METCO ENVIRONMENTAL
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SOURCE EMISSIONS SURVEY
OF
VALERO REFINING - TEXAS, L.P.
HOUSTON REFINERY
C-TRAIN SRU TAIL GAS STACK (EPN 39CB2001)
HOUSTON, TEXAS
TCEQ PERMIT 2507A

SEPTEMBER 2007

FILE NUMBER 07-338

"I certify that I have personally checked and am familiar with the information submitted herein, and based on my inquiries of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate, and complete."

James R. Monfries
Senior Quality Assurance Manager

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INTRODUCTION

METCO Environmental, 1100 Gulf Freeway, Calder Ridge Business Park, Suite 100, League City, Texas, conducted a source emissions survey of Valero Refining – Texas, L.P., Houston Refinery, located at 9701 Manchester Avenue, Houston, Texas, on September 4 and 5, 2007. The purpose of these tests was to determine the concentrations of ammonia, hydrogen sulfide, oxides of nitrogen, sulfur dioxide, carbon monoxide, non-methane/non-ethane volatile organic compounds, and highly reactive volatile organic compounds (HRVOCs) being emitted to the atmosphere via the C-Train SRU Tail Gas Stack (EPN 39CB2001), in order to comply with TCEQ Permit 2507A. Three tests were preformed while the unit was operating at an average AAG rate of 136.10 MSCFH.

The sampling was performed by the following METCO personnel: Ryan Williams - Project Supervisor, Ben Goebel, Justin Cooper, and Lance Eubanks.

The sampling followed the procedures set forth in the Code of Federal Regulations, Title 40, Chapter I, Part 60, Appendix A, Methods 1, 2, 3A, 3B, 4, 6C, 7E, 10, 11, 18, and 25A; and in the "Sampling Procedures Manual, Texas Air Control Board, Revised July 1985".

SUMMARY OF RESULTS

C-Train SRU Tail Gas Stack (EPN 39CB2001)

Run Number	Ammonia Emissions (dry ppm)	Ammonia Emissions (lbs/hr)	Hydrogen Sulfide Emissions (dry ppm)	Hydrogen Sulfide Emissions (lbs/hr)	Oxides of Nitrogen Emissions (dry ppm)	Oxides of Nitrogen Emissions (lbs/hr)
1	0.12	0.002	< 0.10	< 0.01	16.93	0.91
2	0.07	0.001	< 0.10	< 0.01	17.01	0.90
3	0.02	< 0.001	< 0.10	< 0.01	15.75	0.84
Average	0.07	< 0.001	< 0.10	< 0.01	16.56	0.88
Allowable Emission Rate	----	≤ 0.01	----	≤ 0.48	----	≤ 5.51

Run Number	Sulfur Dioxide Emissions (dry ppm)	Sulfur Dioxide Emissions (lbs/hr)	Carbon Monoxide Emissions (dry ppm)	Carbon Monoxide Emissions (lbs/hr)	Non-Methane/Non-Ethane Volatile Organic Compounds Emissions as Propane (dry ppm)	Non-Methane/Non-Ethane Volatile Organic Compounds Emissions as Propane (lbs/hr)
1	36.58	2.73	39.66	1.30	< 0.01	< 0.01
2	34.24	2.51	11.03	0.35	< 0.01	< 0.01
3	33.91	2.51	42.48	1.38	< 0.01	< 0.01
Average	34.91	2.58	31.06	1.01	< 0.01	< 0.01
Allowable Emission Rate	----	≤ 93.95	----	≤ 10.16	----	≤ 0.21

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SUMMARY OF RESULTS

C-Train SRU Tail Gas Stack (EPN 39CB2001)

Run Number	Ethylene Emissions (dry ppm)	Ethylene Emissions (lbs/hr)	Propylene Emissions (dry ppm)	Propylene Emissions (lbs/hr)	1,3-Butadiene Emissions (dry ppm)	1,3-Butadiene Emissions (lbs/hr)	Butenes Emissions (dry ppm)	Butenes Emissions (lbs/hr)	Total Highly Reactive Volatile Organic Compounds Emissions (lbs/hr)
1	< 0.02	< 0.001	< 0.02	< 0.001	< 0.05	< 0.003	< 0.14	< 0.009	< 0.014
2	< 0.02	< 0.001	< 0.02	< 0.001	< 0.05	< 0.003	< 0.14	< 0.009	< 0.014
3	< 0.02	< 0.001	< 0.02	< 0.001	< 0.05	< 0.003	< 0.14	< 0.009	< 0.014
Average	< 0.02	< 0.001	< 0.02	< 0.001	< 0.05	< 0.003	< 0.14	< 0.009	< 0.014

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SUMMARY OF RESULTS

C-Train SRU Tail Gas Stack (EPN 39CB2001)

Run Number	1	2	3
Date	09/05/07	09/05/07	09/05/07
Time	1050-1150	1235-1335	1415-1515
Stack Flow Rate - ACFM	28,832	29,125	29,602
Stack Flow Rate - DSCFM*	7,503	7,374	7,445
% Water Vapor - % Volume	13.11	12.71	13.11
% CO_2 - % Volume	6.6	6.8	6.8
% O_2 - % Volume (orsat)	3.4	3.2	3.2
% O_2 - % Volume (monitor)	2.95	2.92	2.89
Excess Air @ Sampling Point - %	16.6	15.5	15.5
Stack Temperature -°F	1,313	1,370	1,371
Stack Pressure - "Hg	29.99	29.96	29.93
Volume Dry Gas Sampled – DSCF*	33.486	34.031	33.648
Ammonia - ug	78.0	51.0	14.9
Ammonia Emissions – dry ppm	0.12	0.07	0.02
Ammonia Emissions – lbs/hr	0.002	0.001	< 0.001

Not Enough Temp

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

SUMMARY OF RESULTS

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Hydrogen Sulfide

Run Number	1	2	3
Date	09/05/07	09/05/07	09/05/07
Time	1050-1150	1235-1335	1415-1515
N_i	0.0100	0.0100	0.0100
V_i, ml	50.0	50.0	50.0
N_s	0.0102	0.0102	0.0102
V_s, ml	47.5	47.5	47.5
V_i, Blank, ml	50.0	50.0	50.0
V_s, Blank, ml	47.5	47.5	47.5
Vm_{std}, liters*	58.552	59.587	58.896
C_{H2S}, mg/dscm*	< 0.15	< 0.15	< 0.15
C_{H2S}, ppm	< 0.10	< 0.10	< 0.10
C_{H2S}, lbs/hr	< 0.01	< 0.01	< 0.01

$$C_{H2S} = \frac{K\,(V_iN_i - V_sN_s)\ \text{sample} - (V_iN_i - V_sN_s)\ \text{blank}}{Vm_{std}}$$

C_{H2S} = Concentration of H_2S at standard conditions, mg/dscm*

K = Conversion factor = 17,040

V_i = Volume of standard iodine solution, ml

N_i = Normality of standard iodine solution

V_s = Volume of standard sodium thiosulfate solution, ml

N_s = Normality of standard sodium thiosulfate solution

Vm_{std} = Dry gas volume at standard conditions, liters*

* 29.92 "Hg, 68 Deg.F (760 mm Hg, 20 Deg.C)

SUMMARY OF RESULTS

C-Train SRU Tail Gas Stack (EPN 39CB2001)

Run Number	1	2	3
% O_2 - % Volume (monitor)	2.95	2.92	2.89
Oxides of Nitrogen Emissions - dry ppm	16.93	17.01	15.75
Oxides of Nitrogen Emissions - lbs/hr	0.91	0.90	0.84
Sulfur Dioxide Emissions - dry ppm	36.58	34.24	33.91
Sulfur Dioxide Emissions - lbs/hr	2.73	2.51	2.51
Carbon Monoxide Emissions - dry ppm	39.66	11.03	42.48
Carbon Monoxide Emissions - lbs/hr	1.30	0.35	1.38
Total Hydrocarbons Emissions as Propane - wet ppm	< 0.10	< 0.10	0.10
Total Hydrocarbons Emissions as Propane - dry ppm	< 0.12	< 0.11	0.12
Methane Concentrations as Propane - dry ppm	0.66	0.67	0.66
Ethane Concentrations as Propane - dry ppm	N.D.	N.D.	N.D.
Non-Methane/Non-Ethane Volatile Organic Compounds Emissions as Propane - dry ppm	< 0.01	< 0.01	< 0.01
Non-Methane/Non-Ethane Volatile Organic Compounds Emissions as Propane - lbs/hr	< 0.01	< 0.01	< 0.01

N.D. – None detected.

SUMMARY OF RESULTS

C-Train SRU Tail Gas Stack (EPN 39CB2001)

Run Number	1	2	3
Ethylene Emissions - dry ppm	< 0.02	< 0.02	< 0.02
Ethylene Emissions - lbs/hr	< 0.001	< 0.001	< 0.001
Propylene Emissions - dry ppm	< 0.02	< 0.02	< 0.02
Propylene Emissions - lbs/hr	< 0.001	< 0.001	< 0.001
1,3-Butadiene Emissions - dry ppm	< 0.05	< 0.05	< 0.05
1,3-Butadiene Emissions - lbs/hr	< 0.003	< 0.003	< 0.003
Butenes Emissions - dry ppm	< 0.14	< 0.14	< 0.14
Butenes Emissions - lbs/hr	< 0.009	< 0.009	< 0.009
Total Highly Reactive Volatile Organic Compounds Emissions - lbs/hr	< 0.014	< 0.014	< 0.014

DISCUSSION OF RESULTS

The three tests for ammonia, oxides of nitrogen, sulfur dioxide, carbon monoxide, and non-methane/non-ethane volatile organic compounds appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train, the pitot tubes, the integrated bag sampling system, and the reference method monitors sampling systems showed no leaks before or after each test. The zero and calibration drift tests of the reference method monitors were stable with no variations greater than 3.0 percent. The calibration error check, sampling system bias check, and NO_2 to NO conversion efficiency check performed on the reference method monitors prior to testing were valid. The indicative parameters calculated from the field data were in close agreement. The moisture percentages for the three tests were within 2.1 percent of the mean value. The measured flow rates (Q_s) for the tests were within 0.9 percent of the mean value.

The NO_2 to NO conversion efficiency check was performed prior to testing on September 5, 2007, from 0643-0713. The results were as follows:

Highest peak value observed: 22.9 ppm
Value observed after 30 minutes: 22.7 ppm
NO_2 to NO conversion efficiency (%) = (Value observed after 30 minutes/Highest peak value observed) x 100
(22.7/22.9) x 100 = 99.1%

The required allowable as found in 40 CFR, Part 60, Appendix A, Method 7E, is 98.0%. Therefore, the NO_2 to NO conversion efficiency check was valid.

The calculated emissions (pounds per hour) of ammonia for the three tests showed a range of -25.0 percent to +50.0 percent variation from the mean value.

The calculated emissions (pounds per hour) of oxides of nitrogen for the three tests showed a range of -4.9 percent to +3.0 percent variation from the mean value.

The calculated emissions (pounds per hour) of sulfur dioxide for the three tests showed a range of -2.8 percent to +5.7 percent variation from the mean value.

The calculated emissions (pounds per hour) of carbon monoxide for the three tests showed a range of -65.3 percent to +36.6 percent variation from the mean value.

The concentrations of non-methane/non-ethane volatile organic compounds for the three tests were below the minimum detectable limit of the method.

The three tests for hydrogen sulfide appeared to be valid representations of the actual emissions during the tests. All leak checks performed on the sampling train showed no leaks before or after each test.

The concentrations of hydrogen sulfide for the three tests were below the minimum detectable limit of the method.

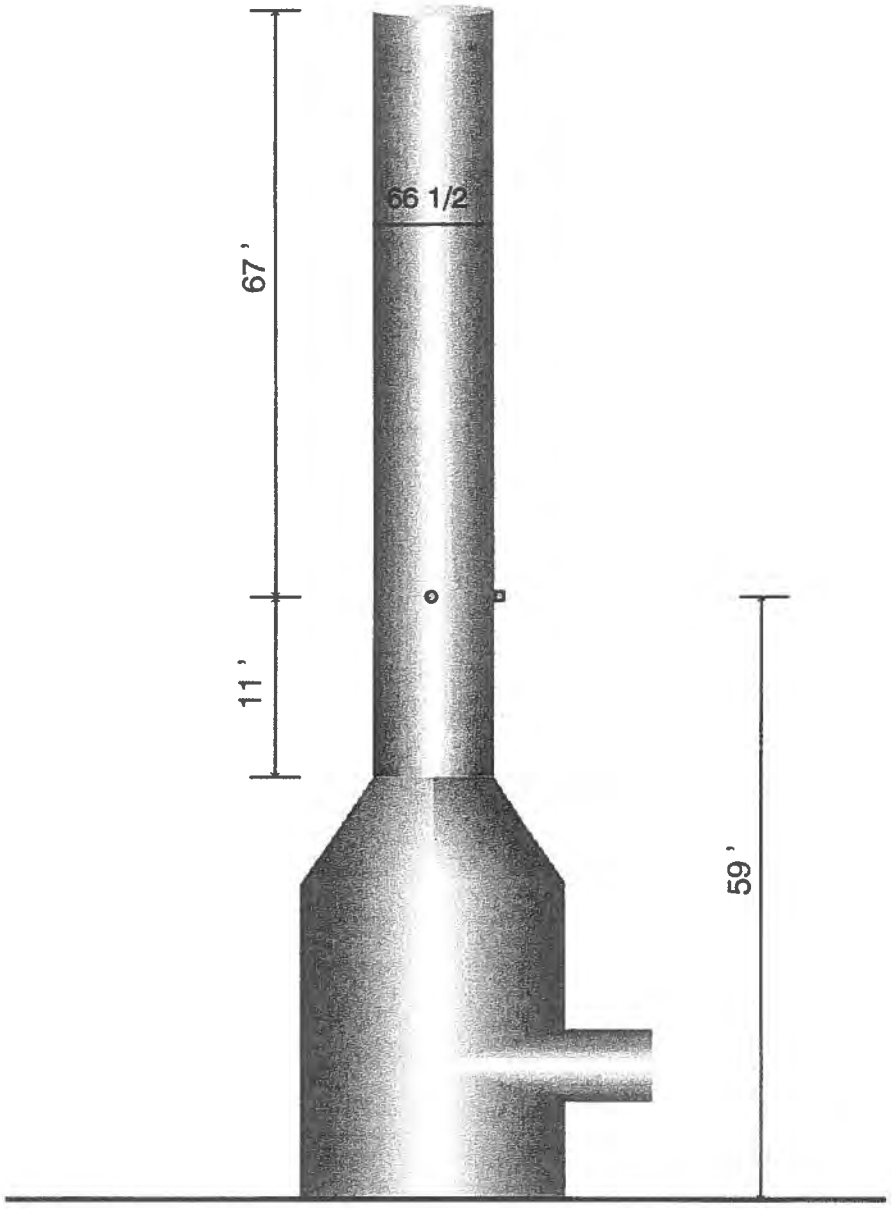
The three tests for ethylene, propylene, 1,3-butadiene, and butenes appeared to be accurate representations of the actual emissions during the tests. All leak checks performed on the integrated bag sampling system showed no leaks before or after each test.

DESCRIPTION OF SAMPLING LOCATION

The sampling location on the C-Train SRU Tail Gas Stack (EPN 39CB2001) is approximately 59 feet above the ground. The sampling ports are located 11 feet (2.0 stack diameters) downstream from a constriction in the stack and 67 feet (12.1 stack diameters) upstream from the outlet of the stack.

SAMPLING LOCATION

C-Train SRU Tail Gas Stack (EPN 39CB2001)



Not to Scale

SAMPLING AND ANALYTICAL PROCEDURES

The sampling followed the procedures set forth in the Code of Federal Regulations, Title 40, Chapter I, Part 60, Appendix A, Methods 1, 2, 3A, 3B, 4, 6C, 7E, 10, 11, 18, and 25A; and in the "Sampling Procedures Manual, Texas Air Control Board, Revised July 1985".

A velocity traverse was made at each of the two ports on the stack, in order to determine the uniformity and magnitude of the flow during each test. Several traverse points were checked for cyclonic flow and none was found to be present. Eight traverse points were sampled from each of the two ports for a total of sixteen traverse points.

The sampling trains were leak-checked before each test, and again after each test at the highest vacuum reading recorded during the test. This was done to predetermine the possibility of a diluted sample.

The reference method monitors sampling system was leak-checked at the end of the sampling probe before sampling, and again at the conclusion of sampling.

The pitot tube lines were checked for leaks before and after each test under both a vacuum and a pressure. The lines were also checked for clearance and the manometer was zeroed before each test.

An integrated orsat sample was collected and analyzed according to EPA Method 3B during each test.

Ammonia

Triplicate samples for ammonia were collected. The samples were taken according to

EPA Method 4; and the "Sampling Procedures Manual, Texas Air Control Board, Revised July 1985". For each run, samples of twenty-minute duration were taken from three traverse points for a total sampling time of 60 minutes. Data was recorded at five-minute intervals. Reagent blanks were submitted.

The " front-half " of the sampling train contained the following components:

Heated Probe
Heated Glass Fiber Filter and Glass Support @ 248°F ± 25°F

The " back-half " of the sampling train contained the following components:

Impinger Number	Contents	Amount	Parameter Collected
1	0.1N H_2SO_4	100 ml	Ammonia
2	0.1N H_2SO_4	100 ml	Ammonia
3	Empty	----	Moisture
4	Silica Gel	200 g	Moisture

The ammonia samples were analyzed by ion chromatography.

Hydrogen Sulfide

Triplicate sets of samples for hydrogen sulfide were collected. The samples were taken according to EPA Method 11. For each run, samples of sixty-minute duration were taken from the midpoint of the stack. Data was recorded at five-minute intervals. At the conclusion of each run the sampling train was purged for fifteen minutes with ambient air drawn through a charcoal scrubber.

The " front-half " of the sampling train contained the following components:

Stainless Steel Probe
Glass Wool Plug
Teflon Sample Line

The " back-half " of the sampling train contained the following components:

Impinger Number	Contents	Amount	Parameter Collected
1	6% Hydrogen Peroxide	15 ml	Sulfur Dioxide
2	Empty	--------	Moisture
3	Cadmium Sulfate Solution	15 ml	Hydrogen Sulfide
4	Cadmium Sulfate Solution	15 ml	Hydrogen Sulfide
5	Cadmium Sulfate Solution	15 ml	Hydrogen Sulfide
6	Silica Gel	30 g	Moisture

The concentration of hydrogen sulfide in the samples was determined on-site iodometrically.

Ethylene, Propylene, 1,3-Butadiene, and Butenes (HRVOCs)

Triplicate samples for ethylene, propylene, 1,3-butadiene, and butenes were collected. The samples were collected according to EPA Method 18. For each run, samples of sixty-minute duration were collected from the midpoint of the stack. The reference method sampling system consisted of a probe, a Teflon sample line, a rotameter, and a Tedlar bag.

The samples were analyzed by GC/FID.

Oxides of Nitrogen

The oxides of nitrogen sampling was performed according to EPA Method 7E. A

Thermo Environmental Model 10S Oxides of Nitrogen Analyzer (Serial Number 10S-39403-260) was used to monitor the concentrations of oxides of nitrogen during each run. The reference method analyzer was operated at a range of 0 to 100 parts per million, with a calibration span of 93.6 parts per million. A multi-point calibration was performed on the reference method analyzer prior to testing. An analyzer calibration error check, a sampling system bias check, and a NO_2 to NO conversion efficiency check were also conducted prior to testing. After each run, the zero and calibration drift of the reference method monitor was checked. The calibration gases were as follows:

Zero Nitrogen
44.5 ppm NO in N_2 (ALM 35137)
93.6 ppm NO in N_2 (BLM 1222)

The reference method sampling system consisted of a heated probe, a chilled condenser, and a Teflon sample line. The calibration gases for the bias and drift checks were introduced upstream of the chilled condenser.

Calibration gas certifications are included in Appendix C.

Sulfur Dioxide

The sulfur dioxide sampling was performed according to EPA Method 6C. A Western Research Model 721M Sulfur Dioxide Analyzer (Serial Number 94-721M-8191-3) was used to monitor the concentrations of sulfur dioxide during each run. The reference method analyzer was operated at a range of 0 to 100 parts per million, with a calibration span of 84.5 parts per million. A multi-point calibration was performed on the reference method analyzer prior to testing. An analyzer calibration error check and a sampling system bias check were also conducted prior to testing. After each run, the zero and

calibration drift of the reference method monitor was checked. The calibration gases were as follows:

Zero Nitrogen

41.7 ppm SO_2 in N_2 (ALM 67916)

84.5 ppm SO_2 in N_2 (BLM 3931)

The reference method sampling system consisted of a heated probe, a chilled condenser, and a Teflon sample line. The calibration gases for the bias and drift checks were introduced upstream of the chilled condenser.

Calibration gas certifications are included in Appendix C.

Carbon Monoxide

The carbon monoxide sampling was performed according to EPA Method 10 using the continuous sampling procedure. A Thermo Environmental Model 48 Carbon Monoxide Analyzer (Serial Number 48-39616-261) was used to monitor the concentrations of carbon monoxide during each run. The reference method analyzer was operated at a range of 0 to 100 parts per million, with a calibration span of 83.0 parts per million. A multi-point calibration was performed on the reference method analyzer prior to testing. An analyzer calibration error check and a sampling system bias check were also conducted prior to testing. After each run, the zero and calibration drift of the reference method monitor was checked. The calibration gases were as follows:

Zero Nitrogen

44.9 ppm CO in N_2 (ALM 54751)

83.0 ppm CO in N_2 (ALM 47398)

The reference method sampling system consisted of a heated probe, a chilled condenser, and a Teflon sample line. The calibration gases for the bias and drift checks were introduced upstream of the chilled condenser.

Calibration gas certifications are included in Appendix C.

Non-Methane/Non-Ethane Volatile Organic Compounds

The non-methane/non-ethane volatile organic compounds sampling was performed according to EPA Methods 18 and 25A. A J.U.M. Model VE-7 Total Hydrocarbon Analyzer (Serial Number 00061209-109) was used to monitor the concentrations of total hydrocarbons during each run. The reference method analyzer was operated at a range of 0 to 100 parts per million. A multi-point calibration was performed on the reference method analyzer prior to testing. An analyzer calibration error check and a sampling system bias check were also conducted prior to testing. After each run, the zero and calibration drift of the reference method monitor was checked. The calibration gases were as follows:

Zero Nitrogen

29.9 ppm C_3H_8 in N_2 (BLM 4041)

47.0 ppm C_3H_8 in N_2 (BAL 4862)

84.6 ppm C_3H_8 in N_2 (BLM 517)

The reference method sampling system consisted of a heated probe with an in-stack filter and a heated Teflon sample line. The calibration gases for the bias and drift checks were introduced upstream of the heated Teflon sample line.

Calibration gas certifications are included in Appendix C.

An integrated gas sample was also collected during each test according to EPA Method 18. The reference method sampling system consisted of a stainless steel probe, a chilled condenser, rotameter, and a Tedlar bag. The integrated samples were analyzed for methane and ethane by GC/FID. The concentrations of methane and ethane were subtracted from the total hydrocarbons concentrations to obtain the non-methane/non-ethane volatile organic compounds concentrations.

Oxygen

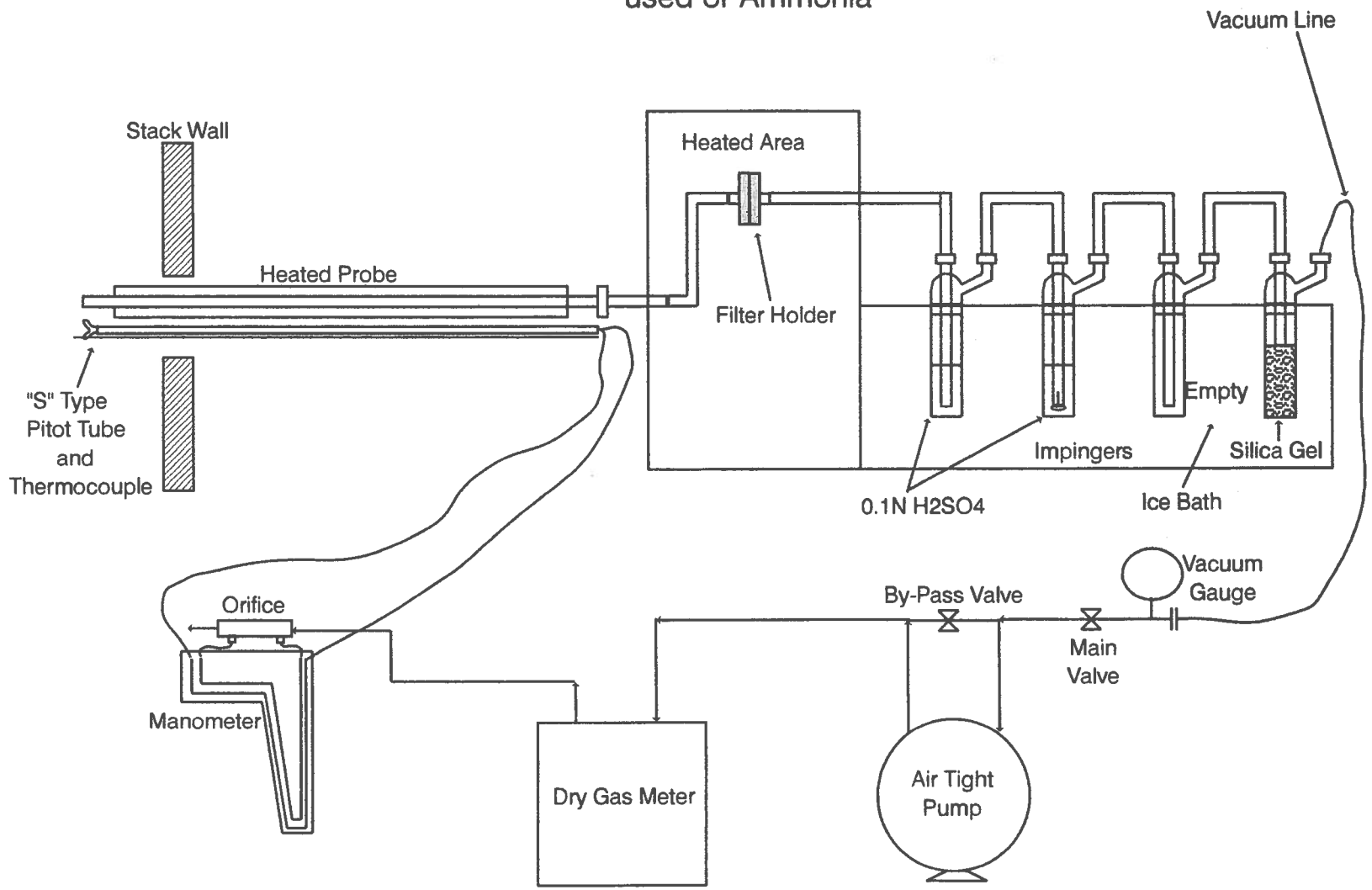
The oxygen sampling was performed according to EPA Method 3A. A Teledyne Oxygen Analyzer (Serial Number 132689) was used to monitor the concentrations of oxygen during each run. The reference method analyzer was operated at a range of 0 to 25 percent, with a calibration span of 20.90 percent. A multi-point calibration was performed on the reference method analyzer prior to testing. An analyzer calibration error check and a sampling system bias check were also conducted prior to testing. After each run, the zero and calibration drift of the reference method monitor was checked. The calibration gases were as follows:

Zero Nitrogen
12.20 percent O_2 in N_2 (AAL 16103)
20.90 percent O_2 in air (AAL 14753)

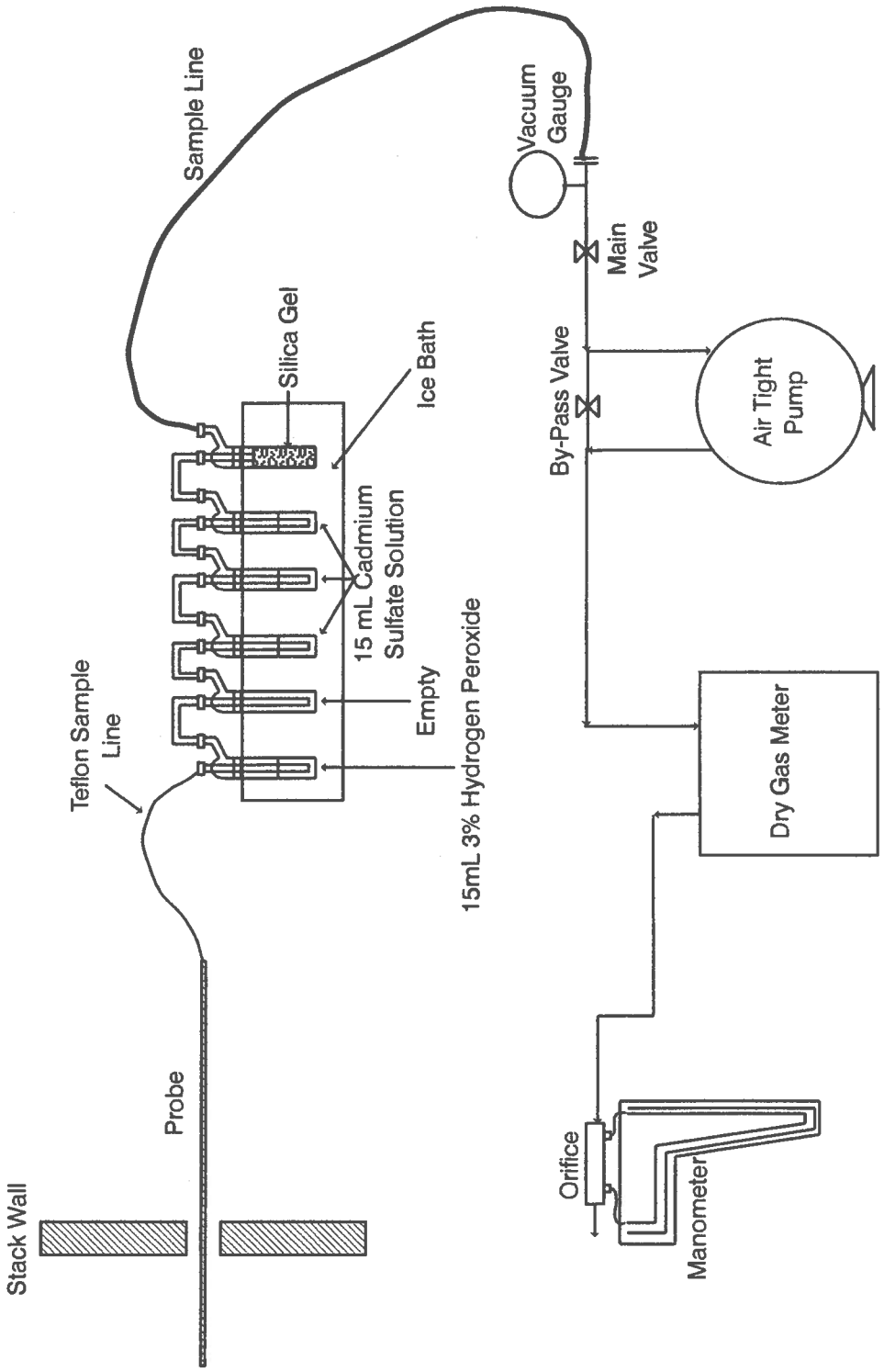
The reference method sampling system consisted of a heated probe, a chilled condenser, and a Teflon sample line. The calibration gases for the bias and drift checks were introduced upstream of the chilled condenser.

Calibration gas certifications are included in Appendix C.

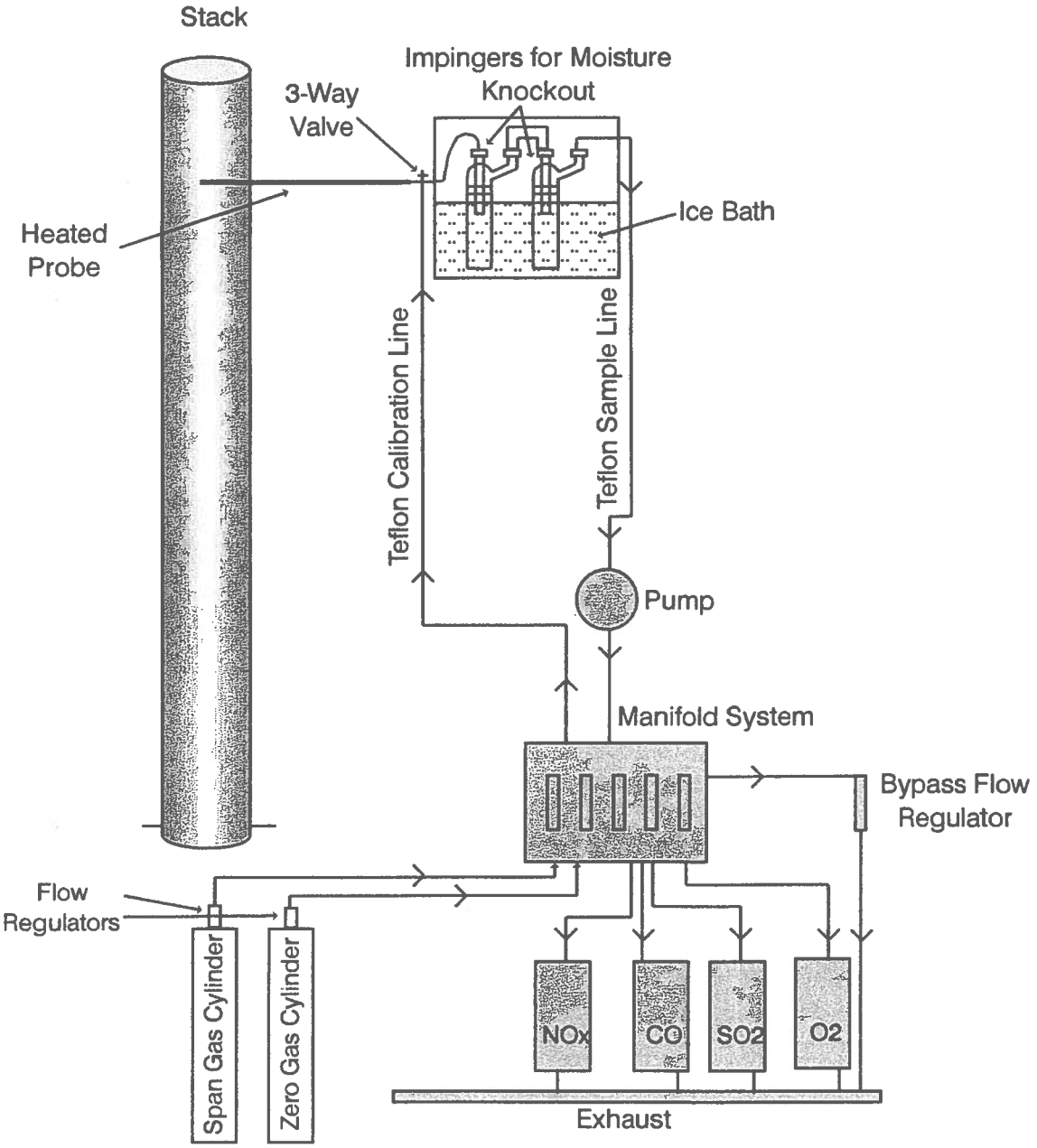
Schematic Diagram of the EPA Method 4 Sampling Train used or Ammonia



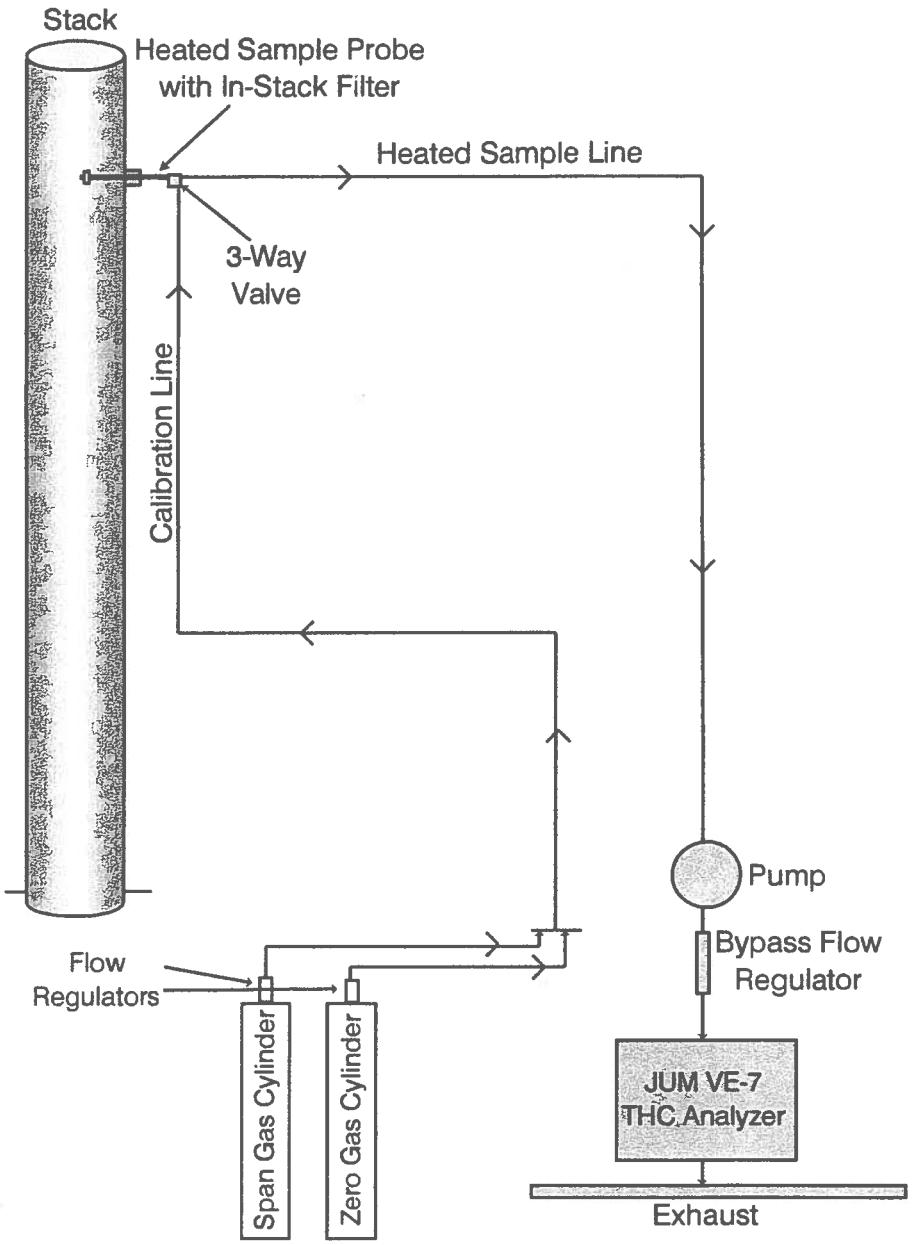
Schematic Diagram of the EPA Method 11 Sample Train



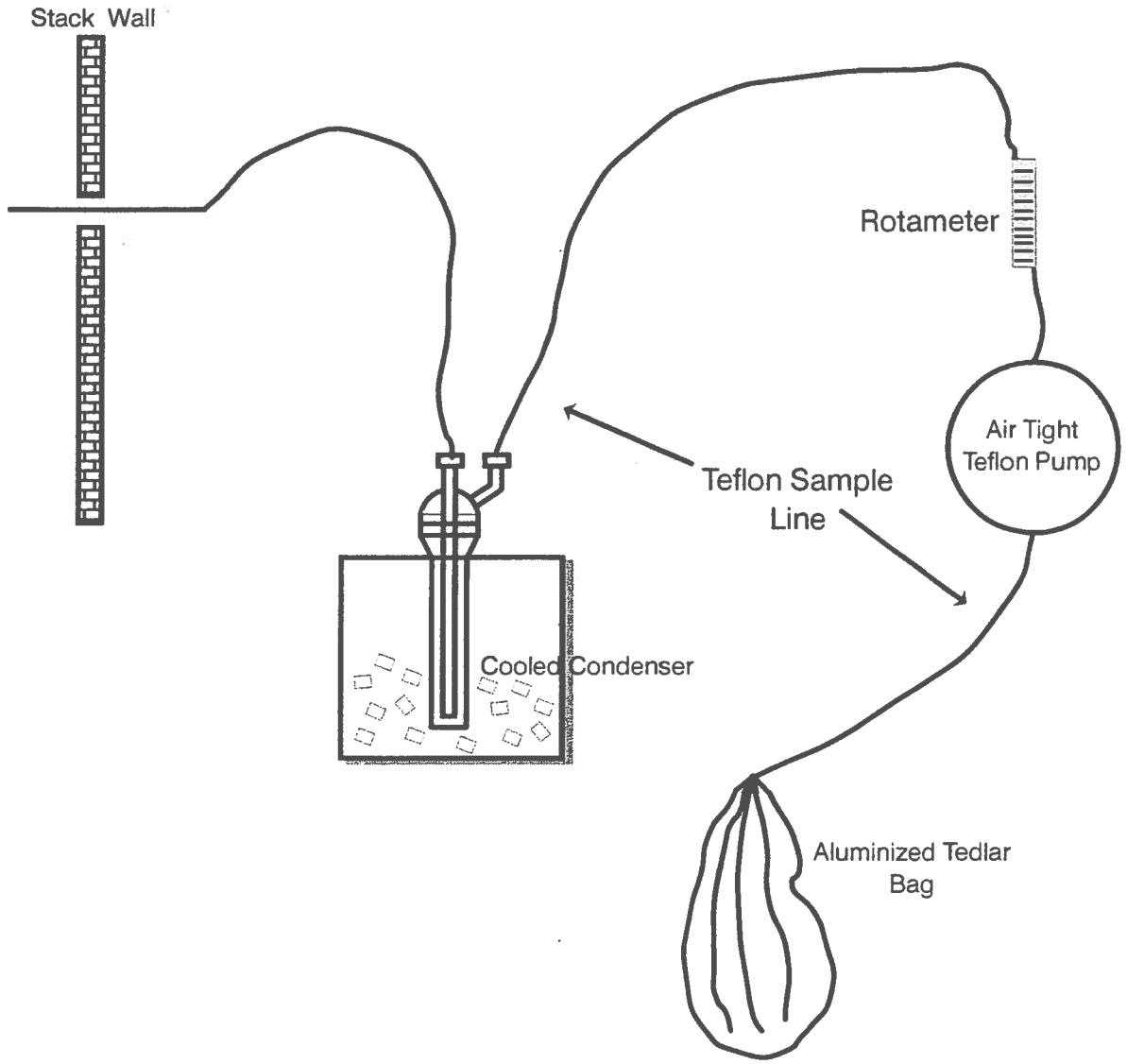
Reference Method Monitors Sampling System (EPA Methods 3A, 6C, 7E, and 10)



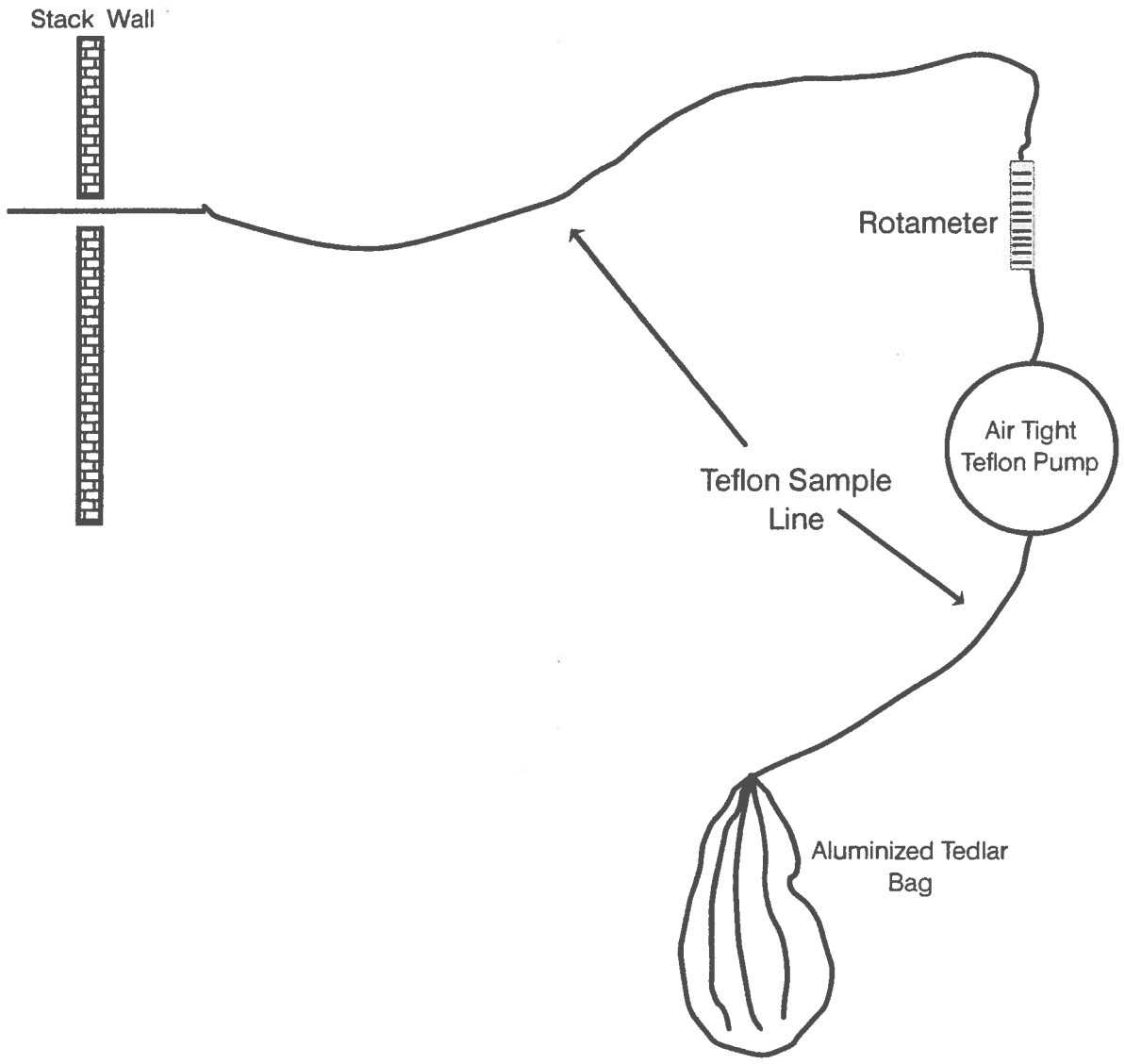
Reference Method Monitor Sampling System (EPA Method 25A)



EPA Method 18 (Integrated Bag) Sampling Train
used for the determination of Methane/Ethane



EPA Method 18 (Integrated Bag) Sampling Train
used for the determination of HRVOCs



DESCRIPTION OF TESTS

Personnel from METCO Environmental arrived at the plant at 9:00 a.m. on Tuesday, September 4, 2007. After meeting with plant personnel, the equipment was moved onto the C-Train SRU Tail Gas Stack (EPN 39CB2001). Testing was delayed due to plant operational problems. The equipment was secured for the night and all work was completed at 4:15 p.m.

On Wednesday, September 5, work began at 6:00 a.m. The reference method monitors were calibrated and the equipment was prepared for testing. The first set of tests for ammonia, hydrogen sulfide, oxides of nitrogen, sulfur dioxide, carbon monoxide, non-methane/non-ethane volatile organic compounds, and HRVOCs began at 10:50 a.m. Testing continued until completion of the third set of tests at 5:15 p.m.

The reference method monitors were calibrated and secured for transport. The equipment was moved off of the stack and loaded into the sampling van. The samples were recovered and transported to METCO Environmental's laboratory in Dallas, Texas, for analysis and evaluation.

Operations at Valero Refining - Texas, L.P., Houston Refinery, C-Train SRU Tail Gas Stack (EPN 39CB2001), located in Houston, Texas, were completed at 5:30 p.m. on Tuesday, September 5, 2007.

APPENDICES

A. Location of Sampling Points
B. Source Emissions Calculations
C. Calibration Data
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H. Chain of Custody
I. Resumes of Test Personnel

METCO ENVIRONMENTAL

APPENDIX A

Location of Velocity Sampling Points
C-Train SRU Tail Gas Stack (EPN 39CB2001)

The sampling ports are located 11 feet (2.0 stack diameters) downstream from a constriction in the stack and 67 feet (12.1 stack diameters) upstream from the outlet of the stack. The locations of the sampling points were calculated as follows:

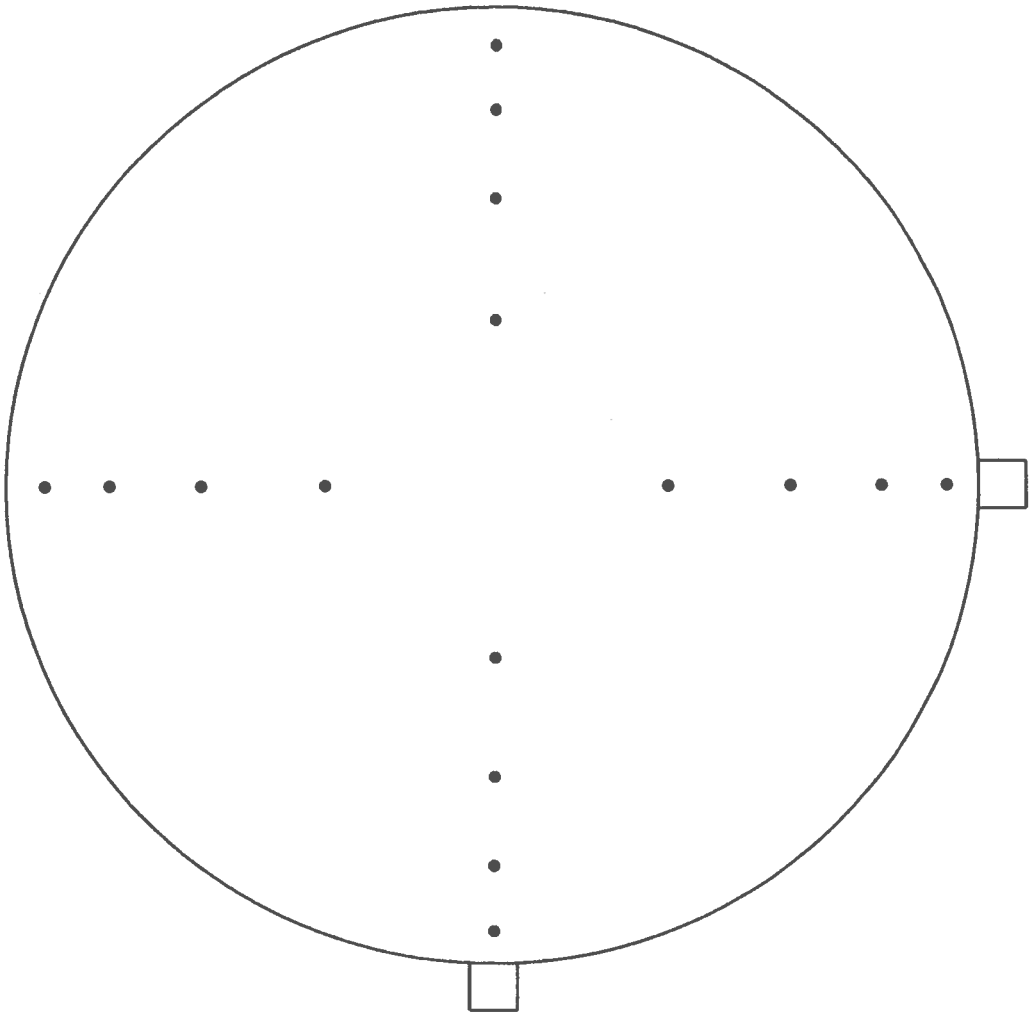
Port and Wall Thickness	=	20 inches
Inside Stack Diameter	=	66 1/2 inches

Point Number	Percent of Diameter From Wall	Distance From Wall
1	3.2	2 1/8 "
2	10.5	7 "
3	19.4	12 7/8 "
4	32.3	21 1/2 "
5	67.7	45 "
6	80.6	53 5/8 "
7	89.5	59 1/2 "
8	96.8	64 3/8 "

APPENDIX A

Location of Velocity Sampling Points

C-Train SRU Tail Gas Stack (EPN 39CB2001)



APPENDIX A

Location of Ammonia Sampling Points
C-Train SRU Tail Gas Stack (EPN 39CB2001)

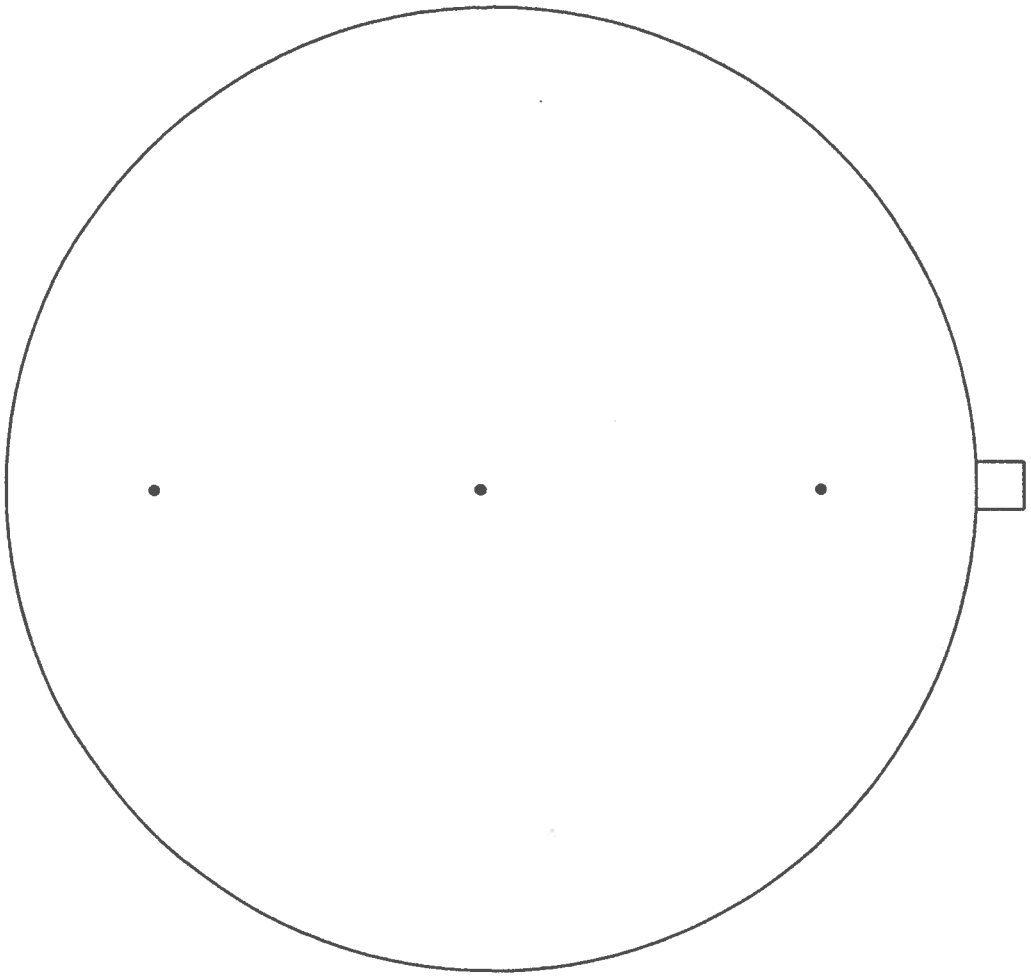
The sampling ports are located 11 feet (2.0 stack diameters) downstream from a constriction in the stack and 67 feet (12.1 stack diameters) upstream from the outlet of the stack. The locations of the sampling points were calculated as follows:

Port and Wall Thickness = 20 inches
Inside Stack Diameter = 66 1/2 inches

Point Number	Percent of Diameter From Wall	Distance From Wall
1	16.7	11 1/8 "
2	50.0	33 1/4 "
3	83.3	55 3/8 "

APPENDIX A

Location of Ammonia Sampling Points
C-Train SRU Tail Gas Stack (EPN 39CB2001)



APPENDIX B

Nomenclature and Equations
for
Calculation of Source Emissions

METCO ENVIRONMENTAL

NOMENCLATURE FOR CALCULATIONS

Symbol	English Units	Metric Units	Description
A_s	$in.^2$	m^2	Stack Area
C_p			Pitot Tube Calibration Factor
D_n	in.	m	Sampling Nozzle Diameter
%EA			Percent Excess Air at sampling point
g	32.174 ft/sec^2		Acceleration of Gravity
%I			Percent Isokinetic
%M			Percent Moisture in the stack gas by volume
M_d			Mole fraction of dry gas
M_{water}	18 lb/lb-mole		Molecular Weight of water
MW	lb/lb-mole	g/g-mole	Molecular Weight of stack gas
MW_{air}	28.96 lb/ lb-mole		Molecular Weight of air
MW_d	lb/lb-mole	g/g-mole	Molecular Weight of dry stack gas
P_b	"Hg Absolute	mm Hg	Barometric Pressure
P_m	"H_2O	mm H_2O	Orifice Pressure drop
P_s	"Hg Absolute	mm Hg	Stack Pressure

* 29.92 " Hg, 68° F (760 mm Hg, 20° C)

Symbol	English Units	Metric Units	Description
ΔP	"H_2O	mm H_2O	Velocity Head of stack gas
P_{std}	29.92 "Hg	760 mm Hg	Standard Barometric Pressure
Q_a	ACFM	m^3/hr	Stack Gas Volume at actual stack conditions
Q_s	DSCFM*	dscm/hr*	Stack Gas Volume at 29.92 "Hg, 528°R, dry
R	21.83 "Hg-ft^3/lb-mole°R		Universal Gas Constant
T_m	°F	°C	Average Gas Meter Temperature
T_t	min	min	Net time of test
T_s	°F	°C	Stack Temperature
T_{std}	528°R	293°K	Standard Temperature
V_m	ft^3	m^3	Volume of dry gas sampled @ meter conditions
Vm_{std}	dscf*	dscm*	Volume of dry gas sampled @ standard conditions
V_s	fpm	m/sec	Stack velocity @ stack conditions
V_w	ml	ml	Total water collected in impingers and silica gel
Vw_{gas}	scf*	scm*	Volume of water vapor collected @ standard conditions
ρ_{air}	0.0752 lbs/ft^3		Density of Air

* 29.92 " Hg, 68° F (760 mm Hg, 20° C)

Symbol	English Units	Metric Units	Description
ρ_{water}	1 g/ml		Density of Water
ρ_{man}	62.32 lbs/ft^3		Density of Manometer Oil

Standard Conditions: 29.92 "Hg, 68°F (760 mm Hg, 20°C)

METCO ENVIRONMENTAL

EXAMPLE CALCULATIONS

1. Volume of dry gas sampled at standard conditions. *

$$Vm_{std} = Vm \left(\frac{T_{std}}{T_m + 460} \right) \left[\frac{P_b + \frac{P_m}{13.6}}{P_{std}} \right]$$

$$Vm_{std} = 17.65\, Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460} \right] = dscf$$

$$Vm_{std} = dscf \times 0.028317 = dscm$$

2. Volume of water vapor collected at standard conditions. *

$$Vw_{gas} = \frac{(V_w - gms\ SO_2 - gms\ H_2S)\, \rho_{water}\, R\, T_{std}}{P_{std}\, M_{water}\, 453.6}$$

$$Vw_{gas} = 0.0472\, (V_w - gms\ SO_2 - gms\ H_2S) = scf$$

$$Vw_{gas} = scf \times 0.028317 = scm$$

3. Percent moisture in stack gas.

$$\%M = \frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \%$$

* 29.92 " Hg, 68° F (760 mm Hg, 20° C)

4. Mole fraction of dry gas.

$$M_d = \frac{100 - \%M}{100}$$

5. Average molecular weight of dry stack gas.

$$MW_d = \left[\%CO_2 \times \frac{44}{100}\right] + \left[\%O_2 \times \frac{32}{100}\right] + \left[\%N_2 \times \frac{28}{100}\right] + \left[\%CO \times \frac{28}{100}\right] = lb/lb\text{-}mole$$

$$= g/g\text{-}mole$$

6. Molecular weight of stack gas.

$$MW = MW_d \times M_d + 18\,(1 - M_d) = \frac{lb}{lb\text{-}mole} = g/g\text{-}mole$$

7. Percent excess air at sampling point.

$$\%EA = \frac{100\,[\%O_2 - (0.5\,\%CO)]}{0.265\,(\%N_2) - [\%O_2 - (0.5\,\%CO)]}$$

8. Stack Pressure.

$$P_s = P_b + \frac{Stack\ Pressure\ "H_2O}{13.6} = "Hg\ Absolute$$

$$P_s = "Hg\ Abs. \times 25.4 = mm\ Hg$$

9. Stack velocity at stack conditions.

$$V_s = C_p\, 60 \left[\frac{2g \times \rho_{man} \times P_{std} \times MW_{air} \times (T_s + 460)}{12 \times \rho_{air} \times P_s \times MW \times T_{std}} \right]^{1/2} \times \sqrt{\Delta P}\ average$$

$$V_s = 5{,}123.8\, C_p \left[\frac{(T_s + 460)}{P_s \times MW} \right]^{1/2} \sqrt{\Delta P}\ average = fpm$$

$$V_s = fpm \times 0.00508 = m/sec$$

10. Dry stack gas volume at standard conditions. *

$$Q_s = \frac{1}{144} V_s \times A_s \times M_d \times \frac{T_{std}}{T_s + 460} \times \frac{P_s}{P_{std}}$$

$$Q_s = \frac{0.123\, V_s \times A_s \times M_d \times P_s}{T_s + 460} = DSCFM$$

$$Q_s = DSCFM \times 1.6990 = dscm/hr$$

11. Actual stack gas volume at stack conditions.

$$Q_a = \frac{V_s \times A_s}{144} = ACFM$$

$$Q_a = ACFM \times 1.6990 = m^3/hr$$

EXAMPLE CALCULATIONS

$$\text{lbs/hr} = \frac{\text{mg}}{Vm_{std}} \times 2.205 \times 10^{-6} \text{ lbs/mg} \times \text{DSCFM*} \times 60 \text{ min/hr}$$

Vm_{std} = Volume of dry gas sampled (dscf*)

DSCFM* = Stack Flow Rate

$$\text{ppm} = \frac{\text{mg}}{Vm_{std}\ (m^3)} \times \frac{24.04}{MW}$$

24.04 = Ideal Gas Constant liters/g-mole

Vm_{std} = Volume of dry gas sampled (m^{3}*)

MW = Molecular Weight

Compound	Molecular Weight
Ammonia	17.03

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

EXAMPLE CALCULATIONS

lbs/hr = ppm x CF x 60 min/hr x DSCFM*

CF = Conversion Factor for ppm to lbs/scf*

Compound	Conversion Factor
NO_x	1.194×10^{-7}
SO_2	1.660×10^{-7}
CO	7.273×10^{-8}

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

EXAMPLE CALCULATIONS

$$\text{lbs/hr} = \frac{\text{ppm} \times \text{MW} \times 60 \times \text{DSCFM*}}{385.1 \times 10^6}$$

where : MW = molecular weight

ppm = ppm of compound

DSCFM* = flow rate

Compound	Molecular Weight
Ethylene	28.05
Hydrogen Sulfide	34.08
Propylene	42.08
Butenes	56.11
1,3-Butadiene	54.09

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

EXAMPLE CALCULATIONS

lbs/hr = ppm x CF x 60 min/hr x DSCFM*

CF = Conversion Factor for ppm to lbs/scf*

Compound	Conversion Factor
Non-Methane/Non-Ethane Volatile Organic Compounds as Propane	1.145×10^{-7}

The non-methane/non-ethane volatile organic compounds number is derived by subtracting the propane equivalents of methane (dry ppm) and ethane (dry ppm) from the total hydrocarbons concentrations (dry ppm).

Methane as propane = Methane concentration/3
Ethane as propane = Ethane concentration x 2/3

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

EXAMPLE CALCULATIONS

Equation 7E-5

$$C_{gas} = (\overline{C} - C_o) \frac{C_{ma}}{C_m - C_o}$$

Where: C_{gas} = *Effluent gas concentration - dry basis (ppm)*

$\overline{C}$ = *Average gas concentration indicated by gas analyzer - dry basis (ppm)*

C_o = *Average of initial and final system calibration bias check responses for the zero gas (ppm)*

C_m = *Average of initial and final system calibration bias check responses for the upscale calibration gas (ppm)*

C_{ma} = *Actual concentration of the upscale calibration gas (ppm)*

METCO ENVIRONMENTAL

SOURCE EMISSION SURVEY

JOB NUMBER: 07-338
JOB NAME: VALERO REFINING-TEXAS
LOCATION: HOUSTON, TEXAS
UNIT TESTED: C-TRAIN SRU TAIL GAS STACK

SOURCE EMISSION CALCULATIONS

			RUN NUMBER		
SYMBOL	DESCRIPTION	UNITS	1	2	3
DATE			09/05/07	09/05/07	09/05/07
BEGIN TIME			1050	1235	1415
END TIME			1150	1335	1515
P(b)	BAROMETRIC PRESSURE	"Hg Abs.	30.00	29.97	29.94
		(mm Hg)	(762.00)	(761.00)	(760.00)
P(m)	ORIFICE PRESSURE DROP	"H2O	1.100	1.100	1.100
		(mm H2O)	(27.900)	(27.900)	(27.900)
	DGM CALIBRATION FACTOR		0.992	0.992	0.992
V(m)	VOLUME DRY GAS SAMPLED	ft.^3	34.310	35.096	34.672
	@ METER CONDITIONS	(m^3)	(0.972)	(0.994)	(0.982)
	LEAK CHECK VOLUME	ft.^3	0.000	0.000	0.000
T(m)	AVERAGE GAS METER	DEG.F	84	87	86
	TEMPERATURE	(DEG.C)	(29)	(31)	(30)
V(m[std])*	VOLUME DRY GAS SAMPLED	DSCF	33.486	34.031	33.648
	@ STANDARD CONDITIONS*	(DSCM)	(0.948)	(0.964)	(0.953)
V(w)	TOTAL WATER COLLECTED,	ml	107.0	105.0	107.6
	IMPINGERS & SILICA GEL				
V(w[gas])	VOLUME WATER VAPOR	SCF	5.050	4.956	5.079
	COLLECTED @ STANDARD	(SCM)	(0.143)	(0.140)	(0.144)
	CONDITIONS*				
%M	MOISTURE IN STACK GAS	%	13.11	12.71	13.11
	BY VOLUME				
Md	MOL FRACTION OF DRY GAS		0.8689	0.8729	0.8689
Tt	NET TIME OF TEST	MINUTES	60	60	60

* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

SOURCE EMISSION CALCULATIONS

JOB NUMBER: 07-338
JOB NAME: VALERO REFINING-TEXAS
LOCATION: HOUSTON, TEXAS
UNIT TESTED: C-TRAIN SRU TAIL GAS STACK

			RUN NUMBER		
SYMBOL	DESCRIPTION	UNITS	1	2	3
CO2		%	6.6	6.8	6.8
O2		%	3.4	3.2	3.2
CO		%	0.0	0.0	0.0
N2		%	90.0	90.0	90.0
%EA	EXCESS AIR @ SAMPLING POINT	%	16.6	15.5	15.5
MWd	MOLECULAR WEIGHT OF DRY STACK GAS	LB/LB-MOLE (g/g-MOLE)	29.19 (29.19)	29.22 (29.22)	29.22 (29.22)
MW	MOLECULAR WEIGHT OF STACK GAS	LB/LB-MOLE (g/g-MOLE)	27.72 (27.72)	27.79 (27.79)	27.75 (27.75)
Cp	PITOT TUBE CALIBRATION		0.787	0.787	0.787
DELTA P	VELOCITY HEAD OF STACK GAS	"H2O (mm H20)	0.042 (1.100)	0.041 (1.000)	0.042 (1.100)
DELTA P ^(1/2)		"H2O	0.203	0.202	0.205
Ts	STACK TEMPERATURE	DEG. F (DEG. C)	1,313 (712)	1,370 (743)	1,371 (744)
Ps	STACK PRESSURE	"Hg Abs. (mm Hg) "H20	29.99 (762.00) -0.10	29.96 (761.00) -0.10	29.93 (760.00) -0.10
Vs	STACK VELOCITY @ STACK CONDITIONS	FPM (m/SEC.)	1,195 (6)	1,208 (6)	1,227 (6)
As	STACK AREA	(SQ.INCHES) (SQ.METERS)	3,473 (2)	3,473 (2)	3,473 (2)
Qs	DRY STACK GAS VOLUME @ STANDARD CONDITIONS* WET STACK GAS VOLUME @ STANDARD CONDITIONS*	DSCFM (DSCM/HR) WSCFH	7,503 (12,748) 518,103	7,374 (12,528) 506,862	7,445 (12,649) 514,098
Qa	ACTUAL STACK GAS VOLUME @ STACK CONDITIONS	ACFM (m^3/HR)	28,832 (48,986)	29,125 (49,483)	29,602 (50,294)
			0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
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* 68 Deg.F, 29.92 "Hg (20 Deg.C, 760 mm Hg)

APPENDIX C

Calibration Data

Equipment	Calibration Factor	Calibration Date
Pitot Tube #44-12-1	0.787	07/27/07
Dry Gas Meter #44-1	0.992	08/06/07
Stack Unit Orifice #44-1		08/06/07
Digital Temperature Indicator #44-1		08/03/07
VOST Dry Gas Meter #11	0.994	08/04/07
Barometer #44-2		04/25/07

PITOT TUBE CALIBRATION

Date: 7-27-07 Time: 1445

Pitot No.: 44-B-1 T_s: 75 °F

Pitot Dimensions: 12"x1/2" C_{pstd}: 0.990

Motor Setting	fps mark	Calibration Standard Start	Calibration Standard End	√Standard Average	High	√High	Cal. Factor	Low	√Low	Cal. Factor
7	20	0.04	0.04	0.300	0.14	0.374	0.794	0.14	0.374	0.794
14	30	0.20	0.20	0.447	0.32	0.566	0.783	0.32	0.566	0.783
20	40	0.35	0.35	0.592	0.55	0.742	0.790	0.55	0.742	0.790
28	50	0.55	0.55	0.742	0.90	0.949	0.774	0.90	0.949	0.774
35	60	0.79	0.79	0.885	1.30	1.140	0.772	1.30	1.146	0.772
41	70	1.10	1.10	1.049	1.70	1.304	0.796	1.70	1.304	0.796
50	80	1.40	1.40	1.183	2.20	1.483	~~2.20~~ 0.790	2.20	1.483	~~2.20~~ 0.790
62	90	1.80	1.80	1.342	2.80	1.673	0.794	2.80	1.673	0.794
28	50	0.55	0.55	0.742	0.90	0.949	0.774	0.90	0.949	0.774
28	50	0.55	0.55	0.742	0.90	0.949	0.774	0.90	0.949	0.774
Average							0.787			0.787

Summary of Results:

Normal high side calibration factor 0.787

variation + 1.14%

variation - 1.91%

Normal low side calibration factor 0.787

variation + 1.14%

variation - 1.91%

Calibrator: Ryan Williams

Checked By: Mike Bass

METCO ENVIRONMENTAL

Dry Gas Meter Calibration

Dry Gas Meter No.: 44-1

Date: 8-6-07

ΔH ("H_2O)	C_{DG}
0.5	0.994
1.0	0.993
1.5	0.994
2.0	0.994
3.0	0.983
4.0	0.991
Average	0.992 ✓

Variation: + 0.40

- 0.91

Calibrator: Rya Willis

Checked By: Christopher Lee

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 4-1 Calibrator: R. Williams

Date: 8-6-07

$$\textit{Calibration Factor } (C_{DG}) = \frac{\textit{Wet Test Meter } Vm_{std}}{\textit{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 0.50 P_b: 30.00 "Hg

Control Module Vacuum: 5.0 "Hg

	Wet Test Meter (No. 2)						Dry Gas Meter				
	Time	Meter Reading		Temp.		P_m	Meter Reading		Temp. In	Temp. Out	P_m
End	12:44	5.135	cf	80	°F	-1.0 "H_2O	092.888	cf	81 °F	79 °F	0.50 "H_2O
Start	0:00	0.000	cf	80	°F	-1.0 "H_2O	087.750	cf	80 °F	79 °F	0.50 "H_2O
Avg.	12:49	5.135	cf	80	°F	-1.0 "H_2O	5.138	cf	80 °F		0.50 "H_2O

$$\textit{Wet Test Meter } Vm_{std} = 17.65 \times 5.135 \left[\frac{30.00 + \frac{-1.0}{13.6}}{80 + 460} \right] \times 1.000 \; (C_p) = 5.023 \; \textit{dcsf}$$

$$\textit{Dry Gas Meter } Vm_{std} = 17.65 \times 5.138 \left[\frac{30.00 + \frac{0.50}{13.6}}{80 + 460} \right] = 5.024 \; \textit{dcsf}$$

$$C_{DG} = \frac{5.023}{5.024} = \boxed{0.996}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 44-1 Calibrator: R. Williams

Date: 8-4-07

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 1.00 P_b: 30.00 "Hg

Control Module Vacuum: 5.0 "Hg

	Wet Test Meter (No. 2)						Dry Gas Meter				
	Time	Meter Reading		Temp.		P_m	Meter Reading		Temp. In	Temp. Out	P_m
End	9:14	5.110	cf	80	°F	-1.50 "H_2O	098.327	cf	84 °F	78 °F	1.00 "H_2O
Start	0:00	0.000	cf	80	°F	-1.50 "H_2O	093.215	cf	80 °F	77 °F	1.00 "H_2O
Avg.	9:14	5.110	cf	80	°F	-1.50 "H_2O	5.112	cf	80 °F		1.00 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 5.110 \left[\frac{30.00 + \frac{-1.50}{13.6}}{80 + 460}\right] \times 1.000 \quad (C_f) = 4.992 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 5.112 \left[\frac{30.00 + \frac{1.00}{13.6}}{80 + 460}\right] = 5.025 \text{ dcsf}$$

$$C_{DG} = \frac{4.992}{5.025} = \boxed{0.993}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 44-1 Calibrator: R. Williams

Date: 8-4-07

$$\text{Calibration Factor } (C_{DG}) = \frac{\text{Wet Test Meter } Vm_{std}}{\text{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 1.50 P_b: 30.00 "Hg

Control Module Vacuum: 5.0 "Hg

	Wet Test Meter (No. 2)				Dry Gas Meter			
	Time	Meter Reading	Temp.	P_m	Meter Reading	Temp. In	Temp. Out	P_m
End	15:01	10.270 cf	80 °F	-2.00 "H_2O	108.848 cf	87 °F	78 °F	1.50 "H_2O
Start	0:00	0.000 cf	80 °F	-2.00 "H_2O	098.584 cf	82 °F	78 °F	1.50 "H_2O
Avg.	15:01	10.270 cf	80 °F	-2.00 "H_2O	10.264 cf	81 °F		1.50 "H_2O

$$\text{Wet Test Meter } Vm_{std} = 17.65 \times 10.270 \left[\frac{30.00 + \frac{-2.00}{13.6}}{80 + 460} \right] \times 1.000 \quad (C_p) = 10.021 \text{ dcsf}$$

$$\text{Dry Gas Meter } Vm_{std} = 17.65 \times 10.264 \left[\frac{30.00 + \frac{1.50}{13.6}}{81 + 460} \right] = 10.083 \text{ dcsf}$$

$$C_{DG} = \frac{10.021}{10.083} = \boxed{0.994}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 4/4-1 Calibrator: R. Williams

Date: 8-4-07

$$\textit{Calibration Factor } (C_{DG}) = \frac{\textit{Wet Test Meter } Vm_{std}}{\textit{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 2.00 P_b: 30.00 "Hg

Control Module Vacuum: 5.0 "Hg

	Wet Test Meter (No. 2)					Dry Gas Meter				
	Time	Meter Reading		Temp.	P_m	Meter Reading		Temp. In	Temp. Out	P_m
End	12:47	10.135	cf	80 °F	-2.50 "H_2O	119.237	cf	91 °F	80 °F	2.00 "H_2O
Start	0:00	0.000	cf	80 °F	-2.50 "H_2O	109.100	cf	83 °F	78 °F	2.00 "H_2O
Avg.	12:47 ✓	10.135 ✓	cf	80 ✓ °F	-2.50 ✓ "H_2O	10.137 ✓	cf	83 ✓	°F	2.00 ✓ "H_2O

$$Vm_{std} = 17.65 \times 10.135 \left[\frac{30.00 + \frac{-2.50}{13.6}}{80 + 460} \right] \times 1.000 \quad (C_f) = 9.877 \text{ dcsf}$$

$$Vm_{std} = 17.65 \times 10.137 \left[\frac{30.00 + \frac{2.00}{13.6}}{83 + 460} \right] = 9.933 \text{ dcsf}$$

$$C_{DG} = \frac{9.877}{9.933} = \boxed{0.994}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 44-1 Calibrator: R. Williams

Date: 8-4-07

$$\textit{Calibration Factor } (C_{DG}) = \frac{\textit{Wet Test Meter } Vm_{std}}{\textit{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 3.00 P_b: 30.00 "Hg

Control Module Vacuum: 5-0 "Hg

	Wet Test Meter (No. 2)					Dry Gas Meter				
	Time	Meter Reading		Temp.	P_m	Meter Reading		Temp. In	Temp. Out	P_m
End	10:25	10.140	cf	80 °F	-3.70 "H_2O	124.702	cf	92 °F	79 °F	3.00 "H_2O
Start	0:00	0.000	cf	80 °F	-3.70 "H_2O	119.603	cf	84 °F	79 °F	3.00 "H_2O
Avg.	10:25	10.140	cf	80 °F	-3.70 "H_2O	10.099	cf	84 °F		3.00 "H_2O

$$\textit{Wet Test Meter } Vm_{std} = 17.65 \times 10.140 \left[\frac{30.00 + \frac{-3.70}{13.6}}{80 + 460}\right] \times 1.00 \quad (C_f) = \frac{9.853}{9.750} \text{ dcsf}$$

$$\textit{Dry Gas Meter } Vm_{std} = 17.65 \times 10.099 \left[\frac{30.00 + \frac{3.00}{13.6}}{84 + 460}\right] = 9.902 \text{ dcsf}$$

$$C_{DG} = \frac{9.853 \text{ / } 9.750}{9.902} = \boxed{0.983}$$

METCO ENVIRONMENTAL

DRY GAS METER CALIBRATION

Meter Number: 44-1 Calibrator: R. Williams

Date: 8-6-07

$$\textit{Calibration Factor } (C_{DG}) = \frac{\textit{Wet Test Meter } Vm_{std}}{\textit{Dry Gas Meter } Vm_{std}}$$

Run No.: 1 @ 4.00 P_b: 30.00 "Hg

Control Module Vacuum: 5.0 "Hg

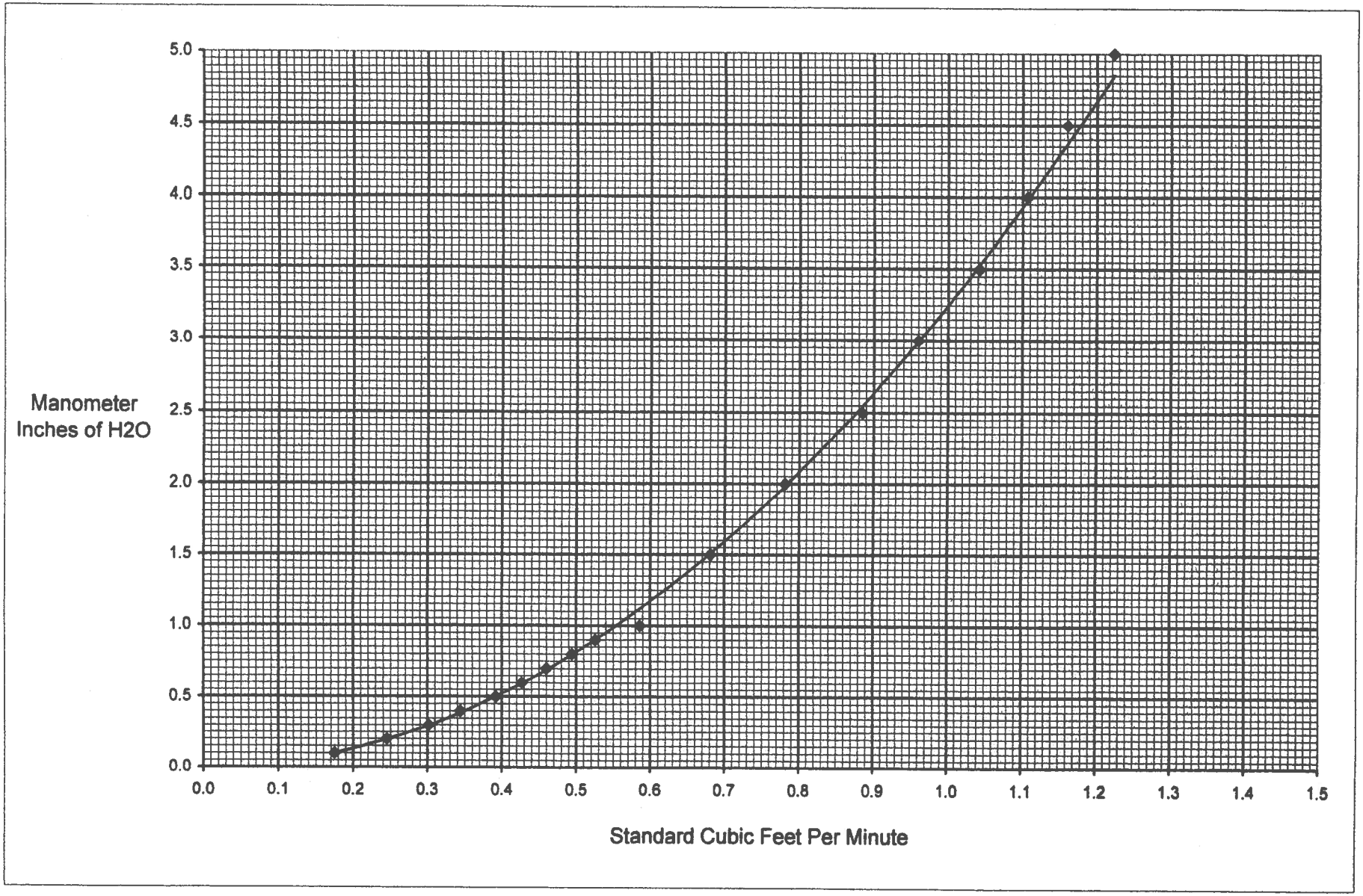
	Wet Test Meter (No. 2)						Dry Gas Meter				
	Time	Meter Reading		Temp.		P_m	Meter Reading		Temp. In	Temp. Out	P_m
End	9:11	10.280	cf	80	°F	-5.0 "H_2O	140.314	cf	93 °F	79 °F	4.00 "H_2O
Start	0:00	0.000	cf	80	°F	-5.0 "H_2O	130.042	cf	78? °F	78 °F	4.00 "H_2O
Avg.	9:11	10.280	cf	80	°F	-5.0 "H_2O	10.272	cf	84	°F	4.00 "H_2O

$$\textit{Wet Test Meter } Vm_{std} = 17.65 \times 10.280 \left[\frac{30.00 + \frac{-5.0}{13.6}}{80 + 460} \right] \times 1.000 \quad (C_f) = 9.957 \textit{ dcsf}$$

$$\textit{Dry Gas Meter } Vm_{std} = 17.65 \times 10.272 \left[\frac{30.00 + \frac{4.00}{13.6}}{84 + 460} \right] = 10.047 \textit{ dcsf}$$

$$C_{DG} = \frac{9.957}{10.047} = \boxed{0.991}$$

STACK UNIT ORIFICE NO: **44-1** DATE: **08/06/07** CALIBRATED BY: **Ryan Williams** CHECKED BY: **Chris Smith**



METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 44-1

CALIBRATION DATA

DATE: 8-3-07

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	815	78	78 ✓
Ice Bath	817	34	33 ✓
Boiling Water	820	212	212 ✓
Oven	830	251	251 ✓
Oven	840	302	301 ✓
Oven	847	350	351 ✓
Oven	854	375	375 ✓

Meter Adjusted? YES _____ No ✓

Reference Thermometer No. H-IV

Calibrator R. Wells

Checked By: Christopher Lee

METCO ENVIRONMENTAL

VOST Dry Gas Meter Calibration

Dry Gas Meter Number 11

Date: 8/4/7

Rate l/min.	C_{DG}
0.30	1.006
0.50	0.999
1.00	0.991
1.50	0.981
Average	0.994

Variation: +1.21 %

-1.31 %

Calibrator: M. Bass

Checked By: JM

METCO ENVIRONMENTAL

VOST DRY GAS METER CALIBRATION

Meter Number: 11

Date: 8/4/7 Calibrator: M. Bass

Calibration Factor (C_{DG}) = $\frac{\text{Wet Test Meter } VM_{STD}}{\text{Dry Gas Meter } VM_{STD}}$

Run No.: 1 @ 0.3 L/m P_b: 30.04 "HG

Control Module Vacuum 6.0 "HG

	WET TEST METER (No. 5)				DRY GAS METER			
	Time	Meter Reading	Tm.	P_m	Meter Reading	Tm. In	Tm. Out	P_m
End	17.5	5.465 l	79 °F	-0.10 "H_2O	8078.54 l	80 °F	80 °F	0.8"H_2O
Start	0	0.000 l	79°F	-0.10 "H_2O	8073.10 l	79 °F	79 °F	0.8"H_2O
	17.5	5.465 l	79 °F	-0.100 "H_2O	5.44 l	°F	80 °F	0.80"H_2O

Wet Test Meter VM_{std} = 17.65 x 5.465 $\left(\frac{30.04 \; \frac{-0.100}{+13.6}}{79 \; +460}\right)$ x 1.002 (C_1) = 5.385 l

Gas Meter VM_{std} = 17.65 x 5.44 $\left(\frac{30.04 \; \frac{0.800}{+13.6}}{80 \; +460}\right)$ x = 5.352 l

$C_{DG} = \frac{5.385}{5.352} =$ 1.006 ✓

METCO ENVIRONMENTAL

VOST DRY GAS METER CALIBRATION

Meter Number: 11

Date: 8/4/7 Calibrator: M. Bass

Calibration Factor (C_{DG}) = $\frac{\text{Wet Test Meter } VM_{STD}}{\text{Dry Gas Meter } VM_{STD}}$

Run No.: 1 @ 0.5 L/m P_b: 30.04 "HG

Control Module Vacuum 5.5 "HG

	WET TEST METER (No. 5)				DRY GAS METER			
	Time	Meter Reading	Tm.	P_m	Meter Reading	Tm. In	Tm. Out	P_m
End	10.5	5.267	79 °F	-0.10 "H_2O	8072.021	79 °F	79 °F	0.9 "H_2O
Start	0	0.000	79 °F	-0.10 "H_2O	8066.751	78 °F	78 °F	0.9 "H_2O
	10.5	5.267	79 °F	-0.100 "H_2O	5.271	°F	79 °F	0.90 "H_2O

Wet Test Meter VM_{std} = 17.65 x 5.267 $\left(\frac{30.04 - 0.100}{79} + \frac{13.6}{460} \right)$ x 1.002(C_f) = 5.190 l

Gas Meter VM_{std} = 17.65 x 5.27 $\left(\frac{30.04 - 0.900}{79} + \frac{13.6}{460} \right)$ x = 5.195 l

$C_{DG} = \frac{5.190}{5.195} =$ 0.999

METCO ENVIRONMENTAL

VOST DRY GAS METER CALIBRATION

Meter Number: 11

Date: 8/4/7 Calibrator: M. Bass

Calibration Factor (C_{DG}) = $\frac{\text{Wet Test Meter } VM_{STD}}{\text{Dry Gas Meter } VM_{STD}}$

Run No.: 1@1.5 L/m P_b: 30.04 "HG

Control Module Vacuum 5.5 "HG

	WET TEST METER (No. 5)				DRY GAS METER			
	Time	Meter Reading	Tm.	P_m	Meter Reading	Tm. In	Tm. Out	P_m
End	7	10.562 l	79 °F	-0.15 "H_2O	8102.881	81 °F	81 °F	2.5"H_2O
Start	0	0.000 l	79 °F	-0.15 "H_2O	8092.11 l	81 °F	81 °F	2.5"H_2O
	7	10.562 l	79 °F	-0.15 "H_2O	10.77 l	°F	81 °F	2.00"H_2O

Wet Test Meter VM_{std} = 17.65 x 10.562 $\left(\frac{30.04 - 0.150 + 13.6}{79 + 460}\right)$ x 1.002(C_f) = 10.407 l

Gas Meter VM_{std} = 17.65 x 10.77 $\left(\frac{30.04 - 2.000 + 13.6}{81 + 460}\right)$ x = 10.607 l

$C_{DG} = \frac{10.407}{10.607} =$ 0.981

METCO ENVIRONMENTAL

DIGITAL TEMPERATURE INDICATOR NO. 11

CALIBRATION DATA

DATE: 8/4/17

Media	Time	Mercury Temperature (°F)	DTI (°F)
Ambient Air	1230	80	80
Ice Bath	1234	34	34
Boiling Water	1238	212	212
Oven			
Oven			
Oven			
Oven			

Meter Adjusted? YES _____ No ✓

Reference Thermometer No. H-V

Calibrator M. Bass

Checked By: _____

METCO ENVIRONMENTAL

BAROMETER CALIBRATION

Barometer No. 44-2

Date: 4/25/07
Time: 0850

Barometric Pressure @ Hobby Airport @ 45 ft.	=	29.91
	-	0.045
Absolute Pressure @ Hobby Airport	=	29.865
	+	0.024
Absolute Pressure @ METCO @ 21 ft.	=	29.889
Barometer Reading	=	29.89
Variation	=	0.00
Barometer Adjusted?	Yes ____	No X
Barometer Reading (after adjustment)	=	-

Signature of Calibrator

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-5857

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 11851
Project No.: 04-52415-003

Customer
METCO ENVIRONMENTAL

1100 GULF FREEWAY STE 100
CALDER RIDGE BUS. PARK
LEAGUE CITY TX 77573

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: ALM035137 **Certification Date:** 08Mar2007 **Exp. Date:** 07Mar2009
Cylinder Pressure*:** 1991 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
NITRIC OXIDE	44.5	PPM	+/- 1%	Direct NIST and NMi
NITROGEN - OXYGEN FREE		BALANCE		
TOTAL OXIDES OF NITROGEN	44.5	PPM		Reference Value Only

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1683	15Aug2009	AAL070665	49.82 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//1602651	27Feb2007	FTIR

ANALYZER READINGS

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

NITRIC OXIDE

First Triad Analysis		
Date: 01Mar2007	Response Unit:PPM	
Z1 = 0.00224	R1 = 50.02994	T1 = 44.48326
R2 = 50.10500	Z2 = 0.05554	T2 = 44.52593
Z3 = 0.05924	T3 = 45.10644	R3 = 50.12430
Avg. Concentration:	44.46	PPM

Second Triad Analysis		
Date: 08Mar2007	Response Unit: PPM	
Z1 = -0.15681	R1 = 49.85123	T1 = 44.42013
R2 = 49.85643	Z2 = -0.13049	T2 = 44.53143
Z3 = -0.10837	T3 = 44.56849	R3 = 49.96522
Avg. Concentration:	44.46	PPM

Calibration Curve	
Concentration = A + Bx + Cx2 + Dx3 + Ex4	
r = 9.99985E-1	
Constants:	A = 0.00000E+0
B = 5.25998E-1	C = 5.90000E-5
D = 0.00000E+0	E = 0.00000E+0

APPROVED BY: _____ C-19 SUPERVISOR: _____

LaVail Washington TOM NGUYEN

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-5857

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 11851
Project No.: 04-52415-004

Customer

FOLIO# 0815ONMENTAL

1100 GULF FREEWAY STE 100
CALDER RIDGE BUS. PARK
LEAGUE CITY TX 77573

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: BLM001222 **Certification Date:** 12Mar2007 **Exp. Date:** 11Mar2009
Cylinder Pressure*:** 2015 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
NITRIC OXIDE	93.6	PPM	+/- 1%	Direct NIST and NMi
NITROGEN - OXYGEN FREE		BALANCE		
TOTAL OXIDES OF NITROGEN	93.6	PPM		Reference Value Only

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1684	01Jun2009	AAL070662	98.40 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//1602651	27Feb2007	FTIR

ANALYZER READINGS

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

First Triad Analysis

NITRIC OXIDE

Date: 05Mar2007 Response Unit:PPM
Z1 = -0.10864 R1 = 98.79787 T1 = 94.00968
R2 = 98.82276 Z2 = 0.01118 T2 = 94.10664
Z3 = 0.14887 T3 = 94.12026 R3 = 98.93663
Avg. Concentration: 93.65 PPM

Second Triad Analysis

Date: 12Mar2007 Response Unit: PPM
Z1 = -0.04292 R1 = 98.75526 T1 = 93.81463
R2 = 98.79322 Z2 = -0.02097 T2 = 93.89314
Z3 = 0.00876 T3 = 93.94102 R3 = 98.86146
Avg. Concentration: 93.50 PPM

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 9.99994E-1
Constants: A = 0.00000E+0
B = 9.88267E-1 C = 1.96000E-4
D = 0.00000E+0 E = 0.00000E+0

APPROVED BY: LARA NASH

C-20

METCO ENVIRONMENTAL

VOST DRY GAS METER CALIBRATION

Meter Number: 11

Date: 8/4/17 Calibrator: M. Bass

Calibration Factor (C_{DG}) = $\frac{\text{Wet Test Meter } VM_{STD}}{\text{Dry Gas Meter } VM_{STD}}$

Run No.: 1 @ 1.0 L/m P_b: 30.04 "HG

Control Module Vacuum 5.0 "HG

	WET TEST METER (No. 5)				DRY GAS METER			
	Time	Meter Reading	Tm.	P_m	Meter Reading	Tm. In	Tm. Out	P_m
End	10.5	10.024	179 °F	-0.15 "H_2O	8090.151	81 °F	81 °F	1.3 "H_2O
Start	0	0.000	79°F	-0.15 "H_2O	8080.01	81 °F	80 °F	1.3 "H_2O
	10.5	10.024	179 °F	-0.150 "H_2O	10.14	°F 81	°F	1.30 "H_2O

Wet Test Meter VM_{std} = 17.65 x 10.024 $\left(\frac{30.04 - 0.150 + 13.6}{79 + 460}\right)$ x 1.002(C_f) = 9.877 l

Gas Meter VM_{std} = 17.65 x 10.14 $\left(\frac{30.04 + 1.300 + 13.6}{81 + 460}\right)$ x = 9.969 l

$C_{DG} = \frac{9.877}{9.969} =$ 0.991

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-585

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 11628
Project No.: 04-47453-001

Customer
METCO ENVIRONMENTAL

3226 COMMANDER DR
CARROLLTON TX 75006

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: ALMX067916 **Certification Date:** 14Sep2006 **Exp. Date:** 13Sep2008
Cylinder Pressure*:** 2015 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
SULFUR DIOXIDE *	41.7	PPM	+/- 1%	Direct NIST and NMi
NITROGEN		BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

* This Protocol has been certified using corrected NIST SO2 standard values, per EPA guidance dated 7/24/96 and will not correlate with uncorrected Prot

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1693	15Aug2009	ALM060767	50.79 PPM	SULFUR DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//1602651	25Aug2006	FTIR

ANALYZER READINGS

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

SULFUR DIOXIDE *

First Triad Analysis

Date: 05Sep2006 Response Unit:PPM

Z1 = 0.00650	R1 = 50.66982	T1 = 41.48558
R2 = 50.68285	Z2 = 0.01046	T2 = 41.55101
Z3 = 0.02153	T3 = 41.56378	R3 = 50.73442

Avg. Concentration: 41.61 PPM

Second Triad Analysis

Date: 14Sep2006 Response Unit: PPM

Z1 = -0.01751	R1 = 50.49213	T1 = 41.50327
R2 = 50.54832	Z2 = 0.00516	T2 = 41.52610
Z3 = 0.02228	T3 = 41.56072	R3 = 50.57292

Avg. Concentration: 41.74 PPM

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4

r = 9.99995E-1

Constants:	A = 0.00000E+0
B = 1.00018E+0	C = -8.00000E-5
D = 0.00000E+0	E = 0.00000E+0

Special Notes: FOLIO ITEM 1015

APPROVED BY: _____ C-21
Lara Nash

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-5857

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 11651
Project No.: 04-48667-004

Customer

METCO ENVIRONMENTAL

1100 GULF FREEWAY STE 100
CALDER RIDGE BUS. PARK
LEAGUE CITY TX 77573

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: BLM003931 **Certification Date:** 11Oct2006 **Exp. Date:** 10Oct2008
Cylinder Pressure*:** 765 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
SULFUR DIOXIDE *	84.5 PPM	+/- 1%	Direct NIST and NMi
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

* This Protocol has been certified using corrected NIST SO2 standard values, per EPA guidance dated 7/24/96 and will not correlate with uncorrected Prot

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1694	01Sep2007	ALM015595	98.10 PPM	SULFUR DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//1602651	29Sep2006	FTIR

ANALYZER READINGS

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

SULFUR DIOXIDE *

First Triad Analysis

Date: 15Sep2004 Response Unit:PPM

Z1=0.00000	R1=0.00000	T1=0.00000
R2=0.00000	Z2=0.00000	T2=0.00000
Z3=0.00000	T3=0.00000	R3=0.00000

Avg. Concentration: 84.10 PPM

Second Triad Analysis

Date: 11Oct2006 Response Unit: PPM

Z1=-0.00828	R1=96.64872	T1=83.73190
R2=96.82528	Z2=0.01738	T2=83.85848
Z3=0.03620	T3=83.89366	R3=96.90284

Avg. Concentration: 84.96 PPM

Calibration Curve

Concentration=A+Bx+Cx2+Dx3+Ex4
r=9.99998E-1

Constants:	A=0.00000E+0
B=1.00441E+0	C=-8.00000E-5
D=0.00000E+0	E=0.00000E+0

Special Notes: RE-CERT

APPROVED BY: _____ C-22
Lara Nash

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-585

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 11909
Project No.: 04-53520-001

Customer
METCO ENVIRONMENTAL

1100 GULF FREEWAY STE 100
CALDER RIDGE BUS. PARK
LEAGUE CITY TX 77573

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: ALM054751 **Certification Date:** 23Apr2007 **Exp. Date:** 22Apr2010
Cylinder Pressure*:** 1974 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
CARBON MONOXIDE	44.9	PPM	+/- 1%	Direct NIST and NMi
NITROGEN		BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1678	15Aug2009	ALM044707	51.13 PPM	CARBON MONOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//1602651	28Mar2007	FTIR

ANALYZER READINGS

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

First Triad Analysis

CARBON MONOXIDE

Date: 16Apr2007 Response Unit:PPM

Z1 = 0.00369	R1 = 51.22116	T1 = 44.97036
R2 = 51.25307	Z2 = 0.00909	T2 = 44.98311
Z3 = 0.06466	T3 = 45.01506	R3 = 51.38445

Avg. Concentration: 44.85 PPM

Second Triad Analysis

Date: 23Apr2007 Response Unit: PPM

Z1 = -0.01235	R1 = 51.14521	T1 = 44.92569
R2 = 51.18774	Z2 = -0.00164	T2 = 44.97978
Z3 = 0.04001	T3 = 45.02080	R3 = 51.26432

Avg. Concentration: 44.91 PPM

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4

r = 9.99995E-1

Constants:	A = 0.00000E+0
B = 9.83636E-1	C = 6.22000E-4
D = 1.00000E-6	E = 0.00000E+0

APPROVED BY: Tom Nguyen

C-23

~~RATA CLASS~~

Scott Specialty Gases

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-585

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 11555
Project No.: 04-46199-012

Customer

METCO ENVIRONMENTAL

3226 COMMANDER DR
CARROLLTON TX 75006

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: ALM047398 **Certification Date:** 15Aug2006 **Exp. Date:** 14Aug2009
Cylinder Pressure*:** 1994 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
CARBON MONOXIDE	83.0	PPM	+/- 1%	Direct NIST and NMi
NITROGEN		BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1679	02Apr2007	ALM015479	94.90 PPM	CARBON MONOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//1602651	01Aug2006	FTIR

ANALYZER READINGS

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

First Triad Analysis

CARBON MONOXIDE

Date: 08Aug2006 Response Unit:PPM

Z1 = -0.00592	R1 = 96.84705	T1 = 84.72433
R2 = 97.08540	Z2 = 0.02101	T2 = 84.83049
Z3 = 0.04070	T3 = 84.86078	R3 = 97.09674

Avg. Concentration: 82.96 PPM

Second Triad Analysis

Date: 15Aug2006 Response Unit: PPM

Z1 = -0.00476	R1 = 96.80813	T1 = 84.65017
R2 = 96.83073	Z2 = -0.00048	T2 = 84.70574
Z3 = 0.03386	T3 = 84.70891	R3 = 96.88358

Avg. Concentration: 82.99 PPM

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4

r = 9.99999E-1

Constants:	A = 0.00000E+0
B = 7.03405E-1	C = 6.70000E-5
D = 2.00000E-6	E = 0.00000E+0

Special Notes: FOLIO ITEM 0215

APPROVED BY: _____ C-24

Lara Nash

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

1290 COMBERMERE STREET,TROY,MI 48083 Phone: 248-589-2950 Fax: 248-589-213

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
1290 COMBERMERE STREET
TROY,MI 48083

P.O. No.: 11379
Project No.: 05-40652-004

Customer

METCO ENVIRONMENTAL

1100 GULF FREEWAY STE 100
CALDER RIDGE BUS. PARK
LEAGUE CITY TX 77573

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: BLM004041 **Certification Date:** 07Mar2006 **Exp. Date:** 06Mar2009
Cylinder Pressure*:** 1950 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
PROPANE	29.87	PPM	+/- 1%	Direct NIST and NMi
NITROGEN		BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1667	04Jul2008	ALM019225	49.80 PPM	PROPANE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
VARIAN/3600/0455	21Feb2006	FLAME IONIZATION

ANALYZER READINGS

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

First Triad Analysis

PROPANE

Date: 07Mar2006 Response Unit:AREA
Z1 = 0.00000 R1 = 52368.00 T1 = 31290.00
R2 = 52441.00 Z2 = 0.00000 T2 = 31492.00
Z3 = 0.00000 T3 = 31451.00 R3 = 52641.00
Avg. Concentration: 29.87 PPM

Second Triad Analysis

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999997
Constants: A = 0.056131
B = 0.000975 C = 0
D = 0 E = 0

APPROVED BY: _____
HILARY THATCHER

C-25

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-5857

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 11465
Project No.: 04-43989-009

Customer

METCO ENVIRONMENTAL

1100 GULF FREEWAY STE 100
CALDER RIDGE BUS. PARK
LEAGUE CITY TX 77573

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: BAL4862 **Certification Date:** 10May2006 **Exp. Date:** 10May2009
Cylinder Pressure*:** 1950 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
PROPANE	47	PPM	+/- 1%	Direct NIST and NMi
NITROGEN		BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1667	04Jul2008	ALM028376	49.80 PPM	PROPANE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
HP-Y/HP 6890/US00000974	27Apr2006	GAS CHROMATOGRAPHY

ANALYZER READINGS

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

First Triad Analysis

PROPANE

Date: 10May2006

Z1 = 141710.0	R1 = 745333.0	T1 = 711783.0
R2 = 747510.0	Z2 = 141884.0	T2 = 714235.0
Z3 = 142241.0	T3 = 712454.0	R3 = 745025.0
Avg. Concentration:	47.00	PPM

Second Triad Analysis

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999989

Constants:	A = -0.0573
B = 0.0000658	C =
D =	E =

Special Notes: FOLIO ITEM: 0.925

APPROVED BY: CRISSA MARTIN

C-26

SUPERVISOR: SUSAN BRANDON

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-5857

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
1290 COMBERMERE STREET
TROY,MI 48083

P.O. No.: 11052
Project No.: 04-32825-005

Customer

METCO ENVIRONMENTAL
SCOT JACKSON
P O BOX 598
ADDISON TX 75001

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: BLM000517 **Certification Date:** 14Mar2005 **Exp. Date:** 13Mar2008
Cylinder Pressure*:** 1900 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
PROPANE	84.62 PPM	+/- 1%	Direct NIST and NMi
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.
Product certified as +/- 1% analytical accuracy is directly traceable to NIST or NMI standards.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1668	01Aug2005	ALM008717	99.50 PPM	PROPANE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
VARIAN/3600/0455	14Mar2005	FLAME IONIZATION

ANALYZER READINGS

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

First Triad Analysis

PROPANE

Date: 14Mar2005 Response Unit:HGHT
Z1 = 0.00000 R1 = 759762.0 T1 = 643595.0
R2 = 762171.0 Z2 = 0.00000 T2 = 644008.0
Z3 = 0.00000 T3 = 644047.0 R3 = 761893.0
Avg. Concentration: 84.62 PPM

Second Triad Analysis

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999955
Constants: A = 0.432368
B = 0.000130 C = 0.00
D = 0.00 E = 0.00

APPROVED BY: April Ash C-27

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-5857

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 11909
Project No.: 04-53520-003

Customer
METCO ENVIRONMENTAL

1100 GULF FREEWAY STE 100
CALDER RIDGE BUS. PARK
LEAGUE CITY TX 77573

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: AAL16103 **Certification Date:** 19Apr2007 **Exp. Date:** 19Apr2010
Cylinder Pressure*:** 1950 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
CARBON DIOXIDE	12.1	%	+/- 1%	Direct NIST and NMi
OXYGEN	12.2	%	+/- 1%	Direct NIST and NMi
NITROGEN	BALANCE			

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1675	04Jul2008	K001494	13.93 %	CARBON DIOXIDE
NTRM 2350	01May2009	K003567	23.48 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
MTIA/M200/171109	27Mar2007	GAS CHROMATOGRAPHY
SERVOMEX/MODEL 244A/701/716	23Mar2007	PARAMAGNETIC

ANALYZER READINGS

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

First Triad Analysis **Second Triad Analysis** **Calibration Curve**

CARBON DIOXIDE

Date: 19Apr2007	Response Unit:AREA	
Z1 = 3.00000	R1 = 1065526.	T1 = 927212.0
R2 = 1067773.	Z2 = 260.0000	T2 = 927081.0
Z3 = 210.0000	T3 = 926833.0	R3 = 1067476.
Avg. Concentration:	12.12	%

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.999997
Constants: A = -0.02423971
B = .0000131416 C =
D = E =

OXYGEN

Date: 20Apr2007	Response Unit:VOLTS	
Z1 = 0.00000	R1 = 0.98500	T1 = 5126.000
R2 = 0.98500	Z2 = 0.00000	T2 = 5127.000
Z3 = 0.00000	T3 = 5127.000	R3 = 0.98490
Avg. Concentration:	12.22	%

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = 0.9999998
Constants: A = .004395935
B = 23.82394065 C =
D = E =

APPROVED BY: DAVID KELLY C-28

Scott Specialty Gases

Shipped From:
9810 BAY AREA BLVD
PASADENA TX 77507
Phone: 281-474-5800 Fax: 281-474-5857

C E R T I F I C A T E O F A N A L Y S I S

METCO ENVIRONMENTAL

1100 GULF FREEWAY STE 100
CALDER RIDGE BUS. PARK
LEAGUE CITY TX 77573

PROJECT #: 04-55550-001
PO#: 12016
ITEM #: 0401031 AL
DATE: 09Jul2007

CYLINDER #: AAL14753
FILL PRESSURE: 02000 PSIG

PURE MATERIAL: AIR CAS# 132259-10-0

GRADE: CEM ZERO

PURITY: -

IMPURITY	MAXIMUM CONCENTRATIONS
CO	0.5 PPM
CO2	1 PPM
THC(CH4)	0.1 PPM
H2O	5 PPM
O2	20 TO 21%

APPENDIX D

Field Testing Data

METCO ENVIRONMENTAL

Job Number 07-338 ✓
Job Name Valero ✓
Run Number 1 ✓
Unit CTrain SRU Tail Gas Stack ✓
Date 9/13/07 9/5/07 ✓
Operator Mr Boss Cooper / Edwards / Boss Williams

NH3 / Flow Field Data

Read and record at the start of each test point.

Sample box No. 45-3 Meter Box No. 44-1 ✓

Purge to: —
Purge time: —
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 90
Assumed Moisture % 2
Probe Length
C Factor — to reference.
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 7.0 "Hg = 0.000 cfm

			ΔP_s		P_m		T_s					T_m	
Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Gauge	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp °F Inlet	Dry Gas Temp °F Outlet	Traverse Point Remarks
3	10:50	423.442	0.045	1.10	1.10	3.5	1334	—	246	87	80	80	B B
3	10:55	426.26	0.050	1.10	1.10	3.5	1338	—	244	68	81	80	7
3	11:00	429.13	0.050	1.10	1.10	3.5	1338	—	244	65	83	80	6
3	1105	431.99	0.050	1.10	1.10	3.5	1335	—	244	65	84	79	5
2	1110	434.89	0.045	1.10	1.10	3.5	1328	—	245	65	86	79	4
2	1115	437.75	0.045	1.10	1.10	3.5	1334	—	257	64	90	79	3
2	1120	440.66	0.045	1.10	1.10	3.5	1327	—	259	64	89	80	2
2	1125	443.75	0.045	1.10	1.10	3.5	1327	—	259	64	90	80	1
1	1130	446.47	—	1.10	1.10	3.5	—	—	260	64	92	81	—
1	1135	449.36	0.035	1.10	1.10	3.5	1329	—	256	64	93	81	C B
1	1140	452.23	0.035	1.10	1.10	3.5	1335	—	255	64	92	81	7
1	1145	455.12	0.040	1.10	1.10	3.5	1334	—	252	64	93	81	6
END	1150	458.029	0.045	—	—	—	1339	—	—	—	—	—	5
			0.040				1329						4
			0.036				1313						3
			0.030				1299						2
			0.030				1065						1
			—				—						END

Pitot Tube Calibration Factor C_p 0.787 ✓
Volume Collected V_m 34.310 ✓ ft^3
Water Collected V_w 107 ✓ ml
Time of Test T_t 60 ✓ min.
Stack Pressure P_s -0.10 ✓ "H_2O

Pitot Tube No. 44-12-1 ✓
Baro. Press. P_b 30.00 ✓ "Hg
Probe Tip Dia. D_n — in.
% CO_2 6.6 ✓ % CO 0.0 ✓
% O_2 3.4 ✓ % N_2 90.0 ✓
Area Stack A_s 3473 ✓ in^2

Barometer No. 44-2 ✓ Probe Tip No. —
Total Volume of Leak Checks After Start: — ft^3
V_m = Dry Gas Meter Calibration Factor 0.992 ✓ x 34.587

{Dry Gas Meter Reading — ft^3 – (T_t — min. X Leak Rate — cfm)}

D-2

VERSION 2
15 MARCH 2006

Impinger Box No. 45-3

			Water Weight Gain		
Impinger 1	Final Weight	843.1	Balance QA ____	Impinger 1	71.4
	Initial Weight	771.7		Impinger 2	14.7
	Increase			Impinger 3	2.4
Impinger 2	Final Weight	782.2		Impinger 4	18.3
	Initial Weight	767.5	V_w =		
	Increase		g SO_2 = -	Impinger 5	
Impinger 3	Final Weight	672.1	V_w =		
	Initial Weight	669.5		Impinger 6	
	Increase				
Impinger 4	Final Weight	940.6		Impinger 7	
	Initial Weight	922.3			
	Increase			Total	107.0 ✓ = V_w

Impinger 5	Final Weight		P_b =	30.00 ✓	%CO_2 =	4.4 ✓	
	Initial Weight		V_m =	34.310 ✓	%O_2 =	3.4 ✓	
	Increase		V_w =	107.0 ✓	%CO =	0.0 ✓	
			P_m =	1.10 ✓	%N_2 =	90.0 ✓	
Impinger 6	Final Weight		Avg ΔP =	0.042 ✓	A_s =	3.473 ✓	
	Initial Weight				D_n =	—	
	Increase		Avg$\sqrt{\Delta P}$ =	~~0.047~~ 0.203 ✓ (Rv)	T_1 =	40 ✓	
			C_p =	0.787 ✓			
Impinger 7	Final Weight		P_s =	-0.10 ✓	"H_2O	29.99 ✓	"Hg
	Initial Weight		T_m =	~~83~~ 84 ✓	°F	~~543~~ 544 ✓	°R
	Increase		T_s =	1313 ✓	°F	1773 ✓	°R

Moisture Content: %M = ~~13.08~~ 13.11 ✓ M_d = ~~0.8692~~ 0.8689 ✓ MW_d = 29.192 / 28.142 ✓ MW = ✓ 27.72 / 25.42

$$Vm_{std} = 17.65\ Vm\left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 34.310\left[\frac{30.00 + \frac{1.10}{13.6}}{\text{~~83~~ 84} + 460}\right] = \frac{33.486 \checkmark}{\text{~~33.547~~} \text{ sft}^3} = \frac{\text{~~0.554~~}}{0.558 \checkmark} \text{ scfm}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 107.0 = 5.050 ✓ sft³

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{5.050}{\text{~~33.547~~ } 33.486 + 5.050}$ x 100 = ~~13.08~~ 13.11 ✓ %

V_s = 5123.8 x $\sqrt{\frac{0.787}{24.44 \times \frac{\text{~~25.42~~}}{27.72}} \times \frac{\text{~~0.047~~}}{0.203}}$ = ~~1256~~ 1195 ✓ fpm

ACFM: ~~28,832~~ 30,787 / ~~2554~~ 7,503 ✓

SCFM: ~~1154~~ 7882

%I = $\frac{1{,}039 \times \quad \times}{\times \quad \times \quad \times \quad \times (\quad)^2}$ = — %

%EA: 14.4 ✓

VERSION 2
15 MARCH 2006

METCO ENVIRONMENTAL

Job Number 07-338 ✓
Job Name Valero ✓
Run Number 2 ✓
Unit C train SRU Tail Gas ✓ Stack
Date 9/5/07 ✓
Operator Cooper / Eubanks / Williams ✓
Sample box No. 45-2 Meter Box No. 44-1 ✓

NH_2 / Flow Field Data

Read and record at the start of each test point.

Purge to: —
Purge time: —
Pitot Leak Check Initial ✓ Final —

Ambient Temp. °F 90
Assumed Moisture % 13
Probe Length —
C Factor — to reference.
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 8.0 "Hg = 0.000 cfm

			ΔP_s		P_m		T_s				T_m		
Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Gauge	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp °F Inlet	Dry Gas Temp °F Outlet	Traverse Point Remarks
3	1235	458.452	0.040	1.10	1.10	4.0	1381		248	71	84	84	88
3	1240	461.35	0.040	1.10	1.10	4.0	1382		254	62	85	84	7
3	1245	464.44	0.045	1.10	1.10	4.0	1385		262	58	86	84	6
3	1250	467.29	0.045	1.10	1.10	4.0	1379		246	57	89	83	5
2	1255	470.37	0.040	1.10	1.10	4.0	1385		243	59	90	82	4
2	1300	473.20	0.040	1.10	1.10	4.0	1385		241	60	90	83	3
2	1305	476.16	0.040	1.10	1.10	4.0	1384		247	61	91	83	2
2	1310	479.08	0.040	1.10	1.10	4.0	1356		251	61	91	84	1
1	1315	482.01	—	1.10	1.10	4.0	—		254	62	93	83	—
1	1320	485.98	0.030	1.10	1.10	4.0	1357		255	63	94	84	28
1	1325	487.81	0.030	1.10	1.10	4.0	1359		254	64	92	84	7
1	1330	490.71	0.040	1.10	1.10	4.0	1362		254	64	92	84	6
END	1335	493.831	0.045	—	—	—	1356	—	—	—	—	—	5
			0.045				1361						4
			0.045				1361						3
			0.045				1368						2
			0.045				1366						1
			—				—						—

Pitot Tube Calibration Factor C_p 0.787 ✓
Volume Collected V_m 35.094 ✓ ft^3
Water Collected V_w 105.0 ✓ ml
Time of Test T_t 60 ✓ min.
Stack Pressure P_s −0.10 ✓ "H_2O

Pitot Tube No. 44-12-1 ✓
Baro. Press. P_b 29.97 ✓ "Hg
Probe Tip Dia. D_n — in.
% CO_2 4.8 ✓ % CO 0.0 ✓
% O_2 3.2 ✓ % N_2 50.0 ✓
Area Stack A_s 3473 ✓ in^2

Barometer No. 44-2 ✓ Probe Tip No. —
Total Volume of Leak Checks After Start: — ft^3 ✓
V_m = Dry Gas Meter Calibration Factor 0.992 ✓ X 35.379
{Dry Gas Meter Reading — ft^3 – (T_t — min. X Leak Rate — cfm)}

D4

VERSION 2
15 MARCH 2006

Impinger Box No. 45-2

			Water Weight Gain		
Impinger 1	Final Weight	845.6	Balance QA ____	Impinger 1	77.7
	Initial Weight	767.9		Impinger 2	12.4
	Increase			Impinger 3	3.5
Impinger 2	Final Weight	775.7		Impinger 4	11.4
	Initial Weight	763.3	V_w =		
	Increase		g SO_2 = ____	Impinger 5	____
Impinger 3	Final Weight	670.3	V_w =		
	Initial Weight	666.8		Impinger 6	____
	Increase				
Impinger 4	Final Weight	944.9		Impinger 7	____
	Initial Weight	~~935.4~~ 933.5			
	Increase			Total	105.0 ✓ = V_w

Impinger 5	Final Weight	____	P_b =	29.57 ✓	%CO_2 =	4.8 ✓	
	Initial Weight	____	V_m =	35.054 ✓	%O_2 =	3.2 ✓	
	Increase		V_w =	105.0 ✓	%CO =	0.0 ✓	
			P_m =	1.10 ✓	%N_2 =	90.0 ✓	
Impinger 6	Final Weight	____	Avg ΔP =	0.041 ✓	A_n =	3473 ✓	
	Initial Weight	____			D_n =	—	
	Increase		Avg$\sqrt{\Delta P}$ =	0.202 ✓	T_t =	60 ✓	
			C_p =	0.787 ✓			
Impinger 7	Final Weight	____	P_s =	-0.10 ✓ "H_2O		29.54 ✓	"Hg
	Initial Weight	____	T_m =	87 ✓ °F		547 ✓	°R
	Increase	____	T_s =	1370 ✓ °F		1830 ✓	°R

Moisture Content: %M = 12.71 ✓ M_d = 0.8729 ✓ MW_d = 29.216 ✓ MW = 27.79 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 35.054 \left[\frac{29.57 + \frac{1.10}{13.6}}{87 + 460}\right] = \frac{34.031}{0.547} \text{ sft}^3/\text{scfm}$$ ✓

Vw_{gas} = 0.0472 x Vw = 0.0472 x 105.0 = 4.954 ✓ sft³

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}} \times 100 = \frac{4.954}{34.031 + 4.954} \times 100$ = 12.71 ✓ %

V_s = 5123.8 x $0.787 \sqrt{\frac{1830}{29.54 \times 27.79}}$ x 0.202 = 1708 ✓ fpm

ACFM: 29,125 ✓

SCFM: 7,374 ✓

%I = $\frac{1{,}039 \times \quad \times}{\times \quad \times \quad \times \quad \times(\quad)^2}$ = ____ %

%EA: 15.5 ✓

VERSION 2
15 MARCH 2006

METCO ENVIRONMENTAL

Job Number 07-338 ✓
Job Name Valero ✓
Run Number 3 ✓
Unit C train SRU Tail Gas Stack ✓
Date 9/5/07 ✓
Operator Cooper / Eubanks / Williams ✓
Sample box No. 45-3 Meter Box No. 441 ✓

NH2 / Flow Field Data

Read and record at the start of each test point.

Purge to: —
Purge time: —
Pitot Leak Check Initial ✓ Final ✓

Ambient Temp. °F 90
Assumed Moisture % _____
Probe Length _____
C Factor — to reference.
Initial Leak @ 15.0 "Hg = 0.000 cfm
Final Leak @ 10.0 "Hg = 0.000 cfm

			ΔP_s		P_m		T_s				T_m		
Point	Clock Time	Dry Gas Meter, CF	"Pitot" "H_2O	Orifice ΔH "H_2O Desired	Orifice ΔH "H_2O Actual	Pump Vacuum "Hg Gauge	Stack Temp °F	Probe Temp °F	Oven Temp °F	Effluent Temp °F	Dry Gas Temp °F Inlet	Dry Gas Temp °F Outlet	Traverse point Remarks
3	1415	494.028	0.040	1.10	1.10	8.0	1383		260	71	86	86	B8
3	1420	496.81	0.045	1.10	1.10	8.0	1387		248	54	84	83	7
3	1425	499.68	0.050	1.10	1.10	8.0	1385		248	51	85	83	6
3	1430	502.63	0.050	1.10	1.10	8.0	1381		252	51	86	84	5
2	1435	505.64	0.045	1.10	1.10	8.0	1385		250	53	87	83	4
2	1440	508.51	0.045	1.10	1.10	8.0	1385		257	53	88	83	3
2	1445	511.50	0.045	1.10	1.10	8.0	1384		267	54	89	83	2
2	1450	514.38	0.040	1.10	1.10	8.0	1361		264	55	89	83	1
1	1455	517.32	—	1.10	1.10	8.0	—		257	55	89	83	—
1	1500	520.41	0.035	1.10	1.10	8.0	1358		261	55	90	83	C8
1	1505	523.05	0.040	1.10	1.10	8.0	1359		253	56	90	83	7
1	1510	526.09	0.040	1.10	1.10	8.0	1363		258	57	91	83	6
GND	1515	528.98	0.045	—	—	—	1359	—	—	—	—	—	5
			0.045				1361						4
			0.040				1361						3
			0.035				1368						2
			0.035				1368						1
			—				—						—

Pitot Tube Calibration Factor C_p 0.787 ✓
Volume Collected V_m 34.477 ✓ ft^3
Water Collected V_w 107.6 ✓ ml
Time of Test T_t 60 ✓ min.
Stack Pressure P_s -0.10 ✓ "H_2O

Pitot Tube No. 44-12-1 ✓
Baro. Press. P_b 29.94 ✓ "Hg
Probe Tip Dia. D_n — in.
% CO_2 6.8 ✓ % CO 0.0 ✓
% O_2 3.7 ✓ % N_2 90.0 ✓
Area Stack A_s 3473 ✓ in^2

Barometer No. 44-2 ✓ Probe Tip No. —
Total Volume of Leak Checks After Start: — ft^3
V_m = Dry Gas Meter Calibration Factor 0.997 ✓ x 34.452

{Dry Gas Meter Reading — ft^3 – (T_t — min. X Leak Rate — cfm)}

D-6

VERSION 2
15 MARCH 2006

Impinger Box No. 45-3

			Water Weight Gain		
Impinger 1	Final Weight	857.0	Balance QA ____	Impinger 1	83.7
	Initial Weight	773.3		Impinger 2	15.0
	Increase			Impinger 3	0.9
Impinger 2	Final Weight	784.7		Impinger 4	8.0
	Initial Weight	749.7	V_w =		
	Increase			Impinger 5	
Impinger 3	Final Weight	672.5	g SO_2 = -		
	Initial Weight	671.6	V_w =	Impinger 6	
	Increase				
Impinger 4	Final Weight	955.1		Impinger 7	
	Initial Weight	947.1			✓
	Increase			Total	107.4 = V_w

Impinger 5	Final Weight		P_b =	29.94 ✓	$\%CO_2$ =	4.8 ✓	
	Initial Weight		V_m =	34.672 ✓	$\%O_2$ =	3.2 ✓	
	Increase		V_w =	107.4 ✓	%CO =	0.2 ✓	
			P_m =	1.10 ✓	$\%N_2$ =	90.0 ✓	
Impinger 6	Final Weight		Avg ΔP =	0.042 ✓	A_n =	3473 ✓	
	Initial Weight				D_n =	- ✓	
	Increase		Avg$\sqrt{\Delta P}$ =	0.205 ✓	T_t =	40	
			C_p =	0.787 ✓			
Impinger 7	Final Weight		P_s =	-0.10 ✓ "H_2O		29.93 ✓	"Hg
	Initial Weight		T_m =	86 ✓ °F		546 ✓	°R
	Increase		T_s =	1371 ✓ °F		1831 ✓	°R

Moisture Content: %M = 13.11 ✓ M_d = 0.8689 ✓ MW_d = 29.214 ✓ MW = 27.75 ✓

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 34.672 \left[\frac{29.94 + \frac{1.10}{13.6}}{86 + 460}\right] = \frac{33.648}{0.561} \text{ sft}^3 \text{ ✓ scfm ✓}$$

Vw_{gas} = 0.0472 x Vw = 0.0472 x 107.6 = 5.079 ✓ sft³

% Moisture = $\frac{Vw_{gas}}{Vm_{std} + Vw_{gas}}$ x 100 = $\frac{5.079}{33.648 + 5.079}$ x 100 = 13.11 ✓ %

V_s = 5123.8 x $\frac{0.787}{\sqrt{\frac{1831}{29.93 \times 27.75}}}$ x 0.205 = 1227 ✓ fpm

ACFM: 29,602 ✓

SCFM: 7,145 ✓

%I = $\frac{1{,}039 \times \quad \times}{\times \quad \times \quad \times \quad \times (\quad)^2}$ = — %

%EA: 15.5 ✓

VERSION 2
15 MARCH 2006

VOST FIELD DATA

Job Number 07-338 | H_2S | Probe Length 4'

Job Name Valero | Operator ~~Gerald Bass~~ / Eubanks | Sample Point mid

Run Number 1 | Meter Number 11 ✓ | Initial Leak @ 15.0 "Hg = 0.0 "Hg

Location CTrain SRU Tail Gas Stack | Ambient Temp. 90 °C (°F) | Final Leak @ 15.0 "Hg = 0.0 "Hg

Date ~~8/31/07~~ 9/5/07 | Barometer Number 44.2 ✓ | Baro. Pressure P_b 30.00 "Hg

CLOCK TIME	DRY GAS METER (LITERS)	ROTOMETER READING	PUMP VACUUM "HG GAUGE	PROBE TEMP. °C / °F	CONDENSER TEMPERATURE °C / °F 1ST	2ND	DRY GAS TEMPERATURE °C / (°F) INLET	OUTLET	DRY GAS METER PRESSURE "H_2O	REMARKS
1050	8385.12	1.00	-1.0	—	—	—	80	79	1.2	
1055	8390.21	1.00	-1.0	—	—	—	80	80	1.2	
1100	8395.01	1.00	-1.0	—	—	—	81	80	1.2	purge
1105	8399.92	1.05	-1.0	—	—	—	81	81	1.2	1200-1215
1110	8405.18	1.05	-1.0	—	—	—	82	81	1.2	@ 1 L/min
1115	8410.32	1.05	-1.0	—	—	—	83	82	1.2	
1120	8415.55	1.00	-1.0	—	—	—	84	83	1.2	
1125	8420.58	1.00	-1.0	—	—	—	85	84	1.2	
1130	8425.63	1.00	-1.0	—	—	—	85	84	1.2	
1135	8430.61	1.00	-1.0	—	—	—	86	85	1.2	
1140	8435.46	1.00	-1.0	—	—	—	86	85	1.2	
1145	8440.41	1.00	-1.0	—	—	—	87	86	1.2	
1150	8445.35	—	—	—	—	—	—	—	—	

V_m = Dry Gas Meter Calibration Factor 0.994 ✓ X 60.230 ✓ = 59.869 ✓

T_m °C x 9/5 32 = T_m °F

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times 59.869^{\checkmark} \times \left[\frac{30.00^{\checkmark} + \frac{1.20^{\checkmark}}{13.6}}{82^{\checkmark} + 460}\right] = 58.552^{\checkmark}\ \text{standard liters}$$

$$Vm_{std}\ (dscf) = \frac{Vm_{std}\ (L)}{28.317} = \frac{58.552}{28.317} = 2.068^{\checkmark}\ dscf$$

VERSION 2
9 JULY 2003

VOST FIELD DATA

Job Number 07-338 — H_2S — Probe Length 4'

Job Name Valero — Operator Goebel / Eubanks — Sample Point Mid

Run Number 2 — Meter Number 11 ✓ — Initial Leak @ 15.0 "Hg = 0.0 "Hg

Location C Train SR4 Tail Gas Stack — Ambient Temp. 90 °C / (°F) — Final Leak @ 15.0 "Hg = 0.0 "Hg

Date 9/5/07 — Barometer Number 44-2 ✓ — Baro. Pressure P_b 29.97 "Hg

CLOCK TIME	DRY GAS METER (LITERS)	ROTOMETER READING	PUMP VACUUM "HG GAUGE	PROBE TEMP. °C / °F	CONDENSER TEMPERATURE °C / °F 1ST	CONDENSER TEMPERATURE °C / °F 2ND	DRY GAS TEMPERATURE °C / (°F) INLET	DRY GAS TEMPERATURE °C / (°F) OUTLET	DRY GAS METER PRESSURE "H_2O	REMARKS
1235	8459.36	1.00	-1.0	—	—	—	87	87	1.40	
1240	8464.36	1.00	-1.0	—	—	—	87	87	1.40	purge
1245	8469.65	1.00	-1.0	—	—	—	87	87	1.40	1347-1402
1250	8474.61	1.00	-1.0	—	—	—	87	87	1.40	@ 1 L/m
1255	8479.62	1.00	-1.0	—	—	—	88	87	1.40	
1300	8484.66	1.00	-1.0	—	—	—	88	87	1.40	
1305	8490.96	1.00	-1.0	—	—	—	88	87	1.40	
1310	8495.17	1.00	-1.0	—	—	—	88	88	1.40	
1315	8500.53	1.00	-1.0	—	—	—	88	88	1.40	
1320	8505.74	1.00	-1.0	—	—	—	88	88	1.40	
1325	8510.82	1.00	-1.0	—	—	—	88	88	1.40	
1330	8516.10	1.00	-1.0	—	—	—	88	88	1.40	
1335	8521.25	—	—	—	—	—	—	—	—	

V_m = Dry Gas Meter Calibration Factor 0.994 ✓ X 61.890 ✓ = 61.519 ✓

T_m °C x 9/5 32 = T_m °F

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times \underset{\checkmark}{61.519} \times \left[\frac{\underset{\checkmark}{27.97} + \frac{\overset{\checkmark}{1.40}}{13.6}}{\underset{\checkmark}{88} + 460}\right] = \underset{\checkmark}{59.587}\ \text{standard liters}$$

$$Vm_{std}\ (dscf) = \frac{Vm_{std}\ (L)}{28.317} = \frac{59.587}{28.317} = \underset{\checkmark}{2.104}\ dscf$$

VERSION 2
9 JULY 2003

VOST FIELD DATA

Job Number 07-338 — H_2S

Job Name Valero — Operator Goebel/Eubanks — Probe Length 4'

Run Number 3 — Meter Number 11 ✓ — Sample Point Mid

Location C Train SRU Tail Gas Stack — Ambient Temp. 90 °C / (°F) — Initial Leak @ 15.0 "Hg = 0.09 "Hg

Date 9/5/07 — Barometer Number 44-2 ✓ — Final Leak @ ____ "Hg = ____ "Hg

Baro. Pressure P_b 29.94 "Hg

CLOCK TIME	DRY GAS METER (LITERS)	ROTOMETER READING	PUMP VACUUM "HG GAUGE	PROBE TEMP. °C / °F	CONDENSER TEMPERATURE °C / °F 1ST	2ND	DRY GAS TEMPERATURE °C / (°F) INLET	OUTLET	DRY GAS METER PRESSURE "H_2O	REMARKS
1415	8537.55	1.00	-1.0	—	—	—	86	86	1.40	purge
1420	8542.30	1.00	-1.0	—	—	—	86	86	1.40	1525-1540
1425	8547.51	1.00	-1.0	—	—	—	86	86	1.40	@ 1L/min
1430	8552.81	1.00	-1.0	—	—	—	86	86	1.40	
1435	8558.10	1.00	-1.0	—	—	—	86	86	1.40	
1440	8563.00	1.00	-1.0	—	—	—	86	86	1.40	
1445	8568.75	1.00	-1.0	—	—	—	86	86	1.40	
1450	8573.20	1.00	-1.0	—	—	—	87	87	1.40	
1455	8578.21	1.00	-1.0	—	—	—	87	87	1.40	
1500	8583.31	1.00	-1.0	—	—	—	87	87	1.40	
1505	8588.42	1.00	-1.0	—	—	—	87	87	1.40	
1510	8593.51	1.00	-1.0	—	—	—	88	87	1.40	
1515	8598.36	—	—	—	—	—	—	—	—	

V_m = Dry Gas Meter Calibration Factor 0.994 ✓ X 61.010 ✓ = 60.644 ✓

T_m °C x 9/5 32 = T_m °F

$$Vm_{std} = 17.65\ Vm \left[\frac{P_b + \frac{P_m}{13.6}}{T_m + 460}\right] = 17.65 \times \underset{\checkmark}{60.644} \times \left[\frac{\overset{\checkmark}{29.94} + \frac{\overset{\checkmark}{1.40}}{13.6}}{\overset{\checkmark}{86} + 460}\right] = \underset{\checkmark}{58.896}\ \text{standard liters}$$

$$Vm_{std}\ (dscf) = \frac{Vm_{std}\ (L)}{28.317} = \frac{58.896}{28.317} = \underset{\checkmark}{2.080}\ \text{dscf}$$

METHOD 18 FIELD DATA (Bag Sample)

Job Number 07-338
Job Name Valero
Bag/Run Number 1 / Methane/ethane
Location C-Train SRU
Date ~~8/31/07~~ 9-5-07

Rotometer # 214 ✓
Operator Williams
Ambient Temp. 50 °C / °F
Barometer Number 44.2 ✓

Probe Length 6'
Sample Point mid
Baro. Pressure P_b ~~29~~ 30.00 "Hg
P_m
Source Pressure Ps -0.10 "H_2O

CLOCK TIME	ROTOMETER READING	SOURCE TEMP. °C / °F	PROBE TEMP. °C / °F	REMARKS
1050	0.15	1380	250	
1110	0.15	1330	250	
1130	0.15	1340	250	
1150	0.15	1350	250	

AVG Rotometer Reading = 0.15 = 0.15 L/m

Collected Condensate + Rinse = _____ ml

$Volume_{TOTAL}$ = L/m x T_t (min) = 0.15 x 60 = 9 Liters

VERSION 1
08 FEBRUARY 2007

METHOD 18 FIELD DATA (Bag Sample)

Job Number 07-338
Job Name 07-338
Bag/Run Number 2 | Meth | EFL
Location C-Train SRU
Date 9-5-07

Rotometer # 44 ✓
Operator Williams
Ambient Temp. 90 °C / °F
Barometer Number 44-2 ✓

Probe Length 6'
Sample Point M.d
Baro. Pressure P_b 29.97 "Hg
P_m
Source Pressure Ps -0.10 "H_2O

CLOCK TIME	ROTOMETER READING	SOURCE TEMP. °C / °F	PROBE TEMP. °C / °F	REMARKS
1235	0.15	1380	250	
1255	0.15	1380	250	
1310	0.15	1380	250	
1335	0.15	1380	250	

AVG Rotometer Reading = 0.15 = 0.15 L/m

Collected Condensate + Rinse = _____ ml

$Volume_{TOTAL}$ = L/m x T_t (min) = 0.15 x 60 = 9 Liters

METHOD 18 FIELD DATA (Bag Sample)

Job Number 07-388
Job Name Valero
Bag/Run Number 3 | Mult | Exh
Location C-Train SRU
Date 9-5-07

Rotometer # 44 ✓
Operator Williams
Ambient Temp. 90 °C (°F)
Barometer Number 44-2 ✓

Probe Length 6'
Sample Point mid
Baro. Pressure P_b 25.54 "Hg
P_m
Source Pressure Ps -0.10 "H_2O

CLOCK TIME	ROTOMETER READING	SOURCE TEMP. °C / °F	PROBE TEMP. °C / °F	REMARKS
1415	0.15	1380	250	
1430	0.15	1380	250	
1445	0.15	1380	250	
1515	0.15	1380	250	

AVG Rotometer Reading = _____ = 0.15 L/m

Collected Condensate + Rinse = _____ ml

$Volume_{TOTAL}$ = L/m x T_t (min) = 0.15 x 60 = 9 Liters

VERSION 1
08 FEBRUARY 2007

METHOD 18 FIELD DATA (Bag Sample)

Job Number 07-338

Job Name Valero

Bag/Run Number 3 | Hexoc

Location ~~Water~~ C Train SRU

Date 9-5-07

Rotometer # 44 ✓

Operator Williams

Ambient Temp. 90 °C / °F

Barometer Number 44-2 ✓

Probe Length 6'

Sample Point mid

Baro. Pressure P_b 29.94 "Hg

P_m

Source Pressure Ps -0.10 "H_2O

CLOCK TIME	ROTOMETER READING	SOURCE TEMP. °C / °F	PROBE TEMP. °C / °F	REMARKS
1415	0.15	1380	250	
1430	0.15	1380	250	
1445	0.15	1380	250	
1515	0.15	1380	250	

AVG Rotometer Reading = 0.15 = 0.15 L/m

Collected Condensate + Rinse = _____ ml

$Volume_{TOTAL}$ = L/m x T_t (min) = 0.15 x 60 = 9 Liters

APPENDIX E

Analytical Data

C Train SRU Tail Gas Stack

SUMMARY OF RESULTS

9/5/07

Run Number	1	2	3			
Time	1050-1150	1235-1335	1415-1515			
N_I	0.0100	0.0100	0.0100			
V_I, ml	50	50	50			
N_S	0.0102	0.0102	0.0102			
V_S, ml	47.5	47.5	47.5			
V_I Blank, ml	50	50	50			
V_S Blank, ml	47.5	47.5	47.5			
$V_{m_{std}}$, liters*	58.552 ✓	59.587 ✓	58.896 ✓			
C_{H_2S}, mg/dscm*	<0.15 0.000	<0.15 0.000	<0.15 ~~0.000~~			
C_{H_2S}, ppm	<0.10 0.000	<0.10 0.00	<0.10 0.00			

$$C_{H_2S} = K \frac{(V_I N_I - V_S N_S)\ \text{sample} - (V_I N_I - V_S N_S)\ \text{blank}}{V_{m_{std}}}$$

C_{H_2S} = Concentration of H_2S at standard conditions, mg/dscm*

K = Conversion factor = 17.04×10^3

V_I = Volume of standard iodine solution, ml

N_I = Normality of standard iodine solution

V_S = Volume of standard sodium thiosulfate solution, ml

N_S = Normality of standard sodium thiosulfate solution

$V_{m_{std}}$ = Dry Gas Volume at standard conditions, liters*

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

3.4
27 y

METCO ENVIRONMENTAL

Standardization of Iodine

Date 9/5/07

Run Number	1	2	3
ml of 0.1 N Iodine	25	25	25
ml of 0.0102 N $Na_2S_2O_3$ to titrate	24.5	24.5	24.5
Normality of Iodine	0.009996	0.009996	0.009996
Average Normality	0.0100		

Analyst Ben Sell

METCO ENVIRONMENTAL

C Train SRU Tail Gas Stack

SUMMARY OF RESULTS

9/5/07

Run Number	1	2	3			
Time	1050-1150	1235-1335	1415-1515			
N_I	0.0102	0.0100	0.0100			
V_I, ml	50	50	50			
N_S	0.0102	0.0102	0.0102			
V_S, ml	47.5	47.5	47.5			
V_I Blank, ml	50	50	50			
V_S Blank, ml	47.5	47.5	47.5			
$V_{m_{std}}$, liters*	58.552 ✓	59.587 ✓	58.896 ✓			
C_{H_2S}, mg/dscm*	<0.15 0.000	<0.15 0.000	<0.15 ~~0.000~~			
C_{H_2S}, ppm	<0.10 0.00	<0.10 0.00	<0.10 0.00			

$$C_{H_2S} = K \frac{(V_I N_I - V_S N_S)\ \text{sample} - (V_I N_I - V_S N_S)\ \text{blank}}{V_{m_{std}}}$$

C_{H_2S} = Concentration of H_2S at standard conditions, mg/dscm*

K = Conversion factor = 17.04×10^3

V_I = Volume of standard iodine solution, ml

N_I = Normality of standard iodine solution

V_S = Volume of standard sodium thiosulfate solution, ml

N_S = Normality of standard sodium thiosulfate solution

$V_{m_{std}}$ = Dry Gas Volume at standard conditions, liters*

* 29.92 "Hg, 68°F (760 mm Hg, 20°C)

3.4

Standardization of Iodine

Date 9/5/07

Run Number	1	2	3
ml of 0.1 N Iodine	25	25	25
ml of 0.0102 N $Na_2S_2O_3$ to titrate	24.5	24.5	24.5
Normality of Iodine	0.009996	0.009996	0.009996
Average Normality	0.0100		

Analyst Ben Ball

07-89

Marathon

Standardization of Sodium Thiosulfate

Date 2-23-07

Run Number	1	2	3
ml of 0.100 N $K_2Cr_2O_7$	50	50	50
ml of $Na_2S_2O_3$ to titrate	49.20	49.25	49.25
Normality of $Na_2S_2O_3$	0.101626	0.101523	0.101523
Average Normality	0.1016		

Analyst M. Santos

The "0.01N" Sodium thiosulfate is 0.0102N.

07-338
Valero
Houston, Tx.

9-17-07
SRU-C Tail Gas Stack

Ammonia Analysis

Run	Smp	Vol	Dilu	ppm NH_4	ppm NH_4	ppm avg.	% RD	Total µg NH_3
1	1	211	1	0.263	0.267	0.265	1.5	52.8086
	2,3	174	1	0.150	0.156	0.153	3.9	25.143
					Run 1 total ug			78.0
2	1	203	1	0.116	0.121	0.1185	4.2	22.7191
	2,3	172	1	0.175	0.173	0.174	1.1	28.2653
					Run 2 total ug			51.0
3	1	211	1	0.037	0.037	0.037	0	7.3733
	2,3	179	1	0.042	0.047	0.0445	11.2	7.5230
					Run 3 total ug			14.9

Spike	ppm NH_4	ppm NH_4	% RD	% Recov	% Recov
RII@2x +0.5 ppm	0.634	0.636	0.3	100.3	100.7

METCO ENVIRONMENTAL

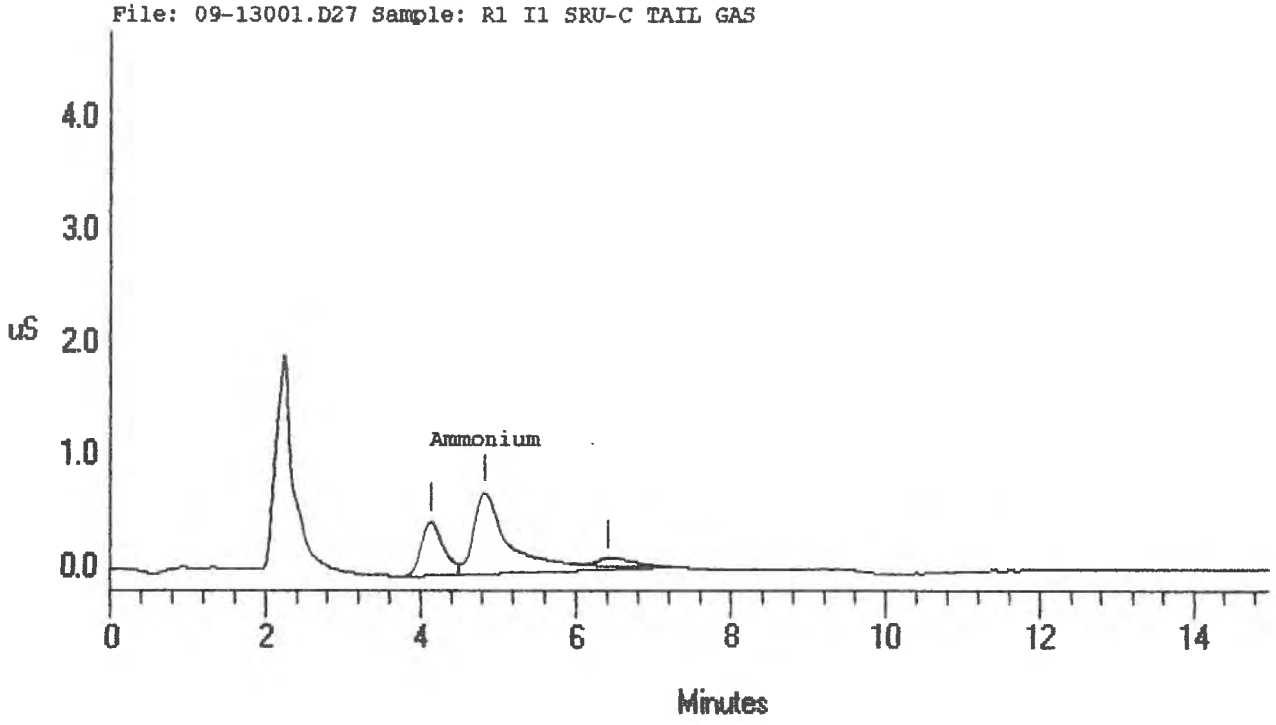
Data Reprocessed On 09/14/2007 10:05:48

Sample Name: R1 I1 SRU-C TAIL GAS	Date: 09/13/2007 22:52:40
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D27	
Method : C:\DX\METHOD\NH3LOW.MET	
ACI Address: 1 System: 1 Inject#: 27	Detector:CDM-2
Analyst : Column: CS12-SC,4mm STARTED 5-17-01	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.83	Ammonium	23717241	712773	0.263
	Totals	23717241	712773	0.263



METCO ENVIRONMENTAL

Data Reprocessed On 09/14/2007 10:05:57

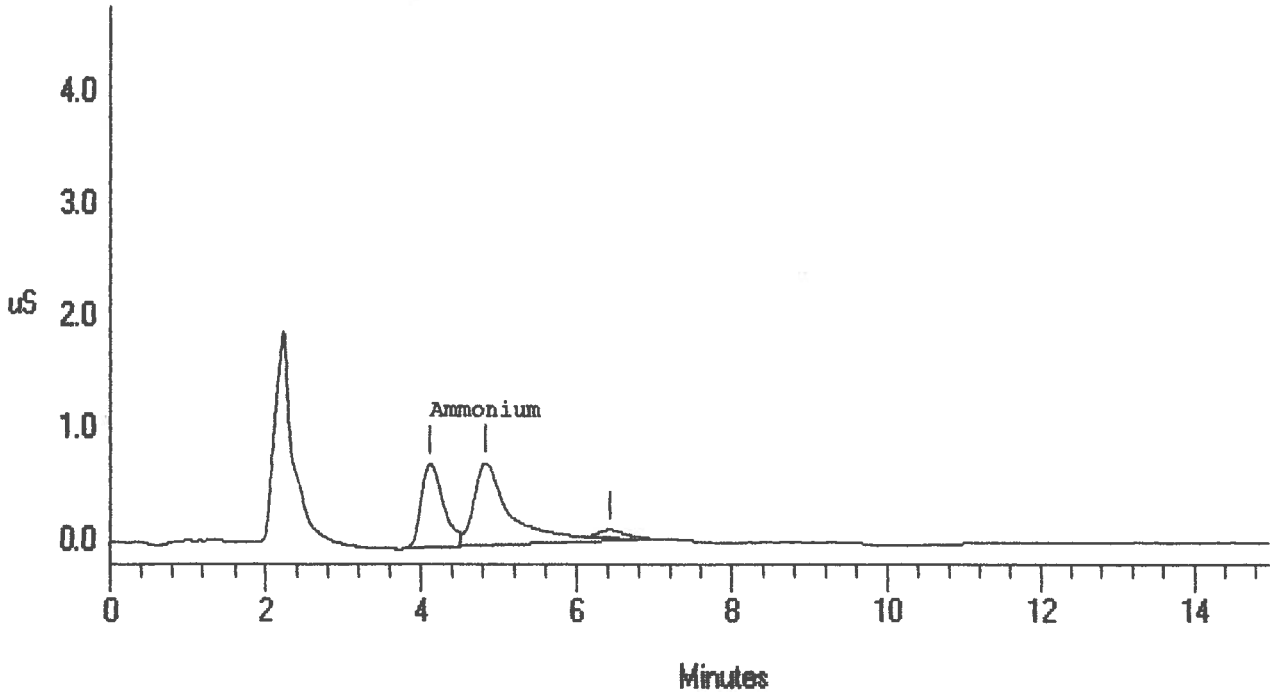
Sample Name: R1 I1 SRU-C TAIL GAS	Date: 09/13/2007 23:08:57
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D28	
Method : C:\DX\METHOD\NH3LOW.MET	
ACI Address: 1 System: 1 Inject#: 28	Detector:CDM-2
Analyst : Column: CS12-SC,4mm STARTED 5-17-01	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.83	Ammonium	24056210	733135	0.267
	Totals	24056210	733135	0.267

File: 09-13001.D28 Sample: R1 I1 SRU-C TAIL GAS



METCO ENVIRONMENTAL

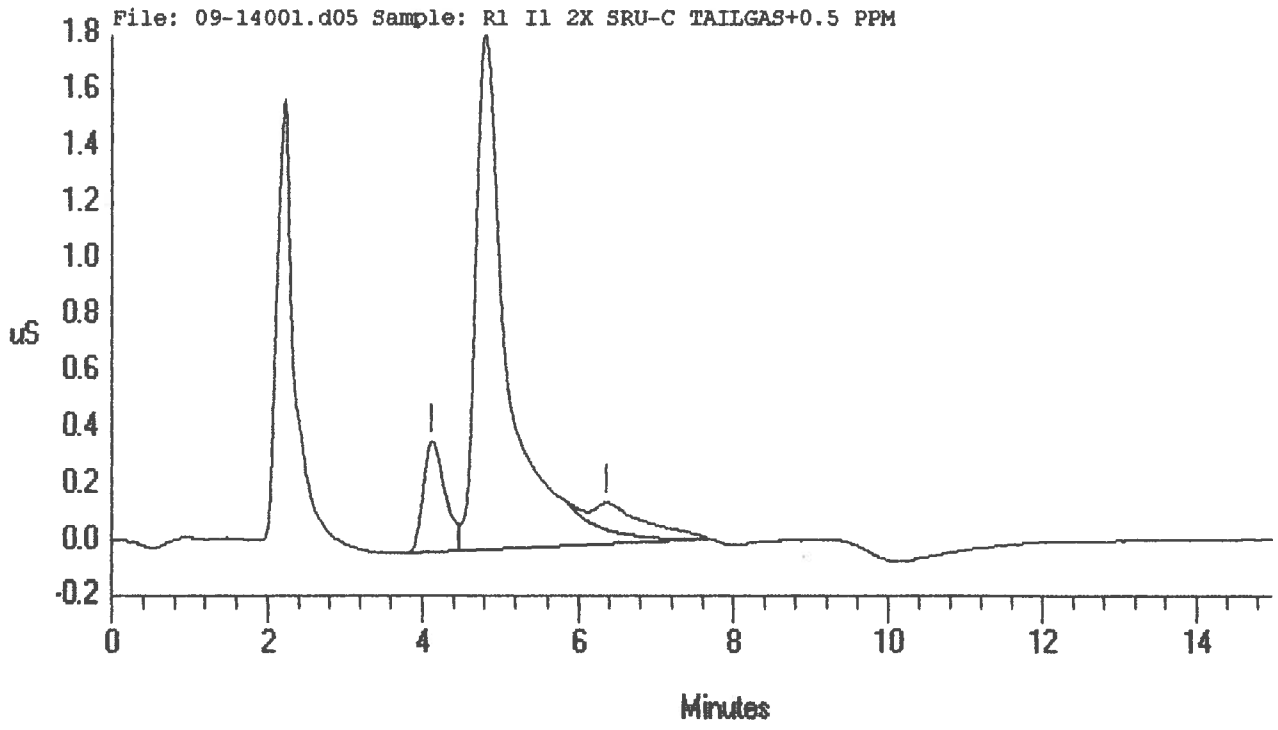
Data Reprocessed On 09/14/2007 10:07:20

Sample Name:	R1 I1 2X SRU-C TAILGAS+0.5 PPM Date: 09/14/2007 09:42:22
Data File :	C:\DX\DATA\CATIONS\07-338\09-14001.d05
Method :	C:\DX\METHOD\NH3LOW.MET
ACI Address: 1	System: 1 Inject#: 5 Detector:CDM-2
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.82	Ammonium	54712712	1830074	0.634
	Totals	54712712	1830074	0.634



METCO ENVIRONMENTAL

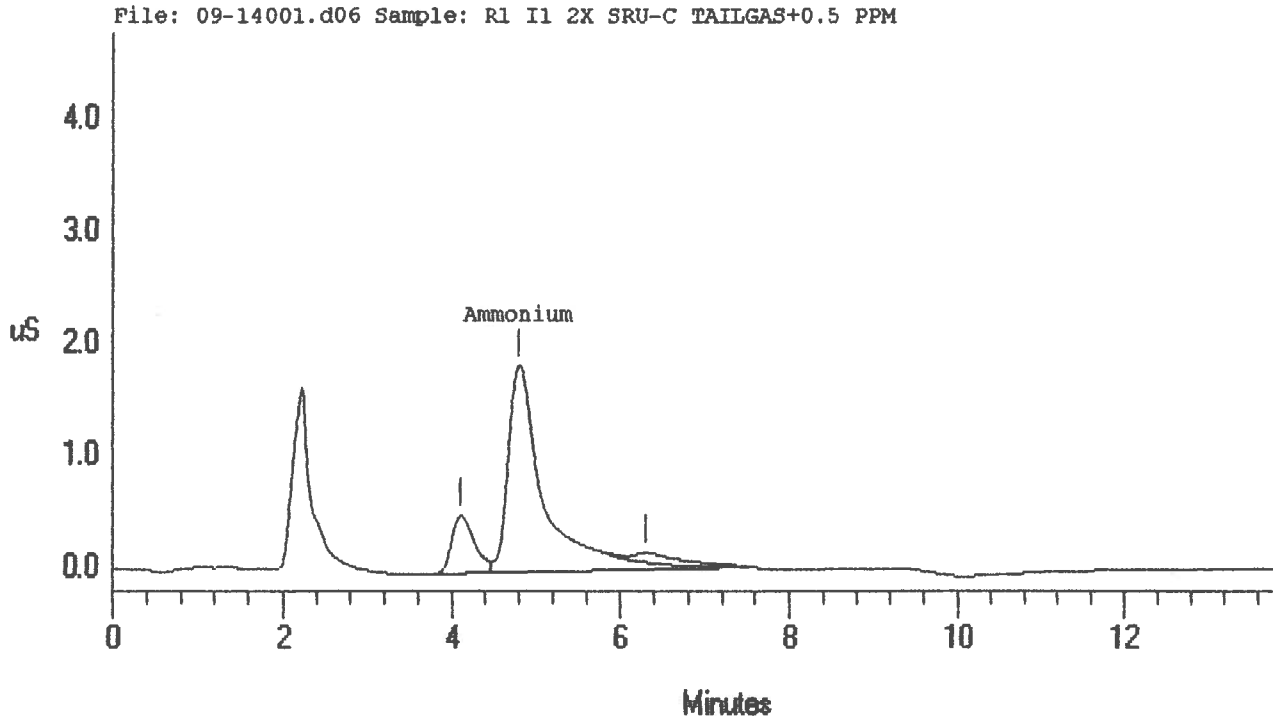
Data Reprocessed On 09/14/2007 10:07:20

```
| Sample Name: R1 I1 2X SRU-C TAILGAS+0.5 PPM Date: 09/14/2007 09:57:24      |
| Data File  : C:\DX\DATA\CATIONS\07-338\09-14001.d06                        |
| Method     : C:\DX\METHOD\NH3LOW.MET                                       |
| ACI Address: 1  System: 1  Inject#: 6                  Detector:CDM-2      |
| Analyst    :                Column: CS12-SC,4mm STARTED 5-17-01            |
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4140	5Hz	0.00	13.80	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.80	Ammonium	54816150	1834137	0.636
	Totals	54816150	1834137	0.636



METCO ENVIRONMENTAL

Data Reprocessed On 09/14/2007 10:07:39

Sample Name:	R1 I2,3 SRU-C TAIL GAS
Data File :	C:\DX\DATA\CATIONS\07-338\09-13001.D21
Method :	C:\DX\METHOD\NH3LOW.MET
ACI Address: 1 System: 1 Inject#: 21	Detector:CDM-2
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01

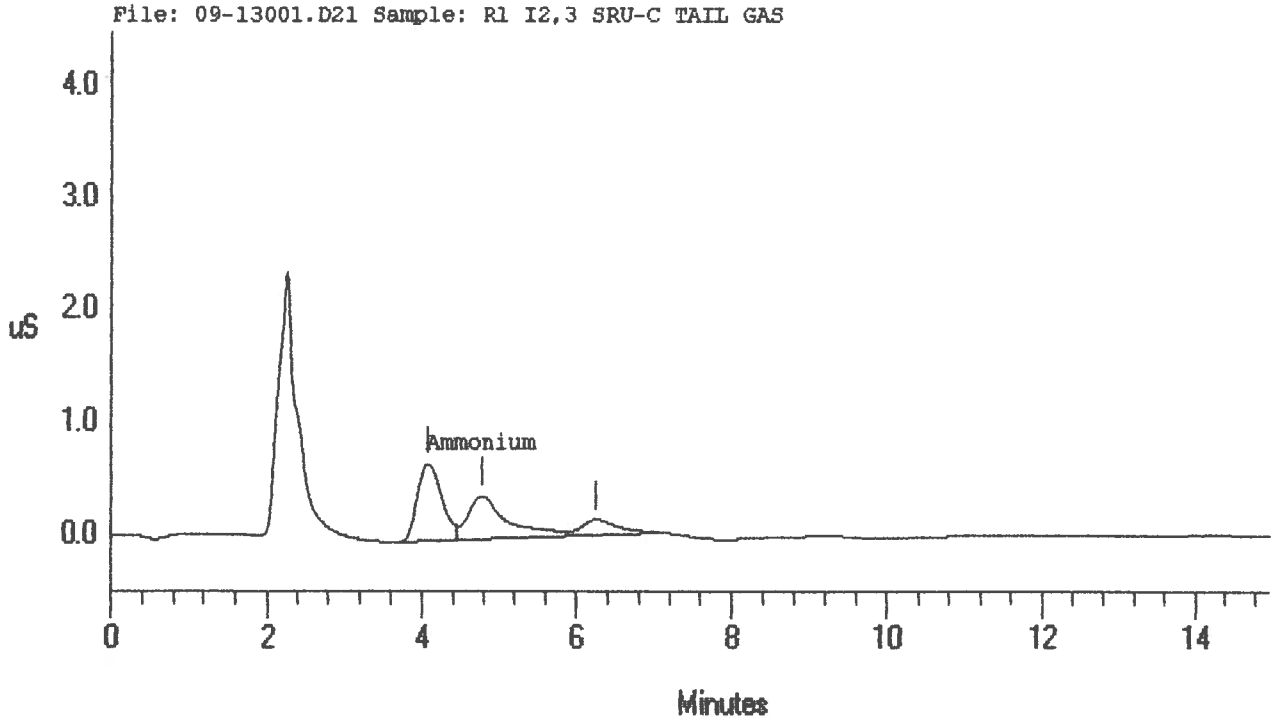
Date: 09/13/2007 21:14:59

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.77	Ammonium	13922324	387785	0.150
	Totals	13922324	387785	0.150

File: 09-13001.D21 Sample: R1 I2,3 SRU-C TAIL GAS



METCO ENVIRONMENTAL

Data Reprocessed On 09/14/2007 10:07:47

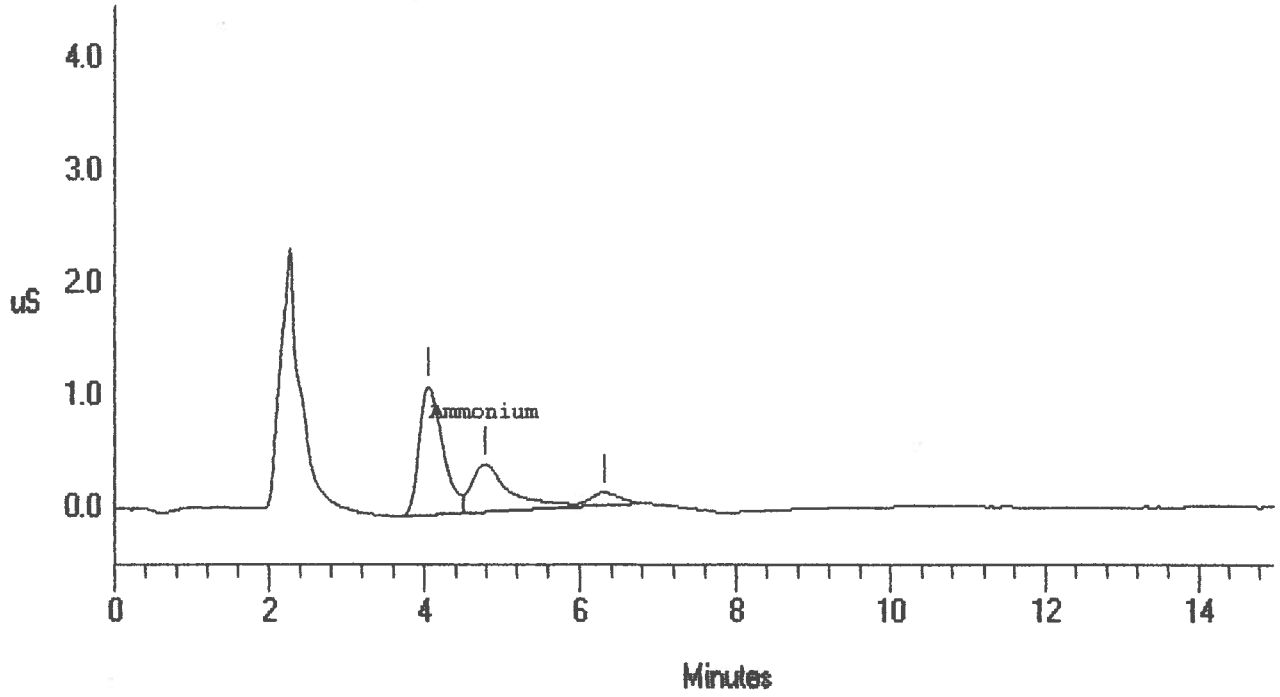
Sample Name: R1 I2,3 SRU-C TAIL GAS		Date: 09/13/2007 21:31:15	
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D22			
Method : C:\DX\METHOD\NH3LOW.MET			
ACI Address: 1 System: 1 Inject#: 22		Detector:CDM-2	
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.78	Ammonium	14435940	418906	0.156
	Totals	14435940	418906	0.156

File: 09-13001.D22 Sample: R1 I2,3 SRU-C TAIL GAS



METCO ENVIRONMENTAL

Data Reprocessed On 09/14/2007 10:08:06

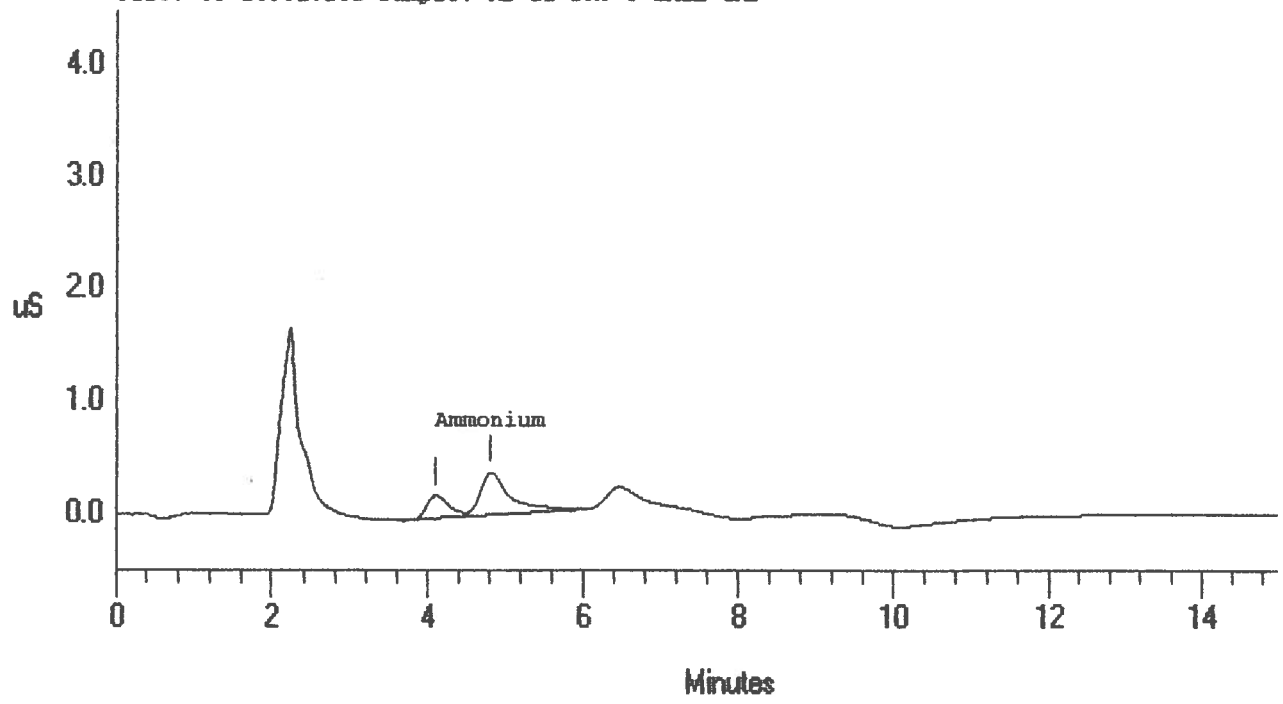
Sample Name: R2 I1 SRU-C TAIL GAS		Date: 09/14/2007 08:37:18	
Data File : C:\DX\DATA\CATIONS\07-338\09-14001.D01			
Method : C:\DX\METHOD\NH3LOW.MET			
ACI Address: 1 System: 1 Inject#: 1			Detector:CDM-2
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.82	Ammonium	10918189	380784	0.116
	Totals	10918189	380784	0.116

File: 09-14001.D01 Sample: R2 I1 SRU-C TAIL GAS



METCO ENVIRONMENTAL

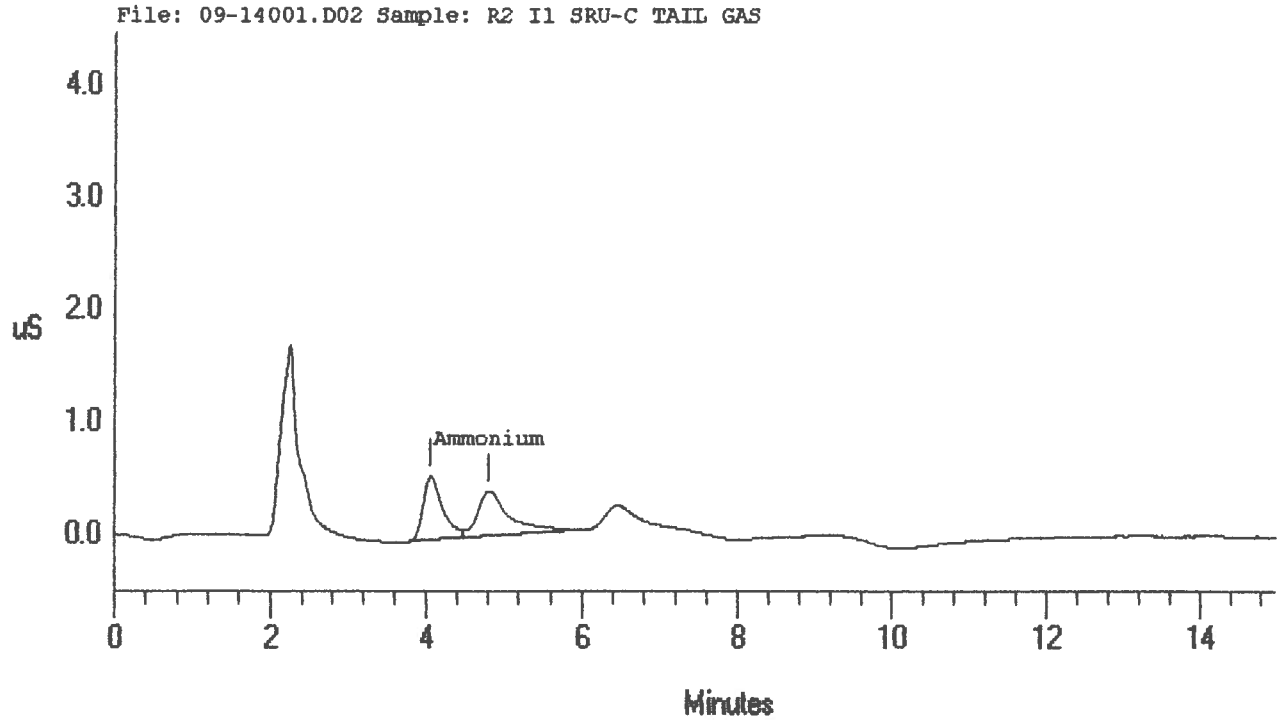
Data Reprocessed On 09/14/2007 10:08:14

Sample Name:	R2 I1 SRU-C TAIL GAS
Date:	09/14/2007 08:53:35
Data File :	C:\DX\DATA\CATIONS\07-338\09-14001.D02
Method :	C:\DX\METHOD\NH3LOW.MET
ACI Address: 1 System: 1 Inject#: 2	Detector:CDM-2
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.82	Ammonium	11331749	397891	0.121
	Totals	11331749	397891	0.121



METCO ENVIRONMENTAL

Data Reprocessed On 09/14/2007 10:59:42

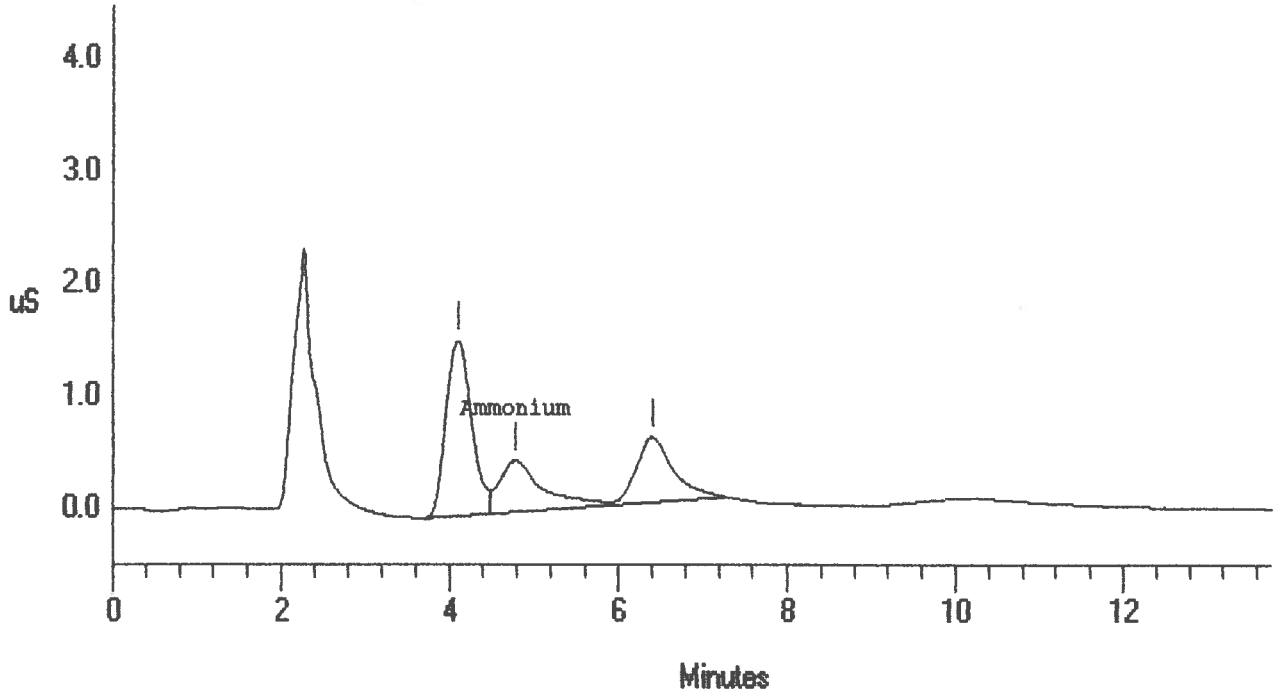
Sample Name:	R2 I2,3 SRU-C TAIL GAS
Data File :	C:\DX\DATA\CATIONS\07-338\09-14001.D08
Method :	C:\DX\METHOD\NH3LOW.MET
ACI Address: 1 System: 1 Inject#: 8	Detector:CDM-2
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01
Date:	09/14/2007 10:53:24

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4140	5Hz	0.00	13.80	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.78	Ammonium	16124687	452568	0.175
	Totals	16124687	452568	0.175

File: 09-14001.D08 Sample: R2 I2,3 SRU-C TAIL GAS



METCO ENVIRONMENTAL

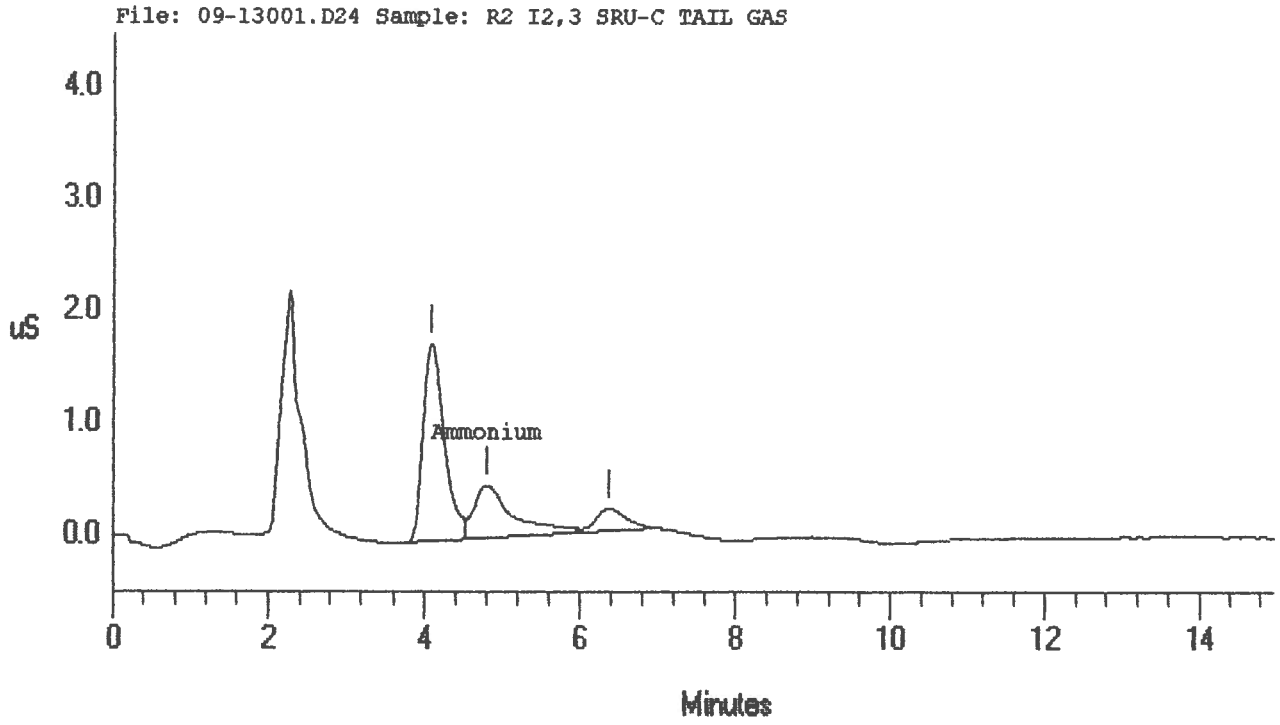
Data Reprocessed On 09/14/2007 11:00:09

Sample Name:	R2 I2,3 SRU-C TAIL GAS
Data File :	C:\DX\DATA\CATIONS\07-338\09-13001.D24
Method :	C:\DX\METHOD\NH3LOW.MET
ACI Address: 1 System: 1 Inject#: 24	Detector:CDM-2
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01
Date:	09/13/2007 22:03:49

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.80	Ammonium	15997968	462486	0.173
	Totals	15997968	462486	0.173



METCO ENVIRONMENTAL

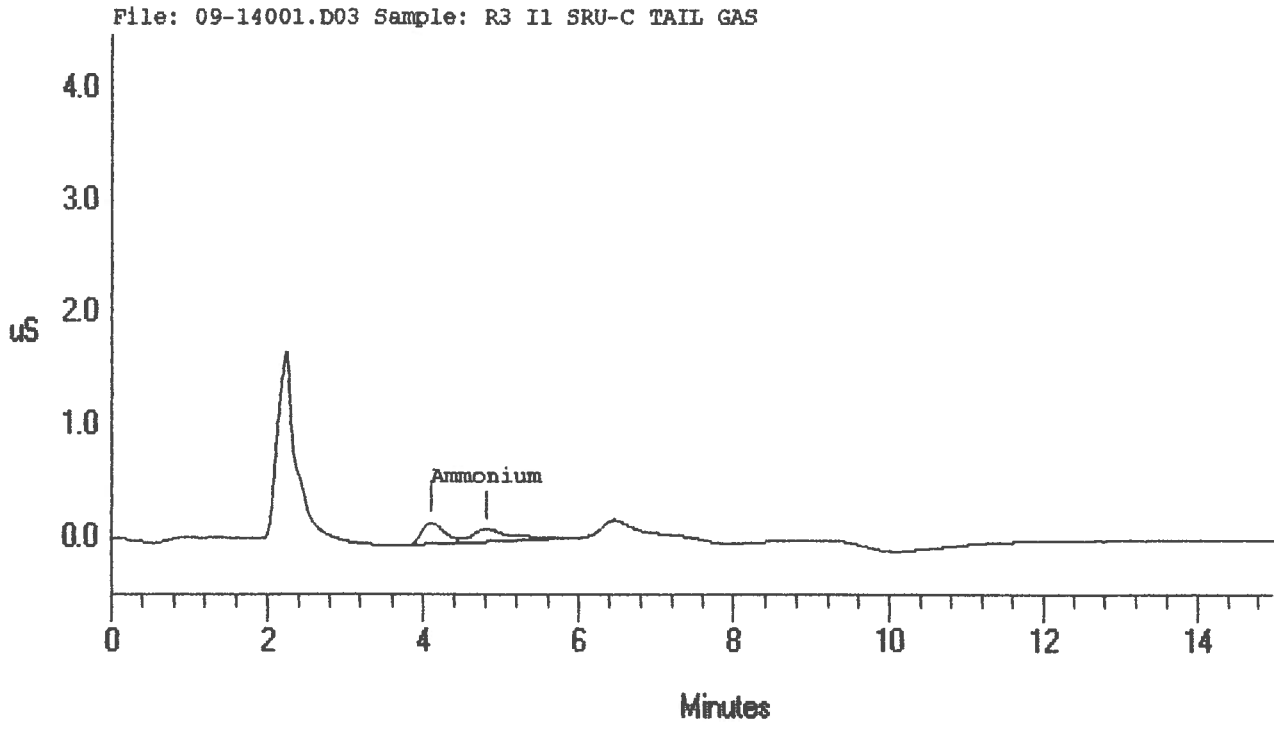
Data Reprocessed On 09/14/2007 10:27:23

Sample Name:	R3 I1 SRU-C TAIL GAS
Data File :	C:\DX\DATA\CATIONS\07-338\09-14001.D03
Method :	C:\DX\METHOD\NH3LOW.MET
ACI Address: 1 System: 1 Inject#: 3	Detector:CDM-2
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01
Date:	09/14/2007 09:09:51

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	4500	5Hz	0.00	15.00	1000	

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.82	Ammonium	3549899	109350	0.037
	Totals	3549899	109350	0.037



METCO ENVIRONMENTAL

Data Reprocessed On 09/14/2007 10:27:31

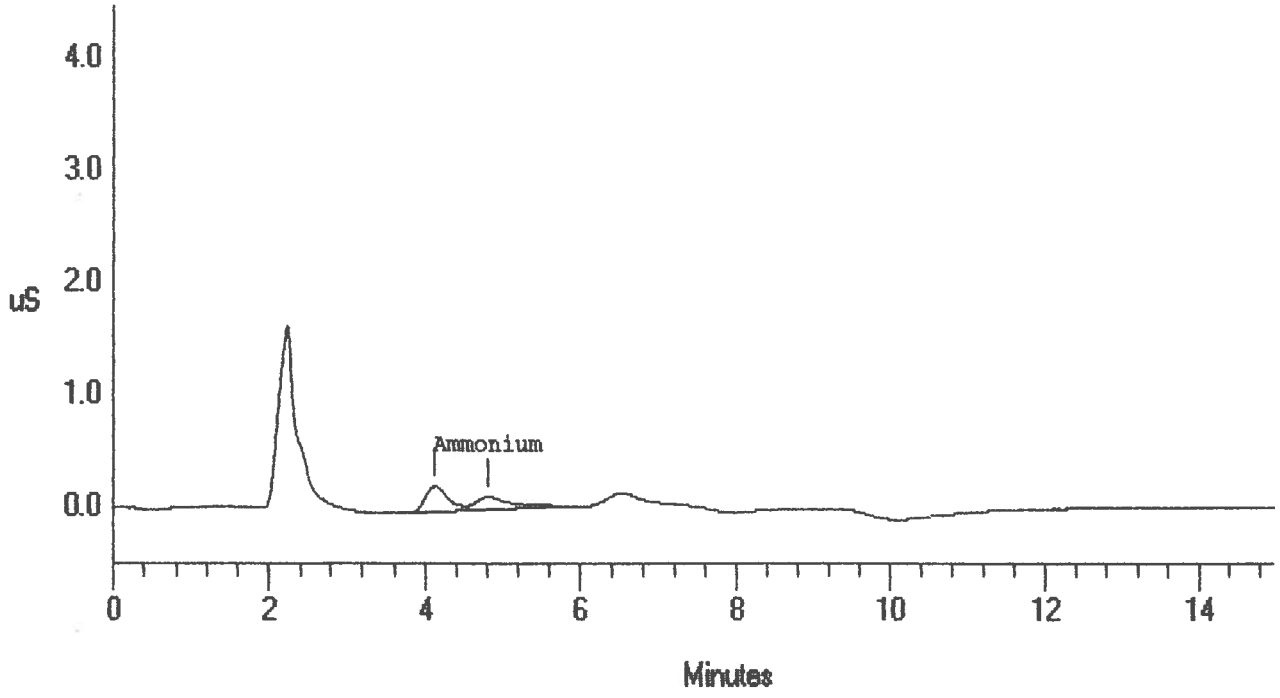
Sample Name: R3 I1 SRU-C TAIL GAS		Date: 09/14/2007 09:26:07	
Data File : C:\DX\DATA\CATIONS\07-338\09-14001.D04			
Method : C:\DX\METHOD\NH3LOW.MET			
ACI Address: 1 System: 1 Inject#: 4			Detector:CDM-2
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.82	Ammonium	3524758	112269	0.037
	Totals	3524758	112269	0.037

File: 09-14001.D04 Sample: R3 I1 SRU-C TAIL GAS



METCO ENVIRONMENTAL

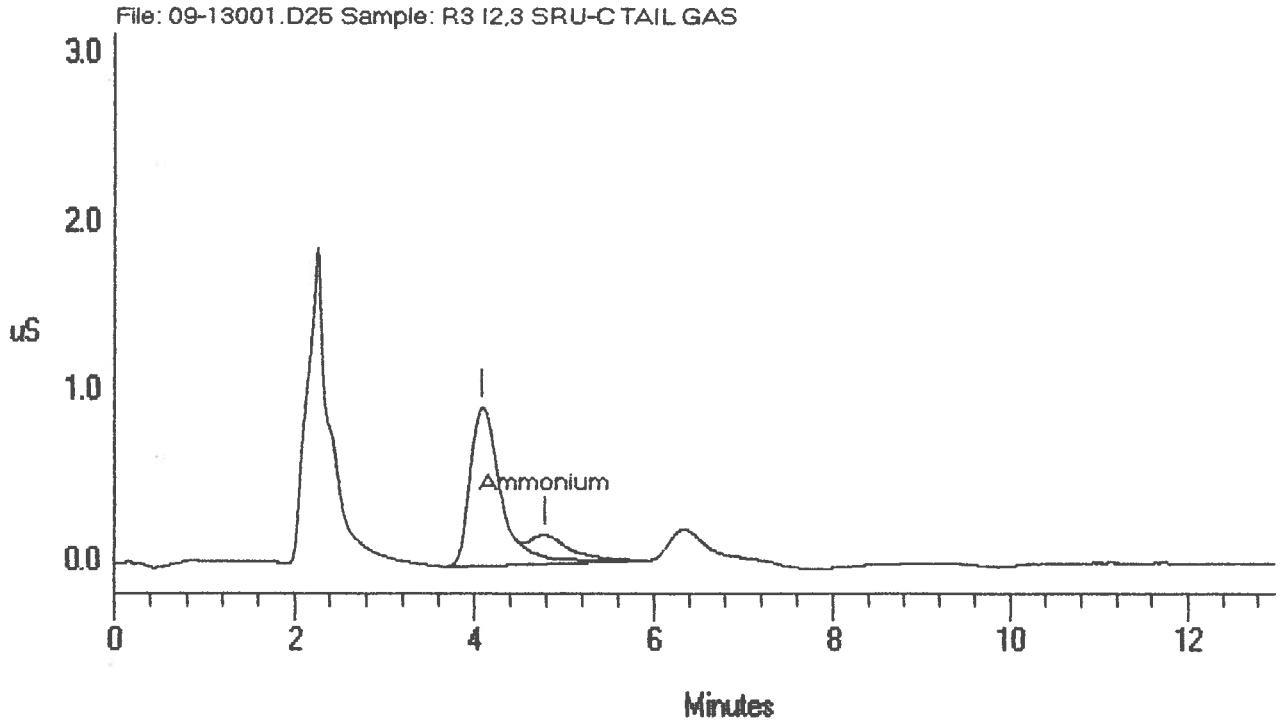
Data Reprocessed On 09/14/2007 10:27:44

Sample Name: R3 I2,3 SRU-C TAIL GAS		Date: 09/13/2007 22:17:48	
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D25			
Method : C:\DX\METHOD\NH3LOW.MET			
ACI Address: 1 System: 1 Inject#: 25		Detector:CDM-2	
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	3900	5Hz	0.00	13.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.78	Ammonium	3817067	125183	0.042
	Totals	3817067	125183	0.042



METCO ENVIRONMENTAL

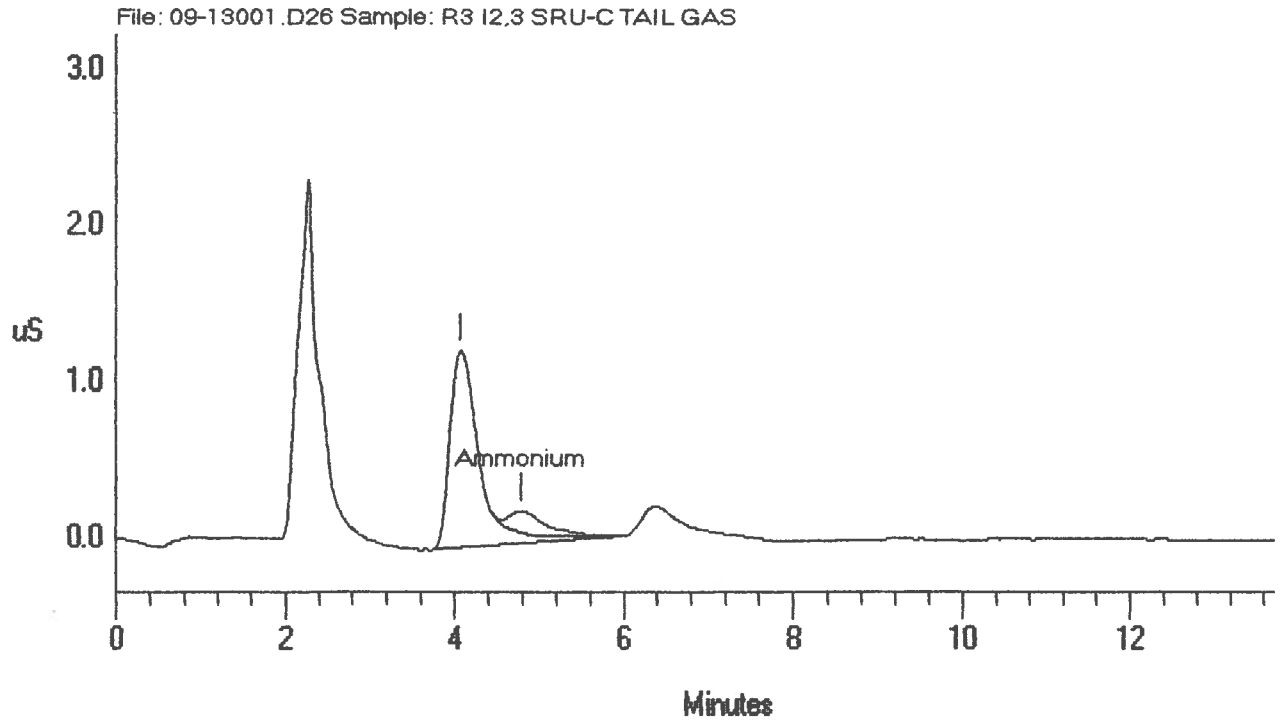
Data Reprocessed On 09/14/2007 10:28:24

Sample Name:	R3 I2,3 SRU-C TAIL GAS	Date:	09/13/2007 22:36:23
Data File :	C:\DX\DATA\CATIONS\07-338\09-13001.D26		
Method :	C:\DX\METHOD\NH3LOW.MET		
ACI Address: 1	System: 1 Inject#: 26	Detector:	CDM-2
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	4500	5Hz	0.00	13.75		1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.78	Ammonium	4481081	135663	0.047
	Totals	4481081	135663	0.047



METCO ENVIRONMENTAL

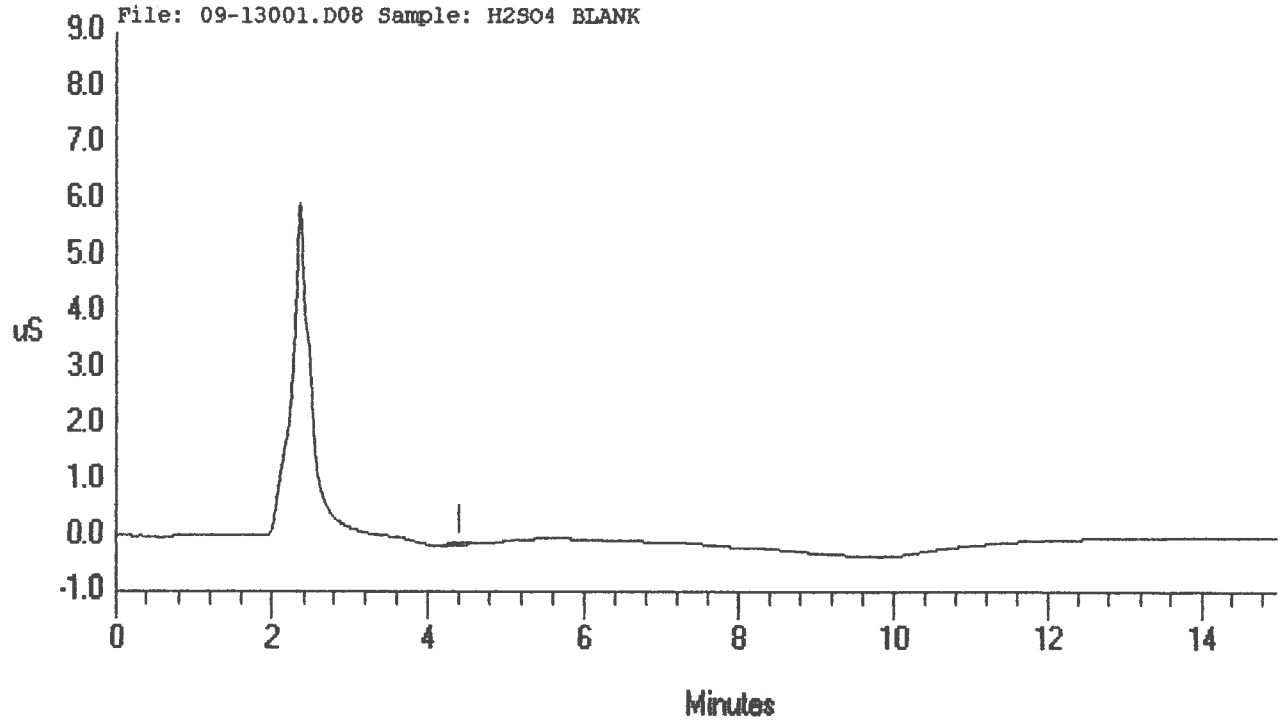
Data Reprocessed On 09/14/2007 10:29:03

Sample Name: H2SO4 BLANK	Date: 09/13/2007 17:43:19
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D08	
Method : C:\DX\METHOD\NH3LOW.MET	
ACI Address: 1 System: 1 Inject#: 8	Detector:CDM-2
Analyst : Column: CS12-SC,4mm STARTED 5-17-01	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
Totals		0	0	0.000



METCO ENVIRONMENTAL

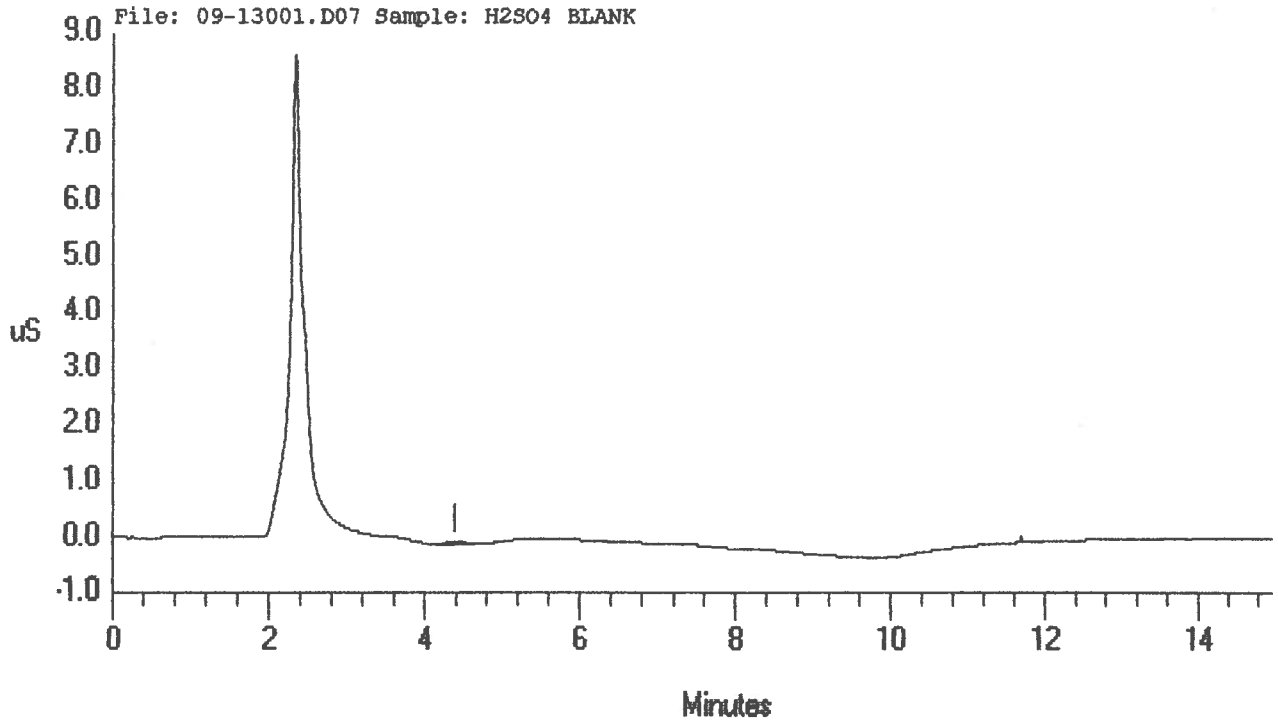
Data Reprocessed On 09/14/2007 10:28:56

Sample Name: H2SO4 BLANK		Date: 09/13/2007 17:27:02	
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D07			
Method : C:\DX\METHOD\NH3LOW.MET			
ACI Address: 1 System: 1 Inject#: 7		Detector:CDM-2	
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
Totals		0	0	0.000



METCO ENVIRONMENTAL

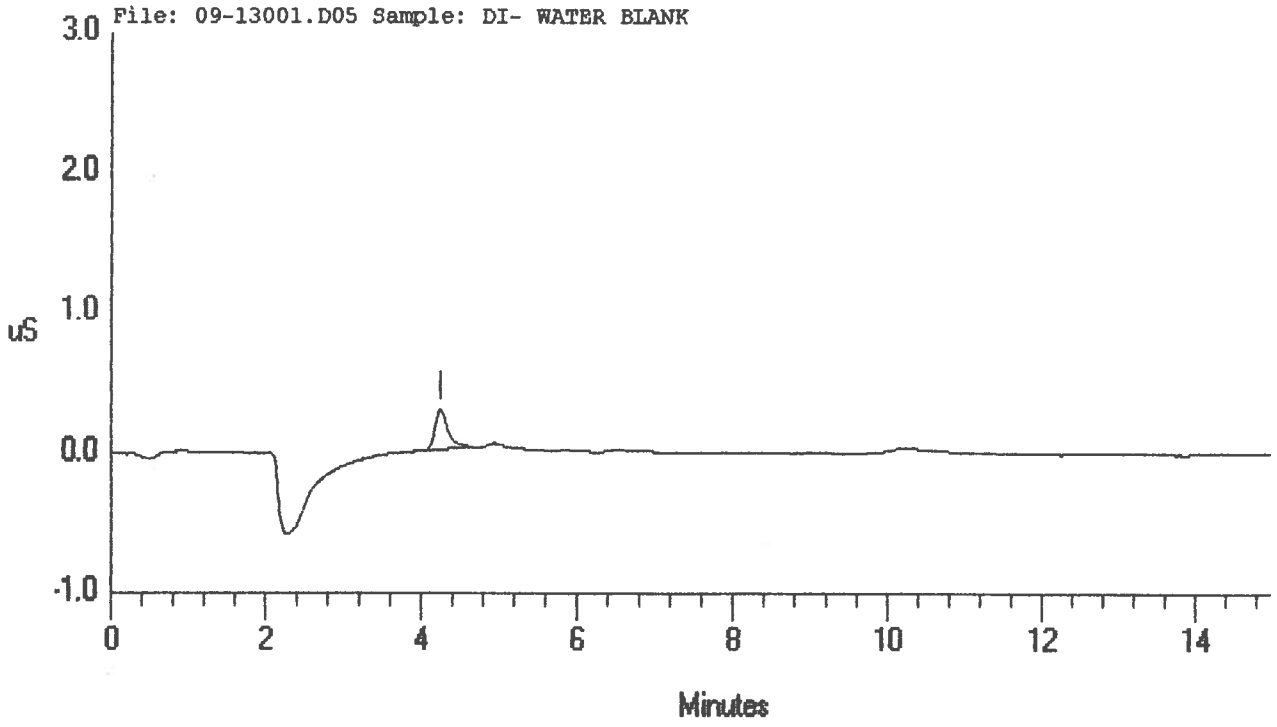
Data Reprocessed On 09/14/2007 10:28:39

Sample Name: DI- WATER BLANK		Date: 09/13/2007 16:54:30	
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D05			
Method : C:\DX\METHOD\NH3LOW.MET			
ACI Address: 1 System: 1 Inject#: 5		Detector:CDM-2	
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
Totals		0	0	0.000



METCO ENVIRONMENTAL

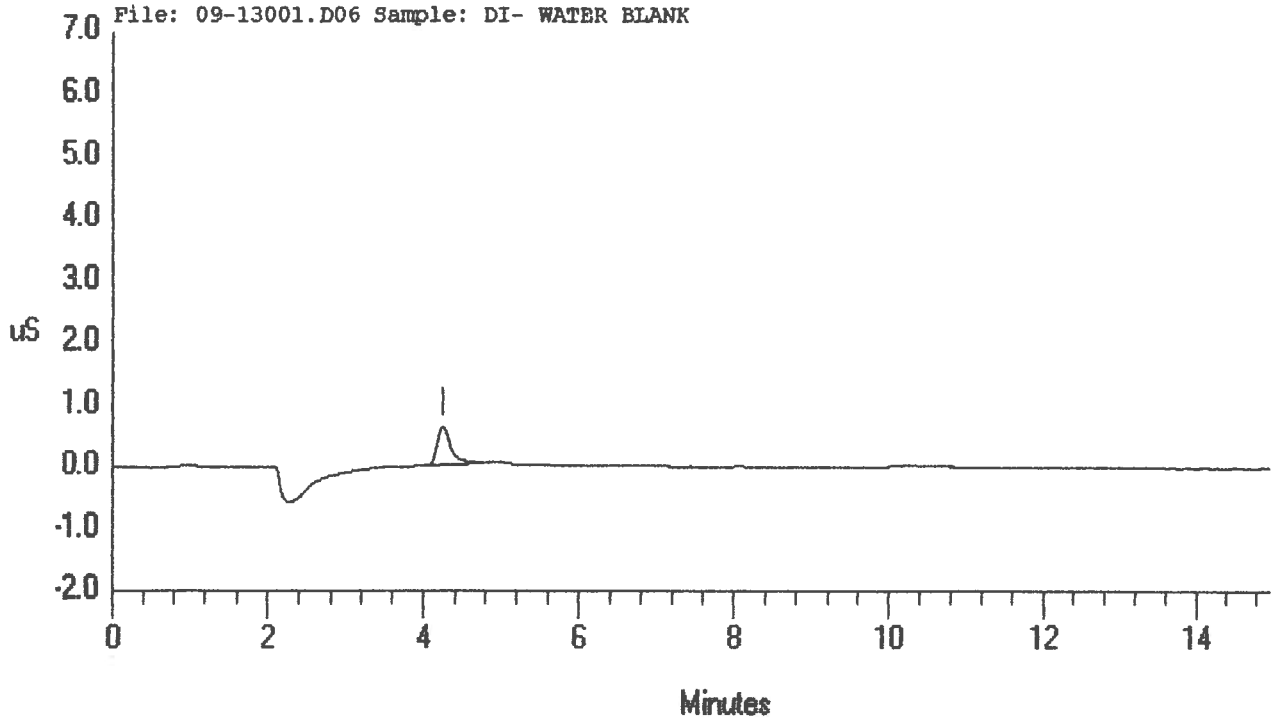
Data Reprocessed On 09/14/2007 10:28:48

Sample Name: DI- WATER BLANK		Date: 09/13/2007 17:10:46	
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D06			
Method : C:\DX\METHOD\NH3LOW.MET			
ACI Address: 1 System: 1 Inject#: 6		Detector:CDM-2	
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

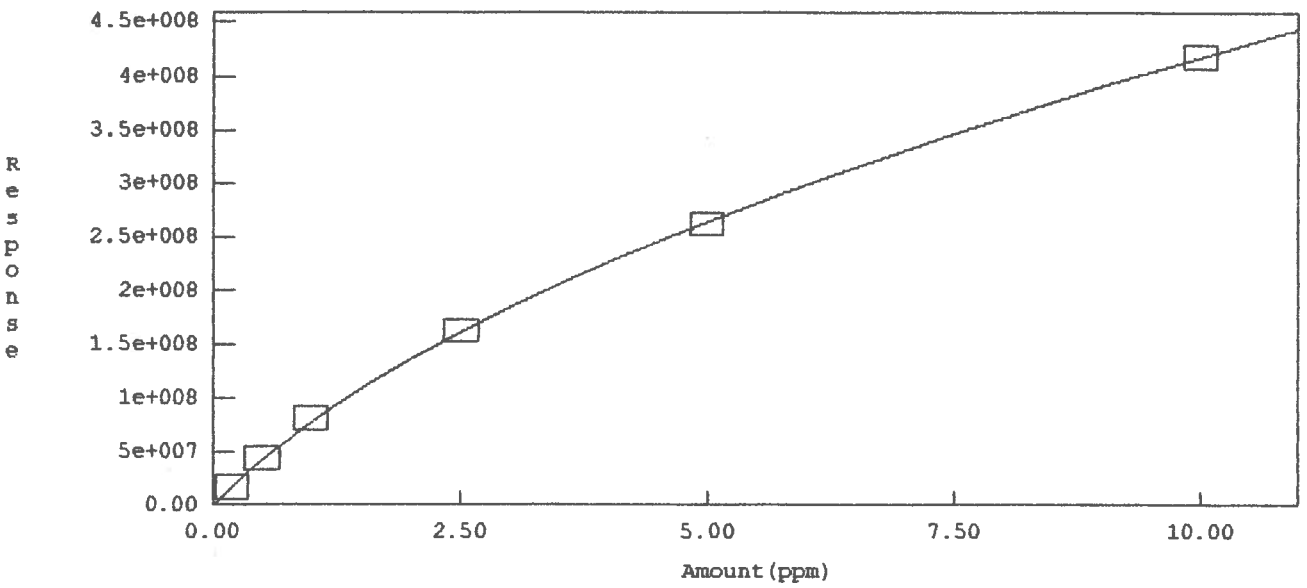
********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
Totals		0	0	0.000



Method: NH3LOW.MET - Last Updated: 23:20 on Thu, 13 Sep 2007

Component: Ammonium
Fit Type: Quadratic (Force Zero)
r^2 = 0.999904
Amt = (3.286169e-017 * Resp^2)+
(1.030917e-008 * Resp)+ 0.0000
Standardization: External
Calibration: Area



METCO ENVIRONMENTAL

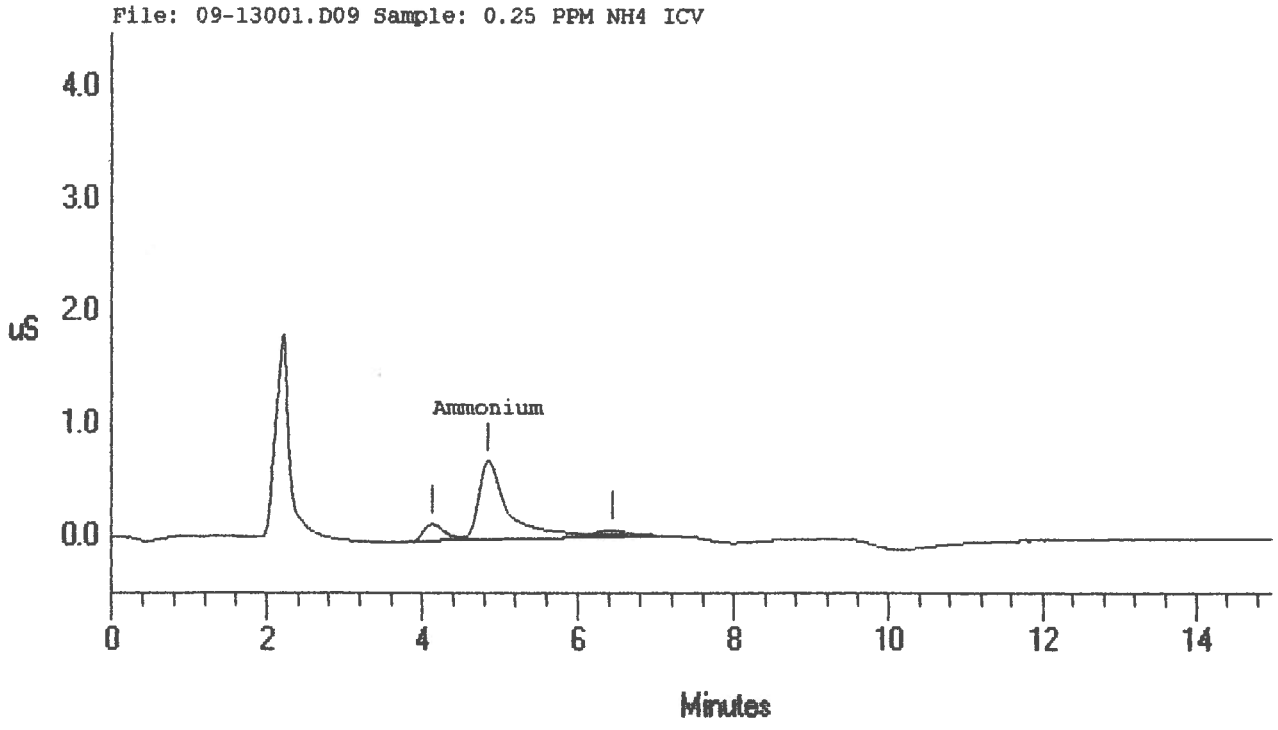
Data Reprocessed On 09/14/2007 10:29:12

Sample Name:	0.25 PPM NH4 ICV	Date:	09/13/2007 17:59:36
Data File :	C:\DX\DATA\CATIONS\07-338\09-13001.D09		
Method :	C:\DX\METHOD\NH3LOW.MET		
ACI Address: 1	System: 1 Inject#: 9	Detector:	CDM-2
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	4500	5Hz	0.00	15.00		1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.85	Ammonium	19026947	698615	0.208
	Totals	19026947	698615	0.208



METCO ENVIRONMENTAL

Data Reprocessed On 09/14/2007 10:29:21

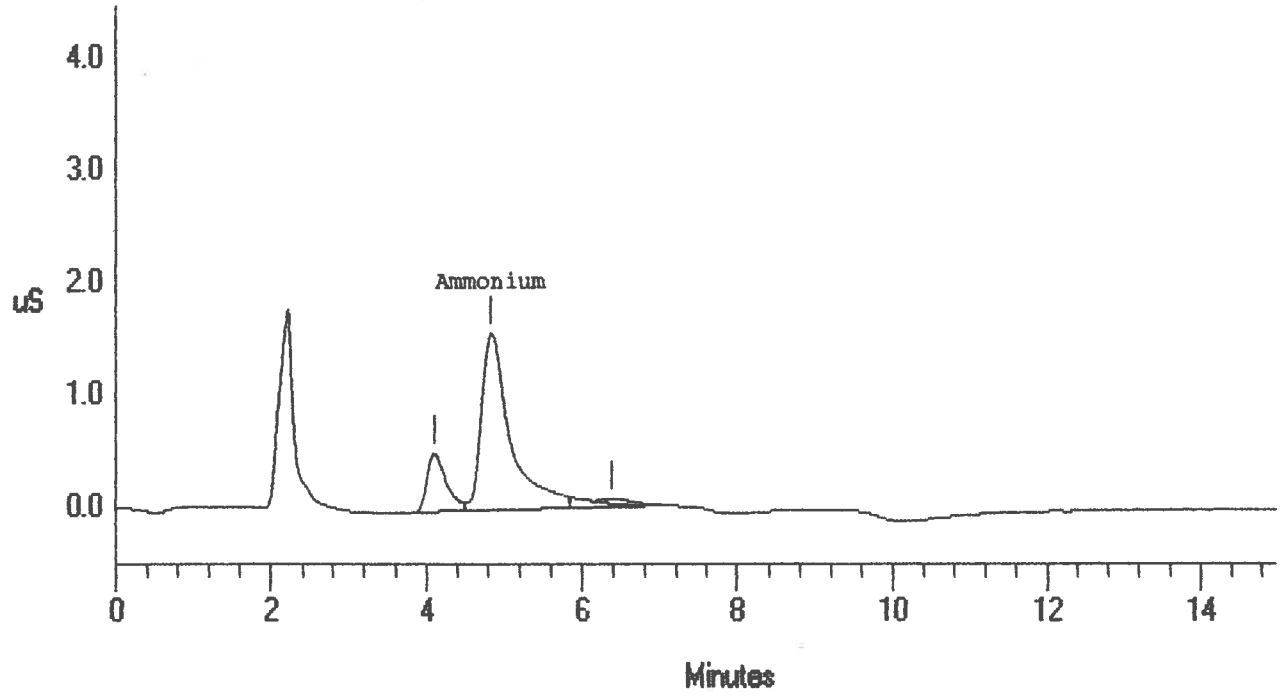
Sample Name: 0.5 PPM NH4 ICV		Date: 09/13/2007 18:15:53	
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D10			
Method : C:\DX\METHOD\NH3LOW.MET			
ACI Address: 1 System: 1 Inject#: 10		Detector:CDM-2	
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.83	Ammonium	43341297	1569752	0.509
	Totals	43341297	1569752	0.509

File: 09-13001.D10 Sample: 0.5 PPM NH4 ICV



METCO ENVIRONMENTAL

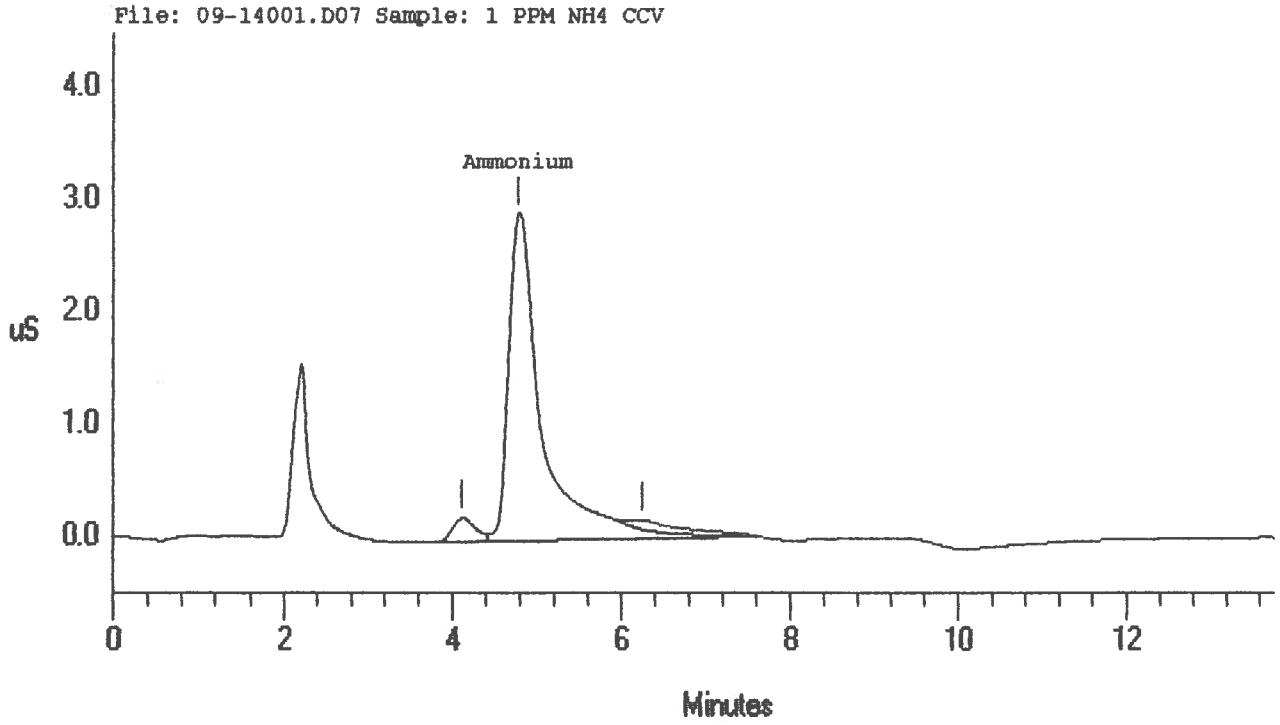
Data Reprocessed On 09/14/2007 10:29:33

Sample Name: 1 PPM NH4 CCV		Date: 09/14/2007 10:19:14	
Data File : C:\DX\DATA\CATIONS\07-338\09-14001.D07			
Method : C:\DX\METHOD\NH3LOW.MET			
ACI Address: 1 System: 1 Inject#: 7		Detector:CDM-2	
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4140	5Hz	0.00	13.80	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.78	Ammonium	80517599	2910997	1.043
	Totals	80517599	2910997	1.043



METCO ENVIRONMENTAL

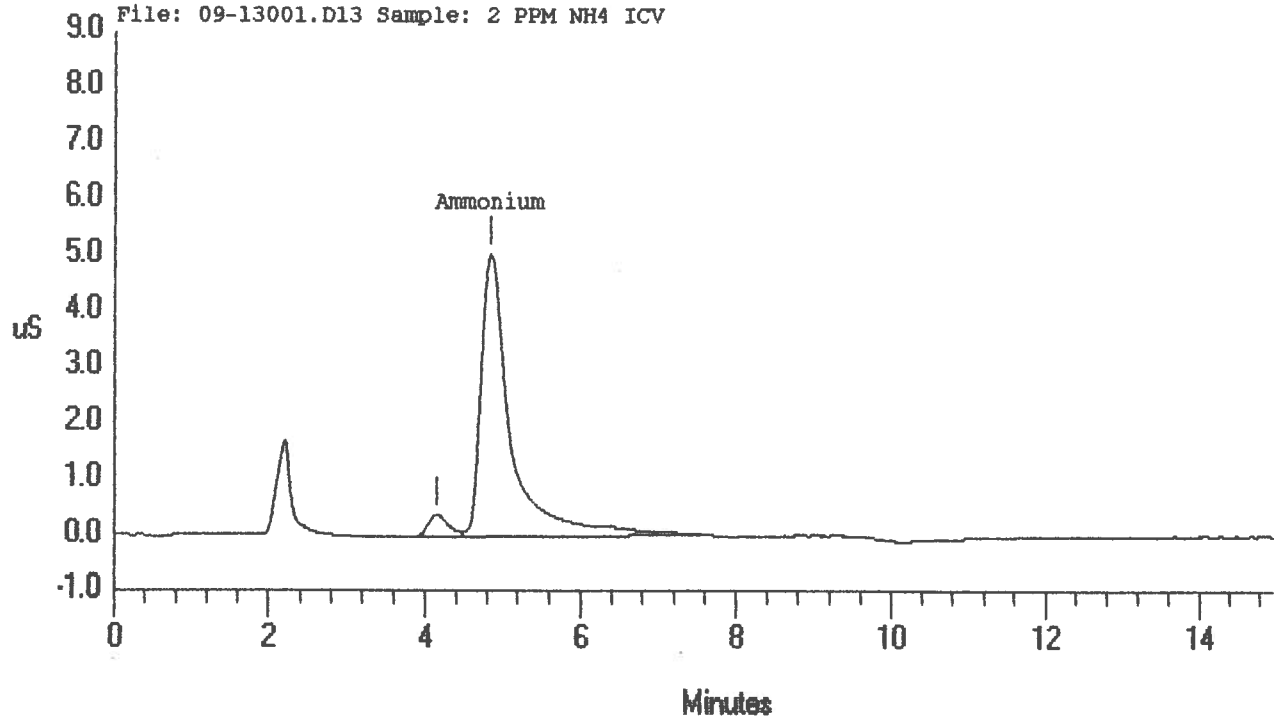
Data Reprocessed On 09/14/2007 10:29:46

Sample Name: 2 PPM NH4 ICV	Date: 09/13/2007 19:04:44
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D13	
Method : C:\DX\METHOD\NH3LOW.MET	
ACI Address: 1 System: 1 Inject#: 13	Detector:CDM-2
Analyst : Column: CS12-SC,4mm STARTED 5-17-01	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.83	Ammonium	136026391	5027928	2.010
	Totals	136026391	5027928	2.010



METCO ENVIRONMENTAL

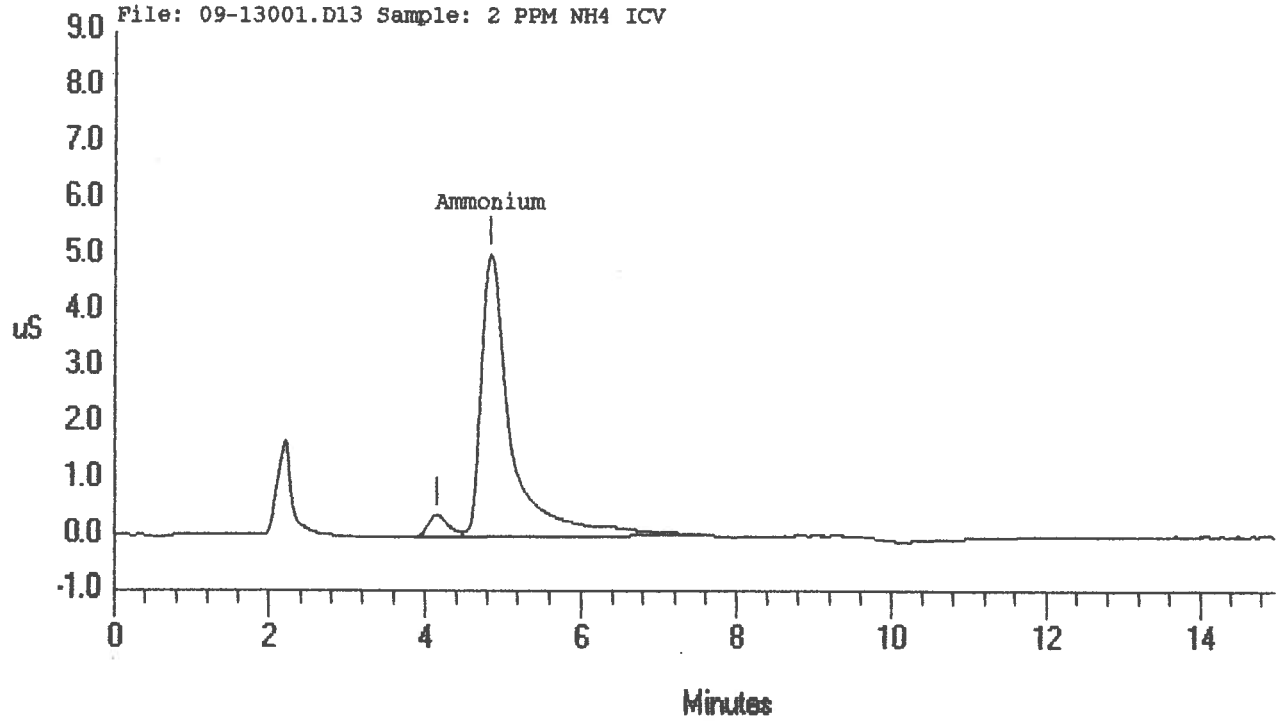
Data Reprocessed On 09/14/2007 10:29:46

Sample Name: 2 PPM NH4 ICV	Date: 09/13/2007 19:04:44
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D13	
Method : C:\DX\METHOD\NH3LOW.MET	
ACI Address: 1 System: 1 Inject#: 13	Detector:CDM-2
Analyst : Column: CS12-SC,4mm STARTED 5-17-01	

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.83	Ammonium	136026391	5027928	2.010
	Totals	136026391	5027928	2.010



METCO ENVIRONMENTAL

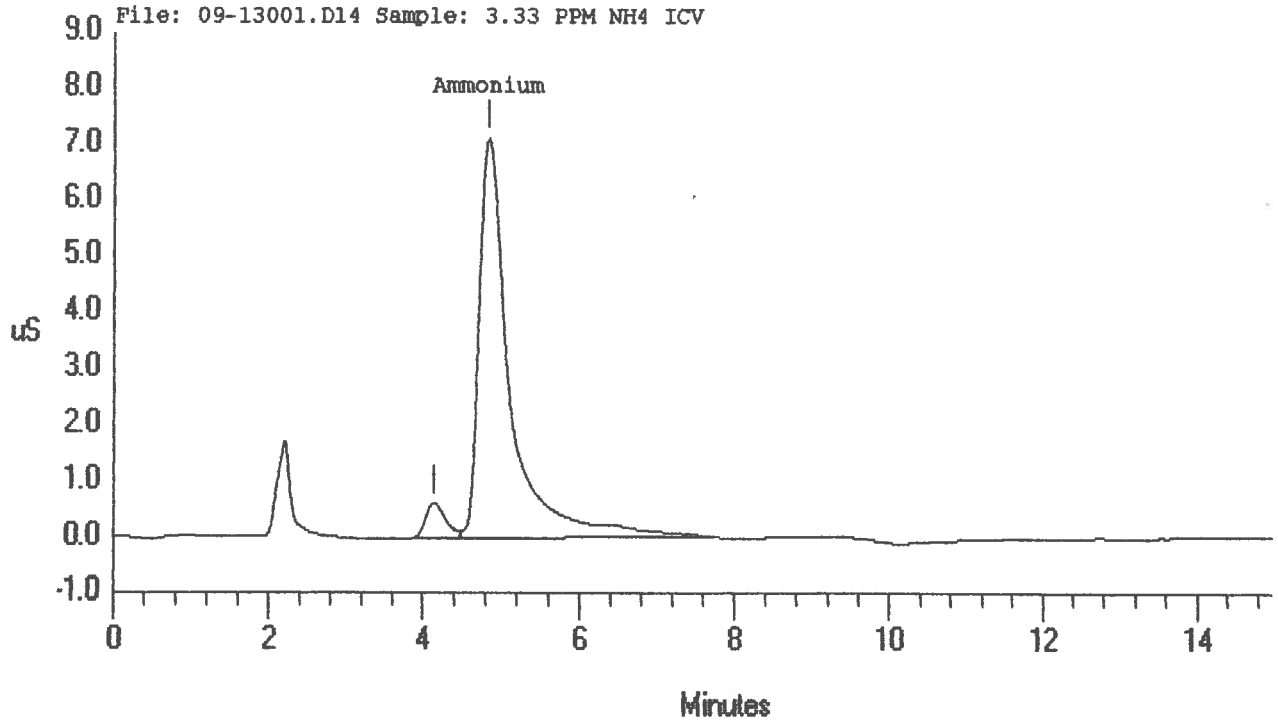
Data Reprocessed On 09/14/2007 10:29:54

Sample Name: 3.33 PPM NH4 ICV		Date: 09/13/2007 19:21:01	
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D14			
Method : C:\DX\METHOD\NH3LOW.MET			
ACI Address: 1 System: 1 Inject#: 14			Detector:CDM-2
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.83	Ammonium	198957185	7123014	3.352
	Totals	198957185	7123014	3.352



METCO ENVIRONMENTAL

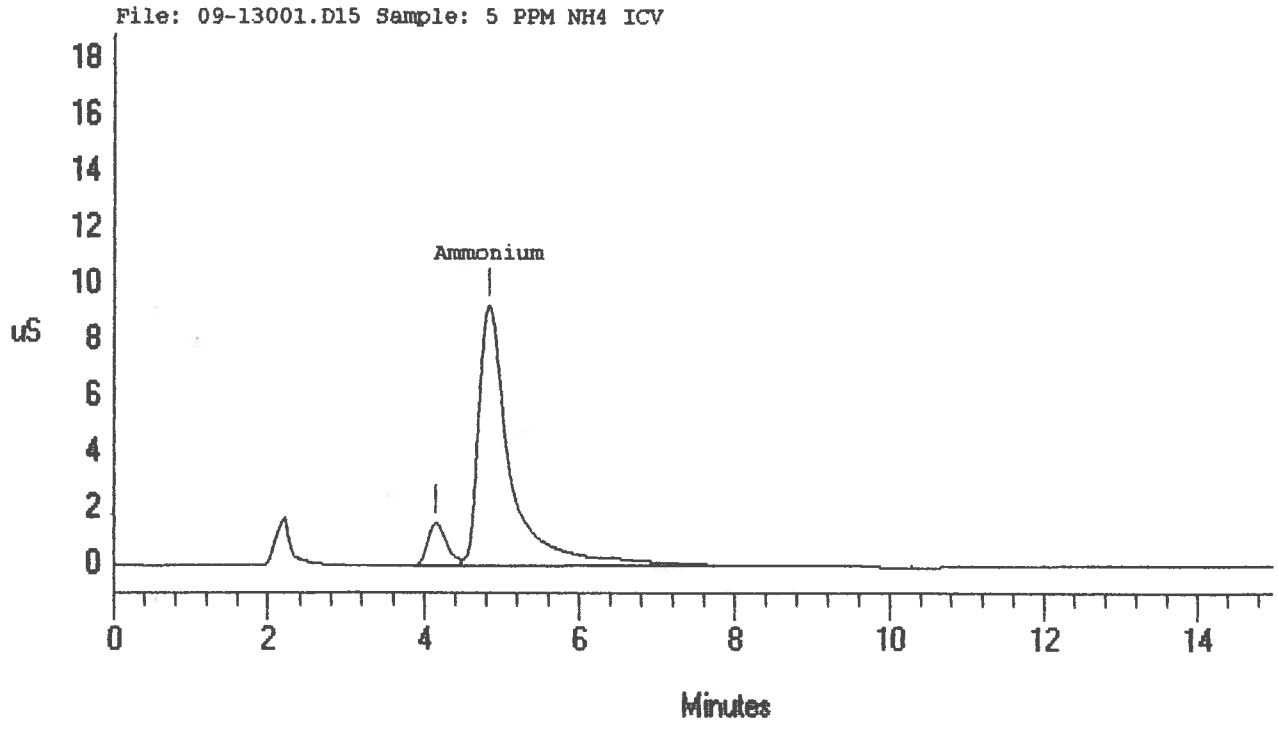
Data Reprocessed On 09/14/2007 10:30:01

Sample Name: 5 PPM NH4 ICV		Date: 09/13/2007 19:37:18	
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D15			
Method : C:\DX\METHOD\NH3LOW.MET			
ACI Address: 1 System: 1 Inject#: 15		Detector:CDM-2	
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.83	Ammonium	264389429	9274667	5.023
	Totals	264389429	9274667	5.023



METCO ENVIRONMENTAL

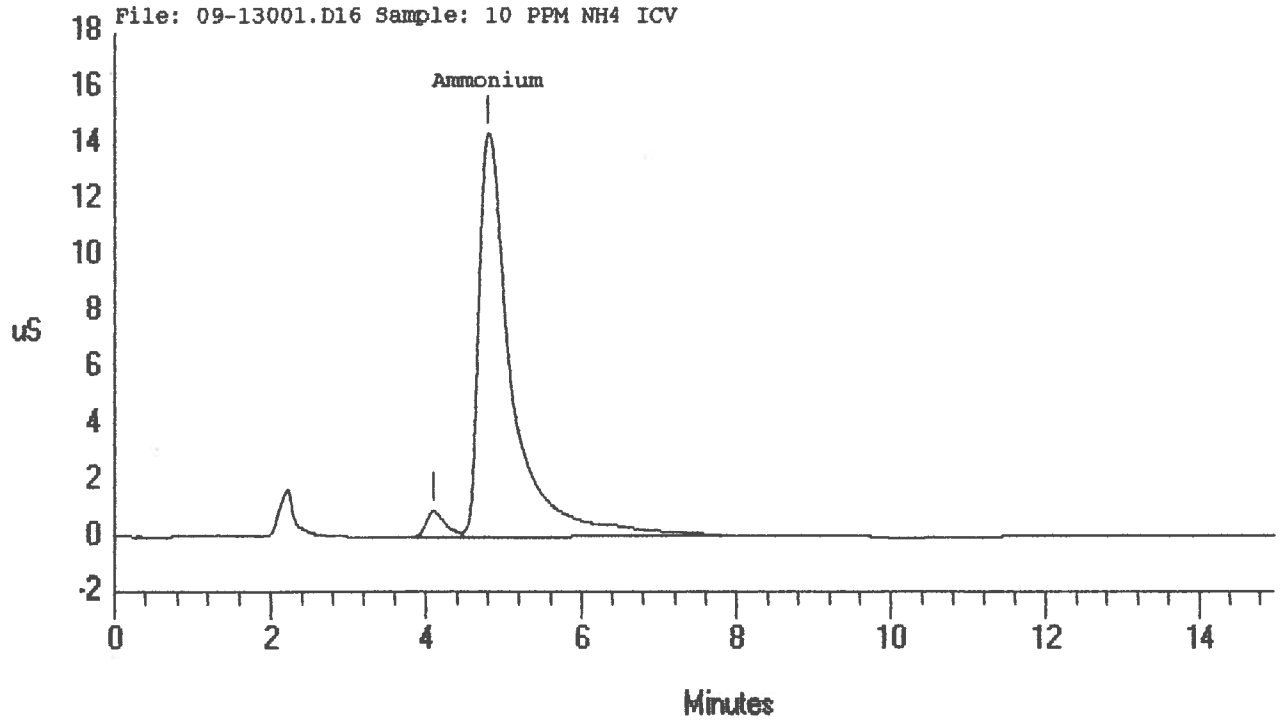
Data Reprocessed On 09/14/2007 10:30:08

Sample Name: 10 PPM NH4 ICV		Date: 09/13/2007 19:53:35	
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D16			
Method : C:\DX\METHOD\NH3LOW.MET			
ACI Address: 1 System: 1 Inject#: 16			Detector:CDM-2
Analyst :	Column: CS12-SC,4mm STARTBD 5-17-01		

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.82	Ammonium	424535395	14390748	10.299
	Totals	424535395	14390748	10.299



METCO ENVIRONMENTAL

Data Reprocessed On 09/14/2007 10:30:17

Sample Name: 5 PPM NH4 CHK STD	Date: 09/13/2007 20:26:09
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D18	
Method : C:\DX\METHOD\NH3LOW.MET	
ACI Address: 1 System: 1 Inject#: 18	Detector:CDM-2
Analyst : Column: CS12-SC,4mm STARTED 5-17-01	

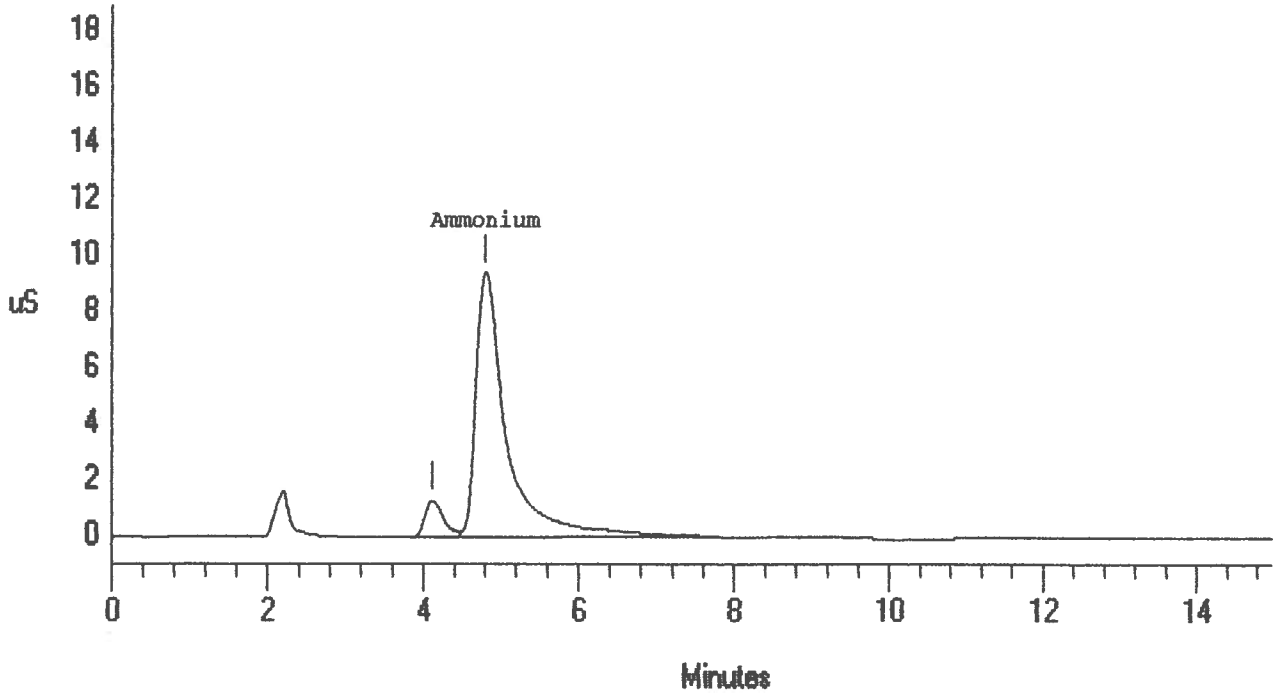
Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.80	Ammonium	264782665	9435985	5.034
	Totals	264782665	9435985	5.034

100.7%

File: 09-13001.D18 Sample: 5 PPM NH4 CHK STD



METCO ENVIRONMENTAL

Data Reprocessed On 09/14/2007 10:30:23

Sample Name: 5 PPM NH4 CHK STD	Date: 09/13/2007 20:42:26
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D19	
Method : C:\DX\METHOD\NH3LOW.MET	
ACI Address: 1 System: 1 Inject#: 19	Detector:CDM-2
Analyst : Column: CS12-SC,4mm STARTED 5-17-01	

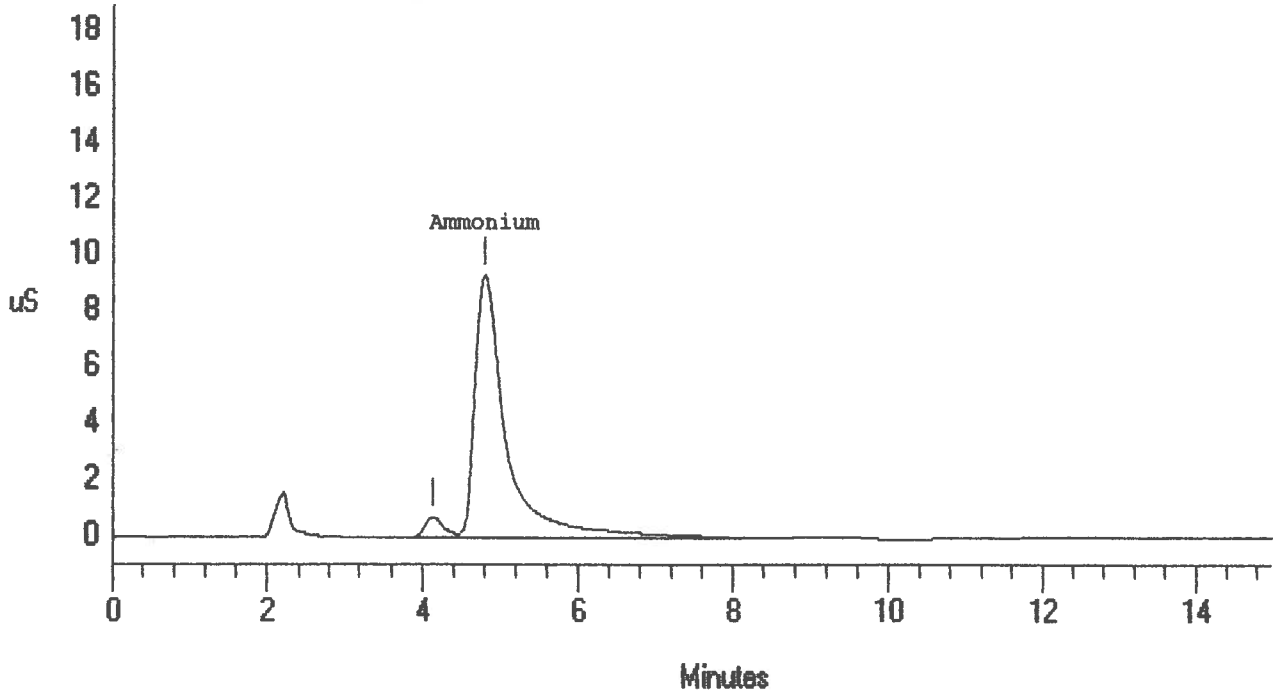
Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.80	Ammonium	263920502	9323536	5.010
	Totals	263920502	9323536	5.010

100.2%

File: 09-13001.D19 Sample: 5 PPM NH4 CHK STD



METCO ENVIRONMENTAL

Data Reprocessed On 09/14/2007 10:30:36

Sample Name: 5 PPM NH4 CHK STD/CCV		Date: 09/13/2007 23:25:02	
Data File : C:\DX\DATA\CATIONS\07-338\09-13001.D29			
Method : C:\DX\METHOD\NH3LOW.MET			
ACI Address: 1 System: 1 Inject#: 29		Detector:CDM-2	
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01		

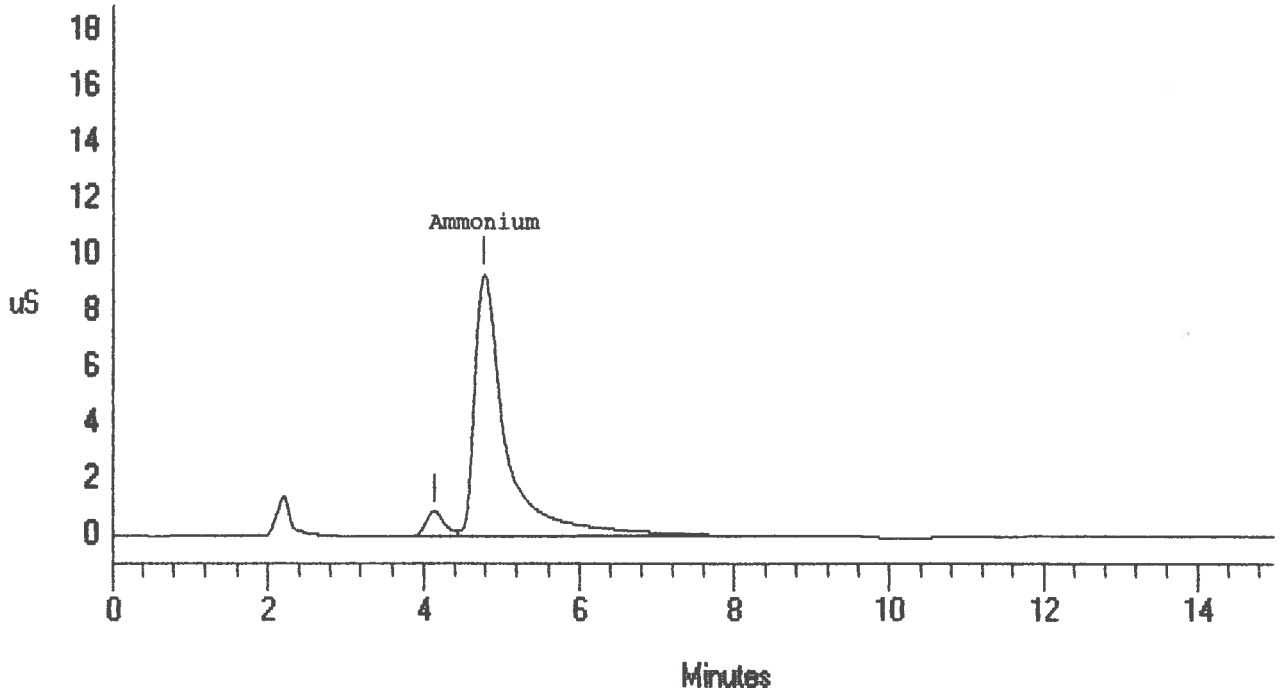
Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.78	Ammonium	264725924	9316921	5.032
	Totals	264725924	9316921	5.032

100.6 %

File: 09-13001.D29 Sample: 5 PPM NH4 CHK STD/CCV



METCO ENVIRONMENTAL

Data Reprocessed On 09/14/2007 10:30:43

Sample Name:	5 PPM NH4 CHK STD/CCV
Data File :	C:\DX\DATA\CATIONS\07-338\09-13001.D30
Method :	C:\DX\METHOD\NH3LOW.MET
ACI Address:	1 System: 1 Inject#: 30
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01

Date: 09/13/2007 23:41:31

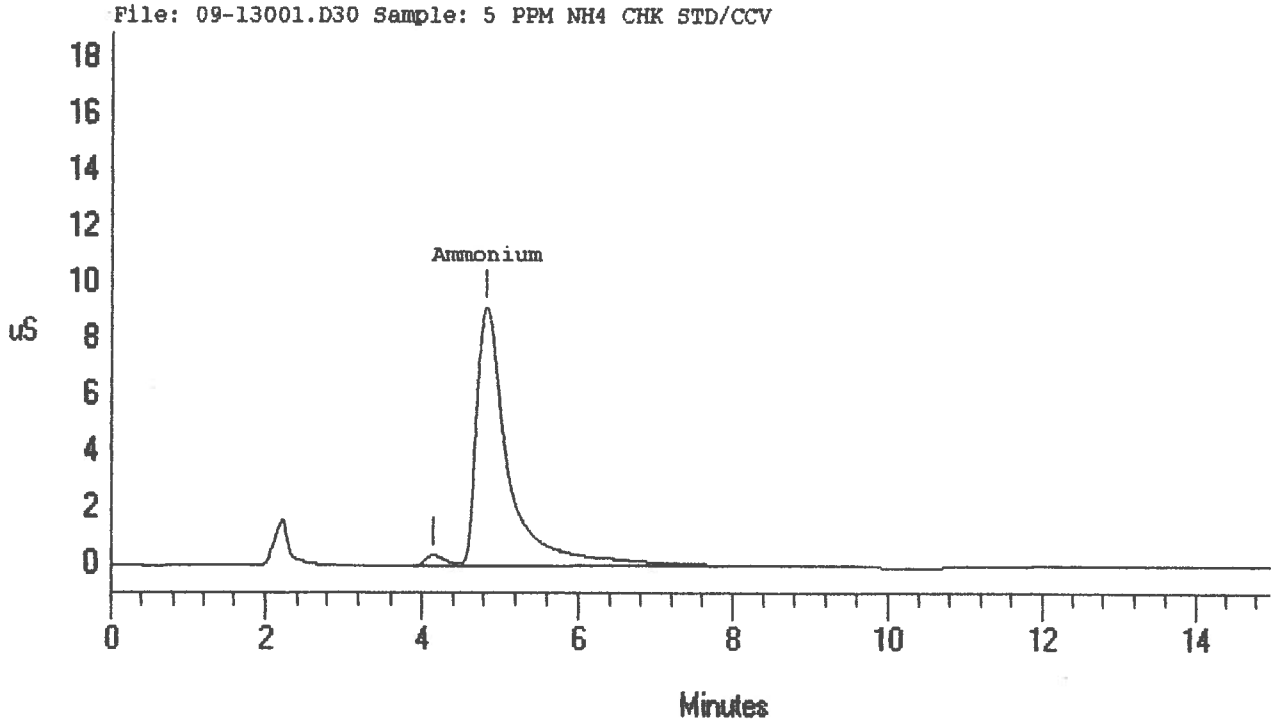
Detector:CDM-2

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4500	5Hz	0.00	15.00	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.83	Ammonium	263012816	9212391	4.985
	Totals	263012816	9212391	4.985

99.7%



METCO ENVIRONMENTAL

Data Reprocessed On 09/14/2007 11:26:09

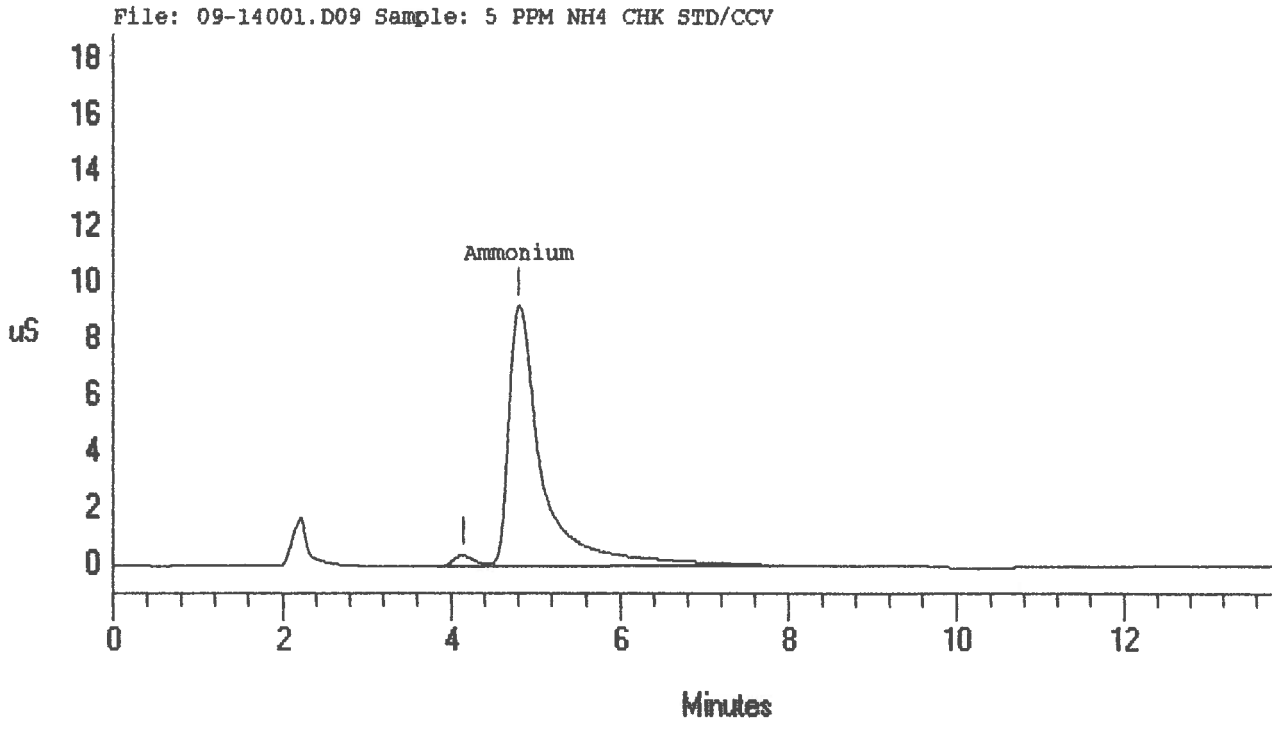
Sample Name:	5 PPM NH4 CHK STD/CCV
Data File :	C:\DX\DATA\CATIONS\07-336\09-14001.D09
Method :	C:\DX\METHOD\NH3LOW.MET
ACI Address: 1 System: 1 Inject#: 9	Detector:CDM-2
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01
Date:	09/14/2007 11:17:00

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4140	5Hz	0.00	13.80	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
4.80	Ammonium	263494674	9239786	4.998
	Totals	263494674	9239786	4.998

100.0%



METCO ENVIRONMENTAL

Data Reprocessed On 09/14/2007 10:28:28

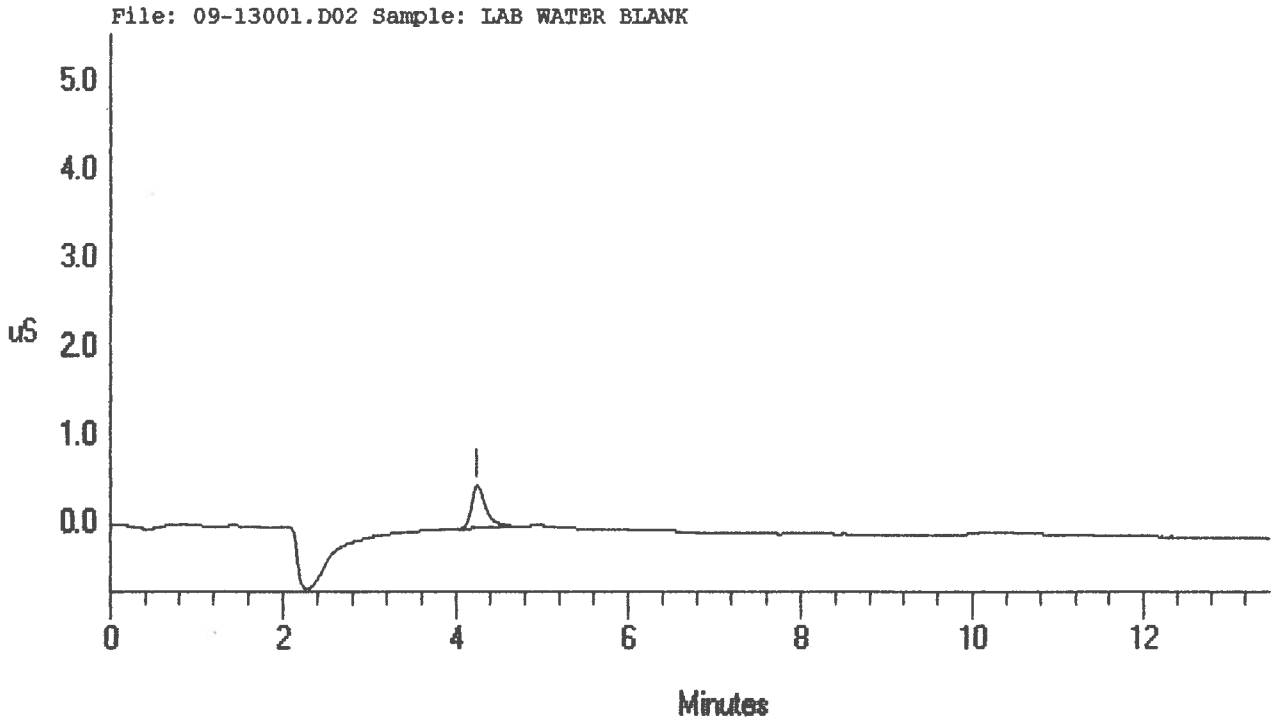
Sample Name:	LAB WATER BLANK
Data File :	C:\DX\DATA\CATIONS\07-338\09-13001.D02
Method :	C:\DX\METHOD\NH3LOW.MET
ACI Address: 1 System: 1 Inject#: 2	Detector:CDM-2
Analyst :	Column: CS12-SC,4mm STARTED 5-17-01

Date: 09/13/2007 14:20:57

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	4050	5Hz	0.00	13.50	1000

********** Component Report: Components Found **********

Ret Time	Component Name	Area	Height	Concentration ppm
Totals		0	0	0.000



Narrative

METCO Environmental Narrative
Valero
Houston, TX
SRU C-Train Tail Gas Stack
(07-338)

Introduction

The procedure utilized for this analysis can be found in detail in EPA Method 18 (40 CFR, Part 60, Appendix A). In this analytical procedure the straight chain hydrocarbons, methane and ethane were examined in Tedlar bags using a gas chromatograph/flame ionization detector (GC/FID) system.

Procedure

Before samples were analyzed, an analytical system blank and a three-point calibration curve were performed. The calibration was performed using certified gas standards ranging in concentration from 15 to 100 ppm. Each day a daily calibration and an analytical system blank were performed. The daily calibration was required to be within 5% of detector response. If this value were exceeded, a second three-point calibration would be performed and verified before any sample analysis. The relative percent difference for the retention and area counts of the calibration injections was calculated.

Each sample was analyzed by pumping the gas from a Tedlar bag that had been previously shown to be free from possible hydrocarbon contaminants, into a sample loop at a sampling rate greater than 20 ml/minute in order to purge the sample loop. A sample was then mechanically injected into the gas chromatographic column for separation of its components and analysis utilizing a flame ionization detector. The results are summarized in the summary section and the chromatograms are presented in the data section.

Results and Discussion

Methane was detected in the samples. No ethane was detected in the samples.

Summary of Results

07-338

Valero
Houston, TX
SRU C-Train Tail Gas Stack

Compound	Run 1	Run 2	Run 3
Methane	1.97	2.00	1.98
Ethane	<0.04	<0.04	<0.04

Results

METCO Environmental

Sample Results

Valero
Houston, TX 07-338
SRU C-Train Tail Gas Stack
Compound
Methane

Limit of Detection (LOD) 0.28 ppm

Sample ID	Analysis Method	Ret Time 1	Ret Time 2	Ret Time 3	Conc 1	Conc 2	Conc 3	Avg Conc	% Dif Con	Dil Fac	Adj Conc
Run 1	EPA M18	1.60	1.60	1.60	1.97	1.96	1.98	1.97	0.34%	1.000	1.97
Run 2	EPA M18	1.60	1.60	1.60	2.01	1.99	2.01	2.00	0.44%	1.000	2.00
Run 3	EPA M18	1.60	1.60	1.60	2.16	1.88	1.90	1.98	6.06%	1.000	1.98

METCO Environmental

Sample Results

Valero
Houston, TX 07-338
SRU C-Train Tail Gas Stack
Compound
Ethane

Limit of Detection (LOD) 0.04 ppm

Sample ID	Analysis Method	Ret Time 1	Ret Time 2	Ret Time 3	Conc 1	Conc 2	Conc 3	Avg Conc	% Dif Con	Dil Fac	Adj Conc
Run 1	EPA M18	NA	NA	NA	0.04	0.04	0.04	0.04	0.00%	1.000	0.04
Run 2	EPA M18	NA	NA	NA	0.04	0.04	0.04	0.04	0.00%	1.000	0.04
Run 3	EPA M18	NA	NA	NA	0.04	0.04	0.04	0.04	0.00%	1.000	0.04

Sample Custody

METCO Environmental ©

CHAIN OF CUSTODY RECORD

Job No.: 07-338
Job Name: Valero
Location: Houston, TX
Unit: C-Train SRU Tail Gas Stack

Project Manager: M. Blicer
Project Supervisor: M. Bass

Method: 18

SAMPLE I.D.	DATE	TIME	# OF CONT.	Absorb. Solution	Initial Vol.	SAMPLE ANALYSIS REQUIRED: PART	HCL	CL2	SO2	SO3	Methane	Ethane	Recovered by	REMARKS (Specific Compounds/Methods)
Run 1	9-5-07 ~~8/31/07~~	1050	1								✓	✓	R. Williams	
Run 2	↓	1335	1								✓	✓	↓	
Run 3	↓	1615	1								✓	✓	↓	

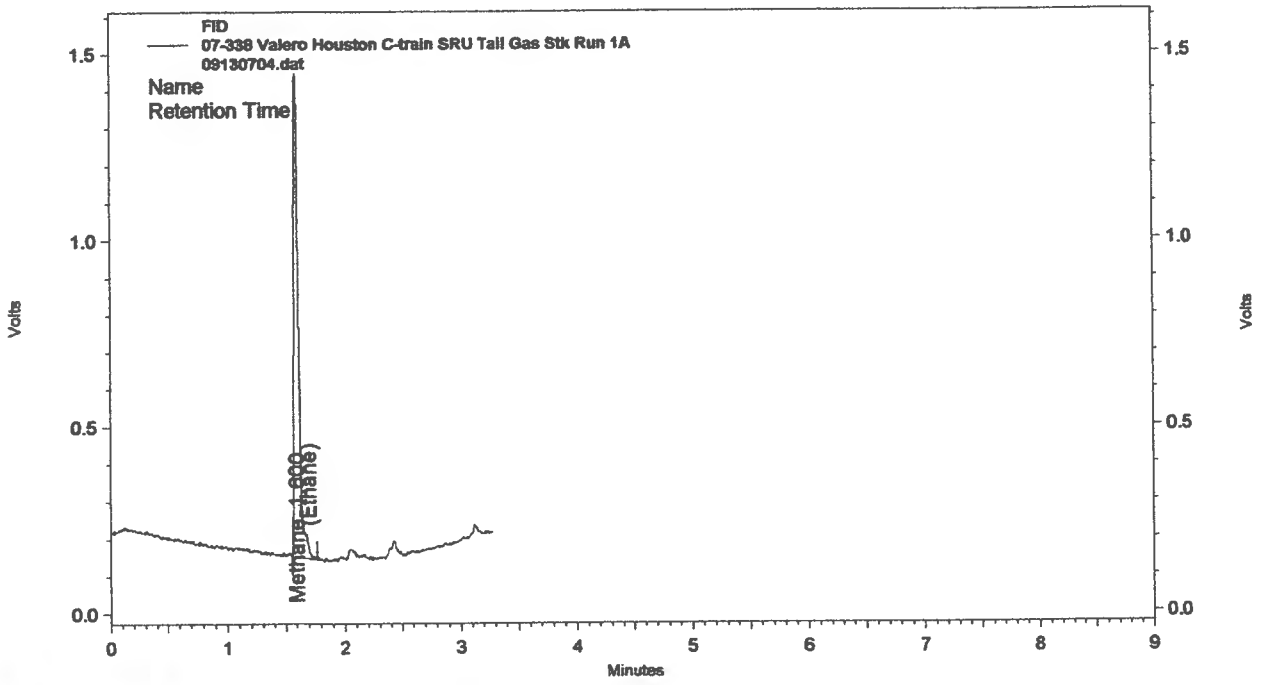
Samples Received for Transport/Shipment by:	Ryan Williams	Date:	9-5-07	Time: 1620
Samples Received for Transport/Shipment by:		Date:		Time:
Samples Received for Transport/Shipment by:		Date:		Time:
Samples Shipped Via:		Date:		Time:
Samples Received at Laboratory by:	Mark Shrum	Date:	9.11.07	Time: 1420
Samples Analyzed by:	Robert Adams	Date:	9-11-07	Time: 1430
Samples Analyzed by:		Date:		Time:
Data Checked by:		Date:		Time:

VERSION 2
10 MARCH 2003

Sample Chromatograms

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth090607.met
Method: 9/13/2007 9:32:34 AM
Acquired: 9/13/2007 9:29:13 AM
Printed: 1

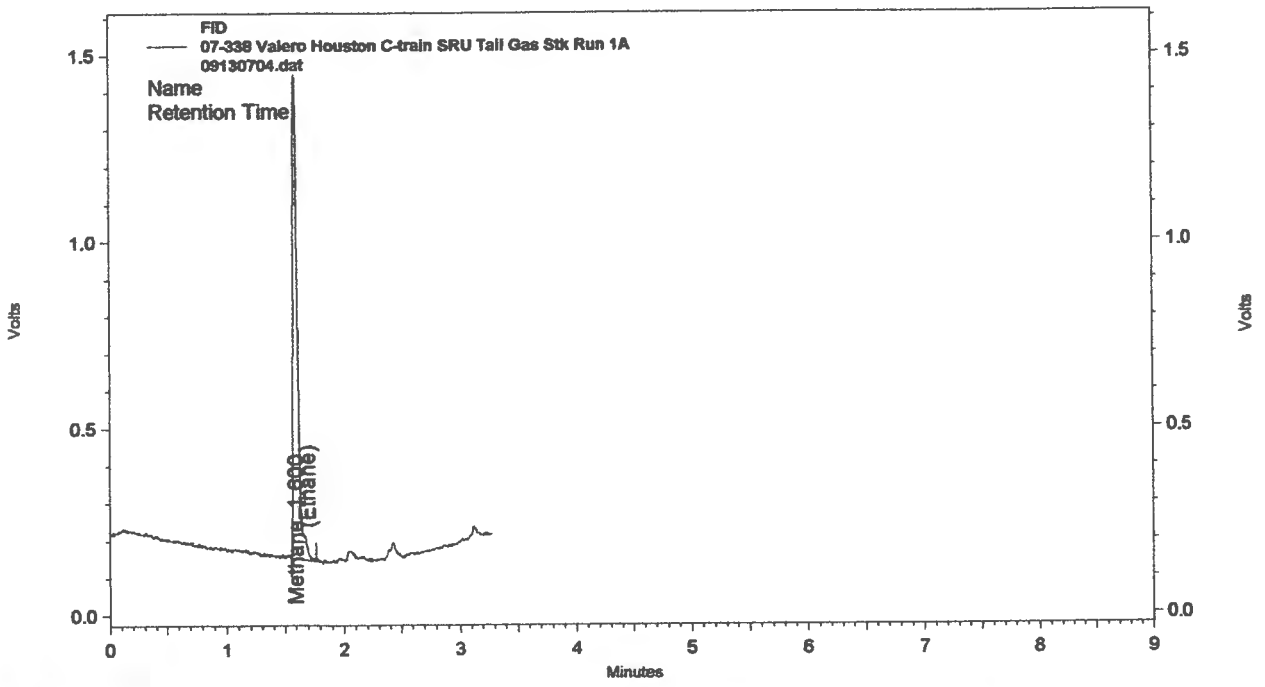


FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.600	1298	3657	1.97
Totals		1298	3657	1.97

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth090607.met
Method: 9/13/2007 9:32:34 AM
Acquired: 9/13/2007 9:29:13 AM
Printed: 1

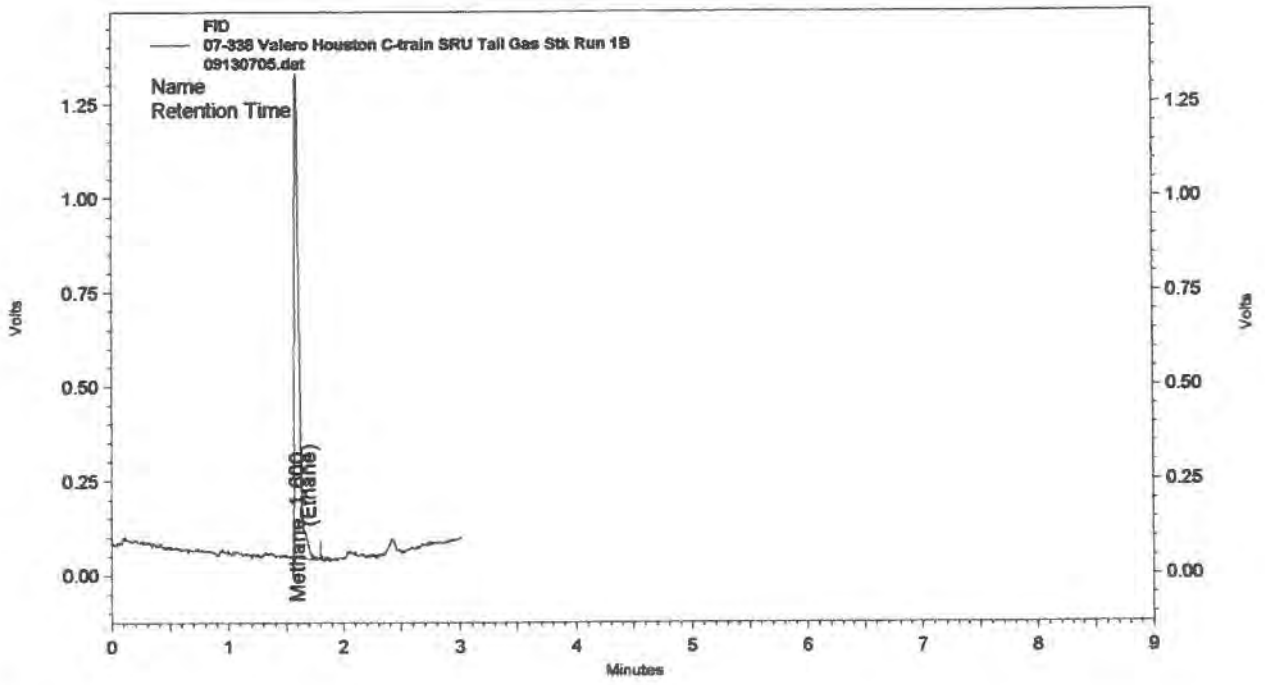


FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.600	1298	3657	1.97
Totals		1298	3657	1.97

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth090607.met
Method: 9/13/2007 9:38:25 AM
Acquired: 9/13/2007 9:35:19 AM
Printed: 1

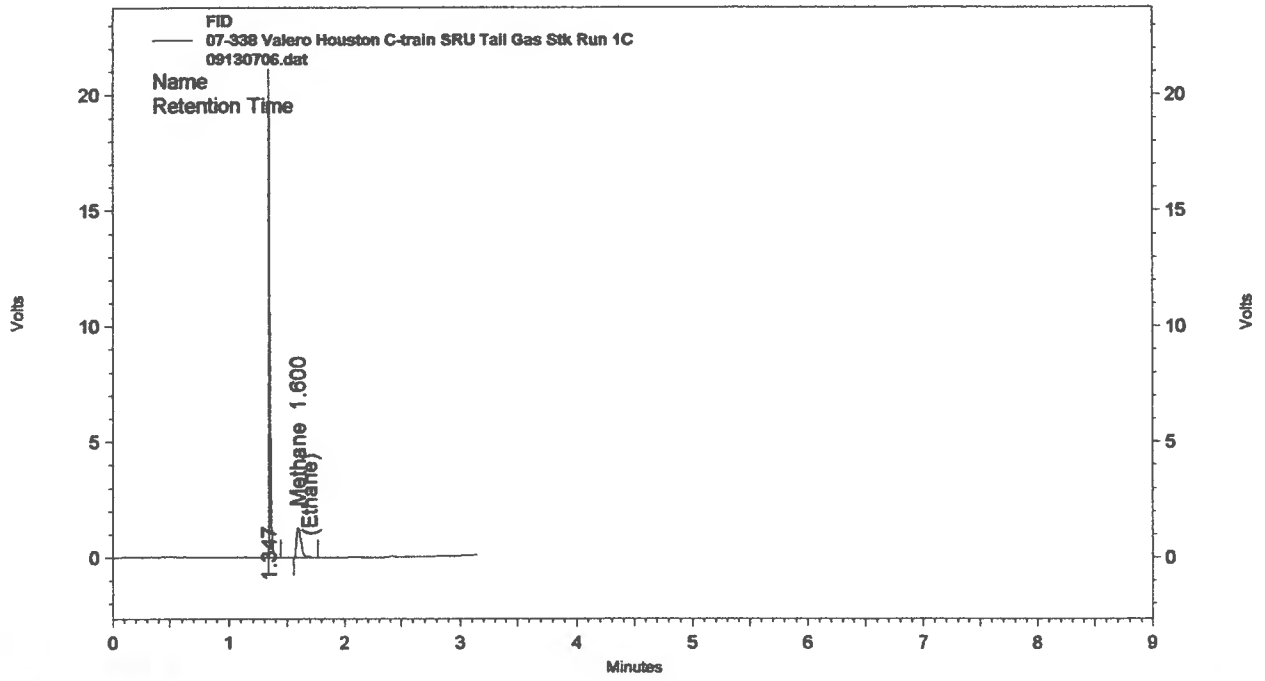


FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.600	1285	3636	1.96
Totals		1285	3636	1.96

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth090607.met
Method: 9/13/2007 9:44:32 AM
Acquired: 9/13/2007 9:41:15 AM
Printed: 1

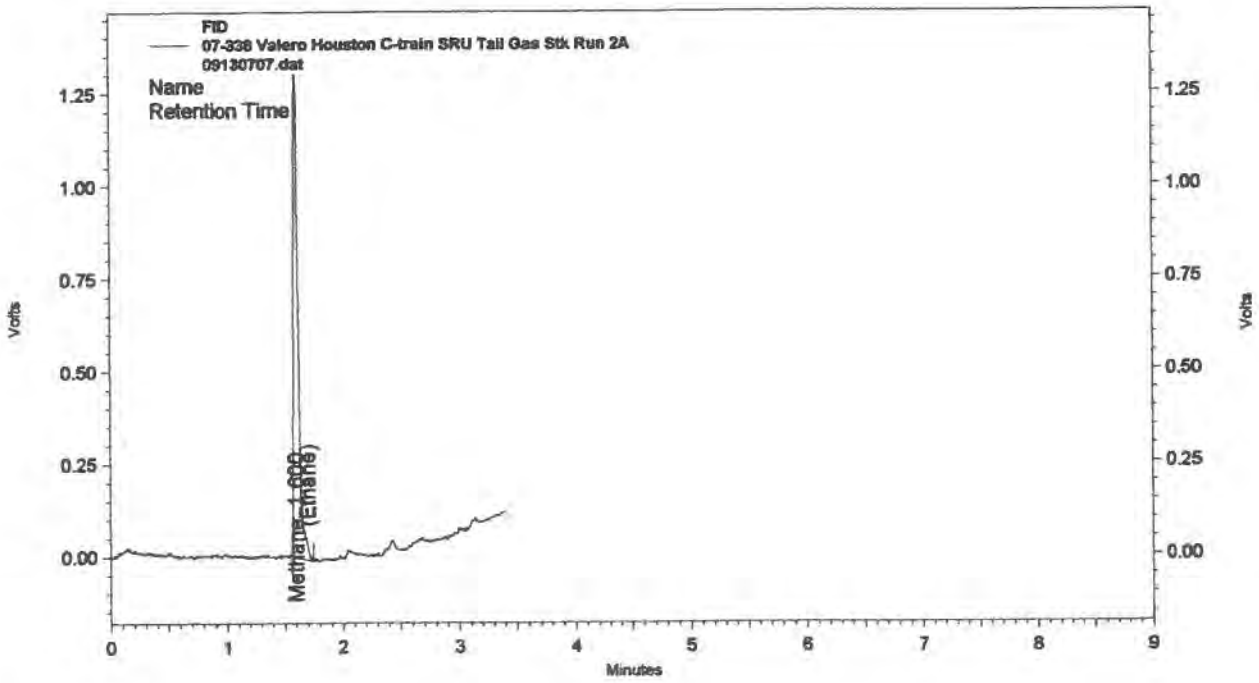


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.347	21124	15335	0.00
Methane	1.600	1295	3676	1.98
Totals		22419	19011	1.98

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth090607.met
Method: 9/13/2007 9:51:52 AM
Acquired: 9/13/2007 9:48:25 AM
Printed: 1

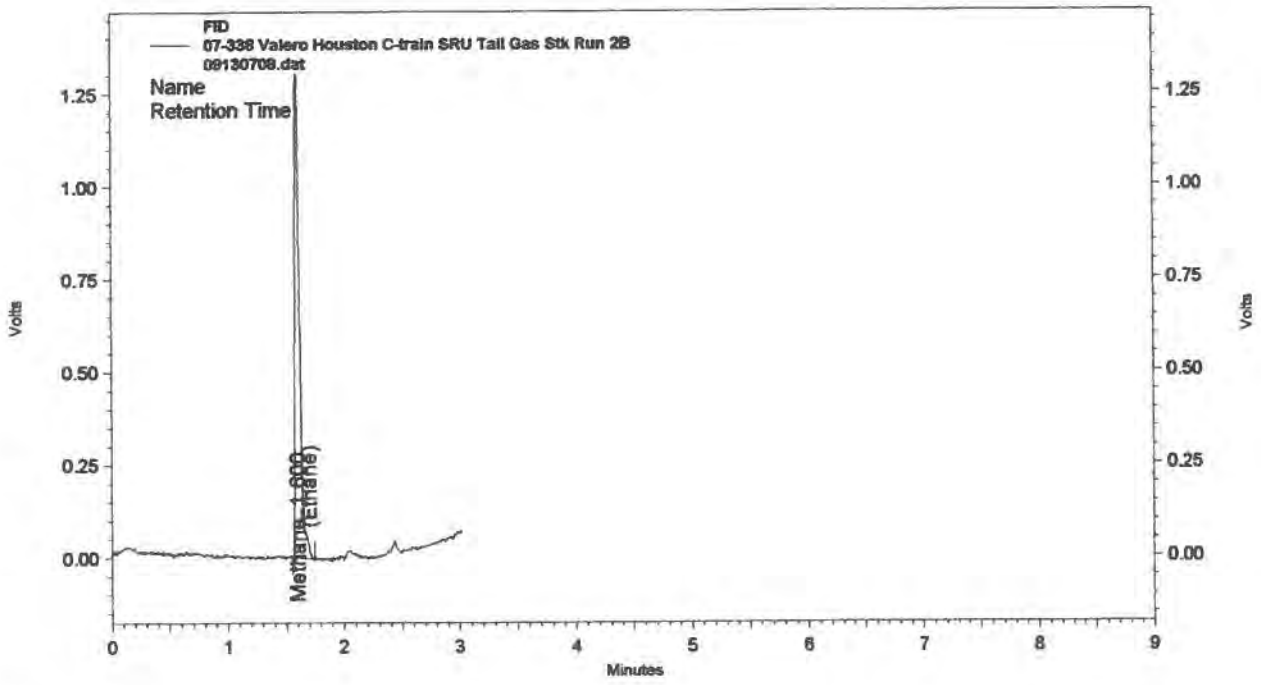


FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.600	1308	3728	2.01
Totals		1308	3728	2.01

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth090607.met
Method: 9/13/2007 9:57:33 AM
Acquired: 9/13/2007 9:54:27 AM
Printed: 1

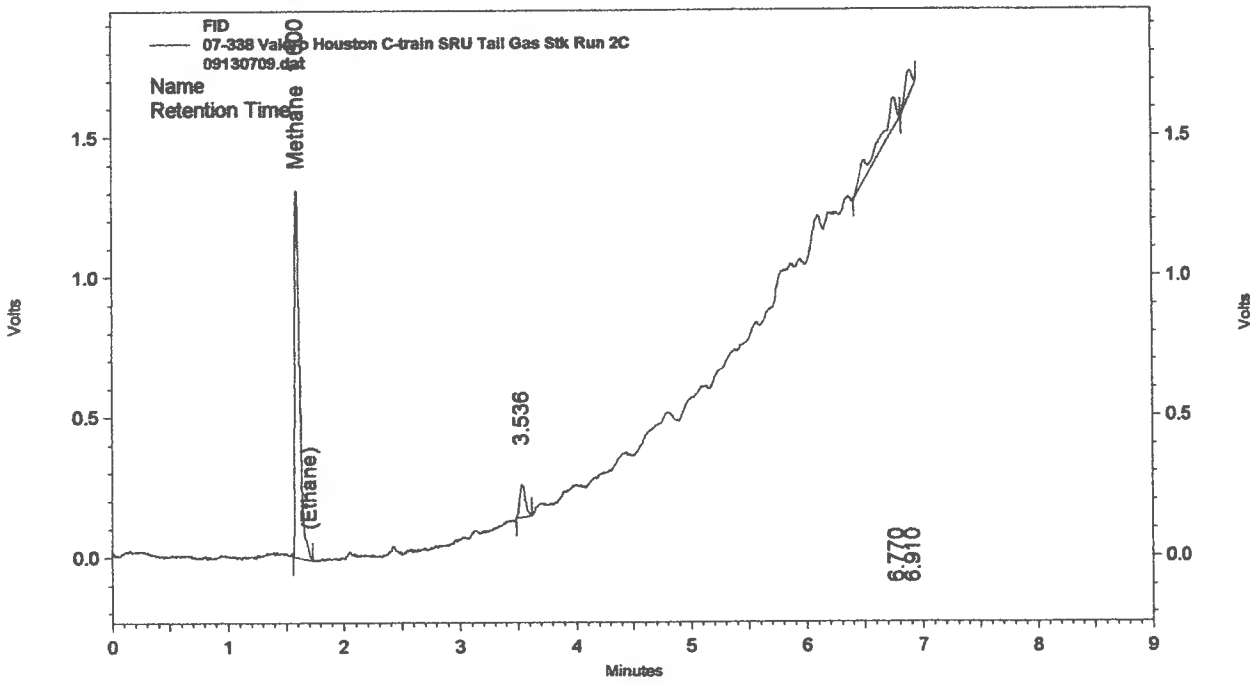


FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.600	1305	3697	1.99
Totals		1305	3697	1.99

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth090607.met
Method: 9/13/2007 10:06:35 AM
Acquired: 9/13/2007 9:59:29 AM
Printed: 1

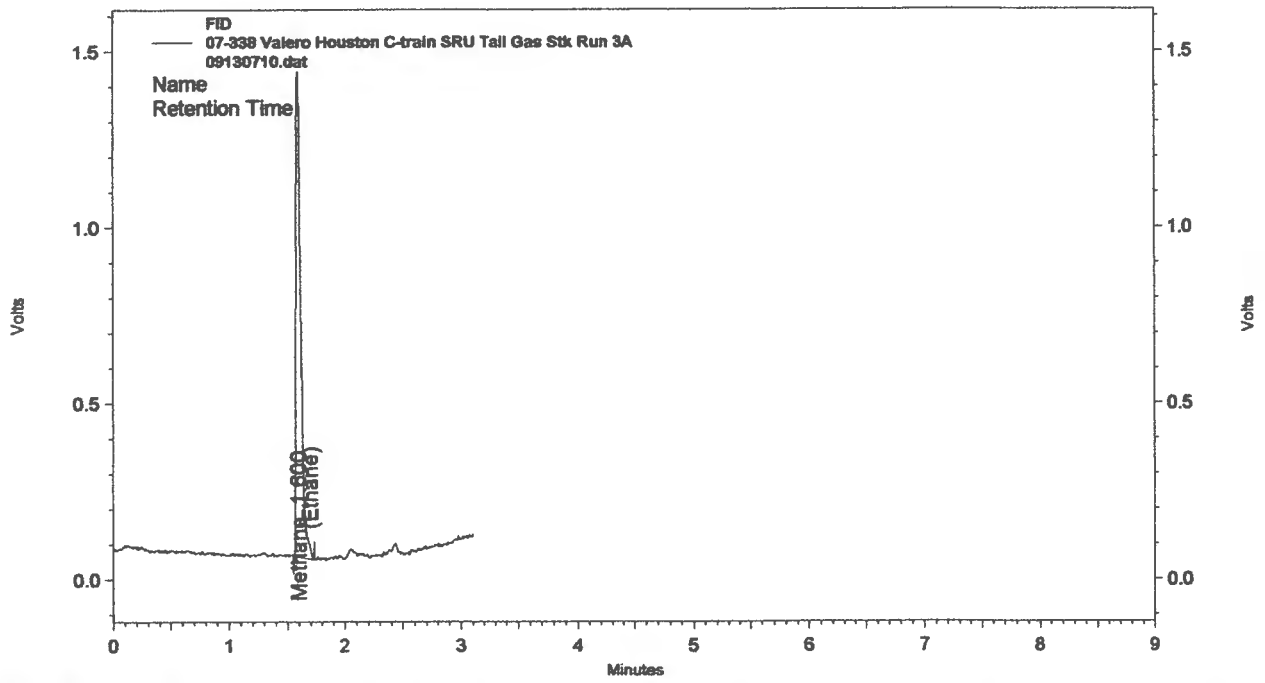


FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.600	1314	3735	2.01
	3.536	118	401	0.00
	6.770	112	1138	0.00
	6.910	88	355	0.00
Totals		1632	5629	2.01

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth090607.met
Method: 9/13/2007 10:14:38 AM
Acquired: 9/13/2007 10:11:29 AM
Printed: 1

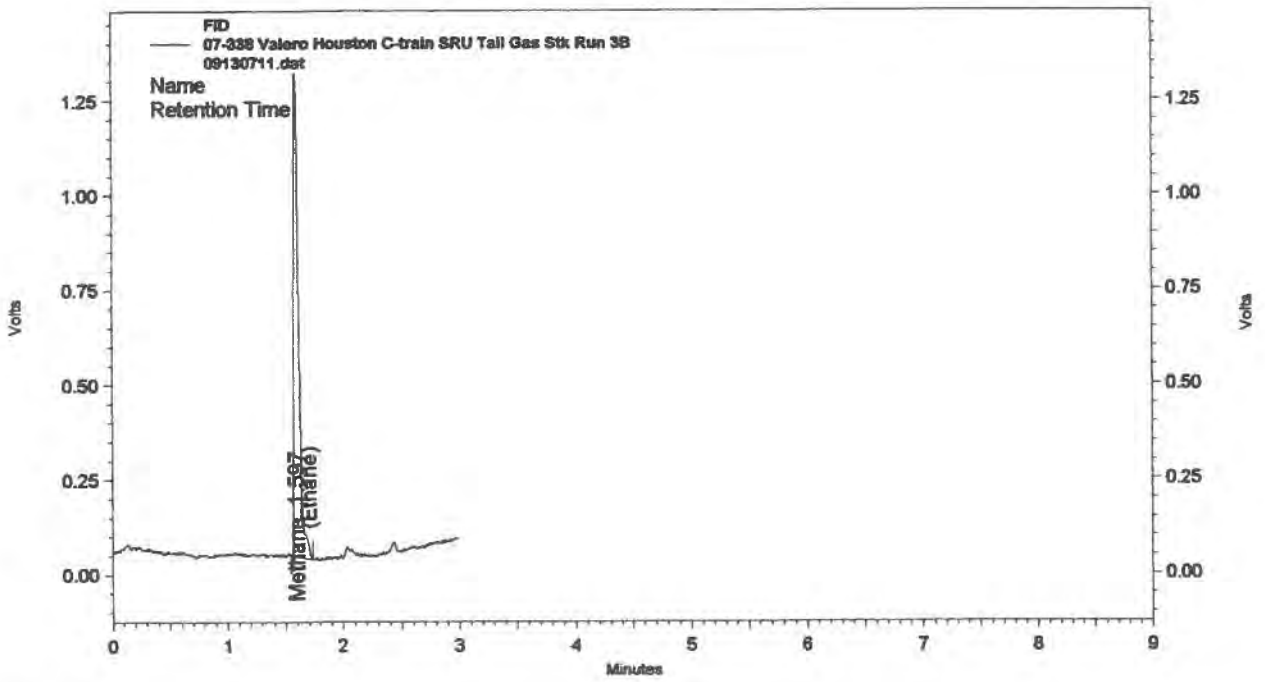


FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.600	1380	4000	2.16
Totals		1380	4000	2.16

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth090607.met
Method: 9/13/2007 10:19:55 AM
Acquired: 9/13/2007 10:16:49 AM
Printed: 1

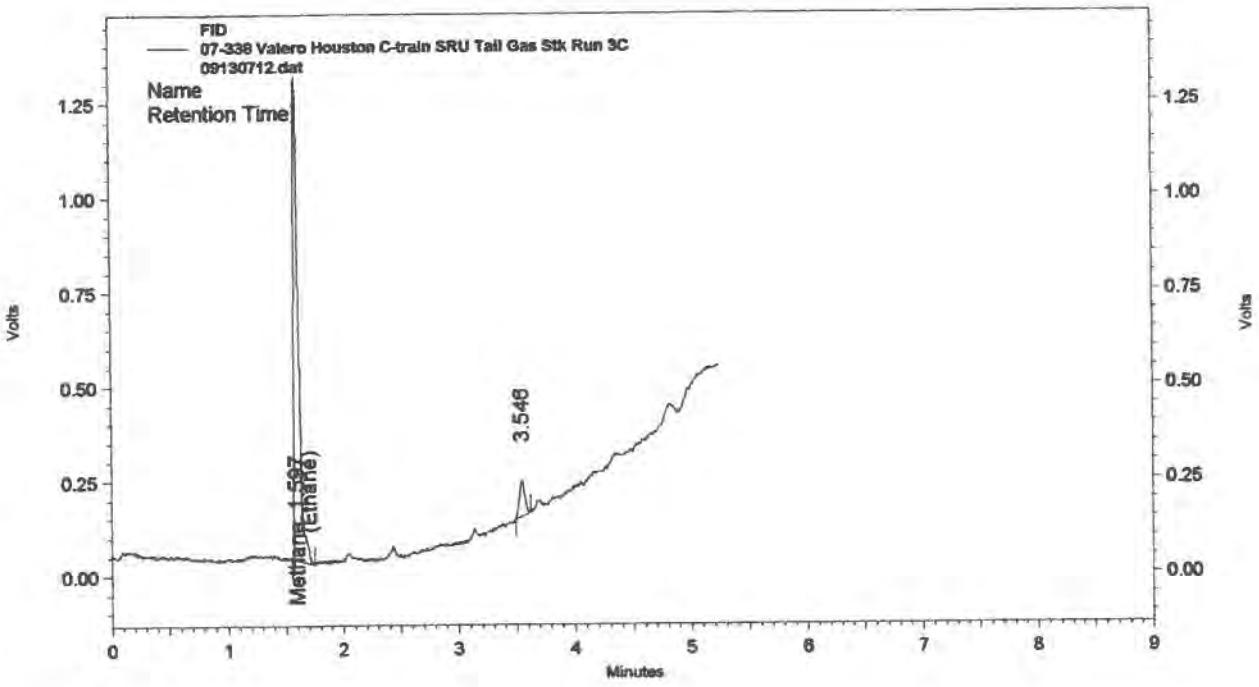


FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.597	1278	3482	1.88
Totals		1278	3482	1.88

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth090607.met
Method: 9/13/2007 10:27:19 AM
Acquired: 9/13/2007 10:21:58 AM
Printed: 1



FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.597	1281	3525	1.90
	3.546	93	312	0.00
Totals		1374	3837	1.90

Standards, Blanks

GC Conditions

Column: Restek RTx-1, 50 m, 0.53 mm ID,
Oven: 40C hold 2 minutes to 195 at 25C/ minute, held for 2.8 minute
Carrier: Helium
Injector: VICI 6 port 1mL volume

METCO Environmental

Sample Results

Valero
Houston, TX 07-338
SRU C-Train Tail Gas Stack
Compound
Ethane

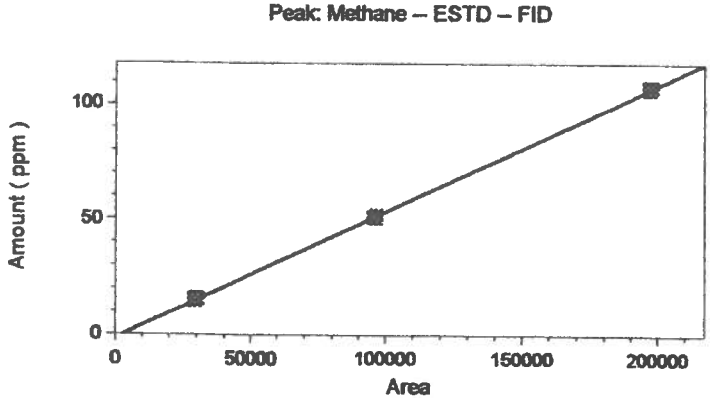
Limit of Detection (LOD) 0.04 ppm

Sample ID	Analysis Method	Ret Time 1	Ret Time 2	Ret Time 3	Conc 1	Conc 2	Conc 3	Avg Conc	% Dif Con	Dil Fac	Adj Conc
Run 2	EPA M18	NA	NA	NA	0.04	0.04	0.04	0.04	0.00%	1.000	0.04
Run 3	EPA M18	NA	NA	NA	0.04	0.04	0.04	0.04	0.00%	1.000	0.04
Run 4	EPA M18	NA	NA	NA	0.04	0.04	0.04	0.04	0.00%	1.000	0.04

Calibration Report

Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth062907.met
Print Time: 9/7/2007 8:12:40 AM
User: System
Instrument: GC 14A

Methane (FID)
Average RF: 0.000524611 RF StDev: 2.08720e-005 RF %RSD: 3.97856
Scaling: None LSQ Weighting: None Force Through Zero: Off
Replicate Mode: Wt Average (Weight: 100)
Fit Type: Linear
y = 0.000549503x - 1.58705
Goodness of fit (r^2): 0.999978



	Level 1	Level 2	Level 3	Level 4
Amount	15	51	107	510
Area	29913.3	96149.5	197432	
RF	0.000501448	0.00053042397	0.00054196012	
	629373746	5163677	2878062	
Last Area	29928.5	96101.7	197511	
Residual	0.14958	-0.247402	0.0978218	N/A
Rep StDev	49.9633	159.978	374.305	
Rep %RSD	0.167027	0.166385	0.189587	
Rep 1 Area	29971	96283	197981	
Rep 1 User	System	System	System	
Rep 1 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060713.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060707.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060710.dat	
Rep 1 Sample ID	15 ppm cal a	50 ppm cala	100 ppm cal a	
Rep 1 Calib. Time	9/6/2007 2:57:55 PM	9/6/2007 11:20:28 AM	9/6/2007 1:52:47 PM	
Rep 2 Area	29886	96011	197357	
Rep 2 User	System	System	System	

Calibration Report

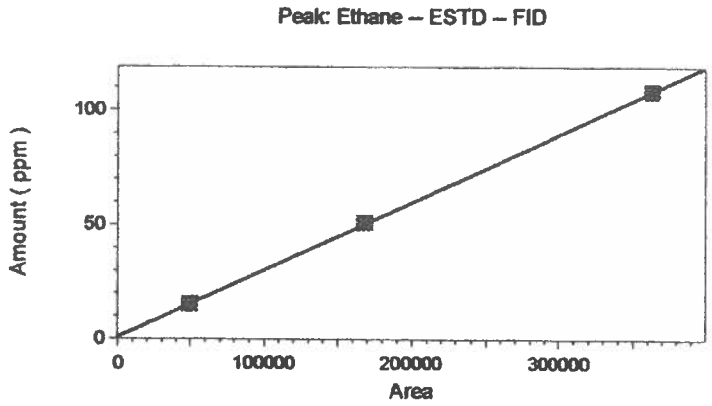
Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth062907.met
Print Time: 9/7/2007 8:12:40 AM
User: System
Instrument: GC 14A

Rep 2 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060714.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060708.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060711.dat
Rep 2 Sample ID	15 ppm cal b	50 ppm cal b	100 ppm cal b
Rep 2 Calib. Time	9/6/2007 3:26:15 PM	9/6/2007 11:43:34 AM	9/6/2007 2:24:07 PM
Rep 3 Area	29883	96011	197194
Rep 3 User	System	System	System
Rep 3 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060715.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060708.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060712.dat
Rep 3 Sample ID	15 ppm cal c	50 ppm cal b	100 ppm cal c
Rep 3 Calib. Time	9/6/2007 4:16:58 PM	9/6/2007 11:55:14 AM	9/6/2007 2:44:15 PM
Rep 4 Area		96293	197194
Rep 4 User		System	System
Rep 4 Data File		C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060709.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060712.dat
Rep 4 Sample ID		50 ppm cal c	100 ppm cal c
Rep 4 Calib. Time		9/6/2007 1:30:52 PM	9/6/2007 2:58:27 PM

Calibration Report

Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth062907.met
Print Time: 9/7/2007 8:12:41 AM
User: System
Instrument: GC 14A

Ethane (FID)
Average RF: 0.000301725 RF StDev: 4.02444e-006 RF %RSD: 1.33381
Scaling: None LSQ Weighting: None Force Through Zero: Off
Replicate Mode: Wt Average (Weight: 100)
Fit Type: Linear
y = 0.000295636x + 0.758032
Goodness of fit (r^2): 0.999921



	Level 1	Level 2	Level 3	Level 4
Amount	15.1	51	108	500
Area	49510.3	168339	363358	
RF	0.000304986	0.00030296009	0.00029722752	
	837764507	8372926	7672433	
Last Area	49504	168261	363510	
Residual	-0.295077	0.474873	-0.179796	N/A
Rep StDev	42.4421	239.964	635.593	
Rep %RSD	0.0857238	0.142548	0.174922	
Rep 1 Area	49545	168520	364250	
Rep 1 User	System	System	System	
Rep 1 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060713.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060707.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060710.dat	
Rep 1 Sample ID	15 ppm cal a	50 ppm cala	100 ppm cal a	
Rep 1 Calib. Time	9/6/2007 2:57:55 PM	9/6/2007 11:20:28 AM	9/6/2007 1:52:47 PM	
Rep 2 Area	49463	168132	363378	
Rep 2 User	System	System	System	

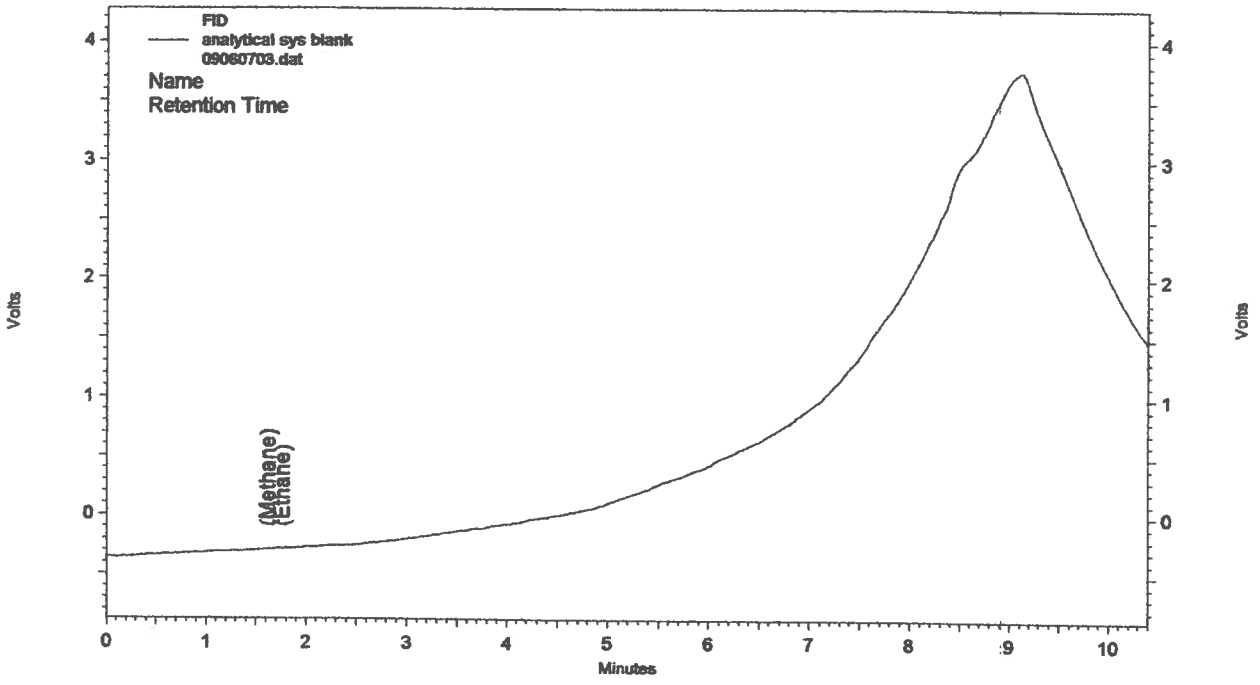
Calibration Report

Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth062907.met
Print Time: 9/7/2007 8:12:41 AM
User: System
Instrument: GC 14A

Rep 2 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060714.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060708.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060711.dat
Rep 2 Sample ID	15 ppm cal b	50 ppm cal b	100 ppm cal b
Rep 2 Calib. Time	9/6/2007 3:26:15 PM	9/6/2007 11:43:34 AM	9/6/2007 2:24:07 PM
Rep 3 Area	49523	168132	362902
Rep 3 User	System	System	System
Rep 3 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060715.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060708.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060712.dat
Rep 3 Sample ID	15 ppm cal c	50 ppm cal b	100 ppm cal c
Rep 3 Calib. Time	9/6/2007 4:16:58 PM	9/6/2007 11:55:14 AM	9/6/2007 2:44:15 PM
Rep 4 Area		168572	362902
Rep 4 User		System	System
Rep 4 Data File		C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060709.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09060712.dat
Rep 4 Sample ID		50 ppm cal c	100 ppm cal c
Rep 4 Calib. Time		9/6/2007 1:30:52 PM	9/6/2007 2:58:27 PM

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth062907.met
Method: 9/6/2007 9:42:16 AM
Acquired: 9/6/2007 9:27:27 AM
Printed: 1

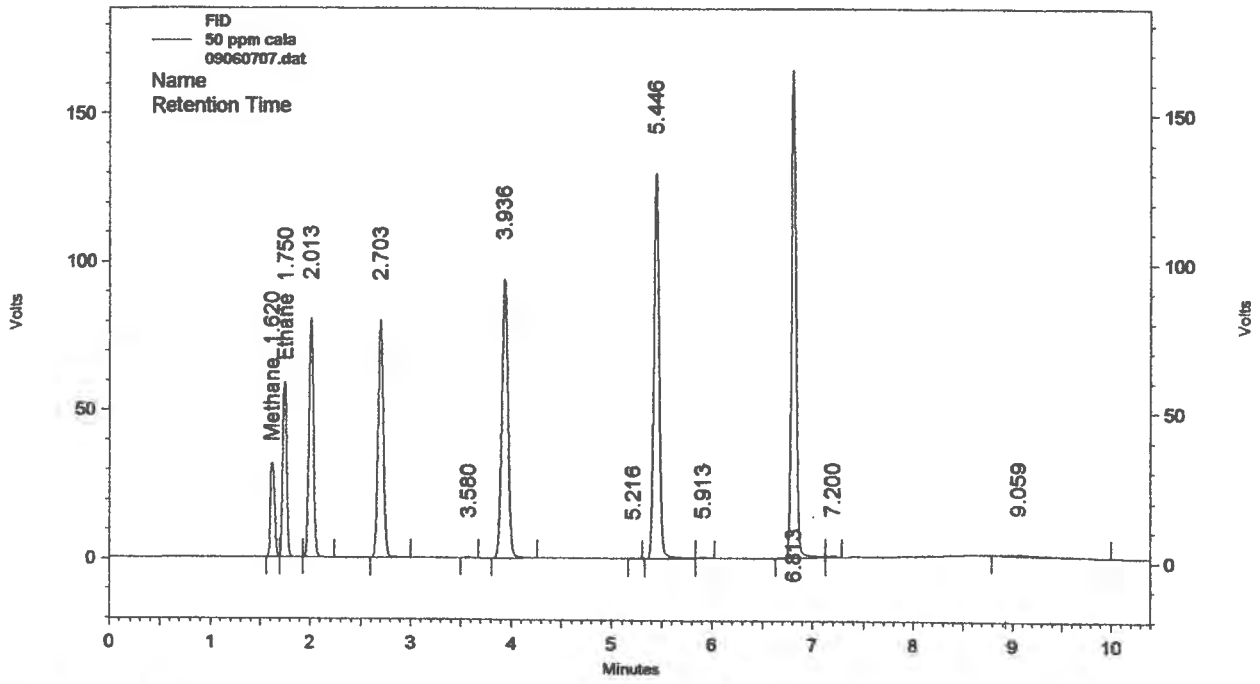


FID Results

Name	Retention Time	Height	Area	ESTD concentration

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth062907.met
Method: 9/6/2007 11:20:28 AM
Acquired: 9/6/2007 11:08:49 AM
Printed: 1

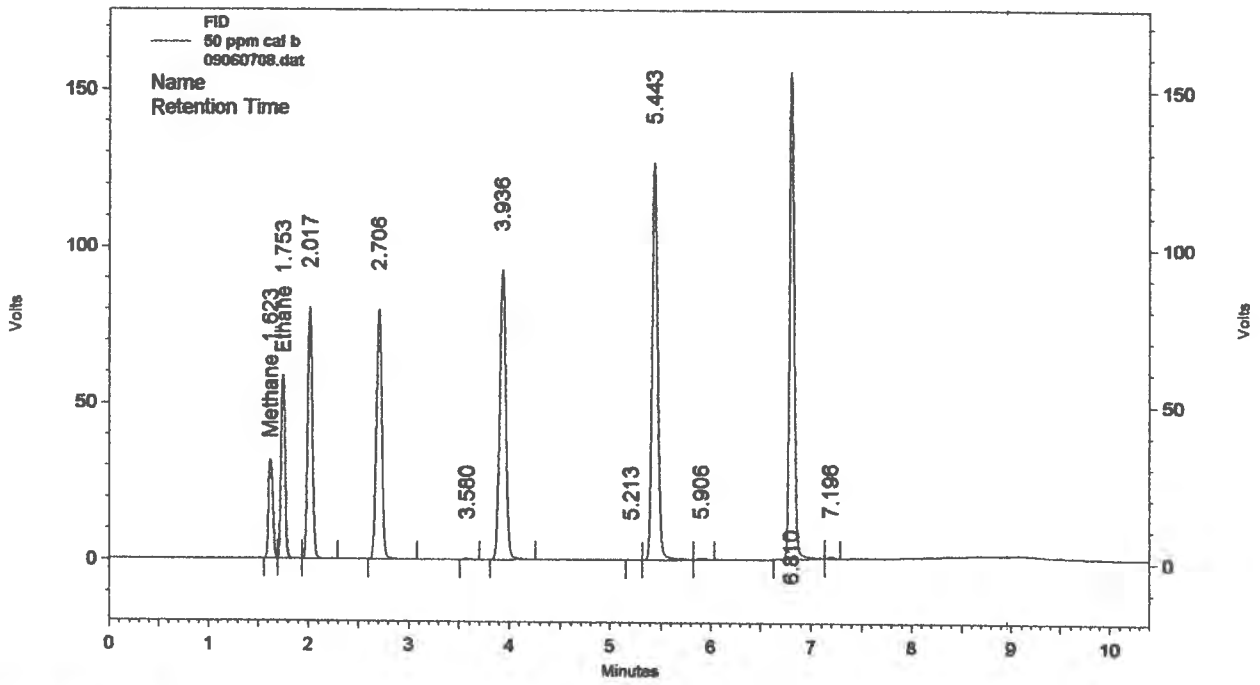


FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.620	31717	96283	51.00 CAL
Ethane	1.750	58808	168520	51.00 CAL
	2.013	80471	256921	0.00
	2.703	80243	314652	0.00
	3.580	329	1494	0.00
	3.936	94030	403465	0.00
	5.216	102	409	0.00
	5.446	129688	483096	0.00
	5.913	507	2249	0.00
	6.813	163813	541005	0.00
	7.200	649	2840	0.00
	9.059	373	10442	0.00
Totals		640730	2281376	102.00 CAL

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Methetn062907.met
Method: 9/6/2007 11:55:14 AM
Acquired: 9/6/2007 11:33:09 AM
Printed: 1



FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.623	31630	96011	51.00 CAL
Ethane	1.753	58695	168132	51.00 CAL
	2.017	80367	256421	0.00
	2.706	79851	313008	0.00
	3.580	325	1491	0.00
	3.936	92548	398379	0.00
	5.213	100	381	0.00
	5.443	126491	470724	0.00
	5.906	497	2285	0.00
	6.810	154917	510674	0.00
	7.196	602	2546	0.00
Totals		626023	2220052	102.00 CAL

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth062907.met
Method: 9/6/2007 1:30:52 PM
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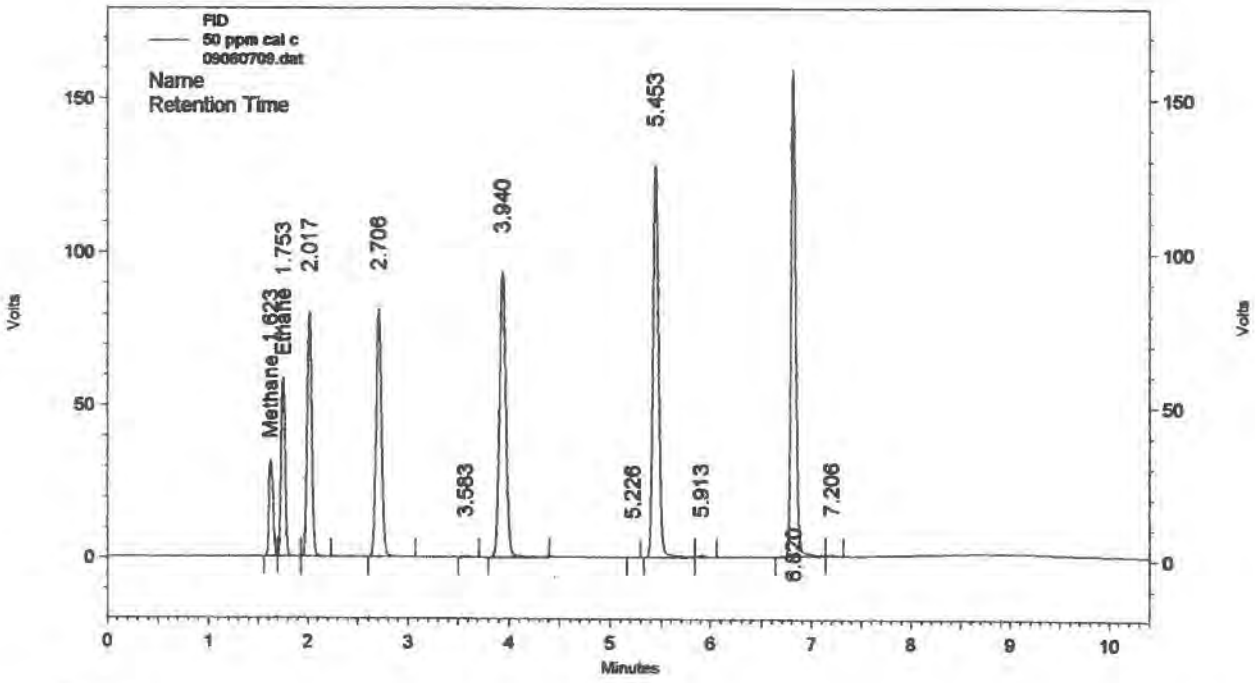
Printed: 1



FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.623	31618	96293	51.00 CAL
Ethane	1.753	58703	168572	51.00 CAL
	2.017	80393	256866	0.00
	2.706	81147	314699	0.00
	3.583	319	1487	0.00
	3.940	93203	402529	0.00
	5.226	104	395	0.00
	5.453	127846	476241	0.00
	5.913	507	2323	0.00
	6.820	158710	522635	0.00
	7.206	617	2725	0.00
Totals		633167	2244765	102.00 CAL

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Methetn062907.met
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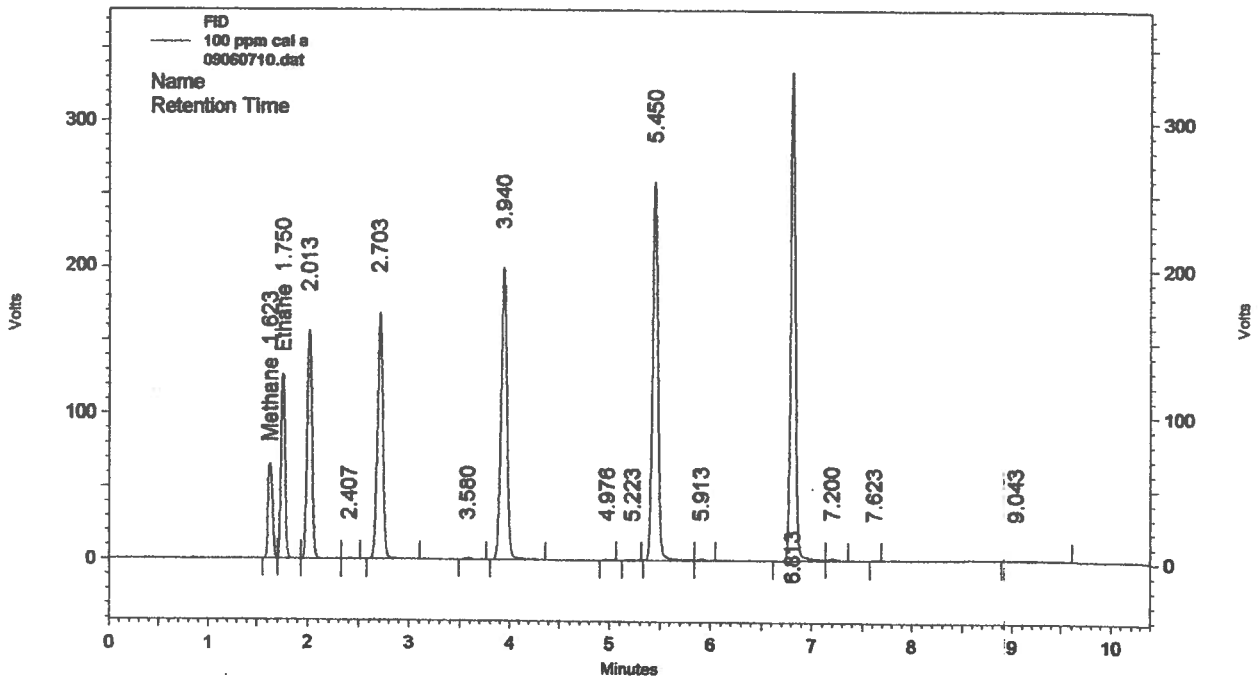

FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.623	65407	197981	107.00 CAL
Ethane	1.750	126446	364250	108.00 CAL
	2.013	156112	499549	0.00
	2.407	428	1768	0.00
	2.703	168713	656274	0.00
	3.580	1015	4854	0.00
	3.940	199272	859534	0.00
	4.976	200	840	0.00
	5.223	247	1071	0.00
	5.450	258226	964445	0.00
	5.913	746	3471	0.00
	6.813	333445	1099899	0.00
	7.200	1361	6399	0.00
	7.623	171	499	0.00
	9.043	244	5020	0.00

Totals		**1312033**	**4665854**	**215.00 CAL**

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth062907.met
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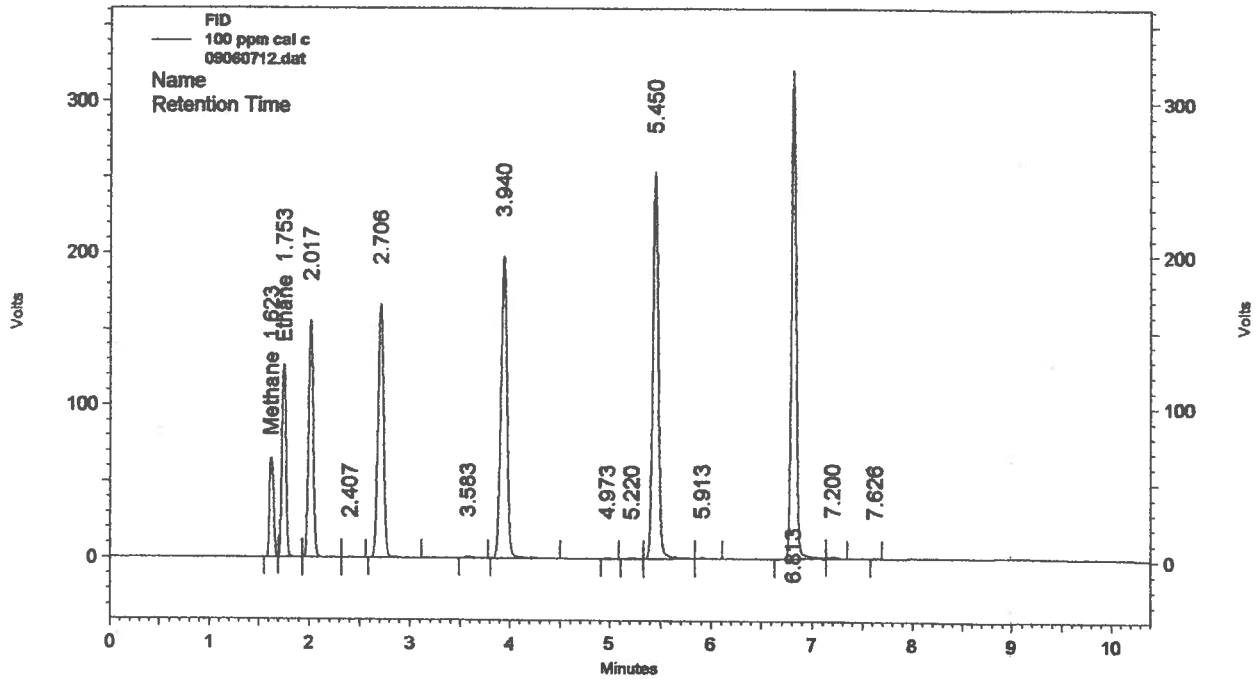

FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.623	65427	197194	107.00 CAL
Ethane	1.753	126550	362902	108.00 CAL
	2.017	155949	497764	0.00
	2.407	438	1858	0.00
	2.706	166831	652352	0.00
	3.583	1007	4902	0.00
	3.940	198345	852384	0.00
	4.973	200	841	0.00
	5.220	239	1033	0.00
	5.450	253647	947090	0.00
	5.913	776	3972	0.00
	6.813	320055	1056734	0.00
	7.200	1308	6033	0.00
	7.626	273	769	0.00
Totals				

		1291045	4585828	215.00 CAL

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth062907.met
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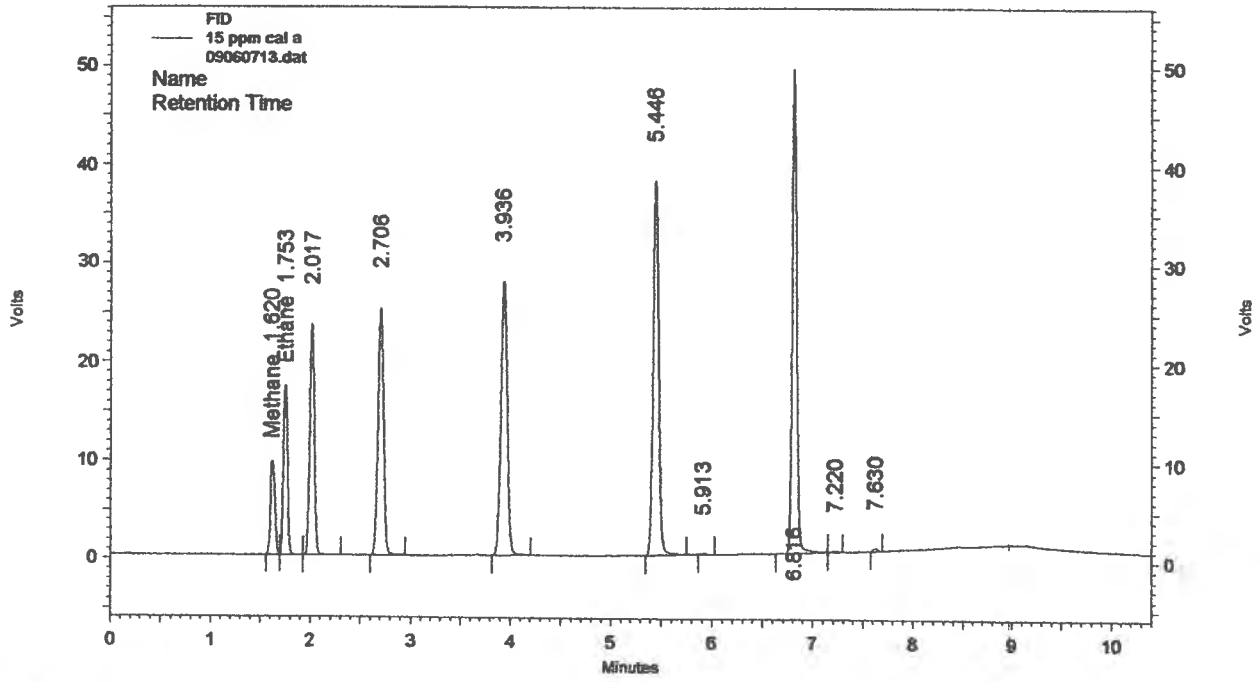

FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.620	9611	29971	15.00 CAL
Ethane	1.753	17205	49545	15.10 CAL
	2.017	23466	75212	0.00
	2.706	25105	98383	0.00
	3.936	27803	119904	0.00
	5.446	37963	140948	0.00
	5.913	115	418	0.00
	6.816	49026	161803	0.00
	7.220	135	667	0.00
	7.630	291	838	0.00
Totals		190720	677689	30.10 CAL

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Metheth062907.met
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Acquired: 9/6/2007 3:04:51 PM
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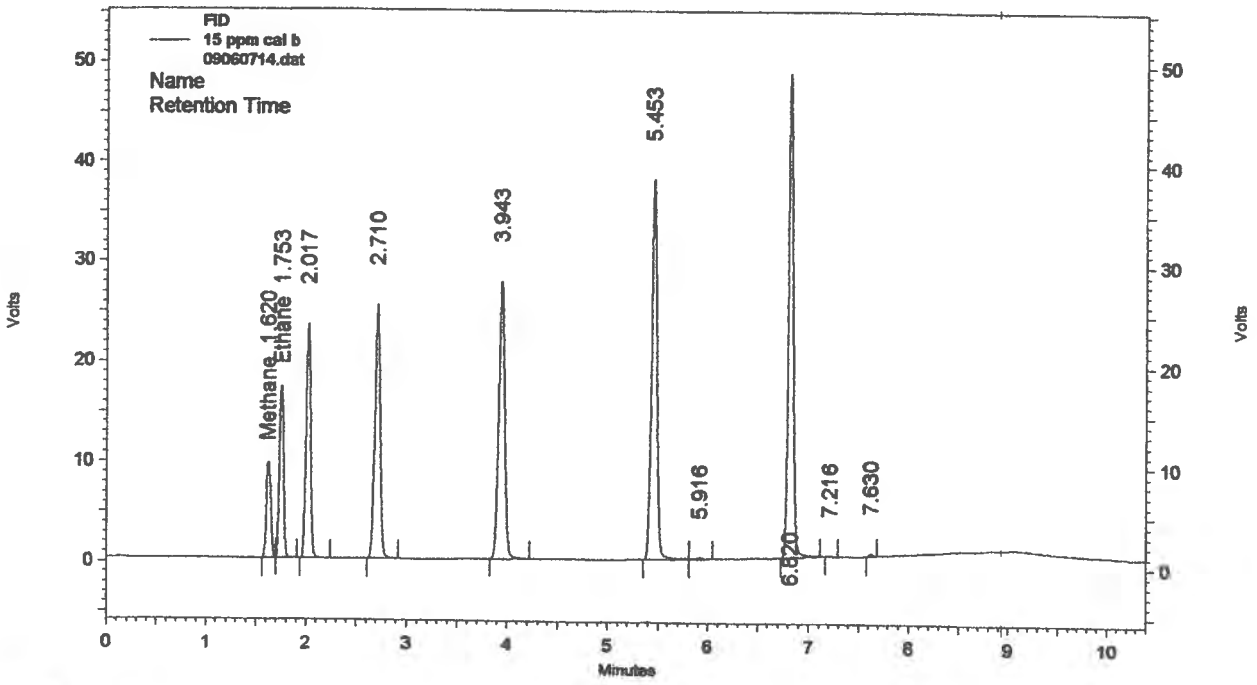
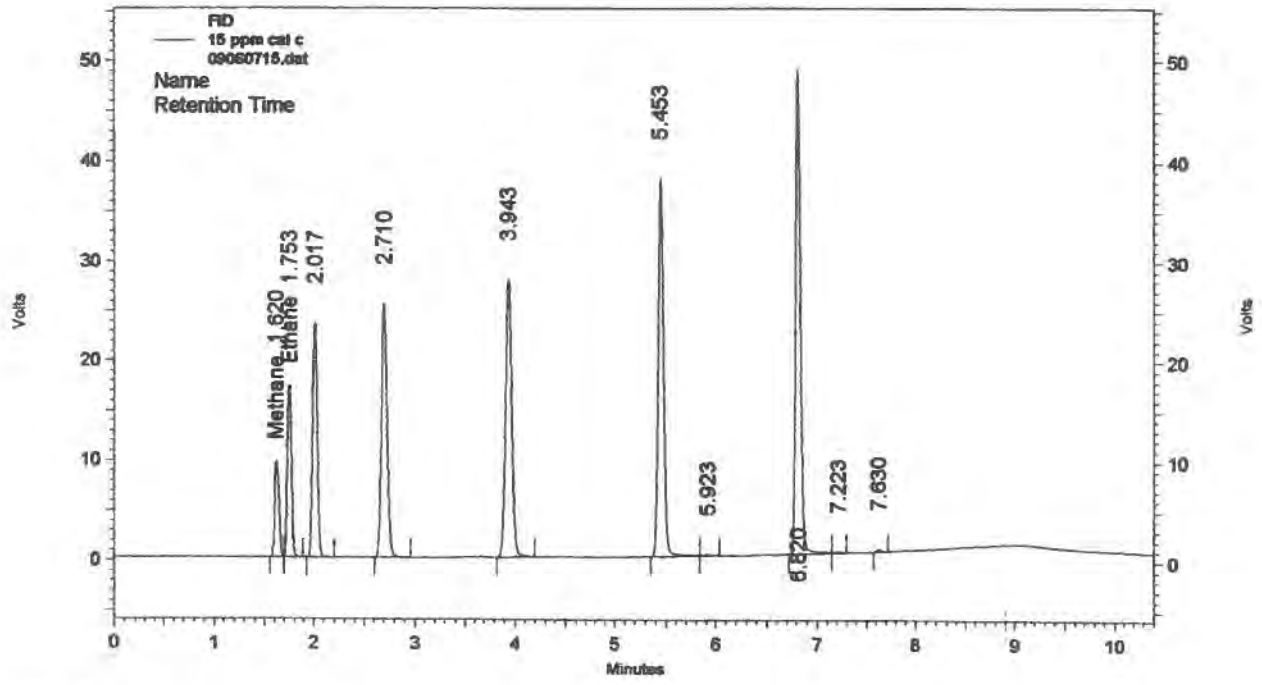


FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.620	9592	29886	15.00 CAL
Ethane	1.753	17170	49463	15.10 CAL
	2.017	23420	74995	0.00
	2.710	25345	98190	0.00
	3.943	27680	119385	0.00
	5.453	37925	141055	0.00
	5.916	150	758	0.00
	6.820	48335	158647	0.00
	7.216	95	384	0.00
	7.630	275	783	0.00
Totals		189987	673546	30.10 CAL

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\Methetb062907.met
Method: 9/6/2007 4:16:58 PM
Acquired: 9/6/2007 3:26:53 PM
Printed: 1



FID Results

Name	Retention Time	Height	Area	ESTD concentration
Methane	1.620	9604	29883	15.00 CAL
Ethane	1.753	17169	49523	15.10 CAL
	2.017	23455	75117	0.00
	2.710	25428	98422	0.00
	3.943	27767	119530	0.00
	5.453	37863	141209	0.00
	5.923	148	692	0.00
	6.820	48419	159599	0.00
	7.223	137	742	0.00
	7.630	256	779	0.00
Totals		190246	675496	30.10 CAL

METCO Environmental
3226 Commander Drive
Carrollton, Tx 75006

Valero Refining

Houston, Tx
C-Train SRU Tail Gas Stack
(07-338)

Analytical Report

EPA Method 18
HRVOC

Narrative

METCO Environmental Narrative

Valero Refining, Houston, Tx
C-Train SRU Tail Gas Stack
(07-338)

Introduction

The procedure utilized for this analysis can be found in detail in EPA Method 18 (40 CFR, Part 60, Appendix A). In this analytical procedure, the highly reactive volatile organic compounds (HRVOC) were examined in Tedlar bags using a gas chromatograph/flame ionization detector (GC/FID) system.

Procedure

Before samples were analyzed, an analytical system blank and a three-point calibration curve were performed. The calibration was performed using certified gas standards ranging in concentration from 10 to 100 ppm. Each day a daily calibration and an analytical system blank were performed. The daily calibration was required to be within 5% of detector response. If this value were exceeded, a second three-point calibration would be performed and verified before any sample analysis. The relative percent difference for the retention and area counts of the calibration injections was calculated.

Each sample was analyzed by pumping the gas from a Tedlar bag that had been previously shown to be free from possible hydrocarbon contaminants, into a sample loop at a sampling rate greater than 20 ml/minute in order to purge the sample loop. A sample was then mechanically injected into the gas chromatographic column for separation of its components and analysis utilizing a flame ionization detector. The results are summarized in the summary section and the chromatograms are presented in the data section. A spike was performed on Run 2 after the initial analysis. An injection of 10 ml of the 50-ppm gas standard was performed on the sample. The recoveries were within the required 70-130%. The volume of the Tedlar bag was measured with a calibrated rotometer. The recovery efficiency of the spiked sample was used to correct the concentration of each analyte.

The Certificates of Analysis for the certified gas standards are presented in calibration section. The calculations for the determination of spike recovery are presented in results section.

Results and Discussion

No HRVOC compounds were detected in the samples.

Summary of Results

07-338 **Valero Refining**
Houston, TX

C-Train SRU Tail Gas Stack (Concentration corrected for recovery)

Compound	Run 1	Run 2	Run 3
Ethylene	<0.02	<0.02	<0.02
Propylene	<0.02	<0.02	<0.02
trans-2-Butene	<0.03	<0.03	<0.03
1-Butene	<0.04	<0.04	<0.04
Isobutylene	<0.03	<0.03	<0.03
cis-2-Butene	<0.04	<0.04	<0.04
1,3-Butadiene	<0.05	<0.05	<0.05

Results

METCO Environmental

Sample Results

Valero Refining
Houston, TX 07-338
C-Train SRU Tail Gas Stack
Compound
Ethylene

Limit of Detection (LOD) 0.02 ppm

Sample ID	Analysis Method	Ret Time 1	Ret Time 3	Ret Time 3	Conc 1	Conc 2	Conc 3	Avg Conc	% Dif Con	Dil Fac	Rec Eff	Adj Conc
Run 1	EPA M18	NA	NA	NA	0.02	0.02	0.02	0.02	0.00%	1.000	1.021	0.02
Run 2	EPA M18	NA	NA	NA	0.02	0.02	0.02	0.02	0.00%	1.000	1.021	0.02
Run 3	EPA M18	NA	NA	NA	0.02	0.02	0.02	0.02	0.00%	1.000	1.021	0.02
Run 2 Spike	EPA M18	2.39	2.40	2.39	0.30	0.29	0.29	0.29	1.52%	1.000	1.000	0.29

METCO Environmental

Sample Results

Valero Refining
Houston, TX 07-338
C-Train SRU Tail Gas Stack
Compound
Propylene

Limit of Detection (LOD) 0.02 ppm

Sample ID	Analysis Method	Ret Time 1	Ret Time 3	Ret Time 3	Conc 1	Conc 2	Conc 3	Avg Conc	% Dif Con	Dil Fac	Rec Eff	Adj Conc
Run 1	EPA M18	NA	NA	NA	0.08	0.02	0.02	0.02	100.00%	1.000	0.986	0.02
Run 2	EPA M18	NA	NA	NA	0.02	0.02	0.02	0.02	0.00%	1.000	0.986	0.02
Run 3	EPA M18	NA	NA	NA	0.02	0.02	0.02	0.02	0.00%	1.000	0.986	0.02
Run 2 Spike	EPA M18	3.85	3.86	3.85	0.28	0.28	0.27	0.28	1.61%	1.000	1.000	0.28

METCO Environmental

Sample Results

Valero Refining
Houston, TX 07-338
C-Train SRU Tail Gas Stack
Compound
trans-2-Butene

Limit of Detection (LOD) 0.03 ppm

Sample ID	Analysis Method	Ret Time 1	Ret Time 2	Ret Time 3	Conc 1	Conc 2	Conc 3	Avg Conc	% Dif Con	Dil Fac	Rec Eff	Adj Conc
Run 1	EPA M18	NA	NA	NA	0.03	0.03	0.03	0.03	0.00%	1.000	1.032	0.03
Run 2	EPA M18	NA	NA	NA	0.03	0.03	0.03	0.03	0.00%	1.000	1.032	0.03
Run 3	EPA M18	NA	NA	NA	0.03	0.03	0.03	0.03	0.00%	1.000	1.032	0.03
Run 2 Spike	EPA M18	6.40	6.42	6.40	0.28	0.28	0.27	0.28	1.61%	1.000	1.000	0.28

METCO Environmental

Sample Results

Valero Refining
Houston, TX 07-338
C-Train SRU Tail Gas Stack
Compound
trans-2-Butene

Limit of Detection (LOD) 0.03 ppm

Sample ID	Analysis Method	Ret Time 1	Ret Time 2	Ret Time 3	Conc 1	Conc 2	Conc 3	Avg Conc	% Dif Con	Dil Fac	Rec Eff	Adj Conc
Run 1	EPA M18	NA	NA	NA	0.03	0.03	0.03	0.03	0.00%	1.000	0.986	0.03
Run 2	EPA M18	NA	NA	NA	0.03	0.03	0.03	0.03	0.00%	1.000	0.986	0.03
Run 3	EPA M18	NA	NA	NA	0.03	0.03	0.03	0.03	0.00%	1.000	0.986	0.03
Run 2 Spike	EPA M18	6.40	6.42	6.40	0.28	0.28	0.27	0.28	1.61%	1.000	1.000	0.28

METCO Environmental

Sample Results

Valero Refining
Houston, TX 07-338
C-Train SRU Tail Gas Stack
Compound
1-Butene

Limit of Detection (LOD) 0.04 ppm

Sample ID	Analysis Method	Ret Time 1	Ret Time 2	Ret Time 3	Conc 1	Conc 2	Conc 3	Avg Conc	% Dif Con	Dil Fac	Rec Eff	Adj Conc
Run 1	EPA M18	NA	NA	NA	0.04	0.04	0.04	0.04	0.00%	1.000	0.950	0.04
Run 2	EPA M18	NA	NA	NA	0.04	0.04	0.04	0.04	0.00%	1.000	0.950	0.04
Run 3	EPA M18	NA	NA	NA	0.04	0.04	0.04	0.04	0.00%	1.000	0.950	0.04
Run 2 Spike	EPA M18	6.52	6.54	6.52	0.28	0.27	0.27	0.27	1.63%	1.000	1.000	0.27

METCO Environmental

Sample Results

Valero Refining
Houston, TX 07-338
C-Train SRU Tail Gas Stack
Compound
Isobutylene

Limit of Detection (LOD) 0.03 ppm

Sample ID	Analysis Method	Ret Time 1	Ret Time 2	Ret Time 3	Conc 1	Conc 2	Conc 3	Avg Conc	% Dif Con	Dil Fac	Rec Eff	Adj Conc
Run 1	EPA M18	NA	NA	NA	0.03	0.03	0.03	0.03	0.00%	1.000	1.021	0.03
Run 2	EPA M18	NA	NA	NA	0.03	0.03	0.03	0.03	0.00%	1.000	1.021	0.03
Run 3	EPA M18	NA	NA	NA	0.03	0.03	0.03	0.03	0.00%	1.000	1.021	0.03
Run 2 Spike	EPA M18	6.84	6.86	6.84	0.29	0.29	0.29	0.29	0.00%	1.000	1.000	0.29

METCO Environmental

Sample Results

Valero Refining
Houston, TX 07-338
C-Train SRU Tail Gas Stack
Compound
cis-2-Butene

Limit of Detection (LOD) 0.04 ppm

Sample ID	Analysis Method	Ret Time 1	Ret Time 2	Ret Time 3	Conc 1	Conc 2	Conc 3	Avg Conc	% Dif Con	Dil Fac	Rec Eff	Adj Conc
Run 1	EPA M18	NA	NA	NA	0.04	0.04	0.04	0.04	0.00%	1.000	0.966	0.04
Run 2	EPA M18	NA	NA	NA	0.04	0.04	0.04	0.04	0.00%	1.000	0.966	0.04
Run 3	EPA M18	NA	NA	NA	0.04	0.04	0.04	0.04	0.00%	1.000	0.966	0.04
Run 2 Spike	EPA M18	7.02	7.04	7.02	0.29	0.29	0.27	0.28	3.14%	1.000	1.000	0.28

METCO Environmental

Sample Results

Valero Refining
Houston, TX 07-338
C-Train SRU Tail Gas Stack
Compound
1,3-Butadiene

Limit of Detection (LOD) 0.05 ppm

Sample ID	Analysis Method	Ret Time 1	Ret Time 2	Ret Time 3	Conc 1	Conc 2	Conc 3	Avg Conc	% Dif Con	Dil Fac	Rec Eff	Adj Conc
Run 1	EPA M18	NA	NA	NA	0.05	0.05	0.05	0.05	0.00%	1.000	1.021	0.05
Run 2	EPA M18	NA	NA	NA	0.05	0.05	0.05	0.05	0.00%	1.000	1.021	0.05
Run 3	EPA M18	NA	NA	NA	0.05	0.05	0.05	0.05	0.00%	1.000	1.021	0.05
Run 2 Spike	EPA M18	8.16	8.19	8.17	0.29	0.30	0.28	0.29	2.30%	1.000	1.000	0.29

Sample Custody

METCO
Environmental ©

CHAIN OF CUSTODY RECORD

Job No.: 07-338
Job Name: Valero
Location: TE Houston, TX
Unit: C-Train SRU Tail Gas Stack

Project Manager: M. Glicer
Project Supervisor: M. Bass

Method: 13

SAMPLE I.D.	DATE	TIME	# OF CONT.	Absorb. Solution	Initial Vol.	SAMPLE ANALYSIS REQUIRED: PART	HCL	CL2	SO2	SO3	Hg VOC		Recovered by	REMARKS (Specific Compounds/Methods)
Run 1	4-5-07 ~~8/31/07~~ RW	1050	1								✓		R. Williams	
Run 2	↓	1335	1								✓			
Run 3	↓	1615	1								✓		↓	

Samples Received for Transport/Shipment by:	Ryan Williams	Date:	4-5-07	Time: 1630
Samples Received for Transport/Shipment by:		Date:		Time:
Samples Received for Transport/Shipment by:		Date:		Time:
Samples Shipped Via:		Date:		Time:
Samples Received at Laboratory by:	[illegible]	Date:	4-11-07	Time: 1420
Samples Analyzed by:	[illegible]	Date:	4-11-07	Time: 1436
Samples Analyzed by:		Date:		Time:
Data Checked by:		Date:		Time:

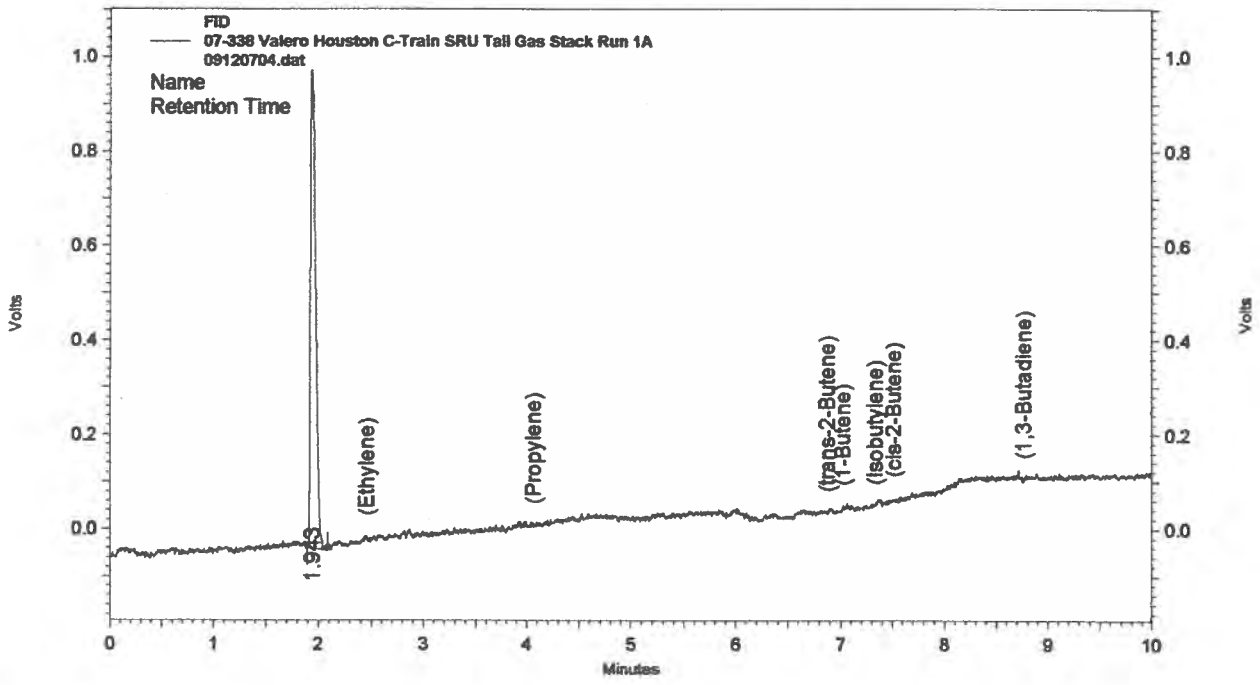
E-101

VERSION 2
10 MARCH 2003

Sample Chromatograms

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/12/2007 9:31:46 AM
Acquired: 9/12/2007 9:21:45 AM
Printed: 1

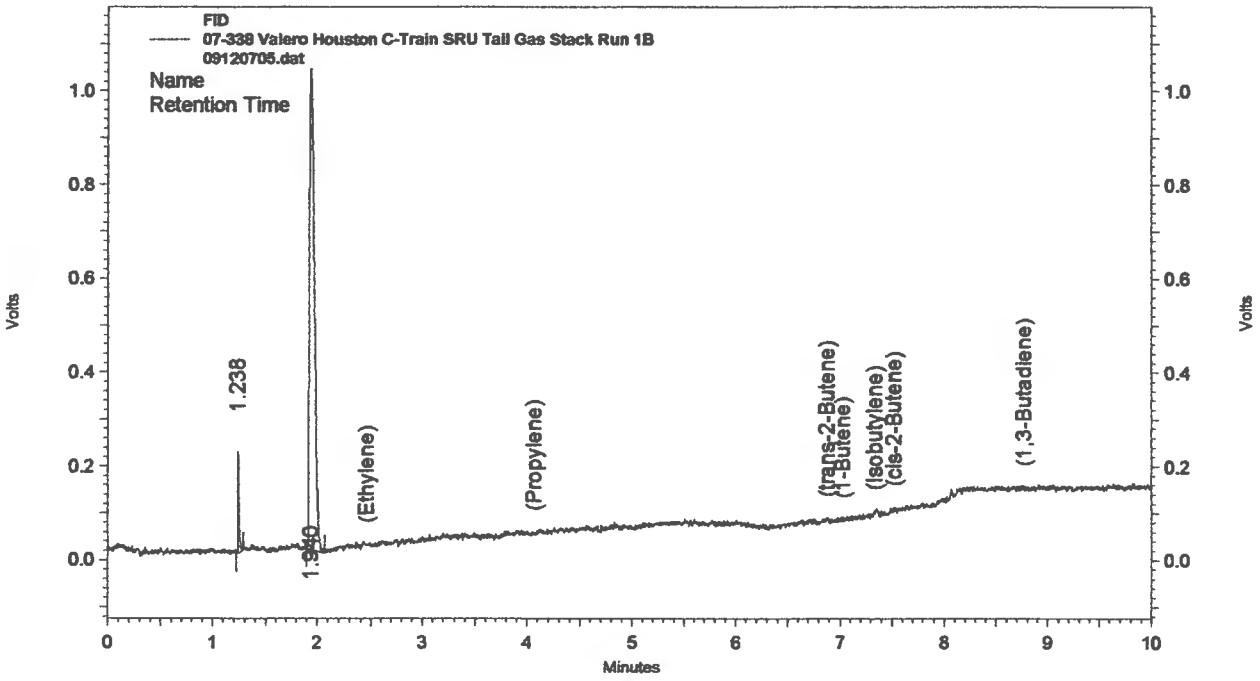


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.943	1012	3339	0.00
Totals		1012	3339	0.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/12/2007 9:48:02 AM
Acquired: 9/12/2007 9:38:01 AM
Printed: 1

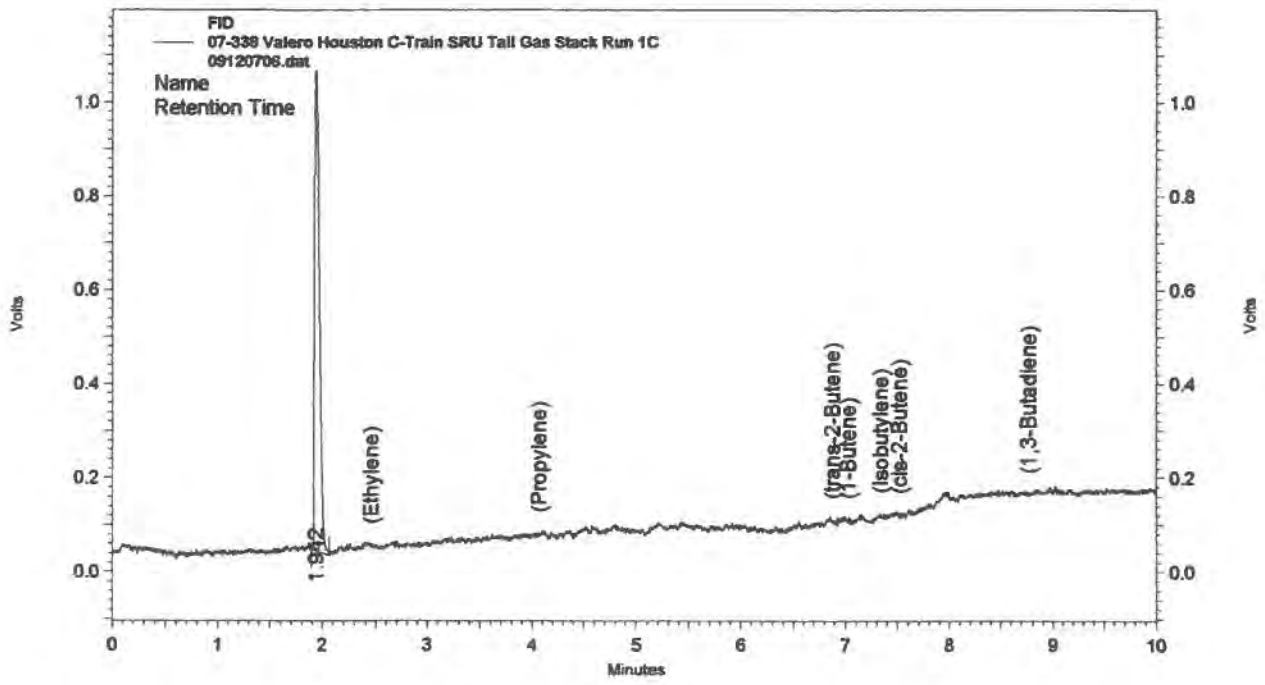


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.238	216	146	0.00
	1.940	1027	3350	0.00
Totals		1243	3496	0.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/12/2007 10:04:25 AM
Acquired: 9/12/2007 9:54:23 AM
Printed: 1

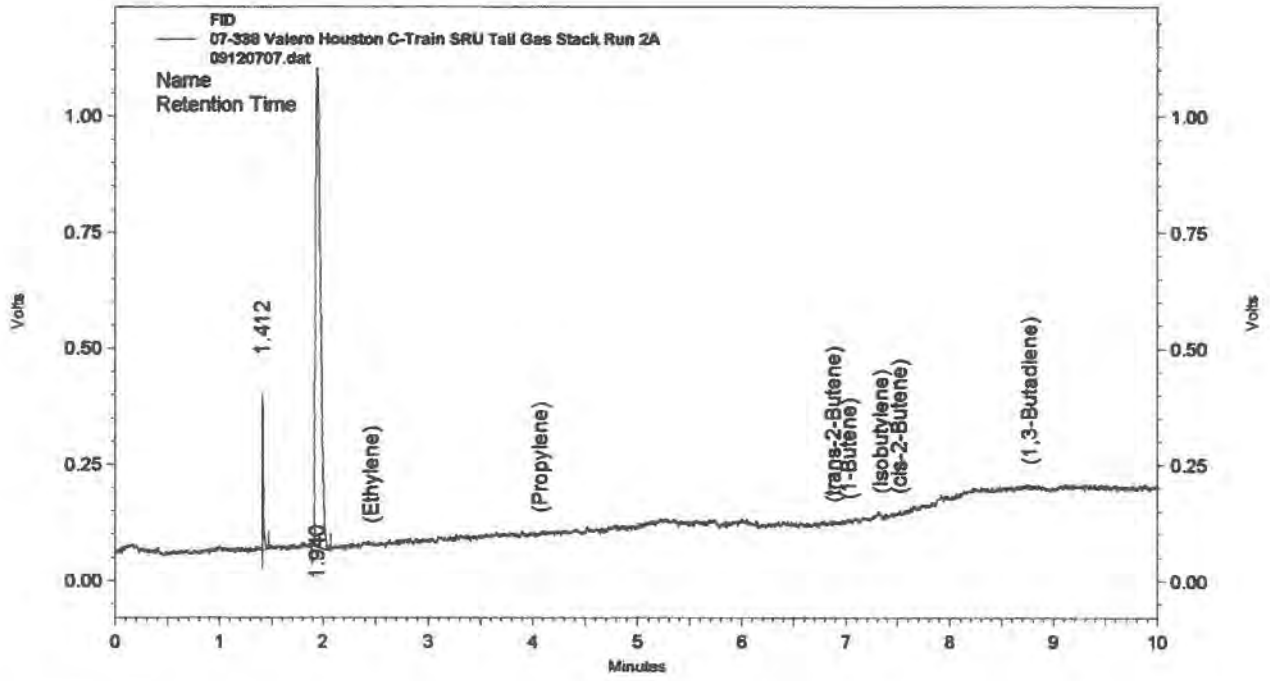


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.942	1022	3356	0.00
Totals		1022	3356	0.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/12/2007 10:20:33 AM
Acquired: 9/12/2007 10:10:32 AM
Printed: 1

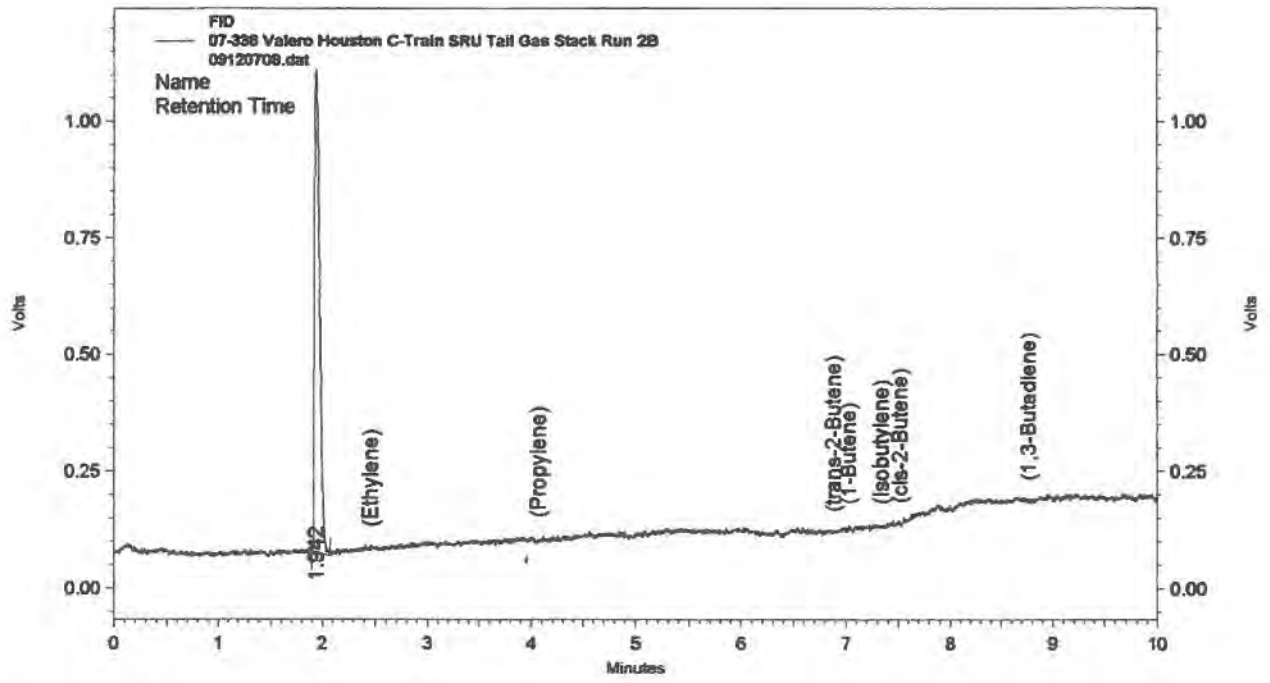


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.412	337	213	0.00
	1.940	1032	3419	0.00
Totals		1369	3632	0.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/12/2007 10:36:55 AM
Acquired: 9/12/2007 10:26:53 AM
Printed: 1

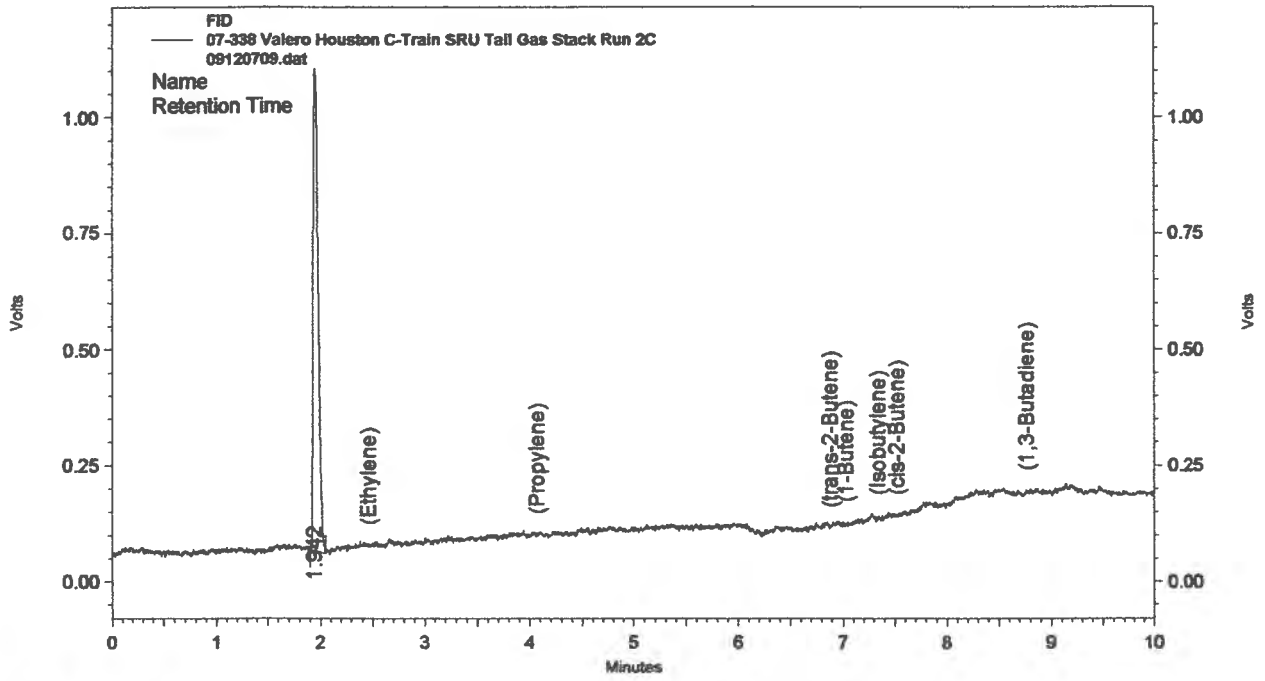


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.942	1036	3427	0.00
Totals		1036	3427	0.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/12/2007 10:53:27 AM
Acquired: 9/12/2007 10:43:26 AM
Printed: 1

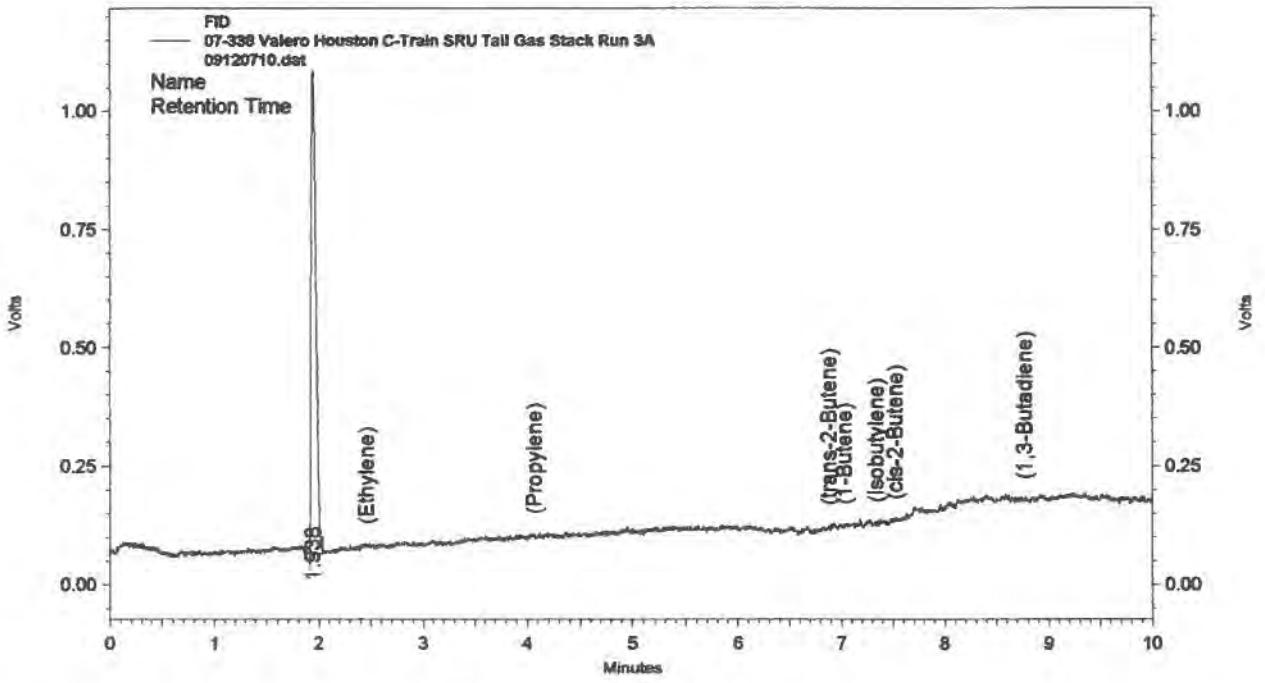


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.942	1039	3466	0.00
Totals		1039	3466	0.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/12/2007 11:09:38 AM
Acquired: 9/12/2007 10:59:36 AM
Printed: 1

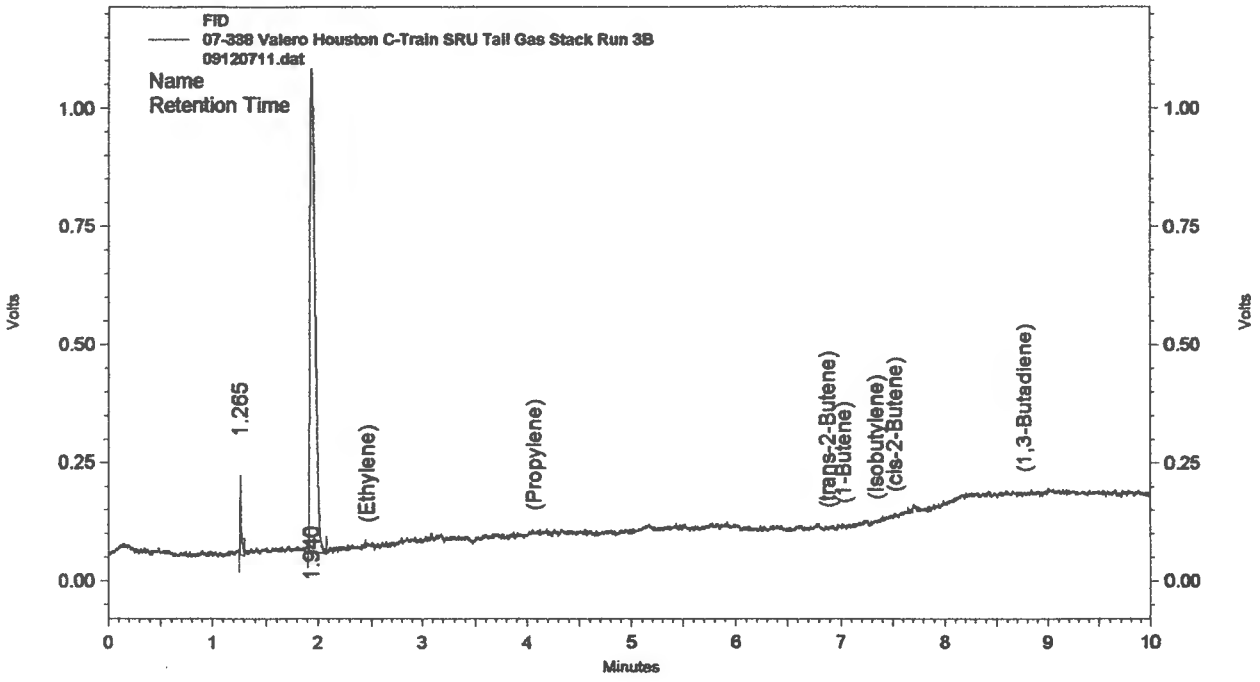


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.938	1020	3270	0.00
Totals		1020	3270	0.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/12/2007 11:25:47 AM
Acquired: 9/12/2007 11:15:46 AM
Printed: 1

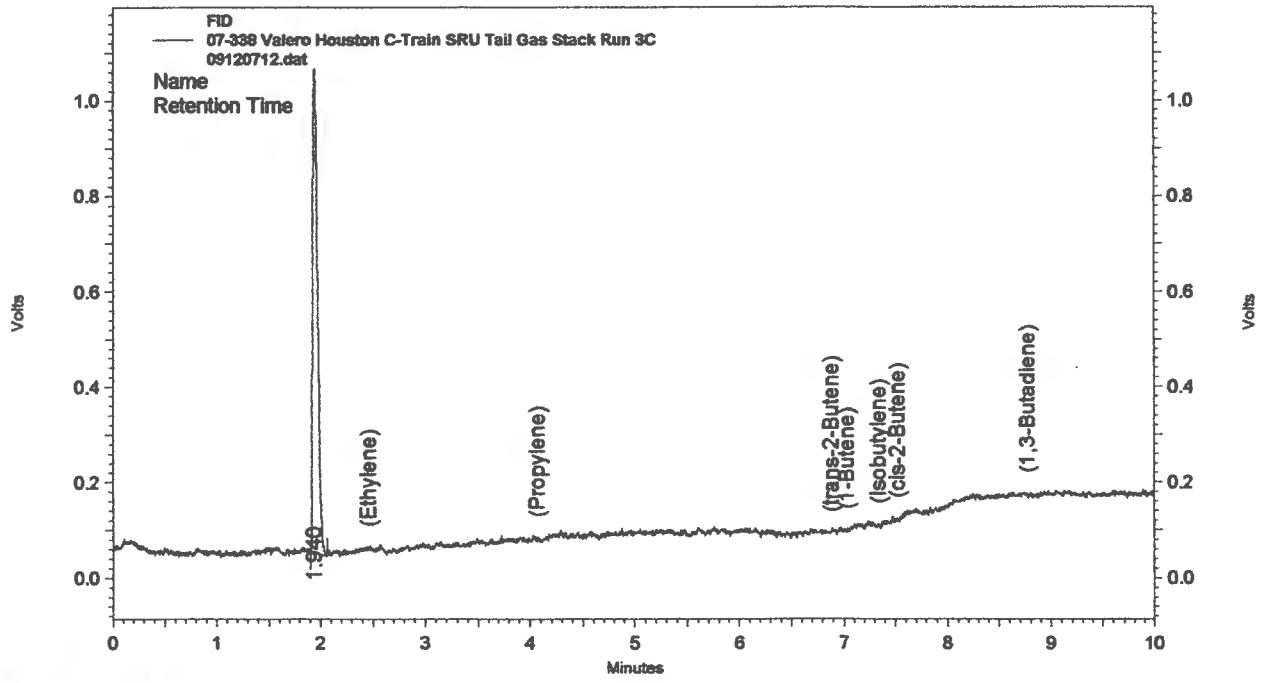


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.265	168	118	0.00
	1.940	1021	3311	0.00
Totals		1189	3429	0.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/12/2007 11:42:22 AM
Acquired: 9/12/2007 11:32:22 AM
Printed: 1

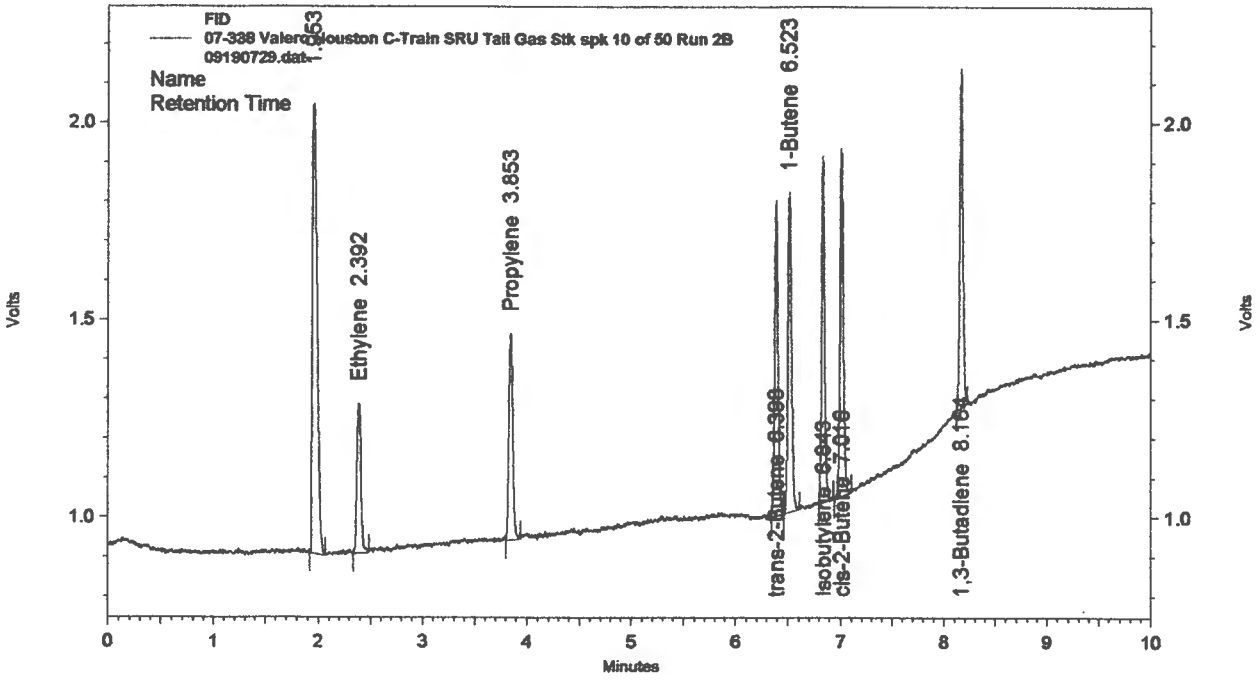


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.940	1014	3256	0.00
Totals		1014	3256	0.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/21/2007 2:26:18 PM
Acquired: 9/19/2007 1:40:34 PM
Printed: 1

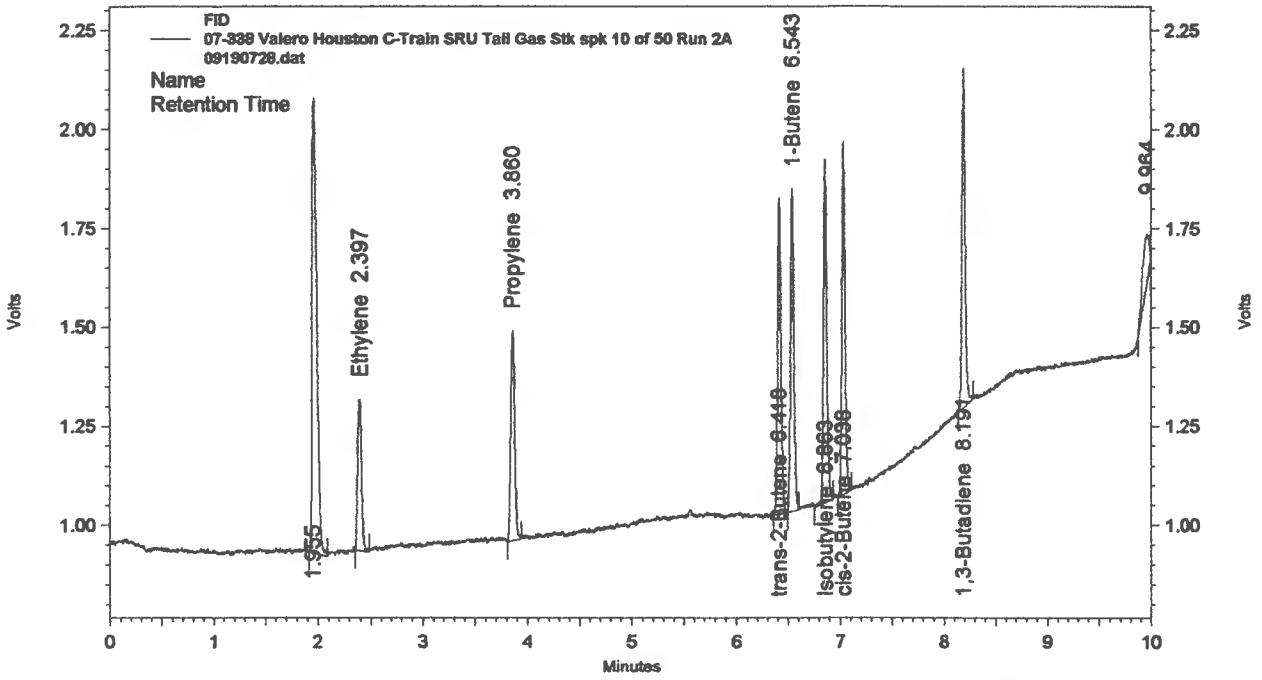


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.953	1141	3633	0.00
Ethylene	2.392	380	997	0.30
Propylene	3.853	524	1375	0.28
trans-2-Butene	6.398	802	1824	0.28
1-Butene	6.523	812	1833	0.28
Isobutylene	6.843	880	1878	0.29
cis-2-Butene	7.016	885	1905	0.29
1,3-Butadiene	8.164	862	1804	0.29
Totals		6286	15249	2.01

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/19/2007 1:34:25 PM
Acquired: 9/19/2007 1:24:25 PM
Printed: 1

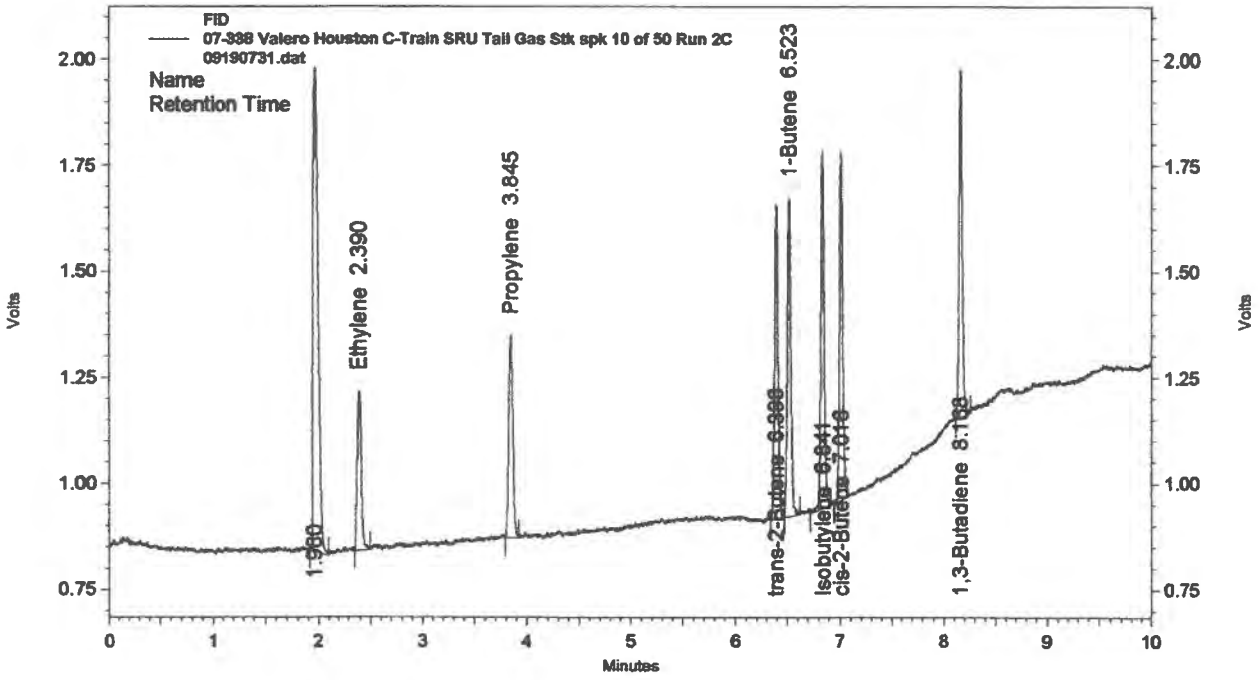


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.955	1149	3685	0.00
Ethylene	2.397	383	959	0.29
Propylene	3.860	531	1394	0.28
trans-2-Butene	6.418	800	1813	0.28
1-Butene	6.543	817	1808	0.27
Isobutylene	6.863	868	1884	0.29
cis-2-Butene	7.038	893	1892	0.29
1,3-Butadiene	8.191	860	1905	0.30
	9.964	121	570	0.00
Totals		6422	15910	2.01

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/19/2007 2:26:41 PM
Acquired: 9/19/2007 2:16:39 PM
Printed: 1



FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.960	1141	3745	0.00
Ethylene	2.390	375	954	0.29
Propylene	3.845	477	1327	0.27
trans-2-Butene	6.396	743	1749	0.27
1-Butene	6.523	751	1763	0.27
Isobutylene	6.841	844	1871	0.29
cis-2-Butene	7.016	823	1780	0.27
1,3-Butadiene	8.168	821	1784	0.28
Totals		5975	14973	1.94

07-338

Spike Recovery Valero Houston C-Train SRU Tail Gas Stack Run 2

	Ccylinder	Vspike (L)	Cspike (ppm)	Sample A	Spike Sample A	Recovery %
Ethylene	50.0	0.01	0.28	0.00	0.29	102.08%
Propylene	50.0	0.01	0.28	0.00	0.28	98.56%
t-2-Butene	50.0	0.01	0.28	0.00	0.28	98.56%
1-Butene	50.0	0.01	0.28	0.00	0.27	95.04%
Isobutylene	50.0	0.01	0.28	0.00	0.29	102.08%
cis-2Butene	51.0	0.01	0.29	0.00	0.28	96.63%
1,3-Butadiene	50.0	0.01	0.28	0.00	0.29	102.08%

Vsample (L): 1.76

Standards, Blanks

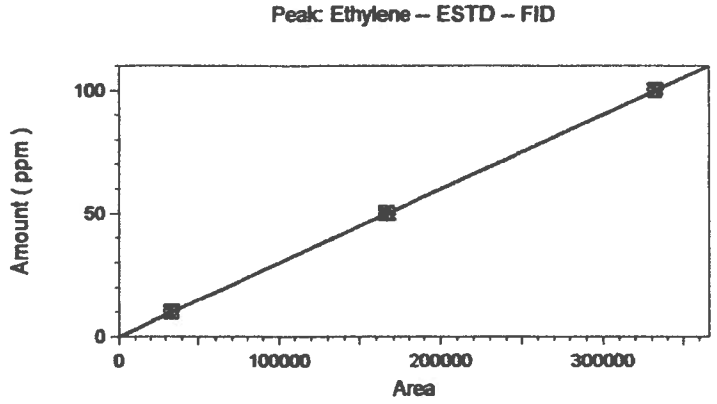
GC Conditions

Column: Restek RT-Alumina Al2O3 PLOT 50 m, 0.53 mm ID
Oven: 40C to 90C at 10C/ minute hold 1 minute 90 to 130C at 30 C/Min hold 2.7
Carrier: Helium
Injector: VICI 6 port 1mL volume

Calibration Report

Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:02 PM
User: System
Instrument: GC 14A

Ethylene (FID)
Average RF: 0.000299569 RF StDev: 1.25993e-006 RF %RSD: 0.420582
Scaling: None LSQ Weighting: None Force Through Zero: Off
Replicate Mode: Wt Average (Weight: 100)
Fit Type: Linear
y = 0.000300986x - 0.129395
Goodness of fit (r^2): 0.999998



	Level 1	Level 2	Level 3
Amount	10	50	100
Area	33534.3	166767	332575
RF	0.000298201	0.00029982010	0.00030068375
	842887389	7935239	4858548
Last Area	33508.5	166759	332491
Residual	0.0360382	-0.0649959	0.0289578
Rep StDev	206.408	93.9432	347.219
Rep %RSD	0.615513	0.0563321	0.104403
Rep 1 Area	33307	166852	332806
Rep 1 User	System	System	System
Rep 1 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\070738.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\0907075.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070741.dat
Rep 1 Sample ID	10 ppm Cal A	50 ppm Cal A	100 ppm Cal A
Rep 1 Calib. Time	9/7/2007 3:34:46 PM	9/7/2007 2:46:58 PM	9/7/2007 4:22:16 PM
Rep 2 Area	33710	166666	332176
Rep 2 User	System	System	System

Calibration Report

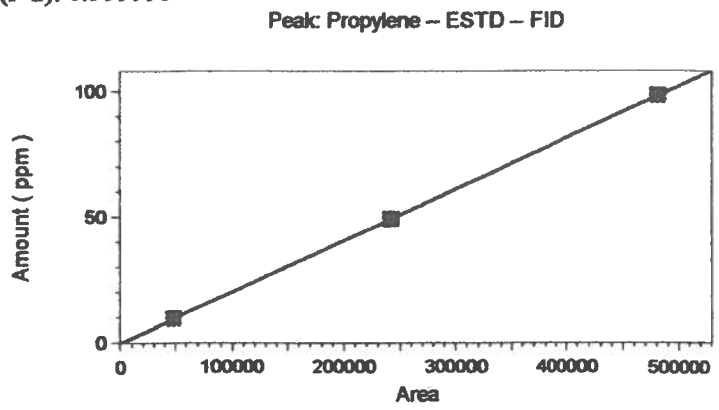
Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:02 PM
User: System
Instrument: GC 14A

Rep 2 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070739.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070736.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070742.dat
Rep 2 Sample ID	10 ppm Cal B	50 ppm Cal B	100 ppm Cal B
Rep 2 Calib. Time	9/7/2007 3:51:23 PM	9/7/2007 3:01:53 PM	9/7/2007 4:37:18 PM
Rep 3 Area	33586	166782	332744
Rep 3 User	System	System	System
Rep 3 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070740.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070737.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070743.dat
Rep 3 Sample ID	10 ppm Cal C	50 ppm Cal C	100 ppm Cal C
Rep 3 Calib. Time	9/7/2007 4:07:44 PM	9/7/2007 3:18:10 PM	9/7/2007 4:51:48 PM

Calibration Report

Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:02 PM
User: System
Instrument: GC 14A

Propylene (FID)
Average RF: 0.000202832 RF StDev: 4.13920e-007 RF %RSD: 0.204070
Scaling: None LSQ Weighting: None Force Through Zero: Off
Replicate Mode: Wt Average (Weight: 100)
Fit Type: Linear
y = 0.000203416x - 0.0951374
Goodness of fit (r^2): 0.999996



	Level 1	Level 2	Level 3
Amount	9.8	49	98
Area	48378.7	241834	482024
RF	0.000202568	0.00020261860	0.00020330923
	625289384	4247272	8191986
Last Area	48356	241526	481873
Residual	0.0541351	-0.0977368	0.0436017
Rep StDev	164.746	543.728	280.19
Rep %RSD	0.340535	0.224836	0.0581277
Rep 1 Area	48196	241634	481972
Rep 1 User	System	System	System
Rep 1 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\090738.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070735.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070741.dat
Rep 1 Sample ID	10 ppm Cal A	50 ppm Cal A	100 ppm Cal A
Rep 1 Calib. Time	9/7/2007 3:34:46 PM	9/7/2007 2:46:58 PM	9/7/2007 4:22:16 PM
Rep 2 Area	48516	241418	481774
Rep 2 User	System	System	System

Calibration Report

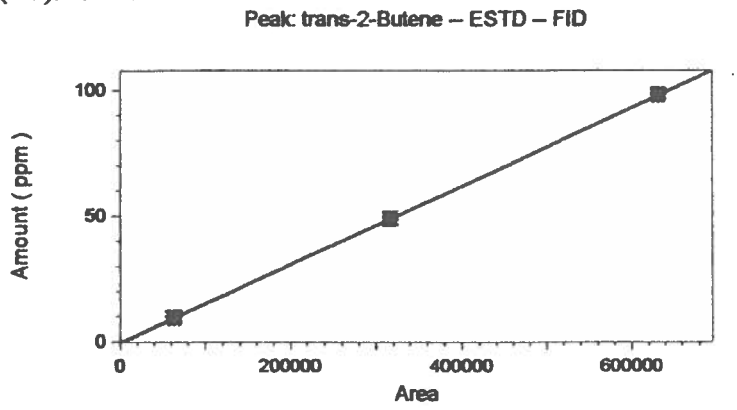
Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:02 PM
User: System
Instrument: GC 14A

Rep 2 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070739.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070736.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070742.dat
Rep 2 Sample ID	10 ppm Cal B	50 ppm Cal B	100 ppm Cal B
Rep 2 Calib. Time	9/7/2007 3:51:23 PM	9/7/2007 3:01:53 PM	9/7/2007 4:37:18 PM
Rep 3 Area	48424	242449	482327
Rep 3 User	System	System	System
Rep 3 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070740.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070737.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070743.dat
Rep 3 Sample ID	10 ppm Cal C	50 ppm Cal C	100 ppm Cal C
Rep 3 Calib. Time	9/7/2007 4:07:44 PM	9/7/2007 3:18:10 PM	9/7/2007 4:51:48 PM

Calibration Report

Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:03 PM
User: System
Instrument: GC 14A

trans-2-Butene (FID)
Average RF: 0.000154743 RF StDev: 3.65455e-007 RF %RSD: 0.236169
Scaling: None LSQ Weighting: None Force Through Zero: Off
Replicate Mode: Wt Average (Weight: 100)
Fit Type: Linear
y = 0.000155239x - 0.0985050
Goodness of fit (r^2): 0.999997



	Level 1	Level 2	Level 3
Amount	9.8	49	98
Area	63461	316823	631678
RF	0.000154425	0.00015466048	0.00015514241
	552701659	8664017	704498
Last Area	63388.5	316084	631283
Residual	0.0469081	-0.0846548	0.0377467
Rep StDev	377.027	1288.98	761.696
Rep %RSD	0.594107	0.406844	0.120583
Rep 1 Area	63033	316228	631619
Rep 1 User	System	System	System
Rep 1 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070738.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070735.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070741.dat
Rep 1 Sample ID	10 ppm Cal A	50 ppm Cal A	100 ppm Cal A
Rep 1 Calib. Time	9/7/2007 3:34:46 PM	9/7/2007 2:46:58 PM	9/7/2007 4:22:16 PM
Rep 2 Area	63744	315939	630947
Rep 2 User	System	System	System

Calibration Report

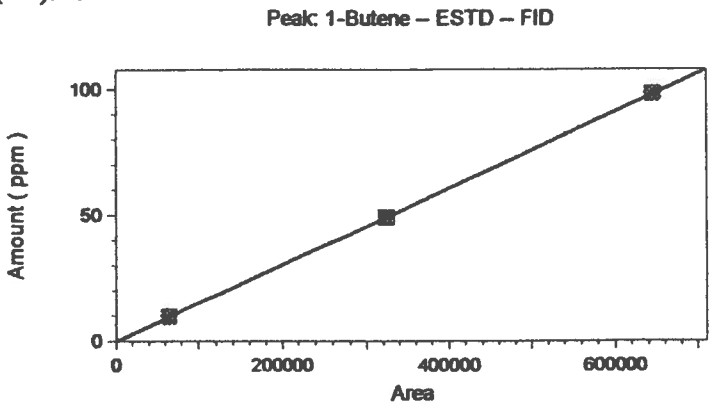
Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:03 PM
User: System
Instrument: GC 14A

Rep 2 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070739.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070736.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070742.dat
Rep 2 Sample ID	10 ppm Cal B	50 ppm Cal B	100 ppm Cal B
Rep 2 Calib. Time	9/7/2007 3:51:23 PM	9/7/2007 3:01:53 PM	9/7/2007 4:37:18 PM
Rep 3 Area	63606	318302	632467
Rep 3 User	System	System	System
Rep 3 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070740.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070737.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070743.dat
Rep 3 Sample ID	10 ppm Cal C	50 ppm Cal C	100 ppm Cal C
Rep 3 Calib. Time	9/7/2007 4:07:44 PM	9/7/2007 3:18:10 PM	9/7/2007 4:51:48 PM

Calibration Report

Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:04 PM
User: System
Instrument: GC 14A

1-Butene (FID)
Average RF: 0.000151465 RF StDev: 4.80042e-007 RF %RSD: 0.316932
Scaling: None LSQ Weighting: None Force Through Zero: Off
Replicate Mode: Wt Average (Weight: 100)
Fit Type: Linear
y = 0.000151713x - 0.0892404
Goodness of fit (r^2): 0.999989



	Level 1	Level 2	Level 3
Amount	9.8	49	98
Area	64563.3	324689	646042
RF	0.000151788	0.00015091364	0.00015169292
	941091435	3517335	3989462
Last Area	64522	324479	645964
Residual	0.0941364	-0.170337	0.0762006
Rep StDev	258.127	604.64	337.134
Rep %RSD	0.399804	0.186221	0.0521845
Rep 1 Area	64274	324962	646272
Rep 1 User	System	System	System
Rep 1 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070738.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070735.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070741.dat
Rep 1 Sample ID	10 ppm Cal A	50 ppm Cal A	100 ppm Cal A
Rep 1 Calib. Time	9/7/2007 3:34:46 PM	9/7/2007 2:46:58 PM	9/7/2007 4:22:16 PM
Rep 2 Area	64770	323996	645655
Rep 2 User	System	System	System

Calibration Report

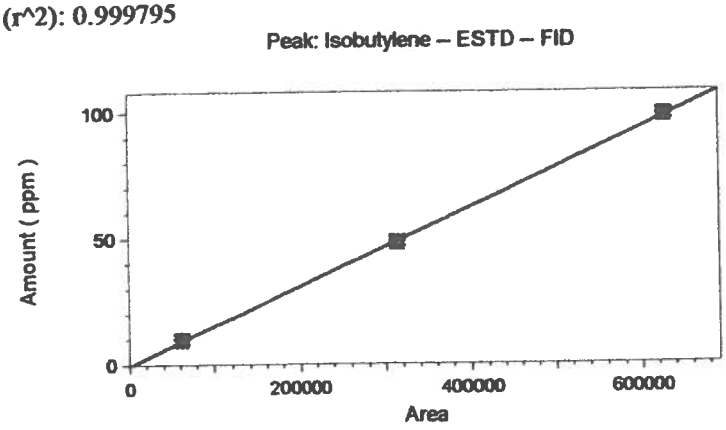
Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:04 PM
User: System
Instrument: GC 14A

Rep 2 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070739.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070736.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070742.dat
Rep 2 Sample ID	10 ppm Cal B	50 ppm Cal B	100 ppm Cal B
Rep 2 Calib. Time	9/7/2007 3:51:23 PM	9/7/2007 3:01:53 PM	9/7/2007 4:37:18 PM
Rep 3 Area	64646	325109	646199
Rep 3 User	System	System	System
Rep 3 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070740.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070737.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070743.dat
Rep 3 Sample ID	10 ppm Cal C	50 ppm Cal C	100 ppm Cal C
Rep 3 Calib. Time	9/7/2007 4:07:44 PM	9/7/2007 3:18:10 PM	9/7/2007 4:51:48 PM

Calibration Report

Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:06 PM
User: System
Instrument: GC 14A

Isobutylene (FID)
Average RF: 0.000155015 RF StDev: 2.08204e-006 RF %RSD: 1.34312
Scaling: None LSQ Weighting: None Force Through Zero: Off
Replicate Mode: Wt Average (Weight: 100)
Fit Type: Linear
y = 0.000156195x - 0.395485
Goodness of fit (r^2): 0.999795



	Level 1	Level 2	Level 3
Amount	9.8	48	98
Area	62681.7	314516	627869
RF	0.000156345	0.00015261544	0.00015608343
	555585099	722685	1372133
Last Area	62630.5	314172	627755
Residual	0.404921	-0.730346	0.325425
Rep StDev	277.057	641.601	335.753
Rep %RSD	0.442006	0.203996	0.053475
Rep 1 Area	62368	314410	628025
Rep 1 User	System	System	System
Rep 1 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\070738.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070735.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070741.dat
Rep 1 Sample ID	10 ppm Cal A	50 ppm Cal A	100 ppm Cal A
Rep 1 Calib. Time	9/7/2007 3:34:46 PM	9/7/2007 2:46:58 PM	9/7/2007 4:22:16 PM
Rep 2 Area	62893	313934	627484
Rep 2 User	System	System	System

Calibration Report

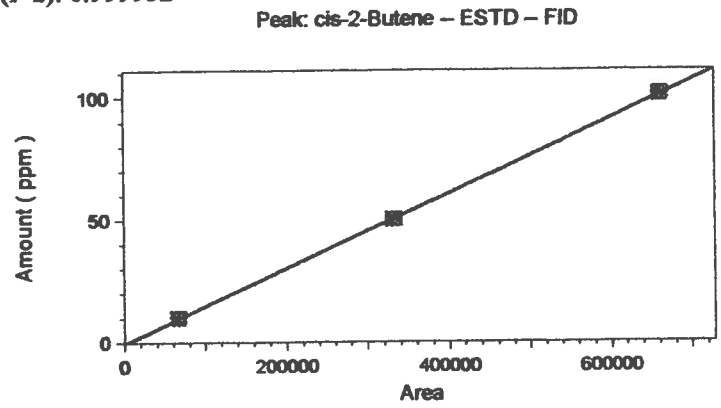
Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:06 PM
User: System
Instrument: GC 14A

Rep 2 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070739.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070736.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070742.dat
Rep 2 Sample ID	10 ppm Cal B	50 ppm Cal B	100 ppm Cal B
Rep 2 Calib. Time	9/7/2007 3:51:23 PM	9/7/2007 3:01:53 PM	9/7/2007 4:37:18 PM
Rep 3 Area	62784	315204	628099
Rep 3 User	System	System	System
Rep 3 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070740.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070737.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070743.dat
Rep 3 Sample ID	10 ppm Cal C	50 ppm Cal C	100 ppm Cal C
Rep 3 Calib. Time	9/7/2007 4:07:44 PM	9/7/2007 3:18:10 PM	9/7/2007 4:51:48 PM

Calibration Report

Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:08 PM
User: System
Instrument: GC 14A

cis-2-Butene (FID)
Average RF: 0.000150901 RF StDev: 1.61946e-006 RF %RSD: 1.07319
Scaling: None LSQ Weighting: None Force Through Zero: Off
Replicate Mode: Wt Average (Weight: 100)
Fit Type: Linear
y = 0.000153062x - 0.442477
Goodness of fit (r^2): 0.999952



	Level 1	Level 2	Level 3
Amount	9.9	50	101
Area	66249.7	331942	661691
RF	0.000149434	0.00015062872	0.00015263914
	714136926	4295208	5946196
Last Area	66202.5	331543	661419
Residual	0.202194	-0.36511	0.162916
Rep StDev	340.447	783.431	601.353
Rep %RSD	0.513885	0.236014	0.0908812
Rep 1 Area	65872	331912	661792
Rep 1 User	System	System	System
Rep 1 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070738.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070735.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070741.dat
Rep 1 Sample ID	10 ppm Cal A	50 ppm Cal A	100 ppm Cal A
Rep 1 Calib. Time	9/7/2007 3:34:46 PM	9/7/2007 2:46:58 PM	9/7/2007 4:22:16 PM
Rep 2 Area	66533	331174	661046
Rep 2 User	System	System	System

Calibration Report

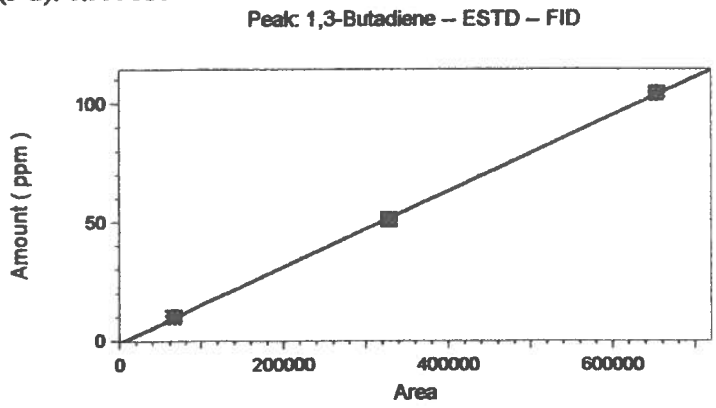
Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:08 PM
User: System
Instrument: GC 14A

Rep 2 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070739.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070736.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070742.dat
Rep 2 Sample ID	10 ppm Cal B	50 ppm Cal B	100 ppm Cal B
Rep 2 Calib. Time	9/7/2007 3:51:23 PM	9/7/2007 3:01:53 PM	9/7/2007 4:37:18 PM
Rep 3 Area	66344	332740	662236
Rep 3 User	System	System	System
Rep 3 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070740.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070737.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070743.dat
Rep 3 Sample ID	10 ppm Cal C	50 ppm Cal C	100 ppm Cal C
Rep 3 Calib. Time	9/7/2007 4:07:44 PM	9/7/2007 3:18:10 PM	9/7/2007 4:51:48 PM

Calibration Report

Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:09 PM
User: System
Instrument: GC 14A

1,3-Butadiene (FID)
Average RF: 0.000156643 RF StDev: 2.14443e-006 RF %RSD: 1.36899
Scaling: None LSQ Weighting: None Force Through Zero: Off
Replicate Mode: Wt Average (Weight: 100)
Fit Type: Linear
y = 0.000159659x - 0.681807
Goodness of fit (r^2): 0.999816



	Level 1	Level 2	Level 3
Amount	10.2	51	104
Area	65607	328311	653601
RF	0.000155471	0.00015534051	0.00015911840
	214961818	5547758	2451239
Last Area	65542.5	327655	653455
Residual	0.407088	-0.735852	0.328764
Rep StDev	279.773	1149.17	700.464
Rep %RSD	0.426438	0.350025	0.10717
Rep 1 Area	65286	327827	654108
Rep 1 User	System	System	System
Rep 1 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\090070738.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\090707305.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070741.dat
Rep 1 Sample ID	10 ppm Cal A	50 ppm Cal A	100 ppm Cal A
Rep 1 Calib. Time	9/7/2007 3:34:46 PM	9/7/2007 2:46:58 PM	9/7/2007 4:22:16 PM
Rep 2 Area	65799	327483	652802
Rep 2 User	System	System	System

Calibration Report

Method: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Print Time: 9/7/2007 4:52:09 PM
User: System
Instrument: GC 14A

Rep 2 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070739.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070736.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070742.dat
Rep 2 Sample ID	10 ppm Cal B	50 ppm Cal B	100 ppm Cal B
Rep 2 Calib. Time	9/7/2007 3:51:23 PM	9/7/2007 3:01:53 PM	9/7/2007 4:37:18 PM
Rep 3 Area	65736	329623	653894
Rep 3 User	System	System	System
Rep 3 Data File	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070740.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070737.dat	C:\EZChrom Elite\Enterprise\Projects\Default\Data\09070743.dat
Rep 3 Sample ID	10 ppm Cal C	50 ppm Cal C	100 ppm Cal C
Rep 3 Calib. Time	9/7/2007 4:07:44 PM	9/7/2007 3:18:10 PM	9/7/2007 4:51:48 PM

METCO Environmental

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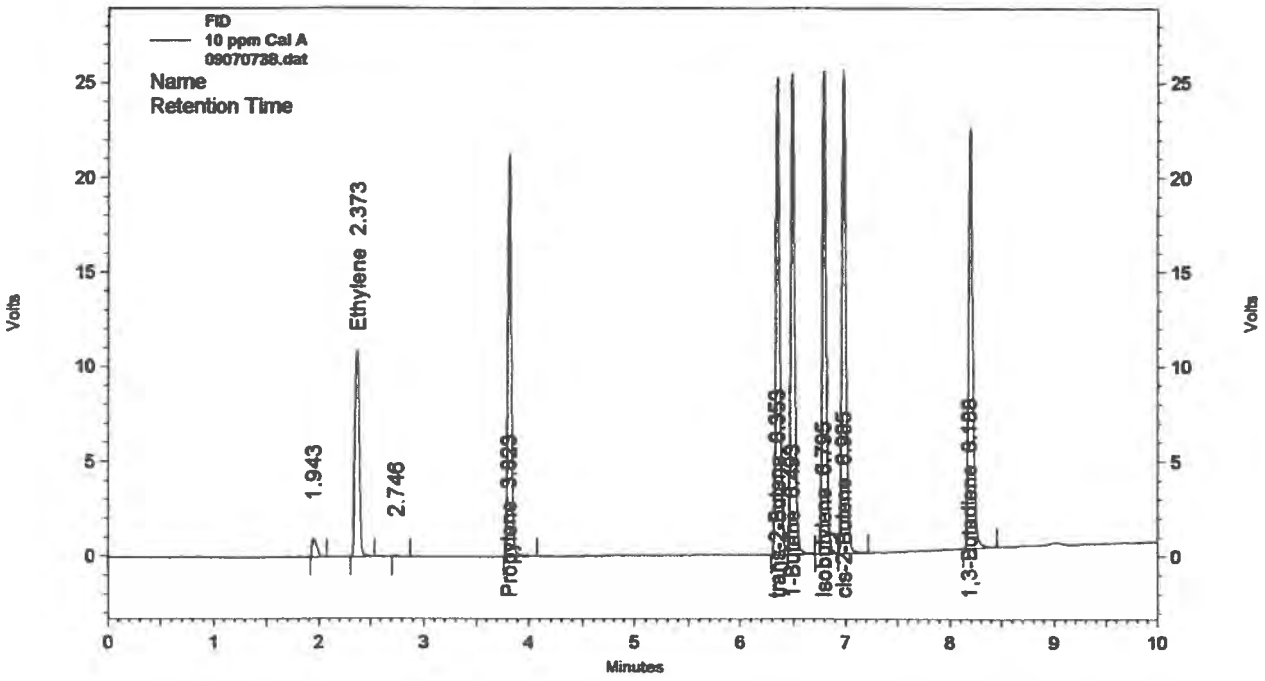

FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.943	974	3120	0.00
Ethylene	2.373	10800	33307	10.00 CAL
	2.746	88	266	0.00
Propylene	3.823	21246	48196	9.80 CAL
trans-2-Butene	6.353	25148	63033	9.80 CAL
1-Butene	6.493	25400	64274	9.80 CAL
Isobutylene	6.795	25463	62368	9.80 CAL
cis-2-Butene	6.985	25539	65872	9.90 CAL
1,3-Butadiene	8.188	22238	65286	10.20 CAL
Totals		156896	405722	69.30

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/7/2007 3:51:23 PM
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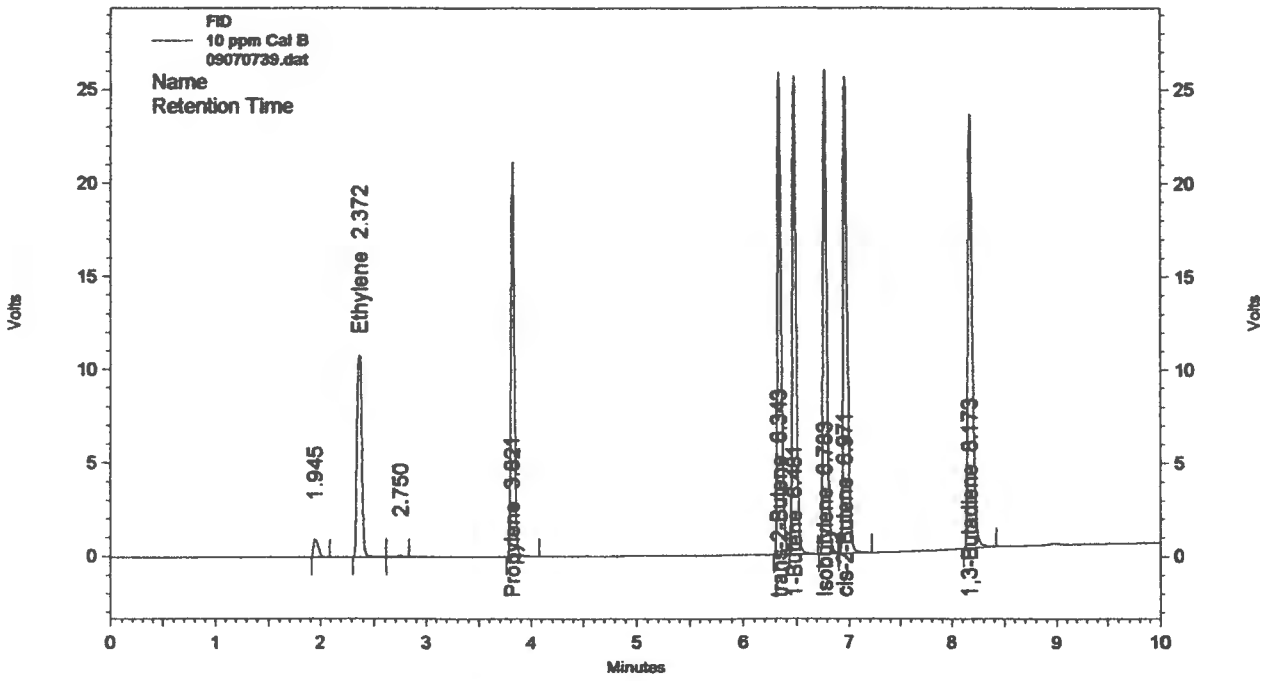
Printed: 1



FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.945	965	3126	0.00
Ethylene	2.372	10802	33710	10.00 CAL
	2.750	94	337	0.00
Propylene	3.821	21142	48516	9.80 CAL
trans-2-Butene	6.343	25864	63744	9.80 CAL
1-Butene	6.481	25607	64770	9.80 CAL
Isobutylene	6.783	25970	62893	9.80 CAL
cis-2-Butene	6.971	25513	66533	9.90 CAL
1,3-Butadiene	8.173	23267	65799	10.20 CAL
Totals		159224	409428	69.30

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
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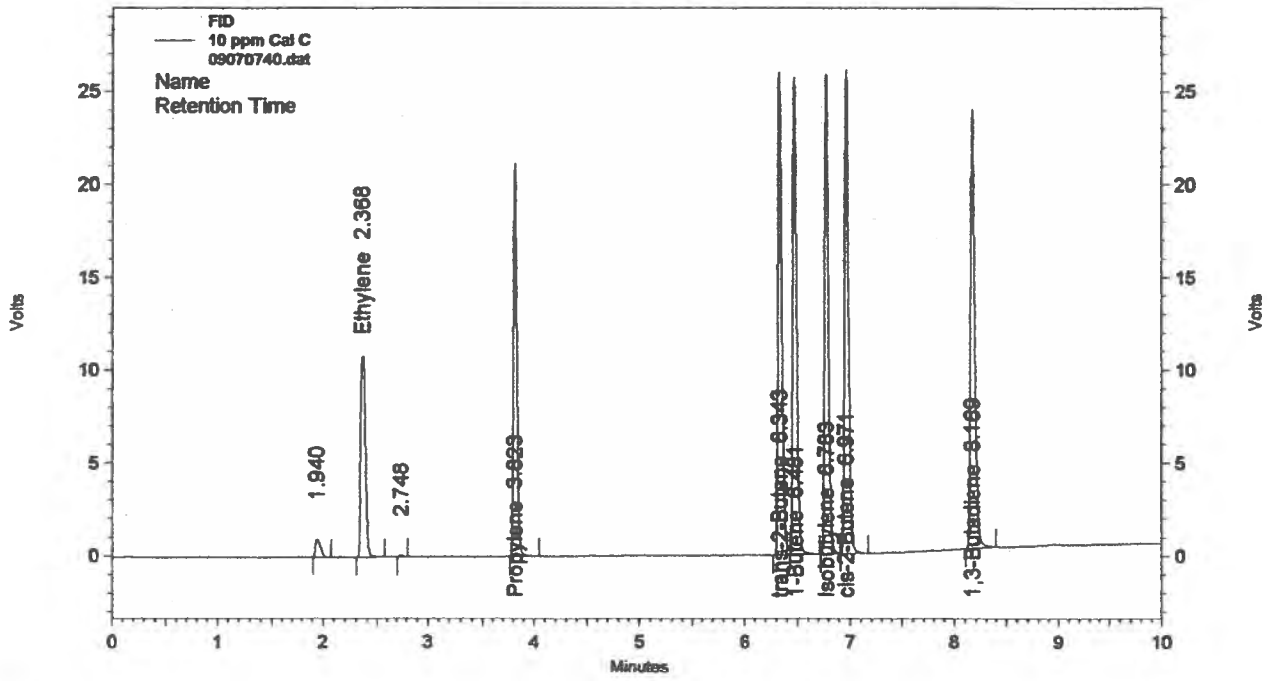

FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.940	966	3136	0.00
Ethylene	2.368	10792	33586	10.00 CAL
	2.748	89	245	0.00
Propylene	3.823	21154	48424	9.80 CAL
trans-2-Butene	6.343	25967	63606	9.80 CAL
1-Butene	6.481	25656	64646	9.80 CAL
Isobutylene	6.783	25788	62784	9.80 CAL
cis-2-Butene	6.971	26038	66344	9.90 CAL
1,3-Butadiene	8.169	23581	65736	10.20 CAL
Totals		160031	408507	69.30

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC052307.met
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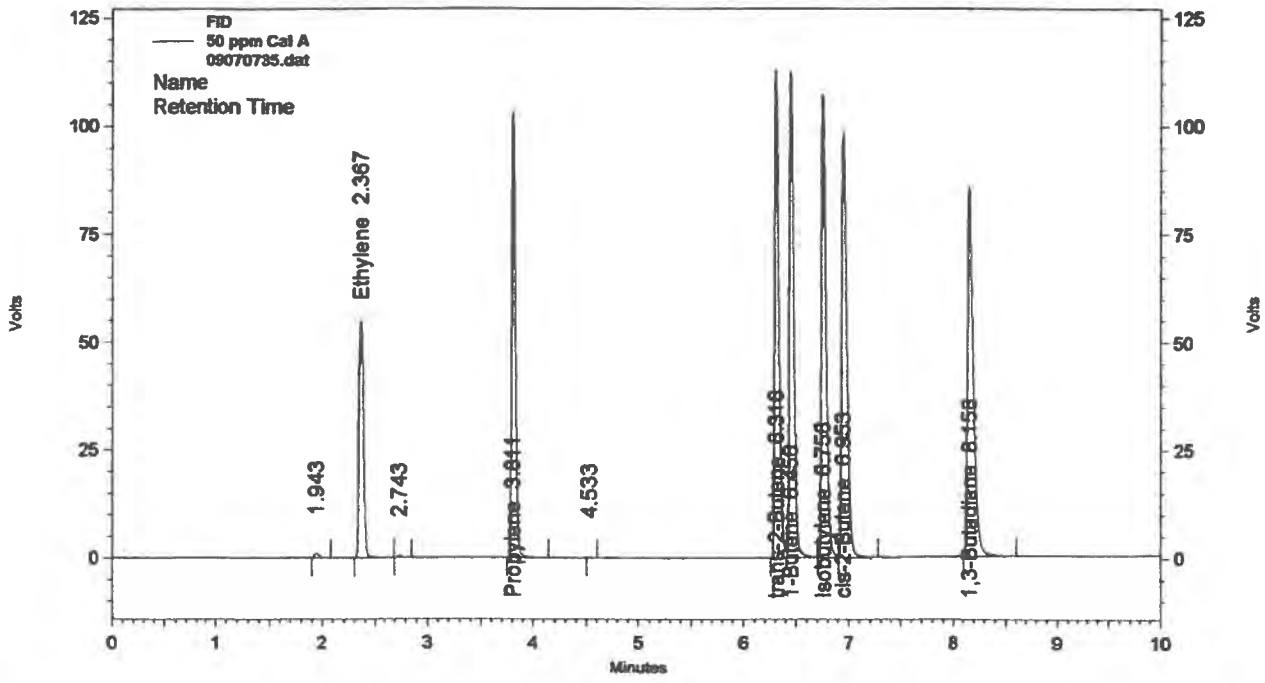
Printed: 1



FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.943	983	3168	0.00
Ethylene	2.367	54853	166852	50.00 CAL
	2.743	427	1258	0.00
Propylene	3.811	103349	241634	49.00 CAL
	4.533	109	258	0.00
trans-2-Butene	6.316	112893	316228	49.00 CAL
1-Butene	6.456	112538	324962	49.00 CAL
Isobutylene	6.756	107152	314410	48.00 CAL
cis-2-Butene	6.953	98463	331912	50.00 CAL
1,3-Butadiene	8.158	85564	327827	51.00 CAL
Totals		676331	2028509	346.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
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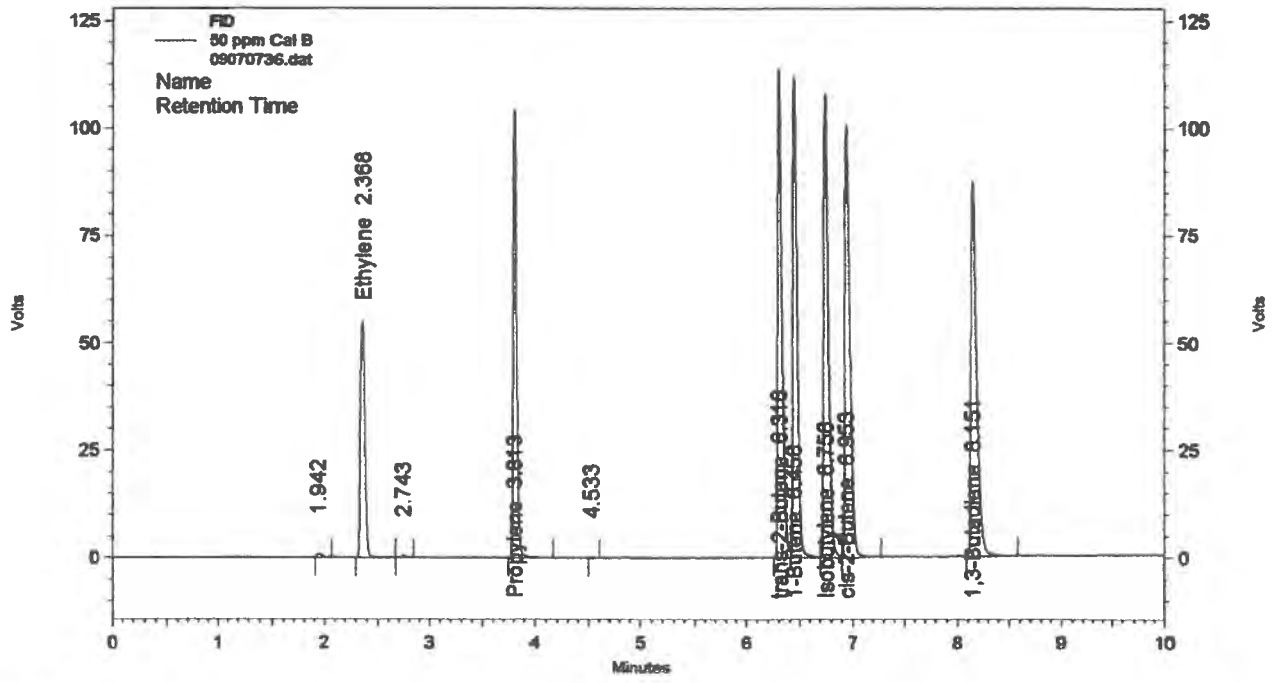

FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.942	977	3163	0.00
Ethylene	2.368	54899	166666	50.00 CAL
	2.743	417	1224	0.00
Propylene	3.813	104224	241418	49.00 CAL
	4.533	101	239	0.00
trans-2-Butene	6.316	113586	315939	49.00 CAL
1-Butene	6.456	111812	323996	49.00 CAL
Isobutylene	6.756	107992	313934	48.00 CAL
cis-2-Butene	6.953	100717	331174	50.00 CAL
1,3-Butadiene	8.151	87215	327483	51.00 CAL
Totals		681940	2025236	346.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/7/2007 3:18:10 PM
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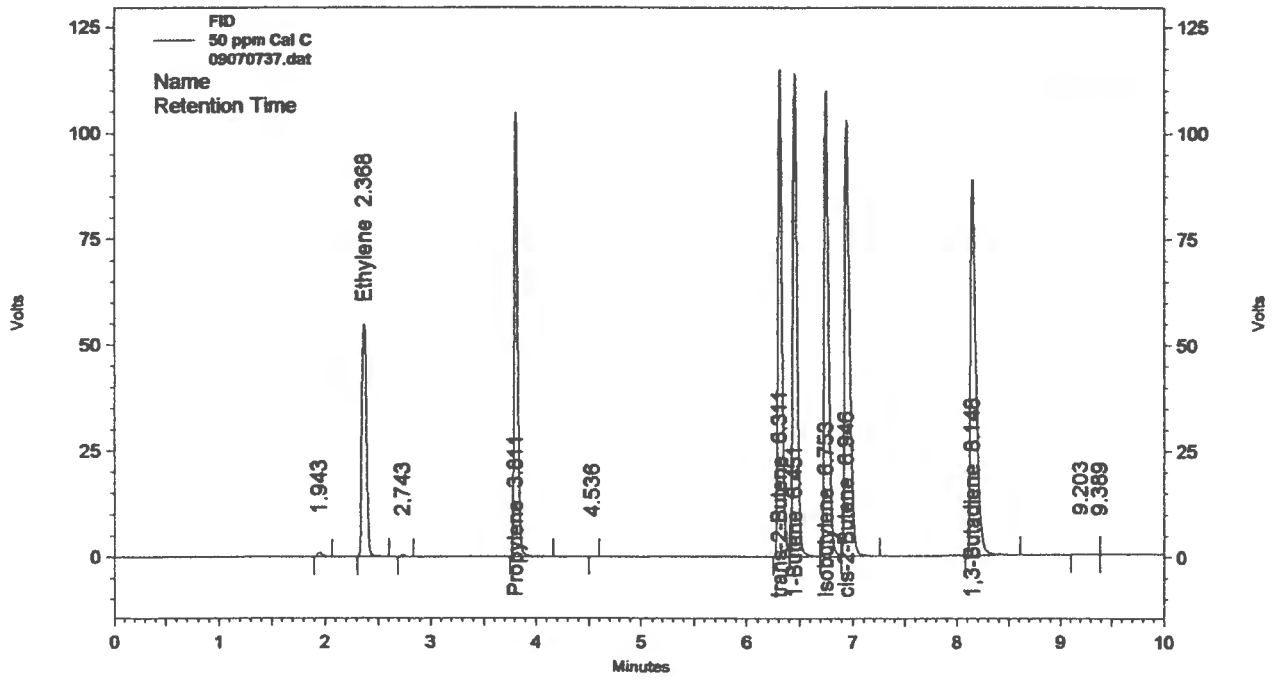

FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.943	972	3117	0.00
Ethylene	2.368	54960	166782	50.00 CAL
	2.743	420	1195	0.00
Propylene	3.811	104859	242449	49.00 CAL
	4.536	102	239	0.00
trans-2-Butene	6.311	115130	318302	49.00 CAL
1-Butene	6.451	114021	325109	49.00 CAL
Isobutylene	6.753	109989	315204	48.00 CAL
cis-2-Butene	6.946	102862	332740	50.00 CAL
1,3-Butadiene	8.148	88660	329623	51.00 CAL
	9.203	145	1013	0.00
	9.389	0	0	0.00
Totals		692120	2035773	346.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
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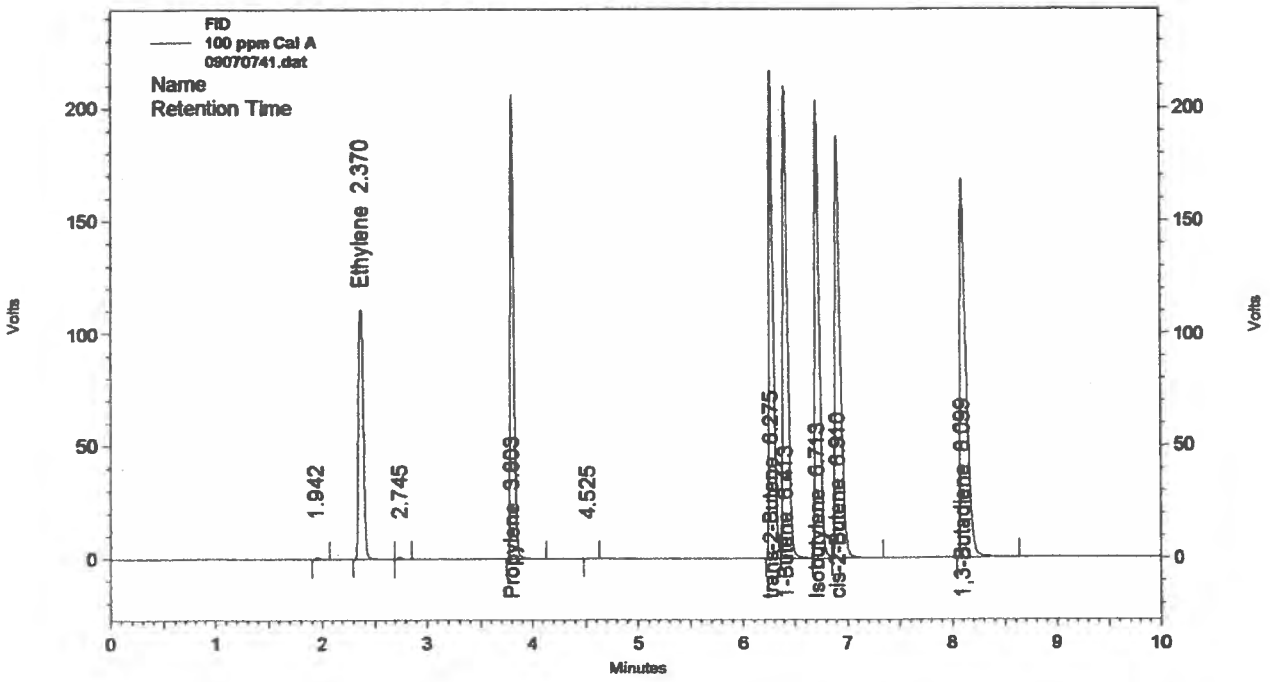

FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.942	978	3139	0.00
Ethylene	2.370	110851	332806	100.00 CAL
	2.745	850	2393	0.00
Propylene	3.803	206105	481972	98.00 CAL
	4.525	186	462	0.00
trans-2-Butene	6.275	216617	631619	98.00 CAL
1-Butene	6.413	209731	646272	98.00 CAL
Isobutylene	6.713	203486	628025	98.00 CAL
cis-2-Butene	6.910	187342	661792	101.00 CAL
1,3-Butadiene	8.099	168460	654108	104.00 CAL
Totals		1304606	4042588	697.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/7/2007 4:37:18 PM
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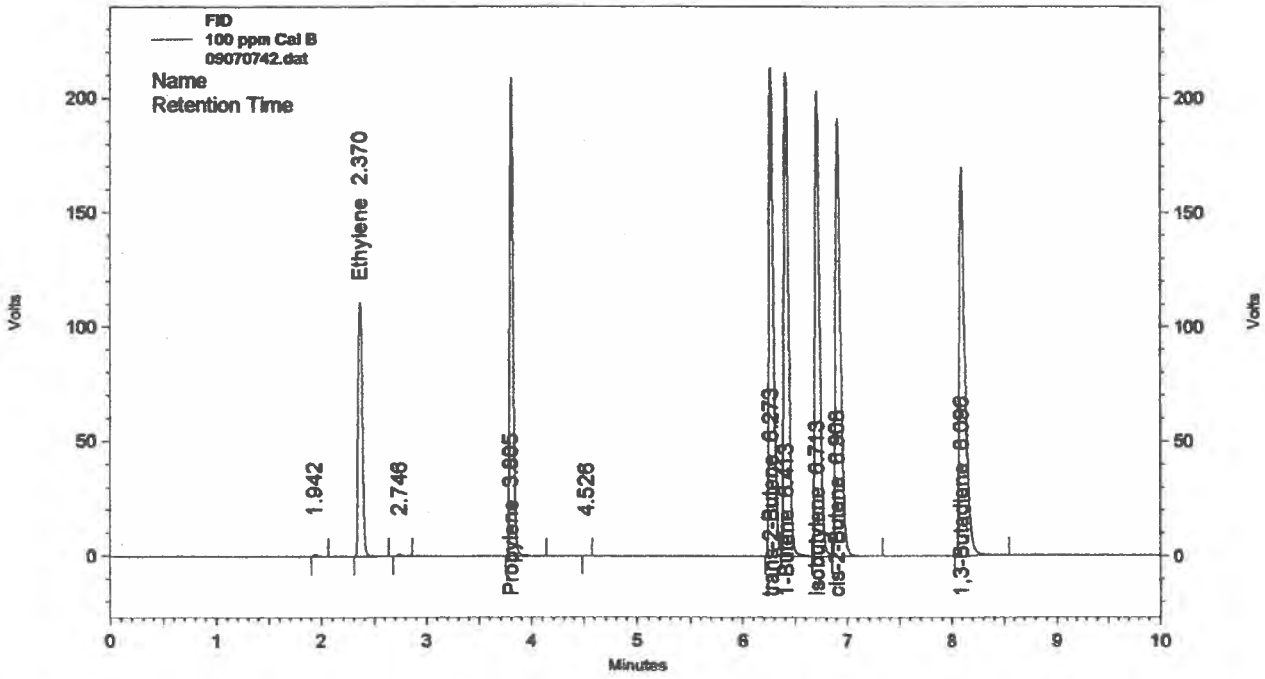

FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.942	977	3110	0.00
Ethylene	2.370	111112	332176	100.00 CAL
	2.746	831	2291	0.00
Propylene	3.805	208956	481774	98.00 CAL
	4.526	189	408	0.00
trans-2-Butene	6.273	213095	630947	98.00 CAL
1-Butene	6.413	211059	645655	98.00 CAL
Isobutylene	6.713	202957	627484	98.00 CAL
cis-2-Butene	6.908	191213	661046	101.00 CAL
1,3-Butadiene	8.096	169480	652802	104.00 CAL
Totals		1309869	4037693	697.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/7/2007 4:51:48 PM
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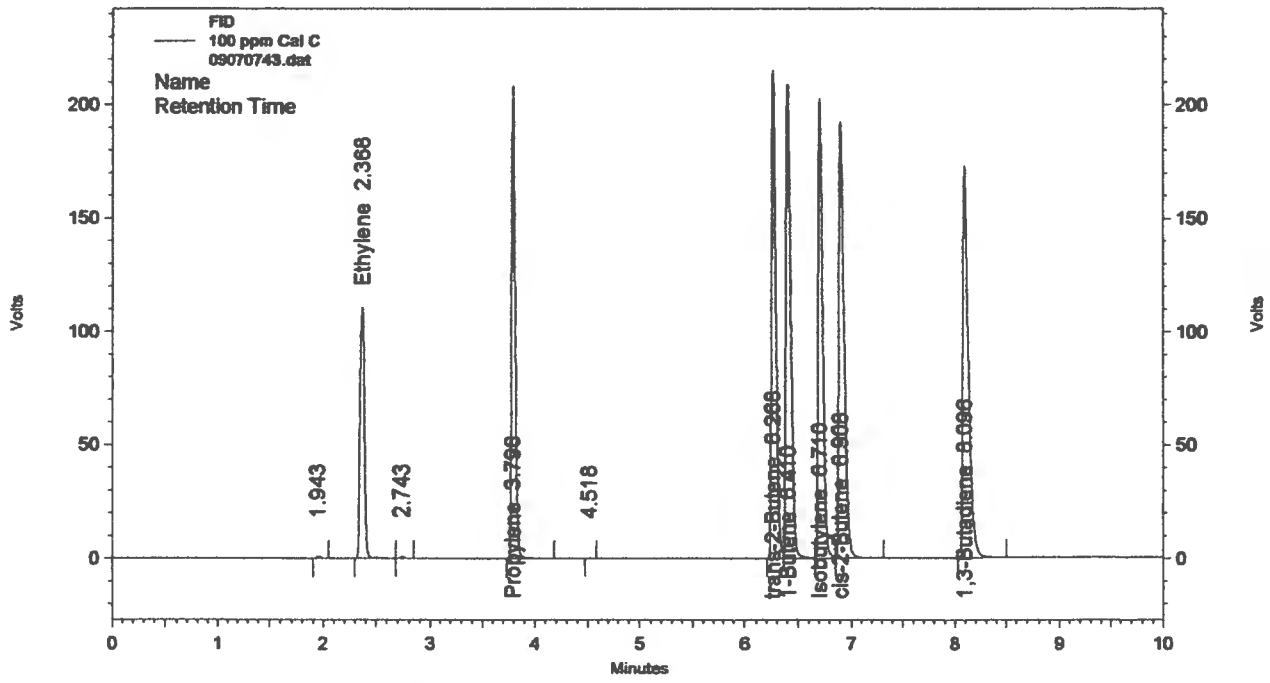
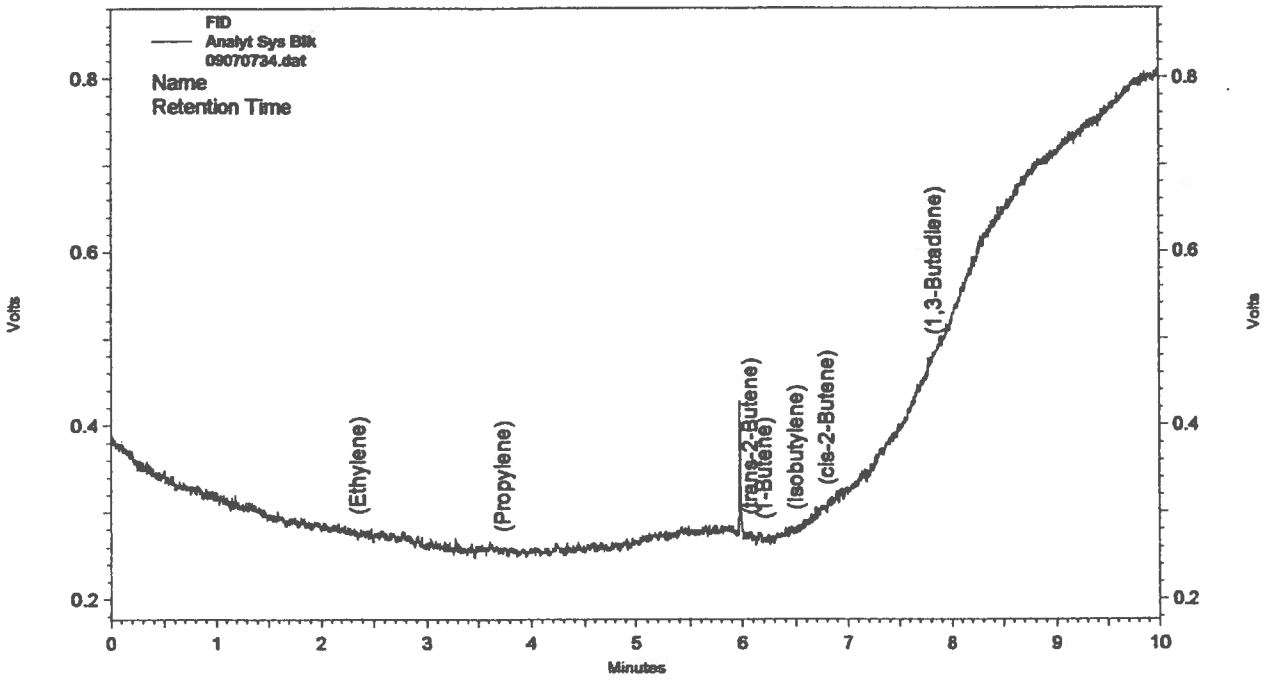


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.943	972	3103	0.00
Ethylene	2.368	110839	332744	100.00 CAL
	2.743	843	2343	0.00
Propylene	3.796	208655	482327	98.00 CAL
	4.518	191	419	0.00
trans-2-Butene	6.268	215357	632467	98.00 CAL
1-Butene	6.410	208920	646199	98.00 CAL
Isobutylene	6.710	202678	628099	98.00 CAL
cis-2-Butene	6.908	192475	662236	101.00 CAL
1,3-Butadiene	8.096	173058	653894	104.00 CAL
Totals		1313988	4043831	697.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC052307.met
Method: 9/7/2007 2:32:05 PM
Acquired: 9/7/2007 2:22:05 PM
Printed: 1

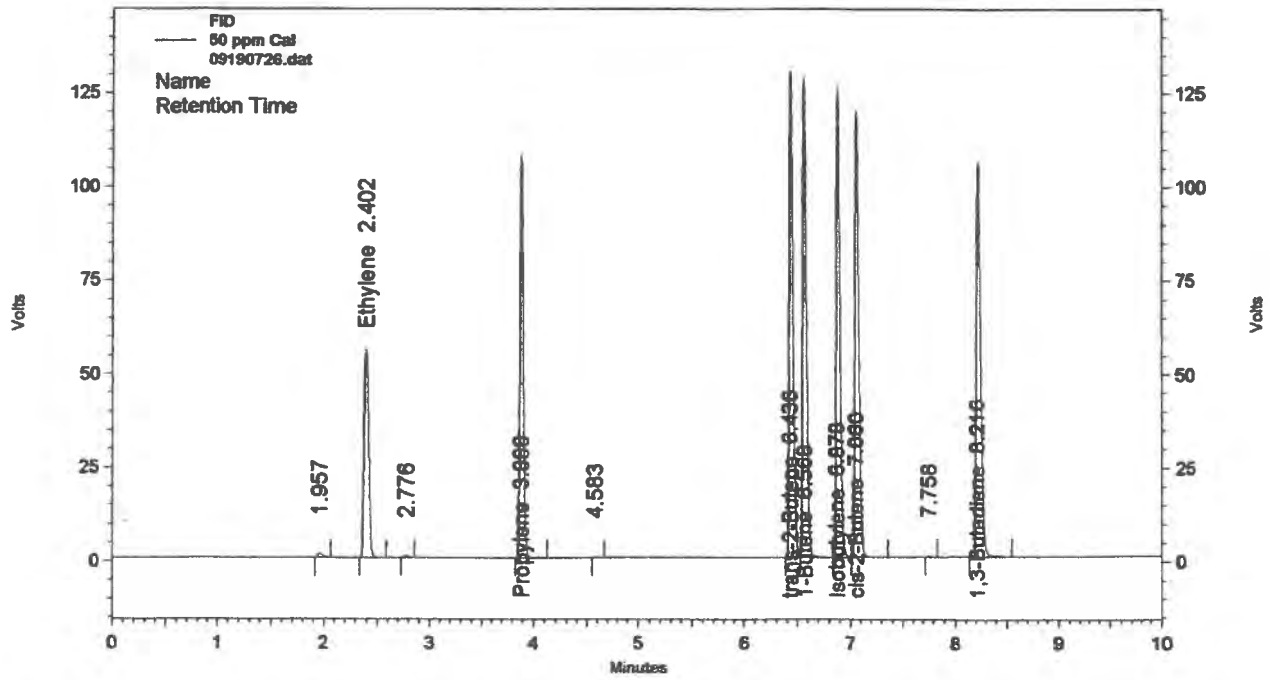


FID Results

Name	Retention Time	Height	Area	ESTD concentration

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/19/2007 1:04:46 PM
Acquired: 9/19/2007 12:35:35 PM
Printed: 1

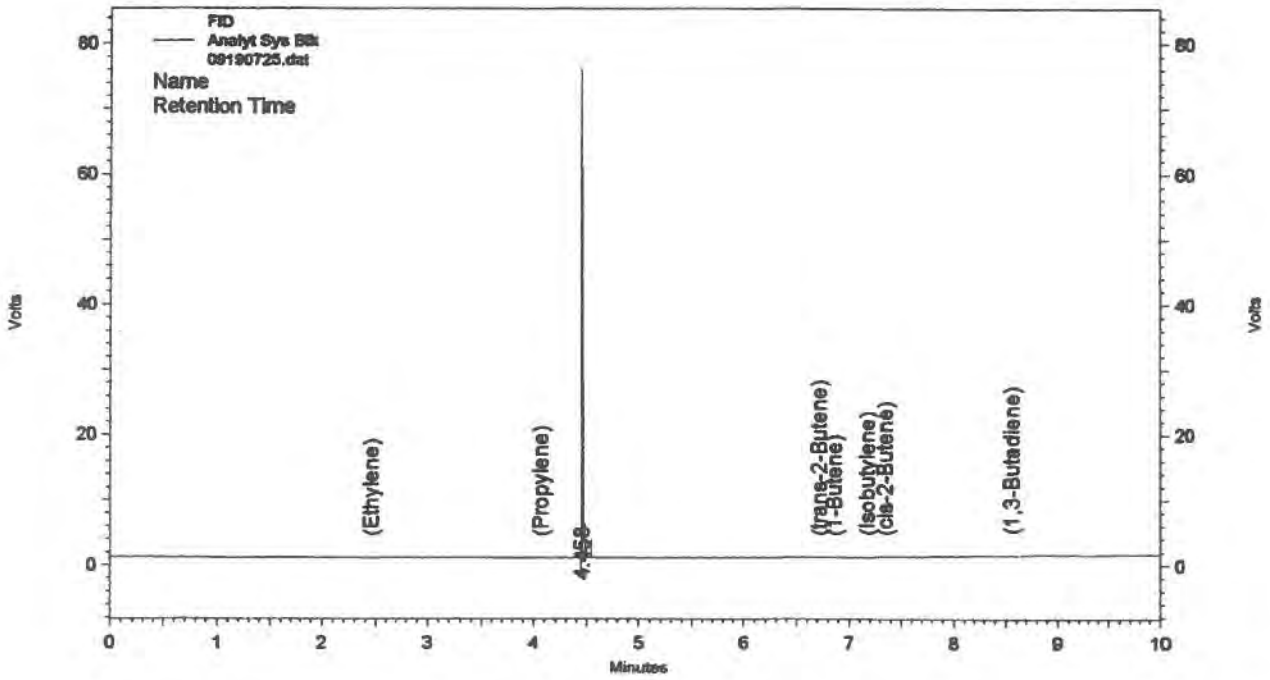


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.957	1119	3582	0.00
Ethylene	2.402	55622	161244	48.45
	2.776	470	1274	0.00
Propylene	3.886	107722	233763	47.46
	4.583	190	442	0.00
trans-2-Butene	6.436	130145	309125	47.89
1-Butene	6.568	128087	312469	47.32
Isobutylene	6.878	125386	304681	47.19
cis-2-Butene	7.060	119320	320903	48.68
	7.758	190	438	0.00
1,3-Butadiene	8.216	105108	317584	50.02
Totals		773359	1965505	337.01

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/19/2007 12:11:27 PM
Acquired: 9/19/2007 12:01:28 PM
Printed: 1

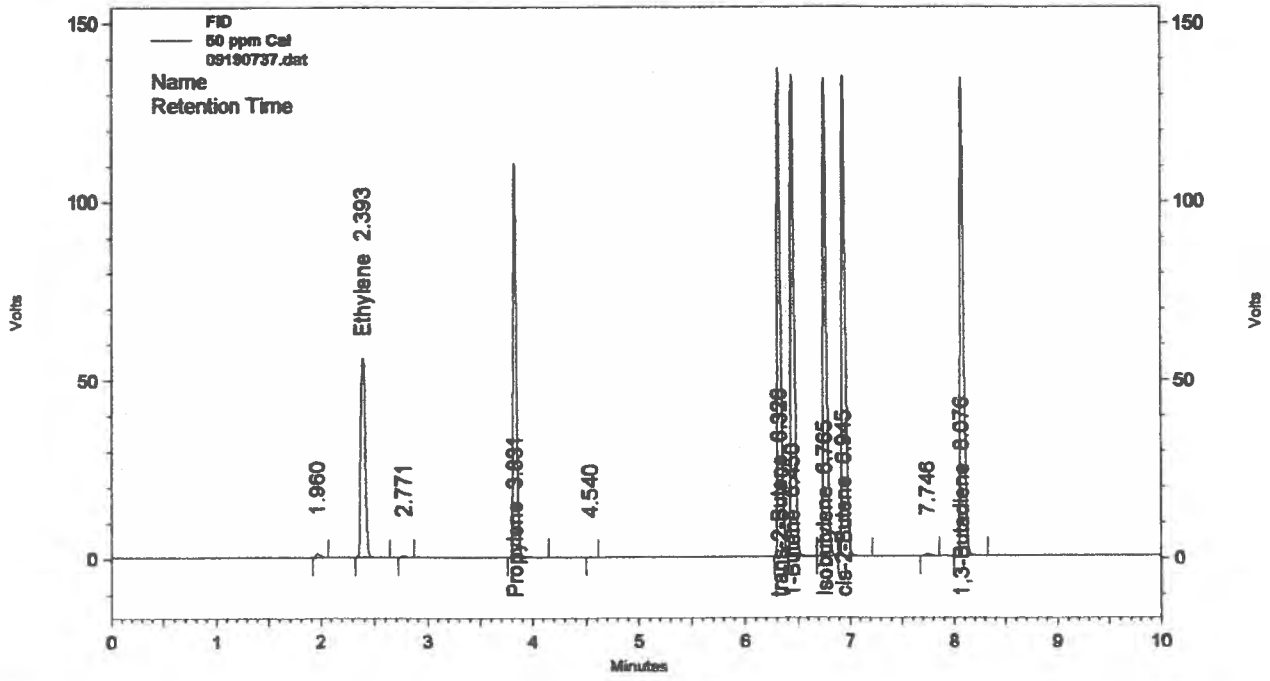


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	4.458	74889	43583	0.00
Totals		74889	43583	0.00

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/19/2007 4:10:02 PM
Acquired: 9/19/2007 4:00:01 PM
Printed: 1

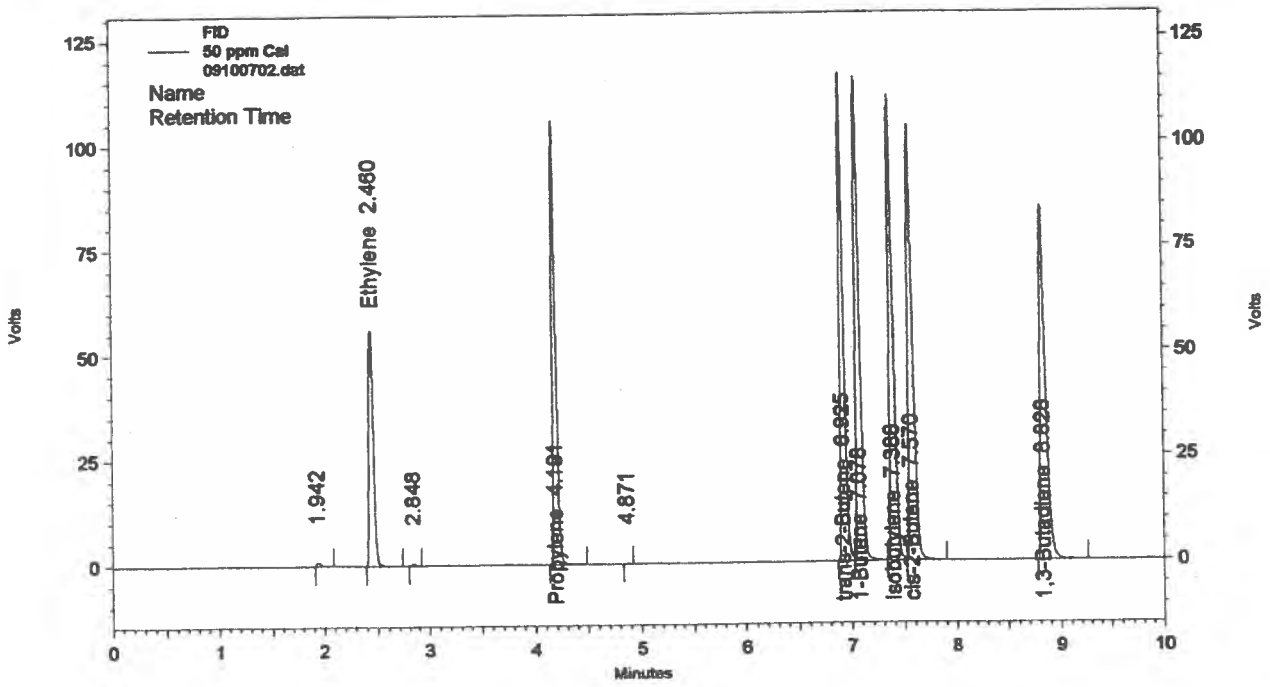


FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.960	1073	3359	0.00
Ethylene	2.393	55798	161740	48.60
	2.771	428	1144	0.00
Propylene	3.831	110274	234849	47.71
	4.540	102	236	0.00
trans-2-Butene	6.326	136649	310179	48.09
1-Butene	6.450	134563	313320	47.48
Isobutylene	6.765	133794	305979	47.55
cis-2-Butene	6.945	134330	322257	49.05
	7.746	504	1928	0.00
1,3-Butadiene	8.076	133754	319662	50.61
Totals		841269	1974653	339.10

METCO Environmental

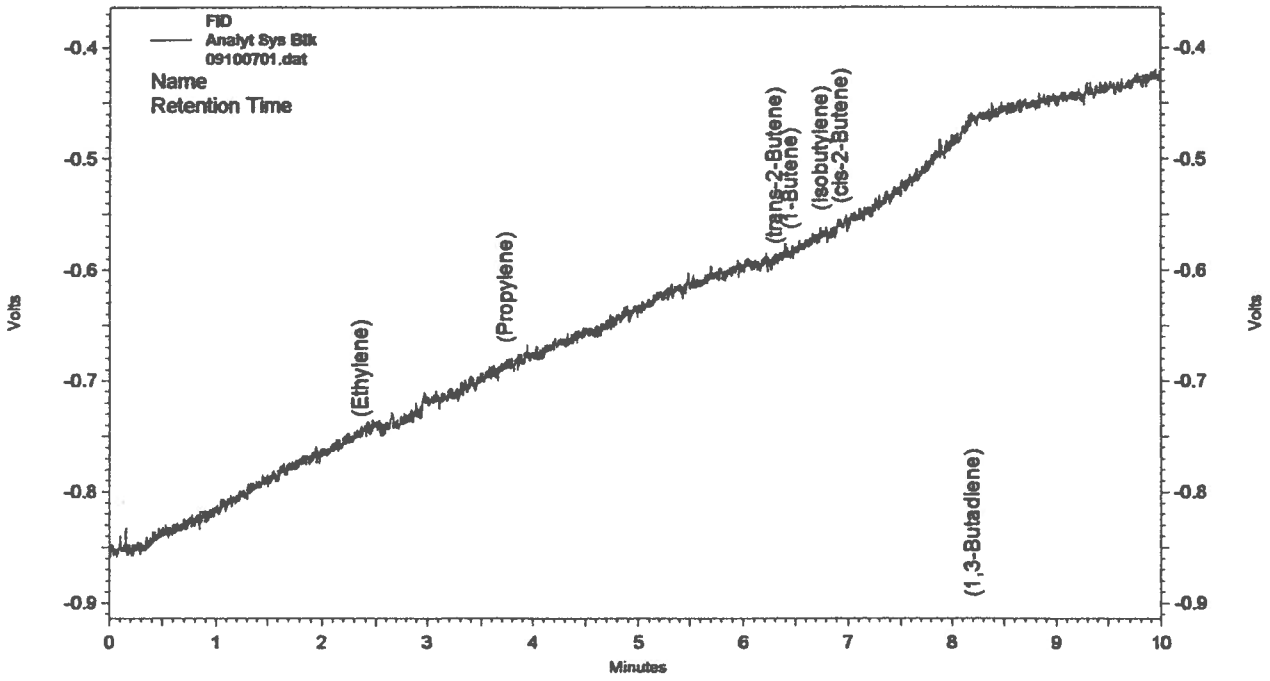
Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/10/2007 9:17:44 AM
Acquired: 9/10/2007 9:06:28 AM
Printed: 1



FID Results Name	Retention Time	Height	Area	ESTD concentration
	1.942	947	3048	0.00
Ethylene	2.460	56262	165270	49.61
	2.848	428	1158	0.00
Propylene	4.191	105852	239375	48.60
	4.871	94	204	0.00
trans-2-Butene	6.925	116317	314361	48.70
1-Butene	7.078	115273	319637	48.40
Isobutylene	7.388	111046	310733	48.14
cis-2-Butene	7.570	103846	328080	49.77
1,3-Butadiene	8.828	84563	324145	51.07
Totals		694628	2006011	344.30

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/10/2007 8:47:08 AM
Acquired: 9/10/2007 8:37:07 AM
Printed: 1

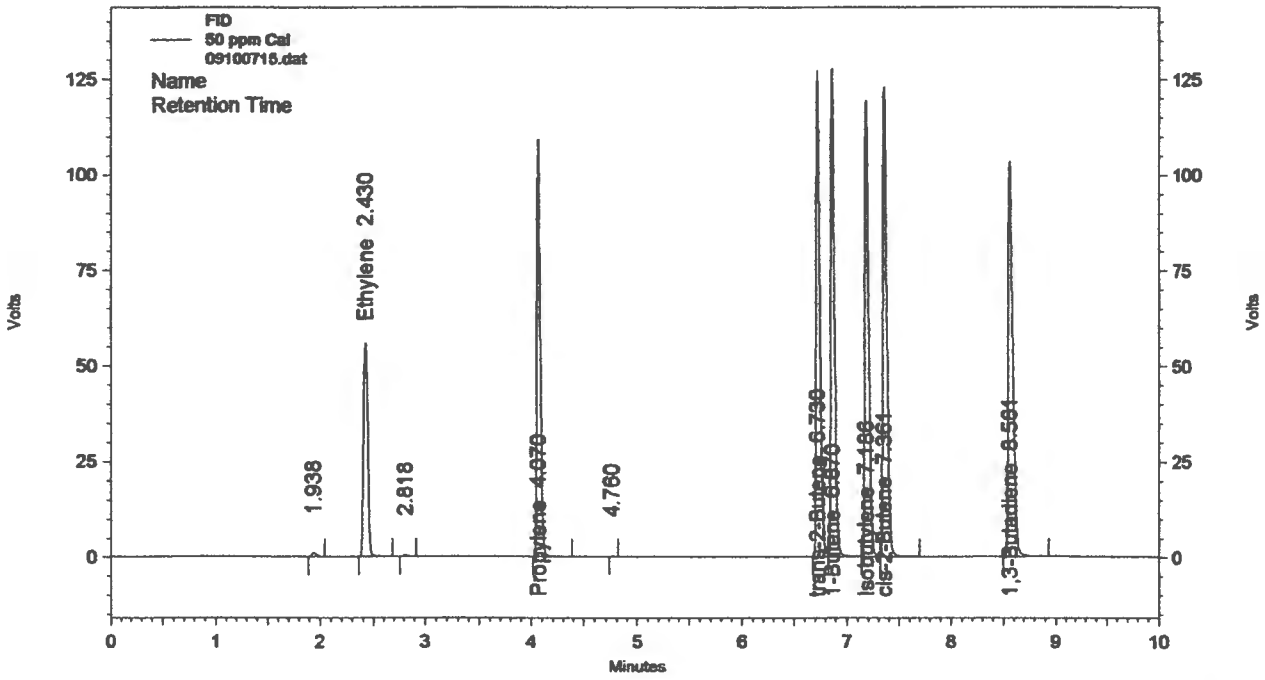


FID Results

Name	Retention Time	Height	Area	ESTD concentration

METCO Environmental

Data File: C:\EZChrom Elite\Enterprise\Projects\Default\Method\HRVOC090707.met
Method: 9/10/2007 1:43:32 PM
Acquired: 9/10/2007 1:31:20 PM
Printed: 1



FID Results

Name	Retention Time	Height	Area	ESTD concentration
	1.938	998	3216	0.00
Ethylene	2.430	55966	164164	49.33
	2.818	421	1157	0.00
Propylene	4.070	109249	238157	48.35
	4.760	89	186	0.00
trans-2-Butene	6.730	127044	314081	48.66
1-Butene	6.870	127669	318085	48.17
Isobutylene	7.186	119306	309551	47.95
cis-2-Butene	7.361	122760	327010	49.61
1,3-Butadiene	8.561	103379	323333	50.94
Totals		766881	1998940	343.01

Scott Specialty Gases
9810 BAY AREA BLVD,PASADENA,TX 77507
Phone: 281-474-5800 Fax: 281-474-5857

CERTIFIED MASTER CLASS
Single-Certified Calibration Standard

CERTIFICATE OF ACCURACY: Certified Master Class Calibration Standard

Product Information
Project No.: 04-49678-001
Item No.: 0402B800018PAL
P.O. No.: 11719

Cylinder Number: ALM060050
Cylinder Size: AL
Certification Date: 29Nov2006
Expiration Date: 01Dec2007

Customer

METCO ENVIRONMENTAL
3226 COMMANDER DR
CARROLLTON, TX 75006

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
1,3-BUTADIENE	10.2	PPM	2
1-BUTENE	9.8	PPM	2
CIS-2-BUTENE	9.9	PPM	2
ETHYLENE	10.0	PPM	2
ISOBUTYLENE	9.8	PPM	2
PROPYLENE	9.8	PPM	2
TRANS-2-BUTENE	9.8	PPM	2
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: CRISSA MARTIN

DATE: 11/29/06

CERTIFIED MASTER CLASS

Single-Certified Calibration Standard

Scott Specialty Gases
9810 BAY AREA BLVD,PASADENA,TX 77507
Phone: 281-474-5800 Fax: 281-474-5857

CERTIFICATE OF ACCURACY: Certified Master Class Calibration Standard

Product Information
Project No.: 04-49678-002
Item No.: 0402B800018PAL
P.O. No.: 11719

Cylinder Number: ALM024421
Cylinder Size: AL
Certification Date: 29Nov2006
Expiration Date: 01Dec2007

Customer

METCO ENVIRONMENTAL
3226 COMMANDER DR
CARROLLTON, TX 75006

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
1,3-BUTADIENE	51.	PPM	2
1-BUTENE	49.	PPM	2
CIS-2-BUTENE	50.	PPM	2
ETHYLENE	50.	PPM	2
ISOBUTYLENE	48.	PPM	2
PROPYLENE	49.	PPM	2
TRANS-2-BUTENE	49.	PPM	2
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: _____
CRISSA MARTIN

DATE: 11/29/06

Scott Specialty Gases
9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-5857

CERTIFIED MASTER CLASS
Single-Certified Calibration Standard

CERTIFICATE OF ACCURACY: Certified Master Class Calibration Standard

Product Information
Project No.: 04-49678-003
Item No.: 0402B800007PAL
P.O. No.: 11719

Cylinder Number: AAL18899
Cylinder Size: AL
Certification Date: 22Nov2006
Expiration Date: 01Dec2007

Customer

METCO ENVIRONMENTAL
3226 COMMANDER DR
CARROLLTON, TX 75006

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
1,3-BUTADIENE	104.	PPM	2
1-BUTENE	98.	PPM	2
CIS-2-BUTENE	101.	PPM	2
ETHYLENE	100.	PPM	2
ISOBUTYLENE	98.	PPM	2
PROPYLENE	98.	PPM	2
TRANS-2-BUTENE	98.	PPM	2
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

NIST

APPROVED BY: CRISSA MARTIN DATE: 11/22/06

CERTIFIED MASTER CLASS

Single-Certified Calibration Standard

Scott Specialty Gases
9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-5857

CERTIFICATE OF ACCURACY: Certified Master Class Calibration Standard

Product Information
Project No.: 04-49678-004
Item No.: 0402B800007PAL
P.O. No.: 11719

Cylinder Number: ALM028213
Cylinder Size: AL
Certification Date: 27Nov2006
Expiration Date: 01Dec2007

Customer

METCO ENVIRONMENTAL
3226 COMMANDER DR
CARROLLTON, TX 75006

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
1,3-BUTADIENE	510.	PPM	2
1-BUTENE	490.	PPM	2
CIS-2-BUTENE	500.	PPM	2
ETHYLENE	490.	PPM	2
ISOBUTYLENE	480.	PPM	2
PROPYLENE	480.	PPM	2
TRANS-2-BUTENE	480.	PPM	2
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

NIST

APPROVED BY: _____
CRISSA MARTIN

DATE: 11/27/06

METCO ENVIRONMENTAL

ROTOMETER CALIBRATION

CALIBRATOR: RAdams

ROTOMETER NUMBER: 15

DATE: 11/9/06 P_b "Hg: 29.01

FLOW METER SETTING	FLOW RATE (l/MIN.)
10	0.013
15	0.020
20	0.029
25	0.038
30	0.053
35	0.070
40	0.088
45	0.114
50	0.143
55	0.170
60	0.201

GILIBRATOR 2 WET V4.4 DATE..11/9/06.....
PUMP S/N.....ID....10.....

FLOW	AVERAGE	# SAMPLES
12.82	12.82	01
12.89	12.86	02
13.06	12.92	03
13.03	12.95	04

GILIBRATOR 2 WET V4.4 DATE..11/9/06.....
PUMP S/N.....ID....15.....

FLOW	AVERAGE	# SAMPLES
20.56	20.56	01
20.41	20.49	02
20.48	20.48	03

GILIBRATOR 2 WET V4.4 DATE.11/9/06.....
PUMP S/N.....ID....20.....

FLOW	AVERAGE	# SAMPLES
28.55	28.55	01
28.90	28.72	02
28.66	28.70	03

GILIBRATOR 2 WET V4.4 DATE.11/9/06.....
PUMP S/N.....ID....25.....

FLOW	AVERAGE	# SAMPLES
38.28	38.28	01
38.26	38.27	02
38.46	38.33	03

GILIBRATOR 2 WET V4.4 DATE...11/9/06.....
PUMP S/N.....ID..30.....

FLOW	AVERAGE	# SAMPLES
53.26	53.26	01
53.57	53.41	02
53.64	53.49	03

GILIBRATOR 2 WET V4.4 DATE.11/9/06.....
PUMP S/N.....ID...35.....

FLOW	AVERAGE	# SAMPLES
70.33	70.33	01
70.62	70.48	02
70.50	70.49	03

GILIBRATOR 2 WET V4.4 DATE.11/9/06.....
PUMP S/N.....ID..40.....

FLOW	AVERAGE	# SAMPLES
86.45	86.45	01
89.15	87.80	02
88.82	88.14	03

GILIBRATOR 2 WET V4.4 DATE..11/9/06.....
PUMP S/N.....ID....45.....

FLOW	AVERAGE	# SAMPLES
112.6	112.6	01
114.3	113.5	02
113.8	113.6	03

GILIBRATOR 2 WET V4.4 DATE..11/9/06...
PUMP S/N.....ID....50.....

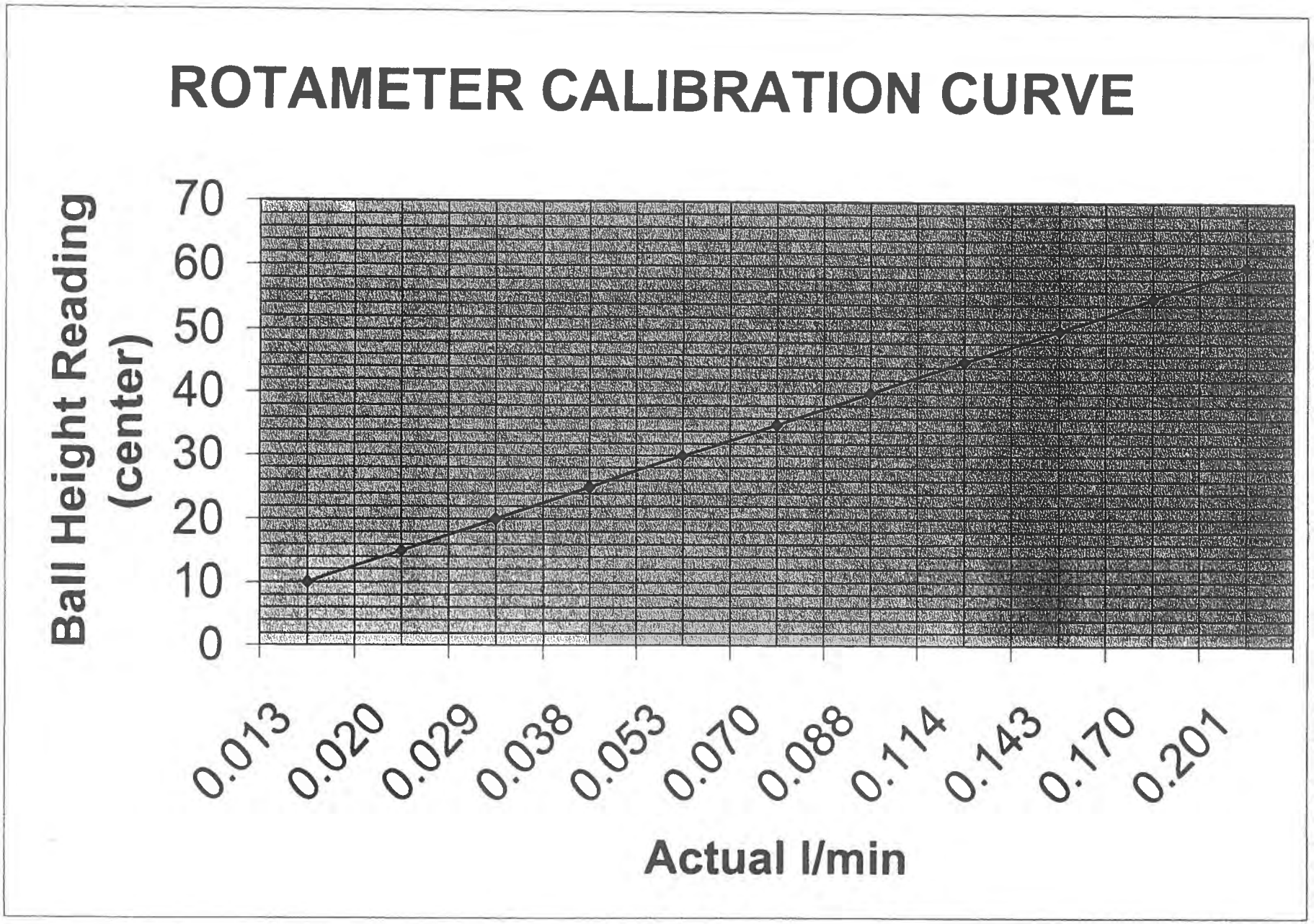
FLOW	AVERAGE	# SAMPLES
142.1	142.1	01
144.0	143.1	02
143.1	143.1	03

GILIBRATOR 2 WET V4.4 DATE..11/9/06...
PUMP S/N.....ID.....55.....

FLOW	AVERAGE	# SAMPLES
169.9	169.9	01
170.6	170.3	02
169.7	170.1	03

V4.4 DATE..11/9/06.....
..ID....60.....

SAMPLES
01
02
03


ROTAMETER CALIBRATION CURVE
Ball Height Reading (center)
70
60
50
40
30
20
10
0
0.013
0.020
0.029
0.038
0.053
0.070
0.088
0.114
0.143
0.170
0.201
Actual l/min

Calibration Curves

A calibration curve relates the component amount to detector response, (or for an Internal Standard calibration, the amount ratio to the area or height ratio). Class VP Client/Server fits a curve to the calibration points, according to the fit type, scaling, and weighting factors you select. The resulting calibration curve is used to calculate component concentrations in unknown samples, and is generally defined by a least squares calculation

$y = f(x)$

where f =

linear (with or without force through zero)

Replicates and Averaging Calibrations

Initially, a method contains no calibration. When you run the first calibration standard, the areas/heights for each calibrated peak are entered into the method calibration. If you run a subsequent standard at the same calibration level (a **replicate**), you have a choice of how you want the data system to treat the new areas/heights for the calibration. Setting the Calib Flag in the peak table to either Replace or Wt Average for each calibrated peak makes this choice.

If you choose to **Replace** the existing calibration, the areas/heights for each replicate replaces the area/height for the previous replicate in the calibration. Only the most recent replicate areas/heights are used to create the calibration curve. Previous replicates are ignored.

If you choose **Wt Average**, each calibration point on the curve will be determined by performing the average of the current calibration with previous replicate areas/heights in the method. The following example describes how this is done.

Assume a starting method for a single-level calibration with no existing calibration data. After a series of "n" calibration replicate samples are run, the calibration curve is determined as shown below.

Level 1 Replicate Area

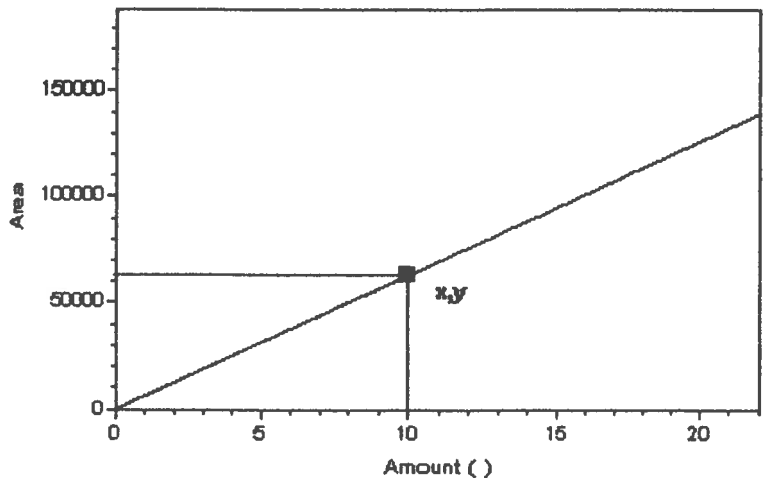
1. $Area_1$
2. $Area_2$
3. $Area_3$

. .

. .

. .

n $Area_n$



The resulting calibration curve is shown above, with the point **(x,y)** representing the calibration point for Level 1. The area, **y**, of this point is calculated by taking the average of the replicates at this level.

$$y = \frac{area_1 + area_2 + ...area_n}{n}$$

This average, y, is saved as the **last area** in the method. This value is used to calculate the weighted average when a new series of replicates for this level is run, as shown below.

Level 1 Replicate Area

1 $Area_1$

2 $Area_2$

3 $Area_3$

. .

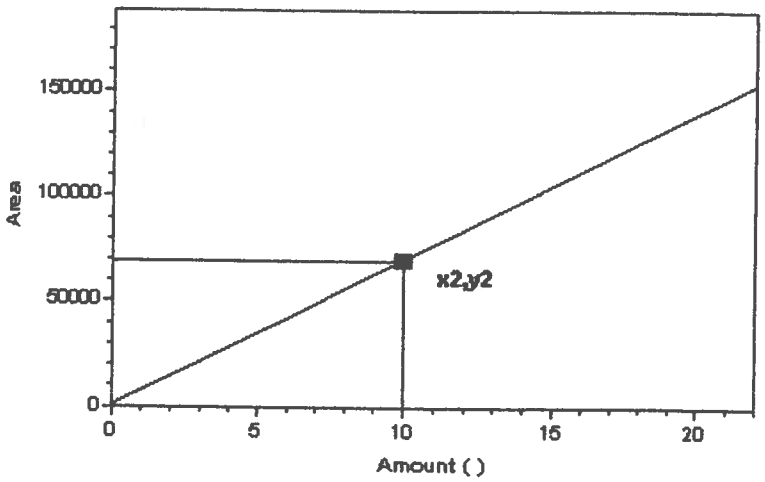
. .

. .

m $Area_m$

Because this is the second time a series of replicates was run for this level, a weighted average is now calculated, using the Calib Weight (weighting factor) set in the peak table.

A new calibration curve is calculated.



The new calibration point **(x2,y2)** is used to draw the calibration curve, with the area, **y2**, calculated as follows.

$$y2 = \left[\left(\frac{area_1 + area_2 + ...area_m}{m}\right) * W\right] + [y * (1 - W)]$$

Where

y2 = area of calibration point x2,y2

APPENDIX F

Reference Method Monitors Data

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Oxides of Nitrogen
Concentration

Run Number	Measured (ppm)	Adjusted (ppm*)
1	16.50	16.93
2	16.20	17.01
3	15.20	15.75

*Calculated according to equation 7E-5.

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Sulfur Dioxide
Concentration

Run Number	Measured (ppm)	Adjusted (ppm*)
1	36.00	36.58
2	34.10	34.24
3	33.40	33.91

*Calculated according to equation 7E-5.

C-Train SRU Tail Gas Stack (EPN 39CB20C
Carbon Monoxide
Concentration

Run Number	Measured (ppm)	Adjusted (ppm*)
1	37.90	39.66
2	10.10	11.03
3	40.10	42.48

*Calculated according to equation 7E-5.

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Total Hydrocarbons
Concentration

Run Number	Measured (wet ppm)
1	< 0.10
2	< 0.10
3	0.10

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Oxygen
Concentration

Run Number	Measured (%)	Adjusted (%*)
1	2.97	2.95
2	2.93	2.92
3	2.90	2.89

*Calculated according to equation 7E-5.

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Calibration Summary
Oxides of Nitrogen

Run Number	NO_x Calibration Initial Drift Check (ppm)	NO_x Calibration Final Drift Check (ppm)	NO_x Calibration Average (ppm)	NO_x Zero Initial Drift Check (ppm)	NO_x Zero Final Drift Check (ppm)	NO_x Zero Average (ppm)	Actual NO_x Calibration Value (ppm)	Actual NO_x Zero Value (ppm)
1	44.20	41.90	43.05	0.20	0.20	0.20	44.50	0.00
2	41.90	42.20	42.05	0.20	0.20	0.20	44.50	0.00
3	42.20	42.80	42.50	0.20	0.30	0.25	44.50	0.00

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Calibration Summary
Sulfur Dioxide

Run Number	SO_2 Calibration Initial Drift Check (ppm)	SO_2 Calibration Final Drift Check (ppm)	SO_2 Calibration Average (ppm)	SO_2 Zero Initial Drift Check (ppm)	SO_2 Zero Final Drift Check (ppm)	SO_2 Zero Average (ppm)	Actual SO_2 Calibration Value (ppm)	Actual SO_2 Zero Value (ppm)
1	40.90	41.20	41.05	0.00	-0.10	-0.05	41.70	0.00
2	41.20	42.10	41.65	-0.10	-1.00	-0.55	41.70	0.00
3	42.10	40.30	41.20	-1.00	-0.10	-0.55	41.70	0.00

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Calibration Summary
Carbon Monoxide

Run Number	CO Calibration Initial Drift Check (ppm)	CO Calibration Final Drift Check (ppm)	CO Calibration Average (ppm)	CO Zero Initial Drift Check (ppm)	CO Zero Final Drift Check (ppm)	CO Zero Average (ppm)	Actual CO Calibration Value (ppm)	Actual CO Zero Value (ppm)
1	43.20	42.70	42.95	-0.20	-0.40	-0.30	44.90	0.00
2	42.70	42.30	42.50	-0.40	-0.50	-0.45	44.90	0.00
3	42.30	42.50	42.40	-0.50	0.10	-0.20	44.90	0.00

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Calibration Summary
Oxygen

Run Number	O_2 Calibration Initial Drift Check (%)	O_2 Calibration Final Drift Check (%)	O_2 Calibration Average (%)	O_2 Zero Initial Drift Check (%)	O_2 Zero Final Drift Check (%)	O_2 Zero Average (%)	Actual O_2 Calibration Value (%)	Actual O_2 Zero Value (%)
1	12.12	12.10	12.11	0.05	0.05	0.05	12.20	0.00
2	12.10	12.10	12.10	0.05	0.04	0.05	12.20	0.00
3	12.10	12.04	12.07	0.04	0.05	0.05	12.20	0.00

C-Train SRU Tail Gas Stack (EPN 39CB2001)
System Calibration Bias and Drift Data
Oxides of Nitrogen
Calibration Span = 93.6 ppm

Run Number	NO_x Calibration Initial Response (ppm)	NO_x Calibration Initial Bias (%*)	NO_x Calibration Final Response (ppm)	NO_x Calibration Final Bias (%*)	NO_x Calibration Drift (%*)	NO_x Zero Initial Response (ppm)	NO_x Zero Initial Bias (%*)	NO_x Zero Final Response (ppm)	NO_x Zero Final Bias (%*)	NO_x Zero Drift (%*)	Actual NO_x Calibration Value (ppm)	Actual NO_x Zero Value (ppm)
1	44.20	0.00	41.90	2.46	2.46	0.20	0.21	0.20	0.21	0.00	44.20	0.00
2	41.90	2.46	42.20	2.14	0.32	0.20	0.21	0.20	0.21	0.00	44.20	0.00
3	42.20	2.14	42.80	1.50	0.64	0.20	0.21	0.30	0.32	0.11	44.20	0.00

* PERCENT OF CALIBRATION SPAN

C-Train SRU Tail Gas Stack (EPN 39CB2001)
System Calibration Bias and Drift Data
Sulfur Dioxide
Calibration Span = 84.5 ppm

Run Number	SO_2 Calibration Initial Response (ppm)	SO_2 Calibration Initial Bias (%*)	SO_2 Calibration Final Response (ppm)	SO_2 Calibration Final Bias (%*)	SO_2 Calibration Drift (%*)	SO_2 Zero Initial Response (ppm)	SO_2 Zero Initial Bias (%*)	SO_2 Zero Final Response (ppm)	SO_2 Zero Final Bias (%*)	SO_2 Zero Drift (%*)	Actual SO_2 Calibration Value (ppm)	Actual SO_2 Zero Value (ppm)
1	40.90	0.36	41.20	0.00	0.36	0.00	0.00	-0.10	0.12	0.12	41.20	0.00
2	41.20	0.00	42.10	1.07	1.07	-0.10	0.12	-1.00	1.18	1.07	41.20	0.00
3	42.10	1.07	40.30	1.07	2.13	-1.00	1.18	-0.10	0.12	1.07	41.20	0.00

* PERCENT OF CALIBRATION SPAN

C-Train SRU Tail Gas Stack (EPN 39CB2001)
System Calibration Bias and Drift Data
Carbon Monoxide
Calibration Span = 83.0 ppm

Run Number	CO Calibration Initial Response (ppm)	Initial Bias (%*)	Final Response (ppm)	Final Bias (%*)	Drift (%*)	CO Zero Initial Response (ppm)	Initial Bias (%*)	Final Response (ppm)	Final Bias (%*)	Drift (%*)	Actual CO Calibration Value (ppm)	Actual CO Zero Value (ppm)
1	43.20	0.60	42.70	1.20	0.60	-0.20	0.12	-0.40	0.12	0.24	43.70	-0.30
2	42.70	1.20	42.30	1.69	0.48	-0.40	0.12	-0.50	0.24	0.12	43.70	-0.30
3	42.30	1.69	42.50	1.45	0.24	-0.50	0.24	0.10	0.48	0.72	43.70	-0.30

* PERCENT OF CALIBRATION SPAN

METCO ENVIRONMENTAL

C-Train SRU Tail Gas Stack (EPN 39CB2001)
System Calibration Bias and Drift Data
Oxygen
Calibration Span = 20.90 percent

Run Number	O_2 Calibration Initial Response (%)	Initial Bias (%*)	Final Response (%)	Final Bias (%*)	Drift (%*)	O_2 Zero Initial Response (%)	Initial Bias (%*)	Final Response (%)	Final Bias (%*)	Drift (%*)	Actual O_2 Calibration Value (%)	Actual O_2 Zero Value (%)
1	12.12	0.57	12.10	0.67	0.10	0.05	0.33	0.05	0.33	0.00	12.24	0.12
2	12.10	0.67	12.10	0.67	0.00	0.05	0.33	0.04	0.38	0.05	12.24	0.12
3	12.10	0.67	12.04	0.96	0.29	0.04	0.38	0.05	0.33	0.05	12.24	0.12

* PERCENT OF CALIBRATION SPAN

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Analyzer Calibration Data
Oxides of Nitrogen

Date 09/05/07
Runs 1 - 3

Calibration Span = 93.6 ppm

Gas Range	Actual Calibration Value (ppm)	Analyzer Calibration Response (ppm)	Absolute Difference (ppm)	Difference (%*)
Low	0.00	0.00	0.00	0.00
Mid	44.50	44.20	0.30	0.32
High	93.60	93.70	0.10	0.11

* Percent of calibration span

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Analyzer Calibration Data
Sulfur Dioxide

Date 09/05/07
Runs 1 - 3

Calibration Span = 84.5 ppm

Gas Range	Actual Calibration Value (ppm)	Analyzer Calibration Response (ppm)	Absolute Difference (ppm)	Difference (%*)
Low	0.00	0.00	0.00	0.00
Mid	41.70	41.20	0.50	0.59
High	84.50	84.70	0.20	0.24

* Percent of calibration span

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Analyzer Calibration Data
Carbon Monoxide

Date 09/05/07
Runs 1 - 3
Calibration Span = 83.0 ppm

Gas Range	Actual Calibration Value (ppm)	Analyzer Calibration Response (ppm)	Absolute Difference (ppm)	Difference (%*)
Low	0.00	-0.30	0.30	0.36
Mid	44.90	43.70	1.20	1.45
High	83.00	83.40	0.40	0.48

* Percent of calibration span

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Analyzer Calibration Data
Total Hydrocarbons

Date 09/05/07
Runs 1 - 3
Span = 20.9 ppm

Gas Range	Actual Calibration Value (ppm)	Analyzer Calibration Response (ppm)	Absolute Difference (ppm)	Difference (%*)
Zero	0.00	-0.10	0.10	----
Low	29.87	29.70	0.17	0.57
Mid	47.00	47.80	0.80	1.70
High	84.62	84.70	0.08	----

* Percent of span gas

C-Train SRU Tail Gas Stack (EPN 39CB2001)
Analyzer Calibration Data
Oxygen

Date 09/05/07
Runs 1 - 3

Calibration Span = 20.90 %

Gas Range	Actual Calibration Value (%)	Analyzer Calibration Response (%)	Absolute Difference (%)	Difference (%*)
Low	0.00	0.12	0.12	0.57
Mid	12.20	12.24	0.04	0.19
High	20.90	20.93	0.03	0.14

* Percent of calibration span

O2 NOx SO2 CO THC

Ref Gas 15.0 "Hg = 0.0 "Hg

Sam

filename	8/31/2007	8:03:03	C:\RM\DATA\SRUC.CSV								
testby1	Metco Environmental										
testby2	Houston Division										
testby3	METCO 44										
testby4	M. Bass										
testfor1	Valero Houston										
testfor2	Houston, TX										
testfor3	C-Train SRU Tail Gas Stack										
testfor4	07-338										
name			1 O2	3 NOx	6 SO2	5 CO	4 THC				
sn			32689	10S-39403-260	94-721M-8191-3	48-39616-261	00061209-109				
offset			0	0	0	0	0				
fullscale			25	100	100	100	100				
train			1	1	1	1	1				
gastype			o2 3a	nox 7e	so2 6c	co 10	thc 25a				
dcg1	8/31/2007	8:03:30	19.64	0.07	0.68	-0.17	1.41	ALM000674/cg1	N2	0	
dcg1	8/31/2007	8:03:45	8.54	0.05	0.52	-0.17	1.39	ALM000674/cg1	N2	0	
dcg1	8/31/2007	8:04:00	1.95	0.04	0.20	-0.17	1.33	ALM000674/cg1	N2	0	
dcg1	8/31/2007	8:04:15	0.66	0.03	0.28	-0.17	1.31	ALM000674/cg1	N2	0	
dcg1	8/31/2007	8:04:30	0.32	0.03	0.13	-0.17	1.27	ALM000674/cg1	N2	0	
dcg1	8/31/2007	8:04:45	0.20	0.03	-0.08	-0.17	1.28	ALM000674/cg1	N2	0	
dcg1	8/31/2007	8:05:00	0.15	0.03	0.09	-0.17	1.28	ALM000674/cg1	N2	0	
dcg1	8/31/2007	8:05:15	0.13	0.04	0.02	-0.17	1.26	ALM000674/cg1	N2	0	
dcg1	8/31/2007	8:05:30	0.11	0.03	-0.04	-0.17	1.23	ALM000674/cg1	N2	0	
dcg1	8/31/2007	8:05:45	0.10	0.03	0.02	-0.17	1.23	ALM000674/cg1	N2	0	
dcg1	8/31/2007	8:06:00	0.09	0.03	-0.04	-0.17	1.23	ALM000674/cg1	N2	0	
dcg1	8/31/2007	8:06:15	0.09	0.03	-0.05	-0.17	1.23	ALM000674/cg1	N2	0	
dcg7	8/31/2007	8:06:45	2.58	0.80	3.76	-0.17	1.24	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:07:00	2.58	0.45	50.78	-0.17	1.23	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:07:15	0.58	0.42	79.81	-0.17	1.23	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:07:30	0.21	0.42	84.35	-0.17	1.22	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:07:45	0.13	0.41	85.12	-0.17	1.21	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:08:00	0.09	0.40	85.44	-0.17	1.20	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:08:15	0.08	0.40	85.39	-0.19	1.19	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:08:30	0.08	0.39	85.58	-0.27	1.18	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:08:45	0.07	0.39	85.64	-0.27	1.18	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:09:00	0.07	0.39	85.45	-0.22	1.18	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:09:15	0.07	0.40	84.81	-0.17	1.18	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:09:30	0.06	0.40	84.66	-0.17	1.17	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:09:45	0.06	0.40	84.36	-0.17	1.16	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:10:00	0.06	0.40	84.35	-0.22	1.16	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:10:15	0.06	0.39	84.35	-0.27	1.15	BLM003931/cg7	SO2	84.5	
dcg7	8/31/2007	8:10:30	0.06	0.40	84.35	-0.27	1.15	BLM003931/cg7	SO2	84.5	
so2high1	8/31/2007	8:10:30	0.06	0.40	84.35	-0.27	1.15	BLM003931/cg7	SO2	84.5	
dcg5	8/31/2007	8:10:45	0.15	1.18	83.87	-0.25	1.15	BLM001222/cg5	NOx	93.6	
dcg5	8/31/2007	8:11:00	2.96	77.62	46.78	-0.17	1.14	BLM001222/cg5	NOx	93.6	
dcg5	8/31/2007	8:11:15	0.84	91.07	8.76	-0.17	1.14	BLM001222/cg5	NOx	93.6	
dcg5	8/31/2007	8:11:30	0.23	92.00	1.40	-0.17	1.14	BLM001222/cg5	NOx	93.6	
dcg5	8/31/2007	8:11:45	0.11	91.64	0.54	-0.17	1.14	BLM001222/cg5	NOx	93.6	
dcg5	8/31/2007	8:12:00	0.08	91.29	0.45	-0.17	1.12	BLM001222/cg5	NOx	93.6	
dcg5	8/31/2007	8:12:15	0.06	91.98	0.41	-0.17	1.13	BLM001222/cg5	NOx	93.6	
dcg5	8/31/2007	8:12:30	0.06	92.97	0.31	-0.17	1.13	BLM001222/cg5	NOx	93.6	
dcg5	8/31/2007	8:12:45	0.05	93.27	0.37	-0.17	1.15	BLM001222/cg5	NOx	93.6	
dcg5	8/31/2007	8:13:00	0.05	93.39	0.32	-0.12	1.17	BLM001222/cg5	NOx	93.6	
dcg5	8/31/2007	8:13:15	0.05	93.39	0.13	-0.07	1.17	BLM001222/cg5	NOx	93.6	
dcg5	8/31/2007	8:13:30	0.05	93.39	0.24	-0.07	1.17	BLM001222/cg5	NOx	93.6	
noxhigh1	8/31/2007	8:13:30	0.05	93.39	0.24	-0.07	1.17	BLM001222/cg5	NOx	93.6	
dcg9	8/31/2007	8:13:45	0.05	93.31	0.17	-0.07	1.17	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:14:00	0.68	30.37	0.10	0.21	1.16	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:14:15	0.51	0.62	0.29	3.98	1.15	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:14:30	0.15	0.43	0.15	11.84	1.16	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:14:45	0.07	0.35	0.27	23.50	1.16	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:15:00	0.06	0.28	0.25	33.24	1.14	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:15:15	0.05	0.25	0.04	38.36	1.16	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:15:30	0.04	0.22	0.17	37.72	1.15	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:15:45	0.04	0.18	0.18	34.56	1.16	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:16:00	0.04	0.15	0.00	41.25	1.17	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:16:15	0.04	0.14	0.10	63.76	1.16	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:16:30	0.04	0.12	0.21	65.67	1.16	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:16:45	0.04	0.11	0.07	68.72	1.17	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:17:00	0.04	0.10	0.20	71.83	1.20	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:17:15	0.04	0.09	0.18	74.55	1.20	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:17:30	0.04	0.08	0.14	76.96	1.17	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:17:45	0.04	0.07	0.22	79.20	1.18	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:18:00	0.04	0.07	0.14	80.93	1.18	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:18:15	0.04	0.06	0.02	82.70	1.18	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:18:30	0.04	0.06	0.37	83.54	1.15	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:18:45	0.03	0.06	0.34	83.51	1.15	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:19:00	0.03	0.05	0.16	83.36	1.14	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:19:15	0.03	0.05	0.25	83.20	1.12	ALM047398/cg9	CO	83	
dcg9	8/31/2007	8:19:30	0.03	0.04	0.16	82.81	1.11	ALM047398/cg9	CO	83	

Cal Error

			O2	NOx	SO2	CO	THC			
dcg9	8/31/2007	8:19:45	0.03	0.05	0.15	82.80	1.29	ALM047398/cg9	CO	83
dcg9	8/31/2007	8:20:00	0.03	0.04	0.40	82.81	0.57	ALM047398/cg9	CO	83
dcg9	8/31/2007	8:20:15	0.03	0.05	0.38	82.78	-0.15	ALM047398/cg9	CO	83
cohigh1	8/31/2007	8:20:15	0.03	0.05	0.38	82.78	-0.15	ALM047398/cg9	CO	83
dcg2	8/31/2007	8:20:45	3.54	0.27	0.46	82.18	-0.56	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:21:00	15.82	0.06	0.60	76.19	-0.65	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:21:15	19.79	0.05	0.55	59.99	-0.72	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:21:30	20.70	0.03	0.52	41.53	-0.72	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:21:45	20.99	0.04	0.35	20.26	-0.72	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:22:00	21.10	0.02	0.44	6.67	-0.68	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:22:15	21.15	0.02	0.42	0.72	-0.67	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:22:30	21.18	0.02	0.32	-0.57	0.48	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:22:45	21.06	0.03	0.59	-0.66	1.01	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:23:00	20.78	0.02	0.48	-0.66	1.00	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:23:15	20.79	0.02	0.38	-0.66	1.01	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:23:30	20.79	0.03	0.57	-0.66	1.00	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:23:45	20.79	0.01	0.40	-0.66	1.01	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:24:00	20.79	0.02	0.37	-0.66	1.02	AAL14753/cg2	O2	20.9
dcg2	8/31/2007	8:24:15	20.79	0.02	0.59	-0.66	1.01	AAL14753/cg2	O2	20.9
o2high1	8/31/2007	8:24:15	20.79	0.02	0.59	-0.66	1.01	AAL14753/cg2	O2	20.9
dcg8	8/31/2007	8:24:30	20.79	0.02	0.41	-0.66	1.02	ALM067916/cg8	SO2	41.7
dcg8	8/31/2007	8:24:45	16.18	0.19	9.86	-0.66	1.03	ALM067916/cg8	SO2	41.7
dcg8	8/31/2007	8:25:00	4.54	0.07	33.41	-0.66	1.03	ALM067916/cg8	SO2	41.7
dcg8	8/31/2007	8:25:15	1.39	0.07	39.54	-0.64	1.04	ALM067916/cg8	SO2	41.7
dcg8	8/31/2007	8:25:30	0.59	0.07	40.37	-0.56	1.04	ALM067916/cg8	SO2	41.7
dcg8	8/31/2007	8:25:45	0.33	0.07	40.48	-0.54	1.05	ALM067916/cg8	SO2	41.7
dcg8	8/31/2007	8:26:00	0.22	0.07	40.54	-0.52	1.06	ALM067916/cg8	SO2	41.7
dcg8	8/31/2007	8:26:15	0.17	0.07	40.63	-0.48	1.06	ALM067916/cg8	SO2	41.7
dcg8	8/31/2007	8:26:30	0.14	0.07	40.72	-0.46	1.04	ALM067916/cg8	SO2	41.7
dcg8	8/31/2007	8:26:45	0.12	0.07	40.73	-0.48	1.05	ALM067916/cg8	SO2	41.7
dcg8	8/31/2007	8:27:00	0.11	0.08	40.73	-0.51	1.04	ALM067916/cg8	SO2	41.7
dcg8	8/31/2007	8:27:15	0.10	0.08	40.73	-0.53	1.04	ALM067916/cg8	SO2	41.7
dcg8	8/31/2007	8:27:30	0.09	0.06	40.73	-0.46	1.03	ALM067916/cg8	SO2	41.7
dcg8	8/31/2007	8:27:45	0.08	0.07	40.73	-0.46	1.03	ALM067916/cg8	SO2	41.7
so2mid1	8/31/2007	8:27:45	0.08	0.07	40.73	-0.46	1.03	ALM067916/cg8	SO2	41.7
dcg6	8/31/2007	8:28:00	0.08	0.08	40.75	-0.46	1.03	ALM035137/cg6	NOx	44.5
dcg6	8/31/2007	8:28:15	0.80	35.08	30.30	-0.46	1.04	ALM035137/cg6	NOx	44.5
dcg6	8/31/2007	8:28:30	0.42	45.72	7.28	-0.46	1.04	ALM035137/cg6	NOx	44.5
dcg6	8/31/2007	8:28:45	0.15	45.76	1.47	-0.46	1.06	ALM035137/cg6	NOx	44.5
dcg6	8/31/2007	8:29:00	0.09	45.76	0.77	-0.41	1.07	ALM035137/cg6	NOx	44.5
dcg6	8/31/2007	8:29:15	0.07	45.76	0.89	-0.37	1.08	ALM035137/cg6	NOx	44.5
dcg6	8/31/2007	8:29:30	0.07	45.76	0.65	-0.37	1.10	ALM035137/cg6	NOx	44.5
dcg6	8/31/2007	8:29:45	0.06	45.76	0.64	-0.37	1.09	ALM035137/cg6	NOx	44.5
dcg6	8/31/2007	8:30:00	0.06	45.75	0.67	-0.37	1.09	ALM035137/cg6	NOx	44.5
dcg6	8/31/2007	8:30:15	0.05	45.75	0.52	-0.37	1.09	ALM035137/cg6	NOx	44.5
dcg6	8/31/2007	8:30:30	0.05	45.76	0.58	-0.37	1.08	ALM035137/cg6	NOx	44.5
dcg6	8/31/2007	8:30:45	0.05	45.77	0.73	-0.28	1.08	ALM035137/cg6	NOx	44.5
dcg6	8/31/2007	8:31:00	0.05	45.76	0.59	-0.27	1.08	ALM035137/cg6	NOx	44.5
noxmid1	8/31/2007	8:31:00	0.05	45.76	0.59	-0.27	1.08	ALM035137/cg6	NOx	44.5
dcg10	8/31/2007	8:31:15	0.05	45.76	0.64	-0.27	1.08	ALM054751/cg10	CO	44.9
dcg10	8/31/2007	8:31:30	2.08	6.91	0.77	0.11	1.08	ALM054751/cg10	CO	44.9
dcg10	8/31/2007	8:31:45	1.14	0.30	0.93	4.55	1.08	ALM054751/cg10	CO	44.9
dcg10	8/31/2007	8:32:00	0.30	0.22	1.03	12.88	1.08	ALM054751/cg10	CO	44.9
dcg10	8/31/2007	8:32:15	0.12	0.18	0.97	23.76	1.08	ALM054751/cg10	CO	44.9
dcg10	8/31/2007	8:32:30	0.08	0.15	1.01	34.08	1.06	ALM054751/cg10	CO	44.9
dcg10	8/31/2007	8:32:45	0.06	0.13	1.09	41.07	1.07	ALM054751/cg10	CO	44.9
dcg10	8/31/2007	8:33:00	0.05	0.10	0.91	43.22	1.06	ALM054751/cg10	CO	44.9
dcg10	8/31/2007	8:33:15	0.05	0.10	0.92	43.43	1.05	ALM054751/cg10	CO	44.9
dcg10	8/31/2007	8:33:30	0.05	0.09	1.03	43.52	1.07	ALM054751/cg10	CO	44.9
dcg10	8/31/2007	8:33:45	0.04	0.07	0.90	43.59	1.07	ALM054751/cg10	CO	44.9
dcg10	8/31/2007	8:34:00	0.04	0.07	0.92	43.60	1.08	ALM054751/cg10	CO	44.9
dcg10	8/31/2007	8:34:15	0.04	0.06	0.98	43.60	1.09	ALM054751/cg10	CO	44.9
dcg10	8/31/2007	8:34:30	0.04	0.05	0.91	43.60	1.09	ALM054751/cg10	CO	44.9
comid1	8/31/2007	8:34:30	0.04	0.05	0.91	43.60	1.09	ALM054751/cg10	CO	44.9
dcg3	8/31/2007	8:34:45	0.43	0.15	0.98	43.46	1.11	ALM005139/cg3	O2	12.2
dcg3	8/31/2007	8:35:00	7.30	0.05	0.98	41.83	1.12	ALM005139/cg3	O2	12.2
dcg3	8/31/2007	8:35:15	10.82	0.04	0.76	35.23	1.12	ALM005139/cg3	O2	12.2
dcg3	8/31/2007	8:35:30	11.61	0.04	0.79	26.62	1.12	ALM005139/cg3	O2	12.2
dcg3	8/31/2007	8:35:45	11.86	0.03	0.81	15.93	1.12	ALM005139/cg3	O2	12.2
dcg3	8/31/2007	8:36:00	11.96	0.03	0.79	6.66	1.09	ALM005139/cg3	O2	12.2
dcg3	8/31/2007	8:36:15	12.00	0.02	0.76	1.58	1.08	ALM005139/cg3	O2	12.2
dcg3	8/31/2007	8:36:30	12.02	0.02	0.75	-0.24	1.08	ALM005139/cg3	O2	12.2
dcg3	8/31/2007	8:36:45	12.04	0.02	0.78	-0.76	1.08	ALM005139/cg3	O2	12.2
dcg3	8/31/2007	8:37:00	12.04	0.02	0.90	-0.87	1.08	ALM005139/cg3	O2	12.2
dcg3	8/31/2007	8:37:15	12.05	0.02	0.75	-0.87	1.06	ALM005139/cg3	O2	12.2
dcg3	8/31/2007	8:37:30	12.05	0.02	0.76	-0.88	1.04	ALM005139/cg3	O2	12.2
o2mid1	8/31/2007	8:37:30	12.05	0.02	0.76	-0.88	1.04	ALM005139/cg3	O2	12.2
dcg1	8/31/2007	8:37:45	12.05	0.02	0.78	-0.87	1.02	ALM000674/cg1	N2	0
dcg1	8/31/2007	8:38:00	10.30	0.03	0.77	-0.87	1.02	ALM000674/cg1	N2	0
dcg1	8/31/2007	8:38:15	3.20	0.02	0.84	-0.87	1.01	ALM000674/cg1	N2	0
dcg1	8/31/2007	8:38:30	0.97	0.02	0.86	-0.82	1.00	ALM000674/cg1	N2	0

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				O2		NOx	SO2	CO	THC				
dcg1	8/31/2007	8:38:45	0.40	0.02		0.74	-0.68	0.99	ALM000674/cg1	N2	0		
dcg1	8/31/2007	8:39:00	0.22	0.01		0.80	-0.56	1.00	ALM000674/cg1	N2	0		
dcg1	8/31/2007	8:39:15	0.15	0.02		0.96	-0.45	1.01	ALM000674/cg1	N2	0		
dcg1	8/31/2007	8:39:30	0.11	0.01		0.74	-0.37	1.03	ALM000674/cg1	N2	0		
dcg1	8/31/2007	8:39:45	0.09	0.02		0.82	-0.37	1.04	ALM000674/cg1	N2	0		
dcg1	8/31/2007	8:40:00	0.08	0.02		0.80	-0.37	1.03	ALM000674/cg1	N2	0		
dcg1	8/31/2007	8:40:15	0.07	0.02		0.68	-0.37	1.04	ALM000674/cg1	N2	0		
dcg1	8/31/2007	8:40:30	0.07	0.03		0.95	-0.37	1.05	ALM000674/cg1	N2	0		
dcg1	8/31/2007	8:40:45	0.06	0.02		0.83	-0.35	1.05	ALM000674/cg1	N2	0		
dcg1	8/31/2007	8:41:00	0.06	0.03		0.78	-0.32	1.06	ALM000674/cg1	N2	0		
o2ezero1	8/31/2007	8:41:00	0.06	0.03		0.78	-0.32	1.06	ALM000674/cg1	N2	0		
noxezero1	8/31/2007	8:41:00	0.06	0.03		0.78	-0.32	1.06	ALM000674/cg1	N2	0		
coezero1	8/31/2007	8:41:00	0.06	0.03		0.78	-0.32	1.06	ALM000674/cg1	N2	0		
so2ezero1	8/31/2007	8:41:00	0.06	0.03		0.78	-0.32	1.06	ALM000674/cg1	N2	0		
dcg6	8/31/2007	8:46:45	20.12	16.45		1.67	-0.29	2.60	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:47:00	19.89	16.42	start	1.80	-0.31	2.57	ALM035137/cg6	NOx	44.5	Converter check	
dcg6	8/31/2007	8:47:15	19.68	16.43		1.72	-0.27	2.53	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:47:30	19.50	16.44		2.03	-0.27	2.51	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:47:45	19.34	16.38		2.18	-0.25	2.41	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:48:00	19.18	16.41		2.13	-0.22	2.42	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:48:15	19.05	16.46		2.24	-0.27	2.42	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:48:30	18.92	16.42		2.34	-0.27	2.34	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:48:45	18.80	16.44		2.35	-0.20	2.32	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:49:00	18.70	16.42		2.47	-0.22	2.29	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:49:15	18.60	16.41		2.62	-0.17	2.29	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:49:30	18.51	16.44		2.47	-0.17	2.28	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:49:45	18.43	16.39		2.65	-0.17	2.23	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:50:00	18.36	16.33		2.73	-0.17	2.19	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:50:15	18.29	16.36		2.71	-0.23	2.20	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:50:30	18.22	16.38		2.82	-0.17	2.14	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:50:45	18.17	16.41		2.83	-0.26	2.19	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:51:00	18.12	16.48		2.90	-0.27	2.17	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:51:15	18.07	16.51		3.02	-0.18	2.11	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:51:30	18.03	16.53		2.98	-0.17	2.08	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:51:45	17.99	16.56		2.86	-0.17	2.09	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:52:00	17.96	16.61		2.73	-0.17	2.23	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:52:15	17.93	16.70		2.91	-0.24	2.56	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:52:30	17.90	16.67		2.94	-0.17	1.25	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:52:45	17.88	16.64		3.01	-0.17	0.65	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:53:00	17.85	16.65		2.95	-0.23	0.50	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:53:15	17.83	16.61		3.02	-0.20	0.99	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:53:30	17.81	16.64		3.03	-0.27	1.45	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:53:45	17.79	16.63		2.90	-0.20	1.03	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:54:00	17.78	16.61		3.06	-0.21	0.53	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:54:15	17.77	16.57		3.12	-0.17	0.27	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:54:30	17.75	16.56		2.89	-0.17	0.20	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:54:45	17.75	16.51		3.01	-0.17	0.16	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:55:00	17.74	16.51		3.18	-0.17	0.14	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:55:15	17.73	16.58		2.98	-0.19	0.14	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:55:30	17.74	16.58		2.91	-0.21	0.20	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:55:45	17.73	16.73		3.09	-0.17	0.36	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:56:00	17.73	16.56		2.97	-0.17	0.49	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:56:15	17.74	16.54		3.04	-0.17	0.55	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:56:30	17.73	16.52		2.99	-0.17	12.28	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:56:45	17.74	16.62		2.74	-0.17	4.04	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:57:00	17.74	16.60		2.52	-0.17	2.09	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:57:15	17.75	16.68		1.64	-0.17	2.08	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:57:30	17.76	16.63		2.50	-0.17	1.97	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:57:45	17.77	16.67		2.93	-0.17	1.94	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:58:00	17.78	16.62		2.79	-0.23	2.02	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:58:15	17.79	16.65		2.46	-0.18	3.45	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:58:30	17.80	16.66		1.89	-0.17	2.52	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:58:45	17.81	16.75		1.92	-0.24	2.77	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:59:00	17.81	16.67		1.96	-0.17	3.16	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:59:15	17.83	16.73		1.97	-0.17	3.53	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:59:30	17.84	16.75		2.01	-0.17	4.17	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	8:59:45	17.85	16.72		2.15	-0.17	4.94	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:00:00	17.86	16.73		1.96	-0.17	4.82	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:00:15	17.87	16.70		1.94	-0.17	5.02	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:00:30	17.88	16.76		2.06	-0.17	5.40	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:00:45	17.90	16.75		2.13	-0.17	5.29	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:01:00	17.91	16.77		2.00	-0.12	4.98	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:01:15	17.92	16.83		1.96	-0.09	5.29	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:01:30	17.93	16.84		2.03	-0.17	5.03	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:01:45	17.94	16.74		1.93	-0.17	6.14	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:02:00	17.96	16.79		2.15	-0.17	5.62	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:02:15	17.97	16.85		1.93	-0.17	5.48	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:02:30	17.98	16.81		1.95	-0.17	6.15	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:02:45	18.00	16.82		2.02	-0.19	5.89	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:03:00	18.01	16.82		1.86	-0.22	5.87	ALM035137/cg6	NOx	44.5		
dcg6	8/31/2007	9:03:15	18.02	16.81		1.76	-0.17	5.88	ALM035137/cg6	NOx	44.5		

				O2	NOx	SO2	CO	THC			
dcg6	8/31/2007	9:03:30	18.03	16.89	1.79	-0.17	5.73	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:03:45	18.05	16.86	1.91	-0.17	5.62	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:04:00	18.06	16.91	1.95	-0.17	5.51	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:04:15	18.08	16.85	1.87	-0.17	5.50	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:04:30	18.09	16.89	1.92	-0.17	5.59	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:04:45	18.10	16.89	1.72	-0.09	5.89	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:05:00	18.11	16.94	1.78	-0.07	5.79	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:05:15	18.13	16.94	1.75	-0.15	5.89	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:05:30	18.14	16.82	1.82	-0.17	5.94	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:05:45	18.15	16.71	1.81	-0.17	5.86	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:06:00	18.17	16.83	1.69	-0.17	5.60	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:06:15	18.18	16.85	1.80	-0.15	5.77	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:06:30	18.19	16.82	2.52	-0.07	5.51	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:06:45	18.21	16.78	2.70	-0.16	5.61	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:07:00	18.22	16.78	2.69	-0.17	6.03	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:07:15	18.23	16.73	2.67	-0.10	6.12	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:07:30	18.24	16.75	2.76	-0.17	6.16	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:07:45	18.26	16.71	2.94	-0.17	6.51	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:08:00	18.26	16.74	2.82	-0.17	6.20	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:08:15	18.28	16.69	2.78	-0.17	6.21	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:08:30	18.29	16.68	2.92	-0.17	5.77	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:08:45	18.30	16.64	2.75	-0.26	5.71	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:09:00	18.32	16.71	2.83	-0.27	5.75	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:09:15	18.33	16.69	2.85	-0.27	5.66	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:09:30	18.34	16.69	2.72	-0.27	5.59	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:09:45	18.35	16.74	2.74	-0.20	5.70	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:10:00	18.35	16.76	2.74	-0.27	5.52	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:10:15	18.37	16.79	2.65	-0.27	5.25	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:10:30	18.37	16.73	2.73	-0.27	5.43	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:10:45	18.38	16.71	2.76	-0.27	5.42	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:11:00	18.38	16.68	2.58	-0.22	5.50	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:11:15	18.39	16.72	2.69	-0.17	5.34	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:11:30	18.40	16.80	2.59	-0.17	5.49	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:11:45	18.40	16.79	2.51	-0.19	5.27	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:12:00	18.41	16.64	2.63	-0.22	5.34	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:12:15	18.42	16.68	2.63	-0.17	5.40	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:12:30	18.42	16.65	2.60	-0.23	5.30	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:12:45	18.42	16.68	2.72	-0.18	5.19	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:13:00	18.43	16.68	2.57	-0.17	5.16	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:13:15	18.43	16.66	2.73	-0.17	5.34	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:13:30	18.43	16.67	2.74	-0.17	5.17	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:13:45	18.43	16.71	2.62	-0.24	4.96	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:14:00	18.43	16.66	2.74	-0.17	4.95	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:14:15	18.43	16.68	2.71	-0.24	4.93	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:14:30	18.43	16.69	2.59	-0.22	5.07	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:14:45	18.43	16.71	2.64	-0.27	5.18	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:15:00	18.42	16.80	2.51	-0.27	5.62	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:15:15	18.42	16.67	2.38	-0.20	5.21	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:15:30	18.42	16.66	2.52	-0.22	4.97	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:15:45	18.42	16.66	2.57	-0.17	4.89	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:16:00	18.42	16.66	2.47	-0.22	5.17	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:16:15	18.41	16.65	2.62	-0.18	5.10	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:16:30	18.40	16.67	2.56	-0.17	5.22	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:16:45	18.40	(16.71) end	2.53	-0.17	4.85	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:17:00	18.40	16.71	2.48	-0.17	5.24	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:17:15	18.40	16.71	2.51	-0.17	5.14	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:17:30	18.39	16.70	2.51	-0.22	5.20	ALM035137/cg6	NOx	44.5	
dcg6	8/31/2007	9:17:45	18.38	16.67	2.54	-0.20	5.55	ALM035137/cg6	NOx	44.5	
dcg4	8/31/2007	9:34:30	20.27	0.09	1.38	-0.27	-0.05	ALM037705/cg4	THC	0	
dcg4	8/31/2007	9:34:45	20.28	0.10	1.28	-0.27	0.03	ALM037705/cg4	THC	0	
dcg4	8/31/2007	9:35:00	20.29	0.09	1.16	-0.32	0.03	ALM037705/cg4	THC	0	
dcg4	8/31/2007	9:35:15	20.30	0.09	1.39	-0.37	0.04	ALM037705/cg4	THC	0	
dcg4	8/31/2007	9:35:30	20.30	0.09	1.27	-0.37	0.05	ALM037705/cg4	THC	0	THC cal error
dcg4	8/31/2007	9:35:45	20.31	0.09	1.24	-0.37	0.05	ALM037705/cg4	THC	0	
dcg4	8/31/2007	9:36:00	20.31	0.09	1.34	-0.37	0.05	ALM037705/cg4	THC	0	
thcezero1	8/31/2007	9:35:45	20.31	0.09	1.24	-0.37	0.05	ALM037705/cg4	THC	0	Air
dcg13	8/31/2007	9:36:15	20.32	0.09	1.21	-0.37	1.15	BAL4862/cg13	THC	47	
dcg13	8/31/2007	9:36:30	20.32	0.08	1.22	-0.37	37.11	BAL4862/cg13	THC	47	
dcg13	8/31/2007	9:36:45	20.33	0.08	1.21	-0.34	46.26	BAL4862/cg13	THC	47	
dcg13	8/31/2007	9:37:00	20.34	0.09	1.24	-0.27	46.48	BAL4862/cg13	THC	47	
dcg13	8/31/2007	9:37:15	20.34	0.09	1.33	-0.33	47.02	BAL4862/cg13	THC	47	
dcg13	8/31/2007	9:37:30	20.35	0.09	1.35	-0.27	47.06	BAL4862/cg13	THC	47	
dcg13	8/31/2007	9:37:45	20.35	0.08	1.17	-0.27	47.09	BAL4862/cg13	THC	47	
dcg13	8/31/2007	9:38:00	20.35	0.09	1.23	-0.27	47.09	BAL4862/cg13	THC	47	
dcg13	8/31/2007	9:38:15	20.36	0.09	1.27	-0.29	47.08	BAL4862/cg13	THC	47	
thcmid1	8/31/2007	9:38:15	20.36	0.09	1.27	-0.29	47.08	BAL4862/cg13	THC	47	
dcg12	8/31/2007	9:39:15	20.37	0.08	1.22	-0.37	72.96	BLM000517/cg12	THC	84.62	
dcg12	8/31/2007	9:39:30	20.37	0.08	1.35	-0.37	83.00	BLM000517/cg12	THC	84.62	
dcg12	8/31/2007	9:39:45	20.38	0.08	1.28	-0.35	84.07	BLM000517/cg12	THC	84.62	
dcg12	8/31/2007	9:40:00	20.38	0.09	1.25	-0.27	83.64	BLM000517/cg12	THC	84.62	
dcg12	8/31/2007	9:40:15	20.39	0.09	1.23	-0.35	84.74	BLM000517/cg12	THC	84.62	

dcg12	8/31/2007	9:40:30	20.39	0.1	1.1	-0.4	84.5	BLM000517/cg12	THC	84.62
dcg12	8/31/2007	9:40:45	20.39	0.1	1.2	-0.4	84.7	BLM000517/cg12	THC	84.62
thchigh1	8/31/2007	9:40:45	20.39	0.1	1.2	-0.4	84.7	BLM000517/cg12	THC	84.62
dcg14	8/31/2007	9:41:30	20.40	0.1	1.2	-0.4	80.5	BLM004041/cg14	THC	29.87
dcg14	8/31/2007	9:41:45	20.41	0.1	1.2	-0.4	63.2	BLM004041/cg14	THC	29.87
dcg14	8/31/2007	9:42:00	20.41	0.1	1.1	-0.4	31.0	BLM004041/cg14	THC	29.87
dcg14	8/31/2007	9:42:15	20.41	0.1	1.2	-0.4	30.8	BLM004041/cg14	THC	29.87
dcg14	8/31/2007	9:42:30	20.42	0.1	1.3	-0.4	30.6	BLM004041/cg14	THC	29.87
dcg14	8/31/2007	9:42:45	20.41	0.1	1.0	-0.4	30.6	BLM004041/cg14	THC	29.87
dcg14	8/31/2007	9:43:00	20.42	0.1	1.2	-0.4	30.6	BLM004041/cg14	THC	29.87
dcg14	8/31/2007	9:43:15	20.42	0.1	1.2	-0.4	30.6	BLM004041/cg14	THC	29.87
dcg14	8/31/2007	9:43:30	20.42	0.1	1.1	-0.4	30.6	BLM004041/cg14	THC	29.87
thclow1	8/31/2007	9:43:30	20.42	0.1	1.1	-0.4	30.6	BLM004041/cg14	THC	29.87
scg8	8/31/2007	10:38:45	8.73	0.1	23.6	99.3	54.5	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:39:00	8.86	0.1	22.5	99.3	118.5	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:39:15	8.92	0.1	21.0	99.3	119.2	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:47:00	9.15	0.1	16.6	99.3	120.3	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:47:15	8.05	0.1	16.0	99.3	79.9	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:47:30	3.97	0.1	19.5	99.3	92.8	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:47:45	1.94	0.1	24.8	99.3	109.7	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:48:00	0.84	0.1	29.5	99.3	113.7	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:48:15	0.41	0.1	32.1	99.3	113.7	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:48:30	0.25	0.1	33.7	99.3	98.7	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:48:45	0.19	0.1	34.7	92.1	107.9	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:49:00	0.16	0.1	34.9	46.3	108.6	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:49:15	0.13	0.1	35.5	15.6	91.2	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:49:30	0.13	0.1	35.7	6.3	117.6	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:49:45	0.12	0.1	35.7	3.4	119.9	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:50:00	0.11	0.1	36.0	2.3	96.3	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:50:15	0.11	0.1	36.1	1.6	115.0	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:50:30	0.10	0.1	36.1	1.3	109.8	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:50:45	0.10	0.1	36.4	1.1	120.4	ALM067916/cg8	SO2	41.7
scg8	8/31/2007	10:51:00	0.09	0.1	36.4	0.9	120.3	ALM067916/cg8	SO2	41.7
scg6	8/31/2007	10:51:15	0.09	0.1	36.4	0.8	114.6	ALM035137/cg6	NOx	44.5
scg6	8/31/2007	10:51:30	0.09	0.1	36.6	0.6	102.9	ALM035137/cg6	NOx	44.5
scg6	8/31/2007	10:51:45	0.09	0.1	36.2	0.5	120.1	ALM035137/cg6	NOx	44.5
scg6	8/31/2007	10:52:00	0.10	0.1	29.3	0.4	101.9	ALM035137/cg6	NOx	44.5
scg6	8/31/2007	10:52:15	0.09	0.1	17.8	0.4	114.5	ALM035137/cg6	NOx	44.5
scg6	8/31/2007	10:52:30	0.08	0.1	9.9	0.3	118.8	ALM035137/cg6	NOx	44.5
scg3	8/31/2007	10:52:45	0.08	0.1	6.0	0.3	119.9	ALM005139/cg3	O2	12.2
scg3	8/31/2007	10:53:00	0.08	0.1	3.8	0.3	105.3	ALM005139/cg3	O2	12.2
scg3	8/31/2007	10:53:15	0.10	37.2	2.6	0.2	86.0	ALM005139/cg3	O2	12.2
scg3	8/31/2007	10:53:30	2.29	17.4	1.9	0.2	93.1	ALM005139/cg3	O2	12.2
scg3	8/31/2007	10:53:45	7.72	2.5	1.4	0.0	109.1	ALM005139/cg3	O2	12.2
scg3	8/31/2007	10:54:00	10.50	0.5	1.1	-0.1	108.3	ALM005139/cg3	O2	12.2
scg3	8/31/2007	10:54:15	11.36	0.3	0.8	-0.3	105.5	ALM005139/cg3	O2	12.2
scg3	8/31/2007	10:54:30	11.62	0.2	0.6	-0.4	107.4	ALM005139/cg3	O2	12.2
scg3	8/31/2007	10:54:45	11.72	0.2	0.4	-0.5	117.8	ALM005139/cg3	O2	12.2
scg3	8/31/2007	10:55:00	11.77	0.2	0.3	-0.5	113.9	ALM005139/cg3	O2	12.2
scg3	8/31/2007	10:55:15	11.79	0.2	0.2	-0.5	96.8	ALM005139/cg3	O2	12.2
scg10	8/31/2007	10:55:30	11.81	0.1	0.3	-0.6	91.2	ALM054751/cg10	CO	44.9
scg10	8/31/2007	10:55:45	11.82	0.1	0.2	-0.6	118.8	ALM054751/cg10	CO	44.9
scg10	8/31/2007	10:56:00	10.96	0.1	0.0	-0.5	116.2	ALM054751/cg10	CO	44.9
scg10	8/31/2007	10:56:15	5.88	0.1	0.1	1.5	84.5	ALM054751/cg10	CO	44.9
scg10	8/31/2007	10:56:30	2.14	0.1	0.0	6.8	95.8	ALM054751/cg10	CO	44.9
scg10	8/31/2007	10:56:45	0.84	0.1	0.2	16.0	116.2	ALM054751/cg10	CO	44.9
scg10	8/31/2007	10:57:00	0.42	0.1	0.1	25.9	95.5	ALM054751/cg10	CO	44.9
scg10	8/31/2007	10:57:15	0.25	0.1	-0.1	35.1	79.6	ALM054751/cg10	CO	44.9
scg10	8/31/2007	10:57:30	0.18	0.1	0.1	40.1	94.7	ALM054751/cg10	CO	44.9
scg10	8/31/2007	10:57:45	0.14	0.1	0.1	42.1	118.8	ALM054751/cg10	CO	44.9
scg10	8/31/2007	10:58:00	0.13	0.1	-0.1	42.6	95.2	ALM054751/cg10	CO	44.9
scg10	8/31/2007	10:58:15	0.12	0.1	-0.1	42.8	112.7	ALM054751/cg10	CO	44.9
scg6	8/31/2007	10:58:30	0.11	0.1	-0.2	42.9	90.5	ALM035137/cg6	NOx	44.5
scg6	8/31/2007	10:58:45	0.10	0.1	-0.1	43.0	118.7	ALM035137/cg6	NOx	44.5
scg6	8/31/2007	10:59:00	0.10	10.7	0.0	42.9	111.3	ALM035137/cg6	NOx	44.5
scg6	8/31/2007	10:59:15	0.11	37.5	-0.2	41.4	57.0	ALM035137/cg6	NOx	44.5
scg6	8/31/2007	10:59:30	0.09	44.6	-0.3	36.5	57.4	ALM035137/cg6	NOx	44.5
scg6	8/31/2007	10:59:45	0.08	45.3	-0.3	27.2	83.4	ALM035137/cg6	NOx	44.5
scg6	8/31/2007	11:00:00	0.08	45.5	-0.5	17.5	80.0	ALM035137/cg6	NOx	44.5
scg6	8/31/2007	11:00:15	0.08	45.6	-0.3	7.8	48.4	ALM035137/cg6	NOx	44.5
scg6	8/31/2007	11:00:30	0.07	45.4	-0.3	2.5	86.3	ALM035137/cg6	NOx	44.5
dcg1	9/4/2007	8:42:15	18.56	0.1	0.3	0.1	-1.0	ALM000674/cg1	N2	0
dcg1	9/4/2007	8:42:30	10.76	-0.1	0.1	0.1	-1.5	ALM000674/cg1	N2	0
dcg1	9/4/2007	8:42:45	3.23	0.0	-0.6	0.1	-1.3	ALM000674/cg1	N2	0
dcg1	9/4/2007	8:43:00	1.27	0.0	-0.8	0.1	-1.3	ALM000674/cg1	N2	0
dcg1	9/4/2007	8:43:15	0.68	0.0	-0.7	0.0	-1.1	ALM000674/cg1	N2	0
dcg1	9/4/2007	8:43:30	0.45	-0.1	-1.0	0.0	-1.0	ALM000674/cg1	N2	0
dcg1	9/4/2007	8:43:45	0.34	0.1	-1.0	-0.1	-1.6	ALM000674/cg1	N2	0
dcg1	9/4/2007	8:44:00	0.29	0.0	-0.9	-0.1	-1.2	ALM000674/cg1	N2	0
dcg1	9/4/2007	8:44:15	0.26	-0.1	-0.3	-0.1	-0.7	ALM000674/cg1	N2	0
dcg1	9/4/2007	8:44:30	0.24	-0.1	0.1	-0.1	-1.4	ALM000674/cg1	N2	0

dcg5	9/4/2007	8:45:00	0.44	51.5	0.3	-0.1	-2.0	BLM001222/cg5	NOx	93.6
dcg5	9/4/2007	8:45:15	0.60	118.5	0.1	-0.1	-2.0	BLM001222/cg5	NOx	93.6
dcg5	9/4/2007	8:45:30	0.30	118.0	0.0	-0.1	-2.1	BLM001222/cg5	NOx	93.6
dcg5	9/4/2007	8:45:45	0.22	98.8	0.2	-0.1	-2.1	BLM001222/cg5	NOx	93.6
dcg5	9/4/2007	8:46:00	0.19	93.8	0.1	-0.1	-2.0	BLM001222/cg5	NOx	93.6
dcg5	9/4/2007	8:46:15	0.18	93.8	0.0	-0.1	-1.2	BLM001222/cg5	NOx	93.6
noxhigh1	9/4/2007	8:46:15	0.18	93.8	0.0	-0.1	-1.2	BLM001222/cg5	NOx	93.6
dcg9	9/4/2007	8:46:30	0.18	94.0	0.2	-0.1	-2.0	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:46:45	0.61	25.3	0.2	0.6	-2.0	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:47:00	0.54	0.5	0.0	5.8	-1.6	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:47:15	0.26	0.3	0.1	22.8	-1.8	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:47:30	0.19	0.2	0.1	40.5	-1.8	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:47:45	0.16	0.2	0.0	63.5	-1.5	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:48:00	0.15	0.1	-0.1	76.7	-1.8	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:48:15	0.15	0.1	0.0	83.2	-0.8	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:48:30	0.14	0.1	-0.2	83.9	-1.3	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:48:45	0.14	0.1	-0.2	84.0	-1.5	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:49:00	0.14	0.0	0.1	84.0	-1.6	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:49:15	0.13	0.0	0.0	84.0	-1.4	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:49:30	0.13	0.0	-0.1	83.8	-1.4	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:49:45	0.13	0.0	0.1	83.6	-1.7	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:50:00	0.12	0.0	0.0	83.5	-1.8	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:50:15	0.12	0.0	0.0	83.3	-1.7	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:50:30	0.12	0.0	0.0	83.2	-1.4	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:50:45	0.12	0.0	-0.2	83.1	-1.0	ALM047398/cg9	CO	83
dcg9	9/4/2007	8:51:00	0.12	0.0	-0.2	83.1	-0.2	ALM047398/cg9	CO	83
cohigh1	9/4/2007	8:51:00	0.12	0.0	-0.2	83.1	-0.2	ALM047398/cg9	CO	83
dcg7	9/4/2007	8:51:15	0.12	0.0	-0.1	83.1	-0.9	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:51:30	0.51	0.8	15.4	82.7	-0.8	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:51:45	0.41	0.4	66.1	75.2	-1.0	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:52:00	0.20	0.4	81.9	60.3	-1.2	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:52:15	0.14	0.4	84.3	39.3	-1.6	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:52:30	0.12	0.4	84.6	20.0	-0.2	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:52:45	0.11	0.4	84.8	5.6	-0.2	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:53:00	0.11	0.4	85.2	0.7	-0.9	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:53:15	0.11	0.4	85.2	-0.1	-1.5	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:53:30	0.10	0.4	85.1	-0.2	-0.2	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:53:45	0.10	0.4	85.4	-0.2	-1.0	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:54:00	0.10	0.4	85.4	-0.2	-1.4	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:54:15	0.10	0.4	85.3	-0.2	-1.2	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:54:30	0.10	0.3	85.5	-0.1	-1.4	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:54:45	0.10	0.3	85.1	-0.2	-1.4	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:55:00	0.10	0.4	84.5	-0.2	-1.0	BLM003931/cg7	SO2	84.5
dcg7	9/4/2007	8:55:15	0.09	0.4	84.5	-0.2	-1.4	BLM003931/cg7	SO2	84.5
so2high1	9/4/2007	8:55:15	0.09	0.4	84.5	-0.2	-1.4	BLM003931/cg7	SO2	84.5
dcg2	9/4/2007	8:55:30	0.09	0.4	84.6	-0.2	-1.7	AAL14753/cg2	O2	20.9
dcg2	9/4/2007	8:55:45	5.02	0.1	58.5	-0.2	-1.1	AAL14753/cg2	O2	20.9
dcg2	9/4/2007	8:56:00	15.42	0.0	12.1	-0.2	0.0	AAL14753/cg2	O2	20.9
dcg2	9/4/2007	8:56:15	18.50	0.0	1.9	-0.2	-1.6	AAL14753/cg2	O2	20.9
dcg2	9/4/2007	8:56:30	19.40	0.0	0.5	-0.2	-1.3	AAL14753/cg2	O2	20.9
dcg2	9/4/2007	8:56:45	19.72	0.0	0.1	-0.4	-1.6	AAL14753/cg2	O2	20.9
dcg2	9/4/2007	8:57:00	19.85	0.0	0.2	-0.4	-1.4	AAL14753/cg2	O2	20.9
dcg2	9/4/2007	8:57:15	20.12	0.0	0.2	-0.4	-1.6	AAL14753/cg2	O2	20.9
dcg2	9/4/2007	8:57:30	20.82	0.0	-0.1	-0.4	-1.2	AAL14753/cg2	O2	20.9
dcg2	9/4/2007	8:57:45	20.85	0.0	0.0	-0.4	-0.9	AAL14753/cg2	O2	20.9
o2high1	9/4/2007	8:57:45	20.85	0.0	0.0	-0.4	-0.9	AAL14753/cg2	O2	20.9
dcg6	9/4/2007	8:58:00	20.86	0.0	0.0	-0.4	-1.9	ALM035137/cg6	NOx	44.5
dcg6	9/4/2007	8:58:15	17.77	34.4	-0.1	-0.4	-1.9	ALM035137/cg6	NOx	44.5
dcg6	9/4/2007	8:58:30	6.13	44.1	0.1	-0.4	-1.1	ALM035137/cg6	NOx	44.5
dcg6	9/4/2007	8:58:45	1.97	44.2	0.1	-0.3	-1.6	ALM035137/cg6	NOx	44.5
dcg6	9/4/2007	8:59:00	0.87	44.2	-0.2	-0.3	-1.9	ALM035137/cg6	NOx	44.5
noxmid1	9/4/2007	8:59:00	0.87	44.2	-0.2	-0.3	-1.9	ALM035137/cg6	NOx	44.5
dcg8	9/4/2007	8:59:15	0.48	43.1	0.0	-0.2	-1.8	ALM067916/cg8	SO2	41.7
dcg8	9/4/2007	8:59:30	0.57	1.2	14.5	-0.1	-1.9	ALM067916/cg8	SO2	41.7
dcg8	9/4/2007	8:59:45	0.34	0.2	35.8	-0.1	-1.9	ALM067916/cg8	SO2	41.7
dcg8	9/4/2007	9:00:00	0.22	0.1	40.3	-0.1	-1.9	ALM067916/cg8	SO2	41.7
dcg8	9/4/2007	9:00:15	0.18	0.1	41.0	-0.2	-1.9	ALM067916/cg8	SO2	41.7
dcg8	9/4/2007	9:00:30	0.16	0.1	41.0	-0.3	-1.9	ALM067916/cg8	SO2	41.7
so2mid1	9/4/2007	9:00:30	0.16	0.1	41.0	-0.3	-1.9	ALM067916/cg8	SO2	41.7
dcg10	9/4/2007	9:00:45	0.15	0.1	41.0	-0.3	-1.7	ALM054751/cg10	CO	44.9
dcg10	9/4/2007	9:01:00	0.46	0.0	30.7	0.0	-1.2	ALM054751/cg10	CO	44.9
dcg10	9/4/2007	9:01:15	0.34	0.0	7.0	4.2	-0.7	ALM054751/cg10	CO	44.9
dcg10	9/4/2007	9:01:30	0.18	0.0	1.0	12.0	-0.4	ALM054751/cg10	CO	44.9
dcg10	9/4/2007	9:01:45	0.14	0.0	0.4	23.6	-1.0	ALM054751/cg10	CO	44.9
dcg10	9/4/2007	9:02:00	0.12	0.0	0.3	33.4	-1.1	ALM054751/cg10	CO	44.9
dcg10	9/4/2007	9:02:15	0.11	0.0	0.2	41.1	-1.9	ALM054751/cg10	CO	44.9
dcg10	9/4/2007	9:02:30	0.11	0.0	0.1	43.4	-2.0	ALM054751/cg10	CO	44.9
dcg10	9/4/2007	9:02:45	0.10	0.0	0.2	43.9	-1.8	ALM054751/cg10	CO	44.9
dcg10	9/4/2007	9:03:00	0.10	0.0	0.0	44.0	-1.3	ALM054751/cg10	CO	44.9
dcg10	9/4/2007	9:03:15	0.10	0.0	0.0	43.9	-1.5	ALM054751/cg10	CO	44.9
dcg10	9/4/2007	9:03:30	0.10	0.0	0.2	44.0	-1.0	ALM054751/cg10	CO	44.9

O2 NOx SO2 CO THC

comid1	9/4/2007	9:03:30	0.10	0.0	0.2	44.0	-1.0	ALM054751/cg10	CO	44.9
dcg3	9/4/2007	9:03:45	0.10	0.0	0.1	44.0	-1.6	ALM005139/cg3	O2	12.2
dcg3	9/4/2007	9:04:00	4.44	0.0	-0.1	43.2	-1.6	ALM005139/cg3	O2	12.2
dcg3	9/4/2007	9:04:15	10.01	0.0	-0.1	37.5	-1.9	ALM005139/cg3	O2	12.2
dcg3	9/4/2007	9:04:30	11.48	0.0	-0.1	29.4	-1.9	ALM005139/cg3	O2	12.2
dcg3	9/4/2007	9:04:45	11.92	0.0	-0.2	18.1	-1.4	ALM005139/cg3	O2	12.2
dcg3	9/4/2007	9:05:00	12.08	0.0	-0.1	8.8	-1.3	ALM005139/cg3	O2	12.2
dcg3	9/4/2007	9:05:15	12.15	0.0	-0.1	2.6	-1.5	ALM005139/cg3	O2	12.2
dcg3	9/4/2007	9:05:30	12.19	0.0	-0.2	0.2	-1.0	ALM005139/cg3	O2	12.2
o2mid1	9/4/2007	9:05:30	12.19	0.0	-0.2	0.2	-1.0	ALM005139/cg3	O2	12.2
dcg1	9/4/2007	9:06:00	11.55	0.0	-0.1	-0.7	-1.4	ALM000674/cg1	N2	0
dcg1	9/4/2007	9:06:15	4.80	0.0	-0.3	-0.7	-1.8	ALM000674/cg1	N2	0
dcg1	9/4/2007	9:06:30	1.46	0.0	0.0	-0.6	-1.4	ALM000674/cg1	N2	0
dcg1	9/4/2007	9:06:45	0.60	0.0	0.1	-0.5	-1.7	ALM000674/cg1	N2	0
dcg1	9/4/2007	9:07:00	0.33	0.0	-0.1	-0.4	-1.4	ALM000674/cg1	N2	0
dcg1	9/4/2007	9:07:15	0.22	0.0	-0.1	-0.2	-0.2	ALM000674/cg1	N2	0
dcg1	9/4/2007	9:07:30	0.17	0.0	0.0	-0.2	-1.8	ALM000674/cg1	N2	0
dcg1	9/4/2007	9:07:45	0.14	0.0	-0.2	-0.1	-1.6	ALM000674/cg1	N2	0
o2ezero1	9/4/2007	9:07:45	0.14	0.0	-0.2	-0.1	-1.6	ALM000674/cg1	N2	0
noxezero1	9/4/2007	9:07:45	0.14	0.0	-0.2	-0.1	-1.6	ALM000674/cg1	N2	0
coezero1	9/4/2007	9:07:45	0.14	0.0	-0.2	-0.1	-1.6	ALM000674/cg1	N2	0
so2ezero1	9/4/2007	9:07:45	0.14	0.0	-0.2	-0.1	-1.6	ALM000674/cg1	N2	0
dcg12	9/4/2007	10:26:30	7.76	8.7	20.3	99.4	45.0	BLM000517/cg12	THC	84.62
dcg12	9/4/2007	10:26:45	7.71	9.4	20.0	99.4	84.2	BLM000517/cg12	THC	84.62
dcg12	9/4/2007	10:27:00	7.63	8.8	19.9	99.4	84.5	BLM000517/cg12	THC	84.62
dcg12	9/4/2007	10:27:15	7.58	9.6	19.7	99.4	84.6	BLM000517/cg12	THC	84.62
dcg12	9/4/2007	10:27:30	7.29	9.8	20.0	99.4	84.7	BLM000517/cg12	THC	84.62
dcg12	9/4/2007	10:27:45	7.42	9.2	20.4	99.4	84.8	BLM000517/cg12	THC	84.62
dcg12	9/4/2007	10:28:00	7.39	9.6	20.4	99.4	84.8	BLM000517/cg12	THC	84.62
thchigh1	9/4/2007	10:28:00	7.39	9.6	20.4	99.4	84.8	BLM000517/cg12	THC	84.62
dcg13	9/4/2007	10:30:00	7.68	8.8	19.9	99.4	48.2	BAL4862/cg13	THC	47
dcg13	9/4/2007	10:30:15	7.77	9.0	20.0	99.4	48.1	BAL4862/cg13	THC	47
dcg13	9/4/2007	10:30:30	7.63	9.7	20.3	99.4	47.8	BAL4862/cg13	THC	47
dcg13	9/4/2007	10:30:45	7.37	9.6	20.6	99.4	47.8	BAL4862/cg13	THC	47
thcmid1	9/4/2007	10:30:45	7.37	9.6	20.6	99.4	47.8	BAL4862/cg13	THC	47
dcg14	9/4/2007	10:32:00	7.36	9.5	21.2	99.4	30.0	BLM004041/cg14	THC	29.87
dcg14	9/4/2007	10:32:15	7.46	9.2	21.4	99.4	29.8	BLM004041/cg14	THC	29.87
dcg14	9/4/2007	10:32:30	7.66	8.8	21.5	99.4	29.7	BLM004041/cg14	THC	29.87
dcg14	9/4/2007	10:32:45	7.62	9.0	21.2	99.4	29.7	BLM004041/cg14	THC	29.87
thclow1	9/4/2007	10:32:45	7.62	9.0	21.2	99.4	29.7	BLM004041/cg14	THC	29.87
dcg2	9/4/2007	10:34:45	7.71	9.2	21.0	99.4	0.0	AAL14753/cg2	O2	20.9
dcg2	9/4/2007	10:35:00	7.57	8.3	20.7	99.4	0.0	AAL14753/cg2	O2	20.9
dcg2	9/4/2007	10;35:15	7.49	3.3	20.6	99.4	-0.1	AAL14753/cg2	O2	20.9
dcg2	9/4/2007	10:35:30	7.49	2.0	20.5	99.4	-0.1	AAL14753/cg2	O2	20.9
thcezero1	9/4/2007	10:35:30	7.49	2.0	20.5	99.4	-0.1	AAL14753/cg2	O2	20.9
dcg1	9/5/2007	6:17:45	20.26	0.1	3.3	0.0	1.1	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:18:00	9.63	0.0	3.1	0.0	1.1	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:18:15	2.57	0.0	2.6	0.0	1.0	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:18:30	0.96	0.0	2.2	0.0	1.2	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:18:45	0.51	0.0	1.8	-0.1	1.2	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:19:00	0.35	0.0	1.8	-0.2	1.1	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:19:15	0.28	0.0	1.7	-0.2	1.0	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:19:30	0.23	0.0	1.4	-0.2	1.3	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:19:45	0.21	0.0	0.6	-0.2	1.1	ALM000674/cg1	N2	0
dcg5	9/5/2007	6:20:00	0.20	0.0	0.1	-0.2	1.1	BLM001222/cg5	NOx	93.6
dcg5	9/5/2007	6:20:15	2.44	49.5	0.3	-0.2	1.0	BLM001222/cg5	NOx	93.6
dcg5	9/5/2007	6:20:30	1.29	70.9	0.7	-0.2	0.9	BLM001222/cg5	NOx	93.6
dcg5	9/5/2007	6:20:45	0.42	79.0	0.3	-0.2	1.0	BLM001222/cg5	NOx	93.6
dcg5	9/5/2007	6:21:00	0.24	89.0	0.1	-0.2	1.1	BLM001222/cg5	NOx	93.6
dcg5	9/5/2007	6:21:15	0.18	93.4	0.3	-0.2	1.1	BLM001222/cg5	NOx	93.6
dcg5	9/5/2007	6:21:30	0.16	93.8	0.1	-0.2	1.0	BLM001222/cg5	NOx	93.6
dcg5	9/5/2007	6:21:45	0.15	93.7	0.0	-0.2	1.1	BLM001222/cg5	NOx	93.6
dcg5	9/5/2007	6:22:00	0.15	93.7	0.1	-0.1	1.0	BLM001222/cg5	NOx	93.6
noxhigh1	9/5/2007	6:22:00	0.15	93.7	0.1	-0.1	1.0	BLM001222/cg5	NOx	93.6
dcg7	9/5/2007	6:22:15	0.14	92.9	0.1	-0.2	1.0	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:22:30	1.67	7.4	18.2	-0.2	1.1	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:22:45	0.78	0.9	65.8	-0.2	1.1	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:23:00	0.28	0.7	80.0	-0.2	1.3	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:23:15	0.17	0.7	82.0	-0.3	1.3	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:23:30	0.14	0.6	82.5	-0.3	1.2	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:23:45	0.13	0.6	82.7	-0.4	1.0	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:24:00	0.12	0.6	82.9	-0.4	1.1	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:24:15	0.12	0.5	82.6	-0.3	1.0	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:24:30	0.11	0.5	84.4	-0.3	1.0	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:24:45	0.11	0.5	84.7	-0.3	1.1	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:25:00	0.11	0.5	84.8	-0.3	1.1	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:25:15	0.10	0.5	84.7	-0.3	1.0	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:25:30	0.10	0.5	84.9	-0.3	1.1	BLM003931/cg7	SO2	84.5
dcg7	9/5/2007	6:25:45	0.10	0.4	84.7	-0.4	1.1	BLM003931/cg7	SO2	84.5
so2high1	9/5/2007	6:25:45	0.10	0.4	84.7	-0.4	1.1	BLM003931/cg7	SO2	84.5
dcg9	9/5/2007	6:26:00	0.10	0.4	84.8	-0.3	1.2	ALM047398/cg9	CO	83

Cal Error

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O2 NOx SO2 CO THC

dcg9	9/5/2007	6:26:15	3.27	0.2	59.6	0.1	1.2	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:26:30	2.00	0.1	13.7	5.3	1.4	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:26:45	0.53	0.0	2.0	20.2	1.1	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:27:00	0.22	0.0	0.5	39.5	1.1	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:27:15	0.14	0.0	0.2	60.2	1.0	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:27:30	0.11	0.0	0.2	75.3	1.1	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:27:45	0.10	0.0	0.3	81.5	1.2	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:28:00	0.09	0.0	0.1	82.5	1.2	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:28:15	0.09	0.0	0.1	82.5	1.1	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:28:30	0.09	0.0	0.1	82.5	1.0	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:28:45	0.08	0.0	-0.1	82.7	1.0	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:29:00	0.08	0.0	0.1	82.9	1.0	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:29:15	0.08	0.0	0.0	83.2	0.9	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:29:30	0.08	0.0	-0.1	83.3	1.0	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:29:45	0.07	0.0	0.0	83.4	1.0	ALM047398/cg9	CO	83
dcg9	9/5/2007	6:30:00	0.07	0.0	0.0	83.4	1.1	ALM047398/cg9	CO	83
cohigh1	9/5/2007	6:30:00	0.07	0.0	0.0	83.4	1.1	ALM047398/cg9	CO	83
dcg2	9/5/2007	6:30:15	0.08	0.1	-0.3	83.4	1.1	AAL14753/cg2	O2	20.9
dcg2	9/5/2007	6:30:30	7.14	0.1	0.1	81.5	1.1	AAL14753/cg2	O2	20.9
dcg2	9/5/2007	6:30:45	17.39	0.0	0.1	71.2	1.2	AAL14753/cg2	O2	20.9
dcg2	9/5/2007	6:31:00	19.89	0.0	-0.1	53.5	1.2	AAL14753/cg2	O2	20.9
dcg2	9/5/2007	6:31:15	20.55	0.0	0.1	33.4	1.1	AAL14753/cg2	O2	20.9
dcg2	9/5/2007	6:31:30	20.78	0.0	0.1	14.0	1.1	AAL14753/cg2	O2	20.9
dcg2	9/5/2007	6:31:45	20.88	0.0	-0.2	3.7	0.9	AAL14753/cg2	O2	20.9
dcg2	9/5/2007	6:32:00	20.93	0.0	0.0	0.1	1.0	AAL14753/cg2	O2	20.9
o2high1	9/5/2007	6:32:00	20.93	0.0	0.0	0.1	1.0	AAL14753/cg2	O2	20.9
dcg6	9/5/2007	6:32:15	20.91	0.0	-0.1	-0.4	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:32:30	18.73	27.1	0.2	-0.5	0.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:32:45	6.26	44.2	0.3	-0.5	0.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:33:00	1.75	44.2	0.0	-0.4	0.8	ALM035137/cg6	NOx	44.5
noxmid1	9/5/2007	6:33:00	1.75	44.2	0.0	-0.4	0.8	ALM035137/cg6	NOx	44.5
dcg8	9/5/2007	6:33:15	0.76	36.7	0.0	-0.4	1.0	ALM067916/cg8	SO2	41.7
dcg8	9/5/2007	6:33:30	2.66	0.9	14.5	-0.3	0.9	ALM067916/cg8	SO2	41.7
dcg8	9/5/2007	6:33:45	0.90	0.2	36.0	-0.2	0.9	ALM067916/cg8	SO2	41.7
dcg8	9/5/2007	6:34:00	0.34	0.2	40.6	-0.2	1.0	ALM067916/cg8	SO2	41.7
dcg8	9/5/2007	6:34:15	0.20	0.1	41.2	-0.3	1.0	ALM067916/cg8	SO2	41.7
dcg8	9/5/2007	6:34:30	0.16	0.1	41.2	-0.3	1.0	ALM067916/cg8	SO2	41.7
so2mid1	9/5/2007	6:34:30	0.16	0.1	41.2	-0.3	1.0	ALM067916/cg8	SO2	41.7
dcg10	9/5/2007	6:34:45	0.41	0.1	40.2	-0.4	0.9	ALM054751/cg10	CO	44.9
dcg10	9/5/2007	6:35:00	4.93	0.1	19.3	0.2	0.8	ALM054751/cg10	CO	44.9
dcg10	9/5/2007	6:35:15	1.44	0.0	3.4	4.9	0.8	ALM054751/cg10	CO	44.9
dcg10	9/5/2007	6:35:30	0.44	0.0	0.8	13.6	0.8	ALM054751/cg10	CO	44.9
dcg10	9/5/2007	6:35:45	0.20	0.0	0.5	24.2	0.9	ALM054751/cg10	CO	44.9
dcg10	9/5/2007	6:36:00	0.14	0.0	0.4	35.0	1.0	ALM054751/cg10	CO	44.9
dcg10	9/5/2007	6:36:15	0.11	0.0	0.3	41.3	0.8	ALM054751/cg10	CO	44.9
dcg10	9/5/2007	6:36:30	0.10	0.0	0.2	43.6	0.9	ALM054751/cg10	CO	44.9
dcg10	9/5/2007	6:36:45	0.09	0.0	0.1	43.8	0.9	ALM054751/cg10	CO	44.9
dcg10	9/5/2007	6:37:00	0.09	0.0	0.2	43.9	1.0	ALM054751/cg10	CO	44.9
dcg10	9/5/2007	6:37:15	0.08	0.0	0.1	43.8	0.8	ALM054751/cg10	CO	44.9
dcg10	9/5/2007	6:37:30	0.08	0.0	0.0	43.7	1.0	ALM054751/cg10	CO	44.9
dcg10	9/5/2007	6:37:45	0.08	0.0	0.1	43.7	1.0	ALM054751/cg10	CO	44.9
comid1	9/5/2007	6:37:45	0.08	0.0	0.1	43.7	1.0	ALM054751/cg10	CO	44.9
dcg3	9/5/2007	6:38:00	0.43	0.1	0.1	43.6	1.0	ALM005139/cg3	O2	12.2
dcg3	9/5/2007	6:38:15	7.50	0.0	0.1	42.1	1.2	ALM005139/cg3	O2	12.2
dcg3	9/5/2007	6:38:30	11.06	0.0	0.2	35.9	1.1	ALM005139/cg3	O2	12.2
dcg3	9/5/2007	6:38:45	11.86	0.0	0.0	27.2	1.2	ALM005139/cg3	O2	12.2
dcg3	9/5/2007	6:39:00	12.10	0.0	-0.1	16.2	1.2	ALM005139/cg3	O2	12.2
dcg3	9/5/2007	6:39:15	12.19	0.0	0.0	7.2	1.2	ALM005139/cg3	O2	12.2
dcg3	9/5/2007	6:39:30	12.24	0.0	-0.1	1.8	1.3	ALM005139/cg3	O2	12.2
o2mid1	9/5/2007	6:39:30	12.24	0.0	-0.1	1.8	1.3	ALM005139/cg3	O2	12.2
dcg1	9/5/2007	6:39:45	12.27	0.0	-0.1	0.0	1.2	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:40:00	9.76	0.0	0.1	-0.6	1.1	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:40:15	2.68	0.0	-0.2	-0.6	1.1	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:40:30	0.83	0.0	-0.2	-0.6	1.1	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:40:45	0.36	0.0	-0.1	-0.5	1.1	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:41:00	0.22	0.0	-0.2	-0.4	1.3	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:41:15	0.15	0.0	0.0	-0.3	1.0	ALM000674/cg1	N2	0
dcg1	9/5/2007	6:41:30	0.12	0.0	0.0	-0.3	0.9	ALM000674/cg1	N2	0
o2ezero1	9/5/2007	6:41:30	0.12	0.0	0.0	-0.3	0.9	ALM000674/cg1	N2	0
noxezero1	9/5/2007	6:41:30	0.12	0.0	0.0	-0.3	0.9	ALM000674/cg1	N2	0
coezero1	9/5/2007	6:41:30	0.12	0.0	0.0	-0.3	0.9	ALM000674/cg1	N2	0
so2ezero1	9/5/2007	6:41:30	0.12	0.0	0.0	-0.3	0.9	ALM000674/cg1	N2	0
dcg6	9/5/2007	6:42:00	7.17	0.2	0.2	-0.2	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:42:15	16.32	0.1	1.0	0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:42:30	17.88	18.4	1.4	0.4	0.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:42:45	18.03	22.7	1.7	0.6	0.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:43:00	17.96	22.7	1.8	0.6	0.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:43:15	17.84	22.8	1.9	0.3	0.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:43:30	17.72	22.8	2.1	0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:43:45	17.61	22.9	2.0	0.0	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:44:00	17.51	22.8	2.1	0.0	0.7	ALM035137/cg6	NOx	44.5

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O2 NOx SO2 CO THC

dcg6	9/5/2007	6:44:15	17.43	22.8	2.2	-0.1	0.6	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:44:30	17.35	22.8	2.0	-0.1	0.7	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:44:45	17.28	22.8	2.0	-0.2	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:45:00	17.22	22.9	2.2	-0.2	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:45:15	17.16	22.9	2.1	-0.2	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:45:30	17.11	22.8	2.0	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:45:45	17.08	22.8	2.1	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:46:00	17.05	22.8	1.9	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:46:15	17.02	22.8	2.0	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:46:30	16.99	22.9	2.0	-0.1	0.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:46:45	16.97	22.9	1.8	-0.1	0.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:47:00	16.95	22.8	1.9	-0.1	0.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:47:15	16.94	22.8	1.9	-0.1	0.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:47:30	16.94	22.9	1.8	-0.1	0.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:47:45	16.93	22.8	2.0	-0.1	0.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:48:00	16.93	22.8	2.0	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:48:15	16.93	22.8	2.0	-0.1	0.4	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:48:30	16.93	22.9	2.0	-0.1	-0.2	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:48:45	16.93	22.8	2.1	-0.1	0.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:49:00	16.94	22.8	2.1	-0.1	0.2	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:49:15	16.95	22.8	2.2	-0.1	1.2	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:49:30	16.96	22.8	2.0	-0.1	0.5	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:49:45	16.97	22.9	2.1	-0.1	38.2	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:50:00	16.98	22.8	2.3	-0.1	86.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:50:15	17.00	22.8	2.2	-0.1	85.2	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:50:30	17.01	22.8	2.3	-0.1	84.7	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:50:45	17.03	22.8	2.4	-0.1	84.7	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:51:00	17.05	22.7	2.3	-0.1	28.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:51:15	17.07	22.7	2.3	-0.1	34.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:51:30	17.09	22.7	2.6	-0.1	14.7	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:51:45	17.10	22.8	2.5	-0.1	0.2	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:52:00	17.12	22.8	2.4	-0.1	0.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:52:15	17.15	22.8	2.5	-0.1	0.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:52:30	17.16	22.8	2.4	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:52:45	17.18	22.8	2.4	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:53:00	17.21	22.8	2.4	-0.1	1.2	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:53:15	17.23	22.6	2.3	-0.1	1.2	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:53:30	17.25	22.6	2.4	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:53:45	17.27	22.7	2.4	-0.1	1.2	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:54:00	17.30	22.6	2.2	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:54:15	17.32	22.7	2.3	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:54:30	17.34	22.6	2.2	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:54:45	17.37	22.7	2.2	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:55:00	17.39	22.7	2.2	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:55:15	17.41	22.7	2.2	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:55:30	17.43	22.7	2.0	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:55:45	17.45	22.7	2.1	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:56:00	17.47	22.8	2.0	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:56:15	17.49	22.7	1.9	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:56:30	17.52	22.7	2.1	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:56:45	17.54	22.7	1.9	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:57:00	17.55	22.7	2.0	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:57:15	17.58	22.7	2.0	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:57:30	17.60	22.7	1.9	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:57:45	17.62	22.8	1.8	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:58:00	17.63	22.8	1.9	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:58:15	17.65	22.7	1.7	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:58:30	17.68	22.7	1.9	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:58:45	17.70	22.7	2.0	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:59:00	17.72	22.8	1.8	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:59:15	17.73	22.7	1.8	-0.1	1.2	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:59:30	17.75	22.7	1.8	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	6:59:45	17.76	22.7	1.7	-0.1	0.8	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:00:00	17.78	22.7	1.8	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:00:15	17.80	22.7	1.8	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:00:30	17.81	22.7	1.7	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:00:45	17.82	22.8	1.7	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:01:00	17.83	22.8	1.7	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:01:15	17.84	22.8	1.6	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:01:30	17.85	22.8	1.8	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:01:45	17.84	22.8	1.7	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:02:00	17.83	22.7	1.6	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:02:15	17.82	22.7	1.7	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:02:30	17.80	22.8	1.7	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:02:45	17.77	22.7	1.6	0.0	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:03:00	17.74	22.7	1.8	0.0	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:03:15	17.68	22.8	1.7	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:03:30	17.65	22.7	1.8	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:03:45	17.58	22.7	1.7	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:04:00	17.50	22.8	1.4	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:04:15	17.42	22.7	1.7	-0.1	1.0	ALM035137/cg6	NOx	44.5

O2 NOx SO2 CO THC

dcg6	9/5/2007	7:04:30	17.32	22.7	1.9	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:04:45	17.21	22.7	1.7	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:05:00	17.09	22.8	1.6	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:05:15	16.95	22.6	1.6	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:05:30	16.80	22.7	1.6	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:05:45	16.64	22.7	1.8	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:06:00	16.47	22.6	1.7	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:06:15	16.30	22.6	1.6	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:06:30	16.11	22.6	1.9	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:06:45	15.92	22.8	1.8	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:07:00	15.72	22.7	1.6	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:07:15	15.52	22.7	1.8	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:07:30	15.30	22.6	1.5	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:07:45	15.09	22.7	1.5	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:08:00	14.88	22.7	1.8	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:08:15	14.67	22.7	1.7	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:08:30	14.46	22.7	1.6	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:08:45	14.25	22.7	1.7	-0.1	1.2	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:09:00	14.04	22.7	1.7	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:09:15	13.84	22.7	1.7	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:09:30	13.64	22.7	1.8	-0.1	0.9	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:09:45	13.44	22.7	1.7	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:10:00	13.25	22.7	1.6	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:10:15	13.07	22.7	1.7	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:10:30	12.90	22.7	1.7	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:10:45	12.73	22.6	1.7	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:11:00	12.57	22.6	1.8	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:11:15	12.43	22.7	1.6	-0.1	1.3	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:11:30	12.28	22.7	1.7	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:11:45	12.15	22.7	2.0	-0.1	1.3	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:12:00	12.02	22.7	1.8	-0.1	1.5	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:12:15	11.91	22.6	1.6	-0.2	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:12:30	11.80	22.6	1.8	-0.2	1.2	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:12:45	11.70	22.7	1.6	-0.2	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:13:00	11.61	22.7	1.6	-0.1	1.1	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:13:15	11.52	22.7	1.8	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:13:30	11.45	22.6	1.6	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:13:45	11.38	22.6	1.8	-0.1	1.2	ALM035137/cg6	NOx	44.5
dcg6	9/5/2007	7:14:00	11.31	22.6	1.8	-0.1	1.0	ALM035137/cg6	NOx	44.5
dcg2	9/5/2007	7:14:15	11.31	13.9	1.6	-0.1	1.3	AAL14753/cg2	O2	20.9
dcg2	9/5/2007	7:14:30	15.54	0.6	1.8	0.0	1.0	AAL14753/cg2	O2	20.9
dcg2	9/5/2007	7:14:45	18.77	0.2	1.7	0.4	0.5	AAL14753/cg2	O2	20.9
dcg2	9/5/2007	7:15:00	19.30	0.2	1.6	0.7	-0.1	AAL14753/cg2	O2	20.9
dcg2	9/5/2007	7:15:15	19.34	0.2	1.9	0.9	-0.1	AAL14753/cg2	O2	20.9
thczero1	9/5/2007	7:15:15	19.34	0.2	1.9	0.9	-0.1	AAL14753/cg2	O2	20.9
dcg12	9/5/2007	7:16:30	20.61	0.1	1.4	3.6	67.5	BLM000517/cg12	THC	84.62
dcg12	9/5/2007	7:16:45	20.65	0.1	1.5	4.8	85.1	BLM000517/cg12	THC	84.62
dcg12	9/5/2007	7:17:00	20.66	0.1	1.5	4.7	84.5	BLM000517/cg12	THC	84.62
dcg12	9/5/2007	7:17:15	20.66	0.1	1.3	3.5	84.6	BLM000517/cg12	THC	84.62
dcg12	9/5/2007	7:17:30	20.67	0.1	1.3	1.6	84.7	BLM000517/cg12	THC	84.62
dcg12	9/5/2007	7:17:45	20.67	0.1	1.3	0.4	84.7	BLM000517/cg12	THC	84.62
thchigh1	9/5/2007	7:17:45	20.67	0.1	1.3	0.4	84.7	BLM000517/cg12	THC	84.62
dcg13	9/5/2007	7:18:30	20.67	0.1	1.3	-0.1	42.3	BAL4862/cg13	THC	47
dcg13	9/5/2007	7:18:45	20.66	0.1	1.2	-0.1	51.9	BAL4862/cg13	THC	47
dcg13	9/5/2007	7:19:00	20.66	0.1	1.3	-0.1	48.2	BAL4862/cg13	THC	47
dcg13	9/5/2007	7:19:15	20.67	0.1	1.2	-0.1	48.2	BAL4862/cg13	THC	47
dcg13	9/5/2007	7:19:30	20.67	0.1	1.1	-0.1	48.2	BAL4862/cg13	THC	47
dcg13	9/5/2007	7:19:45	20.66	0.1	1.2	-0.1	47.8	BAL4862/cg13	THC	47
dcg13	9/5/2007	7:20:00	20.67	0.1	1.1	-0.1	47.8	BAL4862/cg13	THC	47
thcmid1	9/5/2007	7:20:00	20.67	0.1	1.1	-0.1	47.8	BAL4862/cg13	THC	47
dcg14	9/5/2007	7:21:00	20.66	0.1	1.2	-0.1	44.3	BLM004041/cg14	THC	29.87
dcg14	9/5/2007	7:21:15	20.66	0.1	1.3	-0.1	29.8	BLM004041/cg14	THC	29.87
dcg14	9/5/2007	7:21:30	20.66	0.1	1.1	-0.1	29.8	BLM004041/cg14	THC	29.87
dcg14	9/5/2007	7:21:45	20.66	0.1	1.2	-0.1	29.7	BLM004041/cg14	THC	29.87
dcg14	9/5/2007	7:22:00	20.66	0.1	1.3	-0.1	29.7	BLM004041/cg14	THC	29.87
thclow1	9/5/2007	7:22:00	20.66	0.1	1.3	-0.1	29.7	BLM004041/cg14	THC	29.87
scg2	9/5/2007	10:24:00	13.80	9.0	8.3	25.1	0.2	AAL14753/cg2	O2	20.9
scg2	9/5/2007	10:24:15	8.00	12.9	16.5	18.5	0.2	AAL14753/cg2	O2	20.9
scg2	9/5/2007	10:24:30	4.66	13.9	22.9	24.0	0.5	AAL14753/cg2	O2	20.9
scg2	9/5/2007	10:24:45	3.64	14.1	28.8	38.5	0.6	AAL14753/cg2	O2	20.9
scg2	9/5/2007	10:25:00	3.33	14.1	32.5	56.2	0.3	AAL14753/cg2	O2	20.9
scg2	9/5/2007	10:25:15	3.21	14.3	34.0	68.3	0.1	AAL14753/cg2	O2	20.9
scg2	9/5/2007	10:25:30	3.14	14.2	34.7	73.7	0.1	AAL14753/cg2	O2	20.9
thczero1	9/5/2007	10:25:30	3.14	14.2	34.7	73.7	0.1	AAL14753/cg2	O2	20.9
scg13	9/5/2007	10:26:30	3.06	14.2	36.0	72.8	44.1	BAL4862/cg13	THC	47
scg13	9/5/2007	10:26:45	3.05	14.3	36.1	71.8	44.8	BAL4862/cg13	THC	47
scg13	9/5/2007	10:27:00	3.04	14.3	36.2	69.9	44.9	BAL4862/cg13	THC	47
scg13	9/5/2007	10:27:15	3.04	14.2	35.9	67.5	46.2	BAL4862/cg13	THC	47
scg13	9/5/2007	10:27:30	3.04	14.5	35.8	66.5	46.7	BAL4862/cg13	THC	47
scg13	9/5/2007	10:27:45	3.01	14.3	35.9	66.0	46.8	BAL4862/cg13	THC	47
scg13	9/5/2007	10:28:00	3.00	14.2	36.0	65.4	46.9	BAL4862/cg13	THC	47

End Conv ✓

Initial Bias Run 1

O2 NOx SO2 CO THC

scg13	9/5/2007	10:28:15	3.00	14.3	36.2	65.5	46.9	BAL4862/cg13	THC	47
thcspan1	9/5/2007	10:28:15	3.00	14.3	36.2	65.5	46.9	BAL4862/cg13	THC	47
scg8	9/5/2007	10:28:30	2.96	14.4	36.1	64.9	46.7	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:28:45	2.98	14.3	36.0	63.9	29.6	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:29:00	2.99	14.4	36.2	64.2	4.2	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:29:15	2.96	14.4	36.3	64.8	3.9	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:29:30	3.00	14.3	36.3	65.3	3.8	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:29:45	3.44	11.1	35.7	66.3	3.8	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:30:00	5.16	5.4	30.3	66.0	3.7	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:30:15	2.56	1.4	28.1	61.9	3.7	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:30:30	0.80	0.5	30.5	51.5	3.7	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:30:45	0.33	0.4	32.6	37.7	3.7	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:31:00	0.19	0.3	33.7	21.2	3.7	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:31:15	0.14	0.3	34.1	9.4	3.7	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:31:30	0.12	0.2	34.6	2.4	2.0	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:31:45	0.10	0.2	34.9	0.5	0.3	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:32:00	0.08	0.2	34.9	0.0	0.3	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:32:15	0.08	0.2	35.2	-0.1	0.1	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:32:30	0.07	0.1	35.3	-0.2	0.1	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:32:45	0.07	0.2	39.7	-0.3	0.0	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:33:00	0.07	0.1	40.9	-0.4	0.0	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:33:15	0.06	0.1	40.7	-0.4	0.0	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	10:33:30	0.06	0.1	40.9	-0.4	0.0	ALM067916/cg8	SO2	41.7
so2span1	9/5/2007	10:33:30	0.06	0.1	40.9	-0.4	0.0	ALM067916/cg8	SO2	41.7
scg6	9/5/2007	10:33:45	0.06	0.1	40.9	-0.4	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	10:34:00	0.06	0.1	41.0	-0.4	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	10:34:15	0.08	2.7	41.2	-0.5	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	10:34:30	0.32	27.5	34.5	-0.4	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	10:34:45	0.20	36.8	18.6	-0.4	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	10:35:00	0.10	38.0	7.9	-0.4	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	10:35:15	0.07	38.5	2.8	-0.3	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	10:35:30	0.06	39.4	0.6	-0.3	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	10:35:45	0.05	43.1	-0.6	-0.3	-0.1	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	10:36:00	0.05	44.0	-1.4	-0.3	-0.1	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	10:36:15	0.05	44.2	-1.8	-0.2	-0.1	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	10:36:30	0.05	44.2	-2.3	-0.2	-0.1	ALM035137/cg6	NOx	44.5
o2zero1	9/5/2007	10:36:30	0.05	44.2	-2.3	-0.2	-0.1	ALM035137/cg6	NOx	44.5
cozero1	9/5/2007	10:36:30	0.05	44.2	-2.3	-0.2	-0.1	ALM035137/cg6	NOx	44.5
noxspan1	9/5/2007	10:36:30	0.05	44.2	-2.3	-0.2	-0.1	ALM035137/cg6	NOx	44.5
scg10	9/5/2007	10:36:45	0.05	44.3	-2.5	-0.2	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	10:37:00	0.05	44.4	-2.6	-0.2	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	10:37:15	0.05	44.1	-2.8	-0.2	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	10:37:30	0.09	21.6	-2.9	0.0	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	10:37:45	0.09	3.4	-3.1	2.6	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	10:38:00	0.06	1.0	-3.2	9.6	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	10:38:15	0.05	0.5	0.1	19.3	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	10:38:30	0.04	0.3	0.3	29.8	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	10:38:45	0.04	0.3	0.4	37.6	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	10:39:00	0.04	0.2	0.2	41.7	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	10:39:15	0.04	0.2	0.1	42.7	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	10:39:30	0.04	0.2	0.3	43.0	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	10:39:45	0.04	0.2	0.0	43.1	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	10:40:00	0.04	0.2	0.0	43.2	-0.1	ALM054751/cg10	CO	44.9
noxzero1	9/5/2007	10:40:00	0.04	0.2	0.0	43.2	-0.1	ALM054751/cg10	CO	44.9
so2zero1	9/5/2007	10:40:00	0.04	0.2	0.0	43.2	-0.1	ALM054751/cg10	CO	44.9
cospan1	9/5/2007	10:40:00	0.04	0.2	0.0	43.2	-0.1	ALM054751/cg10	CO	44.9
scg3	9/5/2007	10:40:15	0.04	0.2	0.1	43.1	-0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	10:40:30	0.04	0.2	0.0	43.1	-0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	10:40:45	0.05	0.2	0.0	43.1	-0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	10:41:00	2.28	0.2	-0.1	42.8	-0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	10:41:15	8.69	0.1	-0.3	39.8	-0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	10:41:30	11.20	0.1	-0.1	32.4	-0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	10:41:45	11.82	0.1	-0.2	23.4	-0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	10:42:00	12.01	0.1	-0.1	12.6	-0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	10:42:15	12.09	0.1	-0.2	5.2	-0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	10:42:30	12.12	0.1	-0.4	1.0	-0.1	ALM005139/cg3	O2	12.2
o2span1	9/5/2007	10:42:30	12.12	0.1	-0.4	1.0	-0.1	ALM005139/cg3	O2	12.2
run1	9/5/2007	10:50:00	3.03	16.8	47.4	41.0	-0.1			
run1	9/5/2007	10:50:15	3.08	17.1	47.0	39.6	-0.1			
run1	9/5/2007	10:50:30	3.07	17.0	47.0	39.4	-0.1			
run1	9/5/2007	10:50:45	3.09	16.6	47.2	39.9	-0.1			
run1	9/5/2007	10:51:00	3.16	16.5	46.8	42.3	-0.1			
run1	9/5/2007	10:51:15	3.17	16.7	46.0	46.1	-0.1			
run1	9/5/2007	10:51:30	3.20	16.7	44.9	50.1	-0.1			
run1	9/5/2007	10:51:45	3.21	16.9	44.4	53.6	-0.1			
run1	9/5/2007	10:52:00	3.20	17.1	44.6	56.0	-0.1			
run1	9/5/2007	10:52:15	3.16	17.0	44.3	55.3	-0.1			
run1	9/5/2007	10:52:30	3.17	16.9	44.2	53.6	-0.1			
run1	9/5/2007	10:52:45	3.14	17.2	43.9	51.7	-0.1			
run1	9/5/2007	10:53:00	3.12	17.0	43.7	48.8	-0.1			
run1	9/5/2007	10:53:15	3.11	16.9	43.4	46.4	-0.1			

Run 1 1050-1150

			O2	NOx	SO2	CO	THC
run1	9/5/2007	10:53:30	3.10	16.6	42.9	45.1	-0.1
run1	9/5/2007	10:53:45	3.09	16.7	42.6	45.0	-0.1
run1	9/5/2007	10:54:00	3.11	17.0	42.3	46.3	-0.1
run1	9/5/2007	10:54:15	3.07	17.2	42.1	47.2	-0.1
run1	9/5/2007	10:54:30	3.05	17.0	42.0	46.2	-0.1
run1	9/5/2007	10:54:45	3.04	17.0	41.4	43.5	-0.1
run1	9/5/2007	10:55:00	3.05	16.7	41.0	40.7	-0.1
run1	9/5/2007	10:55:15	3.07	16.7	40.7	39.5	-0.1
run1	9/5/2007	10:55:30	3.07	16.8	40.3	40.6	-0.1
run1	9/5/2007	10:55:45	3.03	16.8	40.3	42.5	1.0
run1	9/5/2007	10:56:00	2.95	17.0	40.2	43.5	0.7
run1	9/5/2007	10:56:15	2.92	17.1	40.1	42.3	0.2
run1	9/5/2007	10:56:30	2.92	16.9	40.2	39.6	0.2
run1	9/5/2007	10:56:45	2.89	16.9	40.3	36.8	0.1
run1	9/5/2007	10:57:00	2.86	16.7	40.4	34.5	0.1
run1	9/5/2007	10:57:15	2.90	16.5	40.5	33.8	0.1
run1	9/5/2007	10:57:30	2.90	16.4	40.2	35.2	0.1
run1	9/5/2007	10:57:45	2.91	16.6	40.2	38.3	0.1
run1	9/5/2007	10:58:00	2.93	16.6	39.9	42.1	0.1
run1	9/5/2007	10:58:15	2.91	16.7	39.5	44.6	0.1
run1	9/5/2007	10:58:30	2.87	16.6	39.5	45.3	0.1
run1	9/5/2007	10:58:45	2.90	16.6	39.2	44.0	0.1
run1	9/5/2007	10:59:00	2.94	16.5	39.1	42.9	0.1
run1	9/5/2007	10:59:15	2.93	16.4	38.8	43.6	0.1
run1	9/5/2007	10:59:30	2.93	16.5	38.2	45.1	0.1
run1	9/5/2007	10:59:45	2.90	16.5	38.1	46.4	0.1
run1	9/5/2007	11:00:00	2.84	16.5	38.2	46.6	0.0
run1	9/5/2007	11:00:15	2.82	16.4	38.5	45.2	0.1
run1	9/5/2007	11:00:30	2.84	16.4	38.6	43.6	0.1
run1	9/5/2007	11:00:45	2.84	16.5	38.4	42.6	0.1
run1	9/5/2007	11:01:00	2.83	16.5	38.5	41.7	0.2
run1	9/5/2007	11:01:15	2.84	16.5	38.4	41.4	0.1
run1	9/5/2007	11:01:30	2.82	16.7	38.2	41.0	0.0
run1	9/5/2007	11:01:45	2.83	16.7	38.2	39.9	0.0
run1	9/5/2007	11:02:00	2.85	16.4	37.9	39.0	0.0
run1	9/5/2007	11:02:15	2.84	16.5	37.9	39.4	0.0
run1	9/5/2007	11:02:30	2.85	16.6	37.6	40.6	0.0
run1	9/5/2007	11:02:45	2.85	16.5	37.1	41.8	0.0
run1	9/5/2007	11:03:00	2.83	16.7	37.0	42.3	0.0
run1	9/5/2007	11:03:15	2.82	16.8	36.9	40.9	0.0
run1	9/5/2007	11:03:30	2.83	16.7	36.9	38.5	0.0
run1	9/5/2007	11:03:45	2.84	16.5	36.5	37.2	0.0
run1	9/5/2007	11:04:00	2.87	16.6	36.0	37.1	0.0
run1	9/5/2007	11:04:15	2.86	16.4	35.8	38.5	0.0
run1	9/5/2007	11:04:30	2.89	16.6	35.3	40.4	0.0
run1	9/5/2007	11:04:45	2.94	16.6	34.7	41.9	0.0
run1	9/5/2007	11:05:00	2.97	16.8	34.6	42.9	0.0
run1	9/5/2007	11:05:15	2.94	16.8	34.2	42.9	0.0
run1	9/5/2007	11:05:30	2.91	16.8	34.2	41.7	0.0
run1	9/5/2007	11:05:45	2.91	16.6	34.3	39.6	0.0
run1	9/5/2007	11:06:00	2.90	16.6	34.2	37.6	0.0
run1	9/5/2007	11:06:15	2.95	16.7	34.4	36.3	0.0
run1	9/5/2007	11:06:30	2.97	16.9	33.8	35.9	0.0
run1	9/5/2007	11:06:45	2.98	16.9	33.7	35.9	0.0
run1	9/5/2007	11:07:00	2.98	16.8	33.6	35.4	0.0
run1	9/5/2007	11:07:15	3.01	16.9	33.4	34.8	0.0
run1	9/5/2007	11:07:30	3.00	17.1	33.4	34.3	0.0
run1	9/5/2007	11:07:45	3.02	16.9	33.1	33.7	0.0
run1	9/5/2007	11:08:00	3.08	16.9	32.8	33.7	0.0
run1	9/5/2007	11:08:15	3.12	17.0	32.6	34.3	0.0
run1	9/5/2007	11:08:30	3.14	16.7	32.2	34.6	0.0
run1	9/5/2007	11:08:45	3.20	16.9	32.2	36.0	0.0
run1	9/5/2007	11:09:00	3.17	16.9	32.0	37.4	0.0
run1	9/5/2007	11:09:15	3.16	16.9	31.9	38.2	0.0
run1	9/5/2007	11:09:30	3.16	16.9	31.9	38.9	0.0
run1	9/5/2007	11:09:45	3.14	16.9	31.8	39.0	0.0
run1	9/5/2007	11:10:00	3.10	16.7	32.0	38.3	0.0
run1	9/5/2007	11:10:15	3.08	16.9	32.4	37.4	0.0
run1	9/5/2007	11:10:30	3.07	17.1	32.0	35.9	0.0
run1	9/5/2007	11:10:45	3.08	17.1	32.1	33.6	0.0
run1	9/5/2007	11:11:00	3.08	16.9	32.3	31.0	0.0
run1	9/5/2007	11:11:15	3.09	16.9	32.3	29.4	0.0
run1	9/5/2007	11:11:30	3.10	17.0	32.8	28.6	0.0
run1	9/5/2007	11:11:45	3.15	16.9	32.8	28.8	0.0
run1	9/5/2007	11:12:00	3.16	16.9	32.9	29.6	0.0
run1	9/5/2007	11:12:15	3.14	16.7	33.0	30.4	0.0
run1	9/5/2007	11:12:30	3.14	16.7	33.0	31.3	0.0
run1	9/5/2007	11:12:45	3.13	16.6	33.0	32.9	0.0
run1	9/5/2007	11:13:00	3.10	16.6	32.9	34.4	0.0
run1	9/5/2007	11:13:15	3.08	16.6	33.1	35.4	0.0
run1	9/5/2007	11:13:30	3.08	16.7	33.5	35.8	0.0

			O2	NOx	SO2	CO	THC
run1	9/5/2007	11:13:45	3.09	17.0	33.8	34.9	0.0
run1	9/5/2007	11:14:00	3.05	16.9	34.1	32.9	-0.1
run1	9/5/2007	11:14:15	3.03	16.9	34.2	30.3	-0.1
run1	9/5/2007	11:14:30	3.05	16.8	34.3	28.1	0.0
run1	9/5/2007	11:14:45	3.05	16.8	34.6	26.9	0.0
run1	9/5/2007	11:15:00	3.02	16.5	34.5	27.1	0.0
run1	9/5/2007	11:15:15	3.01	16.7	34.9	28.1	0.0
run1	9/5/2007	11:15:30	3.01	16.4	35.3	29.3	0.0
run1	9/5/2007	11:15:45	2.98	16.3	35.6	30.2	0.0
run1	9/5/2007	11:16:00	3.00	16.3	35.9	31.5	0.0
run1	9/5/2007	11:16:15	3.04	16.6	35.7	33.5	0.0
run1	9/5/2007	11:16:30	2.99	16.7	35.8	35.1	0.0
run1	9/5/2007	11:16:45	3.01	16.7	35.9	35.3	0.0
run1	9/5/2007	11:17:00	2.98	16.8	35.8	34.3	0.0
run1	9/5/2007	11:17:15	2.93	16.6	36.1	31.9	-0.1
run1	9/5/2007	11:17:30	2.90	16.6	36.4	29.5	-0.1
run1	9/5/2007	11:17:45	2.93	16.6	36.9	28.0	-0.1
run1	9/5/2007	11:18:00	2.94	16.8	37.0	27.4	-0.1
run1	9/5/2007	11:18:15	2.92	16.6	37.0	26.9	-0.1
run1	9/5/2007	11:18:30	2.91	16.6	37.3	26.9	-0.1
run1	9/5/2007	11:18:45	2.93	16.6	37.2	27.3	-0.1
run1	9/5/2007	11:19:00	2.95	16.4	37.0	28.1	-0.1
run1	9/5/2007	11:19:15	3.01	16.3	36.7	30.1	0.0
run1	9/5/2007	11:19:30	3.00	16.3	36.4	33.1	-0.1
run1	9/5/2007	11:19:45	2.96	16.4	36.6	36.1	0.0
run1	9/5/2007	11:20:00	2.92	16.2	36.7	38.3	0.0
run1	9/5/2007	11:20:15	2.89	16.3	36.6	39.1	-0.1
run1	9/5/2007	11:20:30	2.88	16.4	36.8	38.4	-0.1
run1	9/5/2007	11:20:45	2.90	16.3	36.4	36.9	-0.1
run1	9/5/2007	11:21:00	2.89	16.5	36.1	36.1	0.0
run1	9/5/2007	11:21:15	2.88	16.4	36.1	35.6	-0.1
run1	9/5/2007	11:21:30	2.89	16.3	36.1	35.6	-0.1
run1	9/5/2007	11:21:45	2.88	16.3	36.3	36.3	-0.1
run1	9/5/2007	11:22:00	2.85	16.3	36.2	36.8	-0.1
run1	9/5/2007	11:22:15	2.84	16.2	36.3	37.2	-0.1
run1	9/5/2007	11:22:30	2.83	16.5	36.4	37.7	-0.1
run1	9/5/2007	11:22:45	2.81	16.5	36.2	37.5	-0.1
run1	9/5/2007	11:23:00	2.83	16.5	36.6	36.9	-0.1
run1	9/5/2007	11:23:15	2.79	16.3	36.6	36.3	-0.1
run1	9/5/2007	11:23:30	2.76	16.3	36.5	35.3	-0.1
run1	9/5/2007	11:23:45	2.79	16.4	36.6	34.4	-0.1
run1	9/5/2007	11:24:00	2.74	16.3	36.5	34.2	-0.1
run1	9/5/2007	11:24:15	2.70	16.0	36.7	34.5	-0.1
run1	9/5/2007	11:24:30	2.77	15.9	36.6	36.2	-0.1
run1	9/5/2007	11:24:45	2.81	16.0	36.1	39.8	-0.1
run1	9/5/2007	11:25:00	2.84	15.8	35.9	43.4	-0.1
run1	9/5/2007	11:25:15	2.82	16.0	35.8	47.1	-0.1
run1	9/5/2007	11:25:30	2.79	16.1	35.9	49.3	-0.1
run1	9/5/2007	11:25:45	2.77	16.1	36.0	49.0	-0.1
run1	9/5/2007	11:26:00	2.80	16.0	35.5	47.9	-0.1
run1	9/5/2007	11:26:15	2.81	16.0	35.5	47.1	0.1
run1	9/5/2007	11:26:30	2.78	16.1	35.3	46.4	1.2
run1	9/5/2007	11:26:45	2.77	15.7	35.5	46.5	0.2
run1	9/5/2007	11:27:00	2.76	15.8	35.7	47.9	0.2
run1	9/5/2007	11:27:15	2.77	16.0	35.7	50.1	0.2
run1	9/5/2007	11:27:30	2.80	15.8	35.9	52.2	0.2
run1	9/5/2007	11:27:45	2.77	15.8	35.8	54.7	0.2
run1	9/5/2007	11:28:00	2.79	16.1	35.6	55.6	0.2
run1	9/5/2007	11:28:15	2.80	15.9	35.7	53.9	0.2
run1	9/5/2007	11:28:30	2.83	16.0	35.5	51.5	0.2
run1	9/5/2007	11:28:45	2.84	16.3	35.4	48.5	0.2
run1	9/5/2007	11:29:00	2.82	16.0	35.3	45.4	0.1
run1	9/5/2007	11:29:15	2.80	15.8	35.1	43.4	0.1
run1	9/5/2007	11:29:30	2.84	15.9	35.0	43.2	0.1
run1	9/5/2007	11:29:45	2.88	16.0	34.5	45.3	0.1
run1	9/5/2007	11:30:00	2.89	16.0	34.2	48.7	0.1
run1	9/5/2007	11:30:15	2.93	16.4	34.0	52.6	0.1
run1	9/5/2007	11:30:30	2.98	16.2	33.4	54.0	0.1
run1	9/5/2007	11:30:45	2.98	16.4	33.2	52.6	0.1
run1	9/5/2007	11:31:00	2.94	16.5	33.2	49.6	0.1
run1	9/5/2007	11:31:15	2.94	16.3	33.4	45.9	0.1
run1	9/5/2007	11:31:30	2.90	16.5	33.6	43.7	0.1
run1	9/5/2007	11:31:45	2.89	16.5	33.3	41.6	0.1
run1	9/5/2007	11:32:00	2.90	16.3	33.2	39.4	0.1
run1	9/5/2007	11:32:15	2.91	16.3	33.1	37.5	0.1
run1	9/5/2007	11:32:30	2.93	16.3	32.6	35.7	0.0
run1	9/5/2007	11:32:45	2.95	16.3	32.4	34.3	0.0
run1	9/5/2007	11:33:00	2.97	16.5	32.3	33.9	0.1
run1	9/5/2007	11:33:15	2.96	16.5	32.5	33.7	0.0
run1	9/5/2007	11:33:30	2.99	16.4	32.8	33.7	0.0
run1	9/5/2007	11:33:45	2.99	16.5	32.7	34.3	0.0

			O2	NOx	SO2	CO	THC				
run1	9/5/2007	11:34:00	3.03	16.6	32.7	35.5	0.0				
run1	9/5/2007	11:34:15	3.05	16.4	32.6	37.0	0.0				
run1	9/5/2007	11:34:30	3.06	16.6	32.5	38.2	0.0				
run1	9/5/2007	11:34:45	3.03	16.7	32.2	38.3	0.0				
run1	9/5/2007	11:35:00	3.00	16.4	32.1	37.1	0.0				
run1	9/5/2007	11:35:15	3.02	16.5	32.6	36.1	0.0				
run1	9/5/2007	11:35:30	3.05	16.6	32.7	35.7	0.0				
run1	9/5/2007	11:35:45	3.10	16.6	32.4	35.4	0.0				
run1	9/5/2007	11:36:00	3.12	16.9	32.5	35.5	0.0				
run1	9/5/2007	11:36:15	3.10	16.9	32.6	34.8	0.0				
run1	9/5/2007	11:36:30	3.07	16.8	32.9	32.9	0.0				
run1	9/5/2007	11:36:45	3.04	16.9	33.2	30.6	0.0				
run1	9/5/2007	11:37:00	3.02	17.0	33.1	28.4	0.0				
run1	9/5/2007	11:37:15	3.03	16.9	33.5	26.3	0.0				
run1	9/5/2007	11:37:30	3.05	16.8	33.5	25.1	0.0				
run1	9/5/2007	11:37:45	3.07	16.6	33.6	25.4	0.0				
run1	9/5/2007	11:38:00	3.11	16.6	33.8	26.9	0.0				
run1	9/5/2007	11:38:15	3.18	16.8	33.6	29.2	0.0				
run1	9/5/2007	11:38:30	3.12	16.9	33.7	30.9	0.0				
run1	9/5/2007	11:38:45	3.05	17.0	33.9	30.8	0.0				
run1	9/5/2007	11:39:00	3.05	17.0	34.3	29.1	0.0				
run1	9/5/2007	11:39:15	3.06	16.8	34.5	26.8	0.0				
run1	9/5/2007	11:39:30	3.05	16.9	34.7	25.2	0.0				
run1	9/5/2007	11:39:45	3.06	16.8	35.1	24.8	0.0				
run1	9/5/2007	11:40:00	3.05	16.9	35.0	25.3	0.0				
run1	9/5/2007	11:40:15	3.03	16.9	35.0	25.8	0.0				
run1	9/5/2007	11:40:30	3.04	16.6	35.2	25.7	0.0				
run1	9/5/2007	11:40:45	3.06	16.5	35.1	26.0	0.0				
run1	9/5/2007	11:41:00	3.05	16.8	35.4	26.9	0.0				
run1	9/5/2007	11:41:15	3.02	16.8	35.4	28.1	0.0				
run1	9/5/2007	11:41:30	3.03	16.8	35.5	29.0	0.0				
run1	9/5/2007	11:41:45	3.05	16.8	35.6	29.1	0.0				
run1	9/5/2007	11:42:00	3.00	17.0	35.5	28.1	0.0				
run1	9/5/2007	11:42:15	2.99	16.9	35.5	26.8	0.0				
run1	9/5/2007	11:42:30	2.99	16.6	35.3	26.1	0.0				
run1	9/5/2007	11:42:45	2.99	16.2	35.6	26.6	0.0				
run1	9/5/2007	11:43:00	3.07	16.2	36.0	28.9	0.0				
run1	9/5/2007	11:43:15	3.10	16.3	35.8	33.7	0.0				
run1	9/5/2007	11:43:30	3.11	16.5	35.8	38.6	0.0				
run1	9/5/2007	11:43:45	3.10	16.5	35.6	42.4	0.0				
run1	9/5/2007	11:44:00	3.07	16.3	35.5	43.3	0.0				
run1	9/5/2007	11:44:15	3.05	16.2	35.6	42.0	0.0				
run1	9/5/2007	11:44:30	3.03	15.8	35.6	40.5	0.0				
run1	9/5/2007	11:44:45	3.02	16.0	35.7	40.6	0.0				
run1	9/5/2007	11:45:00	2.99	16.3	35.9	42.3	0.0				
run1	9/5/2007	11:45:15	2.95	16.3	35.9	43.1	0.0				
run1	9/5/2007	11:45:30	2.96	16.4	35.9	42.7	0.0				
run1	9/5/2007	11:45:45	2.93	16.4	35.8	40.3	0.0				
run1	9/5/2007	11:46:00	2.91	16.4	35.6	36.7	0.0				
run1	9/5/2007	11:46:15	2.92	16.1	35.4	33.9	0.0				
run1	9/5/2007	11:46:30	2.94	16.2	35.0	33.0	0.0				
run1	9/5/2007	11:46:45	2.92	16.1	34.9	33.1	0.1				
run1	9/5/2007	11:47:00	2.92	16.3	34.8	33.8	0.0				
run1	9/5/2007	11:47:15	2.88	16.5	34.7	34.5	0.0				
run1	9/5/2007	11:47:30	2.82	16.2	34.9	34.0	0.0				
run1	9/5/2007	11:47:45	2.82	16.0	34.5	32.8	0.0				
run1	9/5/2007	11:48:00	2.86	16.0	34.2	32.9	0.0				
run1	9/5/2007	11:48:15	2.87	16.1	33.9	35.0	0.0				
run1	9/5/2007	11:48:30	2.87	16.1	33.5	37.9	0.0				
run1	9/5/2007	11:48:45	2.85	16.1	33.4	40.9	0.0				
run1	9/5/2007	11:49:00	2.81	15.9	33.1	42.2	0.0				
run1	9/5/2007	11:49:15	2.82	15.8	33.3	42.5	0.0				
run1	9/5/2007	11:49:30	2.81	15.8	33.3	42.9	0.0				
run1	9/5/2007	11:49:45	2.77	15.9	33.2	43.0	0.0				
averun1	9/5/2007	10:50:00	2.97	16.5	36.0	37.9	0.0			60	
scg13	9/5/2007	11:50:45	2.74	15.8	33.4	35.8	40.6	BAL4862/cg13	THC	47	Final Bias Run 1
scg13	9/5/2007	11:51:00	2.71	15.7	33.4	35.1	43.3	BAL4862/cg13	THC	47	
scg13	9/5/2007	11:51:15	2.82	15.3	33.3	35.6	46.5	BAL4862/cg13	THC	47	
scg13	9/5/2007	11:51:30	3.90	12.4	31.5	36.2	47.7	BAL4862/cg13	THC	47	
scg13	9/5/2007	11:51:45	5.88	9.4	27.2	35.9	48.7	BAL4862/cg13	THC	47	
scg13	9/5/2007	11:52:00	14.71	1.1	12.5	33.5	48.9	BAL4862/cg13	THC	47	
scg13	9/5/2007	11:52:15	14.94	8.7	10.0	27.5	47.4	BAL4862/cg13	THC	47	
scg13	9/5/2007	11:52:30	9.67	11.2	18.9	21.9	47.3	BAL4862/cg13	THC	47	
scg13	9/5/2007	11:52:45	8.25	11.3	19.4	18.8	47.5	BAL4862/cg13	THC	47	
scg13	9/5/2007	11:53:00	7.85	11.3	18.2	18.5	47.5	BAL4862/cg13	THC	47	
thcspan1	9/5/2007	11:53:00	7.85	11.3	18.2	18.5	47.5	BAL4862/cg13	THC	47	
scg2	9/5/2007	11:54:15	3.59	15.5	27.3	29.4	0.3	AAL14753/cg2	O2	20.9	
scg2	9/5/2007	11:54:30	3.13	14.9	30.4	31.5	0.2	AAL14753/cg2	O2	20.9	
scg2	9/5/2007	11:54:45	4.33	12.8	30.7	33.8	0.2	AAL14753/cg2	O2	20.9	
thczero1	9/5/2007	11:54:45	4.33	12.8	30.7	33.8	0.2	AAL14753/cg2	O2	20.9	
scg8	9/5/2007	11:55:00	6.35	11.6	28.3	35.6	0.2	ALM067916/cg8	SO2	41.7	

O2 NOx SO2 CO THC

scg8	9/5/2007	11:55:15	7.30	11.4	25.3	35.4	0.2	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	11:55:30	7.22	11.6	23.3	33.7	0.2	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	11:55:45	7.22	4.2	22.9	30.4	0.1	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	11:56:00	3.61	0.9	27.0	25.2	0.1	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	11:56:15	1.20	0.5	33.5	18.5	0.1	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	11:56:30	0.48	0.3	37.5	11.9	0.0	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	11:56:45	0.26	0.3	39.1	5.9	0.0	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	11:57:00	0.18	0.2	40.2	1.9	0.0	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	11:57:15	0.13	0.2	40.8	0.2	0.0	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	11:57:30	0.11	0.2	40.9	-0.3	0.0	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	11:57:45	0.09	0.2	41.2	-0.5	0.0	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	11:58:00	0.08	0.2	41.0	-0.5	0.0	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	11:58:15	0.07	0.2	41.2	-0.5	0.1	ALM067916/cg8	SO2	41.7
so2span1	9/5/2007	11:58:15	0.07	0.2	41.2	-0.5	0.1	ALM067916/cg8	SO2	41.7
scg6	9/5/2007	11:58:30	0.07	0.2	41.3	-0.6	0.3	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	11:58:45	0.07	0.2	41.5	-0.6	0.2	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	11:59:00	0.07	1.9	41.8	-0.6	0.1	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	11:59:15	0.11	24.8	37.1	-0.6	0.1	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	11:59:30	0.09	38.7	23.0	-0.6	0.1	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	11:59:45	0.07	41.2	11.7	-0.6	0.1	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	12:00:00	0.06	41.7	6.2	-0.5	0.1	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	12:00:15	0.05	41.9	3.9	-0.5	0.1	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	12:00:30	0.05	41.9	2.5	-0.4	0.1	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	12:00:45	0.05	41.9	1.8	-0.4	0.1	ALM035137/cg6	NOx	44.5
o2zero1	9/5/2007	12:00:45	0.05	41.9	1.8	-0.4	0.1	ALM035137/cg6	NOx	44.5
cozero1	9/5/2007	12:00:45	0.05	41.9	1.8	-0.4	0.1	ALM035137/cg6	NOx	44.5
noxspan1	9/5/2007	12:00:45	0.05	41.9	1.8	-0.4	0.1	ALM035137/cg6	NOx	44.5
scg10	9/5/2007	12:01:00	0.05	42.0	1.2	-0.4	0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:01:15	0.05	42.1	0.8	-0.4	0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:01:30	0.05	37.2	0.8	-0.4	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:01:45	0.07	11.4	0.5	0.4	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:02:00	0.05	2.1	0.5	4.5	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:02:15	0.05	0.6	0.4	12.6	0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:02:30	0.04	0.4	0.2	22.5	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:02:45	0.04	0.3	0.3	32.3	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:03:00	0.04	0.3	0.1	38.9	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:03:15	0.04	0.2	0.1	41.5	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:03:30	0.04	0.2	0.1	42.3	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:03:45	0.04	0.2	-0.3	42.4	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:04:00	0.04	0.2	-0.2	42.5	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:04:15	0.04	0.2	-0.2	42.7	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	12:04:30	0.04	0.2	-0.1	42.7	0.0	ALM054751/cg10	CO	44.9
noxzero1	9/5/2007	12:04:30	0.04	0.2	-0.1	42.7	0.0	ALM054751/cg10	CO	44.9
so2zero1	9/5/2007	12:04:30	0.04	0.2	-0.1	42.7	0.0	ALM054751/cg10	CO	44.9
cospan1	9/5/2007	12:04:30	0.04	0.2	-0.1	42.7	0.0	ALM054751/cg10	CO	44.9
scg3	9/5/2007	12:04:45	0.04	0.2	-0.2	42.6	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	12:05:00	0.04	0.2	-0.2	42.6	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	12:05:15	0.06	0.2	-0.1	42.6	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	12:05:30	2.83	0.2	-0.2	42.2	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	12:05:45	8.68	0.2	-0.3	38.9	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	12:06:00	11.15	0.1	-0.2	32.1	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	12:06:15	11.81	0.1	-0.5	22.2	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	12:06:30	12.00	0.1	-0.4	12.6	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	12:06:45	12.07	0.1	-0.6	4.7	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	12:07:00	12.10	0.1	-0.6	1.0	0.0	ALM005139/cg3	O2	12.2
o2span1	9/5/2007	12:07:00	12.10	0.1	-0.6	1.0	0.0	ALM005139/cg3	O2	12.2
run2	9/5/2007	12:35:00	2.89	17.0	33.7	16.4	0.0			
run2	9/5/2007	12:35:15	2.89	17.2	33.4	16.5	0.0			
run2	9/5/2007	12:35:30	2.79	17.4	33.6	16.4	0.0			
run2	9/5/2007	12:35:45	2.77	17.1	33.7	15.6	0.0			
run2	9/5/2007	12:36:00	2.76	17.1	33.9	14.3	0.0			
run2	9/5/2007	12:36:15	2.76	17.0	33.6	13.2	0.0			
run2	9/5/2007	12:36:30	2.78	16.9	33.4	12.3	0.0			
run2	9/5/2007	12:36:45	2.77	16.7	33.6	12.0	0.0			
run2	9/5/2007	12:37:00	2.76	16.8	33.6	11.8	0.0			
run2	9/5/2007	12:37:15	2.76	16.7	34.0	11.5	0.0			
run2	9/5/2007	12:37:30	2.77	16.7	34.1	11.3	0.0			
run2	9/5/2007	12:37:45	2.78	16.8	34.3	11.2	0.0			
run2	9/5/2007	12:38:00	2.81	16.5	34.3	11.3	0.0			
run2	9/5/2007	12:38:15	2.79	16.6	34.1	11.5	0.0			
run2	9/5/2007	12:38:30	2.75	16.6	34.1	11.6	0.0			
run2	9/5/2007	12:38:45	2.78	16.5	34.4	11.4	0.0			
run2	9/5/2007	12:39:00	2.78	16.6	34.1	11.1	0.0			
run2	9/5/2007	12:39:15	2.77	16.8	34.3	10.7	0.0			
run2	9/5/2007	12:39:30	2.81	17.0	34.4	10.0	0.1			
run2	9/5/2007	12:39:45	2.81	17.1	34.5	9.3	0.0			
run2	9/5/2007	12:40:00	2.77	16.7	34.6	8.5	0.0			
run2	9/5/2007	12:40:15	2.78	16.8	34.7	7.7	0.0			
run2	9/5/2007	12:40:30	2.82	17.0	34.8	7.2	0.0			
run2	9/5/2007	12:40:45	2.82	17.1	34.6	7.0	0.0			
run2	9/5/2007	12:41:00	2.83	17.2	34.6	6.9	0.0			

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			O2	NOx	SO2	CO	THC
run2	9/5/2007	12:41:15	2.82	17.1	34.7	6.9	0.0
run2	9/5/2007	12:41:30	2.81	16.9	34.7	6.7	0.0
run2	9/5/2007	12:41:45	2.84	17.2	34.9	6.3	0.0
run2	9/5/2007	12:42:00	2.83	17.3	35.1	5.9	0.0
run2	9/5/2007	12:42:15	2.82	17.1	35.7	5.4	0.0
run2	9/5/2007	12:42:30	2.85	16.9	35.7	5.3	0.0
run2	9/5/2007	12:42:45	2.87	16.9	35.5	5.3	0.0
run2	9/5/2007	12:43:00	2.84	17.0	35.8	5.4	0.0
run2	9/5/2007	12:43:15	2.84	16.8	35.9	5.5	0.0
run2	9/5/2007	12:43:30	2.84	17.0	36.2	5.6	0.0
run2	9/5/2007	12:43:45	2.81	17.1	36.5	5.4	0.0
run2	9/5/2007	12:44:00	2.85	17.0	36.6	5.1	0.0
run2	9/5/2007	12:44:15	2.85	17.2	37.0	4.8	0.0
run2	9/5/2007	12:44:30	2.86	17.3	37.0	4.5	0.0
run2	9/5/2007	12:44:45	2.86	17.0	37.4	4.4	0.0
run2	9/5/2007	12:45:00	2.88	16.7	37.4	4.4	0.0
run2	9/5/2007	12:45:15	2.93	16.7	37.2	4.7	0.0
run2	9/5/2007	12:45:30	2.95	16.8	37.4	5.2	0.0
run2	9/5/2007	12:45:45	2.95	17.0	37.2	5.9	0.1
run2	9/5/2007	12:46:00	2.95	17.2	37.4	6.4	0.0
run2	9/5/2007	12:46:15	2.95	17.0	37.4	6.5	0.0
run2	9/5/2007	12:46:30	2.94	17.1	37.7	6.2	0.0
run2	9/5/2007	12:46:45	2.92	16.8	38.1	5.7	0.0
run2	9/5/2007	12:47:00	2.95	16.7	37.8	5.4	0.0
run2	9/5/2007	12:47:15	2.96	16.9	37.7	5.5	0.0
run2	9/5/2007	12:47:30	2.89	17.0	37.5	5.5	0.0
run2	9/5/2007	12:47:45	2.91	16.9	37.5	5.4	0.0
run2	9/5/2007	12:48:00	2.94	16.8	37.5	5.3	0.0
run2	9/5/2007	12:48:15	2.90	16.9	37.2	5.0	0.0
run2	9/5/2007	12:48:30	2.88	16.9	37.4	4.7	0.0
run2	9/5/2007	12:48:45	2.90	17.1	37.8	4.6	0.0
run2	9/5/2007	12:49:00	2.88	16.8	37.8	4.6	0.0
run2	9/5/2007	12:49:15	2.87	16.8	38.1	4.5	0.1
run2	9/5/2007	12:49:30	2.91	16.9	38.0	4.5	0.0
run2	9/5/2007	12:49:45	2.92	16.9	38.0	4.6	0.0
run2	9/5/2007	12:50:00	2.94	16.7	37.8	4.7	0.0
run2	9/5/2007	12:50:15	2.94	16.9	37.6	4.8	0.0
run2	9/5/2007	12:50:30	2.91	16.9	37.5	4.9	0.0
run2	9/5/2007	12:50:45	2.95	16.9	37.4	4.7	0.0
run2	9/5/2007	12:51:00	2.92	17.1	37.4	4.6	0.0
run2	9/5/2007	12:51:15	2.87	16.6	37.4	4.5	0.1
run2	9/5/2007	12:51:30	2.90	16.7	37.1	4.4	0.0
run2	9/5/2007	12:51:45	2.89	17.0	37.0	4.4	0.0
run2	9/5/2007	12:52:00	2.89	17.0	36.8	4.4	0.0
run2	9/5/2007	12:52:15	2.90	16.8	36.9	4.5	0.0
run2	9/5/2007	12:52:30	2.91	16.5	36.7	4.6	0.0
run2	9/5/2007	12:52:45	2.90	16.6	36.5	4.7	0.0
run2	9/5/2007	12:53:00	2.91	16.5	36.5	4.9	0.0
run2	9/5/2007	12:53:15	2.89	16.4	36.1	5.4	0.0
run2	9/5/2007	12:53:30	2.91	16.3	36.0	5.8	0.0
run2	9/5/2007	12:53:45	2.92	16.5	36.0	6.1	0.0
run2	9/5/2007	12:54:00	2.90	16.4	36.0	6.4	0.0
run2	9/5/2007	12:54:15	2.87	16.2	36.3	6.4	0.0
run2	9/5/2007	12:54:30	2.89	16.1	35.9	6.2	0.0
run2	9/5/2007	12:54:45	2.90	16.3	36.0	6.3	0.0
run2	9/5/2007	12:55:00	2.87	16.3	36.0	6.3	0.0
run2	9/5/2007	12:55:15	2.87	16.2	36.1	6.5	0.0
run2	9/5/2007	12:55:30	2.86	16.2	36.2	6.7	0.0
run2	9/5/2007	12:55:45	2.83	16.2	36.0	6.9	0.0
run2	9/5/2007	12:56:00	2.83	16.0	36.4	7.1	0.0
run2	9/5/2007	12:56:15	2.83	15.9	36.6	7.4	0.0
run2	9/5/2007	12:56:30	2.82	15.7	36.7	7.8	0.0
run2	9/5/2007	12:56:45	2.84	15.8	37.2	8.2	0.0
run2	9/5/2007	12:57:00	2.85	16.0	36.7	8.9	0.0
run2	9/5/2007	12:57:15	2.83	15.9	36.8	9.4	0.0
run2	9/5/2007	12:57:30	2.84	15.9	36.8	9.5	0.0
run2	9/5/2007	12:57:45	2.88	16.0	36.7	9.8	0.0
run2	9/5/2007	12:58:00	2.85	16.1	36.5	10.1	0.0
run2	9/5/2007	12:58:15	2.83	15.9	36.4	10.6	0.0
run2	9/5/2007	12:58:30	2.82	15.8	36.7	11.2	0.1
run2	9/5/2007	12:58:45	2.82	15.7	36.6	11.5	0.0
run2	9/5/2007	12:59:00	2.81	15.8	36.4	11.7	0.0
run2	9/5/2007	12:59:15	2.79	15.9	36.3	12.0	0.0
run2	9/5/2007	12:59:30	2.75	15.9	36.1	12.2	0.0
run2	9/5/2007	12:59:45	2.76	15.8	36.3	12.2	0.1
run2	9/5/2007	13:00:00	2.74	15.8	36.3	12.1	0.0
run2	9/5/2007	13:00:15	2.71	15.7	36.3	11.8	0.0
run2	9/5/2007	13:00:30	2.69	15.6	36.7	11.6	0.0
run2	9/5/2007	13:00:45	2.73	15.7	36.7	11.8	0.0
run2	9/5/2007	13:01:00	2.74	15.5	36.7	12.0	0.0
run2	9/5/2007	13:01:15	2.75	15.5	36.6	12.6	0.0

			O2	NOx	SO2	CO	THC
run2	9/5/2007	13:01:30	2.72	15.4	36.3	13.5	0.0
run2	9/5/2007	13:01:45	2.71	15.4	36.5	14.2	0.0
run2	9/5/2007	13:02:00	2.73	15.3	36.3	14.7	0.0
run2	9/5/2007	13:02:15	2.74	15.3	36.4	15.6	0.0
run2	9/5/2007	13:02:30	2.70	15.4	36.4	16.4	0.0
run2	9/5/2007	13:02:45	2.71	15.1	36.5	16.9	0.0
run2	9/5/2007	13:03:00	2.71	15.3	36.6	17.4	0.0
run2	9/5/2007	13:03:15	2.74	15.3	36.2	17.6	0.0
run2	9/5/2007	13:03:30	2.77	15.0	36.1	18.0	0.0
run2	9/5/2007	13:03:45	2.75	14.9	35.8	19.6	0.0
run2	9/5/2007	13:04:00	2.73	14.8	35.9	22.5	0.0
run2	9/5/2007	13:04:15	2.76	15.1	35.9	25.8	0.0
run2	9/5/2007	13:04:30	2.76	15.3	35.5	28.2	0.0
run2	9/5/2007	13:04:45	2.74	15.3	35.5	28.1	0.1
run2	9/5/2007	13:05:00	2.78	15.0	35.4	26.1	0.1
run2	9/5/2007	13:05:15	2.78	15.1	35.5	23.9	0.1
run2	9/5/2007	13:05:30	2.74	15.1	35.6	22.5	0.1
run2	9/5/2007	13:05:45	2.74	15.3	35.2	22.0	0.2
run2	9/5/2007	13:06:00	2.72	15.3	35.2	21.6	0.1
run2	9/5/2007	13:06:15	2.73	15.4	34.9	20.4	0.0
run2	9/5/2007	13:06:30	2.77	15.1	34.6	18.7	0.0
run2	9/5/2007	13:06:45	2.77	15.2	34.6	18.0	0.0
run2	9/5/2007	13:07:00	2.75	15.3	34.6	17.9	0.0
run2	9/5/2007	13:07:15	2.76	15.4	34.8	18.2	0.0
run2	9/5/2007	13:07:30	2.74	15.5	34.5	18.2	0.0
run2	9/5/2007	13:07:45	2.74	15.6	34.5	17.4	0.0
run2	9/5/2007	13:08:00	2.78	15.4	34.0	16.3	0.0
run2	9/5/2007	13:08:15	2.77	15.5	33.6	15.4	0.0
run2	9/5/2007	13:08:30	2.75	15.5	33.6	14.8	0.0
run2	9/5/2007	13:08:45	2.76	15.4	33.3	14.4	0.0
run2	9/5/2007	13:09:00	2.75	15.7	33.2	14.1	0.1
run2	9/5/2007	13:09:15	2.73	15.5	33.2	13.6	0.1
run2	9/5/2007	13:09:30	2.78	15.7	32.8	13.1	0.0
run2	9/5/2007	13:09:45	2.80	15.7	32.7	12.6	0.0
run2	9/5/2007	13:10:00	2.85	15.5	32.2	11.8	0.0
run2	9/5/2007	13:10:15	2.91	15.6	32.0	11.3	0.0
run2	9/5/2007	13:10:30	2.88	15.6	31.8	11.0	0.0
run2	9/5/2007	13:10:45	2.88	15.6	31.4	11.0	0.0
run2	9/5/2007	13:11:00	2.97	15.2	31.4	11.3	0.0
run2	9/5/2007	13:11:15	2.98	15.4	30.8	12.0	0.0
run2	9/5/2007	13:11:30	2.98	15.5	30.6	13.1	0.0
run2	9/5/2007	13:11:45	3.00	15.5	30.5	14.2	0.0
run2	9/5/2007	13:12:00	3.03	15.6	30.3	14.9	0.0
run2	9/5/2007	13:12:15	3.01	16.0	30.3	14.5	0.0
run2	9/5/2007	13:12:30	2.99	16.0	30.1	13.1	0.1
run2	9/5/2007	13:12:45	3.03	16.2	30.3	11.5	0.0
run2	9/5/2007	13:13:00	3.09	16.2	30.4	10.1	0.0
run2	9/5/2007	13:13:15	3.12	16.2	30.2	9.1	0.0
run2	9/5/2007	13:13:30	3.13	16.3	30.0	8.8	0.0
run2	9/5/2007	13:13:45	3.11	16.2	29.6	8.8	0.0
run2	9/5/2007	13:14:00	3.11	16.3	29.7	8.7	0.0
run2	9/5/2007	13:14:15	3.14	16.4	29.6	8.8	0.0
run2	9/5/2007	13:14:30	3.12	16.5	29.4	8.6	0.0
run2	9/5/2007	13:14:45	3.14	16.5	29.4	8.4	0.0
run2	9/5/2007	13:15:00	3.15	16.5	29.2	8.3	0.0
run2	9/5/2007	13:15:15	3.15	16.4	29.3	8.0	0.0
run2	9/5/2007	13:15:30	3.20	16.6	29.2	7.8	0.0
run2	9/5/2007	13:15:45	3.20	16.6	29.2	7.7	0.0
run2	9/5/2007	13:16:00	3.15	16.5	29.6	7.6	0.0
run2	9/5/2007	13:16:15	3.19	16.4	29.6	7.3	0.0
run2	9/5/2007	13:16:30	3.21	16.2	29.9	7.2	0.0
run2	9/5/2007	13:16:45	3.21	16.4	29.8	7.1	0.0
run2	9/5/2007	13:17:00	3.22	16.7	29.7	7.3	0.0
run2	9/5/2007	13:17:15	3.18	16.3	30.2	7.4	0.0
run2	9/5/2007	13:17:30	3.18	16.3	30.1	7.3	0.0
run2	9/5/2007	13:17:45	3.24	16.4	30.4	7.2	0.0
run2	9/5/2007	13:18:00	3.23	16.8	30.3	7.2	0.0
run2	9/5/2007	13:18:15	3.19	16.6	30.5	7.2	0.0
run2	9/5/2007	13:18:30	3.23	16.3	30.8	7.3	0.0
run2	9/5/2007	13:18:45	3.26	16.3	30.7	7.7	0.1
run2	9/5/2007	13:19:00	3.28	16.4	30.8	8.2	0.1
run2	9/5/2007	13:19:15	3.27	16.4	30.7	8.7	0.1
run2	9/5/2007	13:19:30	3.26	16.2	30.9	9.3	0.1
run2	9/5/2007	13:19:45	3.25	16.4	31.1	9.4	0.0
run2	9/5/2007	13:20:00	3.28	16.4	31.0	9.1	0.0
run2	9/5/2007	13:20:15	3.26	16.5	31.3	8.7	0.0
run2	9/5/2007	13:20:30	3.23	16.4	31.4	8.4	0.0
run2	9/5/2007	13:20:45	3.27	16.4	31.4	8.3	0.0
run2	9/5/2007	13:21:00	3.29	16.5	31.6	8.4	0.0
run2	9/5/2007	13:21:15	3.25	16.3	31.5	8.4	0.0
run2	9/5/2007	13:21:30	3.29	16.3	31.6	8.5	0.0

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run2	9/5/2007	13:21:45	3.28	16.5	31.5	8.8	0.0				
run2	9/5/2007	13:22:00	3.27	16.3	31.7	8.9	0.0				
run2	9/5/2007	13:22:15	3.28	16.3	31.8	9.1	0.0				
run2	9/5/2007	13:22:30	3.25	16.5	31.6	9.4	0.0				
run2	9/5/2007	13:22:45	3.23	16.3	31.7	9.4	0.0				
run2	9/5/2007	13:23:00	3.25	16.3	31.6	9.3	0.0				
run2	9/5/2007	13:23:15	3.24	16.5	31.8	9.3	0.0				
run2	9/5/2007	13:23:30	3.23	16.5	31.8	9.1	0.0				
run2	9/5/2007	13:23:45	3.19	16.6	31.8	8.8	0.0				
run2	9/5/2007	13:24:00	3.20	16.5	32.0	8.7	0.0				
run2	9/5/2007	13:24:15	3.17	16.4	32.0	8.3	0.0				
run2	9/5/2007	13:24:30	3.21	16.5	32.1	8.0	0.0				
run2	9/5/2007	13:24:45	3.21	16.6	31.9	7.9	0.0				
run2	9/5/2007	13:25:00	3.23	16.3	31.7	8.1	0.0				
run2	9/5/2007	13:25:15	3.25	16.3	32.0	8.4	0.0				
run2	9/5/2007	13:25:30	3.18	16.2	31.7	8.7	0.0				
run2	9/5/2007	13:25:45	3.18	16.2	31.9	8.7	0.0				
run2	9/5/2007	13:26:00	3.21	16.1	32.2	8.8	0.0				
run2	9/5/2007	13:26:15	3.19	16.2	32.0	9.2	0.1				
run2	9/5/2007	13:26:30	3.13	16.4	32.1	9.4	0.0				
run2	9/5/2007	13:26:45	3.12	16.3	32.1	9.5	0.1				
run2	9/5/2007	13:27:00	3.13	16.3	32.2	9.4	0.0				
run2	9/5/2007	13:27:15	3.11	16.1	32.4	9.0	0.0				
run2	9/5/2007	13:27:30	3.12	16.0	32.5	8.9	0.0				
run2	9/5/2007	13:27:45	3.09	16.1	32.7	9.2	0.0				
run2	9/5/2007	13:28:00	3.07	15.9	32.8	9.4	0.0				
run2	9/5/2007	13:28:15	3.06	15.9	33.1	9.6	0.0				
run2	9/5/2007	13:28:30	3.03	16.2	33.2	9.8	0.0				
run2	9/5/2007	13:28:45	3.01	16.1	33.1	9.7	-0.1				
run2	9/5/2007	13:29:00	3.00	16.1	33.4	9.4	-0.1				
run2	9/5/2007	13:29:15	2.96	16.2	33.3	9.2	-0.1				
run2	9/5/2007	13:29:30	2.97	16.1	33.6	8.8	-0.1				
run2	9/5/2007	13:29:45	2.99	15.9	33.7	8.7	-0.1				
run2	9/5/2007	13:30:00	2.97	16.1	33.6	9.2	0.0				
run2	9/5/2007	13:30:15	2.94	15.9	33.8	9.8	0.0				
run2	9/5/2007	13:30:30	2.93	16.0	33.7	10.4	0.0				
run2	9/5/2007	13:30:45	2.86	16.0	34.0	10.7	-0.1				
run2	9/5/2007	13:31:00	2.87	15.8	34.1	10.5	-0.1				
run2	9/5/2007	13:31:15	2.86	15.6	33.9	10.1	-0.1				
run2	9/5/2007	13:31:30	2.84	15.7	33.8	10.0	0.0				
run2	9/5/2007	13:31:45	2.84	15.7	33.6	10.2	-0.1				
run2	9/5/2007	13:32:00	2.85	15.8	33.5	10.7	-0.1				
run2	9/5/2007	13:32:15	2.82	15.9	33.4	11.2	0.0				
run2	9/5/2007	13:32:30	2.79	15.6	33.4	11.4	0.0				
run2	9/5/2007	13:32:45	2.79	15.7	33.5	11.1	0.0				
run2	9/5/2007	13:33:00	2.76	15.6	33.4	10.9	0.0				
run2	9/5/2007	13:33:15	2.74	15.4	33.5	10.7	0.0				
run2	9/5/2007	13:33:30	2.77	15.4	33.5	10.9	-0.1				
run2	9/5/2007	13:33:45	2.79	15.4	33.5	11.4	0.0				
run2	9/5/2007	13:34:00	2.78	15.4	33.7	12.1	-0.1				
run2	9/5/2007	13:34:15	2.77	15.0	33.6	12.9	-0.1				
run2	9/5/2007	13:34:30	2.79	15.6	33.6	14.1	-0.1				
run2	9/5/2007	13:34:45	2.78	15.4	33.4	15.2	0.0				
averun2	9/5/2007	12:35:00	2.93	16.2	34.1	10.1	0.0		60		
scg2	9/5/2007	13:36:00	2.73	15.0	32.8	17.2	0.0	AAL14753/cg2	O2	20.9	Final Bias Run 2
scg2	9/5/2007	13:36:15	2.72	15.2	32.6	17.7	0.0	AAL14753/cg2	O2	20.9	
scg2	9/5/2007	13:36:30	3.20	13.0	31.8	17.9	0.0	AAL14753/cg2	O2	20.9	
thczero1	9/5/2007	13:36:30	3.20	13.0	31.8	17.9	0.0	AAL14753/cg2	O2	20.9	
scg13	9/5/2007	13:37:30	17.75	3.7	7.6	8.9	47.1	BAL4862/cg13	THC	47	
scg13	9/5/2007	13:37:45	13.25	11.1	14.1	5.5	48.1	BAL4862/cg13	THC	47	
scg13	9/5/2007	13:38:00	6.31	13.7	16.5	4.0	47.5	BAL4862/cg13	THC	47	
scg13	9/5/2007	13:38:15	5.77	11.8	21.3	5.4	47.7	BAL4862/cg13	THC	47	
scg13	9/5/2007	13:38:30	6.76	11.3	21.9	8.0	47.8	BAL4862/cg13	THC	47	
scg13	9/5/2007	13:38:45	7.02	11.2	21.5	10.5	47.9	BAL4862/cg13	THC	47	
scg13	9/5/2007	13:39:00	7.07	11.4	21.5	12.3	47.8	BAL4862/cg13	THC	47	
thcspan1	9/5/2007	13:39:00	7.07	11.4	21.5	12.3	47.8	BAL4862/cg13	THC	47	
scg6	9/5/2007	13:39:15	7.14	11.4	21.5	12.7	47.8	ALM035137/cg6	NOx	44.5	
scg8	9/5/2007	13:39:30	7.16	11.6	21.5	12.3	47.9	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	13:39:45	7.17	11.4	21.2	11.9	47.9	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	13:40:00	7.65	23.2	17.0	11.0	47.9	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	13:40:15	3.39	12.5	11.7	9.3	48.0	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	13:40:30	0.99	1.5	23.3	6.8	48.0	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	13:40:45	0.42	0.6	34.5	4.2	48.1	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	13:41:00	0.25	0.5	38.6	1.8	48.1	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	13:41:15	0.17	0.3	40.2	0.2	48.2	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	13:41:30	0.13	0.3	40.8	-0.4	48.2	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	13:41:45	0.10	0.3	40.8	-0.6	48.3	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	13:42:00	0.09	0.2	41.2	-0.6	48.3	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	13:42:15	0.08	0.2	41.5	-0.6	48.3	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	13:42:30	0.07	0.2	41.9	-0.6	48.3	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	13:42:45	0.07	0.2	41.8	-0.7	48.3	ALM067916/cg8	SO2	41.7	

O2 NOx SO2 CO THC

scg8	9/5/2007	13:43:00	0.07	0.2	41.6	-0.7	48.3	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	13:43:15	0.06	0.2	42.0	-0.7	48.3	ALM067916/cg8	SO2	41.7
scg8	9/5/2007	13:43:30	0.06	0.2	42.1	-0.7	48.3	ALM067916/cg8	SO2	41.7
so2span1	9/5/2007	13:43:30	0.06	0.2	42.1	-0.7	48.3	ALM067916/cg8	SO2	41.7
scg6	9/5/2007	13:43:45	0.06	0.2	42.3	-0.7	48.3	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	13:44:00	0.06	0.2	42.4	-0.7	48.3	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	13:44:15	0.06	5.8	42.1	-0.7	48.3	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	13:44:30	0.06	32.4	31.0	-0.6	48.3	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	13:44:45	0.05	38.5	12.9	-0.6	48.3	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	13:45:00	0.05	39.2	4.6	-0.5	48.3	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	13:45:15	0.05	39.8	1.5	-0.5	48.3	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	13:45:30	0.05	42.0	0.3	-0.5	48.3	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	13:45:45	0.05	42.2	-0.2	-0.5	48.1	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	13:46:00	0.04	42.2	-0.5	-0.5	28.7	ALM035137/cg6	NOx	44.5
o2zero1	9/5/2007	13:46:00	0.04	42.2	-0.5	-0.5	28.7	ALM035137/cg6	NOx	44.5
cozero1	9/5/2007	13:46:00	0.04	42.2	-0.5	-0.5	28.7	ALM035137/cg6	NOx	44.5
noxspan1	9/5/2007	13:46:00	0.04	42.2	-0.5	-0.5	28.7	ALM035137/cg6	NOx	44.5
scg10	9/5/2007	13:46:15	0.05	42.2	-0.6	-0.5	4.3	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:46:30	0.04	42.2	-0.8	-0.4	4.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:46:45	0.04	41.5	-0.9	-0.4	3.9	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:47:00	0.06	15.5	-0.8	0.0	3.8	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:47:15	0.05	1.9	-0.9	3.5	3.8	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:47:30	0.04	0.6	-0.8	10.6	3.8	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:47:45	0.04	0.4	-0.9	21.1	3.7	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:48:00	0.04	0.3	-1.0	30.7	3.7	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:48:15	0.04	0.3	-1.1	38.4	3.7	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:48:30	0.03	0.3	-1.1	41.3	3.7	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:48:45	0.03	0.3	-1.0	42.0	2.8	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:49:00	0.03	0.2	-1.1	42.1	0.5	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:49:15	0.03	0.2	-1.1	42.2	0.3	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:49:30	0.03	0.2	-1.1	42.2	0.3	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:49:45	0.03	0.2	-1.2	42.3	0.2	ALM054751/cg10	CO	44.9
scg10	9/5/2007	13:50:00	0.03	0.2	-1.0	42.3	0.2	ALM054751/cg10	CO	44.9
noxzero1	9/5/2007	13:50:00	0.03	0.2	-1.0	42.3	0.2	ALM054751/cg10	CO	44.9
so2zero1	9/5/2007	13:50:00	0.03	0.2	-1.0	42.3	0.2	ALM054751/cg10	CO	44.9
cospan1	9/5/2007	13:50:00	0.03	0.2	-1.0	42.3	0.2	ALM054751/cg10	CO	44.9
scg3	9/5/2007	13:50:15	0.03	0.2	-1.2	42.3	0.2	ALM005139/cg3	O2	12.2
scg3	9/5/2007	13:50:30	0.03	0.2	-1.3	42.3	0.2	ALM005139/cg3	O2	12.2
scg3	9/5/2007	13:50:45	0.05	0.2	-1.2	42.4	0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	13:51:00	3.10	0.3	-1.2	42.1	0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	13:51:15	9.45	0.2	-1.1	38.4	0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	13:51:30	11.45	0.2	-1.4	31.4	0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	13:51:45	11.89	0.2	-1.4	21.2	0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	13:52:00	12.02	0.2	-1.3	11.7	0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	13:52:15	12.08	0.1	-1.6	3.9	0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	13:52:30	12.10	0.1	-1.5	0.6	0.1	ALM005139/cg3	O2	12.2
o2span1	9/5/2007	13:52:30	12.10	0.1	-1.5	0.6	0.1	ALM005139/cg3	O2	12.2
run3	9/5/2007	14:15:00	3.45	15.8	32.0	38.7	0.0			
run3	9/5/2007	14:15:15	3.40	15.8	31.9	38.8	0.0			
run3	9/5/2007	14:15:30	3.39	15.6	32.2	38.0	0.0			
run3	9/5/2007	14:15:45	3.38	15.6	32.3	37.0	0.0			
run3	9/5/2007	14:16:00	3.36	15.5	32.5	36.1	0.0			
run3	9/5/2007	14:16:15	3.37	15.5	32.5	36.3	0.0			
run3	9/5/2007	14:16:30	3.33	15.5	32.6	37.9	0.0			
run3	9/5/2007	14:16:45	3.31	15.5	32.6	39.3	0.0			
run3	9/5/2007	14:17:00	3.33	15.4	32.4	40.3	0.0			
run3	9/5/2007	14:17:15	3.33	15.3	32.6	41.5	0.0			
run3	9/5/2007	14:17:30	3.30	15.3	32.4	42.9	0.0			
run3	9/5/2007	14:17:45	3.29	15.4	32.3	44.8	0.0			
run3	9/5/2007	14:18:00	3.26	15.5	32.3	46.3	0.0			
run3	9/5/2007	14:18:15	3.22	15.5	32.4	46.1	0.0			
run3	9/5/2007	14:18:30	3.21	15.3	33.0	44.5	0.0			
run3	9/5/2007	14:18:45	3.22	15.3	33.2	43.2	0.0			
run3	9/5/2007	14:19:00	3.23	15.2	33.3	43.0	0.0			
run3	9/5/2007	14:19:15	3.26	15.0	33.2	44.6	0.0			
run3	9/5/2007	14:19:30	3.23	15.2	32.9	47.7	0.0			
run3	9/5/2007	14:19:45	3.17	15.4	33.1	50.0	0.0			
run3	9/5/2007	14:20:00	3.14	15.5	33.0	50.1	0.0			
run3	9/5/2007	14:20:15	3.11	15.4	33.2	48.5	0.0			
run3	9/5/2007	14:20:30	3.11	15.2	33.6	45.8	0.0			
run3	9/5/2007	14:20:45	3.12	15.3	33.6	43.9	0.0			
run3	9/5/2007	14:21:00	3.07	15.3	33.7	43.7	0.0			
run3	9/5/2007	14:21:15	3.04	15.2	33.7	44.3	0.0			
run3	9/5/2007	14:21:30	3.06	15.1	33.6	45.0	1.9			
run3	9/5/2007	14:21:45	3.06	15.4	33.5	45.7	0.5			
run3	9/5/2007	14:22:00	3.06	15.3	33.1	45.6	0.3			
run3	9/5/2007	14:22:15	3.03	15.1	33.3	45.5	0.3			
run3	9/5/2007	14:22:30	3.04	15.3	33.2	46.2	0.3			
run3	9/5/2007	14:22:45	3.01	15.1	33.4	46.6	0.3			
run3	9/5/2007	14:23:00	3.03	15.1	33.7	47.6	0.2			
run3	9/5/2007	14:23:15	3.04	15.2	33.6	49.6	0.3			

Run 3 1415 - 1515

			O2	NOx	SO2	CO	THC
run3	9/5/2007	14:23:30	2.98	15.0	33.6	50.0	0.2
run3	9/5/2007	14:23:45	2.95	14.8	33.6	50.0	0.2
run3	9/5/2007	14:24:00	2.95	14.9	33.7	50.8	0.2
run3	9/5/2007	14:24:15	2.97	14.9	33.4	51.5	0.2
run3	9/5/2007	14:24:30	2.95	14.8	33.0	52.5	0.2
run3	9/5/2007	14:24:45	2.91	14.8	33.1	53.8	0.2
run3	9/5/2007	14:25:00	2.93	14.8	33.3	54.8	0.2
run3	9/5/2007	14:25:15	2.93	14.9	33.5	56.1	0.2
run3	9/5/2007	14:25:30	2.92	15.0	33.4	57.4	0.2
run3	9/5/2007	14:25:45	2.89	15.0	33.4	57.0	0.2
run3	9/5/2007	14:26:00	2.89	14.9	33.6	55.0	0.2
run3	9/5/2007	14:26:15	2.89	15.0	33.3	52.2	0.2
run3	9/5/2007	14:26:30	2.87	15.0	33.3	49.7	0.2
run3	9/5/2007	14:26:45	2.88	14.9	33.3	48.6	0.2
run3	9/5/2007	14:27:00	2.86	15.1	32.9	48.9	0.2
run3	9/5/2007	14:27:15	2.84	15.0	32.9	49.0	0.2
run3	9/5/2007	14:27:30	2.85	14.8	32.9	48.6	0.2
run3	9/5/2007	14:27:45	2.86	14.8	33.2	48.8	0.2
run3	9/5/2007	14:28:00	2.84	14.7	33.0	49.0	0.2
run3	9/5/2007	14:28:15	2.82	14.6	33.1	49.8	0.2
run3	9/5/2007	14:28:30	2.80	14.8	33.4	51.5	0.2
run3	9/5/2007	14:28:45	2.79	14.7	33.4	51.9	0.2
run3	9/5/2007	14:29:00	2.81	14.7	33.5	51.5	0.2
run3	9/5/2007	14:29:15	2.79	14.8	33.4	51.0	0.2
run3	9/5/2007	14:29:30	2.77	14.6	33.5	50.2	0.2
run3	9/5/2007	14:29:45	2.81	14.7	33.6	51.0	0.2
run3	9/5/2007	14:30:00	2.83	14.8	33.3	53.2	0.2
run3	9/5/2007	14:30:15	2.83	14.9	33.2	54.5	0.2
run3	9/5/2007	14:30:30	2.82	15.2	33.0	55.0	0.2
run3	9/5/2007	14:30:45	2.79	14.9	32.9	53.4	0.2
run3	9/5/2007	14:31:00	2.75	14.7	32.9	50.6	0.2
run3	9/5/2007	14:31:15	2.79	14.6	32.6	50.2	0.2
run3	9/5/2007	14:31:30	2.81	14.5	32.3	52.4	0.2
run3	9/5/2007	14:31:45	2.84	14.6	32.1	56.5	0.2
run3	9/5/2007	14:32:00	2.82	14.6	32.4	61.3	0.2
run3	9/5/2007	14:32:15	2.81	15.0	32.8	63.4	0.2
run3	9/5/2007	14:32:30	2.79	15.0	32.8	61.7	0.2
run3	9/5/2007	14:32:45	2.78	15.0	33.1	57.1	0.2
run3	9/5/2007	14:33:00	2.75	15.1	32.6	51.5	0.2
run3	9/5/2007	14:33:15	2.74	15.0	32.2	45.6	0.2
run3	9/5/2007	14:33:30	2.76	15.0	31.9	41.6	0.1
run3	9/5/2007	14:33:45	2.74	15.1	31.4	40.0	0.2
run3	9/5/2007	14:34:00	2.74	14.9	31.4	38.6	0.2
run3	9/5/2007	14:34:15	2.77	14.8	31.2	38.4	0.2
run3	9/5/2007	14:34:30	2.75	14.9	31.4	39.3	0.2
run3	9/5/2007	14:34:45	2.76	14.9	31.3	40.4	0.2
run3	9/5/2007	14:35:00	2.79	14.8	31.1	42.6	0.2
run3	9/5/2007	14:35:15	2.77	15.1	31.1	44.6	0.2
run3	9/5/2007	14:35:30	2.77	14.9	30.9	45.3	0.2
run3	9/5/2007	14:35:45	2.77	14.9	30.8	45.0	0.1
run3	9/5/2007	14:36:00	2.75	15.0	30.7	43.8	0.2
run3	9/5/2007	14:36:15	2.74	15.0	30.7	41.5	0.1
run3	9/5/2007	14:36:30	2.72	15.0	30.7	39.3	0.1
run3	9/5/2007	14:36:45	2.70	14.9	30.7	37.5	0.1
run3	9/5/2007	14:37:00	2.69	15.0	31.1	35.7	0.1
run3	9/5/2007	14:37:15	2.71	14.8	31.1	34.3	0.1
run3	9/5/2007	14:37:30	2.70	15.0	30.8	33.6	0.1
run3	9/5/2007	14:37:45	2.69	15.1	30.8	33.3	0.1
run3	9/5/2007	14:38:00	2.72	15.0	30.7	33.3	0.1
run3	9/5/2007	14:38:15	2.72	15.1	30.8	33.9	0.1
run3	9/5/2007	14:38:30	2.71	14.9	30.8	34.4	0.1
run3	9/5/2007	14:38:45	2.71	14.7	30.6	35.1	0.1
run3	9/5/2007	14:39:00	2.69	14.6	31.1	36.8	0.1
run3	9/5/2007	14:39:15	2.70	14.3	31.3	39.7	0.1
run3	9/5/2007	14:39:30	2.72	14.5	31.3	43.8	0.1
run3	9/5/2007	14:39:45	2.73	14.6	31.0	48.3	0.1
run3	9/5/2007	14:40:00	2.72	14.7	30.9	51.4	0.1
run3	9/5/2007	14:40:15	2.73	14.8	31.3	52.1	0.1
run3	9/5/2007	14:40:30	2.70	14.8	31.5	50.0	0.1
run3	9/5/2007	14:40:45	2.68	14.8	31.9	46.4	0.2
run3	9/5/2007	14:41:00	2.68	14.9	32.1	42.7	0.3
run3	9/5/2007	14:41:15	2.65	14.9	32.1	39.5	0.2
run3	9/5/2007	14:41:30	2.63	14.7	32.5	36.9	0.1
run3	9/5/2007	14:41:45	2.65	14.7	32.5	35.1	0.1
run3	9/5/2007	14:42:00	2.65	14.8	32.8	34.2	0.1
run3	9/5/2007	14:42:15	2.67	14.8	32.8	34.0	0.1
run3	9/5/2007	14:42:30	2.70	14.9	32.8	34.7	0.1
run3	9/5/2007	14:42:45	2.70	14.9	32.8	35.5	0.1
run3	9/5/2007	14:43:00	2.69	14.9	32.5	35.3	0.1
run3	9/5/2007	14:43:15	2.72	15.1	32.7	34.9	0.1
run3	9/5/2007	14:43:30	2.74	15.2	32.6	34.4	0.1

			O2	NOx	SO2	CO	THC
run3	9/5/2007	14:43:45	2.74	15.1	32.8	33.5	0.1
run3	9/5/2007	14:44:00	2.74	15.1	33.1	32.8	0.0
run3	9/5/2007	14:44:15	2.74	15.3	33.1	32.3	0.0
run3	9/5/2007	14:44:30	2.75	15.0	33.1	31.1	0.0
run3	9/5/2007	14:44:45	2.79	15.0	32.8	30.4	0.0
run3	9/5/2007	14:45:00	2.82	15.3	32.5	30.9	0.0
run3	9/5/2007	14:45:15	2.83	15.3	32.5	31.4	0.0
run3	9/5/2007	14:45:30	2.86	15.3	32.4	31.8	0.0
run3	9/5/2007	14:45:45	2.86	15.4	32.5	31.7	0.0
run3	9/5/2007	14:46:00	2.87	15.2	32.3	30.0	0.0
run3	9/5/2007	14:46:15	2.88	15.3	32.1	28.6	0.0
run3	9/5/2007	14:46:30	2.86	15.5	32.3	27.6	0.0
run3	9/5/2007	14:46:45	2.89	15.4	32.1	26.6	0.0
run3	9/5/2007	14:47:00	2.90	15.5	32.1	25.9	0.0
run3	9/5/2007	14:47:15	2.90	15.8	32.0	25.1	0.0
run3	9/5/2007	14:47:30	2.93	15.7	31.8	24.0	0.0
run3	9/5/2007	14:47:45	2.97	15.5	31.7	23.4	0.0
run3	9/5/2007	14:48:00	3.01	15.7	31.3	23.2	0.0
run3	9/5/2007	14:48:15	3.05	15.7	31.3	23.3	0.0
run3	9/5/2007	14:48:30	3.09	15.5	30.9	23.9	0.0
run3	9/5/2007	14:48:45	3.10	15.8	30.6	24.6	0.0
run3	9/5/2007	14:49:00	3.13	15.7	30.7	24.9	0.0
run3	9/5/2007	14:49:15	3.17	15.8	30.5	24.8	0.1
run3	9/5/2007	14:49:30	3.18	16.1	30.5	24.4	0.0
run3	9/5/2007	14:49:45	3.19	15.9	30.2	23.4	0.1
run3	9/5/2007	14:50:00	3.22	15.9	30.4	22.8	0.1
run3	9/5/2007	14:50:15	3.24	16.0	30.6	22.6	0.0
run3	9/5/2007	14:50:30	3.26	15.9	30.7	22.3	0.0
run3	9/5/2007	14:50:45	3.28	15.9	31.0	22.1	0.0
run3	9/5/2007	14:51:00	3.27	16.0	30.9	21.8	0.0
run3	9/5/2007	14:51:15	3.29	16.1	31.0	21.4	0.0
run3	9/5/2007	14:51:30	3.31	16.1	31.2	21.1	0.0
run3	9/5/2007	14:51:45	3.30	16.1	31.0	21.1	0.0
run3	9/5/2007	14:52:00	3.30	16.1	31.2	20.8	0.0
run3	9/5/2007	14:52:15	3.33	16.2	31.1	20.6	0.0
run3	9/5/2007	14:52:30	3.33	16.1	31.3	20.5	0.0
run3	9/5/2007	14:52:45	3.33	16.0	31.7	20.6	0.0
run3	9/5/2007	14:53:00	3.36	15.8	31.7	21.2	0.0
run3	9/5/2007	14:53:15	3.35	16.0	31.9	22.2	0.0
run3	9/5/2007	14:53:30	3.32	15.9	31.8	23.1	0.0
run3	9/5/2007	14:53:45	3.34	16.0	32.3	23.6	0.0
run3	9/5/2007	14:54:00	3.32	16.0	32.6	23.6	0.0
run3	9/5/2007	14:54:15	3.30	16.0	32.8	23.1	0.0
run3	9/5/2007	14:54:30	3.29	15.9	33.2	22.5	0.0
run3	9/5/2007	14:54:45	3.32	16.0	33.3	22.5	0.0
run3	9/5/2007	14:55:00	3.32	15.9	33.6	23.1	0.0
run3	9/5/2007	14:55:15	3.31	15.8	34.0	24.3	0.0
run3	9/5/2007	14:55:30	3.29	15.9	34.3	26.3	0.0
run3	9/5/2007	14:55:45	3.28	15.7	34.9	28.1	0.0
run3	9/5/2007	14:56:00	3.27	15.7	35.2	29.6	0.0
run3	9/5/2007	14:56:15	3.21	15.6	35.8	30.3	0.0
run3	9/5/2007	14:56:30	3.20	15.6	36.2	30.0	0.0
run3	9/5/2007	14:56:45	3.22	15.4	36.5	29.7	0.0
run3	9/5/2007	14:57:00	3.21	15.5	36.9	29.9	0.0
run3	9/5/2007	14:57:15	3.18	15.6	36.9	30.4	0.0
run3	9/5/2007	14:57:30	3.18	15.4	37.3	31.3	0.0
run3	9/5/2007	14:57:45	3.17	15.3	37.3	32.5	0.0
run3	9/5/2007	14:58:00	3.14	15.1	37.4	33.7	0.1
run3	9/5/2007	14:58:15	3.13	15.2	37.7	35.3	0.1
run3	9/5/2007	14:58:30	3.11	15.3	37.5	37.3	0.0
run3	9/5/2007	14:58:45	3.10	15.3	37.7	38.5	0.0
run3	9/5/2007	14:59:00	3.09	15.2	37.8	39.8	0.0
run3	9/5/2007	14:59:15	3.04	15.2	38.0	40.8	0.0
run3	9/5/2007	14:59:30	3.02	14.9	38.3	41.7	0.0
run3	9/5/2007	14:59:45	3.01	15.1	38.2	42.9	0.0
run3	9/5/2007	15:00:00	3.00	15.2	38.5	44.1	0.0
run3	9/5/2007	15:00:15	2.96	14.9	38.7	44.4	0.0
run3	9/5/2007	15:00:30	2.97	15.0	38.8	44.6	0.0
run3	9/5/2007	15:00:45	2.96	15.1	38.7	45.1	0.0
run3	9/5/2007	15:01:00	2.93	14.9	38.6	45.3	0.0
run3	9/5/2007	15:01:15	2.94	14.9	38.6	46.3	0.0
run3	9/5/2007	15:01:30	2.91	15.1	38.5	48.0	0.0
run3	9/5/2007	15:01:45	2.86	15.1	38.3	48.4	0.0
run3	9/5/2007	15:02:00	2.86	15.0	38.3	48.0	0.0
run3	9/5/2007	15:02:15	2.83	15.0	37.8	46.7	0.0
run3	9/5/2007	15:02:30	2.79	15.0	38.0	44.4	0.0
run3	9/5/2007	15:02:45	2.79	14.9	38.1	42.3	0.0
run3	9/5/2007	15:03:00	2.79	15.0	38.0	41.7	0.0
run3	9/5/2007	15:03:15	2.77	15.1	37.9	41.3	0.0
run3	9/5/2007	15:03:30	2.75	15.0	37.6	41.0	0.0
run3	9/5/2007	15:03:45	2.75	14.8	37.6	41.2	0.0

O2 NOx SO2 CO THC

run3	9/5/2007	15:04:00	2.74	14.8	37.6	41.4	0.0				
run3	9/5/2007	15:04:15	2.74	14.7	37.7	42.2	0.0				
run3	9/5/2007	15:04:30	2.73	14.8	37.7	43.9	0.0				
run3	9/5/2007	15:04:45	2.71	14.7	37.4	45.2	0.0				
run3	9/5/2007	15:05:00	2.71	14.6	37.3	46.0	0.0				
run3	9/5/2007	15:05:15	2.69	14.6	36.7	47.2	0.0				
run3	9/5/2007	15:05:30	2.67	14.5	36.4	48.3	0.0				
run3	9/5/2007	15:05:45	2.68	14.7	36.7	49.5	0.0				
run3	9/5/2007	15:06:00	2.66	14.4	36.6	50.6	0.0				
run3	9/5/2007	15:06:15	2.65	14.3	36.5	50.8	0.0				
run3	9/5/2007	15:06:30	2.64	14.1	36.2	52.5	0.0				
run3	9/5/2007	15:06:45	2.64	14.3	36.0	56.8	0.0				
run3	9/5/2007	15:07:00	2.63	14.2	35.6	62.1	0.0				
run3	9/5/2007	15:07:15	2.68	14.1	35.0	67.2	0.0				
run3	9/5/2007	15:07:30	2.71	14.4	34.6	71.9	0.0				
run3	9/5/2007	15:07:45	2.68	14.5	34.2	73.3	0.0				
run3	9/5/2007	15:08:00	2.66	14.3	34.2	71.9	0.0				
run3	9/5/2007	15:08:15	2.67	14.7	33.9	69.4	0.0				
run3	9/5/2007	15:08:30	2.65	14.7	33.4	64.9	0.0				
run3	9/5/2007	15:08:45	2.63	14.6	33.4	59.5	0.0				
run3	9/5/2007	15:09:00	2.61	14.5	33.2	55.2	0.0				
run3	9/5/2007	15:09:15	2.63	14.5	33.0	51.8	0.0				
run3	9/5/2007	15:09:30	2.64	14.5	32.9	49.6	0.0				
run3	9/5/2007	15:09:45	2.61	14.6	32.8	49.0	0.0				
run3	9/5/2007	15:10:00	2.61	14.7	33.0	48.9	0.0				
run3	9/5/2007	15:10:15	2.64	14.7	32.9	48.5	0.0				
run3	9/5/2007	15:10:30	2.62	15.0	32.7	47.5	0.0				
run3	9/5/2007	15:10:45	2.59	14.9	32.5	46.0	0.0				
run3	9/5/2007	15:11:00	2.60	14.6	32.1	44.2	0.0				
run3	9/5/2007	15:11:15	2.59	14.7	32.2	43.1	0.0				
run3	9/5/2007	15:11:30	2.54	15.0	32.0	41.5	0.0				
run3	9/5/2007	15:11:45	2.51	15.3	32.1	39.0	0.0				
run3	9/5/2007	15:12:00	2.49	15.1	32.1	35.5	0.0				
run3	9/5/2007	15:12:15	2.48	15.3	32.0	32.0	0.0				
run3	9/5/2007	15:12:30	2.49	15.6	31.8	28.7	0.0				
run3	9/5/2007	15:12:45	2.51	15.7	31.5	26.2	0.0				
run3	9/5/2007	15:13:00	2.48	15.8	31.9	23.4	0.0				
run3	9/5/2007	15:13:15	2.41	16.0	32.5	20.4	0.0				
run3	9/5/2007	15:13:30	2.36	16.2	32.8	16.6	0.0				
run3	9/5/2007	15:13:45	2.35	16.4	33.1	13.5	0.0				
run3	9/5/2007	15:14:00	2.29	16.6	33.0	10.8	0.0				
run3	9/5/2007	15:14:15	2.21	16.8	33.6	8.5	0.0				
run3	9/5/2007	15:14:30	2.22	16.7	34.1	6.3	0.0				
run3	9/5/2007	15:14:45	2.26	16.7	34.0	4.7	0.0				
run3	9/5/2007	15:15:00	2.27	16.7	34.1	3.3	0.0				
averun3	9/5/2007	14:15:00	2.90	15.2	33.4	40.1	0.1		60		Final Bias Run 3
scg13	9/5/2007	15:16:00	2.10	17.2	35.0	1.4	40.7	BAL4862/cg13	THC	47	
scg13	9/5/2007	15:16:15	2.16	17.2	35.1	0.9	42.2	BAL4862/cg13	THC	47	
scg13	9/5/2007	15:16:30	2.51	15.3	34.3	0.5	43.2	BAL4862/cg13	THC	47	
scg13	9/5/2007	15:16:45	3.86	13.0	31.5	0.3	43.7	BAL4862/cg13	THC	47	
scg13	9/5/2007	15:17:00	5.50	11.5	27.6	0.3	44.2	BAL4862/cg13	THC	47	
scg13	9/5/2007	15:17:15	12.44	1.8	18.9	0.3	45.2	BAL4862/cg13	THC	47	
scg13	9/5/2007	15:17:30	18.48	0.4	7.4	0.2	46.9	BAL4862/cg13	THC	47	
scg13	9/5/2007	15:17:45	19.71	1.5	2.7	0.0	47.4	BAL4862/cg13	THC	47	
scg13	9/5/2007	15:18:00	17.19	6.0	6.3	-0.3	47.8	BAL4862/cg13	THC	47	
scg13	9/5/2007	15:18:15	10.97	13.1	9.6	-0.5	47.7	BAL4862/cg13	THC	47	
scg13	9/5/2007	15:18:30	6.70	14.4	12.8	-0.5	47.7	BAL4862/cg13	THC	47	
thcspan1	9/5/2007	15:18:30	6.70	14.4	12.8	-0.5	47.7	BAL4862/cg13	THC	47	
scg2	9/5/2007	15:19:30	10.76	6.4	11.7	99.4	1.4	AAL14753/cg2	O2	20.9	
scg2	9/5/2007	15:19:45	10.55	6.5	8.7	99.3	0.5	AAL14753/cg2	O2	20.9	
scg2	9/5/2007	15:20:00	10.79	5.8	7.5	99.3	0.2	AAL14753/cg2	O2	20.9	
scg2	9/5/2007	15:20:15	11.51	5.3	6.4	99.3	0.1	AAL14753/cg2	O2	20.9	
scg2	9/5/2007	15:20:30	11.74	5.2	5.8	99.3	0.1	AAL14753/cg2	O2	20.9	
thczero1	9/5/2007	15:20:30	11.74	5.2	5.8	99.3	0.1	AAL14753/cg2	O2	20.9	
scg8	9/5/2007	15:20:45	11.77	5.2	5.3	99.3	0.0	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	15:21:00	11.74	5.3	5.0	99.3	0.0	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	15:21:15	11.72	5.1	5.2	99.3	0.1	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	15:21:30	10.82	2.2	6.8	99.3	0.3	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	15:21:45	4.39	1.1	18.3	99.3	-5.7	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	15:22:00	1.35	0.7	29.9	99.4	-0.5	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	15:22:15	0.54	0.6	35.7	99.4	-0.1	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	15:22:30	0.29	0.5	38.2	99.3	-0.1	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	15:22:45	0.18	0.4	39.3	91.7	0.0	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	15:23:00	0.14	0.4	40.2	27.5	0.0	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	15:23:15	0.12	0.3	40.3	7.5	0.0	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	15:23:30	0.10	0.3	40.3	2.6	-0.1	ALM067916/cg8	SO2	41.7	
scg8	9/5/2007	15:23:45	0.09	0.3	40.6	1.0	-0.1	ALM067916/cg8	SO2	41.7	
so2span1	9/5/2007	15:23:30	0.10	0.3	40.3	2.6	-0.1	ALM067916/cg8	SO2	41.7	
scg6	9/5/2007	15:24:00	0.09	0.3	40.9	0.3	0.0	ALM035137/cg6	NOx	44.5	
scg6	9/5/2007	15:24:15	0.08	0.3	41.4	0.0	0.0	ALM035137/cg6	NOx	44.5	
scg6	9/5/2007	15:24:30	0.09	8.9	40.9	0.0	0.0	ALM035137/cg6	NOx	44.5	

O2 NOx SO2 CO THC

scg6	9/5/2007	15:24:45	0.12	31.8	30.6	-0.2	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:25:00	0.09	36.6	15.9	-0.2	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:25:15	0.23	37.8	8.2	-0.2	-0.1	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:25:30	0.55	38.7	5.0	-0.1	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:25:45	0.68	38.7	3.1	0.0	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:26:00	0.71	41.0	2.0	0.0	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:26:15	0.72	41.9	1.4	0.0	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:26:30	0.72	42.3	0.9	0.1	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:26:45	0.72	42.1	0.9	0.2	-0.1	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:27:00	0.72	42.2	0.6	0.3	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:27:15	0.72	42.5	0.5	0.4	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:27:30	0.73	42.4	0.3	0.4	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:27:45	0.73	42.3	0.1	0.4	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:28:00	0.61	44.0	0.1	0.6	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:28:15	0.25	43.4	0.0	0.6	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:28:30	0.10	43.1	0.1	0.5	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:28:45	0.06	42.8	0.0	0.3	0.0	ALM035137/cg6	NOx	44.5
scg6	9/5/2007	15:29:00	0.05	42.8	-0.2	0.1	0.0	ALM035137/cg6	NOx	44.5
o2zero1	9/5/2007	15:29:00	0.05	42.8	-0.2	0.1	0.0	ALM035137/cg6	NOx	44.5
cozero1	9/5/2007	15:29:00	0.05	42.8	-0.2	0.1	0.0	ALM035137/cg6	NOx	44.5
noxspan1	9/5/2007	15:29:00	0.05	42.8	-0.2	0.1	0.0	ALM035137/cg6	NOx	44.5
scg10	9/5/2007	15:29:15	0.05	42.7	0.0	-0.2	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	15:29:30	0.04	43.1	-0.2	-0.3	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	15:29:45	0.04	42.6	-0.2	-0.3	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	15:30:00	0.06	15.7	-0.3	0.1	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	15:30:15	0.05	2.0	-0.4	3.4	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	15:30:30	0.04	0.6	-0.2	10.9	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	15:30:45	0.04	0.4	-0.1	20.7	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	15:31:00	0.04	0.4	-0.1	31.0	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	15:31:15	0.04	0.4	-0.2	38.1	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	15:31:30	0.03	0.3	-0.3	41.4	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	15:31:45	0.03	0.3	-0.2	42.2	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	15:32:00	0.03	0.3	-0.1	42.4	-0.1	ALM054751/cg10	CO	44.9
scg10	9/5/2007	15:32:15	0.03	0.3	0.1	42.5	0.0	ALM054751/cg10	CO	44.9
scg10	9/5/2007	15:32:30	0.03	0.3	-0.1	42.5	0.0	ALM054751/cg10	CO	44.9
noxzero1	9/5/2007	15:32:30	0.03	0.3	-0.1	42.5	0.0	ALM054751/cg10	CO	44.9
so2zero1	9/5/2007	15:32:30	0.03	0.3	-0.1	42.5	0.0	ALM054751/cg10	CO	44.9
cospan1	9/5/2007	15:32:30	0.03	0.3	-0.1	42.5	0.0	ALM054751/cg10	CO	44.9
scg3	9/5/2007	15:32:45	0.03	0.3	-0.2	42.5	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	15:33:00	0.03	0.2	-0.1	42.4	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	15:33:15	0.04	0.3	-0.2	42.4	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	15:33:30	2.81	0.3	-0.1	41.9	-0.1	ALM005139/cg3	O2	12.2
scg3	9/5/2007	15:33:45	9.19	0.2	-0.2	38.7	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	15:34:00	11.35	0.2	-0.4	31.1	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	15:34:15	11.84	0.2	-0.3	22.0	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	15:34:30	11.98	0.2	-0.3	11.4	0.0	ALM005139/cg3	O2	12.2
scg3	9/5/2007	15:34:45	12.04	0.2	-0.4	4.4	0.0	ALM005139/cg3	O2	12.2
o2span1	9/5/2007	15:34:45	12.04	0.2	-0.4	4.4	0.0	ALM005139/cg3	O2	12.2
End										

APPENDIX G

Plant Operational Data

SRU C Train Operational Data

MultiMonitor 1.2 Hourly Average (Houston)

Tag ID / Calculation:	39FC1001	39FI1009	39AI2003B	39TI2067A	39AI2003A	39FX2011	39FI2030	39FC1003
Description:	AAG TO CLAUS COMBUSTOR	AAG TO THERMAL REACTOR	CEMS PERCENT O2 15 MIN AVERAGE	INCINERATOR STACK	CEMS SO2 15 MIN AVG	INCINTR STACK FLUE GAS	NG 2 INCIN MAIN BURNER	SWS Gas TO THERMAL REACTOR
Engineering Unit:	M SCFH	M SCFH	% O2	DegF	PPM	M SCFH	M SCFH	M SCFH
DateTime	Value_001	Value_002	Value_003	Value_004	Value_005	Value_006	Value_007	Value_008
Wed, 05 Sep 07, 12:00:00 AM	143.60	113.92	7.40	1369.31	28.76	4.35	16.05	27.34
Wed, 05 Sep 07, 01:00:00 AM	144.11	114.75	7.33	1371.16	28.54	4.43	16.14	28.31
Wed, 05 Sep 07, 02:00:00 AM	144.53	115.44	7.31	1370.23	29.99	4.48	16.22	28.94
Wed, 05 Sep 07, 03:00:00 AM	144.79	114.53	7.32	1369.73	29.79	4.48	16.15	26.70
Wed, 05 Sep 07, 04:00:00 AM	143.22	113.93	7.38	1362.25	28.79	4.59	16.04	27.38
Wed, 05 Sep 07, 05:00:00 AM	138.13	111.41	7.53	1331.13	30.46	4.62	15.32	29.55
Wed, 05 Sep 07, 06:00:00 AM	135.30	109.06	7.72	1293.87	29.89	4.59	14.82	28.59
Wed, 05 Sep 07, 07:00:00 AM	133.72	110.03	7.84	1277.41	29.26	4.72	14.62	32.80
Wed, 05 Sep 07, 08:00:00 AM	134.91	110.30	7.81	1296.59	28.73	4.73	14.88	31.99
Wed, 05 Sep 07, 09:00:00 AM	134.64	109.80	6.68	1327.77	31.91	4.32	11.88	31.57
Wed, 05 Sep 07, 10:00:00 AM	136.13	111.66	5.06	1282.36	40.48	3.85	8.85	32.90
Wed, 05 Sep 07, 11:00:00 AM	137.84	110.79	3.74	1284.08	50.05	3.46	7.52	28.77
Wed, 05 Sep 07, 12:00:00 PM	137.03	111.41	3.41	1293.12	49.70	3.33	7.66	30.76
Wed, 05 Sep 07, 01:00:00 PM	136.90	109.72	3.29	1309.04	47.10	3.25	7.81	28.19
Wed, 05 Sep 07, 02:00:00 PM	132.13	106.77	3.35	1330.44	44.97	3.40	7.88	28.44
Wed, 05 Sep 07, 03:00:00 PM	134.28	107.60	3.47	1317.13	44.06	3.47	7.52	27.06
Wed, 05 Sep 07, 04:00:00 PM	138.38	111.77	5.50	1363.07	36.42	4.11	14.80	29.75
Wed, 05 Sep 07, 05:00:00 PM	138.90	112.94	8.17	1344.03	29.60	4.86	17.52	31.47
Wed, 05 Sep 07, 06:00:00 PM	137.64	110.82	8.26	1324.44	27.30	4.82	17.38	29.24
Wed, 05 Sep 07, 07:00:00 PM	134.48	108.27	8.31	1324.76	26.48	4.84	17.28	28.68
Wed, 05 Sep 07, 08:00:00 PM	130.64	105.67	8.46	1323.97	27.25	4.93	17.29	28.42
Wed, 05 Sep 07, 09:00:00 PM	130.57	105.79	8.46	1323.81	26.52	5.29	17.33	28.43
Wed, 05 Sep 07, 10:00:00 PM	132.28	107.17	8.38	1323.22	27.37	8.04	17.31	28.88
Wed, 05 Sep 07, 11:00:00 PM	131.43	107.03	8.34	1322.91	26.65	7.07	17.50	30.11

Avg. 136.10

1) Lowest Hourly Temp Used

APPENDIX H

Chain of Custody

METCO
Environmental ©

CHAIN OF CUSTODY RECORD

Job No.: 07-338
Job Name: Valero
Location: Houston, TX
Unit: C-Train SRU Tail Gas Stack

Project Manager: M. Glicer
Project Supervisor: ~~B. Williams~~ M. Bass

Method: TACD-NH4

SAMPLE I.D.	DATE	TIME	# OF CONT.	Absorb. Solution	Initial Vol.	SAMPLE ANALYSIS REQUIRED: PART	HCL	Cl2	SO2	SO3	NH4		Recovered by	REMARKS (Specific Compounds/Methods)
Run 1 Imp. 1	9-5-07 ~~8/31/07~~	1238	1	0.1 N H_2SO_4	100						✓		R.W. Williams	
Run 1 Imp. 2,3		1241	1	↓	↓						✓		↓	
Run 2 Imp. 1		1400	1								✓			
Run 2 Imp. 2,3		1404	1								✓			
Run 3 Imp. 1		1544	1								✓			
Run 3 Imp. 2,3		1548	1		↓						✓		↓	
RB · 0.1 N H_2SO_4	8/31/07	1200	1	↓	200						✓		M. Bass	
RB · DI H_2O	↓	1201	1	DI H_2O	200						✓		↓	

Samples Received for Transport/Shipment by:	Ryan Williams	Date:	9-5-07	Time: 1700
Samples Received for Transport/Shipment by:		Date:		Time:
Samples Received for Transport/Shipment by:		Date:		Time:
Samples Shipped Via:		Date:		Time:
Samples Received at Laboratory by:	Mark A. Banter	Date:	9-11-07	Time: 1435
Samples Analyzed by:		Date:	9/17/07	Time: 1640
Samples Analyzed by:		Date:		Time:
Data Checked by:		Date:	09/18/07	Time: 1015

H-2

VERSION 2
10 MARCH 2003

METCO
Environmental ©

CHAIN OF CUSTODY RECORD

Job No.: 07-338
Job Name: Valero
Location: TE Houston, TX
Unit: C-Train SRU Tail Gas Stack

Project Manager: M. Glicer
Project Supervisor: M. Bass

Method: 18

SAMPLE I.D.	DATE	TIME	# OF CONT.	Absorb. Solution	Initial Vol.	SAMPLE ANALYSIS REQUIRED: PART	HCL	CL2	SO2	SO3	HR VOC		Recovered by	REMARKS (Specific Compounds/Methods)
Run 1	~~8/31/07~~ 9-5-07	1050	1								✓		R. Williams	
Run 2	↓	1335	1								✓		↓	
Run 3	↓	1515	1								✓		↓	

H-3

Samples Received for Transport/Shipment by:	Ryan Williams	Date:	9-5-07	Time: 1630
Samples Received for Transport/Shipment by:		Date:		Time:
Samples Received for Transport/Shipment by:		Date:		Time:
Samples Shipped Via:		Date:		Time:
Samples Received at Laboratory by:	[signature]	Date:	9-11-07	Time: 1420
Samples Analyzed by:	Rob Dean	Date:	9-11-07	Time: 1436
Samples Analyzed by:		Date:		Time:
Data Checked by:	[signature]	Date:	09/24/07	Time: 1545

APPENDIX I

Resumes of Test Personnel

ROBERT M. PATTERSON; President

Education	B. S. 1983, Central Michigan University; Mt. Pleasant, Michigan, in Geology and Earth Science-Meteorology.
Professional Training Courses	Attended a two-day short course, "Performing and Observing Source Sampling" in Dallas, Texas. Attended a one-day short course on basic supervision. Attended a four-week management course presented by the American Management Association, 1991-1992.
Certification	Certified Visible Emissions Evaluator Certified Cabot Full-Face Respirator Fit Tester
Professional Memberships	Source Evaluation Society American Management Association
Technical Experience	Participated in the sampling of over 1,000 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 1986-present. Over nineteen years experience with EPA and Texas Air Control Board methods of sampling - both stationary sources and ambient air. CFR, Title 40, Chapter I, Part 60, EPA Methods 1 through 25, and 101 through 110. Performance Specifications 1 through 5. CFR, Title 40, Chapter I, Part 50, Appendix A through F. "Sampling Procedures Manual, Texas Air Control Board, January 1983." Parts 1-1 through 14-6, Appendix B through Appendix M. Experienced with sampling Method 0010, Modified Method 5 Sampling Train; Method 0030, Volatile Organic Sampling Train; and various EPA and "Site Specific" multiple metal and acid gas sampling trains.

(continued)

PATTERSON, Rob (cont'd)

Technical Experience (cont'd)

Over twenty one years experience with EPA and Texas Air Control Board methods of analysis of both stationary and ambient air samples. Particulate matter, SO_3, SO_2, H_2SO_4, NO_x, CO, CO_2, O_2, H_2S, F, TRS, HCl, Cl_2, NH_3, VOC, C_1-C_7, and other organics. Both laboratory and on-site analyses were performed.

Experienced in the sampling and analysis of commercial calibration gas cylinders for sulfur dioxide, oxides of nitrogen, carbon dioxide, oxygen, carbon monoxide, and C_1-C_7 hydrocarbons.

Thoroughly trained in the operation and routine maintenance of the following:

- MSA LIRA Model 202S Infrared Analyzer
- Analytical Instrument Development, Inc. Model 340A Calibration System
- Shimadzu GC-Mini 2 Gas Chromatograph
- Thermo Environmental Model 10AR Oxides of Nitrogen Analyzer
- Thermo Oxygen Analyzer
- Teledyne Model 326 Oxygen Analyzer
- Thermo Environmental Model 48 Carbon Monoxide Analyzer
- Thermo Environmental Model 40 Sulfur Dioxide Analyzer
- Ratfisch Model RS 100 Total Hydrocarbon Analyzer
- Western Research Model 721AT Sulfur Dioxide Analyzer
- Horiba Model PIR 2000 Carbon Dioxide Analyzer
- Ratfisch Model RS 55 Total Hydrocarbon Analyzer
- J.U.M. Model VE-7 Total Hydrocarbon Analyzer

JAMES R. MONFRIES; Senior Quality Assurance Manager

Education	B. S. 1975, University of Texas at Arlington; Arlington, Texas, in Biology with a minor in Chemistry. Graduate work at the University of Texas at Dallas in the Environmental Science Department.
Professional Training Courses	Attended a two-day short course, "Performing and Observing Source Sampling" in Dallas, Texas, July 1976.
Certification	Certified Visible Emissions Evaluator
Professional Memberships	Air and Waste Management Association Source Evaluation Society - Past President
Technical Experience	Participated in the sampling of over 700 sources, serving in the supervisory capacity on over 500 sources. Many of the sources were sampled simultaneously using more than one sampling train at several points in the flue gas stream, 1976-present. Has also supervised several ambient air monitoring studies, including a permanent five-station high volume air sampling network in South Texas, a permanent four-station high volume air sampling network in Pennsylvania, and a permanent seven-station sulfur dioxide sampling network in East Texas. Was Quality Assurance Manager for several ambient air monitoring studies; including a four-station high volume air sampling network for TSP and PM10 in Midlothian, Texas; a single-station high volume air sampling network for PM10 in South Texas; a two-station high volume air sampling network for TSP in Wichita Falls, Texas; and a four-station continuous air sampling network for TSP and PM10 in Jewett, Texas using Thermo Andersen FH 62 C14 Beta Gauge Dust Monitors.

(continued)

MONFRIES, James (cont'd)

Twenty years experience with EPA and Texas Commission on Environmental Quality methods of analysis of both source and ambient air samples for particulates, SO_2, SO_3,, H_2SO_4, H_2S, HCl, Cl_2, NO_x, Hydrocarbons, and TRS.

Experienced in the analysis of commercial calibration gas cylinders for sulfur dioxide and oxides of nitrogen.

Experienced with VOST and Modified Method 5 Sampling Procedures.

Thoroughly trained in the operation and routine maintenance of the following:

- Lear Siegler, Inc. SM800 Stack Gas Monitor
- Du Pont Model 460/1 Photometric Analyzer System
- Lear Siegler, Inc. SM1000 Ambient SO_2 Monitor
- Calibrated Instruments Ultragas SO_2 Monitor
- Meloy 285E SO_2 Analyzer
- Meloy SA-700 Fluorescent SO_2 Analyzer
- MSA LIRA Model 202S Infrared Analyzer
- Analytical Instrument Development, Inc. Model 340A Calibration System
- Shimadzu GC-Mini 2 Gas Chromatograph
- Thermo Environmental Model 10S NO_x Analyzer
- Thermo Oxygen Analyzer
- Teledyne Model 326 Oxygen Analyzer
- Thermo Environmental Model 48 Carbon Monoxide Analyzer
- Thermo Environmental Model 40 Sulfur Dioxide Analyzer
- Ratfisch Model RS 103 Total Hydrocarbon Analyzer
- Western Research Model 721AT Sulfur Dioxide Analyzer
- Horiba Model PIR 2000 Carbon Dioxide Analyzer
- Ratfisch Model RS 55 Total Hydrocarbon Analyzer
- J.U.M. Model VE-7 Total Hydrocarbon Analyzer
- Thermo Andersen Model FH 62 C14 Dust Monitor

RYAN WILLIAMS; Project Supervisor I

Education	B. S. Agricultural Service & Development, May 2001; Tarleton State University, Stephenville, Texas.
Technical Experience	Participated in the sampling of over 150 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 2005-present.

BEN GOEBEL; Project Supervisor I

Education	B. S. Environmental Biology, December 1999; Michigan State University; Lansing, Michigan.
Certifications	HAZMAT certified Adult CPR certified Standard First Aid certified
Technical Experience	Participated in the sampling of over 150 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 2002-present.

JUSTIN COOPER; Environmental Scientist II

Education	B. S. Wildlife & Fisheries Sciences, August 2006; Texas A&M University, College Station, Texas.
Technical Experience	Participated in the sampling of over 50 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 2006-present.

LANCE EUBANKS; Environmental Scientist II

Education	B. S. Chemistry, December 2004; Northeastern State University, Tahlequah, Oklahoma.
Technical Experience	Participated in the sampling of over 50 sources, including several of which were sampled simultaneously using more than one sampling train. Thoroughly trained in all EPA testing procedures, 2006-present.

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October 23, 2007

Ms. Tracy Taylor
Valero Refining – Texas, L. P.
Houston Refinery
9701 Manchester Ave.
Houston, Texas 77012

Dear Ms. Taylor:

Enclosed are five (5) copies of the report of the Source Emissions Survey Valero Refining - Texas, L.P., Houston Refinery, C-Train SRU Tail Gas Stack (EPN 39CB2001), located in Houston, Texas, which was performed September 4 and 5, 2007.

METCO Environmental appreciates the opportunity to be of service to Valero Refining - Texas, L.P. If you have any questions, please contact me.

Very truly yours,

METCO ENVIRONMENTAL

Rob Patterson
President

RMP:tr

Enclosures (5)