppmwv)	4/28/95 10:48 (ppmwv)	Average
Hexane	BDL	BDL	1.12	0.37
Methylene Chloride	1.00	0.99	0.95	0.98
1,1,1-Trichloroethane	0.67	0.65	0.85	0.72
Benzene	0.34	0.44	0.40	0.39
2-Butanone	BDL	BDL	BDL	BDL
Toluene	1.06	0.86	1.03	0.98
Ethylbenzene	BDL	BDL	BDL	BDL
Xylene	1.01	1.19	1.17	1.12
Butadiene	BDL	1.43	BDL	0.48
Styrene	0.05	0.06	0.05	0.05

EP-1&2 Run 3

Compound	4/28/95 11:14 (ppmwv)	4/28/95 11:35 (ppmwv)	4/28/95 11:57 (ppmwv)	4/28/95 12:19 (ppmwv)	Average
Hexane	BDL	BDL	BDL	BDL	BDL
Methylene Chloride	2.63	0.94	BDL	BDL	0.89
1,1,1-Trichloroethane	3.20	0.73	0.69	0.72	1.34
Benzene	0.39	0.35	0.36	0.35	0.36
2-Butanone	BDL	BDL	BDL	BDL	BDL
Toluene	0.94	0.74	0.80	0.70	0.80
Ethylbenzene	BDL	BDL	BDL	BDL	BDL
Xylene	1.04	0.73	0.74	0.19	0.67
Butadiene	1.62	1.17	BDL	1.20	1.00
Styrene	0.04	BDL	BDL	BDL	0.01

Solvay Minerals Imc.
CAE Project No. 7473
4/28/95
EP-1&2

Run 1

Time					
4/28/95	8:08	20	**Methane**		
			RT	**AREA**	**AMT**
4/28/95	8:06	1	0	0	<25
4/28/95	8:08	2	34.3	196468	<25
4/28/95	8:10	3	34.06	120527	<25
4/28/95	8:12	4	0	0	<25
4/28/95	8:14	5	0	0	<25
4/28/95	8:16	6	0	0	<25
4/28/95	8:18	7	0	0	<25
4/28/95	8:20	8	0	0	<25
4/28/95	8:23	9	0	0	<25
4/28/95	8:25	10	0	0	<25
4/28/95	8:27	11	0	0	<25
4/28/95	8:29	12	0	0	<25
4/28/95	8:31	13	0	0	<25
4/28/95	8:33	14	0	0	<25
4/28/95	8:35	15	0	0	<25
4/28/95	8:37	16	0	0	<25
4/28/95	8:39	17	0	0	<25
4/28/95	8:42	18	0	0	<25
4/28/95	8:44	19	0	0	<25
4/28/95	8:46	20	0	0	<25
Average					**<25**

Solvay Minerals Inc.
CAE Project No. 7473
4/28/95
EP-1&2

Run 2

Time				
4/28/95 9:44	20	**Methane**		
		RT	**AREA**	**AMT**
4/28/95 9:42	1	0	0	<25
4/28/95 9:44	2	0	0	<25
4/28/95 9:46	3	0	0	<25
4/28/95 9:48	4	0	0	<25
4/28/95 9:50	5	0	0	<25
4/28/95 9:52	6	0	0	<25
4/28/95 9:55	7	34.14	166305	<25
4/28/95 9:57	8	0	0	<25
4/28/95 9:59	9	0	0	<25
4/28/95 10:01	10	0	0	<25
4/28/95 10:03	11	0	0	<25
4/28/95 10:05	12	0	0	<25
4/28/95 10:07	13	0	0	<25
4/28/95 10:09	14	0	0	<25
4/28/95 10:11	15	0	0	<25
4/28/95 10:13	16	0	0	<25
4/28/95 10:16	17	0	0	<25
4/28/95 10:18	18	0	0	<25
4/28/95 10:20	19	0	0	<25
4/28/95 10:22	20	0	0	<25
4/28/95 10:29	1	0	0	<25
4/28/95 10:31	2	0	0	<25
4/28/95 10:34	3	0	0	<25
4/28/95 10:36	4	0	0	<25
4/28/95 10:38	5	0	0	<25
4/28/95 10:40	6	0	0	<25
4/28/95 10:42	7	0	0	<25
4/28/95 10:44	8	0	0	<25
4/28/95 10:46	9	34.22	314850	<25
Average				**<25**

SOLVAY MINERALS
CAE Project No. 7473
4/28/95 Run 3
EP-1&2

4/28/95 11:15	30	**Methane**

		RT	AREA	AMT
4/28/95 11:13	1	34.14	186105	<25
4/28/95 11:15	2	34.14	137927	<25
4/28/95 11:17	3	0	0	<25
4/28/95 11:19	4	0	0	<25
4/28/95 11:22	5	0	0	<25
4/28/95 11:24	6	0	0	<25
4/28/95 11:26	7	0	0	<25
4/28/95 11:28	8	33.98	182782	<25
4/28/95 11:30	9	0	0	<25
4/28/95 11:32	10	0	0	<25
4/28/95 11:34	11	0	0	<25
4/28/95 11:36	12	0	0	<25
4/28/95 11:38	13	0	0	<25
4/28/95 11:40	14	0	0	<25
4/28/95 11:43	15	0	0	<25
4/28/95 11:45	16	34.06	210058	<25
4/28/95 11:47	17	0	0	<25
4/28/95 11:49	18	0	0	<25
4/28/95 11:51	19	0	0	<25
4/28/95 11:53	20	0	0	<25
4/28/95 11:55	21	0	0	<25
4/28/95 11:57	22	0	0	<25
4/28/95 11:59	23	0	0	<25
4/28/95 12:02	24	0	0	<25
4/28/95 12:04	25	0	0	<25
4/28/95 12:06	26	0	0	<25
4/28/95 12:08	27	0	0	<25
4/28/95 12:10	28	0	0	<25
4/28/95 12:12	29	0	0	<25
4/28/95 12:14	30	0	0	<25
Average				**<25**

Field Data Printout

Location: EP-5
Test Run: 1
Client: Solvay Minerals Inc.
Project No: 7473
Test Date: 4/27/95
Meter ΔH@: 1.8228
Meter Y_d: 0.9966
Pitot C_p: 0.84
Static P: -0.4
Leak Rate Before: 0.001 cfm @ 15"Hg
Leak Rate After: 0.000 cfm @ 11"Hg

Method: EPA M2-4
Testing Type: Velocity/Moisture
Area (ft²): 85.90

Bar. Press. (in. Hg): 23.71
Actual Moisture (%): 36.4
O_2 (dry volume %): 8.4
CO_2 (dry volume %): 14.4
Start Time (approx.): 13:07
Stop Time (approx.): 13:52
H_2O (condensate, ml): 324.0
H_2O (silica, g): 17.5

Traverse Point	Pitot ΔP_s (in. H_2O)	Stack T_s (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.}$ H_2O)	Run Time	Sample ΔH (in. H_2O)	Metered (ft³)	Dry Gas Meter $T_{m\ in}$ (°F)	Dry Gas Meter $T_{m\ out}$ (°F)	Volume (calculated) (ft³)
				0.0		970.90			
1-01	0.09	288	0.30	5.0	1.80	975.02	79	79	4.12
1-02	0.10	287	0.32	10.0	1.80	979.04	81	80	4.02
1-03	0.08	287	0.28	15.0	1.80	983.05	80	80	4.01
2-01	0.08	287	0.28	20.0	1.80	987.10	80	79	4.05
2-02	0.07	286	0.26	25.0	1.80	991.13	81	79	4.03
2-03	0.08	287	0.28	30.0	1.80	995.13	80	78	4.00
3-01	0.08	289	0.28	35.0	1.80	999.13	80	78	4.00
3-02	0.08	289	0.28	40.0	1.80	1003.12	81	77	3.99
3-03	0.07	289	0.26	45.0	1.80	1007.11	80	77	3.99
4-01	0.09	291	0.30						
4-02	0.10	290	0.32						
4-03	0.08	290	0.28						
Final	0.29	288		45.0	1.80	36.21	79		

Revision 0

Field Data Printout

Location: EP-5
Test Run: 2
Client: Solvay Minerals Inc.
Project No: 7473
Test Date: 4/27/95
Meter ΔH@: 1.8228
Meter Y_d: 0.9966
Pitot C_p: 0.84
Static P: -0.4
Leak Rate Before: 0.001 cfm @ 15"Hg
Leak Rate After: 0.000 cfm @ 10"Hg

Method: EPA M2-4
Testing Type: Velocity/Moisture
Area (ft^2): 85.90

Bar. Press. (in. Hg): 23.71
Actual Moisture (%): 36.2
O_2 (dry volume %): 8.4
CO_2 (dry volume %): 14.4
Start Time (approx.): 14:35
Stop Time (approx.): 15:20
H_2O (condensate, ml): 324.0
H_2O (silica, g): 17.7

Traverse Point	Pitot ΔP_s (in. H_2O)	Stack T_s (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.}$ H_2O)	Run Time	Sample ΔH (in. H_2O)	Metered (ft^3)	Dry Gas Meter $T_{m\ in}$ (°F)	Dry Gas Meter $T_{m\ out}$ (°F)	Volume (calculated) (ft^3)
				0.0		7.40			
1-01	0.11	287	0.33	5.0	1.80	11.51	78	78	4.11
1-02	0.11	288	0.33	10.0	1.80	15.59	79	80	4.08
1-03	0.10	287	0.32	15.0	1.80	19.64	81	80	4.05
2-01	0.11	290	0.33	20.0	1.80	23.68	82	81	4.04
2-02	0.12	294	0.35	25.0	1.80	27.73	83	81	4.05
2-03	0.10	294	0.32	30.0	1.80	31.79	84	82	4.06
3-01	0.10	295	0.32	35.0	1.80	35.89	86	83	4.10
3-02	0.11	297	0.33	40.0	1.80	39.93	83	81	4.04
3-03	0.08	296	0.28	45.0	1.80	44.02	85	82	4.09
4-01	0.11	289	0.33						
4-02	0.11	290	0.33						
4-03	0.10	287	0.32						
Final	0.32	291		45.0	1.80	36.62	82		

Field Data Printout

Location: EP-5
Test Run: 3
Client: Solvay Minerals Inc.
Project No: 7473
Test Date: 4/27/95
Meter ΔH@: 1.8228
Meter Y_d: 0.9966
Pitot C_p: 0.84
Static P: -0.4
Leak Rate Before: 0.001 cfm @ 16"Hg
Leak Rate After: 0.001 cfm @ 15"Hg

Method: EPA M2-4
Testing Type: Velocity/Moisture
Bar. Press. (in. Hg): 23.71
Actual Moisture (%): 36.1

Area (ft²): 85.90

O_2 (dry volume %): 6.4
CO_2 (dry volume %): 14.4
Start Time (approx.): 16:25
Stop Time (approx.): 17:11
H_2O (condensate, ml): 320.0
H_2O (silica, g): 19.6

Traverse Point	Pitot ΔP_s (in. H_2O)	Stack T_s (°F)	$\sqrt{\Delta P_s}$ (calculated) ($\sqrt{in.}$ H_2O)	Run Time	Sample ΔH (in. H_2O)	Metered (ft³)	Dry Gas Meter $T_{m\ in}$ (°F)	Dry Gas Meter $T_{m\ out}$ (°F)	Volume (calculated) (ft³)
				0.0		44.21			
1-01	0.11	285	0.33	5.0	1.80	48.29	81	81	4.08
1-02	0.10	284	0.32	10.0	1.80	52.31	78	80	4.02
1-03	0.09	282	0.30	15.0	1.80	56.33	74	79	4.02
2-01	0.10	287	0.32	20.0	1.80	60.36	71	76	4.03
2-02	0.11	290	0.33	25.0	1.80	64.37	73	76	4.01
2-03	0.10	289	0.32	30.0	1.80	68.37	75	76	4.00
3-01	0.09	291	0.30	35.0	1.80	72.48	76	75	4.11
3-02	0.11	290	0.33	40.0	1.80	76.37	76	73	3.89
3-03	0.10	290	0.32	45.0	1.80	80.37	75	72	3.99
4-01	0.12	291	0.35						
4-02	0.11	293	0.33						
4-03	0.10	291	0.32						
Final	0.32	289		45.0	1.80	35.16	76		

Solvay Minerals, Inc.
CAE Job No. 7473-1
5/6/95

Chromatagraphic Data Reduction

Limits of Detection

Compound	(ppm)
Hexane	0.23
Methylene Chloride	0.79
1,1,1-Trichloroethane	0.38
Benzene	0.13
2-Butanone	0.39
Toluene	0.20
Ethylbenzene	0.03
Xylene	0.01
Butadiene	0.03
Styrene	0.05

* LOD's are based on a lowest repeatable area of 1000

EP-5 Run 1

Compound	4/27/95 13:07 (ppmwv)	4/27/95 13:29 (ppmwv)	4/27/95 13:51 (ppmwv)	4/27/95 14:13 (ppmwv)	Average
Hexane	2.37	2.63	2.54	1.40	2.24
Methylene Chloride	2.06	2.26	2.35	1.66	2.08
1,1,1-Trichloroethane	4.40	5.61	5.39	3.46	4.72
Benzene	3.37	3.33	3.28	2.90	3.22
2-Butanone	BDL	BDL	BDL	BDL	BDL
Toluene	5.80	6.03	6.16	4.74	5.68
Ethylbenzene	0.44	0.77	0.76	0.78	0.69
Xylene	5.42	6.18	6.33	4.86	5.70
Butadiene	INT	INT	INT	INT	INT
Styrene	0.72	0.92	1.00	0.76	0.85

INT-Analytical interferant

Solvay Minerals, Inc.
CAE Job No. 7473-1
5/6/95

Chromatagraphic Data Reduction

EP-5 Run 2

Compound	4/27/95 14:35 (ppmwv)	4/27/95 14:57 (ppmwv)	4/27/95 15:41 (ppmwv)	Average
Hexane	1.99	1.13	1.24	1.45
Methylene Chloride	1.97	1.64	1.66	1.76
1,1,1-Trichloroethane	3.99	BDL	2.94	2.31
Benzene	2.61	1.96	2.24	2.27
2-Butanone	BDL	BDL	BDL	BDL
Toluene	5.13	4.14	4.58	4.62
Ethylbenzene	0.72	0.16	0.15	0.34
Xylene	4.39	3.90	4.48	4.26
Butadiene	INT	INT	INT	INT
Styrene	0.61	0.47	0.50	0.53

EP-5 Run 3

Compound	4/27/95 16:26 (ppmwv)	4/27/95 16:49 (ppmwv)	4/27/95 17:11 (ppmwv)	4/27/95 17:33 (ppmwv)	Average
Hexane	0.71	0.46	0.50	0.89	0.64
Methylene Chloride	1.26	1.26	1.07	1.37	1.24
1,1,1-Trichloroethane	1.20	1.56	0.76	1.96	1.37
Benzene	0.85	1.11	0.72	1.55	1.06
2-Butanone	BDL	BDL	BDL	BDL	BDL
Toluene	2.52	2.37	1.24	2.72	2.21
Ethylbenzene	BDL	BDL	BDL	BDL	BDL
Xylene	2.59	1.42	2.29	3.68	2.49
Butadiene	INT	INT	4.34	7.82	6.08
Styrene	0.26	0.22	0.22	0.43	0.28

INT-Analytical Interferant

Solvay Minerals Inc.
CAE Project No. 7473
4/27/95
EP-5

RUN 1

4/27/95 13:08	30	Methane

		RT	AREA	AMT
4/27/95 13:06	1	34.46	5376502	189
4/27/95 13:08	2	34.46	5742223	200
4/27/95 13:11	3	34.46	6006825	208
4/27/95 13:13	4	34.54	5465300	191
4/27/95 13:15	5	34.54	5509842	193
4/27/95 13:17	6	34.46	4949970	175
4/27/95 13:19	7	34.54	5084314	180
4/27/95 13:21	8	34.46	4950762	175
4/27/95 13:23	9	34.54	5362592	188
4/27/95 13:25	10	34.54	6041673	209
4/27/95 13:27	11	34.54	5527346	193
4/27/95 13:30	12	34.54	5816490	202
4/27/95 13:32	13	34.54	5958376	207
4/27/95 13:34	14	34.54	6537792	225
4/27/95 13:36	15	34.54	5404686	189
4/27/95 13:38	16	34.54	5806762	202
4/27/95 13:40	17	34.54	6443770	222
4/27/95 13:42	18	34.54	6396178	220
4/27/95 13:44	19	34.46	5757908	200
4/27/95 13:46	20	34.46	6042214	209
4/27/95 13:48	21	34.54	6289966	217
4/27/95 13:51	22	34.54	6421147	221
4/27/95 13:53	23	34.54	5768806	201
4/27/95 13:55	24	34.54	5338730	187
4/27/95 13:57	25	34.54	5419658	190
4/27/95 13:59	26	34.54	5219128	184
4/27/95 14:01	27	34.54	4851382	172
4/27/95 14:03	28	34.54	5220108	184
4/27/95 14:05	29	34.54	5511268	193
4/27/95 14:07	30	34.54	4981492	176
Average				**197**

Solvay Minerals Inc.
CAE Project No. 7473
4/27/95
EP-5

Run 2

4/27/95 14:36	30	**Methane**		
		RT	**AREA**	**AMT**
4/27/95 14:34	1		Bad Inject	
4/27/95 14:36	2	34.54	5480225	192
4/27/95 14:38	3	34.54	4842643	172
4/27/95 14:40	4	34.54	5330612	187
4/27/95 14:43	5	34.54	4893816	174
4/27/95 14:45	6	34.54	5323909	187
4/27/95 14:47	7	34.54	5697246	199
4/27/95 14:49	8	34.54	5412655	190
4/27/95 14:51	9	34.54	4942865	175
4/27/95 14:53	10	34.54	5259153	185
4/27/95 14:55	11	34.3	5427086	190
4/27/95 14:57	12	33.98	5061212	179
4/27/95 14:59	13	34.54	5479588	192
4/27/95 15:01	14	34.54	5153410	182
4/27/95 15:04	15	34.54	5274804	185
4/27/95 15:06	16	34.54	5760412	201
4/27/95 15:08	17	34.62	6341456	219
4/27/95 15:10	18	34.54	5032988	178
4/27/95 15:12	19	34.54	5170454	182
4/27/95 15:14	20	34.54	4926656	175
4/27/95 15:16	21	34.54	5041298	178
4/27/95 15:18	22	34.54	4851430	172
4/27/95 15:20	23	34.54	4785396	170
4/27/95 15:22	24	34.54	4833834	172
4/27/95 15:25	25	34.54	4859052	173
4/27/95 15:27	26	34.54	5618473	196
4/27/95 15:29	27	34.54	5410133	190
4/27/95 15:31	28	34.54	5886742	204
4/27/95 15:33	29	34.54	4565984	163
4/27/95 15:35	30	34.62	5708046	199
Average				**185**

Solvay Minerals Inc.
CAE Project No. 7473
4/27/95
EP-5

Run 3

4/27/95 16:27	30	Methane

		RT	AREA	AMT
4/27/95 16:26	1	34.54	5101196	180
4/27/95 16:28	2	34.54	4665461	167
4/27/95 16:30	3	34.62	5268677	185
4/27/95 16:32	4	34.62	5544606	194
4/27/95 16:34	5	34.54	4227743	153
4/27/95 16:36	6	34.54	4490200	161
4/27/95 16:38	7	34.54	5449846	191
4/27/95 16:40	8	34.54	4204995	152
4/27/95 16:42	9	34.62	4876416	173
4/27/95 16:45	10	34.62	4668382	167
4/27/95 16:47	11	34.62	5539365	194
4/27/95 16:49	12	34.54	4427424	159
4/27/95 16:51	13	34.54	5103826	180
4/27/95 16:53	14	34.62	6027394	209
4/27/95 16:55	15	34.54	5684417	198
4/27/95 16:57	16	34.54	4830922	172
4/27/95 16:59	17	34.54	4697936	168
4/27/95 17:01	18	34.62	6213436	215
4/27/95 17:03	19	34.54	5111412	180
4/27/95 17:06	20	34.62	5475108	192
4/27/95 17:08	21	34.54	5159636	182
4/27/95 17:10	22	34.54	5384386	189
4/27/95 17:12	23	34.54	5036764	178
4/27/95 17:14	24	34.54	4648740	166
4/27/95 17:16	25	34.62	5722083	199
4/27/95 17:18	26	34.54	4650470	166
4/27/95 17:20	27	34.54	4746436	169
4/27/95 17:22	28	34.54	5168138	182
4/27/95 17:24	29	34.54	6028176	209
4/27/95 17:27	30	34.54	4744120	169
Average				**180**