9 75

IC engine
criteria pollutant
exhaust.
TSP, NOx, CO, TNMHC
Flow rate

Fuel flow rate,
Have data on % Load +
Engine capacity

Compliance Test Report
Landfill Gas Fired
Internal Combustion Engine
Oceanside Landfill Gas Recovery Facility
Energy Tactics, Inc.
Oceanside, New York

→ H_2S Inlet. & TNMHC Inlet.

ROJAC Environmental Services, Inc.

Leigh A. Gammie
Principal Engineer

Eszter J. Samodai
Project Scientist

ROJAC Project D92-09

November 2, 1992

30 Arbor Street • Hartford, Connecticut 06106 • (203) 232-8959

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1.0 INTRODUCTION

1.1 Summary of Test Program

ROJAC Environmental Services Inc. (ROJAC) was retained by Energy Tactics, Inc. (ET) to conduct an emission measurement test program on one of their landfill gas fired internal combustion engines located at the Oceanside Landfill Gas Recovery Facility in Oceanside, New York. The testing of the engine was conducted in two phases, namely under 75% and 100% of full load conditions.

The test program consisted of measuring total suspended particulates (TSP), oxides of nitrogen (NO_x), carbon monoxide (CO), diluent oxygen (O_2), and total non methane hydrocarbons (TNMHC) being exhausted from the unit. The tests were conducted in triplicate in accordance with EPA Methods 1-5, 7E, 10, 3A, and 18, respectively. In addition, samples of landfill gas (LFG) were collected for hydrogen sulfide (H_2S) content analysis.

1.2 Key Personnel

The ROJAC test team consisted of the Project Manager, Engineer, and Technician. Ms. Eszter Samodai served as the Project Manager and CEM specialist. Mr. John Gammie headed the TSP test team, with Mr. Jim Davis serving as his technical assistant. Mr. Gary Zimmerman was the on-site observer from the New York State Department of Environmental Conservation (NYSDEC).

2.0 SOURCE AND SAMPLING LOCATION DESCRIPTIONS

2.1 Source Description

Energy Tactics, Inc. operates eight (8) Caterpillar Model G-399 HCR TA-SI internal combustion engines at their Oceanside Landfill Gas Recovery Facility located in Oceanside, New York. The engines are modified for a lean burn system, and are fired with LFG produced on site.

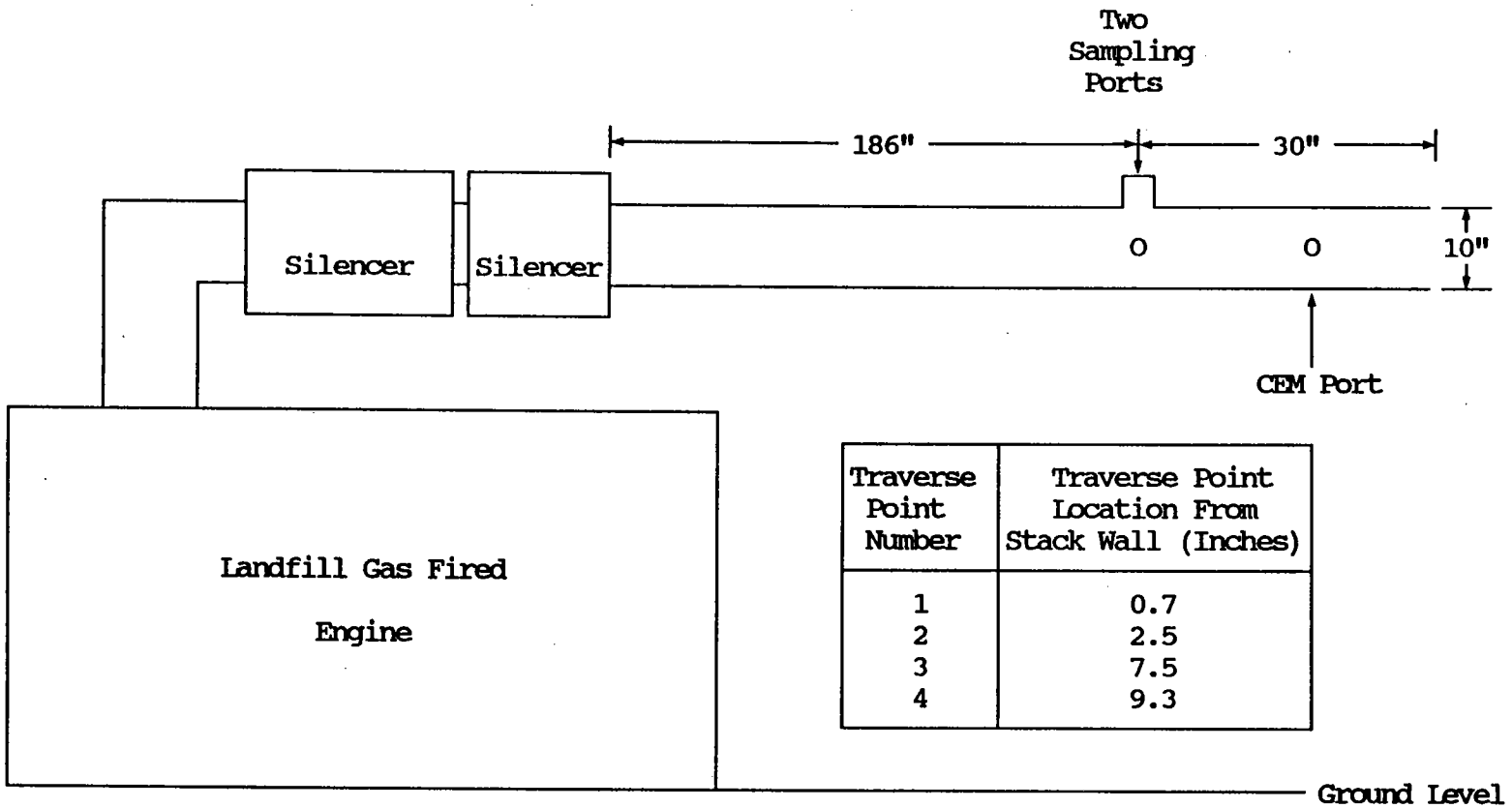
Each engine has 16 cylinders with a 3928 cubic inch displacement for a total rated output of 832 horsepower and 590 kilowatts (KW) of generator capacity. The electrical power produced is sold to Long Island Lighting Company (LILCO).

The pretreatment of the LFG consists of moisture removal, followed by compression, cooling, inertial separation, and filtration. The methane (CH_4) content of the LFG is estimated at approximately 50%. No post combustion pollution control system is used. Each engine is exhausted through a muffler and a horizontal duct approximately 15 feet above ground level.

2.2 Sampling Location

Emissions sampling was conducted in the ten inch ID horizontal section of exhaust duct of engine ET-29 (NYSDEC Emission Point 007). Two (2) ports were spaced 90 degrees apart, 186 inches (18.6 duct diameters) downstream from the the two silencers, and 30 inches (3.0 duct diameters) upstream from the end of the ductwork.

In accordance with EPA Method 1, a total of eight (8) sampling points were used for the velocity traverse and TSP tests with four (4) points being accessed from each port. An additional port, placed further downstream was used for the continuous emission monitoring (CEM) tests. Figure 2-1 shows a schematic diagram of the sampling location along with the traverse point locations.



Traverse Point Number	Traverse Point Location From Stack Wall (Inches)
1	0.7
2	2.5
3	7.5
4	9.3

FIGURE 2-1

ET-29 Outlet Sampling Location
Oceanside Landfill Gas Recovery Facility
Energy Tactics, Inc.
Oceanside, New York

3.0 SUMMARY AND DISCUSSION OF RESULTS

3.1 Objectives and Test Matrix

The purpose of the test program was to determine the emissions from LFG fired internal combustion engine number ET-29 (NYSDEC Emission Point 007). Table 3-1 shows the emission measurement test matrix. Testing was conducted under 75% and 100% of full load conditions. All operational data collected during the tests is included in the Appendix. Since all eight (8) Caterpillar engines are identical, only one engine was required to be tested. The specific objectives of the test program were to:

* measure the emissions of TSP, NO_x, CO, and O_2.
* collect samples of exhaust gas in Tedlar bags for TNMHC analysis by GC/FID.
* collect samples of LFG for H_2S analysis.

The emission limitations for each pollutant mentioned above is as follows:

NO_x:	2.80 pounds per hour (lb/hr)
CO:	4.10 lb/hr
TNMHC:	0.04 lb/hr
TSP:	0.50 lb/hr

TABLE 3–1
EMISSION MEASUREMENT TEST MATRIX
OCEANSIDE LANDFILL GAS RECOVERY FACILITY
ENERGY TACTICS, INC. – OCEANSIDE, NEW YORK
OCTOBER 6 & 7, 1992

Sampling Location	No. of Runs	Sample/Type Pollutant	Sampling Method	Sampling Organ.	Sample Run Time (min.)	Analytical Method	Analytical Laboratory
	3	TSP	M1 – M5	RES	60	M5 Gravimetric	CIGNA
ET–29 OUTLET	3	NOx, CO, O2	M7E, M10 M3A	RES	60	M7E, M10 M3A	RES
100% LOAD	3	TNMHC	M18	RES	60	M18 GC/FID	AAL
	3	LFG	GRAB	ET	GRAB	GC	AAL
	3	TSP	M1 – M5	RES	60	M5 Gravimetric	CIGNA
ET–29 OUTLET	3	NOx, CO, O2	M7E, M10 M3A	RES	60	M7E, M10 M3A	RES
75% LOAD	3	TNMHC	M18	RES	60	M18 GC/FID	AAL
	3	LFG	GRAB	ET	GRAB	GC	AAL

3.2 Field Test Changes and Problems

The only problem encountered during the test program was a temporary CEM system condenser freeze-up. The condenser allows for the conditioning of the exhaust gas by removing the moisture and supplying dry sample to the analyzers. Because of the high moisture content of the stack gas, water collected in the condenser coils and froze, temporarily blocking the sample flow. The condition was quickly remedied by heating the coils to above freezing whereby the flow of sample gas was resumed. The 15 minutes of CEM sampling time lost due to this problem was added on to the end of the test run. The remainder of the sampling progressed according to schedule with no further testing or operational problems.

3.3 ET-29 - 100% Load

3.3.1 Total Suspended Particulate Summary of Results

Three Method 5 tests were performed on October 6, 1992 while the engine was at 100% of full load. The results are shown on Table 3-2. The average TSP emission rate was 0.03 lb/hr which was below the particulate matter emission rate limit of 0.50 lb/hr.

3.3.2 Oxides of Nitrogen Summary of Results

Triplicate one hour Method 7E tests were conducted in conjunction with the TSP tests. The results (Table 3-2) show an average NO_x (as NO_2) emission rate of 2.4 lb/hr which is below the allowable emission rate of 2.8 lb/hr.

3.3.3 Carbon Monoxide Summary of Results

Triplicate one hour Method 10 tests were conducted simultaneously with the other compliance tests. The average CO emission rate was shown to be 2.4 lb/hr which is below the allowable 4.1 lb/hr limit.

3.3.4 Total Non Methane Hydrocarbons Summary of Results

Triplicate integrated one hour Method 18 bag samples were collected for TNMHC analyses by gas chromatography/flame ionization detection (GC/FID). The results show an average TNMHC emission rate of 1.0 lb/hr which is above the emission limitation of 0.04 lb/hr. All laboratory analysis reports and calculations are contained in the Appendix.

TABLE 3-2
SUMMARY OF COMPLIANCE EMISSION MEASUREMENT RESULTS
OCEANSIDE LANDFILL GAS RECOVERY FACILITY
ENERGY TACTICS, INC. – OCEANSIDE, NEW YORK
OCTOBER 6 & 7, 1992

		ET-29 – Emission Pt. 007 – 100% Load – October 6, 1992			
Method/Component	Units	Run 1	Run 2	Run 3	Avg
Method 5 – TSP	mg	6.3	5.0	3.5	4.9
Method 5 – TSP	lb/hr	0.04	0.03	0.02	0.03
Method 7E – NOx	ppm, dry	191.7	201.0	195.8	196.2
Method 10 – CO	ppm, dry	326.1	325.5	322.6	324.7
Method 18 – TNMHC as CH4	ppm, dry	228.0	228.0	250.0	235.3
Method 7E – NOx as NO2	lb/hr	2.3	2.5	2.4	2.4
Method 10 – CO	lb/hr	2.4	2.4	2.4	2.4
Method 18 – TNMHC as CH4	lb/hr	0.97	0.97	1.06	1.00
Method 3A – O2	%	5.8	5.7	5.8	5.8
Method 3 – CO2	%	12.6	12.8	12.9	12.8
Method 2 – Flow	dscfm	1701	1709	1705	1705
Method 4 – Moisture	%	10.6	13.4	12.9	12.3
Landfill Gas – H2S	ppm	57.0	65.0	62.0	61.3
		ET-29 – Emission Pt. 007 – 75% Load – October 7, 1992			
Method/Component	Units	Run 4	Run 5	Run 6	Avg
Method 5 – TSP	mg	2.5	1.6	2.2	2.1
Method 5 – TSP	lb/hr	0.01	0.01	0.01	0.01
Method 7E – NOx	ppm, dry	147.1	99.9	107.2	118.1
Method 10 – CO	ppm, dry	353.1	338.0	338.8	343.3
Method 18 – TNMHC as CH4	ppm, dry	126.0	60.0	30.0	72.0
Method 7E – NOx as NO2	lb/hr	1.6	1.1	1.1	1.3
Method 10 – CO	lb/hr	2.3	2.2	2.2	2.2
Method 18 – TNMHC as CH4	lb/hr	0.47	0.23	0.11	0.27
Method 3A – O2	%	4.5	4.8	4.7	4.7
Method 3 – CO2	%	13.5	13.7	13.9	13.7
Method 2 – Flow	dscfm	1509	1514	1462	1495
Method 4 – Moisture	%	13.7	13.5	14.0	13.7
Landfill Gas – H2S	ppm	54.0	54.0	45.0	51.0

3.3.5 Fuel Analysis Summary of Results

Triplicate samples of LFG fuel were collected during the compliance tests for H_2S analysis by GC. The results showed an average H_2S content of 61.3 parts per million by volume (ppmv). The H_2S content of the fuel is not subject to any limitations.

3.4 ET-29 - 75% Load

3.4.1 Total Suspended Particulate Summary of Results

Three Method 5 tests were performed on October 7, 1992 while the engine was at 75% of full load. The results are shown on Table 3-2. The average TSP emission rate was 0.01 lb/hr which was below the particulate matter emission rate limit of 0.50 lb/hr.

3.4.2 Oxides of Nitrogen Summary of Results

Triplicate one hour Method 7E tests were conducted in conjunction with the TSP tests. The results (Table 3-2) show an average NO_x (as NO_2) emission rate of 1.3 lb/hr which is below the allowable emission rate of 2.8 lb/hr.

3.4.3 Carbon Monoxide Summary of Results

Triplicate one hour Method 10 tests were conducted simultaneously with the other compliance tests. The average CO emission rate was shown to be 2.2 lb/hr which is below the allowable 4.1 lb/hr limit.

3.4.4 Total Non Methane Hydrocarbons Summary of Results

Triplicate integrated one hour Method 18 bag samples were collected for TNMHC analyses by GC/FID. The results show an average TNMHC emission rate of 0.27 lb/hr which is above the emission limitation of 0.04 lb/hr.

3.4.5 Fuel Analysis Summary of Results

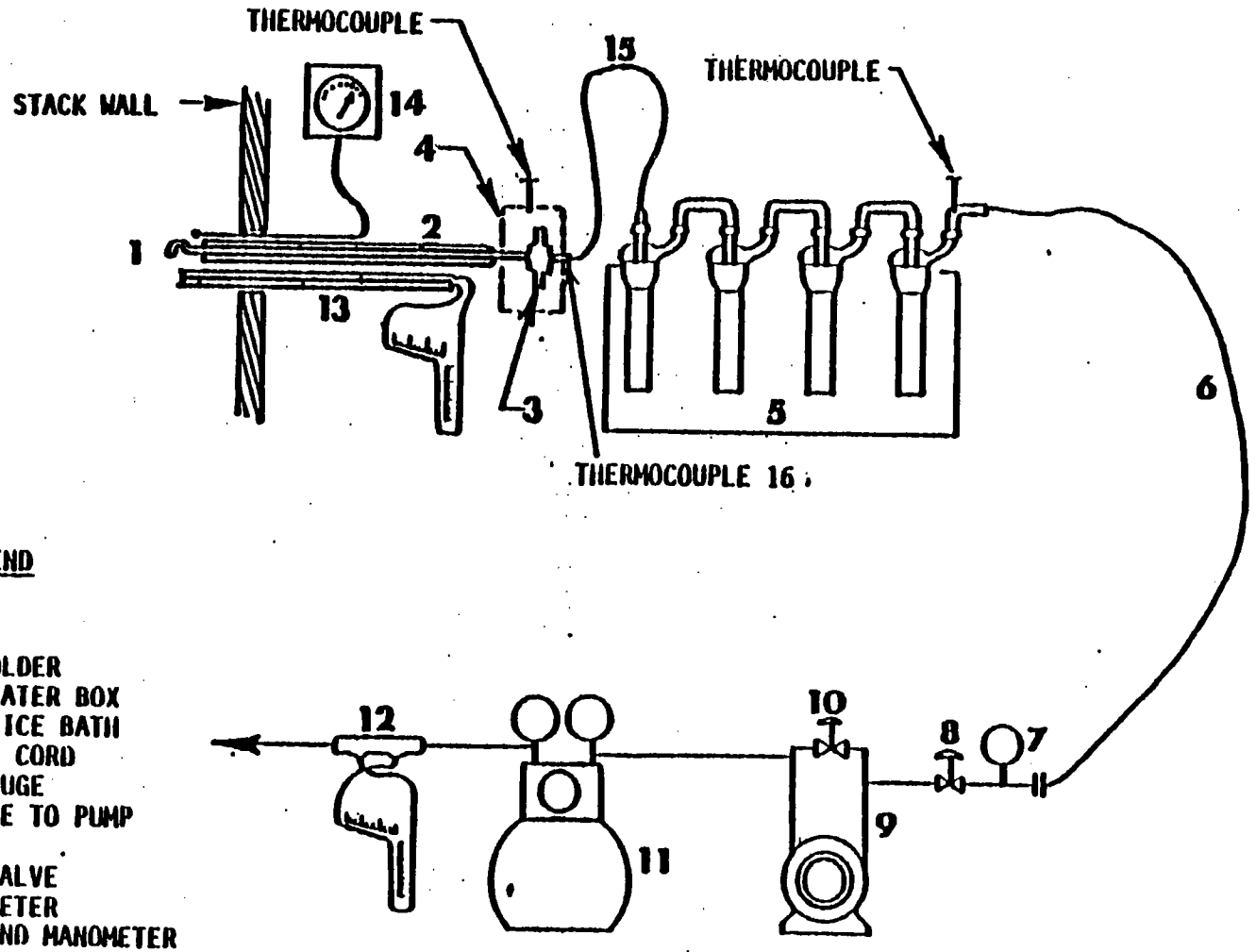
Triplicate samples of LFG fuel were collected during the compliance tests for H_2S analysis by GC. The results showed an average H_2S content of 51.0 ppmv. The H_2S content of the fuel is not subject to any limitations.

4.0 SAMPLING AND ANALYTICAL PROCEDURES

4.1 Particulate Matter Tests

Particulate matter sampling was accomplished using the EPA Method 5 collection train, described in the Code of Federal Regulations, Title 40, Part 60. It is shown schematically in Figure 4-1 and consisted of a nozzle, probe, filter, a flexible umbilical line, Teflon sample line, four impingers, vacuum pump, dry gas meter, and an orifice flowmeter. Complete sampling train calibrations were performed before and after the compliance test program.

A nozzle (1) was attached to a stainless steel probe (2). Pallflex 2500 fiberglass filter paper supported in a 4 inch glass filter holder (3) was used as the collection media. The filter assembly was enclosed in a heated box (4) to maintain temperatures at $248^{o}F \pm 25^{o}F$. An ice bath containing four impingers (5) was attached to the back end of the filter via a Teflon sample line. The first two impingers contained distilled water, the third was dry, and the fourth contained silica gel to remove any remaining moisture. Flexible tubing (6), vacuum gauge (7), needle valve (8), leakless vacuum pump (9), bypass valve (10), dry gas meter (11), calibrated orifice and inclined manometer (12) completed the sampling train. The stack velocity pressure was measured using a pitot tube and inclined manometer (13). The stack temperature was monitored by a thermocouple that was attached to the pitot and connected to a potentiometer (14). A check valve was not used in the ROJAC sampling train.



LEGEND

1 - NOZZLE
2 - PROBE
3 - FILTER HOLDER
4 - FILTER HEATER BOX
5 - IMPINGER ICE BATH
6 - UMBILICAL CORD
7 - VACUUM GAUGE
8 - MAIN VALVE TO PUMP
9 - PUMP
10 - BY-PASS VALVE
11 - DRY GAS METER
12 - ORIFICE AND MANOMETER
13 - PITOT TUBE AND MANOMETER
14 - STACK TEMPERATURE READOUT
15 - FLEXIBLE TUBING
16 - THERMOCOUPLE

FIGURE 4-1

Modified EPA Method 5 Particulate Sampling Train

A nomograph was used to quickly determine the orifice pressure drop required for any pitot velocity pressure and stack temperature to maintain isokinetic sampling conditions. Sampling flow was adjusted by means of the bypass valve. Before and after each particulate matter test run the sampling train was leak checked.

All recorded test data can be found on the field data sheets contained in the Appendix. At the end of each test, three sample containers were used as follows:

Container 1 - Filter.

Container 2 - Acetone wash of probe and front half of filter. The probe and nozzles were washed and brushed three times.

Container 3 - Silica gel from the fourth impinger.

The samples were transported to the laboratory and the following analyses performed:

Container 1 - Transferred filter and any loose particulate matter from the sample container to a tared glass weighing dish, desiccated and dried to constant weight. Reported results to the nearest 0.1 mg.

Container 2 - Transferred the acetone washings to a tared beaker and evaporated to dryness at ambient temperature and pressure. Desiccated and dried to a constant weight. Reported results to the nearest 0.1 mg.

Container 3 - Weighed silica gel to the nearest 0.5 g. The weight of the moisture entrapped in the silica gel, along with the volume of moisture which condensed in the impingers, was used to calculate the moisture content of the flue gas.

Prior to testing, a preliminary velocity traverse, covering all sampling points, was performed to check for cyclonic flow. The pitot-nulling technique was used to determine whether cyclonic flow was present, as detailed in EPA Methods 1 and 2.

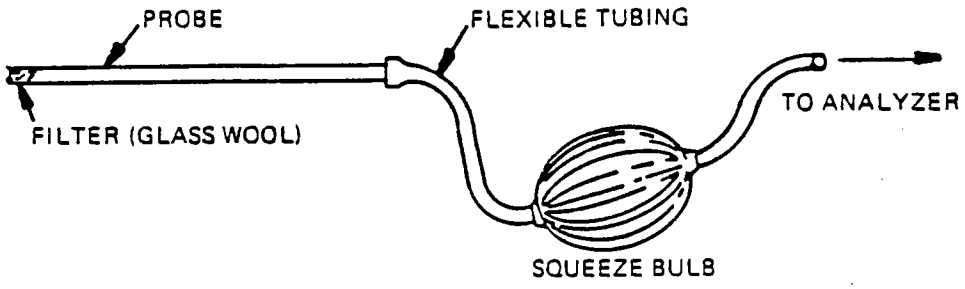
A computer program developed by ROJAC was used to calculate mass emission rates in pounds per hour (lb/hr) based on the measured flowrates in dry standard cubic feet per minute (dscfm). The program also calculated percent moisture, molecular weight of the stack gas at stack conditions, and the percent isokinetics (Appendix).

4.2 Gas Analysis

The composition of the gas stream at the sampling location was analyzed for oxygen and carbon dioxide during each test run in accordance with CFR, Title 40, Part 60, Appendix A, Method 3. To make accurate assessment of the flue gas composition, redundant Orsat analyses were conducted. During each particulate matter test run one multi-point integrated sample of flue gas was taken for Orsat analyses. The integrated gas sampling train used for Method 3 is shown in Figure 4-2.

4.3 Continuous Emission Monitoring

ROJAC conducted exhaust flue gas measurements for O_2, NO_x, and CO using EPA Reference Methods 3A, 7E, and 10, respectively. Sample gas was drawn through a stainless steel probe, through a filter, a heated Teflon sample line, and a refrigerator type condenser by a Teflon lined diaphragm vacuum pump.



GRAB SAMPLE SETUP FOR MOLECULAR WEIGHT DETERMINATION

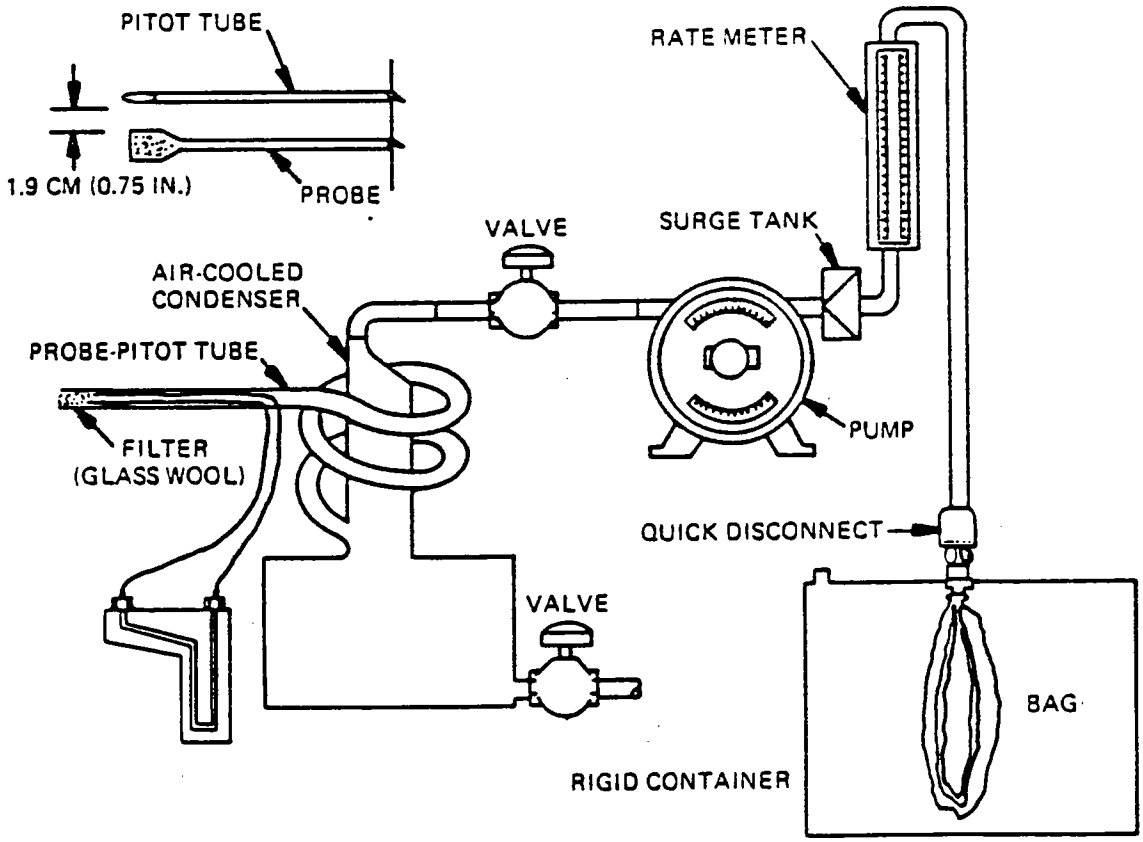


FIGURE 4-2

EPA Method 3 Exhaust Gas Measurement Sampling Train

From the pump the sample was sent into a manifold to which the analyzers were attached. Figure 4-3 shows a schematic diagram of the CEM sampling system.

Analyzer outputs were recorded by a data acquisition system (DAS) at 30 second intervals. Triplicate one hour test runs were conducted.

The O_2 instrument was a Servomex Model 1420 analyzer which measures O_2 concentration by means of the paramagnetic susceptibility of the sample gas using a proven magneto-type measuring cell. Oxygen molecules are attracted more strongly by the magnetic field than are molecules of other gases and their concentrations can thereby be measured.

The NO_x instrument was a Beckman Model 951 NO/NO_x analyzer. This analyzer utilizes the principle of chemiluminescence, whereby NO in the sample gas reacts with ozone at a specific wavelength. The intensity of this light is proportional to the NO concentration.

The CO instrument was an Horiba Model PIR-2000 analyzer. This analyzer measures CO concentration by means of non-dispersive infrared radiation (NDIR). The infrared radiation is produced by the analyzer and is, in turn, absorbed by the continuous flow of sample gas through the analyzer. The percentage of infrared radiation thus absorbed is proportional to the concentration of CO in the gas stream.

Certified EPA Protocol 1 compressed gas mixtures of NO, CO, and O_2, supplied by Scott Specialty Gases and Matheson Gas Products, were used as the calibration standards. The high range CO calibration gas was non-protocol, as allowed by EPA Method 10. High purity zero grade air served as the zero gas and high-level (21.0%) O_2 calibration gas.

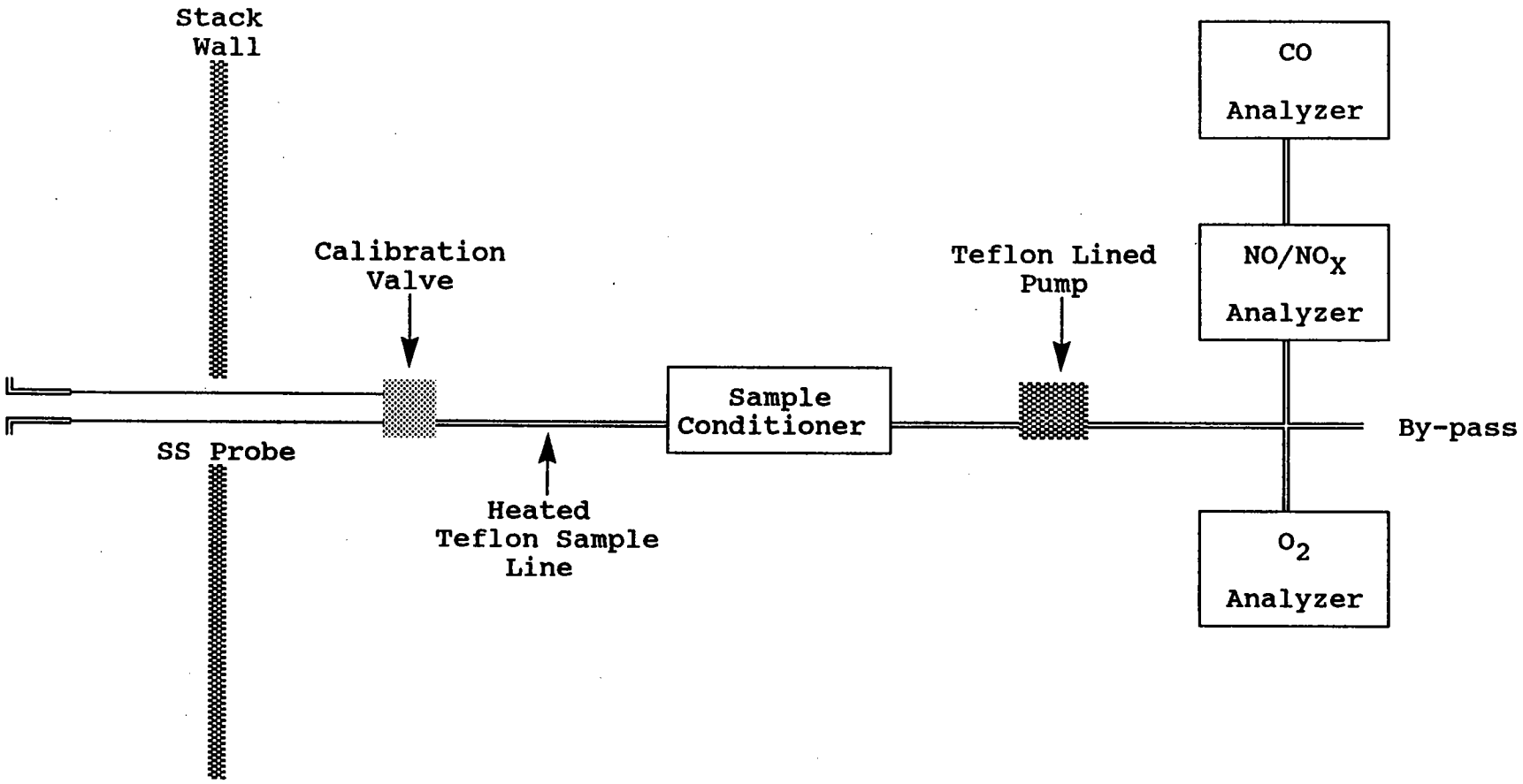


FIGURE 4-3

EPA Methods 3A, 7E, and 10
Continuous Emission Monitoring Sampling System

A full range calibration and linearity check was performed on each analyzer at the beginning of each test day. In addition, each analyzer was zeroed and spanned before and after each test run. These multi-point and single-point calibrations were performed with the above-mentioned calibration standards and zero gas. The span and zero gases passed through all components of the sampling train except the sampling probe.

The gas mixtures were chosen in accordance with the appropriate methodologies as outlined in CFR Title 40, Part 60, Appendix A. Copies of the EPA Protocol 1 Certifications are contained in the Appendix.

The zero and span calibrations were performed to document any instrument drift. CEM readings were recorded at 30 second intervals by the DAS during the entire test program. Using Equation 6C-1, the readings were corrected to account for the zero and span values and any instrument drift as follows:

$$C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o},$$

where C_{gas} = emissions concentration (ppm or %)

$\bar{C}$ = average emissions reading (ppm or %)

C_o = average zero reading (ppm or %)

C_m = average span reading (ppm or %)

C_{ma} = span gas concentration (ppm or %).

4.4 Total Non-Methane Hydrocarbons Tests

TNMHC determinations were made in accordance with EPA Reference Method 18. Collected samples were analyzed for all detectable organic compounds, with the exception of methane (CH_4), by GC/FID. Extreme care was taken during both the sampling and analytical portions of this phase of the testing. Strict QA/QC procedures were followed to produce the most accurate and reliable results possible.

Integrated samples were collected in conjunction with the EPA Method 5 tests. A short non-heated Teflon sample line conveyed the exhaust gas to a Tedlar bag. Sampling during each test run was conducted over a minimum 45 minute period. The approximate sample volume was 28 liters (1 cubic foot) per bag.

The bags were filled at a constant rate of approximately 0.6 liters per minute (lpm) by placing them inside a rigid container and evacuating the air within the container. The Teflon sample line passed through the wall of the rigid container and connected to the sample bag, creating a vacuum seal. The resulting vacuum served to inflate the bag with the extracted flue gas sample. In this manner, sample integrity was assured. Each sample line/bag pair was filled, purged, and filled again to condition the sampling train and minimize any wall absorption effects. Figure 4-4 shows a schematic of the "bag-in-the-box" setup.

At the end of the field test program, the bag samples were rushed to the laboratory and analyzed within 24 hours. The analysis method for TNMHC concentration was by GC/FID.

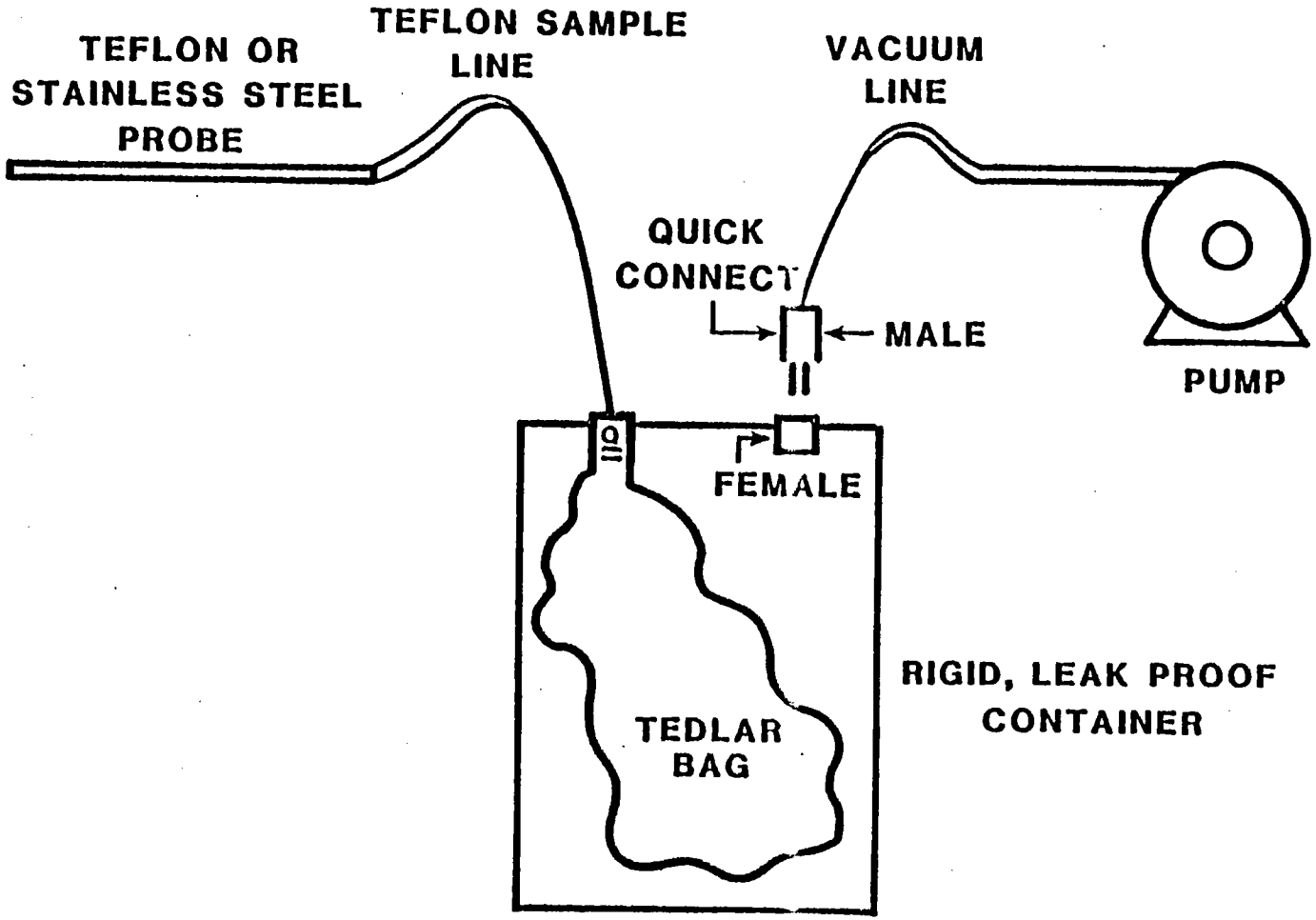


FIGURE 4-4

EPA Method 18 Sampling Train

GC conditions, such as column type, carrier flowrate, temperature, and injected sample volume were carefully determined to maximize peak resolution and separation. Calibration standards were prepared in advance according to the Method 18 protocol. Three standards for high, low, and middle concentration ranges were prepared to encompass the expected stack gas concentration of each compound. Each bag sample was analyzed in duplicate.

The low end of the analytical range of this method of analysis is one (1) ppm. The precision of duplicate analyses is within 5% of their mean value, and the accuracy is within 10% of expected values.

4.5 Fuel Analysis

In addition to the triplicate bag samples collected at the outlet during each phase of testing, samples of LFG were also collected during each test run. These LFG samples were analyzed for H_2S content by GC using a "Hall" detector. The results were reported in ppm by volume. All laboratory analysis reports are contained in the Appendix.

5.0 QA/QC ACTIVITIES

ROJAC maintains specific laboratory facilities dedicated to maintenance and calibration of source sampling equipment used in performing EPA reference method source tests. These facilities include all equipment and standards necessary for equipment calibration using the procedures outlined in the Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods, (EPA 600/4-77-027b).

The checkout and calibration of the source sampling equipment was performed prior to and at the completion of the project. Referenced calibration procedures were strictly followed and the results properly documented and retained. The following calibrated equipment was used during the test program.

* Type-S Pitot Tubes
* Sampling Nozzles
* Type-K Thermocouples
* Dry Gas Meters

Calculations for determining flow rates, moisture contents, isokinetics, particulate and gaseous concentrations were made using a computer program developed by the QA/QC Manager at ROJAC. This program utilizes the calculation procedures and equations specified in EPA Methods 2, 4, and 5. The program has been successfully used for numerous test efforts and has been validated by independent performance audits.

Data were input to the software directly from the field data sheets. Sample calculations were performed by the spreadsheet programs, and all information is contained in the Appendix.

Quality control for the various organic and inorganic analytical procedures was established using field blanks, method blanks, trip blanks, surrogate spiking, and internal standards for quantification. Any specific occurrences encountered during sample analysis are provided in the Appendix.

Sample analysis of TNMHC for this particular test program was conducted by Atlantic Analytical Laboratory, Inc. (AAL), located in Whitehouse, New Jersey. AAL was chosen because of their extensive knowledge of the methodology involved, and their strict adherence to recognized QA/QC procedures.

Sample custody procedures for this program were based on EPA recommended procedures. The project manager was responsible for ensuring that proper custody and documentation procedures were followed for the field sampling and field analytical efforts. The project manager was assisted in this effort by key sampling personnel involved in sample recovery.

All sampling data, including information regarding sampling times, locations, and any specific considerations associated with sample acquisition were recorded in black ink on pre-formatted data sheets which can be found in the Appendix.

Following sample collection, all samples were given a unique alphanumeric sample identification code. Sample labels and integrity seals were completed and affixed to the sample container. Samples were stored in a secure area until shipment. The sample volumes were measured and recorded, and the liquid levels on each bottle were marked. All samples were packed and shipped according to Department of Transportation (DOT) guidelines. As the samples were packed for shipment to the appropriate laboratories, chain-of-custody forms were completed for each shipment box, and enclosed therein.

APPENDIX A

Test Results and Calculations

EPA METHODS 2, 3, 4, AND 5

CLIENT: ET/OCEANSIDE
PROJ. NO.: D92-09
LOCATION: OUTLET - 100% LOAD

RUN NO.:	M5-1	M5-2	M5-3	AVERAGE
DATE:	10/06/92	10/06/92	10/06/92	
TIME:	1015-1125	1212-1323	1353-1502	
PBAR, (in. Hg)	30.36	30.36	30.36	30.36
STACK AREA, (Sq. Ft.)	0.55	0.55	0.55	0.55
NOZZLE DIA., (in.)	0.188	0.188	0.188	0.188
TOTAL TIME, (minutes)	64	64	64	64
CALIBRATION FACTOR	1.0014	1.0014	1.0014	1.0014
PITOT COEFFICIENT	0.84	0.84	0.84	0.84
SQ.RT.DELTA P, (in. H2O)	1.61	1.66	1.65	1.64
DELTA H, (in. H2O)	1.32	1.28	1.18	1.26
METER TEMP., (Degree F)	82	82	88	84
STATIC PRESS., (in. H2O)	0.96	0.97	1.00	0.98
STACK TEMP., (Degree F)	855	855	854	855
METER VOLUME, (cu.ft.)	40.17	40.01	38.76	39.65
TOTAL H2O VAPOR, (ml)	100.7	130.3	119.3	116.8
CO2 IN STACK GAS, (%)	12.6	12.8	12.9	12.8
O2 IN STACK GAS, (%)	6.4	6.0	6.1	6.2
CO IN STACK GAS, (%)	0.0	0.0	0.0	0.0
N2 IN STACK GAS, (%)	81.0	81.2	81.0	81.1
TOTAL PART. CATCH, (mg)	6.3	5.0	3.5	4.9
HYDROGEN IN FUEL, (%)				0.0
CARBON IN FUEL, (%)				0.0
SULFUR IN FUEL, (%)				0.0
NITROGEN IN FUEL, (%)				0.0
OXYGEN IN FUEL, (%)				0.0
GCV, (BTU/lb)				0.0
METER VOL. STD, (cu.ft.)	39.89	39.73	38.06	39.22
H2O IN STACK GAS, (%)	10.62	13.37	12.86	12.28
STACK GAS MOLECULAR WT	28.97	28.64	28.73	28.78
EXCESS AIR, (%)	42.7	38.9	39.9	40.5
STACK GAS VEL., (FPM)	8472.58	8784.85	8703.87	8653.77
GAS FLOWRATE, (ACFM)	4660	4832	4787	4760
STP FLOWRATE, (DSCFM)	1701	1709	1705	1705
ISOKINETIC, (%)	104.6	103.7	99.6	102.6
PART. CONC., (GR/ACF)	8.8953E-04	6.8699E-04	5.0542E-04	6.9398E-04
PART. CONC., (GR/DSCF)	2.4371E-03	1.9419E-03	1.4191E-03	1.9327E-03
EMISSION RATE, (lb/hr)	0.04	0.03	0.02	0.03
CONC., (GR/DSCF@12%CO2)	2.3210E-03	1.8205E-03	1.3200E-03	1.8205E-03
F-FACTOR, (DSCF/MMBTU)	ERR	ERR	ERR	ERR
EMISSIONS, (lb/MMBTU)	ERR	ERR	ERR	ERR

EPA METHODS 2, 3, 4, AND 5

CLIENT: ET/OCEANSIDE
PROJ. NO.: D92-09
LOCATION: OUTLET - 75% LOAD

RUN NO.:	M5-4	M5-5	M5-6	AVERAGE
DATE:	10/07/92	10/07/92	10/07/92	
TIME:	0928-1037	1112-1221	1258-1406	
PBAR, (in. Hg)	30.30	30.30	30.30	30.30
STACK AREA, (Sq. Ft.)	0.55	0.55	0.55	0.55
NOZZLE DIA., (in.)	0.250	0.250	0.250	0.250
TOTAL TIME, (minutes)	64	64	64	64
CALIBRATION FACTOR	1.0014	1.0014	1.0014	1.0014
PITOT COEFFICIENT	0.84	0.84	0.84	0.84
SQ.RT.DELTA P, (in. H2O)	1.49	1.50	1.45	1.48
DELTA H, (in. H2O)	2.92	3.00	2.79	2.90
METER TEMP., (Degree F)	84	91	90	88
STATIC PRESS., (in. H2O)	0.90	0.92	0.90	0.91
STACK TEMP., (Degree F)	884	900	894	893
METER VOLUME, (cu.ft.)	56.68	58.37	56.85	57.30
TOTAL H2O VAPOR, (ml)	189.6	189.1	192.1	190.3
CO2 IN STACK GAS, (%)	13.5	13.7	13.9	13.7
O2 IN STACK GAS, (%)	5.1	4.9	4.9	5.0
CO IN STACK GAS, (%)	0.0	0.0	0.0	0.0
N2 IN STACK GAS, (%)	81.4	81.4	81.2	81.3
TOTAL PART. CATCH, (mg)	2.5	1.6	2.2	2.1
HYDROGEN IN FUEL, (%)				0.0
CARBON IN FUEL, (%)				0.0
SULFUR IN FUEL, (%)				0.0
NITROGEN IN FUEL, (%)				0.0
OXYGEN IN FUEL, (%)				0.0
GCV, (BTU/lb)				0.0
METER VOL. STD, (cu.ft.)	56.18	57.13	55.72	56.35
H2O IN STACK GAS, (%)	13.71	13.48	13.96	13.72
STACK GAS MOLECULAR WT	28.67	28.72	28.69	28.69
EXCESS AIR, (%)	31.1	29.5	29.6	30.1
STACK GAS VEL., (FPM)	7975.19	8076.29	7803.72	7951.73
GAS FLOWRATE, (ACFM)	4386	4442	4292	4373
STP FLOWRATE, (DSCFM)	1509	1514	1462	1495
ISOKINETIC, (%)	93.9	95.2	96.2	95.1
PART. CONC., (GR/ACF)	2.3623E-04	1.4732E-04	2.0744E-04	1.9700E-04
PART. CONC., (GR/DSCF)	6.8658E-04	4.3212E-04	6.0921E-04	5.7597E-04
EMISSION RATE, (lb/hr)	0.01	0.01	0.01	0.01
CONC., (GR/DSCF@12%CO2)	6.1030E-04	3.7850E-04	5.2594E-04	5.0491E-04
F-FACTOR, (DSCF/MMBTU)	ERR	ERR	ERR	ERR
EMISSIONS, (lb/MMBTU)	ERR	ERR	ERR	ERR

CLIENT: ET/OCEANSIDE
LOCATION: OUTLET - 100% LOAD
PROJ. NO: D92-09
DATE: 10/06/92

EMISSION CALCULATION SYMBOLS

INPUTS

P bar	=	30.36	-Barometric pressure, "Hg
As	=	0.55	-Cross sectional area of duct, square feet
Dn	=	0.188	-Nozzle Diameter, inches
T tot	=	64	-Total sampling time, minutes
Y	=	1.0014	-Dry gas meter calibration factor
Cp	=	0.84	-Pitot tube coefficient, dimensionless
DP avg	=	1.6100	-Average square root of velocity head, sqrt(" H2O)
DH avg	=	1.32	-Average orifice pressure drop, "H2O
Tm avg	=	82	-Average dry gas meter temperature, degrees F
Ps avg	=	0.96	-Average duct static pressure, "H2O
Ts avg	=	855	-Average Stack Temperature, degrees F
Vm tot	=	40.167	-Total meter sample volume, cubic feet
Vi+Vsg	=	100.7	-Total volume of liquid collected
% CO2	=	12.6	-Percent CO2 by volume (dry basis), %
% O2	=	6.4	-Percent O2 by volume (dry basis), %
% CO	=	0.0	-Percent CO by volume (dry basis), %
% N2	=	81.0	-Percent N2 by volume (dry basis), %
Mn	=	6.3	-Total particulate collected, mg

Fuel Input

%H	=		-Percent by weight of hydrogen in fuel
%C	=		-Percent by weight of carbon in fuel
%S	=		-Percent by weight of sulfur in fuel
%N	=		-Percent by weight of nitrogen in fuel
%O	=		-Percent by weight of oxygen in fuel
GCV	=		-Gross calorific value of fuel, BTU/lb
Tstd	=	68	-Standard Temperature, degrees F
Pstd	=	29.92	-Standard Pressure, "Hg
Lp	=		-Final Leak Rate of Sampling Train, cfm

1. Volume of Sample Measured By Dry Gas Meter, Corrected to Standard Conditions (Vm std)

$$= Vm\ total \times Y \times \frac{(Tstd + 460)}{Tm\ avg + 460} \times \frac{Pbar + (DH\ avg/13.6)}{Pstd}$$

$$= 40.167 \times 1.001 \times \frac{68 + 460}{82 + 460} \times \frac{30.36 + 1.32/13.6}{29.92}$$

Vm std = 39.89 dscf

2. Moisture Content of Duct Gas (%H2O)

$$= \frac{0.04707 \times (Vi + Vsg)}{Vm\ std + 0.04707 \times (Vi + Vsg)}$$

$$= \frac{0.04707 \times 100.7}{39.8876 + 0.04707 \times 100.7}$$

% H2O = 10.62 % BY VOLUME wet

3. Molecular Weight of Stack Gas (MW)

$$= \{(0.44 \times \%CO2) + (0.28 \times \%CO) + (0.28 \times \%N2) + (0.32 \times \%O2)\} \times \{1 - \frac{\%H2O}{100}\} + (0.18)\ (\%\ H2O)$$

$$= \{(0.44 \times 12.6) + (0.28 \times 0) + (0.28 \times 81) + (0.32 \times 6.4)\} \times (1 - \frac{10.62}{100}) + (0.18 \times 10.62)$$

MW = 28.97 lb/lb-mole

4. Average Duct Gas Density (Dst)

$$= 0.0458 \times MW \left\{ \frac{Pbar + Ps\ avg/13.6}{Ts\ avg + 460} \right\}$$

$$= 0.0458 \times MW \times \left\{ \frac{30.36 + 0.96/13.6}{855 + 460} \right\}$$

Dst = 0.0307 lbs / cubic feet

5. Excess Air (EA)

$$= 100 \times \left\{ \frac{\%O2 - (0.5 \times \%CO)}{0.264 \times \%N2 - (\%O2 - (0.5 \times \%CO))} \right\}$$

$$= 100 \times \left\{ \frac{6.4 - (0.5 \times 0)}{0.264 \times 81 - (6.4 - (0.5 \times 0))} \right\}$$

EA = 42.71 %

6. Average Duct Velocity (Vs)

$$= 5129.4 \times Cp \times DP\ avg \times SQRT \left\{ \frac{Ts\ avg + 460}{(P\ bar + Ps\ avg/13.6) \times MW} \right\}$$

$$= 5129.4 \times 0.84 \times 1.61 \times SQRT \left\{ \frac{855 + 460}{(30.36 + 0.96/13.6) \times 28.96} \right\}$$

Vs = 8472.6 ft/min

7. Duct Volumetric Flow Rate, (Q)

$$= Vs \times As$$

$$= 8472.58 \times 0.55$$

Vs = 4660 acfm

8. Duct Volumetric Flow Rate, Corrected to Dry Standard Conditions (Qstd)

$$= Q \times \left(1 - \frac{\%\ H2O}{100}\right) \times \left(\frac{Tstd + 460}{Ts\ avg + 460}\right) \times \left(\frac{P\ bar + Ps\ avg/13.6}{P\ std}\right)$$

$$= 4659.92 \times \left(1 - \frac{10.62}{100}\right) \times \left(\frac{68 + 460}{Ts\ avg + 460}\right) \times \left(\frac{30.36 + 0.96/13.6}{29.92}\right)$$

Qstd = 1701 dscfm

9. Isokinetic Factor

$$= \frac{5.67 \times (Ts\ avg + 460) \times Vm\ std}{\left(P\ bar + \frac{Ps\ avg}{13.6}\right) \times Vs \times T\ tot \times \left(1 - \frac{\%H2O}{100}\right) \times \left(\frac{Dn\ '2 \times 0.7854}{144}\right)}$$

$$= \frac{5.67 \times (855 + 460) \times 39.88}{\left(30.36 + \frac{0.96}{13.6}\right) \times 4659.9 \times 64 \times \left(1 - \frac{10.62}{100}\right) \times \left(\frac{0.035 \times 0.7854}{144}\right)}$$

I = 104.6 %

10. Actual Particulate Concentration, (C)

$$= \frac{0.01543 \times Mn \times (Tstd + 460) \times (P\ bar + Ps\ avg/13.6) \times (1 - (\%\ H2O\ /100)}{Vm\ std \times (Ts\ avg + 460) \times P\ std}$$

$$= \frac{0.01543 \times 6.3 \times (68 + 460) \times (30.36 + 0.96\ /13.6) \times (1 - (10.62\ /100)}{39.88 \times (855 + 460) \times 29.92}$$

C = 0.0009 grains/acf

11. Particulate Concentration, Corrected to Dry Standard Conditions, (Cs)

$$= 0.01543 \times \frac{Mn}{Vm\ std}$$

$$= 0.01543 \times \frac{6.3}{39.88}$$

Cs = 0.0024 gr/dscf

12. Particulate Emission Rate, (ER)

$$= 0.008571 \times Cs \times Qstd$$

$$= 0.008571 \times 0.002 \times 1700.8$$

ER = 0.036 lbs/hr

13. F - Factor (F)

$$= \frac{(1 \times 10'6) \times \{(3.64 \times \%H) + (1.53 \times \%C) + (0.57 \times \%S) + (0.14 \times \%N) - (0.46 \times \%O)}{GCV}$$

$$= \frac{(1 \times 10'6) \times \{(3.64 \times \quad) + (1.53 \times \quad) + (0.57 \times \quad) + (0.14 \times \quad) - (0.46 \times \quad)}{\quad}$$

F = ERR dscf/MM BTU

14. Particulate Emission, (E)

$$= 0.0001429 \times Cs \times F \times \left(\frac{20.9}{20.9 - \%O2}\right)$$

$$= 0.0001429 \times 0.002 \times ERR \times \left(\frac{20.9}{20.9 - 6.4}\right)$$

E = ERR lb/MM BTU

15. Particulate Concentration Corrected to Dry Standard Conditions and 12% CO2, (Cs @12%CO2)

$$= Cs \times \frac{12}{\%CO2}$$

$$= 0.002 \times \frac{12}{12.6}$$

Cs @12%CO2 = 0.0023 grains/dscf @ 12% CO2

16. Allowable Leak Rate, (La)

$$= 0.02 \text{ cfm or } 0.04 \times \frac{Vm\ tot}{T\ tot}$$

$$= 0.04 \times \frac{40.16}{64}$$

La = 0.02510 cfm

17. Correction for Excessive Leak Rate, (Vmc total)

if Lp > La use Vmc total in place of Vm total in all subsequent equations.

Lp - Final leak rate of sampling train, cfm

$$= Vm\ tot - (Lp - La) \times T\ tot$$

$$= 40.167 - (0 - 0.0251) \times 64$$

Vmc tot = 41.7736 cubic feet

PPM CONVERSIONS

CLIENT: ET/OCEANSIDE
LOCATION: OUTLET - 100% LOAD
PROJ. NO: D92-09
DATE: 10/06/92

	RUN NO.	PPM	MW	GM/DSCM	LB/DSCF	OXYGEN	CO2	DSCFM	LB/HR	LIMIT
NOx	M7E-1	191.7	46.00	3.670E-01	2.292E-05	5.8 %	12.6 %	1701	2.34	
(as NO2)	M7E-2	201.0	46.00	3.848E-01	2.403E-05	5.7 %	12.8 %	1709	2.46	
	M7E-3	195.8	46.00	3.748E-01	2.341E-05	5.8 %	12.9 %	1705	2.39	
	AVERAGE	196.2		3.755E-01	2.345E-05	5.8 %	12.8 %	1705	2.40	2.80
CO	M10-1	326.1	28.00	3.800E-01	2.373E-05	5.8 %	12.6 %	1701	2.42	
	M10-2	325.5	28.00	3.793E-01	2.369E-05	5.7 %	12.8 %	1709	2.43	
	M10-3	322.6	28.00	3.759E-01	2.347E-05	5.8 %	12.9 %	1705	2.40	
	AVERAGE	324.7		3.784E-01	2.363E-05	5.8 %	12.8 %	1705	2.42	4.10
TNMHC	M18-1	228.0	16.00	1.518E-01	9.481E-06	5.8 %	12.6 %	1701	0.97	
(as CH4)	M18-2	228.0	16.00	1.518E-01	9.481E-06	5.7 %	12.8 %	1709	0.97	
	M18-3	250.0	16.00	1.665E-01	1.040E-05	5.8 %	12.9 %	1705	1.06	
	AVERAGE	235.3		1.567E-01	9.785E-06	5.8 %	12.8 %	1705	1.00	0.04

PPM CONVERSIONS

CLIENT: ET/OCEANSIDE
LOCATION: OUTLET - 75% LOAD
PROJ. NO: D92-09
DATE: 10/07/92

	RUN NO.	PPM	MW	GM/DSCM	LB/DSCF	OXYGEN	CO2	DSCFM	LB/HR	LIMIT
NOx	M7E-4	147.1	46.00	2.816E-01	1.759E-05	4.5 %	13.5 %	1509	1.59	
(as NO2)	M7E-5	99.9	46.00	1.912E-01	1.194E-05	4.8 %	13.7 %	1514	1.08	
	M7E-6	107.2	46.00	2.052E-01	1.282E-05	4.7 %	13.9 %	1462	1.12	
	AVERAGE	118.1		2.260E-01	1.411E-05	4.7 %	13.7 %	1495	1.27	2.80
CO	M10-4	353.1	28.00	4.114E-01	2.569E-05	4.5 %	13.5 %	1509	2.33	
	M10-5	338.0	28.00	3.938E-01	2.460E-05	4.8 %	13.7 %	1514	2.23	
	M10-6	338.8	28.00	3.948E-01	2.465E-05	4.7 %	13.9 %	1462	2.16	
	AVERAGE	343.3		4.000E-01	2.498E-05	4.7 %	13.7 %	1495	2.24	4.10
TNMHC	M18-4	126.0	16.00	8.390E-02	5.239E-06	4.5 %	13.5 %	1509	0.47	
(as CH4)	M18-5	60.0	16.00	3.995E-02	2.495E-06	4.8 %	13.7 %	1514	0.23	
	M18-6	30.0	16.00	1.998E-02	1.247E-06	4.7 %	13.9 %	1462	0.11	
	AVERAGE	72.0		4.794E-02	2.994E-06	4.7 %	13.7 %	1495	0.27	0.04

EXAMPLE CALCULATIONS

PPM CONVERSIONS

CLIENT: ET/OCEANSIDE
LOCATION: OUTLET - 100% LOAD
PROJ. NO: D92-09
DATE: 10/06/92

	RUN NO.	PPM	MW	GM/DSCM	LB/DSCF	OXYGEN	CO2	DSCFM	LB/HR
OUTLET	M10-1	326.1	28.00	3.800E-01	2.373E-05	5.8 %	12.6 %	1701	2.42

$$\text{GM/DSCM} = \frac{\text{PPM} \times \text{MW}}{22.414\ \text{L/G-MOLE} \times 10\text{E-3}\ \text{M}^3\text{/L} \times (293.15\text{oK}/273.15\text{oK})} \times (1/1\text{E6 PPM}),$$

$$\text{GM/DSCM} = \frac{326.1 \times 28.0}{24.055\text{E-3}} \times (1/1\text{E6 PPM}) = 3.800\text{E-01 GM/DSCM}$$

$$\text{LB/DSCF} = \frac{\text{PPM} \times \text{MW} \times 2.205\text{E-3 LB/G}}{22.414\ \text{L/G-MOLE} \times 3.531\text{E-2 CF/L} \times (528.27\text{oR}/492.27\text{oR})} \times (1/1\text{E6 PPM}),$$

$$\text{LB/DSCF} = \frac{326.1 \times 28.0 \times 2.205\text{E-3 LB/G}}{0.8493} \times (1/1\text{E6 PPM}) = 2.373\text{E-05 LB/DSCF}$$

LB/HR = (LB/DSCF) x (DSCFM) x 60

LB/HR = 2.373E-05 x 1701 x 60 = 2.42 LB/HR

CONTINUED

WHERE GM/DSCM = GRAMS PER DRY STANDARD CUBIC METER
LB/DSCF = POUNDS PER DRY STANDARD CUBIC FOOT
PPM = PARTS PER MILLION
MW = MOLECULAR WEIGHT IN GRAMS PER GRAM-MOLE (G/G-MOLE) (CO = 28.0)
LB/G = POUNDS PER GRAM
L/G-MOLE = LITERS PER GRAM-MOLE
CF/L = CUBIC FEET PER LITER
oK = DEGREES KELVIN
oR = DEGREES RANKINE
LB/HR = POUNDS PER HOUR

EQUATION 6C-1 - POLLUTANT CONCENTRATION

CLIENT: ET/OCEANSIDE
LOCATION: STACK - NOx - 100% LOAD
PROJ. NO: D92-09
DATE: 10/06/92

RUN NUMBER	ANALYZER AVERAGE	ZERO RESPONSE INITIAL	ZERO RESPONSE FINAL	UPSCALE RESPONSE INITIAL	UPSCALE RESPONSE FINAL	AVERAGE ZERO	AVERAGE SPAN	SPAN GAS VALUE	EMISSION CONCENTRATION
M7E-1	190.2	0.9	1.3	240.1	239.5	1.1	239.8	242.0	191.7
M7E-2	202.7	1.3	3.1	239.5	247.6	2.2	243.6	242.0	201.0
M7E-3	198.2	3.1	4.6	247.6	240.5	3.9	244.1	242.0	195.8
AVERAGE	197.0	1.8	3.0	242.4	242.5	2.4	242.5	242.0	196.2

CLIENT: ET/OCEANSIDE
LOCATION: STACK - NOx - 75% LOAD
PROJ. NO: D92-09
DATE: 10/07/92

RUN NUMBER	ANALYZER AVERAGE	ZERO RESPONSE INITIAL	ZERO RESPONSE FINAL	UPSCALE RESPONSE INITIAL	UPSCALE RESPONSE FINAL	AVERAGE ZERO	AVERAGE SPAN	SPAN GAS VALUE	EMISSION CONCENTRATION
M7E-4	149.4	0.4	4.3	242.9	245.6	2.4	244.3	242.0	147.1
M7E-5	103.4	4.3	1.0	245.6	247.7	2.7	246.7	242.0	99.9
M7E-6	110.3	1.0	1.9	247.7	246.6	1.5	247.2	242.0	107.2
AVERAGE	121.0	1.9	2.4	245.4	246.6	2.2	246.0	242.0	118.1

EQUATION 6C-1 - POLLUTANT CONCENTRATION

CLIENT: ET/OCEANSIDE
LOCATION: STACK - O2 - 100% LOAD
PROJ. NO: D92-09
DATE: 10/06/92

RUN NUMBER	ANALYZER AVERAGE	ZERO RESPONSE INITIAL	ZERO RESPONSE FINAL	UPSCALE RESPONSE INITIAL	UPSCALE RESPONSE FINAL	AVERAGE ZERO	AVERAGE SPAN	SPAN GAS VALUE	EMISSION CONCENTRATION
M3A-1	5.9	0.0	0.1	16.2	16.3	0.1	16.3	16.1	5.8
M3A-2	5.8	0.1	0.1	16.3	16.3	0.1	16.3	16.1	5.7
M3A-3	5.9	0.1	0.0	16.3	16.2	0.1	16.3	16.1	5.8
AVERAGE	5.9	0.1	0.1	16.3	16.3	0.1	16.3	16.1	5.8

CLIENT: ET/OCEANSIDE
LOCATION: STACK - O2 - 75% LOAD
PROJ. NO: D92-09
DATE: 10/07/92

RUN NUMBER	ANALYZER AVERAGE	ZERO RESPONSE INITIAL	ZERO RESPONSE FINAL	UPSCALE RESPONSE INITIAL	UPSCALE RESPONSE FINAL	AVERAGE ZERO	AVERAGE SPAN	SPAN GAS VALUE	EMISSION CONCENTRATION
M3A-4	4.5	0.0	0.0	16.1	16.1	0.0	16.1	16.1	4.5
M3A-5	4.7	0.0	-0.1	16.1	16.0	-0.1	16.1	16.1	4.8
M3A-6	4.6	-0.1	-0.1	16.0	15.9	-0.1	16.0	16.1	4.7
AVERAGE	4.6	0.0	-0.1	16.1	16.0	-0.1	16.0	16.1	4.7

EQUATION 6C-1 - POLLUTANT CONCENTRATION

CLIENT: ET/OCEANSIDE
LOCATION: STACK - CO - 100% LOAD
PROJ. NO: D92-09
DATE: 10/06/92

RUN NUMBER	ANALYZER AVERAGE	ZERO RESPONSE INITIAL	ZERO RESPONSE FINAL	UPSCALE RESPONSE INITIAL	UPSCALE RESPONSE FINAL	AVERAGE ZERO	AVERAGE SPAN	SPAN GAS VALUE	EMISSION CONCENTRATION	PERCENT CO2	CO CORRECTED TO EQ10-1
M10-1	378.0	3.6	4.4	495.5	488.8	4.0	492.2	487.0	373.1	12.6	326.1
M10-2	375.5	4.4	1.5	488.8	489.3	3.0	489.1	487.0	373.2	12.8	325.5
M10-3	373.1	1.5	1.1	489.3	490.9	1.3	490.1	487.0	370.4	12.9	322.6
AVERAGE	375.5	3.2	2.3	491.2	489.7	2.8	490.4	487.0	372.3	12.8	324.7

CLIENT: ET/OCEANSIDE
LOCATION: STACK - CO - 75% LOAD
PROJ. NO: D92-09
DATE: 10/07/92

RUN NUMBER	ANALYZER AVERAGE	ZERO RESPONSE INITIAL	ZERO RESPONSE FINAL	UPSCALE RESPONSE INITIAL	UPSCALE RESPONSE FINAL	AVERAGE ZERO	AVERAGE SPAN	SPAN GAS VALUE	EMISSION CONCENTRATION	PERCENT CO2	CO CORRECTED TO EQ10-1
M10-4	414.2	2.2	-0.2	494.4	493.5	1.0	494.0	487.0	408.2	13.5	353.1
M10-5	397.8	-0.2	0.3	493.5	495.8	0.1	494.7	487.0	391.6	13.7	338.0
M10-6	400.7	0.3	1.0	495.8	495.7	0.7	495.8	487.0	393.5	13.9	338.8
AVERAGE	404.2	0.8	0.4	494.6	495.0	0.6	494.8	487.0	397.8	13.7	343.3

EXAMPLE CALCULATIONS

EQUATIONS 6C-1 AND 10-1 - EMISSIONS CONCENTRATIONS

CLIENT: ET/OCEANSIDE
LOCATION: STACK-CO - 100% LOAD
PROJ. NO: D92-09
DATE: 10/06/92

RUN NUMBER	ANALYZER AVERAGE	ZERO RESPONSE INITIAL	ZERO RESPONSE FINAL	SPAN RESPONSE INITIAL	SPAN RESPONSE FINAL	AVERAGE ZERO	AVERAGE SPAN	SPAN GAS VALUE	EMISSION CONCENTRATION	PERCENT CO2	CO CORRECTED TO EQ 10-1
M10-1	378.0	3.6	4.4	495.5	488.8	4.0	492.2	487.0	373.1 ppm	12.6	326.1 ppm

EQUATION 6C-1: $Cgas = (\bar{C} - Co) \times \frac{(Cma)}{(Cm - Co)}$ WHERE

$\bar{C}$ = ANALYZER RUN AVERAGE
Co = AVERAGE ZERO RESPONSE
Cm = AVERAGE SPAN RESPONSE
Cma = UPSCALE SPAN GAS CONCENTRATION
Cgas = EMISSION CONCENTRATION

$$Cgas = (378.0 - 4.0) \times \frac{(487.0)}{(492.2) - (4.0)} = 373.1 \text{ ppm}$$

EQUATION 10-1 = ppm x (1 - (%CO2/100)) = 373.1 ppm x (1 - (12.6 / 100) = 326.1 ppm

APPENDIX B

Field Data Sheets

EPA METHOD 2

VELOCITY TRAVERSE AND FLOWRATE DETERMINATION

PLANT Energy Tactics

DATE 10-6 to 12

LOCATION Engine outlet 100 Load

STACK DIMENSIONS 10" AREA _____ ft^2

BAROMETRIC PRESSURE, Pb = 30.36 in. Hg

STATIC PRESSURE, Ps = ± _____ in. H_2O

STACK GAS MOLECULAR WEIGHT (Wet), M_s 28

STACK GAS MOISTURE CONTENT, % H_2O = 5

PITOT NO. _____ Cp = .84

TESTER _____

Page ___ Of ___

SCEMATIC OF TRAVERSE POINT LOCATION

+ 0 Clockwise

Cyclonic Flow Angle - 0 Clockwise

PORT	POINT	DELTA P Inch H_2O	$\sqrt{\text{DELTA P}}$ Inch H_2O	T_s (°F)	Cyclonic Flow Angle	Other	Other
1	1	2.58		840	10		
	2	2.59		864	11		
	3	2.43		855	9		
	4	2.30		850	14		
2	1	2.80		865	6		
	2	2.80		863	4		
	3	2.50		861	11		
	4	2.50		862	9		
	AVERAGE			T_s = °F	*		

* Avg. of absolute values including zeroes

Absolute Gas Temperature = T_s + 460°R

Absolute Gas Pressure, Pg = P_b + P_s/13.6 = _____

Gas Velocity, $V_s = (85.49)(C_p)\sqrt{(\text{DELTA P}_{avg})}\sqrt{\frac{Ts + 460}{P_g * M_s}}$ = _____ ft/sec

Actual Gas Flowrate, $Q_a = (V_s)(60)(A)$ = _____ ACFM

Standard Gas Flowrate, $Q_{std} = (Q_a) * \left(\frac{528°R}{T_s}\right) * \left(\frac{Pg}{29.92}\right) * \left(\frac{100 - \%H2O}{100}\right)$ = _____ DSCFM

EPA METHOD 2

VELOCITY TRAVERSE AND FLOWRATE DETERMINATION

PLANT Energy Tactics

DATE 10-7-92

LOCATION Outlet

STACK DIMENSIONS 10" AREA .55 ft^2

BAROMETRIC PRESSURE, Pb = 30.30 in. Hg

STATIC PRESSURE, Ps = ± _____ in. H_2O

STACK GAS MOLECULAR WEIGHT (Wet), M_s 28

STACK GAS MOISTURE CONTENT, % H_2O = 14

PITOT NO. _____ Cp = .84

TESTER JG/JO

Page ___ Of ___

75% LOAD

SCEMATIC OF TRAVERSE POINT LOCATION

+ D Clockwise

Cyclonic Flow Angle - D Clockwise

PORT	POINT	DELTA P Inch H_2O	$\sqrt{\text{DELTA P}}$ Inch H_2O	T_s (°F)	Cyclonic Flow Angle	Other	Other
1	1	2.0		860	10		
	2	2.1		893	11		
	3	1.9		892	10		
	4	1.6		865	13		
2	1	2.2		879	9		
	2	2.25		900	11		
	3	1.95		903	10		
	4	1.55		900	7		
	AVERAGE			T_s = °F	*		

* Avg. of absolute values including zeroes

Absolute Gas Temperature = T_s + 460°R

Absolute Gas Pressure, Pg = P_b + P_s/13.6 = _____

Gas Velocity, $V_s = (85.49)(C_p)\sqrt{(\text{DELTA P}_{avg})}\sqrt{\frac{Ts + 460}{P_g * M_s}}$ = _____ ft/sec

Actual Gas Flowrate, $Q_a = (V_s)(60)(A)$ = _____ ACFM

Standard Gas Flowrate, $Q_{std} = (Q_a) * \left(\frac{528°R}{T_s}\right) * \left(\frac{Ps}{29.92}\right) * \left(\frac{100 - \%H2O}{100}\right)$ = _____ DSCFM

EPA METHODS FIELD DATA SHEET

RUN NO. MS-1
PROJ. NO. 092-09
DATE 10-6-92
FIRM NAME Energy Tactics
PLANT LOC. Ocean Side, NY
TESTER JSG/JD

MODULE NO. 2827
DGM, Y 1.0014
MOD. ^H@ 1.79
PROBE I.D. 401
PITOT (Cp) .84
NOZ. DIA. .188
FILTER I.D. RAAT 146
TARE WT.

PITOT LEAK CHECK
INITIAL 0.00 @ 5"
FINAL

TRAIN LEAK CHECK
INITIAL 0.010 @ 8" Hg
FINAL 0.008 @ 6" Hg

STACK COND.
STATIC PRES. .96
DUCT DIM. 10"
DUCT AREA .55
%H2O 5
AMBIENT COND.
AMB. TEMP 45
BAR. PRES. 30.36

FULL LOAD

TRAV. PT	SAMPLE TIME (min)	CLOCK TIME (hours)	VEL. (^P)	ORIFICE H	DGM Tm in ^F	DGM Tm in ^F	STACK TEMP. Ts ^F	GAS SAMPLE VOLUME Vm CUBIC FEET	COND. OUTLET ^F	HEATER BOX ^F	PROBE TEMP. ^F	FILTER OUTLET ^F	PUMP VAC. In. Hg.	OTHER
	8 min	1015						226.620						
1		23	2.45	1.26	75	75	816	232.4	165	250	250	N/A	3	
2		31	2.77	1.39	85	77	862	236.7		260	255		3	
3		39	2.55	1.28	89	78	867	241.6		255	254		3	
4		47	2.73	1.38	87	79	866	246.6		271	255		3	
1		1101	2.80	1.41	81	79	858	251.8		266	255		3	
2		09	2.75	1.40	89	79	851	256.9		258	254		3	
3		17	2.40	1.21	91	81	866	262.0		265	255		3	
4		25	2.40	1.22	89	81	853	266.787		262	260		3	
	AVERAGE	^P ^P(1/2)	1.61	1.32	82		855	TOTAL 40,167						

PRE IMPINGERS TARE
POST IMPINGERS TARE
TOTAL IMP'S CONTENTS 88

PRE S.G. TARE
POST S.G. TARE 12.7
TOTAL S.G. CONTENTS 100.7

ORSAT BAG ANALYSIS

	1	2	3	AVERAGE
CO2	12.6	12.6	12.6	12.6
O2	6.4	6.4	6.4	6.4
CO	0	0	0	0
N2	81.0	81.0	81.0	81.0

REMARKS

1st 88

EPA METHODS FIELD DATA SHEET

RUN NO. M5-2
PROJ. NO. 092-09
DATE 10-6-92
FIRM NAME Energy Tactics
PLANT LOC. Ocean Side, NY
TESTER JSG/JD

MODULE NO. 2827
DGM, Y 1.0014
MOD. ^H@ 1.79
PROBE I.D. 401
PITOT (Cp) .84
NOZ. DIA. .188
FILTER I.D. RAT 147
TARE WT.

PITOT LEAK CHECK
INITIAL 0.00 @ 5"
FINAL
TRAIN LEAK CHECK
INITIAL 0.002 @ 6" Hg
FINAL 0.009 @ 6" Hg

STACK COND.
STATIC PRES. .97
DUCT DIM. 10"
DUCT AREA .55
%H2O 10
AMBIENT COND.
AMB. TEMP 60s
BAR. PRES. 30.36

FULL LOAD

TRAV. PT	SAMPLE TIME (min)	CLOCK TIME (hours)	VEL. (^P)	ORIFICE H	DGM Tm In ^F	DGM Tm In ^F	STACK TEMP. Ts ^F	GAS SAMPLE VOLUME Vm CUBIC FEET	COND. OUTLET ^F	HEATER BOX ^F	PROBE TEMP. ^F	FILTER OUTLET ^F	PUMP VAC. In. Hg.	OTHER
	8min	1213						267.400						
1		20	2.80	1.27	71	72	850	272.4	65	250	249	65	2	
2		28	2.75	1.27	83	74	848	277.2		254	255		2	
3		36	2.55	1.17	86	76	860	281.1		253	252		2	
4		44	2.40	1.11	89	76	860	286.9		262	255		3	
1		59	2.85	1.31	83	78	856	293.0		252	254		3	
2		1307	3.00	1.39	89	79	857	296.6		260	255		3	
3		15	3.00	1.41	92	81	847	302.5		249	254		3	
4		23	2.75	1.27	91	82	865	307.411					3	
	AVERAGE	^P						TOTAL						
		^P(1/2)	1.66	1.28	82		855	40.011						

PRE IMPINGERS TARE
POST IMPINGERS TARE
TOTAL IMP'S CONTENTS 120

PRE S.G. TARE
POST S.G. TARE 10.3
TOTAL S.G. CONTENTS 130.3

ORSAT BAG ANALYSIS

	1	2	3	AVERAGE
CO2	12.8	12.8	12.8	12.8
O2	6.0	6.0	6.0	6.0
CO	0	0	0	0
N2	81.2	81.2	81.2	81.2

REMARKS

1st 120

EPA METHODS FIELD DATA SHEET

RUN NO. M5-3
PROJ. NO. 092-09
DATE 10-6-92
FIRM NAME Energy Tactics
PLANT LOC. Ocean Side, NY
TESTER JDG/JD

MODULE NO. 2027
DGM, Y 1.0014
MOD. ^H@ 1.79
PROBE I.D. 401
PITOT (Cp) .84
NOZ. DIA. .188
FILTER I.D. RAAT 148
TARE WT.

PITOT LEAK CHECK
INITIAL
FINAL 0.00 @ 4" Hg
TRAIN LEAK CHECK
INITIAL 0.010 @ 5" Hg
FINAL 0.006 @ 6" Hg

STACK COND.
STATIC PRES. + 1.0
DUCT DIM. 10'
DUCT AREA .55
%H2O 15
AMBIENT COND.
AMB. TEMP 60s
BAR. PRES. 30.36

FULL LOAD

TRAV. PT	SAMPLE TIME (min)	CLOCK TIME (hours)	VEL. (^P)	ORIFICE H	DGM Tm In ^F	DGM Tm In ^F	STACK TEMP. Ts ^F	GAS SAMPLE VOLUME Vm CUBIC FEET	COND. OUTLET ^F	HEATER BOX ^F	PROBE TEMP. ^F	FILTER OUTLET ^F	PUMP VAC. In. Hg.	OTHER
	8 min	1353						308.350						
1		1401	2.50	1.07	86	80	859	312.9	165	250	249	165	2	
2		09	2.95	1.27	90	81	857	317.8		262	252		2	
3		17	2.45	1.07	93	83	847	322.7		265	254		3	
4		25	2.50	1.09	95	83	850	327.0		261	255		3	
1		38	2.80	1.21	89	82	849	332.1		259	254		3	
2		46	3.00	1.30	96	85	855	337.2		255	252		3	
3		54	2.90	1.26	98	87	857	342.3		253	253		3	
4		1502	2.65	1.15	99	87	850	347.111		255	253		3	
	AVERAGE	^P						TOTAL						
		^P(1/2)	1.6477	1.18	88		854	38.761						

PRE IMPINGERS TARE
POST IMPINGERS TARE
TOTAL IMP'S CONTENTS 110

PRE S.G. TARE
POST S.G. TARE 9.3
TOTAL S.G. CONTENTS 119.3

ORSAT BAG ANALYSIS

	1	2	3	AVERAGE
CO2	13.0	12.7	13.0	12.9
O2	6.0	6.2	6.0	6.0
CO	0	0	0	0
N2	81.0	81.1	81.0	81.0

REMARKS

110

EPA METHODS FIELD DATA SHEET

RUN NO. M5-4
PROJ. NO. 092-09
DATE 10-7-92
FIRM NAME Energy Tactics
PLANT LOC. Oceanside, NY
TESTER JSG/JD

MODULE NO. 2827
DGM, Y 1.0014
MOD. ^H@ 1.79
PROBE I.D. 401
PITOT (Cp) .84
NOZ. DIA. .250
FILTER I.D. RGHT 103
TARE WT.

PITOT LEAK CHECK
INITIAL 0 @ 4.5"
FINAL
TRAIN LEAK CHECK
INITIAL 0.010 @ @6" Hg
FINAL 0.006 @ 7" "

STACK COND.
STATIC PRES. .90
DUCT DIM. 10"
DUCT AREA .55
%H2O 14
AMBIENT COND.
AMB. TEMP 50s
BAR. PRES. 30.30

75% LOAD

TRAV. PT	SAMPLE TIME (min)	CLOCK TIME (hours)	VEL. (^P)	ORIFICE H	DGM Tm in ^F	DGM Tm in ^F	STACK TEMP. Ts ^F	GAS SAMPLE VOLUME Vm CUBIC FEET	COND. OUTLET ^F	HEATER BOX ^F	PROBE TEMP. ^F	FILTER OUTLET ^F	PUMP VAC. In. Hg.	OTHER
	8min	0928						347.852						
1		36	2.25	2.88	65	65	873	354.7	465	258	255	465	5	
2		44	2.30	2.96	79	68	888	361.8		265	256		5	
3		52	2.15	2.78	89	71	895	368.6		261	255		5	
4		1000	2.15	2.80	93	75	896	375.6		260	257		5	
1		13	2.20	2.93	89	78	864	382.6		262	261		5	
2		21	2.40	3.22	101	83	877	390.3		262	260		6	
3		29	2.11	2.82	103	88	888	397.4		259	257		6	
4		37	2.20	2.95	105	89	890	404.531		252	259		6	
	AVERAGE	^P ^P(1/2)	1.4897	2.92	84		884	TOTAL 56.679						

PRE IMPINGERS TARE
POST IMPINGERS TARE
TOTAL IMP'S CONTENTS 172

PRE S.G. TARE
POST S.G. TARE 17.0
TOTAL S.G. CONTENTS 189.6

ORSAT BAG ANALYSIS

	1	2	3	AVERAGE
CO2	13.4	13.6	13.6	13.5
O2	5.0	5.2	5.0	5.1
CO	0	0	0	0
N2	81.6	81.2	81.4	81.4

REMARKS

ISY 172

FIELD DATA SHEET

FIRM NAME Energy Tactics
PLANT LOCATION Acousde, NY
RUN NUMBER MS-5
SAMPLING LOCATION Outlet
PROJECT NUMBER 092-09
DATE 10-7-92
TESTER JSG/JD

MODULE NO. 2827
STACK PRESSURE (in.H_2O) .92
BAR. PRESSURE 30.30
PROBE ID NO. 401
FILTER ID NO. RAHT 145
FILTER TARE WT.
NOZZLE NO./DIA.(in.) .250
DUCT AREA (Ft^2) .55

ASSUMED MOISTURE (%) 14
TEST DURATION 64
TRAVERSE POINT INTERVAL 8 min
PROBE HEATER SETTING —
FILTER HEATING SETTING 250
LEAK CHECK:
INNITIAL 0.010 @ 8"
FINAL 0.007 @ 8"

DRY GAS METER Y 1.0014
PITOT COEFFICIENT .84
NOMOGRAPH C FACTOR .88
MODULE ΔH_A 1.79
TEST START TIME 1112
TEST FINAL TIME 1221
AMBIENT TEMP. 60's

TRAVERSE POINT	SAMPLE TIME (min)	CLOCK TIME (hours)	VELOCITY HEAD(ΔP) (in. H2O)	ORIFICE ΔH	DGM Tm in °F	DGM Tm out °F	STACK TEMP. Ts °F	GAS SAMPLE VOLUME Vm CUBIC FEET	FILTER OUTLET °F	CONDENSOR OUTLET °F	HEATER BOX °F	PROBE TEMP. F	PUMP VAC. in. Hg
	0 min	1112						405.300					
1		20	2.30	3.03	80	78	882	412.7	N/A	60F	254	255	6
2		28	2.40	3.14	95	83	914	419.8			255	252	6
3		36	2.00	2.66	101	84	900	426.8			258	268	5
4		44	2.00	2.66	100	86	901	433.6			262	269	5
1		57	2.40	3.24	93	88	876	441.3			266	276	6
2		1205	2.50	3.34	101	89	901	449.0			262	271	6
3		13	2.20	2.92	103	87	911	456.5			262	272	5
4		21	2.25	2.98	102	88	913	463.666			264	268	5
	AVERAGE		$\sum\sqrt{\Delta P}$	3.00	91		900	TOTAL					
			1.5010					58.366					

H_2O COLLECTED 173 ml.
S. G. WEIGHT 1601 gr.
TOTAL VOLUME COLLECTED 189.1 ml.

ORSAT BAG ANALYSIS
TRIPLICATE ANALYSIS

CO_2	O_2	CO	N_2
13.8	4.8	0	81.4
13.8	5	0	81.2
13.6	5	0	81.4

173

COMMENTS 75% LOAD

FIELD DATA SHEET

FIRM NAME Energy Tactics
PLANT LOCATION Oceanside, NY
RUN NUMBER M5-6
SAMPLING LOCATION Outlet
PROJECT NUMBER N92-09
DATE 10-7-92
TESTER JSG / JN

MODULE NO. 2827
STACK PRESSURE (in. H_2O) .90
BAR. PRESSURE 30.30
PROBE ID NO. 401
FILTER ID NO. RAAT 149
FILTER TARE WT.
NOZZLE NO./DIA.(in.) .250
DUCT AREA (Ft^2) .55

ASSUMED MOISTURE (%) 14
TEST DURATION 64
TRAVERSE POINT INTERVAL 8 min
PROBE HEATER SETTING —
FILTER HEATING SETTING 250
LEAK CHECK:
INNITIAL 0.007 @ e 7.5"
FINAL 0.001 @ e 7.5" Hg

DRY GAS METER Y 1.0014
PITOT COEFFICIENT .84
NOMOGRAPH C FACTOR .88
MODULE ΔH_A 1.77
TEST START TIME 1258
TEST FINAL TIME 1406
AMBIENT TEMP. 60s

TRAVERSE POINT	SAMPLE TIME (min)	CLOCK TIME (hours)	VELOCITY HEAD(ΔP) (in. H2O)	ORIFICE ΔH	DGM Tm in °F	DGM Tm out °F	STACK TEMP. Ts °F	GAS SAMPLE VOLUME Vm CUBIC FEET	FILTER OUTLET °F	CONDENSOR OUTLET °F	HEATER BOX °F	PROBE TEMP. F	PUMP VAC. in. Hg
	8 min	1258						465.050					
1		1306	2.20	3.86	78	77	883	472.7	N/A	65	253	255	6
2		14	2.20	2.91	95	81	887	479.9			255	252	6
3		22	1.90	2.48	100	81	907	486.5			251	261	5
4		30	2.00	2.62	101	84	907	493.4			253	266	5
1		42	2.25	3.02	94	86	870	500.9			264	271	6
2		50	2.30	3.09	101	87	880	508.3			261	272	6
3		58	2.00	2.63	100	87	900	514.9			260	260	5
4		1406	2.05	2.69	100	86	909	521.900			259	257	5
	AVERAGE		$\sum\sqrt{\Delta P}$ 1.4527	2.79	91	0	894	TOTAL 56.850					

H_2O COLLECTED 177 ml.
S. G. WEIGHT 15.1 gr.
TOTAL VOLUME COLLECTED 192 ml.

ORSAT BAG ANALYSIS
TRIPLICATE ANALYSIS

CO_2	O_2	CO	N_2
13.8	4.8	0	81.4
14	5	0	81.0
14	5	0	81.0

177

COMMENTS 75% LOAD

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill/ET-29 # 007 100% load
DATE: 10/6/92
RUN NO: Linearity + #1 (1015 - 1141)
GAS CONSTITUENT: NO_x
ATTENUATION (SPAN): 0 - 500 ppm

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE		HIGH RANGE
CAL GAS CONCENTRATION:	0.0	97.5	242.0	480.0
ANALYZER CAL RESPONSE:	0.8	99.3	245.2	486.4
ABSOLUTE DIFFERENCE:	0.8	1.8	3.2	6.4
CALIBRATION ERROR (<2%):	0.2%	0.4%	0.6%	1.3%

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	0.8	0.9	0.0%	1.3	0.1%	0.1%
UPSCALE:	245.2	240.1	1.0%	239.5	1.1%	0.1%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 190.2 (RUN AVERAGE)
C_o = 1.1 (AVERAGE ZERO)
C_m = 239.8 (AVERAGE SPAN)
C_{ma} = 242.0 (SPAN GAS CONC)
C_{gas} = 191.7 (POLLUTANT CONC)

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill / ET-29 #007 75% load
DATE: 10/7/92
RUN NO: Linearity + #4 (0935 - 1035)
GAS CONSTITUENT: NO_x
ATTENUATION (SPAN): 0-500 ppm

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE		HIGH RANGE
CAL GAS CONCENTRATION:	0.0	97.5	242.0	480.0
ANALYZER CAL RESPONSE:	0.7	98.3	247.0	481.5
ABSOLUTE DIFFERENCE:	0.7	0.8	5.0	1.5
CALIBRATION ERROR (<2%):	0.1%	0.2%	1.0%	0.3%

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	0.7	0.4	0.1%	4.3	0.7%	0.8%
UPSCALE:	247.0	242.9	0.8%	245.6	0.3%	0.5%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 149.4 (RUN AVERAGE)
C_o = 2.4 (AVERAGE ZERO)
C_m = 244.3 (AVERAGE SPAN)
C_{ma} = 242.0 (SPAN GAS CONC)
C_{gas} = 147.1 (POLLUTANT CONC)

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill / ET-29 # 007 75% load
DATE: 10/7/92
RUN NO: #5 (1115-1215)
GAS CONSTITUENT: NO_x
ATTENUATION (SPAN): 0-500 ppm

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE	HIGH RANGE
CAL GAS CONCENTRATION:			
ANALYZER CAL RESPONSE:			
ABSOLUTE DIFFERENCE:			
CALIBRATION ERROR (<2%):			

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	0.7	4.3	0.7%	1.0	0.1%	0.7%
UPSCALE:	247.0	245.6	0.3%	247.7	0.1%	0.4%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 103.4 (RUN AVERAGE)
C_o = 2.7 (AVERAGE ZERO)
C_m = 246.7 (AVERAGE SPAN)
C_{ma} = 242.0 (SPAN GAS CONC)
C_{gas} = 99.9 (POLLUTANT CONC)

1-

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill / ET-29 #007 75% load
DATE: 10/7/92
RUN NO: # 6 (1250-1350)
GAS CONSTITUENT: NO_x
ATTENUATION (SPAN): 0-500 ppm

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE	HIGH RANGE
CAL GAS CONCENTRATION:			
ANALYZER CAL RESPONSE:			
ABSOLUTE DIFFERENCE:			
CALIBRATION ERROR (<2%):			

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	0.7	1.0	0.1%	1.9	0.2%	0.2%
UPSCALE:	247.0	247.7	0.1%	246.6	0.1%	0.2%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 110.3 (RUN AVERAGE)
C_o = 1.5 (AVERAGE ZERO)
C_m = 247.2 (AVERAGE SPAN)
C_{ma} = 242.0 (SPAN GAS CONC)
C_{gas} = 107.2 (POLLUTANT CONC)

I-

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill / ET-29 #007 100% load
DATE: 10/6/92
RUN NO: Linearity + #1 (1015-1141)
GAS CONSTITUENT: CO
ATTENUATION (SPAN): 0 - 500 ppm

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE		HIGH RANGE
CAL GAS CONCENTRATION:	0.0	141.0	284.0	487.0
ANALYZER CAL RESPONSE:	0.4	144.6	278.2	490.4
ABSOLUTE DIFFERENCE:	0.4	3.6	5.8	3.4
CALIBRATION ERROR (<2%):	0.1%	0.7%	1.2%	0.7%

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	0.4	3.6	0.7%	4.4	0.8%	0.2%
UPSCALE:	490.4	495.5	1.0%	488.8	0.3%	1.4%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 378.0 (RUN AVERAGE)
C_o = 4.0 (AVERAGE ZERO)
C_m = 492.2 (AVERAGE SPAN)
C_{ma} = 487.0 (SPAN GAS CONC)
C_{gas} = 373.1 (POLLUTANT CONC)

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill / ET-29 #007 100% load
DATE: 10/6/92
RUN NO: #2 (1212 - 1312)
GAS CONSTITUENT: CO
ATTENUATION (SPAN): 0 - 500 ppm

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE	HIGH RANGE
CAL GAS CONCENTRATION:			
ANALYZER CAL RESPONSE:			
ABSOLUTE DIFFERENCE:			
CALIBRATION ERROR (<2%):			

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	0.4	4.4	0.8%	1.5	0.2%	0.6%
UPSCALE:	490.4	488.8	0.3%	489.3	0.2%	0.1%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 375.5 (RUN AVERAGE)
C_o = 3.0 (AVERAGE ZERO)
C_m = 489.1 (AVERAGE SPAN)
C_{ma} = 487.0 (SPAN GAS CONC)
C_{gas} = ~~376.4~~ 373.2 (POLLUTANT CONC)

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill/ET-29 #007 100% load
DATE: 10/6/92
RUN NO: #3
GAS CONSTITUENT: CO (1400 - 1500)
ATTENUATION (SPAN): 0 - 500 ppm

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE	HIGH RANGE
CAL GAS CONCENTRATION:			
ANALYZER CAL RESPONSE:			
ABSOLUTE DIFFERENCE:			
CALIBRATION ERROR (<2%):			

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	0.4	1.5	0.2%	1.1	0.1%	0.1%
UPSCALE:	490.4	489.3	0.2%	490.9	0.1%	0.3%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 373.1 (RUN AVERAGE)
C_o = 1.3 (AVERAGE ZERO)
C_m = 490.1 (AVERAGE SPAN)
C_{ma} = 487.0 (SPAN GAS CONC)
C_{gas} = 370.4 (POLLUTANT CONC)

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill/ET-29 #007 75% load
DATE: 10/7/92
RUN NO: Linearity + #4 (0935-1035)
GAS CONSTITUENT: CO
ATTENUATION (SPAN): 0-500 ppm

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE		HIGH RANGE
CAL GAS CONCENTRATION:	0.0	141.0	284.0	487.0
ANALYZER CAL RESPONSE:	1.2	147.4	281.1	490.4
ABSOLUTE DIFFERENCE:	1.2	6.4	2.9	3.4
CALIBRATION ERROR (<2%):	0.2%	1.3%	0.6%	0.7%

SYSTEM CAL BIAS & DRIFT:

	PRE CAL			POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	1.2	2.2	0.2%	-0.2	0.3%	0.5%
UPSCALE:	490.4	494.4	0.8%	493.5	0.6%	0.2%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 414.2 (RUN AVERAGE)
C_o = 1.0 (AVERAGE ZERO)
C_m = 494.0 (AVERAGE SPAN)
C_{ma} = 487.0 (SPAN GAS CONC)
C_{gas} = 408.2 (POLLUTANT CONC)

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill / ET-29 # 007 75% load
DATE: 10/7/92
RUN NO: #5 (1115-1215)
GAS CONSTITUENT: CO
ATTENUATION (SPAN): 0-500 ppm

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE	HIGH RANGE
CAL GAS CONCENTRATION:			
ANALYZER CAL RESPONSE:			
ABSOLUTE DIFFERENCE:			
CALIBRATION ERROR (<2%):			

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	1.2	-0.2	0.3%	0.3	0.2%	0.1%
UPSCALE:	490.4	493.5	0.6%	495.8	1.1%	0.5%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 397.8 (RUN AVERAGE)
C_o = 0.1 (AVERAGE ZERO)
C_m = 494.7 (AVERAGE SPAN)
C_{ma} = 487.0 (SPAN GAS CONC)
C_{gas} = 391.6 (POLLUTANT CONC)

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill / ET-29 #007 75% load
DATE: 10/7/92
RUN NO: #6 (1250-1350)
GAS CONSTITUENT: CO
ATTENUATION (SPAN): 0-500 ppm

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE	HIGH RANGE
CAL GAS CONCENTRATION:			
ANALYZER CAL RESPONSE:			
ABSOLUTE DIFFERENCE:			
CALIBRATION ERROR (<2%):			

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	1.2	0.3	0.2%	1.0	0.0%	0.1%
UPSCALE:	490.4	495.8	1.1%	495.7	1.1%	0.0%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 400.7 (RUN AVERAGE)
C_o = 0.7 (AVERAGE ZERO)
C_m = 495.8 (AVERAGE SPAN)
C_{ma} = 487.0 (SPAN GAS CONC)
C_{gas} = 393.5 (POLLUTANT CONC)

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Riverside Landfill/ET-29 #007 100% load
DATE: 10/6/92
RUN NO: Linearity + #1 (1015-1141)
GAS CONSTITUENT: O_2
ATTENUATION (SPAN): 0-25%

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE	HIGH RANGE
CAL GAS CONCENTRATION:	0.0%	16.1%	20.9%
ANALYZER CAL RESPONSE:	0.0%	16.3%	21.0%
ABSOLUTE DIFFERENCE:	0.0%	0.2%	0.1%
CALIBRATION ERROR (<2%):	0.0%	0.8%	0.4%

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	0.0%	0.0%	0.0%	0.1%	0.4%	04%
UPSCALE:	16.3%	16.2%	0.4%	16.3%	0.0%	0.4%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 5.9 (RUN AVERAGE)
C_o = 0.1 (AVERAGE ZERO)
C_m = 16.3 (AVERAGE SPAN)
C_{ma} = 16.1 (SPAN GAS CONC)
C_{gas} = 5.8 (POLLUTANT CONC)

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill / ET-29 * 007 100% load
DATE: 10/6/92
RUN NO: #2 (1212 - 1312)
GAS CONSTITUENT: O_2
ATTENUATION (SPAN): 0 - 25%

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE	HIGH RANGE
CAL GAS CONCENTRATION:			
ANALYZER CAL RESPONSE:			
ABSOLUTE DIFFERENCE:			
CALIBRATION ERROR (<2%):			

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	0.0%	0.1%	0.4%	0.1%	0.4%	0.0%
UPSCALE:	16.3%	16.3%	0.0%	16.3%	0.0%	0.0%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 5.8 (RUN AVERAGE)
C_o = 0.1 (AVERAGE ZERO)
C_m = 16.3 (AVERAGE SPAN)
C_{ma} = 16.1 (SPAN GAS CONC)
C_{gas} = 5.7 (POLLUTANT CONC)

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill / ET-29 #007 100% load
DATE: 10/6/92
RUN NO: #3 (1400 - 1500)
GAS CONSTITUENT: O_2
ATTENUATION (SPAN): 0-25%

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE	HIGH RANGE
CAL GAS CONCENTRATION:			
ANALYZER CAL RESPONSE:			
ABSOLUTE DIFFERENCE:			
CALIBRATION ERROR (<2%):			

SYSTEM CAL BIAS & DRIFT:

	PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	0.0%	0.1%	0.4%	0.0%	0.0%	0.4%
UPSCALE:	16.3%	16.3%	0.0%	16.2%	0.4%	0.4%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 5.9 (RUN AVERAGE)
C_o = 0.1 (AVERAGE ZERO)
C_m = 16.3 (AVERAGE SPAN)
C_{ma} = 16.1 (SPAN GAS CONC)
C_{gas} = 5.8 (POLLUTANT CONC)

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill / ET-29 #007 75% load
DATE: 10/7/92
RUN NO: Linearity + #4 (0935-1035)
GAS CONSTITUENT: O_2
ATTENUATION (SPAN): 0-25%

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE	HIGH RANGE
CAL GAS CONCENTRATION:	0.0 %	16.1 %	20.9 %
ANALYZER CAL RESPONSE:	0.0 %	16.2 %	20.8 %
ABSOLUTE DIFFERENCE:	0.0 %	0.1 %	0.1 %
CALIBRATION ERROR (<2%):	0.0 %	0.4 %	0.4 %

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
UPSCALE:	16.2 %	16.1 %	0.4 %	16.1 %	0.4 %	0.0 %

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 4.5 (RUN AVERAGE)
C_o = 0.0 (AVERAGE ZERO)
C_m = 16.1 (AVERAGE SPAN)
C_{ma} = 16.1 (SPAN GAS CONC)
C_{gas} = 4.5 (POLLUTANT CONC)

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill/ET-29 #007 75% load
DATE: 10/7/92
RUN NO: # 5 (1115-1215)
GAS CONSTITUENT: O_2
ATTENUATION (SPAN): 0-25 %

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE	HIGH RANGE
CAL GAS CONCENTRATION:			
ANALYZER CAL RESPONSE:			
ABSOLUTE DIFFERENCE:			
CALIBRATION ERROR (<2%):			

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	0.0%	0.0%	0.0%	-0.1%	0.4%	0.4%
UPSCALE:	16.2%	16.1%	0.4%	16.0%	0.8%	0.4%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 4.7 (RUN AVERAGE)
C_o = -0.1 (AVERAGE ZERO)
C_m = 16.1 (AVERAGE SPAN)
C_{ma} = 16.1 (SPAN GAS CONC)
C_{gas} = 4.8 (POLLUTANT CONC)

CEM SYSTEM CALIBRATION DATA
EPA Methods 3A, 6C, and 7E

SOURCE IDENTIFICATION: Oceanside Landfill / ET-29 #007 75% load
DATE: 10/7/92
RUN NO: #6 (1250-1350)
GAS CONSTITUENT: O_2
ATTENUATION (SPAN): 0-25%

ANALYZER CALIBRATION DATA AND/OR LINEARITY CHECK:

	ZERO	MIDRANGE	HIGH RANGE
CAL GAS CONCENTRATION:			
ANALYZER CAL RESPONSE:			
ABSOLUTE DIFFERENCE:			
CALIBRATION ERROR (<2%):			

SYSTEM CAL BIAS & DRIFT:

		PRE CAL		POST CAL		
	ANALYZER CAL RESPONSE	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	SYSTEM CAL RESPONSE	SYSTEM BIAS (<5%)	DRIFT (<3%)
ZERO:	0.0%	-0.1%	0.4%	-0.1%	0.4%	0.0%
UPSCALE:	16.2%	16.0%	0.8%	15.9%	1.2%	0.4%

$$\text{SYSTEM BIAS} = \frac{(\text{SYSTEM CAL RESPONSE} - \text{ANALYZER CAL RESPONSE})}{\text{SPAN}} \times 100$$

$$\text{DRIFT} = \frac{(\text{POST SYSTEM CAL RESPONSE} - \text{PRE SYSTEM CAL RESPONSE})}{\text{SPAN}} \times 100$$

EQ. 6C-1: $C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o}$,

$\bar{C}$ = 4.6 (RUN AVERAGE)
C_o = -0.1 (AVERAGE ZERO)
C_m = 16.0 (AVERAGE SPAN)
C_{ma} = 16.1 (SPAN GAS CONC)
C_{gas} = 4.7 (POLLUTANT CONC)

Operational Data

10-6-92

#29 BEFORE TEST (100%) 49°F AMBIENT, CLEAR, DRY

590 KW

52% CH_4

.30 ΔP @ 6" DWYER, -37" VAC, 56°F (7 cyl)

10 PSI CH. AIR @ 88°F STARBOARD (ODD)

92°F PORT (EVEN)

ODD STACK 931°F

EVEN STACK 912°F

37° TIMING BTDC

EXHAUST TEMPS 1082°F (CYL #1) → 1127°F (CYL #3)

ENERAC 109 PPM NO

429 PPM CO

TELEDYNE 5.8% O_2

THROTTLE FULL OPEN

PSC FULL OPEN

12½" WC G/A ODD, 12" WC G/A EVEN

10 PSI BOOST PRESSURE

8½ PSI MANIFOLD PRESSURE, ± 2" WC BALANCE

ENGINE TEST DATA

ET-29 EMISSION PT. 007 TAKEN BY: J. SNYDER DATE: 10-6-92

BAROMETER: _____ AMBIENT TEMP: _____ RUN#: 1

PRESSURE AT COMPRESSOR INLET: -37" ,"WC

TIME	KW	CHGED AIR, PORT	CHGED AIR, STBD	%CH4	LFG TEMP, DEG F	FLOW DP " WC	NOTES AMB. ENT	ENORAC NO	CO	C_2
10:15	590.2	93.0	96.5	52	67°	.30"	58°	198	481	5.7
10:31	587.8	93.5	97.1	52	69°	.31"	—	—	—	—
10:55	590.2	93.3	97.3	51	73.2	.30"	60°	-	—	—
11:10	595.8	95.0	98.2	52	—	—	—	222	460	5.9
11:43	588.2	98.2	102.4	52	74.3°	.32"	60°	—	—	—
11:59	582.5	99.1	103.2	52	—	.31"	—	—	—	—
12:12	592.0	99.7	103.9	52	76.1°	.31"	67°	209	465	5.7
12:34	587.2	100.2	104.2	51	77.5°	.32"	66°	—	—	—
13:00	584.5	98.9	102.6	51	78.0°	.32"	65°	191	447	5.6
13:18	587.2	101.0	105.0	52	78.2°	.32	67°	—	—	—
13:39	592.8	101.9	106.0	52	—	.31	—	—	—	—
13:51	592.8	100.6	104.5	52	78.2°	.31	—	215	450	5.6
14:01	586.2	100.0	103.8	52	77.3°	.30	64°	—	—	—
14:17	589.9	100.0	103.9	52	77.6°	.31	66°	—	—	—
14:29	596.9	102.7	106.8	52	77.3°	.31	67.4	—	—	—
14:43	588.6	101.8	105.5	51	78.2°	.31	67.0	174	445	5.8
15:01	587.8	102.5	106.3	51	77.3°	.31	66°	—	—	—

COMMENTS:

SEE OTHER SHEET FOR ENGINE SETTINGS.

10-7-92

#29 BEFORE TEST (75%) 50°F AMBIENT, CLEAR, DRY

448 KW

51% CH_4

.23 ΔP @ 6" DWYER, -34" wc, 58°F (7 ENG.)

10 Psi CH. AIR @ 88.1°F PORT (EVEN)

ODD STACK 991°F

EVEN STACK 954°F

31° TIMING BTDC

EXHAUST TEMPS 1093° (CYL #11) → 1172°F (CYL #2)

ENERAC 123 PPM NO

492 PPM CO

TELEDYNE 4.8% O_2

THROTTLE ~40% OPEN

PSC ~50% OPEN

14" G/A EVEN, 14" G/A ODD

10½ PSI BOOST, 4 PSI MANIFOLD EVEN

10½ PSI BOOST, 4¼ PSI MANIFOLD ODD (THROTTLE PLATES NON-LINEAR)

ENGINE TEST DATA

E1-29 EMISSION PT. 007 TAKEN BY: J. SNYDER DATE: 10-7-92

BAROMETER: _____ AMBIENT TEMP: _____ RUN#: 1

PRESSURE AT COMPRESSOR INLET: -34 ,"WC

	TIME	KW	CHGED AIR, PORT	CHGED AIR, STBD	%CH4	LFG TEMP, DEG F	FLOW DP " WC	NOTES Ambient	NO	CO	O_2
ENG -34"	9:29	457	95.4	99.8	51	68°	.23"	60°	119	446	4.5
-35"	9:43	457	96.1	100.1	51	70°	.24"	62°	—	—	—
-36"	9:59	449	97.0	101.3	51	71°	.24"	63°	118	477	4.6
-35"	10:13	448	98.7	103.0	51	74°	.25"	65°	—	—	—
-35"	10:25	448	99.4	103.5	51	76°	.24	65°	—	—	—
8 ENG -42"	10:57	439	99.3	101.1	51	79°	.25	67°	—	—	—
-42"	11:10	442	100.7	102.2	51	79°	.25	68°	99	450	4.6
-45"	11:26	440	100.4	102.1	50	82°	.25	70°	—	—	—
-46	11:45	442	100.8	102.6	50	82°	.25	71°	—	—	—
-44	12:07	442	100.5	102.4	50	83°	.25	75°	—	—	—
-44	12:21	439	99.9	101.6	50	84°	.25	76°	100	490	4.6
-45	12:42	447	99.6	101.3	50	85°	.25	76°	—	—	—
-44	12:56	444	98.5	100.5	50	84°	.26	78°	—	—	—
-45	13:12	446	101.6	103.2	50	84°	.25	78°	—	—	—
-44	13:26	447	100.3	102.3	50	84°	.26	79°	104	500	4.8
-44	13:44	450	100.5	102.6	50	84°	.25	79	—	—	—
-44	13:58	447	101.3	103.4	50	84°	.25	80°	—	—	—

COMMENTS:

APPENDIX C

DAS Printouts

Oceanside Landfill Page 1
Energy Tactics 100% load
ET-29 #007

Data Logging CONFIGURATION 10-Oct-1992 08:01:58

Mode: 4% A/D
A/D (Analog to Digital Converter address)= 772
Storage Interval: hours= 0 minutes= 0 seconds= 30
Printer will log data.
Alarms are silent
Autostop is off
Autostore on disk C

Point	LABEL	UNITS	OFFSET	SCALING	DEC PL	HIGH ALARM	LOW ALARM	CHANNEL	EXT MUX
2	NOx	ppm	-7	.2	1	0	0	0	0
3	O2	%	-2.75	.025	1	0	0	0	2
4	CO	ppm	33.9	.26	1	0	0	0	4

DATE 10-Oct-1992

Scan # 1 08:01:26
NOx 3.2 ppm O2 21.0 % CO 13.7 ppm

Scan # 2 08:02:26
NOx 2.9 ppm O2 21.0 % CO 12.6 ppm

Ambient air
20.9% O_2

Scan # 3 08:03:26
NOx 3.0 ppm O2 21.0 % CO 13.1 ppm

Scan # 4 08:04:26
NOx 2.4 ppm O2 21.0 % CO 13.1 ppm

Scan # 5 08:04:26
NOx 2.5 ppm O2 21.0 % CO 16.1 ppm

Scan # 6 08:04:26
NOx 0.9 ppm O2 20.7 % CO 10.3 ppm

Scan # 7 08:05:26
NOx 0.5 ppm O2 20.7 % CO 7.0 ppm

Scan # 8 08:05:26
NOx -0.2 ppm O2 20.7 % CO 6.9 ppm

Scan # 9 08:06:26
NOx -0.1 ppm O2 20.7 % CO 5.5 ppm

Scan # 10 08:06:26
NOx -0.1 ppm O2 20.7 % CO 5.0 ppm

Scan # 11 08:07:26
NOx -0.0 ppm O2 20.7 % CO 2.9 ppm

Scan # 12 08:07:26
NOx -0.5 ppm O2 20.7 % CO 1.8 ppm

Scan # 13 08:08:26
NOx -0.6 ppm O2 20.7 % CO 1.7 ppm

Scan # 15	08:09:2[illegible]				
NO2	-1.2 ppm	02	20.7 %	00	1.3 ppm

DATE 10-08-1991

Scan # 1	08:11:07				
NO	0.7 ppm	02	20.7 %	00	-1.0 ppm
Scan # 2	08:12:07				
NO	0.2 ppm	02	20.7 %	00	2.0 ppm
Scan # 3	08:12:37				
NO	0.3 ppm	02	20.7 %	00	-0.6 ppm
Scan # 4	08:13:07				
NO	0.2 ppm	02	20.7 %	00	0.4 ppm
Scan # 5	08:13:37				
NO2	0.8 ppm	02	20.7 %	00	-170.2 ppm
Scan # 6	08:14:07				
NO2	0.7 ppm	02	20.7 %	00	-169.8 ppm
Scan # 7	08:14:37				
NO	0.6 ppm	02	20.7 %	00	-0.4 ppm
Scan # 8	08:15:07				
NO	0.5 ppm	02	20.7 %	00	-0.3 ppm
Scan # 9	08:15:37				
NO	0.9 ppm	02	20.7 %	00	1.1 ppm
Scan # 10	08:16:07				
NO	0.5 ppm	02	20.7 %	00	0.9 ppm
Scan # 11	08:16:37				
NO	1.0 ppm	02	20.7 %	00	-0.5 ppm
Scan # 12	08:17:07				
NO	0.8 ppm	02	20.7 %	00	-0.6 ppm
Scan # 13	08:17:37				
NO	0.7 ppm	02	20.7 %	00	-1.2 ppm
Scan # 14	08:18:07				
NO	0.6 ppm	02	20.7 %	00	-1.2 ppm
Scan # 15	08:18:37				
NO	0.9 ppm	02	20.7 %	00	0.0 ppm
Scan # 16	08:19:07				
NO	0.8 ppm	02	20.7 %	00	-1.4 ppm
Scan # 17	08:19:37				
NO	0.8 ppm	02	20.7 %	00	-1.5 ppm
Scan # 18	08:20:07				
NO	0.6 ppm	02	20.7 %	00	-1.1 ppm
Scan # 19	08:20:37				
NO	0.6 ppm	02	20.7 %	00	-0.9 ppm

Scan # 21	08:21:37				
NOx	1.4 ppm	02	20.7 %	00	-1.0 ppm
Scan # 22	08:22:07				
NOx	1.3 ppm	02	20.7 %	00	-1.3 ppm
Scan # 23	08:22:37				
NOx	1.3 ppm	02	20.7 %	00	-1.4 ppm
Scan # 24	08:23:07				
NOx	1.0 ppm	02	20.7 %	00	-2.3 ppm
Scan # 25	08:23:37				
NOx	0.9 ppm	02	20.7 %	00	-0.5 ppm
Scan # 26	08:24:07				
NOx	0.9 ppm	02	20.7 %	00	-1.9 ppm
Scan # 27	08:24:37				
NOx	0.9 ppm	02	20.7 %	00	-2.9 ppm
Scan # 28	08:25:07				
NOx	0.8 ppm	02	20.7 %	00	-0.1 ppm
Scan # 29	08:25:37				
NOx	1.3 ppm	02	20.7 %	00	-0.6 ppm
Scan # 30	08:26:07				
NOx	1.2 ppm	02	20.7 %	00	-0.6 ppm

Basic analyzer cals

DATE 10-06-1992

Scan # 1	08:08:23				
NOx	0.5 ppm	02	20.7 %	00	0.4 ppm
Scan # 2	08:09:53				
NOx	0.3 ppm	02	20.7 %	00	0.2 ppm
Scan # 3	08:36:23				
NOx	0.4 ppm	02	20.7 %	00	-0.3 ppm
Scan # 4	08:36:53				
NOx	0.2 ppm	02	20.7 %	00	0.2 ppm
Scan # 5	08:37:23				
NOx	0.3 ppm	02	20.7 %	00	1.4 ppm
Scan # 6	08:37:53				
NOx	0.8 ppm	02	20.7 %	00	-0.6 ppm
Scan # 7	08:38:23				
NOx	0.9 ppm	02	20.7 %	00	0.1 ppm
Scan # 8	08:38:53				
NOx	0.7 ppm	02	20.7 %	00	0.5 ppm
Scan # 9	08:39:23				
NOx	0.8 ppm	02	20.7 %	00	0.2 ppm
Scan # 10	08:39:53				
NOx	0.8 ppm	02	20.7 %	00	0.5 ppm

zero

Scan # 13	08:40:03				
NOx	0.8 ppm	02	0.4 %	00	468.5 ppm
Scan # 14	08:41:23				
NOx	1.0 ppm	02	0.0 %	00	491.1 ppm
Scan # 15	08:42:57				
NOx	0.7 ppm	02	0.0 %	00	469.4 ppm
Scan # 16	08:43:20				
NOx	0.6 ppm	02	0.0 %	00	490.7 ppm
Scan # 17	08:43:53				
NOx	0.8 ppm	02	0.0 %	00	470.5 ppm
Scan # 18	08:43:21				
NOx	0.3 ppm	02	0.0 %	00	490.7 ppm
Scan # 19	08:43:53				
NOx	447.0 ppm	02	0.1 %	00	18.5 ppm
Scan # 20	08:44:23				
NOx	480.6 ppm	02	0.0 %	00	1.6 ppm
Scan # 21	08:44:52				
NOx	464.1 ppm	02	0.0 %	00	1.0 ppm
Scan # 22	08:45:23				
NOx	487.1 ppm	02	0.0 %	00	0.5 ppm
Scan # 23	08:45:52				
NOx	485.6 ppm	02	0.0 %	00	1.1 ppm
Scan # 24	08:46:23				
NOx	485.9 ppm	02	0.0 %	00	0.8 ppm
Scan # 25	08:46:53				
NOx	485.1 ppm	02	0.0 %	00	0.8 ppm
Scan # 26	08:47:27				
NOx	474.9 ppm	02	0.0 %	00	9.4 ppm
Scan # 27	08:47:57				
NOx	2.6 ppm	02	0.0 %	00	272.7 ppm
Scan # 28	08:48:27				
NOx	1.5 ppm	02	0.0 %	00	273.4 ppm
Scan # 29	08:48:52				
NOx	0.6 ppm	02	0.0 %	00	274.6 ppm
Scan # 30	08:49:23				
NOx	0.2 ppm	02	0.0 %	00	274.0 ppm
Scan # 31	08:49:53				
NOx	0.1 ppm	02	0.0 %	00	278.3 ppm
Scan # 32	08:50:27				
NOx	-0.2 ppm	02	0.0 %	00	273.9 ppm
Scan # 33	08:50:52				
NOx	-0.6 ppm	02	0.0 %	00	276.1 ppm
Scan # 34	08:51:23				

4

4870 ppm CO

O_2 zero

480.0 ppm NO

284.0 ppm CO

Scan # 34	08:51:51				
NO	-1.6 ppm	00	-0.0 %	00	278.5 ppm
Scan # 35	08:52:27				
NO	99.0 ppm	00	0.0 %	00	3.2 ppm
Scan # 36	08:53:03				
NO	99.0 ppm	00	0.0 %	00	0.4 ppm
Scan # 37	08:53:39				
NO	99.0 ppm	00	0.0 %	00	0.3 ppm
Scan # 38	08:54:15				
NO	99.0 ppm	00	0.0 %	00	-0.3 ppm
Scan # 39	08:54:51				
NO	99.0 ppm	00	0.0 %	00	-0.3 ppm
Scan # 40	08:55:27				
NO	97.0 ppm	00	0.0 %	00	0.0 ppm
Scan # 41	08:56:03				
NO	0.3 ppm	00	0.0 %	00	144.0 ppm
Scan # 42	08:56:39				
NO	0.3 ppm	00	0.0 %	00	144.0 ppm
Scan # 43	08:57:15				
NO	0.3 ppm	00	0.0 %	00	144.0 ppm
Scan # 44	08:57:51				
NO	-0.3 ppm	00	0.0 %	00	144.3 ppm
Scan # 45	08:58:27				
NO	0.0 ppm	00	0.0 %	00	144.0 ppm
Scan # 46	08:59:03				
NO	-0.3 ppm	00	16.1 %	00	1.2 ppm
Scan # 47	08:59:39				
NO	0.3 ppm	00	16.2 %	00	-0.1 ppm
Scan # 48	09:00:15				
NO	0.0 ppm	00	16.3 %	00	0.4 ppm
Scan # 49	09:00:51				
NO	0.3 ppm	00	16.3 %	00	-0.5 ppm
Scan # 50	09:01:27				
NO	0.0 ppm	00	16.3 %	00	0.0 ppm
Scan # 51	09:02:03				
NO	0.3 ppm	00	16.3 %	00	-0.6 ppm
Scan # 52	09:02:39				
NO	0.0 ppm	00	16.2 %	00	-0.6 ppm
Scan # 53	09:03:15				
NO	0.0 ppm	00	0.0 %	00	1.7 ppm
Scan # 54	09:03:51				
NO	99.0 ppm	00	0.0 %	00	-0.3 ppm

5

97.5 ppm NO

141.0 ppm CO

16.1% O_2

Scan # 58	09:02:58				
NOx	244.7 ppm	O2	1.1 %	CO	0.1 ppm
Scan # 59	09:03:28				
NOx	245.5 ppm	O2	0.9 %	CO	0.0 ppm
Scan # 60	09:03:58				
NOx	245.4 ppm	O2	0.9 %	CO	-0.3 ppm
Scan # 61	09:04:28				
NOx	245.3 ppm	O2	0.8 %	CO	-0.4 ppm
Scan # 62	09:04:58				
NOx	244.5 ppm	O2	0.8 %	CO	-0.1 ppm
Scan # 63	09:05:28				
NOx	237.9 ppm	O2	1.3 %	CO	1.3 ppm
Scan # 64	09:05:58				
NOx	1.7 ppm	O2	21.1 %	CO	6.0 ppm
Scan # 65	09:06:28				
NOx	1.3 ppm	O2	21.2 %	CO	7.4 ppm
Scan # 66	09:06:58				
NOx	0.9 ppm	O2	21.2 %	CO	7.9 ppm
Scan # 67	09:07:28				
NOx	1.1 ppm	O2	21.1 %	CO	7.9 ppm
Scan # 68	09:07:58				
NOx	2.3 ppm	O2	20.6 %	CO	7.4 ppm
Scan # 69	09:08:28				
NOx	-1.3 ppm	O2	20.5 %	CO	7.2 ppm
Scan # 69	09:08:58				
NOx	0.1 ppm	O2	20.4 %	CO	7.9 ppm
Scan # 69	09:09:28				
NOx	-0.3 ppm	O2	20.0 %	CO	7.0 ppm
Scan # 70	09:09:58				
NOx	-0.2 ppm	O2	19.1 %	CO	6.9 ppm
Scan # 71	09:10:28				
NOx	-0.3 ppm	O2	20.7 %	CO	7.8 ppm
Scan # 72	09:10:58				
NOx	0.1 ppm	O2	20.6 %	CO	8.4 ppm
Scan # 73	09:11:28				
NOx	2.2 ppm	O2	20.9 %	CO	8.7 ppm
Scan # 74	09:11:58				
NOx	-0.2 ppm	O2	20.6 %	CO	7.7 ppm
Scan # 75	09:12:28				
NOx	-0.1 ppm	O2	20.6 %	CO	7.8 ppm
Scan # 76	09:12:58				
NOx	0.4 ppm	O2	21.4 %	CO	8.4 ppm
Scan # 77	09:13:28				

6

242.0 ppm NO

Scan # 78	09:17:53				
NO	0.6 ppm	O2	20.6 %	CO	8.6 ppm
Scan # 79	09:14:23				
NO	0.7 ppm	O2	20.6 %	CO	7.4 ppm
Scan # 81	09:14:53				
NO	0.7 ppm	O2	20.6 %	CO	7.7 ppm
Scan # 81	09:15:23				
NO	0.9 ppm	O2	20.6 %	CO	8.1 ppm
Scan # 82	09:15:53				
NO	0.7 ppm	O2	20.6 %	CO	8.3 ppm
Scan # 83	09:16:23				
NO	0.6 ppm	O2	20.6 %	CO	8.6 ppm
Scan # 84	09:16:53				
NO	0.7 ppm	O2	20.5 %	CO	7.9 ppm
Scan # 85	09:17:27				
NO	1.1 ppm	O2	20.5 %	CO	8.4 ppm
Scan # 86	09:17:53				
NO	1.1 ppm	O2	20.5 %	CO	8.7 ppm
Scan # 87	09:18:23				
NO	1.3 ppm	O2	20.5 %	CO	7.7 ppm
Scan # 88	09:18:53				
NO	1.1 ppm	O2	20.5 %	CO	8.9 ppm
Scan # 89	09:19:23				
NO	1.4 ppm	O2	20.6 %	CO	8.8 ppm
Scan # 90	09:19:53				
NOx	0.7 ppm	O2	20.6 %	CO	8.4 ppm
Scan # 91	09:20:23				
NO	1.4 ppm	O2	20.7 %	CO	9.2 ppm
Scan # 92	09:20:53				
NO	1.3 ppm	O2	20.7 %	CO	8.3 ppm
Scan # 93	09:21:23				
NO	1.1 ppm	O2	20.7 %	CO	8.1 ppm
Scan # 94	09:21:53				
NO	0.8 ppm	O2	20.7 %	CO	7.7 ppm
Scan # 95	09:22:23				
NO	0.9 ppm	O2	20.6 %	CO	7.3 ppm
Scan # 96	09:22:53				
NO	0.9 ppm	O2	20.6 %	CO	8.0 ppm
Scan # 97	09:23:27				
NO	0.6 ppm	O2	20.6 %	CO	7.9 ppm
Scan # 98	09:23:57				
NO	0.5 ppm	O2	20.6 %	CO	7.9 ppm

Standby for leak check

7.

Scan # 100	09:24:53				
NO	0.9 ppm	02	20.6 %	00	8.2 ppm
Scan # 101	09:25:23				
NO	0.8 ppm	01	20.6 %	00	8.1 ppm
Scan # 102	09:25:53				
NO	1.0 ppm	01	20.6 %	00	7.8 ppm
Scan # 103	09:26:23				
NO	1.1 ppm	01	20.6 %	00	7.7 ppm
Scan # 104	09:26:53				
NO	1.2 ppm	02	20.6 %	00	7.9 ppm
Scan # 105	09:27:23				
NO	1.0 ppm	02	20.6 %	00	7.3 ppm
Scan # 106	09:27:53				
NO	1.3 ppm	02	20.6 %	00	8.7 ppm
Scan # 107	09:28:23				
NO	1.3 ppm	02	20.6 %	00	7.7 ppm
Scan # 108	09:28:53				
NO	1.1 ppm	02	20.6 %	00	7.4 ppm
Scan # 109	09:29:23				
NO	1.3 ppm	02	20.6 %	00	8.4 ppm
Scan # 110	09:29:53				
NO	1.3 ppm	02	20.6 %	00	8.1 ppm
Scan # 111	09:30:23				
NO	1.1 ppm	01	20.6 %	00	8.3 ppm
Scan # 112	09:30:53				
NO	1.3 ppm	01	20.6 %	00	7.6 ppm
Scan # 113	09:31:23				
NO	1.6 ppm	01	20.6 %	00	7.8 ppm
Scan # 114	09:31:53				
NO	1.1 ppm	02	20.6 %	00	7.8 ppm
Scan # 115	09:32:23				
NO	1.4 ppm	02	20.5 %	00	7.6 ppm
Scan # 116	09:32:53				
NO	1.1 ppm	01	20.5 %	00	8.6 ppm
Scan # 117	09:33:23				
NO	0.7 ppm	01	20.5 %	00	8.2 ppm
Scan # 118	09:33:53				
NO	0.9 ppm	01	20.5 %	00	8.0 ppm
Scan # 119	09:34:23				
NO	0.8 ppm	01	20.5 %	00	8.1 ppm
Scan # 120	09:34:53				
NO	0.4 ppm	01	20.5 %	00	8.. ppm

	NOx	0.0 ppm	00	20.5 %	00	8.4 ppm
Scan # 133		09:34:27				
	NOx	0.4 ppm	00	20.5 %	00	7.6 ppm
Scan # 134		09:35:57				
	NOx	0.9 ppm	00	20.5 %	00	8.1 ppm
Scan # 135		09:37:28				
	NOx	0.7 ppm	00	20.5 %	00	7.9 ppm
Scan # 136		09:37:58				
	NOx	0.6 ppm	00	20.5 %	00	7.9 ppm
Scan # 137		09:38:28				
	NOx	0.8 ppm	00	20.5 %	00	7.6 ppm
Scan # 138		09:38:58				
	NOx	0.9 ppm	00	20.4 %	00	8.0 ppm
Scan # 139		09:39:28				
	NOx	0.7 ppm	00	20.4 %	00	8.5 ppm
Scan # 140		09:39:58				
	NOx	0.7 ppm	00	20.4 %	00	7.4 ppm
Scan # 141		09:40:28				
	NOx	0.4 ppm	00	20.4 %	00	8.3 ppm
Scan # 142		09:40:58				
	NOx	0.5 ppm	00	20.4 %	00	7.9 ppm
Scan # 143		09:41:28				
	NOx	0.5 ppm	00	20.4 %	00	8.1 ppm
Scan # 144		09:41:57				
	NOx	0.8 ppm	00	20.4 %	00	7.9 ppm
Scan # 145		09:42:28				
	NOx	0.6 ppm	00	20.4 %	00	8.0 ppm
Scan # 146		09:42:57				
	NOx	0.2 ppm	00	20.4 %	00	8.0 ppm
Scan # 147		09:43:28				
	NOx	0.4 ppm	00	20.4 %	00	8.3 ppm
Scan # 148		09:43:58				
	NOx	0.2 ppm	00	20.4 %	00	7.7 ppm
Scan # 149		09:44:28				
	NOx	0.3 ppm	00	20.4 %	00	7.9 ppm
Scan # 150		09:44:58				
	NOx	0.2 ppm	00	20.4 %	00	7.2 ppm
Scan # 151		09:45:28				
	NOx	0.4 ppm	00	20.3 %	00	8.3 ppm
Scan # 152		09:45:58				
	NOx	0.7 ppm	00	20.3 %	00	8.4 ppm
Scan # 153		09:46:28				

9

leak check
good

Scan # 144		09:46:53				
NOx	0.5 ppm		02	20.8 %	00	8.0 ppm
Scan # 145		09:47:23				
NOx	0.8 ppm		02	20.8 %	00	8.1 ppm
Scan # 146		09:47:53				
NOx	-1.0 ppm		02	20.8 %	00	5.8 ppm
Scan # 147		09:48:23				
NOx	-1.1 ppm		02	21.1 %	00	9.0 ppm
Scan # 148		09:48:53				
NOx	-0.5 ppm		02	21.2 %	00	10.1 ppm
Scan # 149		09:49:23				
NOx	-0.9 ppm		02	21.1 %	00	10.5 ppm
Scan # 150		09:49:53				
NOx	-0.9 ppm		02	21.1 %	00	9.8 ppm
Scan # 151		09:50:23				
NOx	0.9 ppm		02	21.1 %	00	10.1 ppm
Scan # 152		09:50:53				
NOx	-0.3 ppm		02	20.9 %	00	9.3 ppm
Scan # 153		09:51:23				
NOx	-2.6 ppm		02	20.7 %	00	8.3 ppm
Scan # 154		09:51:53				
NOx	-2.9 ppm		02	20.7 %	00	7.7 ppm
Scan # 155		09:52:23				
NOx	-2.6 ppm		02	20.7 %	00	8.4 ppm
Scan # 156		09:52:53				
NOx	-1.0 ppm		02	20.7 %	00	8.0 ppm
Scan # 157		09:53:23				
NOx	-0.9 ppm		02	20.7 %	00	7.1 ppm
Scan # 158		09:53:53				
NOx	-3.0 ppm		02	20.7 %	00	8.1 ppm
Scan # 159		09:54:23				
NOx	-0.9 ppm		02	20.7 %	00	6.2 ppm
Scan # 160		09:54:53				
NOx	-0.4 ppm		02	20.7 %	00	4.0 ppm
Scan # 161		09:55:23				
NOx	0.1 ppm		02	20.7 %	00	2.3 ppm
Scan # 162		09:55:53				
NO	0.5 ppm		02	20.7 %	00	3.1 ppm
Scan # 163		09:56:23				
NO	0.3 ppm		02	20.7 %	00	3.9 ppm
Scan # 164		09:56:53				
NO	0.5 ppm		02	20.7 %	00	3.2 ppm

Begin system cals

[illegible]	[illegible] ppm		02	20.7 %	00	3.6 ppm
Scan # 167		09:58:20				
NO	1.1 ppm		00	20.7 %	00	3.9 ppm
Scan # 168		09:58:37				
NO	-0.9 ppm		01	7.4 %	00	392.6 ppm
Scan # 169		09:59:10				
NO	0.3 ppm		02	0.4 %	00	497.2 ppm
Scan # 170		09:59:53				
NO	0.3 ppm		02	0.1 %	00	500.5 ppm
Scan # 171		10:01:23				
NO	-1.6 ppm		00	0.1 %	00	501.7 ppm
Scan # 172		10:00:57				
NO	0.2 ppm		02	0.1 %	00	499.5 ppm
Scan # 173		10:01:20				
NO	0.3 ppm		02	0.0 %	00	495.6 ppm
Scan # 174		10:01:53				
NO	0.6 ppm		02	0.0 %	00	495.6 ppm
Scan # 175		10:02:23				
NO	0.5 ppm		02	0.0 %	00	494.8 ppm
Scan # 176		10:02:50				
NO	0.3 ppm		02	0.0 %	00	495.6 ppm
Scan # 177		10:03:20				
NO	0.5 ppm		02	0.0 %	00	495.6 ppm
Scan # 178		10:03:50				
NO	[illegible] ppm		02	4.4 %	00	321.9 ppm
Scan # 179		10:04:20				
NO	1.3 ppm		02	20.2 %	00	15.9 ppm
Scan # 180		10:04:50				
NO	210.2 ppm		01	1.8 %	00	5.7 ppm
Scan # 181		10:05:20				
NO	231.1 ppm		01	0.1 %	00	4.5 ppm
Scan # 182		10:05:57				
NO	234.8 ppm		02	0.0 %	00	4.3 ppm
Scan # 183		10:06:20				
NO	234.9 ppm		02	0.0 %	00	4.9 ppm
Scan # 184		10:06:50				
NO	236.7 ppm		02	0.0 %	00	4.8 ppm
Scan # 185		10:07:23				
NO	239.7 ppm		03	0.0 %	00	4.7 ppm
Scan # 186		10:07:50				
NO	237.0 ppm		01	0.0 %	00	4.0 ppm
Scan # 187		10:08:20				
NO	24.1 ppm		01	0.0 %	00	4.7 ppm

487.0 ppm CO
O_2 zero

242.0 ppm NO

11.

Scan # 189	10:09:27				
NO	284.8 ppm	O2	0.0 %	CO	3.9 ppm
Scan # 19.	10:09:53				
NO	284.9 ppm	O2	0.0 %	CO	5.1 ppm
Scan # 191	10:10:27				
NO	18.8 ppm	O2	15.3 %	CO	5.5 ppm
Scan # 192	10:10:53				
NO	2.1 ppm	O2	16.2 %	CO	5.1 ppm
Scan # 193	10:11:23				
NO	1.8 ppm	O2	16.2 %	CO	5.2 ppm
Scan # 194	10:11:53				
NO	1.5 ppm	O2	16.2 %	CO	4.3 ppm
Scan # 195	10:12:23				
NO	1.7 ppm	O2	16.2 %	CO	4.6 ppm
Scan # 19.	10:12:53				
NO	1.3 ppm	O2	16.2 %	CO	3.8 ppm
Scan # 197	10:13:23				
NO	1.4 ppm	O2	16.2 %	CO	4.9 ppm
Scan # 198	10:13:53				
NO	18.1 ppm	O2	16.2 %	CO	18.1 ppm
Scan # 19.	10:14:23				
NO	1e8.2 ppm	O2	6.8 %	CO	368.4 ppm
Scan # 200	10:14:53				
NO	15e.e ppm	O2	5.9 %	CO	378.4 ppm
Scan # 201	10:15:23				
	188.1 ppm	O2	5.8 %	CO	381.9 ppm
Scan # 202	10:15:53				
NO	193.9 ppm	O2	5.8 %	CO	383.2 ppm
Scan # 203	10:16:23				
NO	194.4 ppm	O2	5.8 %	CO	379.9 ppm
Scan # 204	10:16:53				
NO	189.1 ppm	O2	5.8 %	CO	379.1 ppm
Scan # 205	10:17:23				
NO	189.. ppm	O2	5.8 %	CO	379.5 ppm
Scan # 206	10:17:53				
NO	187.3 ppm	O2	5.9 %	CO	376.7 ppm
Scan # 207	10:18:23				
NO	18e.1 ppm	O2	5.9 %	CO	377.0 ppm
Scan # 2.8	1.:18:53				
NO	18..e ppm	O2	5.9 %	CO	378.3 ppm
Scan # 209	1.:19:23				
NO	1..:.4 ppm	O2	5.9 %	CO	377.5 ppm

12

16.1% O_2

Begin Run 1

[illegible]	[illegible] ppm	[illegible]	[illegible] %	[illegible]	[illegible] ppm
Scan # 211	10:15:23				
NOx	184.9 ppm	02	5.9 %	00	376.9 ppm
Scan # 212	10:20:50				
NOx	180.3 ppm	02	5.9 %	00	377.4 ppm
Scan # 213	10:21:23				
NOx	188.3 ppm	02	6.0 %	00	378.4 ppm
Scan # 214	10:21:53				
NOx	179.2 ppm	02	6.2 %	00	37..9 ppm
Scan # 215	10:22:23				
NOx	194.6 ppm	02	6.2 %	00	370.2 ppm
Scan # 216	10:22:53				
NOx	174.1 ppm	02	6.2 %	00	365.2 ppm
Scan # 217	10:23:23				
NOx	186.3 ppm	02	6.3 %	00	367.8 ppm
Scan # 218	10:23:53				
NOx	166.9 ppm	02	6.3 %	00	367.3 ppm
Scan # 219	10:24:23				
NOx	186.6 ppm	02	6.2 %	00	370.6 ppm
Scan # 220	10:24:53				
NOx	175.9 ppm	02	6.3 %	00	369.2 ppm
Scan # 221	10:25:23				
NOx	182.7 ppm	02	6.3 %	00	368.1 ppm
Scan # 222	10:25:53				
NOx	165.9 ppm	02	6.4 %	00	364.6 ppm
Scan # 223	10:26:23				
NOx	176.6 ppm	02	6.4 %	00	365.1 ppm
Scan # 224	10:26:53				
NOx	172.6 ppm	02	6.4 %	00	366.4 ppm
Scan # 225	10:27:23				
NOx	184.6 ppm	02	6.3 %	00	367.0 ppm
Scan # 226	10:27:53				
NOx	171.4 ppm	02	6.4 %	00	366.1 ppm
Scan # 227	10:28:23				
NOx	183.5 ppm	00	6.4 %	00	366.8 ppm
Scan # 228	10:28:53				
NOx	171.4 ppm	02	6.4 %	00	364.8 ppm
Scan # 229	10:29:23				
NOx	179.4 ppm	02	6.4 %	00	363.7 ppm
Scan # 230	10:29:53				
NOx	181.4 ppm	02	6.4 %	00	364.8 ppm
Scan # 231	10:30:23				
NOx	176.7 ppm	02	6.4 %	00	363.5 ppm

NOx	178.1 ppm	O2	6.4 %	CO	364.1 ppm
Scan # 233	10:31:13				
NOx	181.6 ppm	O2	6.4 %	CO	366.6 ppm
Scan # 234	10:31:53				
NOx	177.8 ppm	O2	6.4 %	CO	364.8 ppm
Scan # 235	10:32:33				
NOx	181.9 ppm	O2	6.4 %	CO	364.5 ppm
Scan # 236	10:32:53				
NOx	185.5 ppm	O2	6.4 %	CO	364.7 ppm
Scan # 237	10:33:13				
NOx	181.7 ppm	O2	6.4 %	CO	365.6 ppm
Scan # 238	10:33:53				
NOx	178.2 ppm	O2	6.5 %	CO	362.1 ppm
Scan # 239	10:34:13				
NOx	177.9 ppm	O2	6.5 %	CO	361.9 ppm
Scan # 240	10:34:53				
NOx	174.2 ppm	O2	6.5 %	CO	364.6 ppm
Scan # 241	10:35:13				
NOx	187.9 ppm	O2	6.2 %	CO	376.2 ppm
Scan # 242	10:35:53				
NOx	181.4 ppm	O2	5.8 %	CO	377.2 ppm
Scan # 243	10:36:13				
NOx	181.4 ppm	O2	5.8 %	CO	376.5 ppm
Scan # 244	10:36:53				
NOx	178.7 ppm	O2	5.9 %	CO	377.5 ppm
Scan # 245	10:37:13				
NOx	187.3 ppm	O2	5.8 %	CO	380.1 ppm
Scan # 246	10:37:53				
NOx	185.2 ppm	O2	5.8 %	CO	380.6 ppm
Scan # 247	10:38:13				
NOx	184.5 ppm	O2	5.8 %	CO	377.3 ppm
Scan # 248	10:38:53				
NOx	189.6 ppm	O2	5.9 %	CO	378.5 ppm
Scan # 249	10:39:13				
NOx	194.6 ppm	O2	5.8 %	CO	383.0 ppm
Scan # 250	10:39:53				
NOx	191.4 ppm	O2	5.8 %	CO	377.8 ppm
Scan # 251	10:40:13				
NOx	190.2 ppm	O2	5.8 %	CO	377.1 ppm
Scan # 252	10:40:53				
NOx	191.7 ppm	O2	5.8 %	CO	378.2 ppm
Scan # 253	10:41:13				
NOx	190.4 ppm	O2	5.8 %	CO	381.7 ppm

Scan # 253	10:42:23				
NOx	190.6 ppm	O2	5.8 %	CO	379.1 ppm
Scan # 254	10:43:03				
NOx	196.2 ppm	O2	5.8 %	CO	380.8 ppm
Scan # 255	10:43:43				
NOx	200.9 ppm	O2	5.8 %	CO	380.5 ppm
Scan # 256	10:44:23				
NOx	197.9 ppm	O2	5.8 %	CO	381.1 ppm
Scan # 257	10:45:03				
NOx	196.9 ppm	O2	5.8 %	CO	381.4 ppm
Scan # 258	10:45:43				
NOx	196.4 ppm	O2	5.8 %	CO	378.0 ppm
Scan # 259	10:46:23				
NOx	201.1 ppm	O2	5.8 %	CO	381.8 ppm
Scan # 260	10:47:03				
NOx	198.0 ppm	O2	5.8 %	CO	379.7 ppm
Scan # 261	10:47:43				
NOx	198.3 ppm	O2	5.8 %	CO	379.4 ppm
Scan # 262	10:48:23				
NOx	196.9 ppm	O2	5.8 %	CO	378.5 ppm
Scan # 263	10:47:23				
NOx	201.4 ppm	O2	5.8 %	CO	379.7 ppm
Scan # 264	10:47:43				
NOx	202.6 ppm	O2	5.8 %	CO	383.0 ppm
Scan # 267	10:48:23				
NOx	202.1 ppm	O2	5.8 %	CO	382.0 ppm
Scan # 268	10:48:43				
NOx	200.9 ppm	O2	5.8 %	CO	374.1 ppm
Scan # 269	10:49:03				
NOx	198.1 ppm	O2	5.8 %	CO	377.2 ppm
Scan # 270	10:49:43				
NOx	202.7 ppm	O2	5.8 %	CO	379.2 ppm
Scan # 271	10:50:23				
NOx	200.7 ppm	O2	5.8 %	CO	379.7 ppm
Scan # 272	10:50:43				
NOx	199.9 ppm	O2	5.8 %	CO	378.9 ppm
Scan # 273	10:51:23				
NOx	195.2 ppm	O2	5.8 %	CO	380.8 ppm
Scan # 274	10:51:43				
NOx	197.6 ppm	O2	5.8 %	CO	381.3 ppm
Scan # 275	10:52:03				
NOx	196.7 ppm	O2	5.8 %	CO	380.4 ppm

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] ppm
Scan # 277		10:53:20				
NOx	206.9 ppm		02	5.8 %	00	381.8 ppm
Scan # 278		10:53:57				
NO	199.2 ppm		02	5.7 %	00	383.8 ppm
Scan # 279		10:54:27				
NOx	194.4 ppm		02	5.8 %	00	383.5 ppm
Scan # 280		10:54:50				
NOx	191.1 ppm		02	5.8 %	00	382.1 ppm
Scan # 281		10:55:13				
NOx	200.1 ppm		02	5.8 %	00	381.6 ppm
Scan # 282		10:55:53				
NOx	196.2 ppm		02	5.8 %	00	382.6 ppm
Scan # 283		10:56:23				
NOx	173.5 ppm		02	5.8 %	00	382.9 ppm
Scan # 284		10:56:53				
NOx	162.8 ppm		02	5.7 %	00	382.7 ppm
Scan # 285		10:57:23				
NOx	210.0 ppm		02	5.8 %	00	385.7 ppm
Scan # 286		10:57:53				
NOx	209.6 ppm		02	5.7 %	00	386.0 ppm
Scan # 287		10:58:23				
NOx	198.9 ppm		02	5.8 %	00	385.1 ppm
Scan # 288		10:58:57				
NOx	213.7 ppm		02	5.7 %	00	385.5 ppm
Scan # 289		10:59:20				
NOx	201.0 ppm		00	5.8 %	01	384.1 ppm
Scan # 290		10:59:57				
NOx	194.9 ppm		02	5.7 %	00	384.1 ppm
Scan # 291		11:00:20				
NOx	162.2 ppm		01	6.7 %	00	368.2 ppm
Scan # 292		11:00:53				
NOx	200.9 ppm		02	5.8 %	00	380.2 ppm
Scan # 293		11:01:21				
NOx	201.4 ppm		02	5.8 %	00	382.3 ppm
Scan # 294		11:01:57				
NOx	17.3 ppm		01	5.8 %	00	381.9 ppm
Scan # 295		11:02:27				
NOx	2.1 ppm		00	5.8 %	00	382.2 ppm
Scan # 296		11:02:57				
NOx	2.1 ppm		01	5.8 %	01	383.9 ppm
Scan # 297		11:03:20				
NO	40.8 ppm		01	15.2 %	01	45.2 ppm

condenser freeze-up
no sample flow -
standby

Standby 17

Scan # 299		11:04:13				
N..	3.3 ppm		02	18.4 %	01	38.2 ppm
Scan # 30.		11:04:53				
N..	3.2 ppm		02	18.5 %	00	38.0 ppm
Scan # 301		11:05:33				
N..	3.6 ppm		02	18.4 %	01	38.0 ppm
Scan # 302		11:06:13				
N..	3.8 ppm		02	18.4 %	00	38.8 ppm
Scan # 303		11:06:53				
N..	3.5 ppm		02	18.4 %	00	38.5 ppm
Scan # 304		11:07:33				
N..	3.7 ppm		02	18.3 %	00	38.7 ppm
Scan # 305		11:08:13				
N..	3.5 ppm		02	18.3 %	00	38.6 ppm
Scan # 306		11:08:53				
N..	3.4 ppm		02	18.2 %	00	38.6 ppm
Scan # 307		11:09:33				
N..	3.3 ppm		02	18.2 %	00	37.9 ppm
Scan # 308		11:10:13				
N..	3.1 ppm		02	18.3 %	00	38.5 ppm
Scan # 309		11:10:53				
N..	36.4 ppm		02	19.0 %	00	62.9 ppm
Scan # 310		11:11:33				
N..	16.1 ppm		03	20.5 %	00	7.9 ppm
Scan # 311		11:12:13				
N..	2.6 ppm		01	20.7 %	00	7.1 ppm
Scan # 312		11:12:53				
N..	2.6 ppm		02	20.7 %	00	5.9 ppm
Scan # 313		11:13:33				
N..	2.7 ppm		02	20.7 %	00	7.3 ppm
Scan # 314		11:14:13				
N..	2.4 ppm		01	20.7 %	00	6.6 ppm
Scan # 315		11:14:53				
N..	2.6 ppm		02	20.7 %	00	5.5 ppm
Scan # 316		11:15:33				
N..	2.4 ppm		02	20.7 %	00	7.6 ppm
Scan # 317		11:16:13				
N..	2.4 ppm		02	20.7 %	00	6.2 ppm
Scan # 318		11:16:53				
N..	2.3 ppm		02	20.7 %	00	7.2 ppm
Scan # 319		11:17:33				
N..	2.6 ppm		01	20.7 %	01	5.6 ppm

Standby

Scan # 321	11:15:17				
NOx	2.8 ppm	O2	20.7 %	CO	7.4 ppm
Scan # 322	11:15:57				
NOx	2.1 ppm	O2	20.7 %	CO	7.9 ppm
Scan # 323	11:16:23				
NOx	1.9 ppm	O2	20.7 %	CO	6.8 ppm
Scan # 324	11:16:57				
NOx	1.9 ppm	O2	20.7 %	CO	6.3 ppm
Scan # 325	11:17:23				
NOx	1.8 ppm	O2	20.6 %	CO	6.0 ppm
Scan # 326	11:17:53				
NOx	1.8 ppm	O2	20.6 %	CO	6.2 ppm
Scan # 327	11:18:23				
NOx	1.8 ppm	O2	20.6 %	CO	6.6 ppm
Scan # 328	11:18:57				
NOx	1.9 ppm	O2	20.6 %	CO	7.1 ppm
Scan # 329	11:19:23				
NOx	1.7 ppm	O2	20.6 %	CO	6.6 ppm
Scan # 330	11:19:57				
NOx	1.5 ppm	O2	20.6 %	CO	7.2 ppm
Scan # 331	11:20:23				
NOx	1.4 ppm	O2	20.6 %	CO	6.1 ppm
Scan # 332	11:20:53				
NOx	1.4 ppm	O2	20.6 %	CO	6.2 ppm
Scan # 333	11:21:23				
[illegible]	0.0 ppm	O2	21.1 %	CO	7.0 ppm
Scan # 334	11:21:51				
NOx	239.1 ppm	O2	11.2 %	CO	329.1 ppm
Scan # 335	11:22:27				
NOx	287.7 ppm	O2	6.9 %	CO	391.4 ppm
Scan # 336	11:22:53				
NOx	244.9 ppm	O2	6.8 %	CO	390.6 ppm
Scan # 337	11:23:23				
NOx	248.9 ppm	O2	6.7 %	CO	392.7 ppm
Scan # 338	11:23:57				
NOx	-0.1 ppm	O2	6.7 %	CO	396.7 ppm
Scan # 339	11:24:23				
NOx	277.6 ppm	O2	6.7 %	CO	394.6 ppm
Scan # 340	11:24:57				
NOx	272.7 ppm	O2	6.7 %	CO	393.4 ppm
Scan # 341	11:25:23				
NOx	269.6 ppm	O2	6.8 %	CO	394.7 ppm

Scan # 347	11:26:13				
N.A.	195.8 ppm	00	5.8 %	00	381.4 ppm
Scan # 344	11:26:57				
N.A.	194.1 ppm	00	5.8 %	00	381.0 ppm
Scan # 349	11:27:37				
N.A.	194.1 ppm	00	5.8 %	00	381.5 ppm
Scan # 34a	11:27:57				
N.A.	191.4 ppm	00	5.8 %	00	376.5 ppm
Scan # 347	11:28:20				
N.A.	192.2 ppm	00	5.8 %	00	379.1 ppm
Scan # 348	11:28:57				
N.A.	193.9 ppm	00	5.8 %	00	381.7 ppm
Scan # 349	11:29:23				
N.A.	194.6 ppm	00	5.8 %	00	381.8 ppm
Scan # 350	11:29:57				
N.A.	202.7 ppm	00	5.8 %	00	364.7 ppm
Scan # 351	11:30:20				
N.A.	200.9 ppm	00	5.8 %	00	382.8 ppm
Scan # 352	11:30:50				
N.A.	196.8 ppm	00	5.8 %	00	380.0 ppm
Scan # 353	11:31:23				
N.A.	197.8 ppm	00	5.8 %	00	381.6 ppm
Scan # 354	11:31:53				
N.A.	198.3 ppm	00	5.8 %	00	384.0 ppm
Scan # 355	11:32:23				
N.A.	197.1 ppm	00	5.8 %	00	381.9 ppm
Scan # 35a	11:32:57				
N.A.	198.4 ppm	00	5.8 %	00	384.7 ppm
Scan # 357	11:33:20				
N.A.	194.5 ppm	00	5.8 %	00	383.5 ppm
Scan # 358	11:33:53				
N.A.	198.4 ppm	00	5.8 %	00	384.5 ppm
Scan # 359	11:34:23				
N.A.	198.9 ppm	00	5.8 %	00	383.5 ppm
Scan # 3c0	11:34:57				
N.A.	198.2 ppm	00	5.8 %	00	383.0 ppm
Scan # 3c1	11:35:20				
N.A.	197.4 ppm	00	5.8 %	00	382.4 ppm
Scan # 3c2	11:35:57				
N.A.	197.4 ppm	00	5.8 %	00	384.7 ppm
Scan # 3c3	11:36:20				
N.A.	198.1 ppm	00	5.8 %	00	383.0 ppm

resume. add 15 min. to 19 sample run.

20

Scan #	Time	NOx	O2	CO
[illegible]		[illegible] ppm	[illegible] %	[illegible] ppm
365	11:37:23	194.2 ppm	5.8 %	382.0 ppm
366	11:37:53	194.2 ppm	5.8 %	383.6 ppm
367	11:38:23	194.9 ppm	5.8 %	384.3 ppm
368	11:38:53	199.1 ppm	5.9 %	385.3 ppm
369	11:39:23	192.0 ppm	5.8 %	384.4 ppm
370	11:39:53	20[illegible].7 ppm	5.8 %	384.3 ppm
371	11:40:23	196.3 ppm	5.8 %	385.4 ppm
372	11:40:53	20[illegible].9 ppm	5.7 %	388.9 ppm
373	11:41:23	201.4 ppm	5.8 %	389.1 ppm
374	11:41:53	210.4 ppm	5.7 %	389.5 ppm
375	11:42:23	201.6 ppm	5.8 %	388.2 ppm
376	11:42:53	205.1 ppm	5.7 %	383.5 ppm
377	11:43:23	[illegible] ppm	5.7 %	385.8 ppm
378	11:43:53	201.4 ppm	5.5 %	386.5 ppm
379	11:44:23	192.1 ppm	5.7 %	389.5 ppm
380	11:44:53	27.0 ppm	10.4 %	390.4 ppm
381	11:45:23	11.4 ppm	19.6 %	386.0 ppm
382	11:45:53	9.[illegible] ppm	20.3 %	389.0 ppm
383	11:46:23	6.3 ppm	21.0 %	13.6 ppm
384	11:46:53	[illegible] ppm	21.1 %	10.5 ppm
385	11:47:23	[illegible].4 ppm	21.[illegible] %	1[illegible] ppm

End Run 1

leak check good

Scan # 387	11:48:12					
N/A	0.9 ppm	O2	21.0 %	CO	24.8 ppm	
Scan # 388	11:48:50					
N/A	44.5 ppm	O2	20.9 %	CO	25.7 ppm	Begin system cals
Scan # 389	11:49:27					
N/A	3.4 ppm	O2	20.8 %	CO	26.5 ppm	
Scan # 390	11:49:50					
N/A	20.9 ppm	O2	19.0 %	CO	17.6 ppm	
Scan # 391	11:50:23					
N/A	13.1 ppm	O2	16.4 %	CO	13.8 ppm	
Scan # 392	11:50:50					
N/A	5.3 ppm	O2	16.3 %	CO	12.7 ppm	
Scan # 393	11:51:20					
N/A	3.7 ppm	O2	16.3 %	CO	12.0 ppm	16.1 % O_2
Scan # 394	11:51:53					
N/A	3.2 ppm	O2	16.3 %	CO	12.3 ppm	
Scan # 395	11:52:23					
N/A	2.6 ppm	O2	16.3 %	CO	11.2 ppm	
Scan # 396	11:52:53					
N/A	1.8 ppm	O2	16.3 %	CO	12.2 ppm	
Scan # 397	11:53:23					
N/A	2.4 ppm	O2	17.6 %	CO	11.6 ppm	
Scan # 398	11:53:57					
N/A	1.8 ppm	O2	20.6 %	CO	11.8 ppm	
Scan # 399	11:54:23					
N/A	1.3 ppm	O2	20.7 %	CO	4.0 ppm	
Scan # 400	11:54:57					
N/A	1.2 ppm	O2	20.7 %	CO	4.0 ppm	
Scan # 401	11:55:23					
N/A	1.4 ppm	O2	20.7 %	CO	4.9 ppm	
Scan # 402	11:55:53					
N/A	1.1 ppm	O2	20.7 %	CO	4.1 ppm	Zero
Scan # 403	11:56:20					
N/A	1.1 ppm	O2	20.7 %	CO	4.4 ppm	
Scan # 404	11:56:50					
N/A	1.4 ppm	O2	20.7 %	CO	4.3 ppm	
Scan # 405	11:57:20					
N/A	1.1 ppm	O2	20.7 %	CO	4.5 ppm	
Scan # 406	11:57:50					
N/A	1.1 ppm	O2	20.7 %	CO	4.3 ppm	
Scan # 407	11:58:20					
N/A	1.2 ppm	O2	20.4 %	CO	406.4 ppm	
Scan # 408	11:58:57					

Scan # 409		11:59:13			
NOx	0.7 ppm	O2	0.1 %	CO	481.0 ppm
Scan # 410		11:59:53			
NOx	0.9 ppm	O2	0.1 %	CO	489.4 ppm
Scan # 411		12:00:33			
NOx	0.9 ppm	O2	0.1 %	CO	489.9 ppm
Scan # 412		12:00:53			
NOx	0.8 ppm	O2	0.1 %	CO	489.5 ppm
Scan # 413		12:01:23			
NOx	1.3 ppm	O2	0.1 %	CO	477.6 ppm
Scan # 414		12:01:53			
NOx	267.1 ppm	O2	1.2 %	CO	13.5 ppm
Scan # 415		12:02:23			
NOx	221.2 ppm	O2	0.1 %	CO	6.0 ppm
Scan # 416		12:02:53			
NOx	223.4 ppm	O2	0.1 %	CO	6.4 ppm
Scan # 417		12:03:23			
NOx	222.9 ppm	O2	0.1 %	CO	5.9 ppm
Scan # 418		12:03:53			
NOx	240.3 ppm	O2	0.1 %	CO	6.6 ppm
Scan # 419		12:04:23			
NOx	239.8 ppm	O2	0.1 %	CO	6.4 ppm
Scan # 420		12:04:53			
NOx	239.3 ppm	O2	0.0 %	CO	6.7 ppm
Scan # 421		12:05:23			
NOx	238.6 ppm	O2	0.0 %	CO	6.3 ppm
Scan # 422		12:05:53			
NOx	239.9 ppm	O2	0.0 %	CO	6.5 ppm
Scan # 423		12:06:23			
NOx	60.2 ppm	O2	11.9 %	CO	7.4 ppm
Scan # 424		12:06:53			
NOx	2.9 ppm	O2	21.0 %	CO	7.3 ppm
Scan # 425		12:07:23			
NOx	2.0 ppm	O2	21.2 %	CO	7.7 ppm
Scan # 426		12:07:53			
NOx	2.2 ppm	O2	21.2 %	CO	7.3 ppm
Scan # 427		12:08:23			
NOx	1.9 ppm	O2	21.2 %	CO	6.5 ppm
Scan # 428		12:08:57			
NOx	156.2 ppm	O2	16.2 %	CO	203.7 ppm
Scan # 429		12:09:23			
NOx	190.2 ppm	O2	6.1 %	CO	378.1 ppm

487.0 ppm CO

O_2 zero

242.0 ppm NO

Scan # 431	12:11:23				
NOx	206.9 ppm	02	5.8 %	00	376.9 ppm
Scan # 432	12:12:57				
NOx	200.3 ppm	02	5.8 %	00	376.2 ppm
Scan # 433	12:11:13				
NOx	201.4 ppm	02	5.8 %	01	377.4 ppm
Scan # 434	12:11:53				
NOx	207.8 ppm	02	5.8 %	00	376.6 ppm

Begin Run 2

Scan # 435	12:12:23				
NOx	207.6 ppm	02	5.8 %	00	375.4 ppm
Scan # 436	12:12:53				
NOx	214.0 ppm	02	5.8 %	00	378.0 ppm
Scan # 437	12:13:23				
NOx	206.3 ppm	02	5.8 %	00	377.9 ppm
Scan # 438	12:13:53				
NOx	207.8 ppm	02	5.8 %	00	375.6 ppm
Scan # 439	12:14:23				
NOx	208.5 ppm	02	5.8 %	00	376.3 ppm
Scan # 440	12:14:53				
NOx	200.1 ppm	02	5.8 %	00	372.3 ppm
Scan # 441	12:15:23				
NOx	201.7 ppm	02	5.8 %	00	377.6 ppm
Scan # 442	12:15:57				
NOx	199.6 ppm	02	5.9 %	00	375.3 ppm
Scan # 443	12:16:27				
NOx	199.2 ppm	02	5.8 %	00	373.9 ppm
Scan # 444	12:16:57				
NOx	196.7 ppm	01	5.9 %	00	375.1 ppm
Scan # 445	12:17:23				
NOx	198.9 ppm	02	5.8 %	00	377.9 ppm
Scan # 446	12:17:57				
NOx	203.4 ppm	00	5.9 %	00	374.9 ppm
Scan # 447	12:18:23				
NOx	201.4 ppm	02	5.8 %	00	376.5 ppm
Scan # 448	12:18:53				
NOx	204.8 ppm	00	5.8 %	00	376.0 ppm
Scan # 449	12:19:23				
NOx	205.1 ppm	02	5.8 %	00	378.1 ppm
Scan # 450	12:19:57				
NOx	201.4 ppm	01	5.8 %	01	375.6 ppm
Scan # 451	12:20:27				
NOx	198.3 ppm	02	5.9 %	00	374.9 ppm

Scan # 452		12:21:23				
NOx	196.9 ppm		02	5.8 %	00	373.7 ppm
Scan # 454		12:21:53				
NOx	202.4 ppm		02	5.8 %	00	374.3 ppm
Scan # 456		12:22:23				
NOx	205.4 ppm		02	5.8 %	00	376.9 ppm
Scan # 458		12:22:53				
NOx	204.4 ppm		02	5.9 %	00	376.2 ppm
Scan # 457		12:23:03				
NOx	196.1 ppm		02	5.9 %	00	373.9 ppm
Scan # 459		12:23:53				
NOx	197.4 ppm		02	5.9 %	00	372.4 ppm
Scan # 459		12:24:23				
NOx	200.9 ppm		02	5.9 %	00	377.4 ppm
Scan # 460		12:24:53				
NOx	199.2 ppm		02	5.8 %	00	374.3 ppm
Scan # 461		12:25:23				
NOx	211.2 ppm		02	5.8 %	00	375.9 ppm
Scan # 462		12:25:53				
NOx	206.1 ppm		02	5.8 %	00	377.1 ppm
Scan # 463		12:26:23				
NOx	203.0 ppm		02	5.9 %	00	377.2 ppm
Scan # 464		12:26:53				
NOx	206.7 ppm		02	5.8 %	00	378.9 ppm
Scan # 465		12:27:23				
NOx	200.9 ppm		02	5.8 %	00	376.7 ppm
Scan # 466		12:27:53				
NOx	198.3 ppm		02	5.8 %	00	376.5 ppm
Scan # 467		12:28:23				
NOx	203.1 ppm		02	5.8 %	00	377.1 ppm
Scan # 468		12:28:53				
NOx	214.7 ppm		02	5.8 %	00	379.0 ppm
Scan # 469		12:29:23				
NOx	201.9 ppm		02	5.8 %	00	377.3 ppm
Scan # 470		12:29:53				
NOx	202.9 ppm		02	5.8 %	00	374.8 ppm
Scan # 471		12:30:23				
NOx	203.1 ppm		02	5.8 %	00	377.8 ppm
Scan # 472		12:30:53				
NOx	201.6 ppm		02	5.8 %	00	373.9 ppm
Scan # 473		12:31:23				
NOx	195.6 ppm		02	5.9 %	00	375.8 ppm

Scan # [illegible]	12:32:[illegible]					
NOx	199.4 ppm	O2	5.8 %	CO	377.3 ppm	
Scan # 476	12:32:53					
NOx	203.9 ppm	O2	5.8 %	CO	378.0 ppm	
Scan # 477	12:33:23					
NOx	205.7 ppm	O2	5.8 %	CO	378.5 ppm	
Scan # 478	12:33:53					
NOx	200.4 ppm	O2	5.8 %	CO	376.2 ppm	
Scan # 479	12:34:23					
NOx	196.7 ppm	O2	5.8 %	CO	373.9 ppm	
Scan # 480	12:34:53					
NOx	198.6 ppm	O2	5.8 %	CO	376.7 ppm	
Scan # 481	12:35:23					
NOx	195.5 ppm	O2	5.8 %	CO	374.8 ppm	
Scan # 482	12:35:53					
NOx	202.5 ppm	O2	5.8 %	CO	376.9 ppm	
Scan # 483	12:36:23					
NOx	203.7 ppm	O2	5.8 %	CO	376.9 ppm	
Scan # 484	12:36:53					
NOx	201.8 ppm	O2	5.8 %	CO	376.4 ppm	
Scan # 485	12:37:23					
NOx	199.1 ppm	O2	5.8 %	CO	375.8 ppm	
Scan # 486	12:37:53					
NOx	207.4 ppm	O2	5.8 %	CO	378.5 ppm	
Scan # 487	12:38:23					
NOx	206.1 ppm	O2	5.8 %	CO	377.5 ppm	
Scan # 488	12:38:53					
NOx	210.5 ppm	O2	5.8 %	CO	376.3 ppm	
Scan # 489	12:39:23					
NOx	208.1 ppm	O2	5.8 %	CO	377.6 ppm	
Scan # 490	12:39:53					
NOx	205.3 ppm	O2	5.8 %	CO	376.5 ppm	
Scan # 491	12:40:23					
NOx	208.3 ppm	O2	5.8 %	CO	377.1 ppm	
Scan # 492	12:40:53					
NOx	214.5 ppm	O2	5.8 %	CO	377.3 ppm	
Scan # 493	12:41:23					
NOx	211.4 ppm	O2	5.8 %	CO	379.3 ppm	
Scan # 494	12:41:53					
NOx	206.7 ppm	O2	5.8 %	CO	375.7 ppm	
Scan # 495	12:42:23					
NOx	208.3 ppm	O2	5.8 %	CO	376.5 ppm	
Scan # 496	12:42:53					

Scan # 497		12:43:18				
NOx	201.1 ppm		O2	5.8 %	CO	375.8 ppm
Scan # 498		12:43:53				
NOx	200.3 ppm		O2	5.8 %	CO	376.7 ppm
Scan # 499		12:44:28				
NOx	209.5 ppm		O2	5.8 %	CO	375.3 ppm
Scan # 500		12:44:53				
NOx	211.9 ppm		O2	5.8 %	CO	378.1 ppm
Scan # 501		12:45:03				
NOx	208.4 ppm		O2	5.8 %	CO	376.6 ppm
Scan # 502		12:45:57				
NOx	215.9 ppm		O2	5.8 %	CO	375.2 ppm
Scan # 503		12:46:23				
NOx	209.3 ppm		O2	5.8 %	CO	376.9 ppm
Scan # 504		12:46:53				
NOx	216.0 ppm		O2	5.8 %	CO	380.8 ppm
Scan # 505		12:47:23				
NOx	211.4 ppm		O2	5.8 %	CO	380.6 ppm
Scan # 506		12:47:53				
NOx	215.3 ppm		O2	5.8 %	CO	378.3 ppm
Scan # 507		12:48:23				
NOx	205.4 ppm		O2	5.8 %	CO	375.1 ppm
Scan # 508		12:49:57				
NOx	208.9 ppm		O2	5.8 %	CO	377.6 ppm
Scan # 509		12:49:23				
NOx	201.6 ppm		O2	5.8 %	CO	376.1 ppm
Scan # 510		12:49:57				
NOx	206.0 ppm		O2	5.8 %	CO	377.5 ppm
Scan # 511		12:50:23				
NOx	205.6 ppm		O2	5.8 %	CO	376.8 ppm
Scan # 512		12:50:53				
NOx	201.0 ppm		O2	5.8 %	CO	374.5 ppm
Scan # 513		12:51:23				
NOx	201.3 ppm		O2	5.8 %	CO	376.4 ppm
Scan # 514		12:51:53				
NOx	206.8 ppm		O2	5.8 %	CO	374.5 ppm
Scan # 515		12:52:23				
NOx	207.9 ppm		O2	5.8 %	CO	372.5 ppm
Scan # 516		12:52:57				
NOx	207.9 ppm		O2	5.8 %	CO	374.5 ppm
Scan # 517		12:53:27				
NOx	214.3 ppm		O2	5.8 %	CO	377.9 ppm

Scan # 519		12:45:23				
NOx	210.9 ppm		O2	5.8 %	CO	373.9 ppm
Scan # 520		12:54:57				
NOx	202.2 ppm		O2	5.8 %	CO	372.9 ppm
Scan # 521		12:55:23				
NOx	208.1 ppm		O2	5.8 %	CO	378.8 ppm
Scan # 522		12:55:53				
NOx	204.4 ppm		O2	5.8 %	CO	376.2 ppm
Scan # 523		12:56:23				
NOx	203.3 ppm		O2	5.8 %	CO	376.3 ppm
Scan # 524		12:56:51				
NOx	211.2 ppm		O2	5.8 %	CO	373.7 ppm
Scan # 525		12:57:21				
NOx	203.8 ppm		O2	5.8 %	CO	375.7 ppm
Scan # 526		12:57:53				
NOx	206.4 ppm		O2	5.8 %	CO	373.4 ppm
Scan # 527		12:58:23				
NOx	196.8 ppm		O2	5.9 %	CO	374.9 ppm
Scan # 528		12:58:53				
NOx	196.4 ppm		O2	5.8 %	CO	371.7 ppm
Scan # 529		12:59:23				
NOx	201.6 ppm		O2	5.8 %	CO	374.7 ppm
Scan # 530		12:59:57				
NOx	198.9 ppm		O2	5.8 %	CO	374.5 ppm
Scan # 531		13:00:23				
NOx	203.4 ppm		O2	5.8 %	CO	375.9 ppm
Scan # 532		13:01:53				
NOx	203.2 ppm		O2	5.8 %	CO	376.5 ppm
Scan # 533		13:01:20				
NOx	203.5 ppm		O2	5.8 %	CO	374.1 ppm
Scan # 534		13:01:53				
NOx	192.8 ppm		O2	5.8 %	CO	371.0 ppm
Scan # 535		13:02:27				
NOx	199.4 ppm		O2	5.9 %	CO	375.7 ppm
Scan # 536		13:02:53				
NOx	199.8 ppm		O2	5.8 %	CO	375.0 ppm
Scan # 537		13:03:20				
NOx	199.2 ppm		O2	5.9 %	CO	372.6 ppm
Scan # 538		13:03:53				
NOx	194.3 ppm		O2	5.9 %	CO	372.0 ppm
Scan # 539		13:04:20				
NOx	197.4 ppm		O2	5.9 %	CO	372.3 ppm

Scan # 542	13:05:23					
NOx	191.9 ppm	O2	5.9 %	CO	371.2 ppm	
Scan # 543	13:06:07					
NOx	196.3 ppm	O2	5.9 %	CO	371.0 ppm	
Scan # 543	13:06:27					
NOx	193.4 ppm	O2	5.9 %	CO	371.7 ppm	
Scan # 544	13:06:52					
NOx	196.4 ppm	O2	5.9 %	CO	375.2 ppm	
Scan # 545	13:07:23					
NOx	192.4 ppm	O2	5.9 %	CO	371.4 ppm	
Scan # 546	13:07:57					
NOx	197.7 ppm	O2	5.9 %	CO	373.6 ppm	
Scan # 547	13:08:23					
NOx	194.4 ppm	O2	5.9 %	CO	372.5 ppm	
Scan # 548	13:08:53					
NOx	204.7 ppm	O2	5.9 %	CO	373.9 ppm	
Scan # 549	13:09:23					
NOx	191.2 ppm	O2	5.9 %	CO	371.0 ppm	
Scan # 550	13:09:53					
NOx	196.0 ppm	O2	5.9 %	CO	372.8 ppm	
Scan # 551	13:10:23					
NOx	193.4 ppm	O2	5.9 %	CO	372.3 ppm	
Scan # 552	13:10:57					
NOx	193.7 ppm	O2	5.9 %	CO	370.8 ppm	
Scan # 553	13:11:27					
NOx	191.1 ppm	O2	5.9 %	CO	372.5 ppm	
Scan # 554	13:11:57					
NOx	194.3 ppm	O2	5.9 %	CO	373.6 ppm	
Scan # 555	13:12:23					
NOx	187.8 ppm	O2	5.9 %	CO	372.0 ppm	

End Run 2

Scan # 556	13:12:53					
NOx	196.3 ppm	O2	5.9 %	CO	371.7 ppm	
Scan # 557	13:13:27					
NOx	193.2 ppm	O2	5.9 %	CO	372.1 ppm	
Scan # 558	13:13:53					
NOx	191.9 ppm	O2	5.9 %	CO	373.3 ppm	
Scan # 559	13:14:23					
NOx	193.2 ppm	O2	5.9 %	CO	370.0 ppm	
Scan # 561	13:14:51					
NOx	197.7 ppm	O2	5.9 %	CO	371.0 ppm	
Scan # 561	13:15:27					
NOx	189.2 ppm	O2	5.9 %	CO	369.6 ppm	

Scan # 567	13:16:23					
NO	196.9 ppm	01	5.9 %	00	374.4 ppm	
Scan # 568	13:16:53					
NO	200.4 ppm	02	5.8 %	00	376.6 ppm	
Scan # 569	13:17:23					
NO	202.2 ppm	02	5.9 %	00	376.4 ppm	
Scan # 570	13:17:53					
NO	204.5 ppm	02	5.8 %	00	377.8 ppm	
Scan # 567	13:16:23					
NO	206.3 ppm	02	5.9 %	00	374.7 ppm	
Scan # 568	13:18:53					
NO	210.5 ppm	02	5.8 %	00	376.3 ppm	
Scan # 569	13:19:23					
NO	209.3 ppm	02	5.9 %	00	373.3 ppm	
Scan # 570	13:19:53					
NO	210.4 ppm	02	5.9 %	00	374.9 ppm	
Scan # 571	13:20:23					
NO	208.8 ppm	02	5.9 %	00	375.1 ppm	
Scan # 572	13:20:53					
NO	209.2 ppm	02	5.8 %	00	377.9 ppm	
Scan # 573	13:21:23					
NO	210.5 ppm	02	5.8 %	00	377.8 ppm	
Scan # 574	13:21:53					
NO	214.1 ppm	02	5.8 %	00	376.0 ppm	
Scan # 575	13:22:23					
NO	210.2 ppm	02	5.8 %	00	377.5 ppm	
Scan # 576	13:22:53					
NO	219.9 ppm	01	5.8 %	00	376.3 ppm	
Scan # 577	13:23:23					
NO	215.1 ppm	01	5.8 %	00	376.4 ppm	
Scan # 578	13:23:53					
NO	210.2 ppm	02	5.8 %	00	376.9 ppm	
Scan # 579	13:24:23					
NO	164.8 ppm	01	6.8 %	00	328.9 ppm	
Scan # 580	13:24:53					
NO	19.3 ppm	02	21.3 %	00	9.6 ppm	
Scan # 581	13:25:23					
NO	18.4 ppm	02	21.1 %	00	2.3 ppm	
Scan # 581	13:25:53					
NO	18.6 ppm	01	21.1 %	00	1.9 ppm	
Scan # 582	13:26:23					
NO	18.6 ppm	02	21.1 %	00	4.8 ppm	

Begin system cals

Start # 595	13:27:32					
NO	6.9 ppm	02	21.1 %	00	4.1 ppm	
Start # 596	13:27:57					
NO	6.7 ppm	02	21.1 %	00	3.7 ppm	
Start # 597	13:28:21					
NO	26.8 ppm	02	21.2 %	00	4.7 ppm	
Start # 598	13:28:57					
NO	9.1 ppm	02	20.7 %	01	0.8 ppm	
Start # 599	13:29:21					
NO	6.7 ppm	02	20.7 %	00	0.3 ppm	
Start # 5A0	13:29:53					
NO	5.8 ppm	02	20.7 %	00	-0.3 ppm	
Start # 5A1	13:30:23					
NO	5.0 ppm	02	20.7 %	00	1.3 ppm	
Start # 5A2	13:30:53					
NO	4.3 ppm	02	20.7 %	00	1.8 ppm	
Start # 5A3	13:31:22					
NO	3.9 ppm	02	20.7 %	00	0.8 ppm	
Start # 5A4	13:31:53					
NO	3.8 ppm	01	20.7 %	00	1.7 ppm	
Start # 5A5	13:32:23					
NO	3.4 ppm	02	20.7 %	00	1.4 ppm	
Start # 5A6	13:32:51					
NO	2.8 ppm	02	20.7 %	00	1.4 ppm	
Start # 5A7	13:33:20					
NO	3.2 ppm	02	20.7 %	00	1.4 ppm	
Start # 5A8	13:33:51					
NO	3.0 ppm	01	20.7 %	01	1.6 ppm	
Start # 5A9	13:34:22					
NO	3.6 ppm	02	20.7 %	00	1.3 ppm	
Start # 5B0	13:34:50					
NO	3.6 ppm	03	20.8 %	00	3.7 ppm	
Start # 5B1	13:35:20					
NO	3.5 ppm	01	16.5 %	00	2.7 ppm	
Start # 5B2	13:35:53					
NO	3.4 ppm	02	16.7 %	00	2.5 ppm	
Start # 5B3	13:36:22					
NO	3.6 ppm	02	16.3 %	00	2.9 ppm	
Start # 5B4	13:36:52					
NO	3.8 ppm	02	16.3 %	01	2.1 ppm	
Start # 5B5	13:37:22					
NO	3.9 ppm	02	16.3 %	00	2.7 ppm	

leak check good

30

zero

16.1% O_2

Scan # 607	13:38:22				
NOx 2.6 ppm	O2	19.3 %	CO	302.4 ppm	
Scan # 608	13:39:53				
NOx 2.6 ppm	O2	0.3 %	CO	487.4 ppm	
Scan # 609	13:39:22				
NOx 2.4 ppm	O2	0.1 %	CO	489.6 ppm	
Scan # 610	13:39:52				
NOx 2.2 ppm	O2	0.1 %	CO	486.9 ppm	
Scan # 611	13:40:22				
NOx 2.2 ppm	O2	0.1 %	CO	489.1 ppm	
Scan # 612	13:40:52				
NOx 2.2 ppm	O2	0.1 %	CO	489.4 ppm	
Scan # 613	13:41:23				
NOx 2.2 ppm	O2	0.1 %	CO	490.1 ppm	
Scan # 614	13:41:52				
NOx 60.5 ppm	O2	6.9 %	CO	163.8 ppm	
Scan # 615	13:42:22				
NOx 242.9 ppm	O2	0.3 %	CO	4.2 ppm	
Scan # 616	13:42:52				
NOx 247.5 ppm	O2	0.1 %	CO	2.9 ppm	
Scan # 617	13:43:22				
NOx 247.6 ppm	O2	0.1 %	CO	2.4 ppm	
Scan # 618	13:43:52				
NOx 247.8 ppm	O2	0.1 %	CO	1.9 ppm	
Scan # 619	13:44:22				
NOx 247.0 ppm	O2	0.1 %	CO	1.0 ppm	
Scan # 620	13:44:52				
NOx 247.8 ppm	O2	0.1 %	CO	2.1 ppm	
Scan # 621	13:45:22				
NOx 43.0 ppm	O2	15.2 %	CO	3.1 ppm	
Scan # 622	13:45:52				
NOx 4.2 ppm	O2	21.1 %	CO	1.8 ppm	
Scan # 623	13:46:22				
NOx 3.7 ppm	O2	21.2 %	CO	1.6 ppm	
Scan # 624	13:46:52				
NOx 3.2 ppm	O2	21.2 %	CO	2.3 ppm	
Scan # 625	13:47:22				
NOx 3.2 ppm	O2	21.2 %	CO	2.3 ppm	
Scan # 626	13:47:51				
NOx 3.3 ppm	O2	21.2 %	CO	1.6 ppm	
Scan # 627	13:48:22				
NOx 2.9 ppm	O2	21.2 %	CO	1.4 ppm	
Scan # 628	13:48:52				

487.0 ppm CO
O_2 zero

242.0 ppm NO

Scan # 629	13:49:02				
NOx	3.0 ppm	CO	21.2 %	CO	1.2 ppm
Scan # 630	13:49:52				
NOx	2.9 ppm	CO	21.2 %	CO	1.5 ppm
Scan # 631	13:50:32				
NOx	3.0 ppm	CO	21.2 %	CO	1.7 ppm
Scan # 632	13:50:52				
NOx	2.9 ppm	CO	21.2 %	CO	1.4 ppm
Scan # 633	13:51:02				
NOx	3.0 ppm	CO	21.2 %	CO	1.0 ppm
Scan # 634	13:51:52				
NOx	3.0 ppm	CO	21.2 %	CO	1.4 ppm
Scan # 635	13:52:12				
NOx	2.6 ppm	CO	21.2 %	CO	1.2 ppm
Scan # 636	13:52:52				
NOx	2.9 ppm	CO	21.2 %	CO	1.9 ppm
Scan # 637	13:53:22				
NOx	2.6 ppm	CO	21.2 %	CO	0.5 ppm
Scan # 638	13:53:52				
NOx	2.4 ppm	CO	21.2 %	CO	1.6 ppm
Scan # 639	13:54:22				
NOx	2.5 ppm	CO	21.2 %	CO	1.8 ppm
Scan # 64.	13:54:52				
NOx	2.5 ppm	CO	21.2 %	CO	1.0 ppm
Scan # 641	13:55:22				
NOx	2.4 ppm	CO	21.2 %	CO	1.1 ppm
Scan # 642	13:55:52				
NOx	2.1 ppm	CO	21.2 %	CO	1.0 ppm
Scan # 643	13:56:22				
NOx	2.5 ppm	CO	21.3 %	CO	1.1 ppm
Scan # 644	13:56:52				
NOx	2.1 ppm	CO	21.3 %	CO	1.6 ppm
Scan # 645	13:57:22				
NOx	1.9 ppm	CO	21.2 %	CO	1.1 ppm
Scan # 646	13:57:52				
NOx	35.3 ppm	CO	21.0 %	CO	22.2 ppm
Scan # 647	13:58:12				
NOx	211.4 ppm	CO	6.4 %	CO	374.3 ppm
Scan # 648	13:58:42				
NO	213.4 ppm	CO	5.8 %	CO	381.7 ppm
Scan # 649	13:59:22				
NOx	204.2 ppm	CO	5.9 %	CO	377.5 ppm

Begin Run 3

Scan # 651	14:00:22				
NO	205.9 ppm	O2	5.9 %	CO	378.3 ppm
Scan # 652	14:00:52				
NO	205.2 ppm	O2	5.9 %	CO	378.6 ppm
Scan # 653	14:01:22				
NO	216.9 ppm	O2	5.9 %	CO	377.8 ppm
Scan # 654	14:01:52				
NO	221.5 ppm	O2	5.9 %	CO	380.1 ppm
Scan # 655	14:02:22				
NO	224.2 ppm	O2	5.8 %	CO	379.1 ppm
Scan # 656	14:02:52				
NO	223.2 ppm	O2	5.8 %	CO	379.9 ppm
Scan # 657	14:03:22				
NO	220.9 ppm	O2	5.8 %	CO	380.0 ppm
Scan # 658	14:03:52				
NO	219.2 ppm	O2	5.8 %	CO	380.3 ppm
Scan # 659	14:04:22				
NO	218.4 ppm	O2	5.8 %	CO	380.7 ppm
Scan # 660	14:04:52				
NO	220.4 ppm	O2	5.8 %	CO	380.5 ppm
Scan # 661	14:05:22				
NO	224.4 ppm	O2	5.8 %	CO	379.7 ppm
Scan # 662	14:05:52				
NO	208.1 ppm	O2	5.8 %	CO	375.4 ppm
Scan # 663	14:06:22				
NO	185.2 ppm	O2	6.0 %	CO	370.5 ppm
Scan # 664	14:6:52				
NO	186.0 ppm	O2	5.9 %	CO	371.3 ppm
Scan # 665	14:07:22				
NO	180.5 ppm	O2	6.0 %	CO	371.0 ppm
Scan # 666	14:07:52				
NO	191.9 ppm	O2	5.9 %	CO	372.1 ppm
Scan # 667	14:08:22				
NO	178.4 ppm	O2	5.9 %	CO	370.1 ppm
Scan # 668	14:08:52				
NO	196.5 ppm	O2	5.9 %	CO	374.7 ppm
Scan # 669	14:09:22				
NO	183.2 ppm	O2	5.9 %	CO	372.6 ppm
Scan # 670	14:09:52				
NO	200.8 ppm	O2	5.9 %	CO	373.2 ppm
Scan # 671	14:10:22				
NO	197.8 ppm	O2	5.9 %	CO	374.7 ppm

Scan # 673	14:11:11				
NO3	187.6 ppm	01	5.9 %	00	370.1 ppm
Scan # 674	14:11:52				
NO3	203.1 ppm	01	5.9 %	00	372.9 ppm
Scan # 675	14:12:32				
NO3	178.0 ppm	02	5.9 %	00	369.4 ppm
Scan # 676	14:13:12				
NO3	191.2 ppm	02	5.9 %	00	373.4 ppm
Scan # 677	14:13:52				
NO3	187.9 ppm	02	5.9 %	00	374.3 ppm
Scan # 678	14:14:32				
NO3	202.7 ppm	01	5.8 %	00	374.3 ppm
Scan # 679	14:14:51				
NO3	187.6 ppm	01	5.9 %	00	371.3 ppm
Scan # 680	14:14:52				
NO3	207.5 ppm	02	5.8 %	00	376.1 ppm
Scan # 681	14:15:32				
NO3	196.2 ppm	02	5.9 %	00	375.2 ppm
Scan # 682	14:15:52				
NO3	212.0 ppm	02	5.8 %	00	378.2 ppm
Scan # 683	14:16:32				
NO3	206.5 ppm	02	5.8 %	00	374.3 ppm
Scan # 684	14:16:51				
NO3	224.3 ppm	01	5.8 %	00	378.0 ppm
Scan # 685	14:17:32				
NO3	221.4 ppm	02	5.8 %	00	381.2 ppm
Scan # 686	14:17:51				
NO3	207.7 ppm	01	5.7 %	00	380.7 ppm
Scan # 687	14:18:31				
NO3	211.2 ppm	02	5.8 %	00	376.2 ppm
Scan # 688	14:18:52				
NO3	221.4 ppm	02	5.8 %	00	379.7 ppm
Scan # 689	14:19:11				
NO3	211.7 ppm	01	5.8 %	00	376.9 ppm
Scan # 690	14:19:51				
NO3	231.1 ppm	01	5.8 %	00	383.6 ppm
Scan # 691	14:21:11				
NO3	211.3 ppm	02	5.8 %	00	378.6 ppm
Scan # 692	14:21:31				
NO3	229.4 ppm	01	5.7 %	01	379.8 ppm
Scan # 693	14:21:51				
NO3	214.4 ppm	02	5.8 %	01	378.0 ppm

Scan # [illegible]	14:22:1[illegible]				
[illegible]	218.4 ppm	02	5.8 %	00	376.4 ppm
Scan # 695	14:24:52				
[illegible]	218.9 ppm	01	5.8 %	00	376.3 ppm
Scan # 697	14:27:12				
[illegible]	218.4 ppm	02	5.8 %	01	374.3 ppm
Scan # 698	14:27:52				
[illegible]	222.6 ppm	02	5.8 %	00	373.4 ppm
Scan # 699	14:28:32				
[illegible]	218.2 ppm	02	5.8 %	00	373.3 ppm
Scan # 700	14:29:52				
[illegible]	221.3 ppm	02	5.8 %	00	377.6 ppm
Scan # 701	14:29:32				
[illegible]	209.1 ppm	02	5.8 %	00	374.9 ppm
Scan # 702	14:29:52				
[illegible]	224.7 ppm	02	5.8 %	00	377.5 ppm
Scan # 703	14:28:32				
[illegible]	219.1 ppm	02	5.8 %	00	373.2 ppm
Scan # 704	14:28:52				
[illegible]	222.9 ppm	02	5.7 %	00	376.0 ppm
Scan # 705	14:27:32				
[illegible]	220.8 ppm	01	5.8 %	00	376.2 ppm
Scan # 706	14:27:52				
[illegible]	220.1 ppm	02	5.7 %	00	376.3 ppm
Scan # 707	14:28:32				
[illegible]	218.0 ppm	02	5.8 %	00	376.8 ppm
Scan # 708	14:28:52				
[illegible]	220.8 ppm	01	5.7 %	00	377.3 ppm
Scan # 709	14:29:32				
[illegible]	218.7 ppm	02	5.8 %	00	376.3 ppm
Scan # 710	14:29:52				
[illegible]	229.2 ppm	00	5.8 %	00	374.7 ppm
Scan # 711	14:30:32				
[illegible]	210.6 ppm	02	5.8 %	00	372.9 ppm
Scan # 712	14:30:52				
[illegible]	224.4 ppm	02	5.7 %	00	376.2 ppm
Scan # 713	14:31:32				
[illegible]	21[illegible].2 ppm	02	5.8 %	00	373.2 ppm
Scan # 714	14:31:52				
[illegible]	21[illegible].6 ppm	01	5.8 %	00	376.1 ppm
Scan # 715	14:32:32				
[illegible]	2[illegible].8 ppm	01	5.8 %	00	371.1 ppm

Scan # 717	14:30:21					
[illegible]	203.1 ppm	02	5.8 %	00	371.7 ppm	
Scan # 719	14:33:51					
[illegible]	203.7 ppm	02	5.7 %	00	377.1 ppm	
Scan # 719	14:34:21					
[illegible]	210.1 ppm	01	5.8 %	00	372.8 ppm	
Scan # 720	14:34:51					
[illegible]	211.3 ppm	02	5.8 %	00	374.2 ppm	
Scan # 721	14:35:21					
[illegible]	196.4 ppm	01	5.9 %	00	374.[illegible] ppm	
Scan # 722	14:35:52					
[illegible]	192.8 ppm	02	5.9 %	00	376.5 ppm	
Scan # 723	14:36:22					
[illegible]	182.6 ppm	02	6.0 %	00	377.9 ppm	
Scan # 724	14:36:52					
[illegible]	219.4 ppm	02	5.9 %	00	376.2 ppm	
Scan # 725	14:37:22					
[illegible]	193.7 ppm	02	5.9 %	00	372.5 ppm	
Scan # 726	14:37:52					
[illegible]	193.1 ppm	01	5.9 %	00	373.1 ppm	
Scan # 727	14:38:22					
[illegible]	186.1 ppm	01	5.9 %	00	370.2 ppm	
Scan # 728	14:[illegible]:51					
[illegible]	197.5 ppm	02	5.9 %	00	368.9 ppm	
Scan # 729	14:39:21					
[illegible]	183.6 ppm	01	5.9 %	00	369.4 ppm	
Scan # 730	14:39:51					
[illegible]	201.1 ppm	01	5.9 %	00	370.2 ppm	
Scan # 731	14:40:21					
[illegible]	197.2 ppm	01	5.9 %	00	371.7 ppm	
Scan # 732	14:40:51					
[illegible]	193.6 ppm	02	5.9 %	00	370.8 ppm	
Scan # 733	14:41:21					
[illegible]	190.9 ppm	02	5.9 %	00	368.0 ppm	
Scan # 734	14:41:51					
[illegible]	189.9 ppm	02	5.9 %	00	372.4 ppm	
Scan # 735	14:42:21					
[illegible]	175.7 ppm	01	6.0 %	00	369.8 ppm	
Scan # 736	14:42:51					
[illegible]	184.3 ppm	01	6.1 %	00	371.2 ppm	
Scan # 737	14:43:21					
[illegible]	178.6 ppm	02	6.0 %	00	370.1 ppm	

Scan # 739	14:44:12				
NOx	178.7 ppm	O2	6.0 %	CO	367.5 ppm
Scan # 740	14:44:52				
NOx	183.4 ppm	O2	5.9 %	CO	370.9 ppm
Scan # 741	14:45:32				
NOx	176.5 ppm	O2	6.0 %	CO	365.5 ppm
Scan # 742	14:45:52				
NOx	183.9 ppm	O2	5.9 %	CO	368.7 ppm
Scan # 743	14:46:32				
NOx	174.1 ppm	O2	6.0 %	CO	367.8 ppm
Scan # 744	14:46:52				
NOx	174.4 ppm	O2	6.0 %	CO	368.1 ppm
Scan # 745	14:47:32				
NOx	174.4 ppm	O2	6.0 %	CO	367.8 ppm
Scan # 746	14:47:52				
NOx	180.6 ppm	O2	6.0 %	CO	366.4 ppm
Scan # 747	14:48:32				
NOx	177.4 ppm	O2	6.0 %	CO	369.1 ppm
Scan # 748	14:48:52				
NOx	177.9 ppm	O2	6.0 %	CO	368.5 ppm
Scan # 749	14:49:32				
NOx	178.4 ppm	O2	6.0 %	CO	369.3 ppm
Scan # 750	14:49:52				
NOx	182.5 ppm	O2	5.9 %	CO	369.9 ppm
Scan # 751	14:50:32				
NOx	176.2 ppm	O2	6.0 %	CO	368.9 ppm
Scan # 752	14:50:52				
NOx	181.8 ppm	O2	6.0 %	CO	370.9 ppm
Scan # 753	14:51:32				
NOx	178.1 ppm	O2	6.0 %	CO	367.4 ppm
Scan # 754	14:51:52				
NOx	174.3 ppm	O2	6.0 %	CO	368.0 ppm
Scan # 755	14:52:32				
NOx	167.1 ppm	O2	6.0 %	CO	365.9 ppm
Scan # 756	14:52:52				
NOx	174.2 ppm	O2	6.0 %	CO	367.2 ppm
Scan # 757	14:53:31				
NOx	183.1 ppm	O2	6.0 %	CO	369.8 ppm
Scan # 758	14:53:51				
NOx	174.1 ppm	O2	6.0 %	CO	368.6 ppm
Scan # 759	14:54:31				
NOx	183.7 ppm	O2	6.0 %	CO	368.8 ppm

User # 761	14:55:02					
NC	164.8 ppm	02	6.0 %	00	361.3 ppm	
User # 762	14:55:53					
Air	170.4 ppm	02	6.0 %	00	366.3 ppm	
User # 763	14:56:31					
NO2	164.6 ppm	02	6.0	00	368.8 ppm	
User # 764	14:56:51					
Air	172.9 ppm	02	6.0 %	00	367.6 ppm	
User # 765	14:57:22					
Air	166.3 ppm	02	6.1 %	00	366.9 ppm	
User # 766	14:57:51					
Air	171.6 ppm	02	6.0 %	00	369.1 ppm	
User # 767	14:58:22					
Air	165.5 ppm	02	6.0 %	00	368.6 ppm	
User # 768	14:58:52					
Air	165.5 ppm	02	6.0 %	00	367.3 ppm	
User # 769	14:59:22					
Air	156.3 ppm	02	6.0 %	00	364.7 ppm	
User # 770	14:59:52					
Air	166.6 ppm	01	6.0 %	00	368.7 ppm	
User # 771	15:00:22					
Air	168.1 ppm	02	6.0 %	00	369.6 ppm	End Run 3
User # 772	15:00:51					
Air	170.4 ppm	02	6.0 %	00	367.0 ppm	
User # 773	15:01:22					
Air	160.1 ppm	02	6.0 %	00	365.8 ppm	
User # 774	15:01:51					
Air	171.9 ppm	02	6.0 %	00	368.9 ppm	
User # 775	15:02:22					
Air	170.1 ppm	02	6.0 %	00	370.3 ppm	
User # 776	15:02:52					
Air	176.0 ppm	02	6.0 %	00	369.2 ppm	leak check good
User # 777	15:03:22					
Air	166.9 ppm	02	6.0 %	00	367.3 ppm	
User # 778	15:03:52					
Air	170.7 ppm	02	6.0 %	00	366.2 ppm	
User # 779	15:04:22					
NO	20.4 ppm	02	19.0 %	00	29.4 ppm	
User # 780	15:04:51					
NO	1.7 ppm	02	21.0 %	00	1.1 ppm	
User # 781	15:05:22					
NO	1.1 ppm	02	2.0 %	00	0.7 ppm	

Scan # 783	16:08:12				
N2O	5.9 ppm	02	20.5 %	00	1.2 ppm
Scan # 784	16:16:52				
N2O	6.7 ppm	02	20.5 %	00	1.3 ppm
Scan # 785	16:17:22				
N2O	7.2 ppm	02	20.5 %	00	1.0 ppm
Scan # 786	16:07:52				
N2O	6.1 ppm	02	20.5 %	00	0.7 ppm
Scan # 787	16:16:22				
N2O	5.8 ppm	02	20.6 %	00	1.1 ppm
Scan # 788	16:08:52				
N2O	5.6 ppm	02	20.5 %	00	0.4 ppm
Scan # 789	16:09:22				
N2O	4.6 ppm	02	20.5 %	00	1.3 ppm
Scan # 790	16:09:52				
N2O	4.6 ppm	02	20.6 %	00	1.4 ppm
Scan # 791	16:10:22				
N2O	4.7 ppm	02	20.6 %	00	0.5 ppm
Scan # 792	16:10:52				
N2O	4.2 ppm	02	20.6 %	00	1.3 ppm
Scan # 793	16:11:22				
N2O	4.3 ppm	02	20.5 %	00	1.7 ppm
Scan # 794	16:11:52				
N2O	4.8 ppm	02	20.2 %	00	0.9 ppm
Scan # 795	16:12:22				
N2O	3.9 ppm	02	16.2 %	00	0.6 ppm
Scan # 796	16:12:52				
N2O	3.7 ppm	02	16.2 %	00	0.8 ppm
Scan # 797	16:17:22				
N2O	3.7 ppm	02	16.2 %	00	1.7 ppm
Scan # 798	16:13:52				
N2O	3.5 ppm	02	16.2 %	00	2.0 ppm
Scan # 799	16:14:22				
N2O	4.0 ppm	02	16.2 %	00	1.5 ppm
Scan # 8.0	16:14:52				
N2O	3.7 ppm	02	10.0 %	00	316.9 ppm
Scan # 8.1	16:15:22				
N2O	3.5 ppm	02	0.2 %	00	488.7 ppm
Scan # 8.2	16:15:52				
N2O	2.8 ppm	02	0.1 %	00	491.1 ppm
Scan # 8.3	16:16:22				
N2O	3.4 ppm	02	0.1 %	00	490.8 ppm

Begin system cals

Zero

16.1 % O_2

437.0 ppm CO

Scan # 605		15:17:22			
NOx	2.4 ppm	O2	0.0 %	CO	490.9 ppm
Scan # 606		15:17:52			
NOx	3.0 ppm	O2	0.1 %	CO	496.8 ppm
Scan # 607		15:18:22			
NOx	241.2 ppm	O2	0.1 %	CO	31.6 ppm
Scan # 608		15:18:52			
NOx	239.9 ppm	O2	0.1 %	CO	3.4 ppm
Scan # 609		15:19:22			
NOx	242.0 ppm	O2	0.0 %	CO	1.7 ppm
Scan # 610		15:19:51			
NOx	240.1 ppm	O2	0.0 %	CO	0.8 ppm
Scan # 611		15:20:22			
NOx	240.1 ppm	O2	0.0 %	CO	1.1 ppm
Scan # 612		15:20:52			
NOx	240.6 ppm	O2	0.0 %	CO	2.2 ppm
Scan # 613		15:21:22			
NOx	240.5 ppm	O2	0.0 %	CO	2.2 ppm
Scan # 614		15:21:52			
NOx	241.2 ppm	O2	0.0 %	CO	1.4 ppm
Scan # 615		15:22:22			
NOx	239.9 ppm	O2	0.1 %	CO	1.9 ppm
Scan # 616		15:22:52			
NOx	212.9 ppm	O2	0.1 %	CO	2.1 ppm
Scan # 617		15:23:22			
NOx	3.9 ppm	O2	0.1 %	CO	1.8 ppm
Scan # 618		15:23:52			
NOx	2.6 ppm	O2	0.1 %	CO	2.9 ppm

242.0 ppm NO
O_2 zero

End ET-29
#007 100% load

Oceanside Landfill
ET-29 #007
75% load

41

data logging in progress 10-09-1992 08:23:21

Model 14A A-D
A/D (analog to digital) converter address= 7/2
storage interval: hours= 0 minutes= 0 seconds= 30
Printer will log data.
Alarms are silent
Autostop is off
Autostore on disk C

POINT	LABEL	UNITS	OFFSET	SCALING	DEC PL	HIGH ALARM	LOW ALARM	CHANNEL	EXT MUX
1	NOx	ppm	8.25	.2	1	0	0	0	0
3	O2	%	-2.75	.025	1	0	0	0	2
5	CO	ppm	40.75	.25	1	0	0	0	4

DATE 10-09-1992
Scan # 1 08:23:51
NOx -0.3 ppm O2 20.8 % CO 0.0 ppm

Scan # 2 08:24:21
NOx -0.1 ppm O2 20.8 % CO 1.6 ppm

Scan # 3 08:24:51
NOx 0.6 ppm O2 20.8 % CO 0.8 ppm

Scan # 4 08:25:21
NOx 0.4 ppm O2 20.8 % CO 2.8 ppm

Begin analyzer cals

Scan # 5 08:25:51
NOx 0.0 ppm O2 20.8 % CO 2.4 ppm

Scan # 6 08:26:21
NOx 1.3 ppm O2 20.8 % CO 2.4 ppm

ambient air
20.9% O_2

Scan # 7 08:26:51
NOx 1.1 ppm O2 20.8 % CO 2.4 ppm

Scan # 8 08:27:21
NOx 1.6 ppm O2 20.8 % CO 2.7 ppm

Scan # 9 08:27:51
NOx 1.0 ppm O2 20.8 % CO 2.1 ppm

Scan # 10 08:28:21
NOx 1.0 ppm O2 20.8 % CO 1.7 ppm

Scan # 11 08:28:51
NOx 1.1 ppm O2 20.8 % CO 1.2 ppm

Scan # 12 08:29:21
NOx 1.1 ppm O2 20.8 % CO 1.6 ppm

Scan # 13 08:29:51
NOx 1.4 ppm O2 20.8 % CO 0.8 ppm

zero

Scan # 19	08:31:51				
NOx	0.4 ppm	O2	20.8 %	CO	1.6 ppm
Scan # 20	08:32:21				
NOx	0.8 ppm	O2	20.7 %	CO	0.9 ppm
Scan # 17	08:32:51				
NOx	0.9 ppm	O2	20.1 %	CO	1.6 ppm
Scan # 18	08:32:21				
NOx	0.5 ppm	O2	16.4 %	CO	0.9 ppm
Scan # 19	08:32:51				
NOx	0.5 ppm	O2	16.2 %	CO	0.7 ppm
Scan # 20	08:33:21				
NOx	0.8 ppm	O2	16.2 %	CO	0.7 ppm
Scan # 21	08:33:51				
NOx	0.9 ppm	O2	16.2 %	CO	0.8 ppm
Scan # 22	08:34:21				
NOx	0.7 ppm	O2	16.2 %	CO	0.8 ppm
Scan # 23	08:34:51				
NOx	0.6 ppm	O2	16.2 %	CO	-0.5 ppm
Scan # 24	08:35:21				
NOx	0.2 ppm	O2	16.2 %	CO	-0.2 ppm
Scan # 25	08:35:51				
NOx	0.0 ppm	O2	0.4 %	CO	486.0 ppm
Scan # 26	08:36:21				
NOx	0.1 ppm	O2	0.1 %	CO	489.8 ppm
Scan # 27	08:36:51				
NOx	0.1 ppm	O2	0.0 %	CO	491.4 ppm
Scan # 28	08:37:21				
NOx	0.2 ppm	O2	-0.0 %	CO	490.4 ppm
Scan # 29	08:37:51				
NOx	0.1 ppm	O2	-0.0 %	CO	490.7 ppm
Scan # 30	08:38:21				
NOx	0.5 ppm	O2	-0.0 %	CO	491.0 ppm
Scan # 31	08:38:51				
NOx	0.2 ppm	O2	-0.0 %	CO	490.6 ppm
Scan # 32	08:39:21				
NOx	0.2 ppm	O2	-0.0 %	CO	490.6 ppm
Scan # 33	08:39:51				
NOx	509.1 ppm	O2	0.0 %	CO	4.2 ppm
Scan # 34	08:40:21				
NOx	510.3 ppm	O2	0.0 %	CO	1.7 ppm
Scan # 35	08:40:51				
NOx	478.6 ppm	O2	-0.0 %	CO	0.0 ppm

16.1% O_2

487.0 ppm CO
O_2 zero

480.0 ppm NO

43

Scan # 37	08:41:51				
NOx	481.5 ppm	O2	-0.0 %	CO	0.3 ppm
Scan # 38	08:42:31				
NO	482.4 ppm	O2	-0.0 %	CO	-0.2 ppm
Scan # 39	08:43:11				
NO	484.2 ppm	O2	-0.0 %	CO	-1.1 ppm
Scan # 40	08:43:51				
NOx	480.3 ppm	O2	-0.0 %	CO	0.6 ppm
Scan # 41	08:44:31				
NOx	211.1 ppm	O2	-0.0 %	CO	-0.1 ppm
Scan # 42	08:44:11				
NOx	36.9 ppm	O2	0.0 %	CO	244.5 ppm
Scan # 43	08:44:51				
NOx	-1.5 ppm	O2	-0.0 %	CO	267.5 ppm
Scan # 44	08:45:31				
NOx	-1.4 ppm	O2	-0.0 %	CO	265.3 ppm
Scan # 45	08:45:51				
NOx	-1.4 ppm	O2	-0.0 %	CO	264.3 ppm
Scan # 46	08:46:31				
NOx	-1.7 ppm	O2	-0.0 %	CO	264.9 ppm
Scan # 47	08:46:51				
NOx	-1.2 ppm	O2	-0.0 %	CO	264.5 ppm
Scan # 48	08:47:31				
NOx	-1.6 ppm	O2	-0.0 %	CO	264.9 ppm
Scan # 49	08:47:51				
NOx	-0.9 ppm	O2	-0.0 %	CO	263.3 ppm
Scan # 50	08:48:31				
NOx	-1.2 ppm	O2	-0.0 %	CO	263.6 ppm
Scan # 51	08:49:12				
NOx	-1.0 ppm	O2	-0.0 %	CO	263.8 ppm
Scan # 52	08:49:31				
NOx	-0.9 ppm	O2	-0.0 %	CO	262.7 ppm
Scan # 53	08:49:51				
NOx	-1.2 ppm	O2	-0.0 %	CO	263.5 ppm
Scan # 54	08:50:31				
NOx	-1.1 ppm	O2	0.0 %	CO	263.1 ppm
Scan # 55	08:50:51				
NOx	-0.6 ppm	O2	0.0 %	CO	262.3 ppm
Scan # 56	08:51:32				
NO	-0.6 ppm	O2	0.0 %	CO	262.5 ppm
Scan # 57	08:51:51				
NO	-0.8 ppm	O2	0.0 %	CO	263.1 ppm

Scan # 59	08:52:51				
NOx	-1.2 ppm	O2	0.0 %	CO	263.1 ppm
Scan # 60	08:53:22				
NOx	-0.9 ppm	O2	0.0 %	CO	262.3 ppm
Scan # 61	08:53:51				
NOx	-0.9 ppm	O2	0.1 %	CO	264.1 ppm
Scan # 62	08:54:21				
NOx	-0.9 ppm	O2	0.1 %	CO	262.5 ppm
Scan # 63	08:54:51				
NOx	-1.1 ppm	O2	0.1 %	CO	263.4 ppm
Scan # 64	08:55:21				
NOx	-0.7 ppm	O2	0.1 %	CO	263.1 ppm
Scan # 65	08:55:51				
NOx	-0.8 ppm	O2	0.1 %	CO	262.1 ppm
Scan # 66	08:56:22				
NOx	-0.9 ppm	O2	0.1 %	CO	263.7 ppm
Scan # 67	08:56:51				
NOx	-0.7 ppm	O2	0.1 %	CO	262.9 ppm
Scan # 68	08:57:21				
NOx	5.5 ppm	O2	0.1 %	CO	274.8 ppm
Scan # 69	08:57:51				
NOx	-0.7 ppm	O2	-0.0 %	CO	274.2 ppm
Scan # 70	08:58:21				
NOx	-1.3 ppm	O2	-0.0 %	CO	273.8 ppm
Scan # 71	08:58:52				
NOx	-1.0 ppm	O2	-0.0 %	CO	274.1 ppm
Scan # 72	08:59:21				
NOx	-0.9 ppm	O2	-0.0 %	CO	273.5 ppm
Scan # 73	08:59:51				
NOx	-1.1 ppm	O2	-0.0 %	CO	281.7 ppm
Scan # 74	09:00:21				
NOx	-1.1 ppm	O2	-0.0 %	CO	280.9 ppm
Scan # 75	09:00:51				
NOx	-0.9 ppm	O2	-0.0 %	CO	281.1 ppm
Scan # 76	09:01:22				
NOx	-1.3 ppm	O2	-0.0 %	CO	280.8 ppm
Scan # 77	09:01:51				
NOx	-1.2 ppm	O2	-0.0 %	CO	280.5 ppm
Scan # 78	09:02:21				
NOx	-1.3 ppm	O2	-0.1 %	CO	281.5 ppm
Scan # 79	09:02:51				
NOx	88.7 ppm	O2	0.0 %	CO	31.3 ppm

284.0 ppm CO

Scan # 81	09:03:51				
NO	97.5 ppm	02	-0.0 %	CO	3.4 ppm
Scan # 82	09:04:21				
NO	98.3 ppm	02	-0.0 %	CO	4.7 ppm
Scan # 83	09:04:51				
NO	98.1 ppm	02	-0.0 %	CO	2.7 ppm
Scan # 84	09:05:21				
NO	98.4 ppm	02	-0.0 %	CO	4.4 ppm
Scan # 85	09:05:51				
NO	98.2 ppm	02	-0.0 %	CO	4.2 ppm
Scan # 86	09:06:22				
NO	98.0 ppm	02	-0.0 %	CO	8.5 ppm
Scan # 87	09:06:52				
NO	-0.9 ppm	02	-0.0 %	CO	146.6 ppm
Scan # 88	09:07:21				
NO	-0.7 ppm	02	-0.0 %	CO	147.9 ppm
Scan # 89	09:07:51				
NO	-0.9 ppm	02	-0.0 %	CO	147.0 ppm
Scan # 90	09:08:22				
NO	-0.9 ppm	02	-0.0 %	CO	147.1 ppm
Scan # 91	09:08:52				
NO	-0.8 ppm	02	-0.0 %	CO	147.5 ppm
Scan # 92	09:09:21				
NO	-0.9 ppm	02	-0.1 %	CO	147.7 ppm
Scan # 93	09:09:51				
NO	203.1 ppm	02	-0.0 %	CO	10.3 ppm
Scan # 94	09:10:21				
NO	240.7 ppm	02	-0.0 %	CO	5.2 ppm
Scan # 95	09:10:51				
NO	249.5 ppm	02	-0.0 %	CO	5.1 ppm
Scan # 96	09:11:22				
NO	248.6 ppm	02	-0.0 %	CO	3.3 ppm
Scan # 97	09:11:52				
NO	247.4 ppm	02	-0.0 %	CO	4.0 ppm
Scan # 98	09:12:21				
NO	248.9 ppm	02	-0.0 %	CO	4.0 ppm
Scan # 99	09:12:51				
NO	248.3 ppm	02	-0.0 %	CO	3.8 ppm
Scan # 100	09:13:21				
NO	247.2 ppm	02	-0.0 %	CO	3.6 ppm
Scan # 101	09:13:52				
NO	246.8 ppm	02	-0.0 %	CO	4.0 ppm

45

97.5 ppm NO

141.0 ppm CO

242.0 ppm NO

Leak check

	09:14:51				
NOx	3.3 ppm	O2	20.8 %	CO	15.4 ppm
Scan # 104	09:15:21				
NOx	-0.7 ppm	O2	21.5 %	CO	16.6 ppm
Scan # 105	09:15:52				
NOx	0.3 ppm	O2	20.7 %	CO	12.5 ppm
Scan # 106	09:16:22				
NOx	-0.5 ppm	O2	20.4 %	CO	12.7 ppm
Scan # 107	09:16:52				
NOx	0.5 ppm	O2	20.5 %	CO	2.3 ppm
Scan # 108	09:17:21				
NOx	0.3 ppm	O2	20.5 %	CO	2.0 ppm
Scan # 109	09:17:51				
NOx	0.3 ppm	O2	20.5 %	CO	2.7 ppm
Scan # 110	09:18:22				
NOx	0.5 ppm	O2	20.5 %	CO	1.8 ppm
Scan # 111	09:18:52				
NOx	0.2 ppm	O2	20.4 %	CO	3.1 ppm
Scan # 112	09:19:22				
NOx	0.3 ppm	O2	20.1 %	CO	4.9 ppm
Scan # 113	09:19:51				
NOx	0.2 ppm	O2	16.2 %	CO	2.7 ppm
Scan # 114	09:20:21				
NOx	0.1 ppm	O2	16.1 %	CO	3.4 ppm
Scan # 115	09:20:52				
NOx	0.2 ppm	O2	16.1 %	CO	3.2 ppm
Scan # 116	09:21:22				
NOx	0.4 ppm	O2	16.1 %	CO	3.1 ppm
Scan # 117	09:21:52				
NOx	0.3 ppm	O2	16.1 %	CO	3.5 ppm
Scan # 118	09:22:21				
NOx	0.3 ppm	O2	16.1 %	CO	3.6 ppm
Scan # 119	09:22:51				
NOx	207.0 ppm	O2	8.2 %	CO	4.7 ppm
Scan # 120	09:23:21				
NOx	245.7 ppm	O2	0.0 %	CO	3.2 ppm
Scan # 121	09:23:52				
NOx	248.4 ppm	O2	0.0 %	CO	3.6 ppm
Scan # 122	09:24:22				
NOx	244.5 ppm	O2	0.0 %	CO	3.2 ppm
Scan # 123	09:24:52				
NOx	244.5 ppm	O2	0.0 %	CO	3.4 ppm
Scan # 124	09:25:21				
NOx	241.4 ppm				

Design 545 ppm

zero

16.1 % O_2

Scan # 125		09:25:52				
NOx	243.0 ppm	O2	-0.0 %	CO	3.4 ppm	242.0 ppm NO
Scan # 126		09:26:22				
NO	241.6 ppm	O2	-0.0 %	CO	3.8 ppm	
Scan # 127		09:26:52				
NO	241.7 ppm	O2	-0.0 %	CO	3.6 ppm	
Scan # 128		09:27:22				
NOx	238.9 ppm	O2	-0.0 %	CO	4.1 ppm	
Scan # 129		09:27:51				
NOx	109.7 ppm	O2	0.7 %	CO	141.6 ppm	
Scan # 130		09:28:21				
NOx	3.1 ppm	O2	0.1 %	CO	491.5 ppm	
Scan # 131		09:28:52				
NOx	3.0 ppm	O2	-0.0 %	CO	494.7 ppm	
Scan # 132		09:29:22				
NOx	3.1 ppm	O2	-0.0 %	CO	493.4 ppm	487.0 ppm CO
Scan # 133		09:29:52				
NOx	3.2 ppm	O2	-0.0 %	CO	495.9 ppm	O_2 zero
Scan # 134		09:30:21				
NOx	3.2 ppm	O2	-0.0 %	CO	493.6 ppm	
Scan # 135		09:30:52				
NOx	3.4 ppm	O2	-0.0 %	CO	494.8 ppm	
Scan # 136		09:31:22				
NOx	3.1 ppm	O2	-0.0 %	CO	494.7 ppm	
Scan # 137		09:31:51				
NOx	8.2 ppm	O2	15.3 %	CO	24.6 ppm	
Scan # 138		09:32:22				
NOx	147.1 ppm	O2	5.3 %	CO	410.9 ppm	
Scan # 139		09:32:51				
NOx	156.6 ppm	O2	4.4 %	CO	419.7 ppm	
Scan # 140		09:33:22				
NOx	154.1 ppm	O2	4.5 %	CO	417.0 ppm	
Scan # 141		09:33:52				
NOx	149.4 ppm	O2	4.4 %	CO	420.9 ppm	
Scan # 142		09:34:22				
NOx	153.9 ppm	O2	4.4 %	CO	418.5 ppm	
Scan # 143		09:34:52				
NOx	155.4 ppm	O2	4.4 %	CO	419.2 ppm	Begin Run 4
Scan # 144		09:35:21				
NO	154.7 ppm	O2	4.4 %	CO	421.3 ppm	
Scan # 145		09:35:51				
NOx	156.3 ppm	O2	4.4 %	CO	419.1 ppm	
Scan # 146		09:36:22				

Scan # 147	09:38:52				
NO	160.2 ppm	02	4.4 %	00	420.4 ppm
Scan # 149	09:39:22				
NO	164.1 ppm	02	4.4 %	00	418.2 ppm
Scan # 149	09:39:51				
NO	154.9 ppm	02	4.4 %	00	416.4 ppm
Scan # 150	09:39:22				
NO	157.6 ppm	02	4.4 %	00	416.9 ppm
Scan # 151	09:39:52				
NO	154.0 ppm	02	4.4 %	00	417.9 ppm
Scan # 151	09:39:21				
NO	156.3 ppm	02	4.4 %	00	418.0 ppm
Scan # 153	09:39:51				
NO	156.1 ppm	02	4.4 %	00	416.5 ppm
Scan # 154	09:40:22				
NO	152.4 ppm	02	4.5 %	00	414.6 ppm
Scan # 155	09:40:52				
NO	155.1 ppm	02	4.4 %	00	418.0 ppm
Scan # 156	09:41:22				
NO	151.9 ppm	02	4.5 %	00	415.3 ppm
Scan # 157	09:41:52				
NO	155.1 ppm	02	4.4 %	00	420.4 ppm
Scan # 158	09:42:22				
NO	151.4 ppm	02	4.4 %	00	416.7 ppm
Scan # 159	09:42:52				
NO	154.1 ppm	02	4.4 %	00	420.0 ppm
Scan # 160	09:43:22				
NO	146.5 ppm	02	4.4 %	00	416.5 ppm
Scan # 161	09:43:52				
NO	157.3 ppm	02	4.4 %	00	420.7 ppm
Scan # 162	09:44:22				
NO	156.9 ppm	02	4.4 %	00	418.0 ppm
Scan # 163	09:44:52				
NO	158.3 ppm	02	4.4 %	00	419.8 ppm
Scan # 164	09:45:22				
NO	152.9 ppm	02	4.4 %	00	416.8 ppm
Scan # 165	09:45:52				
NO	158.9 ppm	02	4.4 %	00	421.3 ppm
Scan # 166	09:46:22				
NO	154.4 ppm	02	4.4 %	00	416.8 ppm
Scan # 167	09:46:51				
NO	158.4 ppm	02	4.4 %	00	421.1 ppm
Scan # 168	09:47:22				

Scan # 169	09:54:51				
NOx	185.4 ppm	02	4.4 %	00	418.7 ppm
Scan # 170	09:55:02				
NOx	161.9 ppm	02	4.4 %	00	418.6 ppm
Scan # 171	09:55:12				
NOx	161.4 ppm	02	4.4 %	00	420.5 ppm
Scan # 172	09:55:22				
NOx	166.4 ppm	02	4.4 %	00	415.2 ppm
Scan # 173	09:55:32				
NOx	163.3 ppm	02	4.4 %	00	421.7 ppm
Scan # 174	09:55:42				
NOx	154.5 ppm	02	4.4 %	00	419.2 ppm
Scan # 175	09:55:52				
NOx	163.2 ppm	02	4.3 %	00	419.5 ppm
Scan # 176	09:56:02				
NOx	149.9 ppm	02	4.4 %	00	416.9 ppm
Scan # 177	09:56:12				
NOx	159.8 ppm	02	4.4 %	00	420.0 ppm
Scan # 178	09:56:22				
NOx	148.9 ppm	02	4.4 %	00	415.5 ppm
Scan # 179	09:56:32				
NOx	153.4 ppm	02	4.4 %	00	420.0 ppm
Scan # 180	09:56:42				
NOx	149.7 ppm	02	4.4 %	00	420.0 ppm
Scan # 181	09:56:52				
NOx	162.5 ppm	02	4.4 %	00	422.2 ppm
Scan # 182	09:57:02				
NOx	155.2 ppm	02	4.4 %	00	420.3 ppm
Scan # 183	09:57:12				
NOx	163.4 ppm	02	4.3 %	00	420.1 ppm
Scan # 184	09:57:22				
NOx	155.3 ppm	02	4.4 %	00	415.5 ppm
Scan # 185	09:57:32				
NOx	163.8 ppm	02	4.3 %	00	418.2 ppm
Scan # 186	09:57:42				
NOx	156.5 ppm	02	4.4 %	00	419.1 ppm
Scan # 187	09:57:51				
NOx	164.3 ppm	02	4.3 %	00	422.8 ppm
Scan # 188	09:58:02				
NOx	154.8 ppm	02	4.4 %	00	417.9 ppm
Scan # 189	09:58:12				
NOx	164.7 ppm	02	4.3 %	00	420.7 ppm
Scan # 190	09:58:22				

Scan # 191		09:58:52			
NO	164.4 ppm	O2	4.3 %	CO	421.2 ppm
Scan # 192		09:59:22			
NO	158.5 ppm	O2	4.4 %	CO	417.0 ppm
Scan # 193		09:59:52			
NO	167.4 ppm	O2	4.3 %	CO	421.7 ppm
Scan # 194		10:00:22			
NO	163.4 ppm	O2	4.4 %	CO	419.5 ppm
Scan # 195		10:00:52			
NO	151.7 ppm	O2	4.4 %	CO	414.8 ppm
Scan # 196		10:01:22			
NOx	142.3 ppm	O2	4.5 %	CO	406.4 ppm
Scan # 197		10:01:52			
NOx	144.4 ppm	O2	4.5 %	CO	412.4 ppm
Scan # 198		10:02:22			
NOx	139.2 ppm	O2	4.5 %	CO	412.7 ppm
Scan # 199		10:02:52			
NOx	143.7 ppm	O2	4.5 %	CO	409.8 ppm
Scan # 200		10:03:22			
NOx	144.5 ppm	O2	4.5 %	CO	409.0 ppm
Scan # 201		10:03:52			
NOx	146.0 ppm	O2	4.5 %	CO	411.6 ppm
Scan # 202		10:04:22			
NO	135.9 ppm	O2	4.6 %	CO	405.5 ppm
Scan # 203		10:04:52			
NOx	147.9 ppm	O2	4.5 %	CO	412.0 ppm
Scan # 204		10:05:22			
NO	136.9 ppm	O2	4.6 %	CO	406.3 ppm
Scan # 205		10:05:52			
NO	148.6 ppm	O2	4.5 %	CO	411.4 ppm
Scan # 206		10:06:22			
NOx	139.2 ppm	O2	4.6 %	CO	404.1 ppm
Scan # 207		10:06:52			
NOx	143.7 ppm	O2	4.5 %	CO	412.3 ppm
Scan # 208		10:07:22			
NO	140.3 ppm	O2	4.5 %	CO	408.9 ppm
Scan # 209		10:07:52			
NO	148.0 ppm	O2	4.5 %	CO	410.5 ppm
Scan # 210		10:08:22			
NO	144.9 ppm	O2	4.5 %	CO	416.3 ppm
Scan # 211		10:08:52			
NO	144.7 ppm	O2	4.5 %	CO	413.1 ppm
Scan # 212		10:09:22			

Scan # [illegible]	[illegible]				
[illegible]	147.3 psi	02	4.5 %	00	413.4 ppm
Scan # 214	10:10:02				
[illegible]	139.8 psi	02	4.5 %	00	418.7 ppm
Scan # 215	10:10:52				
[illegible]	150.9 psi	02	4.5 %	00	417.4 ppm
Scan # 216	10:11:42				
[illegible]	139.8 psi	02	4.5 %	00	408.1 ppm
Scan # 217	10:12:32				
[illegible]	146.4 psi	02	4.5 %	00	417.6 ppm
Scan # 218	10:13:22				
[illegible]	141.4 psi	02	4.5 %	00	411.3 ppm
Scan # 219	10:12:52				
[illegible]	148.8 psi	02	4.5 %	00	413.8 ppm
Scan # 220	10:13:22				
[illegible]	141.4 psi	02	4.5 %	00	408.7 ppm
Scan # 221	10:13:52				
[illegible]	144.8 psi	02	4.5 %	00	410.1 ppm
Scan # 222	10:14:22				
[illegible]	139.4 psi	02	4.5 %	00	411.1 ppm
Scan # 223	10:14:52				
[illegible]	152.3 psi	02	4.5 %	00	413.5 ppm
Scan # 224	10:15:22				
[illegible]	[illegible] psi	03	4.5 %	00	417.4 psi
Scan # 225	10:15:51				
[illegible]	151.9 psi	02	4.5 %	00	413.3 ppm
Scan # 226	10:16:21				
[illegible]	[illegible] psi	02	4.5 %	00	408.8 ppm
Scan # 21	10:16:51				
[illegible]	[illegible] psi	02	4.5 %	00	410.7 psi
Scan # 228	10:17:21				
[illegible]	139.9 psi	02	4.5 %	00	405.3 ppm
Scan # 229	10:17:52				
[illegible]	147.4 psi	02	4.5 %	00	415.0 ppm
Scan # 230	10:18:22				
[illegible]	142.7 psi	02	4.5 %	00	410.7 ppm
Scan # 231	10:18:52				
[illegible]	[illegible] psi	01	4.5 %	00	416.5 ppm
Scan # 232	10:19:22				
[illegible]	[illegible] psi	01	4.5 %	00	411.1 psi
Scan # 233	10:19:51				
[illegible]	[illegible] psi	01	4.5 %	00	414.6 psi
Scan # 234	10:20:21				

Scan # 235		10:20:52				
NOx	151.4 ppm		O2	4.5 %	CO	414.9 ppm
Scan # 236		10:21:22				
NOx	141.1 ppm		O2	4.5 %	CO	413.1 ppm
Scan # 237		10:21:52				
NOx	145.2 ppm		O2	4.5 %	CO	410.1 ppm
Scan # 238		10:22:22				
NOx	138.8 ppm		O2	4.5 %	CO	407.4 ppm
Scan # 239		10:22:52				
NOx	147.1 ppm		O2	4.5 %	CO	410.2 ppm
Scan # 240		10:23:22				
NOx	141.5 ppm		O2	4.6 %	CO	407.4 ppm
Scan # 241		10:23:52				
NOx	149.6 ppm		O2	4.5 %	CO	411.7 ppm
Scan # 242		10:24:22				
NOx	144.1 ppm		O2	4.5 %	CO	409.6 ppm
Scan # 243		10:24:52				
NOx	149.9 ppm		O2	4.5 %	CO	411.7 ppm
Scan # 244		10:25:22				
NOx	145.6 ppm		O2	4.5 %	CO	407.2 ppm
Scan # 245		10:25:52				
NOx	149.9 ppm		O2	4.5 %	CO	410.8 ppm
Scan # 246		10:26:22				
NOx	144.6 ppm		O2	4.5 %	CO	409.4 ppm
Scan # 247		10:26:52				
NOx	150.2 ppm		O2	4.5 %	CO	413.5 ppm
Scan # 248		10:27:13				
NOx	139.9 ppm		O2	4.5 %	CO	410.8 ppm
Scan # 249		10:27:52				
NOx	146.5 ppm		O2	4.5 %	CO	412.5 ppm
Scan # 250		10:28:22				
NOx	140.2 ppm		O2	4.5 %	CO	409.0 ppm
Scan # 251		10:28:52				
NOx	151.1 ppm		O2	4.5 %	CO	414.2 ppm
Scan # 252		10:29:22				
NOx	145.2 ppm		O2	4.5 %	CO	408.9 ppm
Scan # 253		10:29:52				
NOx	148.9 ppm		O2	4.5 %	CO	411.6 ppm
Scan # 254		10:30:22				
NOx	141.7 ppm		O2	4.5 %	CO	409.1 ppm
Scan # 255		10:31:52				
NOx	142.7 ppm		O2	4.5 %	CO	411.6 ppm
Scan # 256		10:32:22				

Scan # 25[illegible]		[illegible]				
NOx	153.2 ppm		O2	4.8 %	CO	412.4 ppm
Scan # 256		10:31:22				
NOx	141.0 ppm		O2	4.5 %	CO	410.9 ppm
Scan # 257		10:32:52				
NOx	153.2 ppm		O2	4.5 %	CO	413.3 ppm
Scan # 260		10:33:22				
NOx	142.2 ppm		O2	4.5 %	CO	406.5 ppm
Scan # 261		10:33:52				
NOx	151.2 ppm		O2	4.5 %	CO	411.3 ppm
Scan # 262		10:34:22				
NOx	146.1 ppm		O2	4.5 %	CO	408.2 ppm
Scan # 263		10:34:51				
NOx	111.7 ppm		O2	4.5 %	CO	408.5 ppm
Scan # 264		10:35:22				
NOx	103.7 ppm		O2	4.6 %	CO	409.0 ppm
Scan # 265		10:35:52				
NOx	193.8 ppm		O2	4.5 %	CO	416.6 ppm
Scan # 266		10:36:22				
NOx	140.7 ppm		O2	4.8 %	CO	393.1 ppm
Scan # 267		10:36:52				
NOx	124.0 ppm		O2	5.5 %	CO	457.6 ppm
Scan # 268		10:37:22				
NOx	125.3 ppm		O2	5.2 %	CO	466.8 ppm
Scan # 269		10:37:51				
NOx	162.9 ppm		O2	4.9 %	CO	399.0 ppm
Scan # 270		10:38:22				
NOx	154.6 ppm		O2	4.5 %	CO	410.5 ppm
Scan # 271		10:39:52				
NOx	180.4 ppm		O2	4.8 %	CO	390.5 ppm
Scan # 272		10:39:22				
NOx	159.7 ppm		O2	4.9 %	CO	387.1 ppm
Scan # 273		10:39:52				
NOx	154.5 ppm		O2	5.7 %	CO	453.4 ppm
Scan # 274		10:40:22				
NOx	162.7 ppm		O2	4.9 %	CO	385.1 ppm
Scan # 275		10:40:52				
NOx	170.2 ppm		O2	4.9 %	CO	389.0 ppm
Scan # 276		10:41:21				
NOx	206.7 ppm		O2	4.7 %	CO	392.2 ppm
Scan # 277		10:41:51				
NOx	222.1 ppm		O2	4.6 %	CO	397.5 ppm
Scan # 278		10:[illegible]				

End Run 4

Scan # 279		10:42:52			
[illegible]	399.6 ppm	02	4.6 %	00	398.1 ppm
Scan # 280		10:43:22			
[illegible]	399.6 ppm	02	4.6 %	00	398.6 ppm
Scan # 281		10:43:52			
[illegible]	397.8 ppm	02	4.6 %	00	393.3 ppm
Scan # 282		10:44:22			
[illegible]	398.4 ppm	02	4.6 %	00	397.2 ppm
Scan # 283		10:44:52			
[illegible]	417.4 ppm	02	4.6 %	00	403.8 ppm
Scan # 284		10:45:22			
[illegible]	402.6 ppm	02	4.6 %	00	396.5 ppm
Scan # 285		10:45:52			
[illegible]	403.4 ppm	02	4.4 %	00	403.6 ppm
Scan # 286		10:46:22			
[illegible]	420.0 ppm	02	4.4 %	00	410.3 ppm
Scan # 287		10:46:52			
[illegible]	58.4 ppm	02	12.8 %	00	139.2 ppm
Scan # 288		10:47:22			
[illegible]	20.6 ppm	02	17.5 %	00	44.3 ppm
Scan # 289		10:47:52			
[illegible]	14.2 ppm	02	19.0 %	00	20.7 ppm
Scan # 290		10:48:22			
[illegible]	4.9 ppm	02	19.6 %	00	11.8 ppm
Scan # 291		10:48:52			
[illegible]	25.9 ppm	02	20.4 %	00	6.1 ppm
Scan # 292		10:49:22			
[illegible]	13.5 ppm	02	20.3 %	00	1.0 ppm
Scan # 293		10:49:52			
[illegible]	9.1 ppm	02	20.4 %	00	0.4 ppm
Scan # 294		10:50:22			
[illegible]	7.5 ppm	02	20.4 %	00	0.2 ppm
Scan # 295		10:50:52			
[illegible]	6.3 ppm	02	20.4 %	00	-0.3 ppm
Scan # 296		10:51:22			
[illegible]	6.0 ppm	02	20.4 %	00	-0.1 ppm
Scan # 297		10:51:52			
[illegible]	5.7 ppm	02	20.4 %	00	0.1 ppm
Scan # 298		10:52:22			
[illegible]	5.0 ppm	02	20.4 %	00	0.0 ppm
Scan # 299		10:52:52			
[illegible]	5.1 ppm	02	20.4 %	00	0.1 ppm
Scan # 300		10:53:22			

Test. check Good

Begin system cals

Scan # 301		10:53:51				
NOx	4.8 ppm		O2	20.5 %	CO	0.3 ppm
Scan # 302		10:54:22				
NOx	4.2 ppm		O2	20.5 %	CO	-0.5 ppm
Scan # 303		10:54:52				
NOx	4.2 ppm		O2	20.5 %	CO	-0.1 ppm
Scan # 304		10:55:22				
NOx	4.0 ppm		O2	20.4 %	CO	-0.1 ppm
Scan # 305		10:55:52				
NOx	4.0 ppm		O2	19.7 %	CO	1.2 ppm
Scan # 306		10:56:22				
NOx	3.8 ppm		O2	16.2 %	CO	-0.1 ppm
Scan # 307		10:56:52				
NOx	3.3 ppm		O2	16.1 %	CO	0.1 ppm
Scan # 308		10:57:22				
NOx	3.4 ppm		O2	16.1 %	CO	-0.3 ppm
Scan # 309		10:57:52				
NOx	2.8 ppm		O2	16.1 %	CO	-0.5 ppm
Scan # 310		10:58:22				
NOx	3.2 ppm		O2	16.1 %	CO	-0.7 ppm
Scan # 311		10:58:52				
NOx	2.8 ppm		O2	16.1 %	CO	-0.9 ppm
Scan # 312		10:59:22				
NOx	2.4 ppm		O2	16.0 %	CO	0.3 ppm
Scan # 313		10:59:52				
NOx	2.7 ppm		O2	15.9 %	CO	114.5 ppm
Scan # 314		11:00:22				
NOx	1.8 ppm		O2	0.4 %	CO	487.9 ppm
Scan # 315		11:00:52				
NOx	2.4 ppm		O2	0.0 %	CO	493.6 ppm
Scan # 316		11:01:22				
NOx	1.8 ppm		O2	0.0 %	CO	492.8 ppm
Scan # 317		11:01:52				
NOx	2.0 ppm		O2	-0.0 %	CO	493.5 ppm
Scan # 318		11:02:22				
NOx	2.0 ppm		O2	-0.0 %	CO	494.2 ppm
Scan # 319		11:02:52				
NOx	2.5 ppm		O2	-0.0 %	CO	491.8 ppm
Scan # 320		11:03:22				
NOx	126.2 ppm		O2	1.4 %	CO	19.4 ppm
Scan # 321		11:03:51				
NOx	244.8 ppm		O2	-0.0 %	CO	0.4 ppm
Scan # 322		11:14:11				

zero

16.1 % O_2

487.0 ppm CO
O_2 zero

[illegible]	[illegible]	246.8 ppm	[illegible]	02	-0.0 %	00	-0.0 ppm
Scan # 324		11:08:21					
NO		246.4 ppm		02	-0.0 %	00	-0.0 ppm
Scan # 325		11:09:52					
NO		245.8 ppm		02	-0.0 %	00	-0.0 ppm
Scan # 326		11:11:22					
NO		208.4 ppm		02	-0.0 %	00	1.1 ppm
Scan # 327		11:06:52					
NO		83.8 ppm		01	12.7 %	01	3.7 ppm
Scan # 328		11:07:21					
NO		3.4 ppm		02	20.7 %	00	5.3 ppm
Scan # 329		11:07:52					
NO		2.8 ppm		02	20.9 %	00	3.6 ppm
Scan # 330		11:08:22					
NO		2.8 ppm		02	20.9 %	00	4.5 ppm
Scan # 331		11:08:52					
NO		2.3 ppm		02	20.9 %	00	3.9 ppm
Scan # 332		11:09:22					
NO		2.7 ppm		02	20.9 %	00	4.9 ppm
Scan # 333		11:09:52					
NO		2.6 ppm		02	20.9 %	00	4.0 ppm
Scan # 334		11:10:22					
[illegible]		2.9 ppm		02	21.0 %	00	4.5 ppm
Scan # 335		11:10:52					
NO		2.8 ppm		02	21.0 %	00	4.4 ppm
Scan # 336		11:11:22					
NO		2.4 ppm		02	21.0 %	00	4.0 ppm
Scan # 337		11:11:51					
NO		2.4 ppm		02	21.0 %	00	4.7 ppm
Scan # 338		11:12:22					
NO		2.7 ppm		02	21.0 %	00	4.2 ppm
Scan # 339		11:12:52					
NO		2.9 ppm		02	21.0 %	00	4.5 ppm
Scan # 340		11:13:22					
NO		97.4 ppm		02	9.4 %	00	346.3 ppm
Scan # 341		11:13:52					
NO		111.2 ppm		02	4.9 %	00	397.7 ppm
Scan # 342		11:14:22					
NO		111.0 ppm		02	4.8 %	00	394.7 ppm
Scan # 343		11:14:52					
NO		97.0 ppm		02	4.8 %	01	398.8 ppm
Scan # 344		11:15:22					

242.0 ppm NO

56

Begin Run 5

Scan # 345		11:16:12			
NO	103.2 ppm	O2	4.7 %	CO	396.6 ppm
Scan # 346		11:16:22			
NO	98.6 ppm	O2	4.8 %	CO	394.3 ppm
Scan # 347		11:16:32			
NO	103.1 ppm	O2	4.8 %	CO	396.7 ppm
Scan # 348		11:17:12			
NO	99.3 ppm	O2	4.7 %	CO	394.3 ppm
Scan # 349		11:17:61			
NO	98.3 ppm	O2	4.7 %	CO	394.7 ppm
Scan # 350		11:18:22			
NO	99.0 ppm	O2	4.7 %	CO	396.1 ppm
Scan # 351		11:18:52			
NO	97.2 ppm	O2	4.7 %	CO	396.2 ppm
Scan # 352		11:19:22			
NO	101.8 ppm	O2	4.7 %	CO	396.5 ppm
Scan # 353		11:19:52			
NO	98.1 ppm	O2	4.8 %	CO	393.0 ppm
Scan # 354		11:20:22			
NO	97.5 ppm	O2	4.8 %	CO	397.9 ppm
Scan # 355		11:20:52			
NO	97.0 ppm	O2	4.7 %	CO	395.9 ppm
Scan # 356		11:21:22			
NO	101.1 ppm	O2	4.7 %	CO	399.8 ppm
Scan # 357		11:21:52			
NO	97.0 ppm	O2	4.8 %	CO	401.0 ppm
Scan # 358		11:22:22			
NO	99.3 ppm	O2	4.8 %	CO	398.9 ppm
Scan # 359		11:22:52			
NO	98.7 ppm	O2	4.7 %	CO	397.4 ppm
Scan # 360		11:23:22			
NO	102.8 ppm	O2	4.7 %	CO	396.8 ppm
Scan # 361		11:23:52			
NO	101.6 ppm	O2	4.7 %	CO	397.9 ppm
Scan # 362		11:24:22			
NO	104.8 ppm	O2	4.7 %	CO	399.0 ppm
Scan # 363		11:24:52			
NO	102.6 ppm	O2	4.7 %	CO	395.7 ppm
Scan # 364		11:25:22			
NO	99.2 ppm	O2	4.7 %	CO	394.2 ppm
Scan # 365		11:25:52			
NO	103.6 ppm	O2	4.7 %	CO	395.7 ppm
Scan # 366		11:26:22			

Scan # 367	11:25:52				
NOx	102.6 ppm	01	4.7 %	00	399.2 ppm
Scan # 368	11:27:22				
NOx	99.3 ppm	01	4.7 %	00	396.9 ppm
Scan # 369	11:27:52				
NOx	101.3 ppm	02	4.7 %	00	394.4 ppm
Scan # 370	11:28:22				
NOx	101.2 ppm	02	4.7 %	00	397.7 ppm
Scan # 371	11:28:52				
NOx	101.6 ppm	01	4.7 %	00	398.6 ppm
Scan # 372	11:29:21				
NOx	103.0 ppm	01	4.7 %	00	394.4 ppm
Scan # 373	11:29:52				
NOx	99.3 ppm	01	4.8 %	00	394.5 ppm
Scan # 374	11:30:22				
NOx	102.2 ppm	02	4.6 %	00	396.0 ppm
Scan # 375	11:30:52				
NOx	104.6 ppm	02	4.8 %	00	398.0 ppm
Scan # 376	11:31:22				
NOx	101.6 ppm	02	4.7 %	00	400.7 ppm
Scan # 377	11:31:52				
NOx	106.8 ppm	02	4.7 %	00	396.3 ppm
Scan # 378	11:32:22				
NOx	99.3 ppm	01	4.7 %	00	397.8 ppm
Scan # 379	11:32:52				
NOx	103.4 ppm	02	4.7 %	00	396.8 ppm
Scan # 380	11:33:22				
NOx	101.7 ppm	01	4.8 %	00	396.9 ppm
Scan # 381	11:33:52				
NOx	100.7 ppm	02	4.8 %	00	396.9 ppm
Scan # 382	11:34:22				
NOx	105.6 ppm	01	4.7 %	00	395.1 ppm
Scan # 383	11:34:52				
NOx	99.7 ppm	01	4.7 %	00	399.5 ppm
Scan # 384	11:35:21				
NOx	102.4 ppm	02	4.7 %	00	396.2 ppm
Scan # 385	11:35:52				
NOx	100.0 ppm	02	4.8 %	00	392.6 ppm
Scan # 386	11:36:21				
NOx	97.3 ppm	01	4.8 %	00	394.1 ppm
Scan # 387	11:36:52				
NOx	101.6 ppm	01	4.8 %	00	393.4 ppm
Scan # 388	11:37:21				

Scan # 389	11:37:52					
NO	104.5 ppm	O2	4.[illegible] %	CO	395.7 ppm
Scan # 390	11:38:22					
NO	106.2 ppm	O2	4.7 %	CO	396.3 ppm
Scan # 391	11:38:52					
NO	105.2 ppm	O2	4.7 %	CO	398.7 ppm
Scan # 392	11:39:22					
NO	105.2 ppm	O2	4.7 %	CO	395.9 ppm
Scan # 393	11:39:52					
NO	107.0 ppm	O2	4.7 %	CO	399.0 ppm
Scan # 394	11:40:22					
NO	104.1 ppm	O2	4.7 %	CO	400.4 ppm
Scan # 395	11:40:52					
NO	105.8 ppm	O2	4.7 %	CO	402.9 ppm
Scan # 396	11:41:22					
NO	107.6 ppm	O2	4.7 %	CO	396.8 ppm
Scan # 397	11:41:52					
NO	105.6 ppm	O2	4.7 %	CO	395.6 ppm
Scan # 398	11:42:22					
NO	101.6 ppm	O2	4.7 %	CO	397.9 ppm
Scan # 399	11:42:52					
NO	103.3 ppm	O2	4.7 %	CO	397.7 ppm
Scan # 400	11:43:22					
NO	[illegible]7.3 ppm	O2	4.7 %	CO	401.6 ppm
Scan # 401	11:43:52					
NO	105.8 ppm	O2	4.7 %	CO	395.3 ppm
Scan # 402	11:44:22					
NO	107.2 ppm	O2	4.7 %	CO	395.6 ppm
Scan # 403	11:44:52					
NO	[illegible] ppm	O2	4.7 %	CO	396.4 ppm
Scan # 404	11:45:22					
NO	102.1 ppm	O2	4.7 %	CO	393.6 ppm
Scan # 405	11:45:52					
NO	106.6 ppm	O2	4.7 %	CO	393.0 ppm
Scan # 406	11:46:22					
NO	102.9 ppm	O2	4.7 %	CO	394.7 ppm
Scan # 407	11:46:52					
NO	104.9 ppm	O2	4.7 %	CO	400.5 ppm
Scan # 408	11:47:22					
NO	[illegible] ppm	O2	4.7 %	CO	397.5 ppm
Scan # 409	11:47:52					
NO	10[illegible].4 ppm	O2	4.7 %	CO	398.3 ppm
Scan # 4[illegible]	11:48:[illegible]					

Scan # 411		11:49:52				
NO	106.1 ppm		02	4.7 %	00	401.7 ppm
Scan # 412		11:49:22				
NO	104.8 ppm		01	4.7 %	01	400.1 ppm
Scan # 413		11:49:52				
NO	104.2 ppm		00	4.7 %	00	402.1 ppm
Scan # 414		11:50:22				
NO	99.7 ppm		01	4.7 %	00	397.2 ppm
Scan # 415		11:50:52				
NO	102.0 ppm		01	4.7 %	01	396.1 ppm
Scan # 416		11:51:22				
NO	103.0 ppm		00	4.7 %	00	396.4 ppm
Scan # 417		11:51:52				
NO	103.0 ppm		00	4.7 %	00	401.0 ppm
Scan # 418		11:52:22				
NO	104.5 ppm		01	4.7 %	00	397.2 ppm
Scan # 419		11:52:52				
NO	104.5 ppm		02	4.7 %	00	395.9 ppm
Scan # 420		11:53:22				
NO	102.7 ppm		00	4.7 %	00	395.0 ppm
Scan # 421		11:53:52				
NO	104.5 ppm		00	4.7 %	00	397.6 ppm
Scan # 422		11:54:22				
NO	104.2 ppm		01	4.7 %	00	399.2 ppm
Scan # 423		11:54:52				
NO	106.0 ppm		02	4.7 %	00	400.1 ppm
Scan # 424		11:55:22				
NO	98.2 ppm		01	4.7 %	00	393.5 ppm
Scan # 425		11:55:52				
NO	101.5 ppm		02	4.7 %	00	396.0 ppm
Scan # 426		11:56:22				
NO	104.0 ppm		00	4.7 %	00	396.9 ppm
Scan # 427		11:56:52				
NO	104.3 ppm		02	4.7 %	00	395.8 ppm
Scan # 428		11:57:22				
NO	106.3 ppm		00	4.7 %	00	396.9 ppm
Scan # 429		11:57:52				
NO	99.6 ppm		01	4.7 %	01	399.6 ppm
Scan # 430		11:58:22				
NO	101.7 ppm		00	4.6 %	00	399.1 ppm
Scan # 431		11:58:52				
NO	101.0 ppm		01	4.7 %	00	401.2 ppm
Scan # 432		11:59:22				

User # 412	12:10:12				
N2	101.3 ppm	02	4.7 %	00	412.0 ppm
User # 414	12:00:52				
N2	104.7 ppm	02	4.6 %	00	397.5 ppm
User # 416	12:16:51				
N2	102.9 ppm	01	4.7 %	00	399.4 ppm
User # 418	12:10:12				
N2	104.8 ppm	02	4.6 %	00	395.0 ppm
User # 477	12:01:51				
N2	101.3 ppm	01	4.7 %	01	401.4 ppm
User # 421	12:15:12				
N2	102.3 ppm	01	4.6 %	01	394.5 ppm
User # 439	12:02:51				
N2	104.7 ppm	02	4.6 %	00	396.3 ppm
User # 441	12:01:22				
N2	101.7 ppm	01	4.7 %	00	400.5 ppm
User # 443	12:03:51				
N2	101.3 ppm	02	4.7 %	00	402.8 ppm
User # 445	12:04:22				
N2	101.7 ppm	02	4.7 %	00	397.9 ppm
User # 447	12:04:52				
N2	103.6 ppm	02	4.7 %	00	401.6 ppm
User # 449	12:05:22				
N2	101.3 ppm	01	4.6 %	01	401.6 ppm
User # 451	12:05:52				
N2	104.3 ppm	02	4.7 %	00	403.7 ppm
User # 453	12:06:22				
N2	101.6 ppm	01	4.6 %	00	403.3 ppm
User # 455	12:06:52				
N2	101.3 ppm	01	4.6 %	01	398.8 ppm
User # 457	12:07:21				
N2	103.8 ppm	02	4.6 %	00	400.7 ppm
User # 459	12:07:52				
N2	102.1 ppm	01	4.6 %	01	400.1 ppm
User # 461	12:08:22				
N2	101.9 ppm	01	4.6 %	00	404.3 ppm
User # 463	12:08:52				
N2	101.3 ppm	01	4.6 %	01	398.6 ppm
User # 465	12:09:22				
N2	101.3 ppm	01	4.6 %	01	397.5 ppm
User # 467	12:09:52				
N2	101.3 ppm	01	4.6 %	01	397.9 ppm
User # 469	12:10:22				

Scan # 457		12:10:52				
NOx	105.8 ppm		01	4.6 %	00	402.0 ppm
Scan # 458		12:11:22				
NOx	106.3 ppm		01	4.6 %	00	400.3 ppm
Scan # 459		12:11:52				
NOx	103.6 ppm		00	4.6 %	01	396.2 ppm
Scan # 460		12:12:22				
NOx	102.7 ppm		00	4.6 %	01	397.3 ppm
Scan # 461		12:12:52				
NOx	103.0 ppm		01	4.6 %	00	391.2 ppm
Scan # 462		12:13:22				
NOx	106.5 ppm		01	4.6 %	00	401.9 ppm
Scan # 463		12:13:52				
NOx	104.5 ppm		02	4.6 %	00	398.8 ppm
Scan # 464		12:14:22				
NOx	106.0 ppm		02	4.6 %	01	400.0 ppm
Scan # 465		12:14:52				
NOx	104.6 ppm		02	4.6 %	00	399.0 ppm
Scan # 466		12:15:22				
NOx	104.3 ppm		01	4.6 %	00	396.6 ppm
Scan # 467		12:15:52				
NOx	104.4 ppm		02	4.6 %	00	399.6 ppm
Scan # 468		12:16:22				
NOx	46.3 ppm		01	4.7 %	01	399.0 ppm
Scan # 469		12:16:52				
NOx	107.3 ppm		01	4.6 %	00	400.3 ppm
Scan # 470		12:17:22				
NOx	104.3 ppm		02	4.6 %	00	399.9 ppm
Scan # 471		12:17:52				
NOx	103.3 ppm		12	4.6 %	00	402.5 ppm
Scan # 472		12:18:22				
NOx	107.0 ppm		02	4.6 %	03	400.5 ppm
Scan # 473		12:18:52				
NOx	101.2 ppm		02	4.6 %	00	391.2 ppm
Scan # 474		12:19:22				
NOx	32.0 ppm		03	12.7 %	00	121.7 ppm
Scan # 475		12:19:52				
NOx	1.6 ppm		03	19.8 %	03	13.2 ppm
Scan # 476		12:20:22				
NOx	0.4 ppm		03	19.5 %	01	0.0 ppm
Scan # 477		12:20:52				
NOx	0.3 ppm		01	19.1 %	00	41.9 ppm
Scan # 478		12:21:22				

End Run 5

leak check good

Begin system cals

Start # [illegible]	12:[illegible]				
[illegible]	7.3 ppm	C1	20.4 %	00	-0.7 ppm
Start # 478	12:22:30				
NO	6.2 ppm	02	20.3 %	00	0.2 ppm
Start # 479	12:23:51				
NO	3.8 ppm	01	20.3 %	00	0.5 ppm
Start # 4[illegible]	12:26:22				
NO	3.2 ppm	02	20.3 %	00	0.6 ppm
Start # 48[illegible]	12:28:51				
NO	3.0 ppm	01	20.3 %	00	0.4 ppm
Start # 481	12:29:21				
NO	2.2 ppm	01	20.3 %	00	0.6 ppm
Start # 482	12:29:51				
NO	2.1 ppm	02	20.3 %	00	0.3 ppm
Start # 484	12:30:22				
NO	1.6 ppm	02	20.3 %	00	0.3 ppm
Start # 485	12:30:52				
NO	1.3 ppm	01	20.4 %	00	0.5 ppm
Start # 486	12:31:22				
NO	1.1 ppm	02	20.3 %	00	0.3 ppm
Start # 487	12:31:52				
NO	0.5 ppm	02	20.4 %	00	-0.1 ppm
Start # 488	12:32:22				
NO	1.1 ppm	00	20.4 %	00	0.3 ppm
Start # 489	12:32:52				
NO	1.4 ppm	02	20.3 %	00	0.5 ppm
Start # 490	12:33:22				
NO	1.7 ppm	02	19.1 %	00	1.2 ppm
Start # 491	12:33:52				
NO	1.8 ppm	02	16.1 %	00	0.3 ppm
Start # 492	12:34:22				
NO	1.5 ppm	02	16.0 %	00	0.1 ppm
Start # 493	12:34:52				
NO	1.9 ppm	02	16.0 %	00	0.5 ppm
Start # 494	12:35:22				
NO	1.3 ppm	02	16.0 %	00	0.5 ppm
Start # 495	12:35:52				
NO	1.8 ppm	01	16.0 %	00	0.5 ppm
Start # 496	12:36:22				
NO	1.5 ppm	01	16.0 %	00	0.5 ppm
Start # 49[illegible]	12:36:51				
NO	1.8 ppm	01	7.4 %	00	389.0 ppm
Start # 498	12:37:21				

ZERO

16.1 % O_2

Scan # [illegible]	[illegible]	12:32:11			
[illegible]	0.7 ppm	O2	0.2 %	CO	490.0 ppm
Scan # 5:0		12:33:01			
NO	0.9 ppm	O2	-0.1 %	CO	495.8 ppm
Scan # 5:1		12:33:51			
NO	1.2 ppm	O2	-0.1 %	CO	495.5 ppm
Scan # 5:2		12:34:21			
NO	0.8 ppm	O2	-0.1 %	CO	496.7 ppm
Scan # 5:3		12:34:51			
NO	0.9 ppm	O2	-0.1 %	CO	496.1 ppm
Scan # 5:4		12:35:21			
NO	1.4 ppm	O2	-0.1 %	CO	495.6 ppm
Scan # 5:5		12:35:51			
NO	189.7 ppm	O2	2.6 %	CO	69.3 ppm
Scan # 5:6		12:36:21			
NO	246.1 ppm	O2	-0.1 %	CO	2.0 ppm
Scan # 5:7		12:36:51			
NO	246.9 ppm	O2	-0.1 %	CO	0.0 ppm
Scan # 5:8		12:37:21			
NO	247.4 ppm	O2	-0.1 %	CO	0.5 ppm
Scan # 5:9		12:37:51			
NO	247.6 ppm	O2	-0.1 %	CO	0.3 ppm
Scan # 5:0		12:38:21			
NO	247.9 ppm	O2	-0.1 %	CO	0.5 ppm
Scan # 5:1		12:38:51			
NO	247.9 ppm	O2	-0.1 %	CO	0.2 ppm
Scan # 5:2		12:39:21			
NO	236.4 ppm	O2	-0.1 %	CO	1.2 ppm
Scan # 5:3		12:39:51			
NO	45.0 ppm	O2	13.3 %	CO	2.7 ppm
Scan # 5:4		12:40:21			
NO	5.6 ppm	O2	20.4 %	CO	3.5 ppm
Scan # 5:5		12:40:51			
NO	4.3 ppm	O2	20.6 %	CO	3.8 ppm
Scan # 5:6		12:41:21			
NO	4.9 ppm	O2	20.6 %	CO	3.6 ppm
Scan # 5:7		12:41:51			
NO	4.8 ppm	O2	20.7 %	CO	3.9 ppm
Scan # 5:8		12:42:21			
NO	4.1 ppm	O2	20.7 %	CO	3.9 ppm
Scan # 5:9		12:42:51			
NO	3.3 ppm	O2	20.8 %	CO	3.9 ppm

487.0 ppm CO
O_2 zero

242.0 ppm NO

Scan # 522		12:44:21			
NOx	2.7 ppm	02	20.9 %	00	3.4 ppm
Scan # 523		12:44:51			
NOx	2.7 ppm	02	20.9 %	00	3.5 ppm
Scan # 524		12:45:21			
NOx	2.9 ppm	02	20.9 %	00	3.6 ppm
Scan # 525		12:45:51			
NOx	2.9 ppm	02	20.9 %	00	3.6 ppm
Scan # 526		12:46:21			
NOx	2.8 ppm	02	20.9 %	00	3.5 ppm
Scan # 527		12:46:51			
NOx	2.5 ppm	02	20.9 %	00	3.3 ppm
Scan # 528		12:47:21			
NOx	2.5 ppm	02	20.9 %	00	3.3 ppm
Scan # 529		12:47:51			
NOx	2.6 ppm	02	20.9 %	00	3.4 ppm
Scan # 530		12:48:21			
NOx	2.2 ppm	02	20.9 %	00	3.5 ppm
Scan # 531		12:48:51			
NOx	66.3 ppm	02	10.3 %	00	335.6 ppm
Scan # 532		12:49:21			
NOx	107.6 ppm	02	4.8 %	00	410.4 ppm
Scan # 533		12:49:51			
NOx	107.5 ppm	02	4.7 %	00	405.0 ppm

Begin Run 6

Scan # 534		12:50:21			
NOx	108.6 ppm	02	4.6 %	00	410.4 ppm
Scan # 535		12:50:51			
NOx	108.8 ppm	02	4.6 %	00	410.5 ppm
Scan # 536		12:51:21			
NOx	112.2 ppm	02	4.6 %	00	403.8 ppm
Scan # 537		12:51:51			
NOx	110.1 ppm	02	4.6 %	00	408.9 ppm
Scan # 538		12:52:21			
NOx	112.9 ppm	02	4.6 %	00	409.9 ppm
Scan # 539		12:52:51			
NOx	111.8 ppm	02	4.6 %	00	401.4 ppm
Scan # 540		12:53:21			
NOx	112.9 ppm	02	4.6 %	00	401.1 ppm
Scan # 541		12:53:51			
NOx	111.1 ppm	02	4.6 %	00	401.2 ppm
Scan # 542		12:54:21			

[illegible]	[illegible]	[illegible]	02	4.6 %	00	404.6 ppm
Scan # 544		12:55:21				
[illegible]	101.8 psi		01	4.6 %	00	403.7 ppm
Scan # 545		12:55:51				
[illegible]	107.5 psi		02	4.6 %	01	399.6 psi
Scan # 546		12:56:21				
[illegible]	101.4 psi		02	4.6 %	01	401.9 ppm
Scan # 547		12:56:51				
[illegible]	103.5 psi		02	4.6 %	00	404.4 ppm
Scan # 548		12:57:21				
[illegible]	103.5 psi		02	4.6 %	02	402.9 ppm
Scan # 549		12:57:51				
[illegible]	100.0 psi		01	4.6 %	00	399.0 ppm
Scan # 550		12:58:21				
[illegible]	101.3 psi		02	4.6 %	00	401.5 ppm
Scan # 551		12:58:51				
[illegible]	100.3 psi		02	4.6 %	00	400.5 ppm
Scan # 552		12:59:21				
[illegible]	100.8 psi		02	4.6 %	00	400.5 ppm
Scan # 553		12:59:51				
[illegible]	99.3 psi		02	4.6 %	00	396.7 ppm
Scan # 554		13:00:21				
[illegible]	100.4 psi		01	4.6 %	00	398.7 psi
Scan # 555		13:00:51				
[illegible]	100.8 psi		02	4.6 %	00	400.9 ppm
Scan # 556		13:01:21				
[illegible]	[illegible] psi		01	4.6 %	00	397.8 psi
Scan # 557		13:01:51				
[illegible]	100.4 psi		01	4.6 %	00	399.3 psi
Scan # 558		13:02:21				
[illegible]	101.6 psi		01	4.6 %	00	404.0 ppm
Scan # 559		13:02:51				
[illegible]	100.3 psi		02	4.6 %	00	399.3 ppm
Scan # 560		13:03:21				
[illegible]	100.7 psi		02	4.6 %	00	399.2 ppm
Scan # [illegible]		13:03:51				
[illegible]	101.0 psi		02	4.6 %	00	402.0 ppm
Scan # 562		13:04:21				
[illegible]	[illegible] psi		01	4.6 %	00	399.6 psi
Scan # 563		13:04:51				
[illegible]	[illegible] psi		01	4.6 %	00	399.4 psi
Scan # 564		13:05:21				

[illegible]	206.1 ppm	02	4.6 %	00	399.2 ppm
Scan # 561	13:56:21				
[illegible]	199.6 ppm	02	4.6 %	00	403.6 ppm
Scan # 567	13:10:51				
NO	197.4 ppm	02	4.6 %	00	399.8 ppm
Scan # 568	13:07:21				
[illegible]	203.6 ppm	02	4.6 %	00	400.0 ppm
Scan # 569	13:07:51				
NO	198.7 ppm	02	4.6 %	00	402.9 ppm
Scan # 570	13:08:21				
[illegible]	205.1 ppm	02	4.6 %	00	404.1 ppm
Scan # 571	13:08:51				
NO	194.6 ppm	02	4.6 %	00	401.6 ppm
Scan # 572	13:09:21				
NO	195.2 ppm	02	4.7 %	00	400.6 ppm
Scan # 573	13:09:51				
[illegible]	197.2 ppm	02	4.6 %	00	401.2 ppm
Scan # 574	13:10:21				
NO	196.7 ppm	02	4.7 %	00	398.8 ppm
Scan # 575	13:10:51				
[illegible]	199.6 ppm	02	4.6 %	00	404.6 ppm
Scan # 576	13:11:21				
NO	198.5 ppm	02	4.6 %	00	401.1 ppm
Scan # 577	13:11:51				
[illegible]	199.8 ppm	02	4.6 %	00	400.2 ppm
Scan # 578	13:12:21				
[illegible]	201.1 ppm	02	4.6 %	00	402.6 ppm
Scan # 579	13:12:51				
NO	196.4 ppm	02	4.6 %	00	398.6 ppm
Scan # 580	13:13:21				
[illegible]	204.6 ppm	02	4.6 %	00	405.3 ppm
Scan # 581	13:13:51				
NO	199.3 ppm	02	4.6 %	00	404.5 ppm
Scan # 582	13:14:21				
[illegible]	196.2 ppm	02	4.6 %	00	399.0 ppm
Scan # 583	13:14:51				
[illegible]	202.0 ppm	02	4.6 %	00	402.3 ppm
Scan # 584	13:15:21				
[illegible]	200.9 ppm	02	4.6 %	00	404.0 ppm
Scan # 585	13:15:51				
[illegible]	198.6 ppm	02	4.6 %	00	402.7 ppm
Scan # 586	13:16:21				

Scan # [illegible]	[illegible]				
[illegible]	112.3 ppm	02	4.6 %	00	399.2 ppm
Scan # 588	13:17:21				
[illegible]	114.2 ppm	02	4.6 %	00	403.0 ppm
Scan # 589	13:17:51				
[illegible]	113.9 ppm	02	4.6 %	00	402.5 ppm
Scan # 590	13:18:21				
[illegible]	109.7 ppm	02	4.6 %	01	400.1 ppm
Scan # 591	13:18:51				
[illegible]	109.3 ppm	02	4.6 %	00	399.7 ppm
Scan # 592	13:19:21				
[illegible]	109.7 ppm	02	4.6 %	03	398.6 ppm
Scan # 593	13:19:51				
[illegible]	110.8 ppm	02	4.6 %	00	401.6 ppm
Scan # 594	13:20:21				
[illegible]	111.0 ppm	02	4.6 %	00	404.6 ppm
Scan # 595	13:20:51				
[illegible]	109.7 ppm	02	4.6 %	00	399.4 ppm
Scan # 596	13:21:21				
[illegible]	113.3 ppm	02	4.6 %	00	398.6 ppm
Scan # 597	13:21:51				
[illegible]	111.6 ppm	02	4.6 %	00	402.9 ppm
Scan # 598	13:22:21				
[illegible]	113.0 ppm	02	4.6 %	00	402.1 ppm
Scan # 599	13:22:51				
[illegible]	112.7 ppm	02	4.6 %	00	402.2 ppm
Scan # 600	13:23:21				
[illegible]	113.3 ppm	02	4.6 %	00	397.1 ppm
Scan # 601	13:23:51				
[illegible]	113.6 ppm	02	4.6 %	00	399.7 ppm
Scan # 602	13:24:21				
[illegible]	110.8 ppm	02	4.6 %	00	400.8 ppm
Scan # 603	13:24:51				
[illegible]	113.1 ppm	02	4.6 %	00	403.7 ppm
Scan # 604	13:25:21				
[illegible]	114.3 ppm	02	4.6 %	00	401.8 ppm
Scan # 605	13:25:51				
[illegible]	112.8 ppm	02	4.6 %	00	402.2 ppm
Scan # 606	13:26:21				
[illegible]	115.1 ppm	02	4.6 %	00	404.0 ppm
Scan # 607	13:26:51				
[illegible]	110.6 ppm	02	4.6 %	00	399.5 ppm
Scan # 608	13:27:21				

Scan # [illegible]		10:17:51			
[illegible]	117.9 ppm	02	4.6 %	00	399.4 ppm
Scan # 610		10:28:21			
[illegible]	111.1 ppm	01	4.6 %	01	395.8 ppm
Scan # 611		10:28:51			
[illegible]	120.6 ppm	02	4.6 %	00	399.2 ppm
Scan # 612		10:29:21			
[illegible]	105.3 ppm	01	4.6 %	02	400.9 ppm
Scan # 613		10:29:51			
[illegible]	113.9 ppm	01	4.6 %	00	403.2 ppm
Scan # 614		10:30:21			
[illegible]	121.6 ppm	02	4.6 %	01	400.4 ppm
Scan # 615		10:30:51			
[illegible]	115.9 ppm	02	4.6 %	02	397.0 ppm
Scan # 616		10:31:21			
[illegible]	109.0 ppm	02	4.6 %	00	403.3 ppm
Scan # 617		10:31:51			
[illegible]	110.0 ppm	02	4.6 %	00	397.7 ppm
Scan # 618		10:32:21			
[illegible]	110.3 ppm	02	4.6 %	00	397.7 ppm
Scan # 619		10:32:51			
[illegible]	107.7 ppm	02	4.6 %	00	396.8 ppm
Scan # 620		10:33:21			
[illegible]	111.7 ppm	02	4.6 %	02	400.6 ppm
Scan # 621		10:33:51			
[illegible]	106.3 ppm	02	4.7 %	00	399.0 ppm
Scan # 622		10:34:21			
[illegible]	112.6 ppm	01	4.6 %	00	401.4 ppm
Scan # 623		10:34:51			
[illegible]	111.1 ppm	02	4.6 %	00	401.6 ppm
Scan # 624		10:35:21			
[illegible]	116.6 ppm	02	4.6 %	00	405.2 ppm
Scan # 625		10:35:51			
[illegible]	111.2 ppm	02	4.6 %	00	397.7 ppm
Scan # 626		10:36:21			
[illegible]	109.3 ppm	02	4.6 %	00	400.2 ppm
Scan # 627		10:36:51			
[illegible]	112.6 ppm	01	4.6 %	00	397.2 ppm
Scan # 628		10:37:21			
[illegible]	117.2 ppm	01	4.6 %	00	399.4 ppm
Scan # 629		10:37:51			
[illegible]	117.3 ppm	01	4.6 %	00	397.9 ppm
Scan # 630		10:38:21			

Scan # 631		13:38:51				
NO	116.1 ppm		02	4.6 %	00	399.6 ppm
Scan # 632		13:39:21				
NO	110.5 ppm		02	4.6 %	00	401.1 ppm
Scan # 633		13:39:51				
NO	117.1 ppm		02	4.6 %	00	396.4 ppm
Scan # 634		13:40:21				
NO	112.1 ppm		02	4.6 %	00	398.2 ppm
Scan # 635		13:40:51				
NO	114.6 ppm		02	4.6 %	00	397.7 ppm
Scan # 636		13:41:21				
NO	108.2 ppm		02	4.6 %	00	401.0 ppm
Scan # 637		13:41:51				
NO	110.0 ppm		02	4.6 %	00	397.8 ppm
Scan # 638		13:42:21				
NO	107.0 ppm		02	4.6 %	00	397.8 ppm
Scan # 639		13:42:51				
NO	107.9 ppm		02	4.6 %	00	401.6 ppm
Scan # 640		13:43:21				
NO	113.7 ppm		02	4.6 %	00	400.6 ppm
Scan # 641		13:43:51				
NO	111.7 ppm		02	4.6 %	00	404.5 ppm
Scan # 642		13:44:21				
NO	112.1 ppm		01	4.6 %	00	401.6 ppm
Scan # 643		13:44:51				
NO	108.2 ppm		02	4.6 %	00	401.0 ppm
Scan # 644		13:45:21				
NO	107.5 ppm		01	4.6 %	00	399.7 ppm
Scan # 645		13:45:51				
NO	112.3 ppm		02	4.6 %	01	403.3 ppm
Scan # 646		13:46:21				
NO	109.6 ppm		02	4.6 %	00	401.7 ppm
Scan # 647		13:46:51				
NO	110.3 ppm		02	4.6 %	00	396.1 ppm
Scan # 648		13:47:21				
NO	111.0 ppm		02	4.6 %	00	399.5 ppm
Scan # 649		13:47:51				
NO	116.1 ppm		02	4.6 %	02	404.4 ppm
Scan # 650		13:48:21				
NO	116.0 ppm		02	4.6 %	01	401.1 ppm
Scan # 651		13:48:51				
NO	111.1 ppm		02	4.6 %	01	399.6 ppm
Scan # 652		13:49:21				

NO	11.2 ppm	O2	4.6 %	CO	397.4 ppm
Scan # 654	13:56:21				
NO	111.5 ppm	O2	4.6 %	CO	400.3 ppm

End Run 6

Scan # 655	13:60:51				
NO	112.2 ppm	O2	4.6 %	CO	397.1 ppm
Scan # 656	13:51:21				
NO	108.9 ppm	O2	4.6 %	CO	396.5 ppm
Scan # 657	13:51:51				
NO	23.9 ppm	O2	16.5 %	CO	57.6 ppm
Scan # 658	13:52:21				
NO	11.2 ppm	O2	20.4 %	CO	5.2 ppm
Scan # 659	13:52:51				
NO	10.3 ppm	O2	20.7 %	CO	4.2 ppm
Scan # 660	13:53:21				
NO	8.4 ppm	O2	20.7 %	CO	6.2 ppm
Scan # 661	13:53:51				
NO	1.7 ppm	O2	20.6 %	CO	9.1 ppm
Scan # 662	13:54:21				
NO	0.7 ppm	O2	20.5 %	CO	12.6 ppm
Scan # 663	13:54:51				
NO	0.6 ppm	O2	20.5 %	CO	11.8 ppm
Scan # 664	13:55:21				
NO	31.8 ppm	O2	20.4 %	CO	12.2 ppm
Scan # 665	13:55:51				
NO	10.3 ppm	O2	20.3 %	CO	3.0 ppm
Scan # 666	13:56:21				
NO	3.3 ppm	O2	20.2 %	CO	1.1 ppm
Scan # 667	13:56:51				
NO	6.0 ppm	O2	20.3 %	CO	0.5 ppm
Scan # 668	13:57:21				
NO	3.7 ppm	O2	20.3 %	CO	0.8 ppm
Scan # 669	13:57:51				
NO	3.2 ppm	O2	20.3 %	CO	1.6 ppm
Scan # 670	13:58:21				
NO	3.0 ppm	O2	20.3 %	CO	0.8 ppm
Scan # 671	13:58:51				
NO	2.8 ppm	O2	20.3 %	CO	1.4 ppm
Scan # 672	13:59:21				
NO	2.5 ppm	O2	20.3 %	CO	2.1 ppm
Scan # 673	13:59:51				
NO	2.3 ppm	O2	20.3 %	CO	1.4 ppm
Scan # 674	14:00:21				
NO	2.5 ppm	O2	20.3 %	CO	

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Scan # [illegible]		14:[illegible]				
[illegible]	2.0 ppm		02	20.8 %	CO	0.7 ppm
Scan # 675		14:01:21				
[illegible]	1.7 ppm		02	20.8 %	CO	1.4 ppm
Scan # 677		14:[illegible]:51				
[illegible]	1.8 ppm		02	21.2 %	CO	0.9 ppm
Scan # 678		14:02:21				
NO	2.0 ppm		02	20.3 %	CO	1.3 ppm
Scan # 679		14:02:51				
[illegible]	1.2 ppm		02	19.2 %	CO	2.2 ppm
Scan # 680		14:03:21				
[illegible]	1.6 ppm		02	16.0 %	CO	1.3 ppm
Scan # 681		14:03:51				
NO	1.6 ppm		02	15.9 %	CO	1.0 ppm
Scan # 682		14:04:21				
NO	1.9 ppm		02	15.9 %	CO	1.1 ppm
Scan # 683		14:04:51				
NO	1.5 ppm		02	15.9 %	CO	1.2 ppm
Scan # 684		14:05:21				
NO	1.6 ppm		02	15.9 %	CO	1.9 ppm
Scan # 685		14:05:51				
NO	1.3 ppm		02	15.9 %	CO	1.2 ppm
Scan # 686		14:06:21				
[illegible]	2.2 ppm		02	16.0 %	CO	1.9 ppm
Scan # 687		14:06:51				
NO	1.5 ppm		02	1.6 %	CO	471.5 ppm
Scan # 688		14:07:21				
[illegible]	1.3 ppm		02	-0.0 %	CO	494.9 ppm
Scan # 689		14:07:51				
NO	1.1 ppm		02	-0.1 %	CO	496.2 ppm
Scan # 690		14:08:21				
NO	1.0 ppm		02	-0.1 %	CO	496.4 ppm
Scan # 691		14:08:51				
NO	0.9 ppm		02	-0.1 %	CO	496.6 ppm
Scan # 692		14:09:21				
NO	1.1 ppm		02	-0.1 %	CO	496.3 ppm
Scan # 693		14:09:51				
NO	1.3 ppm		02	-0.1 %	CO	496.6 ppm
Scan # 694		14:10:21				
NO	216.3 ppm		01	2.4 %	CO	45.7 ppm
Scan # 695		14:10:51				
NO	249.4 ppm		01	-0.1 %	CO	2.9 ppm
Scan # 696		14:11:21				

zero

72

16.1 % O_2

487.0 ppm CO

NO	244.7 ppm		01	-1.1 %	01	1.6 ppm
Scan # 698		14:12:21				
NO	244.8 ppm		01	-1.1 %	01	2.3 ppm
Scan # 699		14:12:51				
NO	246.8 ppm		01	-1.1 %	00	1.7 ppm
Scan # 700		14:13:21				
NO	242.4 ppm		01	-1.. %	00	2.7 ppm
Scan # 701		14:13:51				
NO	106.3 ppm		02	-1.1 %	01	3.2 ppm
Scan # 702		14:14:21				
NO	3.8 ppm		02	1..4 %	00	3.0 ppm
Scan # 703		14:14:51				
NO	1.6 ppm		02	20.8 %	00	4.5 ppm
Scan # 704		14:15:21				
NO	1.9 ppm		02	20.8 %	00	3.2 ppm
Scan # 705		14:15:51				
NO	1.9 ppm		02	20.8 %	00	4.9 ppm
Scan # 706		14:16:21				
NO	0.1 ppm		02	20.8 %	00	4.2 ppm
Scan # 707		14:16:51				
NO	-0.1 ppm		02	20.8 %	00	4.5 ppm
Scan # 708		14:17:21				
NO	-..1 ppm		02	20.8 %	01	3.8 ppm
Scan # 709		14:17:51				
NO	-0.8 ppm		01	20.8 %	00	3.7 ppm

242.0 ppm NO

73 of 73

End ET
10/7/92

APPENDIX D

Equipment Calibrations

and

EPA Protocol 1 Certification Sheets

METHOD 5 MODULE CALIBRATION

DATE 10/9/92 ORIFICE/MODULE NO. 2877 NAME TEC

BAROMETRIC PRESSURE Pb 30.20 in Hg STANDARD METER 570415

Post test

MODULE ORIFICE SETTING ΔH (in.H_2O)	STANDARD METER				MODULE METER							
	Volume V_s (ft^3)	Factor Y_s	Temperature t_s (°F)	Pressure ΔPs (in. H_2O)	Volume Vm (ft^3)	Temperatures tmi (°F)	tmo (°F)	Time θ (min)	Y	ΔHa (in. H_2O)	Module Flowrate Q (SCFH)	OF
0.5	5.002	1.0001	55	-0.11	5.170	77	64	13.73	1.0070	1.97	.3919	
1.0	5.000	1.0001	55	-0.12	5.130	77	66	9.42	.9964	1.85	.5686	
1.5	10.002	1.0001	57	-0.12	10.246	81	68	15.83	.9924	1.96	.6778	
2.0	10.000	1.0001	57	-0.16	10.260	84	71	13.60	.9911	1.92	.7955	
3.0	10.004	1.0001	58	-0.16	10.271	86	72	10.80	.9936	1.84	1.0061	
									AVERAGE:	.9961	1.90	

CHECK:

FOR CHECK, USE THE AVERAGE ΔHa FOR ΔH

$$Y = \frac{V_s \left(P_b + \frac{P_s}{13.6}\right)(T_m + 460) Y_s}{V_m \left(P_b + \frac{\Delta H}{13.6}\right)(t_s + 460)}$$

$$\Delta Ha = \left[\frac{(0.0317)\,\Delta H}{P_b\,(t_m + 460)}\right]\left[\frac{(t_s + 460)\,\theta}{V_s\,Y_s}\right]^2$$

$$Q = Y\,(17.64)\,V_m\left[\frac{P_b + \frac{\Delta H}{13.6}}{(t_m + 460)\,\theta}\right]$$

$$OF = \text{orifice factor} = \left[\frac{(t_m + 460)\,\Delta H}{P_b}\right]^{1/2}$$

Correlation Line Equation

$Q = m\,(OF) + b$

$Q =$ _____ OF + _____

ACCEPTANCE CRITERIA:

Each Y must be 1.00 ± 0.01
Average ΔHa must be 1.84 ± 0.25
Each ΔHa must be within 0.15 of the average ΔHa

TC Readout Calibrated with Constant Voltage Source

tmi 57 °F tmo 57 °F Reference Thermometer 57 °F

Module Leak Check 0.00 10" HG

Heater Box Love Control OK ✓ Probe Heater Low Control ✓

Module Cleaned ✓ Pitot tube manometer leak check ✓

Calibrated and Checked by TC Date 10/9/92

Reviewed by Hien Ung Date 10/9/92

5/3/03

METHOD 5 MODULE CALIBRATION

DATE 9/25/92 ORIFICE/MODULE NO. 2827 NAME TEC

BAROMETRIC PRESSURE Pb 30.45 in Hg STANDARD METER 570415

Pre-test

MODULE ORIFICE SETTING ΔH (in.H_2O)	STANDARD METER Volume V_s (ft^3)	Factor Y_s	Temperature t_s (^oF)	Pressure ΔPs (in. H_2O)	MODULE METER Volume Vm (ft^3)	Temperatures tmi (^oF)	tmo (^oF)	Time θ (min)	Y	ΔHa (in. H_2O)	Module Flowrate Q (SCFH)	OF
0.5	5.000	1.0001	63	-0.11	5.150	69	78	12.96	1.0049	1.77	.4154	
1.0	5.004	1.0001	63	-0.12	5.163	71	79	8.88	1.0051	1.65	.6102	
1.5	10.003	1.0001	63	-0.14	10.323	72	84	15.26	.9992	1.82	.7148	
2.0	10.004	1.0001	63	-0.15	10.326	73	85	13.43	1.0000	1.88	.8150	
3.0	10.005	1.0001	63	-0.16	10.307	74	87	10.15	.9981	1.83	1.0133	
									AVERAGE:	1.0014	1.79	

CHECK:

FOR CHECK, USE THE AVERAGE ΔHa FOR ΔH

$$Y = \frac{V_s \left(P_b + \frac{P_s}{13.6}\right)(T_m + 460)\, Y_s}{V_m \left(P_b + \frac{\Delta H}{13.6}\right)(t_s + 460)}$$

$$\Delta Ha = \left[\frac{(0.0317)\,\Delta H}{P_b\,(t_m + 460)}\right]\left[\frac{(t_s + 460)\,\theta}{V_s\, Y_s}\right]^2$$

$$Q = Y\,(17.64)\,V_m \left[\frac{P_b + \frac{\Delta H}{13.6}}{(t_m + 460)\,\theta}\right]$$

$$OF = \text{orifice factor} = \left[\frac{(t_m + 460)\,\Delta H}{P_b}\right]^{1/2}$$

Correlation Line Equation

$Q = m\,(OF) + b$

$Q =$ _____ OF + _____

ACCEPTANCE CRITERIA:

Each Y must be 1.00 ± 0.01
Average ΔHa must be 1.04 ± 0.25
Each ΔHa must be within 0.15 of the average ΔHa

TC Readout Calibrated with Constant Voltage Source _____
tmi 63 °F tmo 63 °F Reference Thermometer 63 °F
Module Leak Check 0.00 ✓ 12" HG
Heater Box Love Control OK ✓ Probe Heater Low Control _____
Module Cleaned ✓ Pitot tube manometer leak check ✓

Calibrated and Checked by TC Date 9/25/92
Reviewed by [signature] Date 9/25/92

5/3/03

S-TYPE PITOT GEOMETRIC CALIBRATION

PART 2 - PITOT ALIGNMENT

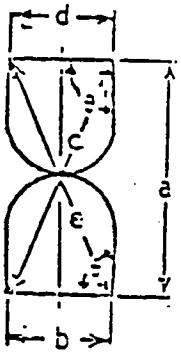
Probe Identification 401 Pitot Identification 401

Technical Specialist TEC

Date 11/27/91

A.

Transverse Tube Axis



a 1.237
b .337
c 1.324
d .320
e 1.325
θ 89
θ' 89

$\frac{a^2 + b^2 - c^2}{2ab} = \cos\theta$

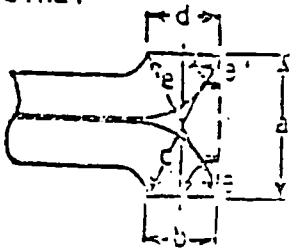
$\frac{a^2 + d^2 - e^2}{2ad} = \cos\theta'$

$(80^\circ < \theta < 100^\circ)$

$(80^\circ < \theta' < 100^\circ)$

B.

Longitudinal Tube Axis



a 1.237
b .409
c 1.324
d .506
e 1.325
θ 89
θ' 88

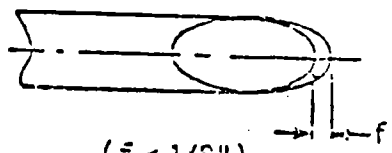
$\frac{a^2 + b^2 - c^2}{2ab} = \cos\theta$

$\frac{a^2 + d^2 - e^2}{2ad} = \cos\theta'$

$(85^\circ < \theta < 95^\circ)$

$(85^\circ < \theta' < 95^\circ)$

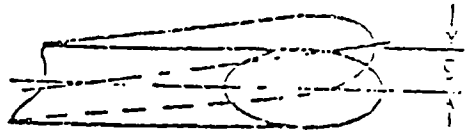
C.



f ____

$(f < 1/8")$

D.



g ____

$(g < 1/32")$

NOTE: Values in parentheses are EPA Method 2 specifications.

PROBE THERMOCOUPLE CALIBRATION

		Tolerances
Expected Stack Temperature (T_s)	____ °R	
Mercury Thermometer (T_{ref})	____ °R	($T_s \pm 10\%$)
Thermocouple Readout	____ °R	($T_{ref} \pm 1.5\%$)

Probe Identification ____

Technician ____ Date ____

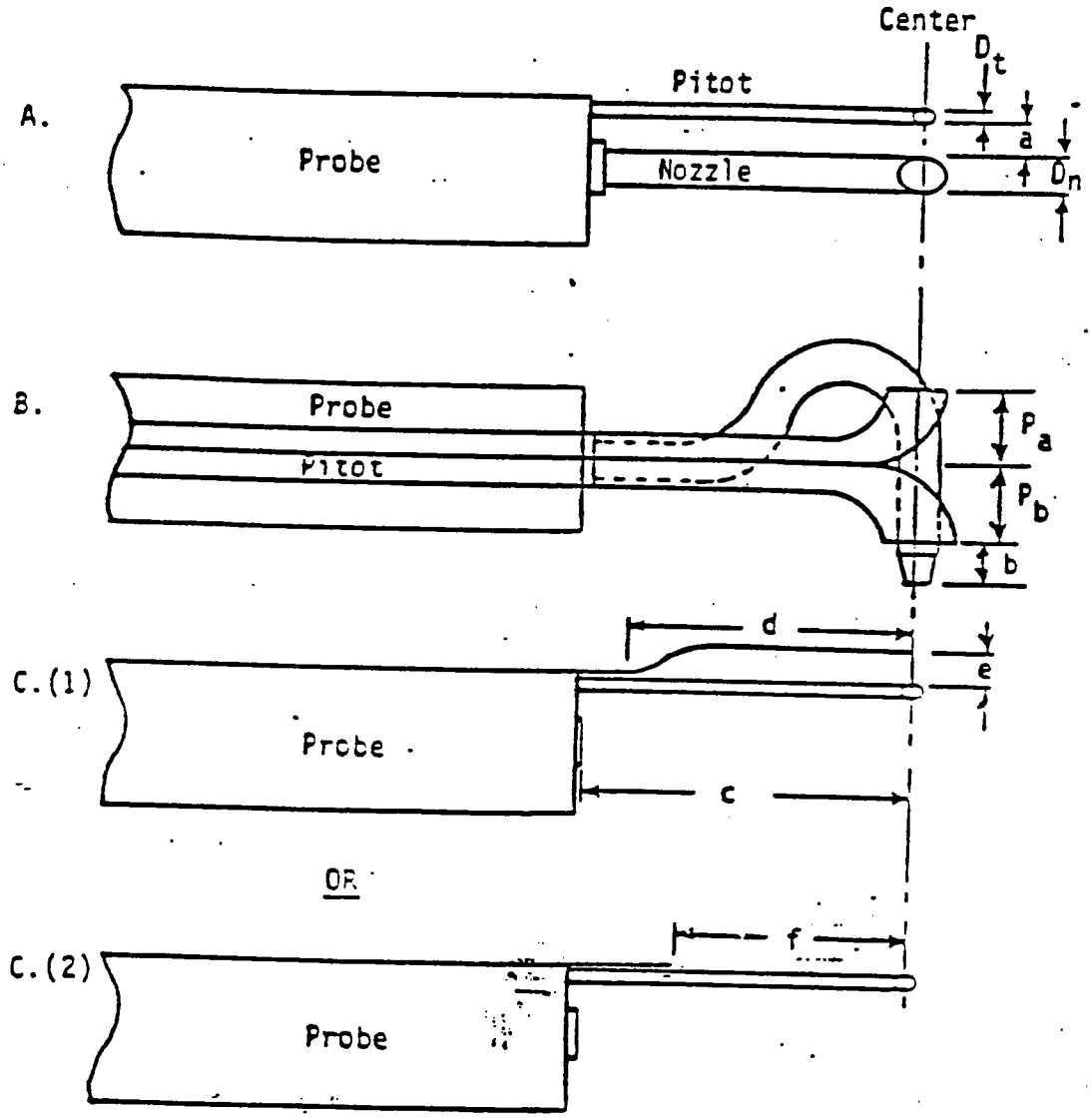
S-TYPE PITOT GEOMETRIC CALIBRATION

PART 1 - PROBE CONFIGURATION

Probe Identification 401 Pitot Identification 401

Technical Specialist TEC

Date 11/27/91



D_t .380

D_n .375

a .620

P_a .620

P_b .620

b .415

c _____

c _____

e _____

OR

c 3.164

f 1.014

Specifications (EPA Method 2)

D_t = 3/16" to 3/8"
D_n = 1/2"
$a \geq 3/4"$
$b \geq 0$

$c \geq 3"$
$d \geq 3"$
$e \geq 3/4"$
$f \geq 2"$

$P_a = P_b$

$1.05\ D_t \leq P \leq 1.50\ D_t$

If these specifications are met, proceed with Part 2 Pitot alignment

NBS TRACEABLE GAS MIXTURES

The mixture(s) described below are manufactured and certified traceable to the National Bureau of Standards, Standards Reference Materials (NBS, SRM) via the Traceability Protocol for establishing true concentrations of gases used for calibration and audits of continuous Source Emission Monitors (Protocol No. 1) or Air Pollution Analyzers (Protocol No. 2)

ANALYSIS REPORT

Per Protocol Number 1

Control Number 88-18539

Cylinder Number SX-19977

Preparation Date: 07/08/92

Minor Component Oxygen

Mean Concentration 16.1%

REPLICATE ANALYSIS DATA	DATE	ANALYSIS	MEAN
	07/08/92	16.1%	
		16.1%	
		16.2%	16.1%
REPLICATE ANALYSIS DATA			

Balance Gas Nitrogen

NBS SRM Numbers Used 2659A

Analytical Principle Used Beckman Prarmagnetic

Expiration Date 01/08/94

Matheson Gas Products
World Leader in Specialty Gases & Equipment
P.O. Box 85, East Rutherford, N.J. 07073

Dale Dicus Analyst

NOTEBOOK REFERENCE

NBS TRACEABLE GAS MIXTURES

The mixture(s) described below are manufactured and certified traceable to the National Bureau of Standards, Standards Reference Materials (NBS, SRM) via the Traceability Protocol for establishing true concentrations of gases used for calibration and audits of continuous Source Emission Monitors (Protocol No. 1) or Air Pollution Analyzers (Protocol No. 2)

ANALYSIS REPORT

Per Protocol Number 1

Control Number 88-16516

Cylinder Number SX-16386

Preparation Date: 2/13/92

Minor Component Nitric Oxide

Mean Concentration 97.5PPM

REPLICATE ANALYSIS DATA	DATE	ANALYSIS	MEAN
	2/13/92	97.4PPM	
		97.5PPM	
		97.5PPM	97.5PPM
REPLICATE ANALYSIS DATA			
	3/16/92	97.5PPM	
		97.4PPM	
		97.4PPM	97.5PPM

Balance Gas Nitrogen

NBS SRM Numbers Used 1684B

Analytical Principle Used Beckman Chemilumenscent

Expiration Date 9/16/93

Matheson
Gas Products
World Leader in Specialty Gases & Equipment
P.O. Box 85, East Rutherford, N.J. 07073

Dale Dieus Analyst

NOTEBOOK REFERENCE

NBS TRACEABLE GAS MIXTURES

The mixture(s) described below are manufactured and certified traceable to the National Bureau of Standards, Standards Reference Materials (NBS, SRM) via the Traceability Protocol for establishing true concentrations of gases used for calibration and audits of continuous Source Emission Monitors (Protocol No. 1) or Air Pollution Analyzers (Protocol No. 2)

ANALYSIS REPORT

Per Protocol Number 1

Control Number 88-16446

Cylinder Number SX-24321

Preparation Date: 03/04/92

Minor Component Nitric Oxide

Mean Concentration 242PPM

REPLICATE ANALYSIS DATA	DATE	ANALYSIS	MEAN
	03/04/92	245PPM	
		243PPM	
		241PPM	242PPM
REPLICATE ANALYSIS DATA			
	03/11/92	240PPM	
		243PPM	
		241PPM	242PPM

Balance Gas Nitrogen

NBS SRM Numbers Used 1685

Analytical Principle Used Beckman Chemilumenscent

Expiration Date 09/11/93

Matheson Gas Products
World Leader in Specialty Gases & Equipment
P.O. Box 85, East Rutherford, N.J. 07073

Dale Ricci Analyst

NOTEBOOK REFERENCE

NBS TRACEABLE GAS MIXTURES

The mixture(s) described below are manufactured and certified traceable to the National Bureau of Standards, Standards Reference Materials (NBS, SRM) via the Traceability Protocol for establishing true concentrations of gases used for calibration and audits of continuous Source Emission Monitors (Protocol No. 1) or Air Pollution Analyzers (Protocol No. 2)

ANALYSIS REPORT

Per Protocol Number 1

Control Number 88-16443

Cylinder Number SX-24308

Preparation Date: 03/04/92

Minor Component Nitric Oxide

Mean Concentration 480PPM

REPLICATE ANALYSIS DATA	DATE	ANALYSIS	MEAN
	03/04/92	481PPM	
		478PPM	
		475PPM	480PPM
REPLICATE ANALYSIS DATA			
	03/11/92	487PPM	
		480PPM	
		478PPM	480PPM

Balance Gas Nitrogen

NBS SRM Numbers Used 1686B

Analytical Principle Used Beckman Chemiluminescent

Expiration Date 09/11/93

Matheson Gas Products
World Leader in Specialty Gases & Equipment
P.O. Box 85, East Rutherford, N.J. 07073

Carlo Dicio Analyst

NOTEBOOK REFERENCE

NBS TRACEABLE GAS MIXTURES

The mixture(s) described below are manufactured and certified traceable to the National Bureau of Standards, Standards Reference Materials (NBS, SRM) via the Traceability Protocol for establishing true concentrations of gases used for calibration and audits of continuous Source Emission Monitors (Protocol No. 1) or Air Pollution Analyzers (Protocol No. 2)

ANALYSIS REPORT

Per Protocol Number 1

Control Number 88-14469

Cylinder Number SX22708

Preparation Date: 10-25-91

Minor Component Carbon Monoxide

Mean Concentration 141PPM

REPLICATE ANALYSIS DATA	DATE	ANALYSIS	MEAN
	10-25-91	141PPM	
		142PPM	
		142PPM	141PPM
REPLICATE ANALYSIS DATA			
	11-01-91	141PPM	
		141PPM	
		140PPM	141PPM

Balance Gas Nitrogen

NBS SRM Numbers Used 2636A

Analytical Principle Used Beckman NDIR

Expiration Date 5/1/93

Matheson Gas Products
World Leader in Specialty Gases & Equipment
P.O. Box 85, East Rutherford, N.J. 07073

Dale Dilly Analyst

NOTEBOOK REFERENCE

NBS TRACEABLE GAS MIXTURES

The mixture(s) described below are manufactured and certified traceable to the National Bureau of Standards, Standards Reference Materials (NBS, SRM) via the Traceability Protocol for establishing true concentrations of gases used for calibration and audits of continuous Source Emission Monitors (Protocol No. 1) or Air Pollution Analyzers (Protocol No. 2)

ANALYSIS REPORT

Per Protocol Number 1

Control Number 88-15792

Cylinder Number SX-24302

Preparation Date: 1/28/92

Minor Component Carbon Monoxide

Mean Concentration 284PPM

REPLICATE ANALYSIS DATA	DATE	ANALYSIS	MEAN
	01/28/92	284PPM	
		284PPM	
		285PPM	284PPM
REPLICATE ANALYSIS DATA			
	02/04/92	285PPM	
		284PPM	
		284PPM	284PPM

Balance Gas Nitrogen

NBS SRM Numbers Used 2636A

Analytical Principle Used Beckman NDIR

Expiration Date 08/04/93

Matheson Gas Products
World Leader in Specialty Gases & Equipment
P.O. Box 85, East Rutherford, N.J. 07073

Dale Dicus Analyst

NOTEBOOK REFERENCE

Matheson
Gas Products
World Leader in Specialty Gases & Equipment

POST OFFICE BOX 85
EAST RUTHERFORD, NEW JERSEY 07073
TELEPHONE: (201) 933-2400

ABCO WELDING & INDUSTRIAL SUPPLY
130 CROSS ROAD
WATERFORD, CONNECTITUCT 06385

Date SEPTEMBER 11, 1992
Our Invoice # 101-89273
Your P.O. # 08-126-BAL
Ref. No. 952/953/954/955

Gentlemen:

Below are the results you requested as reported by our laboratory. Results are in molecular percent, unless otherwise indicated.

LABORATORY REPORT ON GAS CERTIFICATION

Cyl. # SX-11334

Mixture Req.	Certification
CARBON MONOXIDE C.P.	487PPM ± 4.8PPM
NITROGEN PREP.	BALANCE

Cyl. # SX-19848

Mixture Req.	Certification
CARBON MONOXIDE C.P.	1195PPM ± 11
NITROGEN PREP.	BALANCE

CYL.# SX-213611

CARBON MONOXIDE C.P.	2199PPM ± 22PPM
NITROGEN PREP.	BALANCE

CYL.# SX-21373

CARBON MONOXIDE C.P.	4887PPM ± 48PPM
NITROGEN PREP.	BALANCE

Analyst JEFF MARSHALL

JM:p

APPENDIX E

Laboratory Analysis Reports

and

Analytical Data Sheets

LABORATORY ANALYSIS REPORT

Environmental Health Laboratory
a division of CIGNA Loss Control Services, Inc.

94 Murphy Road
Hartford, CT 06114
(800) 243-4903
In CT (203) 522-3814

Laboratories In Macon, GA and Hartford, CT

To: John Gammie
ROJAC Environmental Services, Inc.
30 Arbor Street
Hartford, CT 06106

Report No.: 92J1042

P.O. No.: 092-09

Date Received: 10/08/92

Date Reported: 10/16/92

Analysis: Total Particulates
Analytical Method: EPA Method #5

Sample Number	Total Particulates on Filter (g)	Total Particulates in Wash (g)	Total mg
M5-1 Filter	0.0026	----	
M5-2 Filter	-0.0002 (a.b)	----	
M5-3 Filter	0.0013	----	
M5-4 Filter	-0.0009 (b.b)	----	
M5-5 Filter	0.0008	----	
M5-6 Filter	0.0011	----	
M5-1 AR	----	0.0037	6.3
M5-2 AR	----	0.0050	5.0
M5-3 AR	----	0.0022	3.5
M5-4 AR	----	0.0025	2.5
M5-5 AR	----	0.0008	1.6
M5-6 AR	----	0.0011	2.2
Acetone Blank	----	0.0008	

Analytical results for the acetone rinses have been corrected for the acetone blank reading.

Analyst: Bill Rowe Date: 10/16/92

< = Less than.

92-J1042

ROJAC Environmental Services, Inc.

RECEIVED
HARTFORD ENV.
OCT 0 8 1992
BOARD SPECIFIED BY
JEM

SUBMITTAL FOR LABORATORY ANALYSIS

TO: GIGNA

FROM: JOHN GAMMIE

DATE: 10-8-92 PROJECT NO.: 092-09

SAMPLE TYPE	SAMPLE ID	ANALYSIS
✓ Filter	M5-1	M5
✓ "	M5-2	Gravimetric
✓ "	M5-3	
✓ "	M5-4	
✓ "	M5-5	
✓ "	M5-6	
✓ Acetone Rinse	M5-1 AR	
✓	M5-2 AR	
✓	M5-3 AR	
✓	M5-4 AR	
✓	M5-5 AR	
✓	M5-6 AR	
✓ Acetone Blank	Blank	

30 Arbor Street • Hartford, Connecticut 06106 • (203) 232-8959

ANALYTICAL DATA

PLANT Oceanside Landfill

DATE 10/6/92

SAMPLING LOCATION Engine 007 - outlet

SAMPLE TYPE MS

RUN NUMBER MS-1

SAMPLE BOX NUMBER _____

CLEAN-UP MAN JSG

COMMENTS: 100% load

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER Filter — 2.6 mg

FILTER NUMBER RQAT146 (T.W. 0.6121) — CONTAINER AR — 3.7 mg

FRONT HALF SUBTOTAL 6.3 mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ — _____ mg

ETHER-CHLOROFORM EXTRACTION — _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ — _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT _____ mg

MOISTURE

IMPINGERS

FINAL VOLUME _____ ml

INITIAL VOLUME _____ ml

NET VOLUME _____ ml

SILICA GEL

FINAL WEIGHT	_____ g	_____ g	_____ g
INITIAL WEIGHT	_____ g	_____ g	_____ g
NET WEIGHT	_____ g	_____ g	_____ g

TOTAL MOISTURE _____ g

EPA (Dur) 231
4/92

ANALYTICAL DATA

PLANT Oceanside Landfill

DATE 10/6/92

SAMPLING LOCATION Engine 007 - outlet

SAMPLE TYPE MS

RUN NUMBER MS-2

SAMPLE BOX NUMBER _____

CLEAN-UP MAN JSG

COMMENTS: 100% load

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER Filter — 0.0 mg

FILTER NUMBER	T.W.
RQAT147	0.6022

CONTAINER AR — 5.0 mg

FRONT HALF SUBTOTAL 5.0 mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS AND BACK HALF OF FILTER HOLDER — CONTAINER _____ — _____ mg

ETHER-CHLOROFORM EXTRACTION — _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ — _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT _____ mg

MOISTURE

IMPINGERS

FINAL VOLUME	_____ ml
INITIAL VOLUME	_____ ml
NET VOLUME	_____ ml

SILICA GEL

FINAL WEIGHT	_____ g	_____ g	_____ g
INITIAL WEIGHT	_____ g	_____ g	_____ g
NET WEIGHT	_____ g	_____ g	_____ g

TOTAL MOISTURE _____ g

EPA (Dur) 231
4-72

ANALYTICAL DATA

PLANT Oceanside Landfill

DATE 10/6/92

SAMPLING LOCATION Engine 007 - outlet

SAMPLE TYPE M5

RUN NUMBER M5-3

SAMPLE BOX NUMBER _____

CLEAN-UP MAN JSG

COMMENTS: 100% load

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER Filter — 1.3 mg

FILTER NUMBER RQAT148 — T.W. 0.6011 — CONTAINER AR — 2.2 mg

_____ _____

_____ _____

FRONT HALF SUBTOTAL 3.5 mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ — _____ mg

ETHER-CHLOROFORM EXTRACTION — _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ — _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT _____ mg

MOISTURE

IMPINGERS

FINAL VOLUME _____ ml

INITIAL VOLUME _____ ml

NET VOLUME _____ ml

SILICA GEL

FINAL WEIGHT	_____ g	_____ g	_____ g
INITIAL WEIGHT	_____ g	_____ g	_____ g
NET WEIGHT	_____ g	_____ g	_____ g

TOTAL MOISTURE _____ g

EPA (Dur) 231

4-72

ANALYTICAL DATA

PLANT Oceanside Landfill

DATE 10/17/92

SAMPLING LOCATION Engine 007 – outlet

SAMPLE TYPE M5

RUN NUMBER M5-4

SAMPLE BOX NUMBER _____

CLEAN-UP MAN JSG

COMMENTS: 75% load

FRONT HALF

LABORATORY RESULTS

		T.W.		
ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER	CONTAINER	Filter	0.0	mg
FILTER NUMBER	RQAT149	0.5990		
	CONTAINER	AR	2.5	mg

FRONT HALF SUBTOTAL 2.5 mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER	CONTAINER _____	_____ mg
	ETHER-CHLOROFORM EXTRACTION	_____ mg
ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER	CONTAINER _____	_____ mg
	BACK HALF SUBTOTAL	_____ mg
	TOTAL WEIGHT	_____ mg

MOISTURE

IMPINGERS

FINAL VOLUME	_____ ml
INITIAL VOLUME	_____ ml
NET VOLUME	_____ ml

SILICA GEL

FINAL WEIGHT	_____ g	_____ g	_____ g
INITIAL WEIGHT	_____ g	_____ g	_____ g
NET WEIGHT	_____ g	_____ g	_____ g

TOTAL MOISTURE _____ g

EPA (Dur) 231
4-72

ANALYTICAL DATA

PLANT Oceanside Landfill

DATE 10/7/92

SAMPLING LOCATION Engine 007 - outlet

SAMPLE TYPE M5

RUN NUMBER M5-5

SAMPLE BOX NUMBER _____

CLEAN-UP MAN JSG

COMMENTS: 75% load

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER — CONTAINER Filter — 0.8 mg

FILTER NUMBER RQAT150 — T.W. 0.6033 — CONTAINER AR — 0.8 mg

FRONT HALF SUBTOTAL 1.6 mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ — _____ mg

ETHER-CHLOROFORM EXTRACTION — _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER — CONTAINER _____ — _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT _____ mg

MOISTURE

IMPINGERS

FINAL VOLUME _____ ml

INITIAL VOLUME _____ ml

NET VOLUME _____ ml

SILICA GEL

FINAL WEIGHT	_____ g	_____ g	_____ g
INITIAL WEIGHT	_____ g	_____ g	_____ g
NET WEIGHT	_____ g	_____ g	_____ g

TOTAL MOISTURE _____ g

EPA (Dur) 231
4-72

ANALYTICAL DATA

PLANT Oceanside Landfill

DATE 10/7/92

SAMPLING LOCATION Engine 007 - outlet

SAMPLE TYPE MS

RUN NUMBER MS-6

SAMPLE BOX NUMBER _____

CLEAN-UP MAN JSG

COMMENTS: 75% load

FRONT HALF

LABORATORY RESULTS

ACETONE WASH OF NOZZLE, PROBE, CYCLONE (BYPASS), FLASK, FRONT HALF OF FILTER HOLDER

CONTAINER Filter 1.1 mg

FILTER NUMBER	T.W.
RQAT151	0.5996

CONTAINER AR 1.1 mg

FRONT HALF SUBTOTAL 2.2 mg

BACK HALF

IMPINGER CONTENTS AND WATER WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER

CONTAINER _____ mg

ETHER-CHLOROFORM EXTRACTION _____ mg

ACETONE WASH OF IMPINGERS, CONNECTORS, AND BACK HALF OF FILTER HOLDER

CONTAINER _____ mg

BACK HALF SUBTOTAL _____ mg

TOTAL WEIGHT _____ mg

MOISTURE

IMPINGERS

FINAL VOLUME _____ ml

INITIAL VOLUME _____ ml

NET VOLUME _____ ml

SILICA GEL

FINAL WEIGHT	_____ g	_____ g	_____ g
INITIAL WEIGHT	_____ g	_____ g	_____ g
NET WEIGHT	_____ g	_____ g	_____ g

TOTAL MOISTURE _____ g

EPA (Dur) 231
4-72

A T L A N T I C
A N A L Y T I C A L
L A B O R A T O R Y

Ms. Eszter J. Samodai
ROJAC Environmental Services, Inc.
30 Arbor Street
Hartford, CT 06106

Report No. AAL-7749
Date Requested 10-08-92
Date Reported 10-14-92
P.O. No. 27195

Material Submitted: Twelve Gas Samples in Tedlar Bags

Information Requested: Gas Chromatography Analysis

Notebook: VG072,p82;SS083,p54

Subject samples, received from Energy Tactics, Yaphank, NY on 10/08/92, have been analyzed by gas chromatography for the specified constituents.

Results are reported on the following pages.

d1014

Victor H. Given

FAX: 203-232-5378

Hydrogen Sulfide by Gas Chromatography

GC Method

Varian 3700 equipped with a Tracor 1000 Hall detector.

Column: 4m x 2mm glass, 1.5% XE60, 1% H3PO4 on Carbopack maintained at 20 degrees C.

Injection port: On column @ 100 degrees C.

Detector: "Hall", sulfur mode, reactor 880 degrees C, Methanol flow rate 0.3 ml/min.

Calibration: Three point calibration curve prepared from dynamic dilutions of 107 ppm hydrogen sulfide Scott Specialty Gas Co. calibration standard.

Hydrogen Sulfide by Gas Chromatography

	Concentration, ppm by volume
Sample Identity	Results
LFG-1	57
LFG-2	65
LFG-3	62
LFG-4	54
LFG-5	54
LFG-6	45

Total Non Methane Hydrocarbons by Gas Chromatography

GC Method

Varian 6000 FID

Column: 60 m x .32 mm SPB-5 column.
Temperature programmed 10 degrees C to 240 degrees C
@ 15 degrees C/min., head pressure 30 psig.

Injection: Split mode, 10:1 ratio
Temperature 200 degrees C

Detector: Flame ionization, range 10^{-12}
nitrogen makeup 20/min

All peaks eluting after methane were integrated and the total area referenced to hexane calibration data.

Samples and standards were run in duplicate per EPA 18 method requirements.

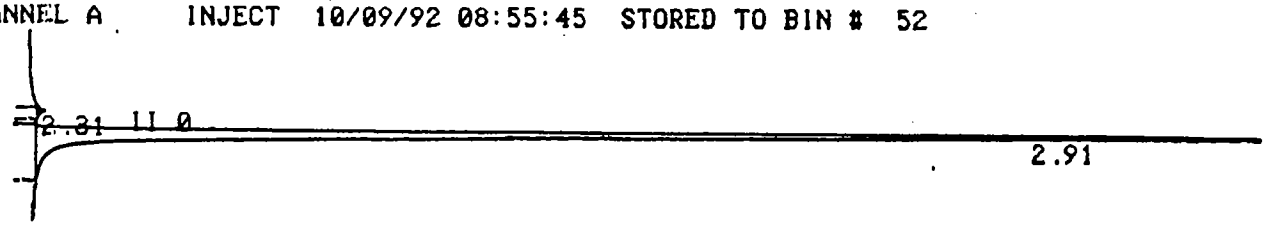
Total Non Methane Hydrocarbons by Gas Chromatography

Sample Identity	Results	
	Conc. ppm by Vol. as Hexane	Conc. ppm by vol. as Methane
M18-1-0	38	228
M18-2-0	38	228
M18-3-0	42	250
M18-4-0	21	126
M18-5-0	10	60
M18-6-0	5	30

Rojac –

10-9-1 25ul 107 Std

CHANNEL A INJECT 10/09/92 08:55:45 STORED TO BIN # 52



DATA SAVED TO BIN # 52

10/09/92 08:55:45 CH= "A" PS= 1.

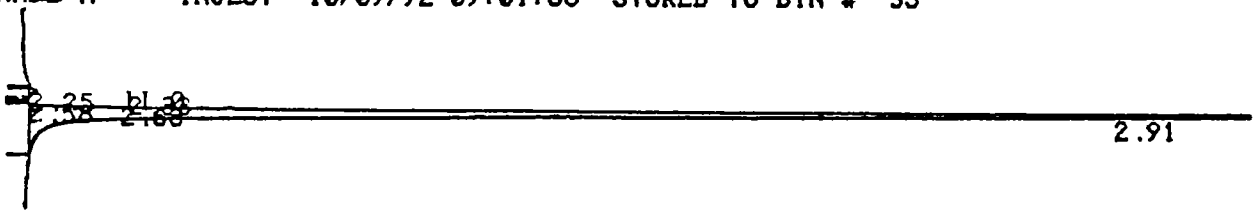
FILE 1. METHOD 0. RUN 146 INDEX 146 BIN 52

PEAK#	AREA%	RT	AREA BC
1	0.391	2.31	10294 01
2	99.609	2.91	2625162 01
TOTAL	100.		2635456

WARNING - MEMORY AT 9. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-2 25ul 107 ppm Std

CHANNEL A INJECT 10/09/92 09:01:38 STORED TO BIN # 53



DATA SAVED TO BIN # 53

10/09/92 09:01:38 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 147 INDEX 147 BIN 53

PEAK#	AREA%	RT	AREA BC
1	0.036	2.25	1064 02
2	0.39	2.33	11436 02
3	0.032	2.58	936 02
4	0.003	2.63	90 03
5	99.539	2.91	2918316 01
TOTAL	100.		2931842

WARNING - MEMORY AT 7. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

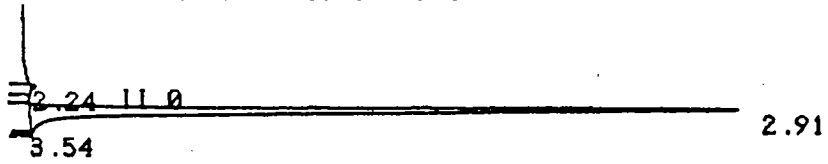
10-9-3 25ul 53.5 ppm H2S

WARNING - MEMORY AT 7. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

✓ 1-9-3 25ml 53.5 ppm H_2S

381

CHANNEL A INJECT 10/09/92 09:09:07 STORED TO BIN # 54



DATA SAVED TO BIN # 54

10/09/92 09:09:07 CH= "A" PS= 1.

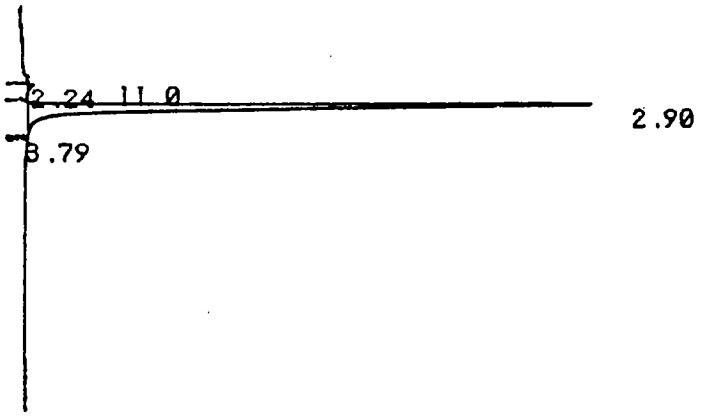
FILE 1. METHOD 0. RUN 148 INDEX 148 BIN 54

PEAK#	AREA%	RT	AREA BC
1	0.672	2.24	8835 01
2	99.326	2.91	1305160 08
3	0.001	3.54	19 05
TOTAL	100.		1314014

WARNING - MEMORY AT 5. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

✓ 10 9-5 20 W 53.5 ppm

CHANNEL A INJECT 10/09/92 09:22:37 STORED TO BIN # 56



38

DATA SAVED TO BIN # 56

10/09/92 09:22:37 CH= "A" PS= 1.

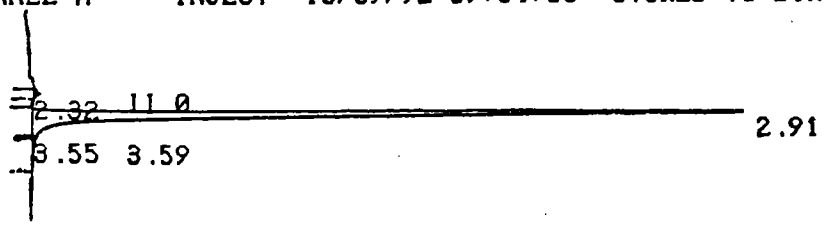
FILE 1. METHOD 0. RUN 150 INDEX 150 BIN 56

PEAK#	AREA%	RT	AREA BC
1	0.95	2.24	9900 02
2	99.042	2.9	1031936 08
3	0.008	3.79	81 05
TOTAL	100.		1041917

WARNING - MEMORY AT 3. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

✓ 10-9-C 53.5 ppm SLD

CHANNEL A INJECT 10/09/92 09:34:50 STORED TO BIN # 57



DATA SAVED TO BIN # 57

10/09/92 09:34:50 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 151 INDEX 151 BIN 57

PEAK#	AREA%	RT	AREA BC
1	0.575	2.32	7717 01
2	99.422	2.91	1333517 08
3	0.002	3.55	32 05
4	0.	3.59	6 05
TOTAL	100.		1341272

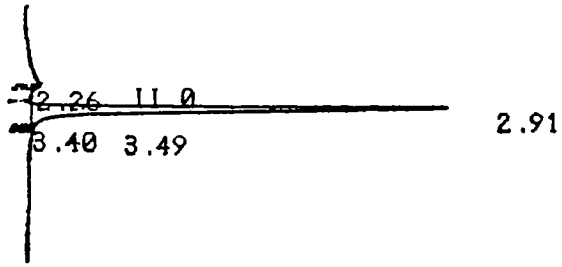
WARNING - MEMORY AT 0. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-7 53.5 ppm H_2S

WARNING - MEMORY AT 2. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

✓ 10-9-92 2 c.f ppm H_2S Std

CHANNEL A INJECT 10/09/92 09:46:05 STORED TO BIN # 59



DATA SAVED TO BIN # 59

10/09/92 09:46:05 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 153 INDEX 153 BIN 59

PEAK#	AREA%	RT	AREA	BC
1	0.279	2.26	2083	01
2	99.71	2.91	743322	08
3	0.004	3.4	29	05
4	0.007	3.49	50	05
TOTAL	100.		745484	

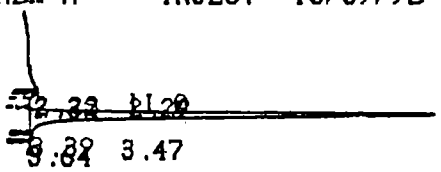
WARNING - MEMORY AT 1. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

RUN 155 INDEX 155 BIN 59

PEAK# AREA% RT AREA BC

10-9-10 268 ppm SF6 in S

CHANNEL A INJECT 10/09/92 10:03:42 STORED TO BIN # 61



DATA SAVED TO BIN # 61

10/09/92 10:03:42 CH= "A" PS= 1.

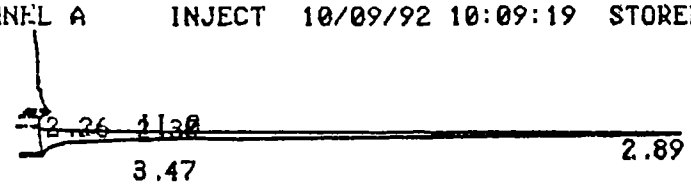
FILE 1. METHOD 0. RUN 155 INDEX 155 BIN 61

PEAK#	AREA%	RT	AREA BC
1	0.222	2.23	1624 02
2	0.287	2.29	2099 02
3	0.449	2.32	3278 03
4	99.026	2.9	723517 08
5	0.001	3.39	9 05
6	0.001	3.47	10 05
7	0.013	3.64	95 05
TOTAL	100.		730632

WARNING - MEMORY AT 0. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-11 25ml ml LFG-6

CHANNEL A INJECT 10/09/92 10:09:19 STORED TO BIN # 62



390

DATA SAVED TO BIN # 62

10/09/92 10:09:19 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 156 INDEX 156 BIN 62

PEAK#	AREA%	RT	AREA BC
1	0.239	2.26	2793 02
2	0.23	2.3	2685 03
3	99.527	2.89	1161604 08
4	0.003	3.47	37 05
TOTAL	100.		1167119

WARNING - MEMORY AT 0. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

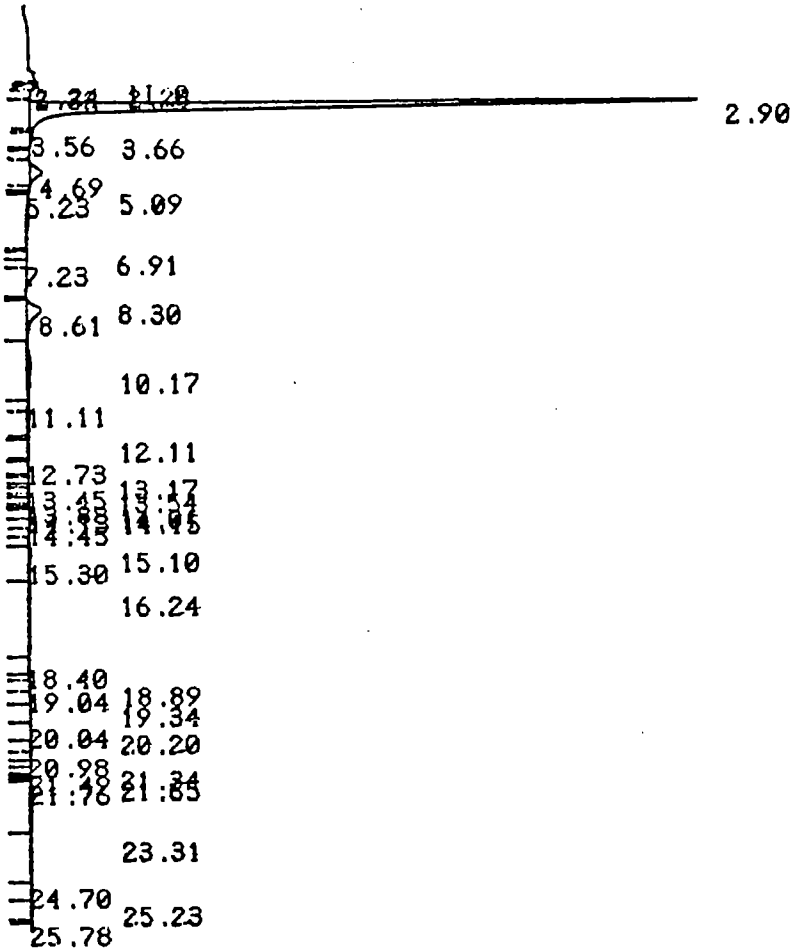
10-9-12 25ml LFG-5

CHANNEL A INJECT 10/09/92 10:13:13 STORED TO BIN #

WARNING - MEMORY AT 0. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-12 25ml LFG-5

CHANNEL A INJECT 10/09/92 10:13:12 STORED TO BIN # 63



DATA SAVED TO BIN # 63

10/09/92 10:13:12 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 157 INDEX 157 BIN 63

391

PEAK#	AREA%	RT	AREA BC
1	0.111	2.24	1679 02
2	0.095	2.28	1434 02
3	0.279	2.32	4222 03
4	82.629	2.9	1249023 08
5	0.027	3.56	406 07
6	3.4	4.69	51394 02
7	0.102	5.09	1544 02
8	0.007	5.23	102 03
9	0.008	6.91	119 01
10	0.008	7.23	121 01
11	0.026	8.3	393 02
12	5.08	8.61	76792 08
13	1.976	10.17	29873 06
14	0.061	11.11	923 07
15	0.02	12.11	308 01
16	0.009	12.73	142 01
17	0.012	13.17	179 01
18	0.042	13.45	633 02
19	0.014	13.54	209 03

24.70
25.78 25.23

DATA SAVED TO BIN # 63

10/09/92 10:13:12 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 157 INDEX 157 BIN 63

391

PEAK#	AREA%	RT	AREA BC
1	0.111	2.24	1679 02
2	0.095	2.28	1434 02
3	0.279	2.32	4222 03
4	82.629	2.9	1249023 08
5	0.027	3.56	406 07
6	3.4	4.69	51394 02
7	0.102	5.09	1544 02
8	0.007	5.23	102 03
9	0.008	6.91	119 01
10	0.008	7.23	121 01
11	0.026	8.3	393 02
12	5.08	8.61	76792 08
13	1.976	10.17	29873 06
14	0.061	11.11	923 07
15	0.02	12.11	308 01
16	0.009	12.73	142 01
17	0.012	13.17	179 01
18	0.042	13.45	633 02
19	0.014	13.54	209 03
20	0.073	13.88	1108 02
21	0.03	14.01	450 02
22	0.067	14.13	1008 02
23	0.289	14.15	4367 02
24	0.123	14.45	1856 03
25	0.066	15.1	994 02
26	0.871	15.3	13162 02
27	1.494	16.24	22582 02
28	0.204	18.4	3085 02
29	0.143	18.89	2159 02
30	0.264	19.04	3991 02
31	0.327	19.34	4950 02
32	0.291	20.04	4396 02
33	0.154	20.2	2327 03
34	0.072	20.98	1090 02
35	0.078	21.34	1183 02
36	0.098	21.49	1485 03
37	0.018	21.65	279 01
38	0.012	21.76	177 01
39	0.68	23.31	10285 02
40	0.378	24.7	5710 02
41	0.336	25.23	5085 02
42	0.025	25.78	377 03
TOTAL	100.		1511602

WARNING - MEMORY AT 0. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

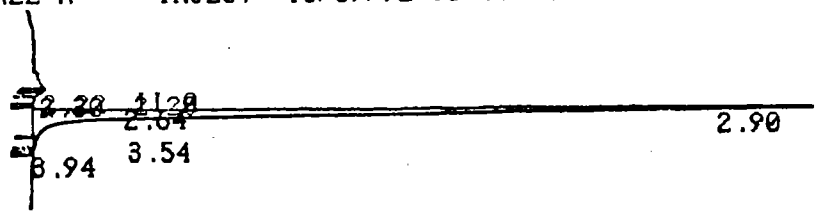
10-9-13 25ml LFG-5

CHANNEL A INJECT 10/09/92 10:40:25 STORED TO BIN # 64

WARNING - MEMORY AT 0. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-13 25ml LFG-5

CHANNEL A INJECT 10/09/92 10:40:25 STORED TO BIN # 64



DATA SAVED TO BIN # 64

10/09/92 10:40:25 CH= "A" PS= 1.

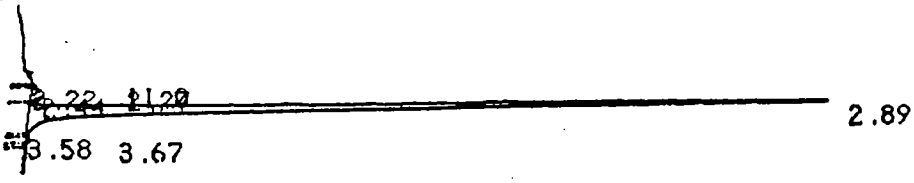
FILE 1. METHOD 0. RUN 158 INDEX 158 BIN 64

PEAK#	AREA%	RT	AREA BC
1	0.141	2.22	2018 02
2	0.121	2.28	1733 02
3	0.219	2.3	3135 03
4	0.014	2.64	203 02
5	99.464	2.9	1423818 08
6	0.004	3.54	61 05
7	0.036	3.94	521 05
TOTAL	100.		1431489

WARNING - MEMORY AT 0. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-14 25ml LFG-5

CHANNEL A INJECT 10/09/92 10:46:31 STORED TO BIN # 65



DATA SAVED TO BIN # 65

10/09/92 10:46:31 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 159 INDEX 159 BIN 65

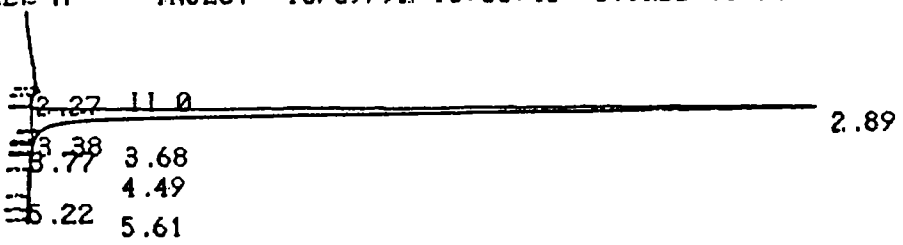
PEAK#	AREA%	RT	AREA BC
1	0.084	2.22	1263 02
2	0.03	2.27	446 02
3	2.466	2.44	37081 02
4	97.329	2.89	1463792 08
5	0.023	3.58	342 06
6	0.069	3.67	1035 07
TOTAL	100.		1503959

WARNING - MEMORY AT 0. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

WARNING - MEMORY AT 0. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

✓ 10-9-15 25u LFG-4

CHANNEL A INJECT 10/09/92 10:53:45 STORED TO BIN # 66



DATA SAVED TO BIN # 66

10/09/92 10:53:45 CH= "A" PS= 1.

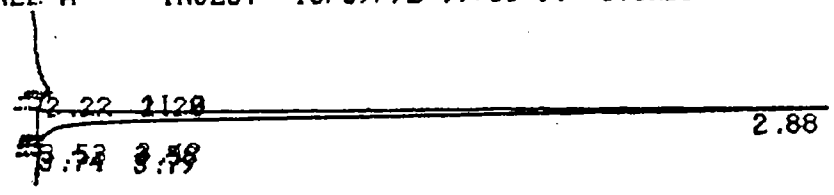
FILE 1. METHOD 0. RUN 160 INDEX 160 BIN 66

PEAK#	AREA%	RT	AREA BC
1	0.295	2.27	4297 01
2	99.089	2.89	1442960 08
3	0.002	3.38	24 05
4	0.002	3.68	24 05
5	0.022	3.77	318 05
6	0.284	4.49	4131 08
7	0.235	5.22	3417 06
8	0.073	5.61	1061 07
TOTAL	100.		1456232

WARNING - MEMORY AT 2. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

✓ 10-9-15 25u LFG-4

CHANNEL A INJECT 10/09/92 11:00:14 STORED TO BIN # 67



DATA SAVED TO BIN # 67

10/09/92 11:00:14 CH= "A" PS= 1.

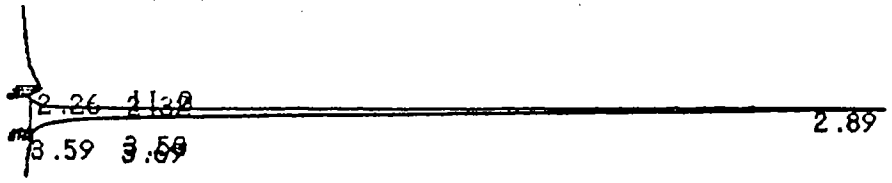
FILE 1. METHOD 0. RUN 161 INDEX 161 BIN 67

PEAK#	AREA%	RT	AREA BC
1	0.17	2.22	2498 02
2	0.212	2.28	3112 03
3	99.562	2.88	1459060 08
4	0.001	3.49	52 05
5	0.004	3.53	61 05
6	0.005	3.58	72 05
7	0.002	3.74	27 05
8	0.041	3.79	596 05
TOTAL	100.		1465478

WARNING - MEMORY AT 1. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-17 25ul LFG3

CHANNEL A INJECT 10/09/92 11:05:59 STORED TO BIN # 68



DATA SAVED TO BIN # 68

10/09/92 11:05:59 CH= "A" PS= 1.

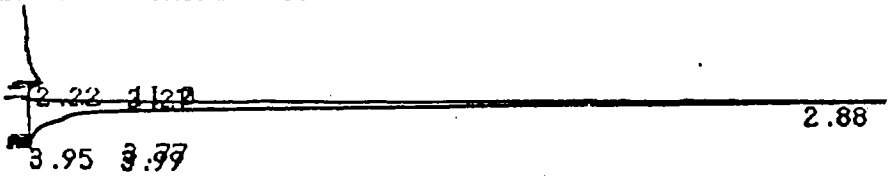
FILE 1. METHOD 0. RUN 162 INDEX 162 BIN 68

PEAK#	AREA%	RT	AREA	BC
1	0.231	2.26	3795	02
2	0.157	2.32	2592	03
3	99.595	2.89	1639600	08
4	0.008	3.5	127	05
5	0.01	3.59	158	07
TOTAL	100.		1646278	

WARNING - MEMORY AT 1. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-18 25ul LFG-3

CHANNEL A INJECT 10/09/92 11:11:13 STORED TO BIN # 69



DATA SAVED TO BIN # 69

10/09/92 11:11:13 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 163 INDEX 163 BIN 69

PEAK#	AREA%	RT	AREA	BC
1	0.163	2.22	2766	02
2	0.122	2.27	2072	03
3	99.668	2.88	1687542	08
4	0.023	3.77	386	05
5	0.018	3.95	311	05
6	0.005	3.99	78	05
TOTAL	100.		1693155	

WARNING - MEMORY AT 4. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

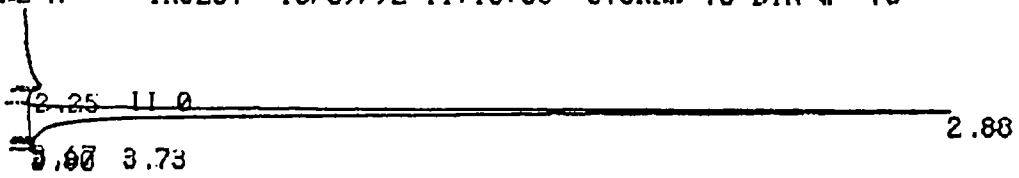
10-9-19 25ul LFG-2

CHANNEL A INJECT 10/09/92 11:16:38 STORED TO BIN # 70

WARNING - MEMORY AT 4. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-19 25 ul LFG-2

CHANNEL A INJECT 10/09/92 11:16:38 STORED TO BIN # 70



395

DATA SAVED TO BIN # 70

10/09/92 11:16:38 CH= "A" PS= 1.

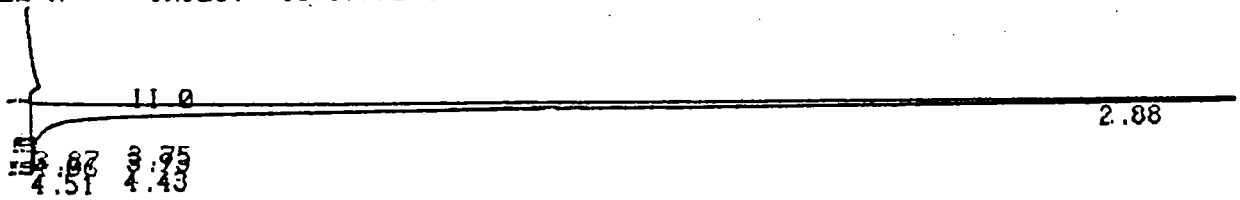
FILE 1. METHOD 0. RUN 164 INDEX 164 BIN 70

PEAK#	AREA%	RT	AREA BC
1	0.092	2.25	1642 01
2	99.868	2.88	1784537 08
3	0.003	3.67	54 05
4	0.001	3.73	11 05
5	0.036	3.8	651 05
TOTAL	100.		1786895

WARNING - MEMORY AT 1. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

Ha 19-20 25ul 10% STD

CHANNEL A INJECT 10/09/92 11:26:25 STORED TO BIN # 72



DATA SAVED TO BIN # 72

10/09/92 11:26:25 CH= "A" PS= 1.

396

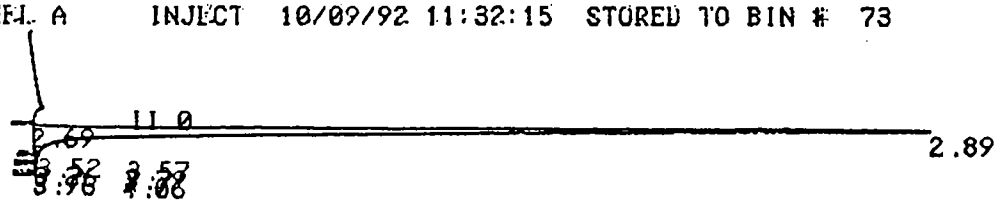
FILE 1. METHOD 0. RUN 166 INDEX 166 BIN 72

PEAK#	AREA%	RT	AREA BC
1	99.922	2.88	2968383 08
2	0.008	3.75	234 05
3	0.02	3.87	603 06
4	0.004	3.93	127 06
5	0.019	4.06	573 06
6	0.026	4.43	787 07
TOTAL	100.		2970707

20 LFG-2

10-9-21 2nd LFG-2

CHANNEL A INJECT 10/09/92 11:32:15 STORED TO BIN # 73



DATA SAVED TO BIN # 73

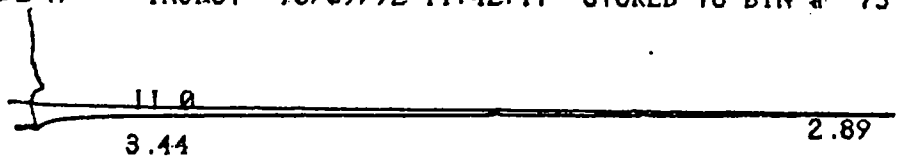
10/09/92 11:32:15 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 167 INDEX 167 BIN 73

PEAK#	AREA%	RT	AREA BC
1	0.01	2.69	165 02
2	99.896	2.89	1704743 08
3	0.005	3.52	88 06
4	0.006	3.57	94 07
5	0.011	3.79	188 06
6	0.071	3.96	1210 06
7	0.002	4.06	29 07
TOTAL	100.		1706517

10-9-21 2nd LFG-1

CHANNEL A INJECT 10/09/92 11:42:17 STORED TO BIN # 75



DATA SAVED TO BIN # 75

10/09/92 11:42:17 CH= "A" PS= 1.

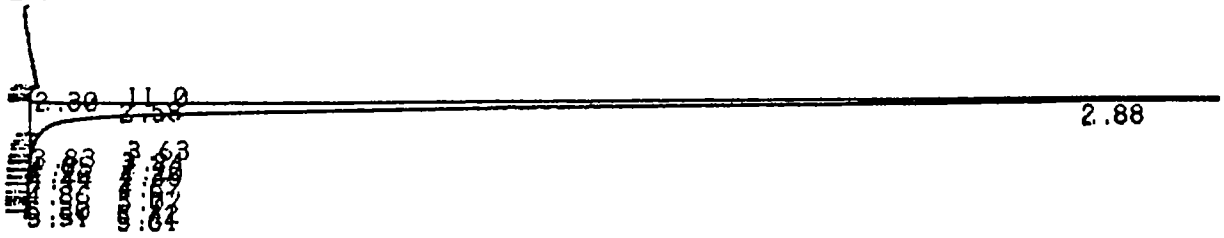
FILE 1. METHOD 0. RUN 169 INDEX 169 BIN 75

PEAK#	AREA%	RT	AREA BC
1	99.996	2.89	1572555 08
2	0.004	3.44	61 05
TOTAL	100.		1572616

WARNING - MEMORY AT 9. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-25 25ul 107 ppm STD

CHANNEL A INJECT 10/09/92 11:55:46 STORED TO BIN # 78



DATA SAVED TO BIN # 78

10/09/92 11:55:46 CH= "A" PS= 1.

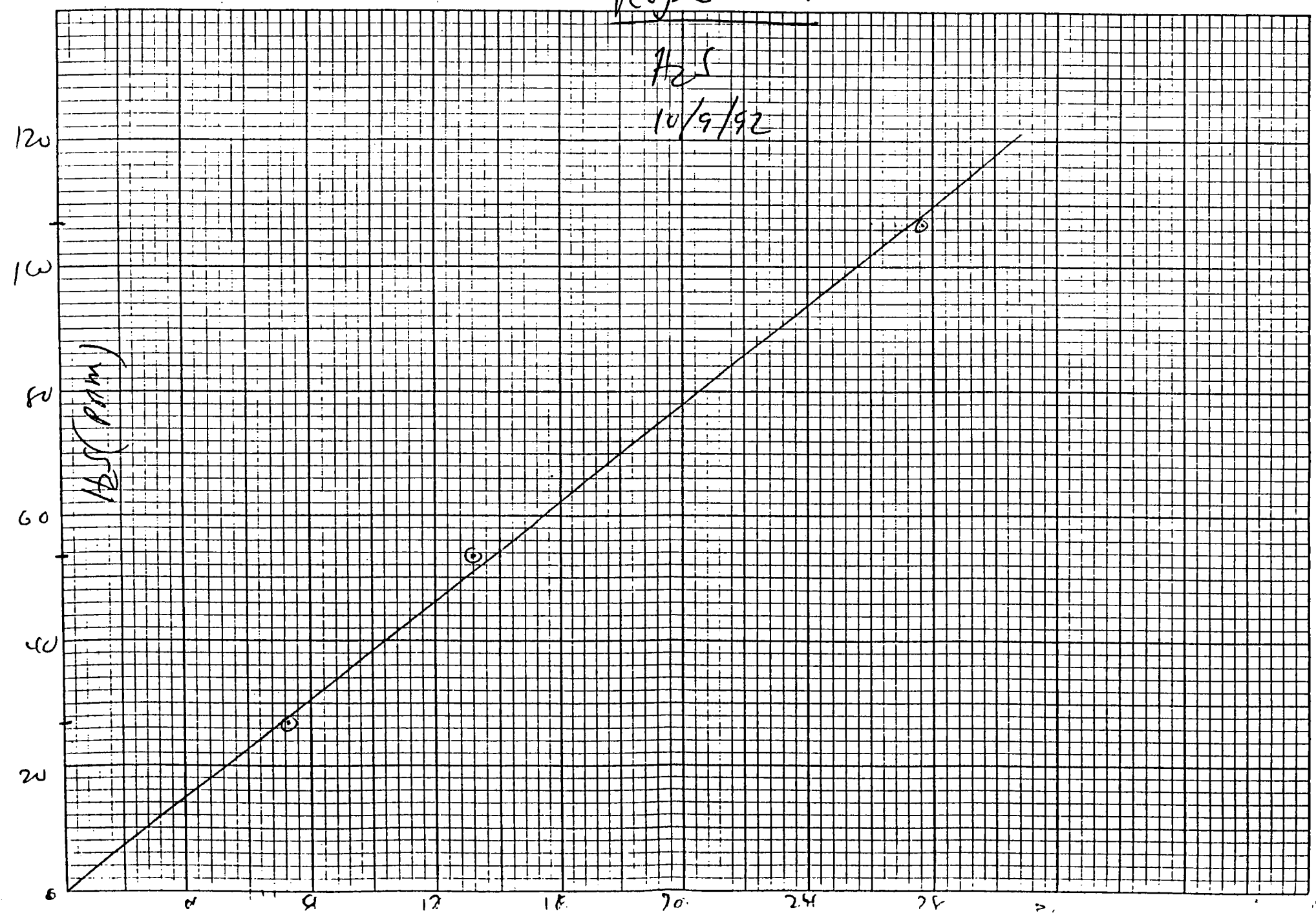
FILE 1. METHOD 0. RUN 172 INDEX 172 BIN 78

PEAK#	AREA%	RT	AREA	BC
1	0.056	2.3	1639	01
2	0.007	2.58	211	01
3	99.55	2.88	2896981	08
4	0.001	3.63	29	05
5	0.013	3.83	366	06
6	0.008	3.94	237	06
7	0.028	4.05	803	06
8	0.01	4.2	303	06
9	0.026	4.26	770	07
10	0.019	4.44	550	01
11	0.022	4.67	629	01
12	0.046	4.86	1333	02
13	0.067	5.07	1955	02
14	0.077	5.3	2228	02
15	0.03	5.42	880	02
16	0.031	5.51	904	02
17	0.009	5.61	269	03
TOTAL	100.		2910087	

Rope 7749

H2S

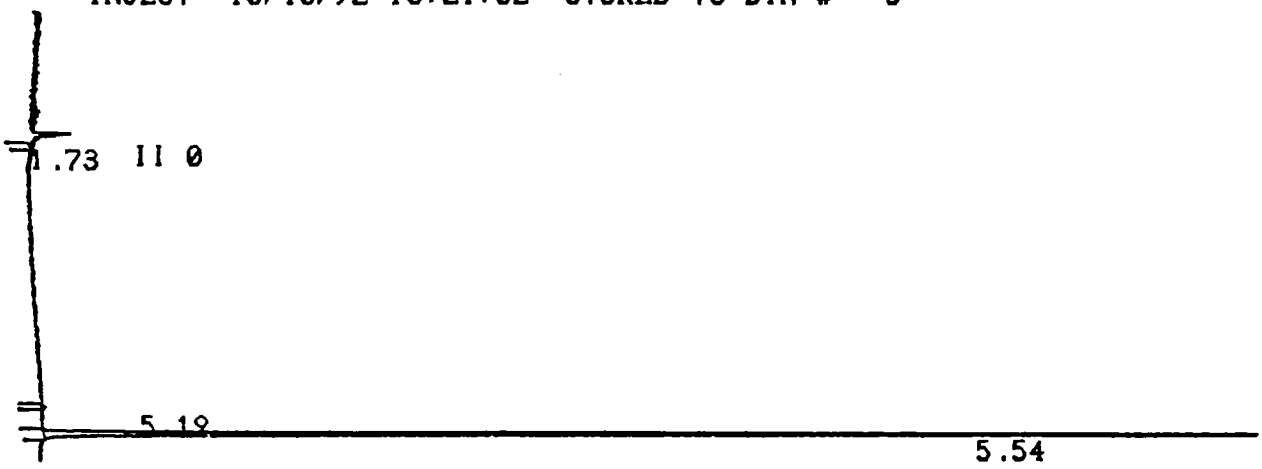
10/9/92



Rajac Bag 4

10-10-4 6.8 ppm hexane std 0.5cc 8x FID

CHANNEL A INJECT 10/10/92 10:21:32 STORED TO BIN # 5



DATA SAVED TO BIN # 5

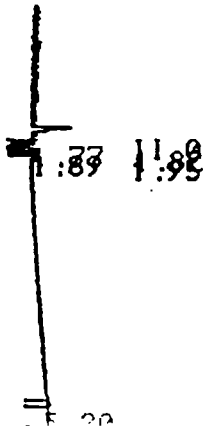
10/10/92 10:21:32 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 672 INDEX 472 BIN 5

PEAK#	AREA%	RT	AREA BC
1	0.185	1.73	55 01
2	0.299	5.19	89 01
3	99.515	5.54	29574 01
TOTAL	100.		29718

10-10-5 6.8 ppm hexane std 0.5cc 8x FID

CHANNEL A INJECT 10/10/92 10:29:55 STORED TO BIN # 6



DATA SAVED TO BIN # 6

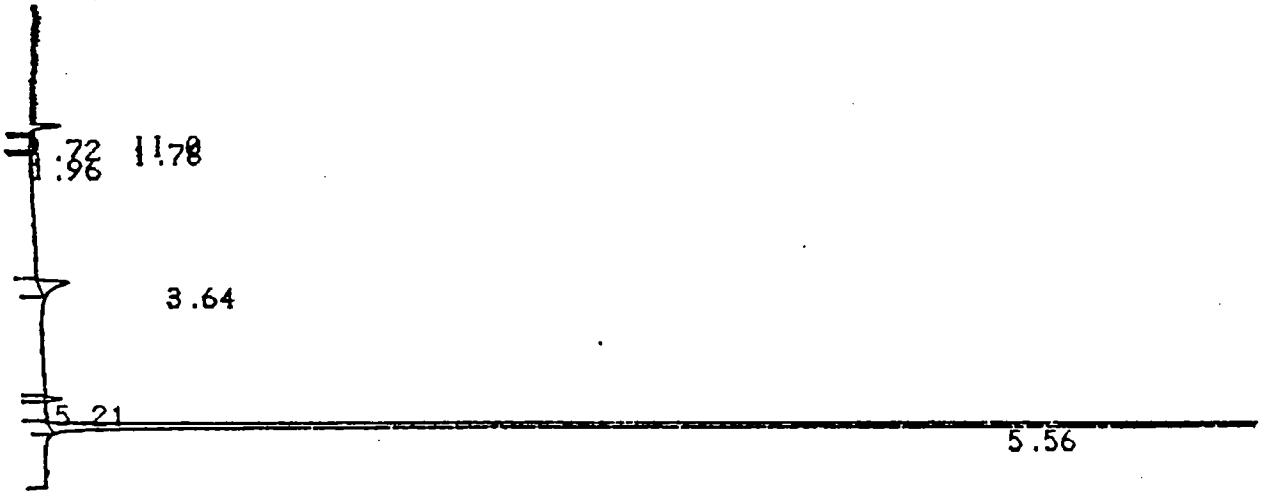
10/10/92 10:29:55 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 673 INDEX 473 BIN 6

PEAK#	AREA%	RT	AREA BC
1	0.179	1.77	56 01
2	0.202	1.82	63 01
3	0.186	1.89	58 01
4	0.115	1.95	36 01
5	0.253	5.2	79 01
6	99.065	5.54	30930 01
TOTAL	100.		31222

10-10-6 33.5 ppm hexane std 0.5cc 8X FID

CHANNEL A INJECT 10/10/92 10:38:24 STORED TO BIN # 7



DATA SAVED TO BIN # 7

10/10/92 10:38:24 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 674 INDEX 474 BIN 7

PEAK#	AREA%	RT	AREA BC
1	0.035	1.72	52 01
2	0.263	1.78	389 02
3	0.053	1.96	78 03
4	1.297	3.64	1919 01
5	0.23	5.21	340 01
6	98.123	5.56	145225 01
TOTAL	100.		148003

10-10-7 33.5 ppm hexane std 0.5 cc 8X FID

DATA SAVED TO BIN # 7

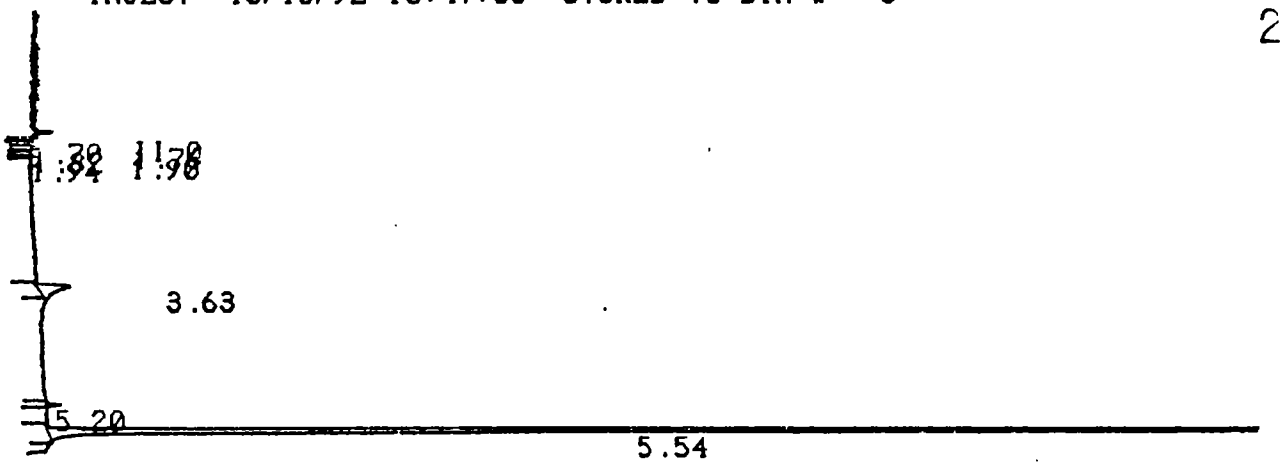
10/10/92 10:38:24 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 674 INDEX 474 BIN 7

PEAK#	AREA%	RT	AREA	BC
1	0.035	1.72	52	01
2	0.263	1.78	389	02
3	0.053	1.96	78	03
4	1.297	3.64	1919	01
5	0.23	5.21	340	01
6	98.123	5.56	145225	01
TOTAL	100.		148003	

10-10-7 33.5 ppm hexane std 0.5cc 8X FID

CHANNEL A INJECT 10/10/92 10:47:36 STORED TO BIN # 8



DATA SAVED TO BIN # 8

10/10/92 10:47:36 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 675 INDEX 475 BIN 8

PEAK#	AREA%	RT	AREA	BC
1	0.059	1.7	89	01
2	0.042	1.76	64	01
3	0.057	1.82	86	01
4	0.027	1.9	41	02
5	0.038	1.94	57	03
6	1.253	3.63	1894	01
7	0.212	5.2	320	01
8	98.313	5.54	148661	01
TOTAL	100.		151212	

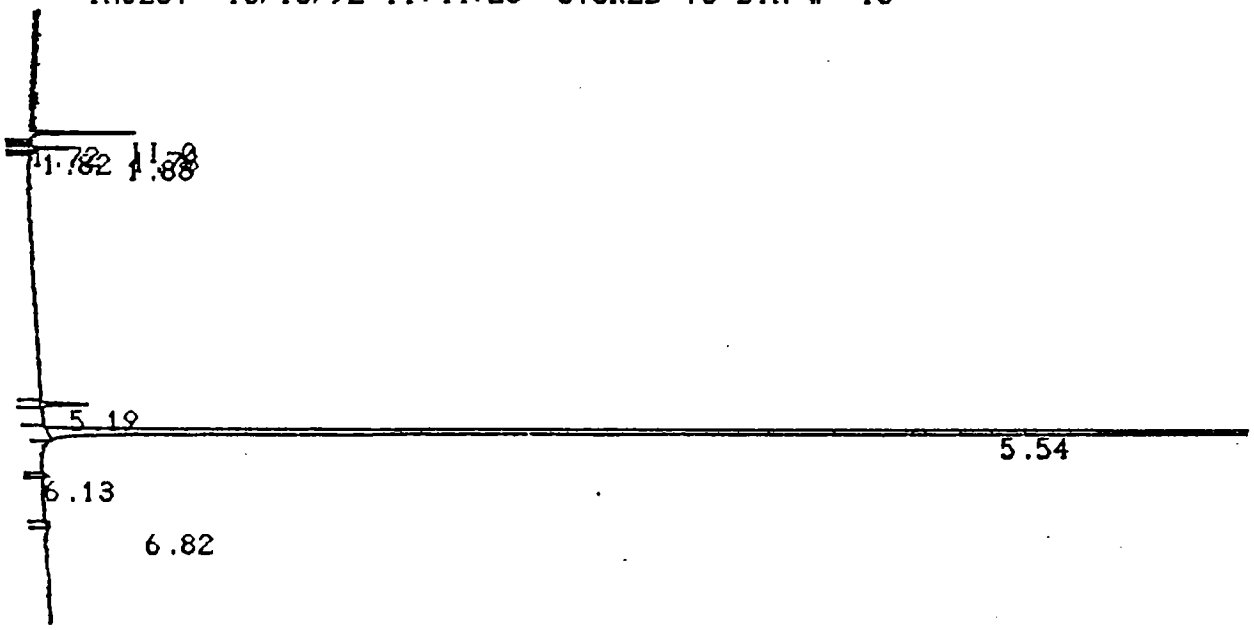
1	0.018	1.7	89	01
2	0.025	1.76	108	02
3	0.166	1.82	710	02
4	0.024	1.88	103	03
5	0.01	1.93	43	01
6	0.242	5.21	1032	01
7	99.31	5.55	423528	01
8	0.038	6.15	162	01
9	0.063	6.54	267	01
10	0.058	7.73	247	01
11	0.047	8.77	200	01
TOTAL	100.		426469	

cm232

WARNING - MEMORY AT 1. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

✓ 10-10-11 0.5 cc from Std

CHANNEL A INJECT 10/10/92 11:44:28 STORED TO BIN # 13



DATA SAVED TO BIN # 13

10/10/92 11:44:28 CH= "A" PS= 1.

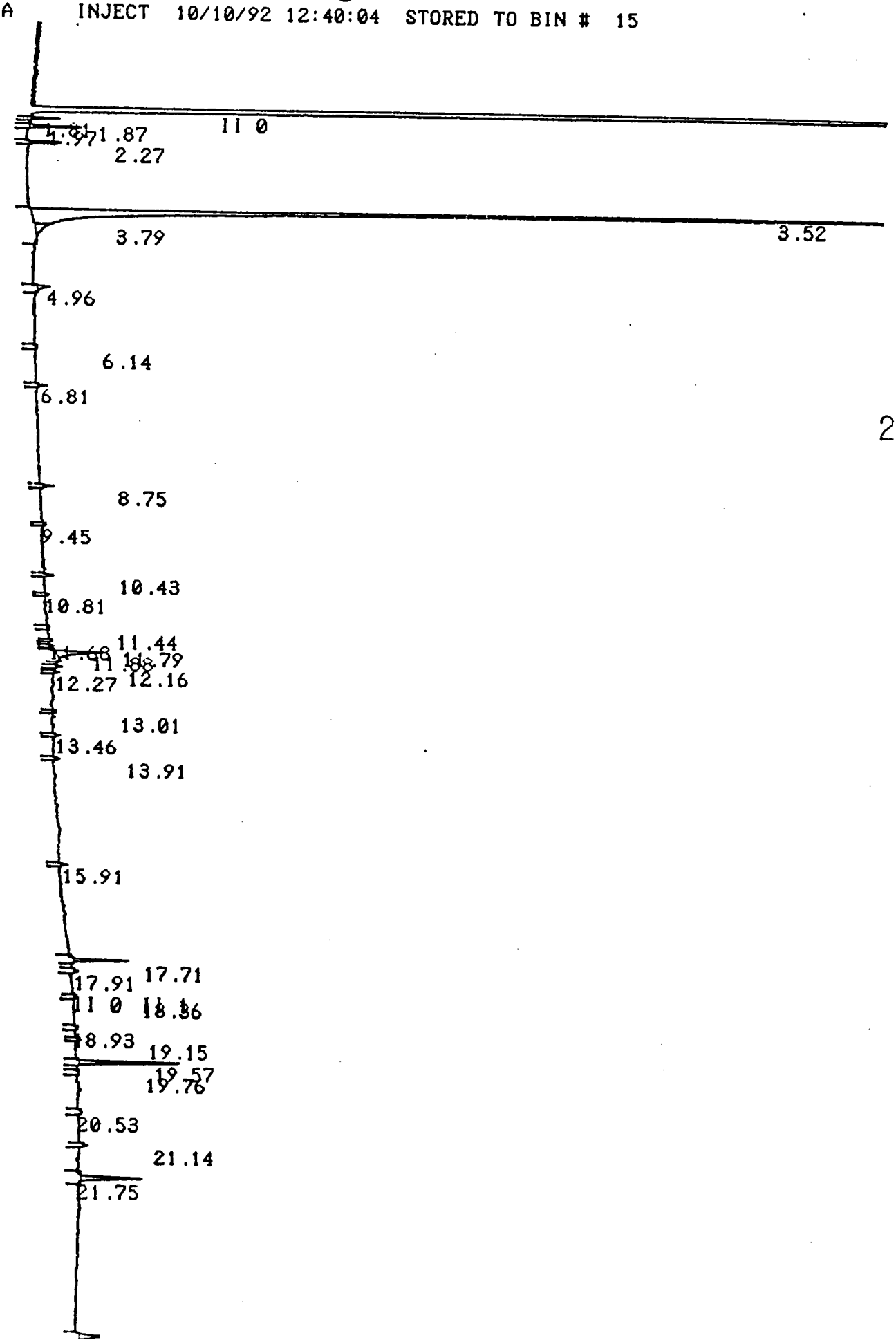
FILE 1. METHOD 0. RUN 680 INDEX 480 BIN 13

PEAK#	AREA%	RT	AREA	BC
1	0.023	1.72	96	02
2	0.027	1.78	112	02
3	0.167	1.82	685	08
4	0.014	1.88	59	05
5	0.245	5.19	1002	01
6	99.462	5.54	406960	01
7	0.037	6.13	150	01
8	0.024	6.82	98	01
TOTAL	100.		409162	

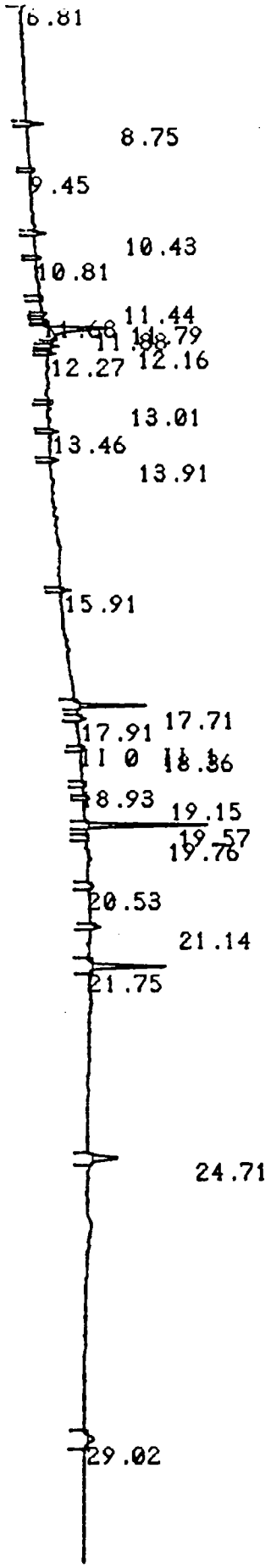
WARNING - MEMORY AT 2. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

V 10-16-12 0.5 cc Bag 4 Rogac

CHANNEL A INJECT 10/10/92 12:40:04 STORED TO BIN # 15



2



DATA SAVED TO BIN # 15

10/10/92 12:40:04 CH= "A" PS= 1.

FILE 1 METHOD 0 RUN 682 INDEX 482 BIN 15

PEAK#	AREA%	RT	AREA BC
1	0.86	1.81	792 02
2	0.136	1.87	125 02
3	1.606	1.97	1479 03
4	0.992	2.27	913 01
5	74.672	3.52	68747 08
6	0.001	3.79	1 05
7	0.984	4.96	906 01
8	0.058	6.14	53 01
9	0.381	6.81	351 01
10	0.441	8.75	406 01
11	0.084	9.45	77 01
12	0.32	10.43	295 01
13	0.108	10.81	99 01
14	0.072	11.44	66 01
15	0.085	11.68	78 01
16	0.164	11.79	151 01
17	3.426	11.88	3154 01
18	0.24	12.16	221 01
19	0.214	12.27	197 01
20	0.047	13.01	43 01
21	0.211	13.46	194 01
22	0.188	13.91	173 01
23	0.305	15.91	281 01
24	2.14	17.71	1970 01
25	0.301	17.91	277 01
26	0.074	18.36	68 01
27	0.131	18.93	121 01
28	0.173	19.15	159 01
29	4.305	19.57	3963 01
30	0.127	19.76	117 01
31	0.218	20.53	201 01
32	0.322	21.14	296 01
33	3.692	21.75	3399 01
34	1.942	24.71	1788 01
35	0.982	29.02	904 01
TOTAL	100.		92065

FI= 1. FE= 1. MN= 0.
PRESS 'ENTER' TO SKIP ENTRY
ENABLE BASELINE DRAWING? [Y/N] (Y)
STORAGE MENU? [Y,N] (N)

FUNCTION NUMBER [0-10] (0)

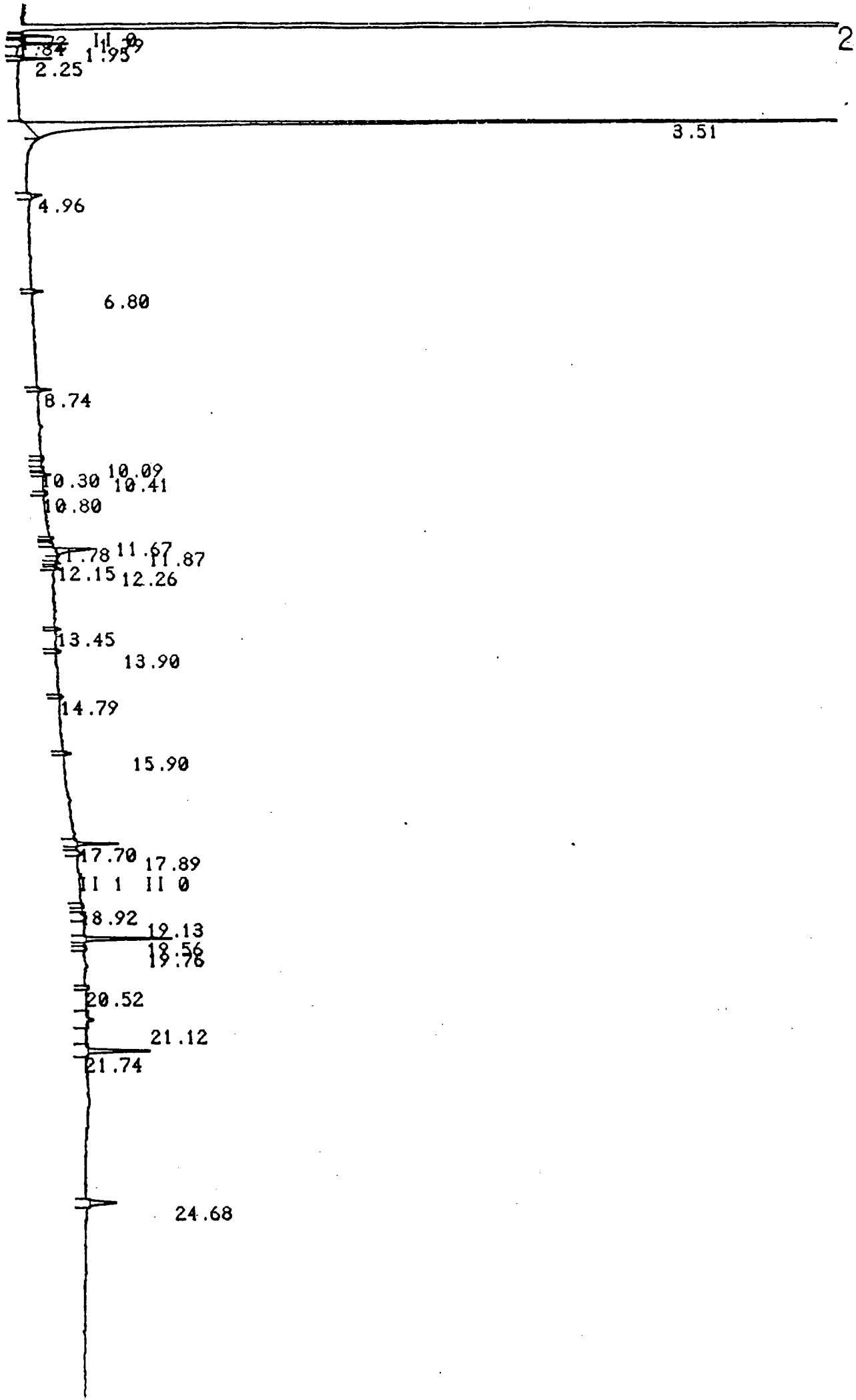
FILE NAME () ="
TIME FUNCTION VALUE
TT= 31 TF=" ER TV= 1
TT=

METHOD NUMBER [0,1,2,5] (0) MN=

END OF DIALOG

10-16-13 05cc Bag 4 RJac

CHANNEL A INJECT 10/10/92 13:20:06 STORED TO BIN # 16


2
2.25
3.51
4.96
6.80
8.74
10.09
10.30
10.41
10.80
11.67
11.78
11.87
12.15
12.26
13.45
13.90
14.79
15.90
17.70
17.89
8.92
19.13
18.56
19.76
20.52
21.12
21.74
24.68

28.97

ER 0

DATA SAVED TO BIN # 16

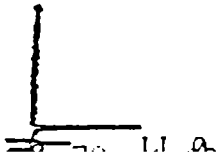
10/10/92 13:20:06 CH= "A" PS= 1.

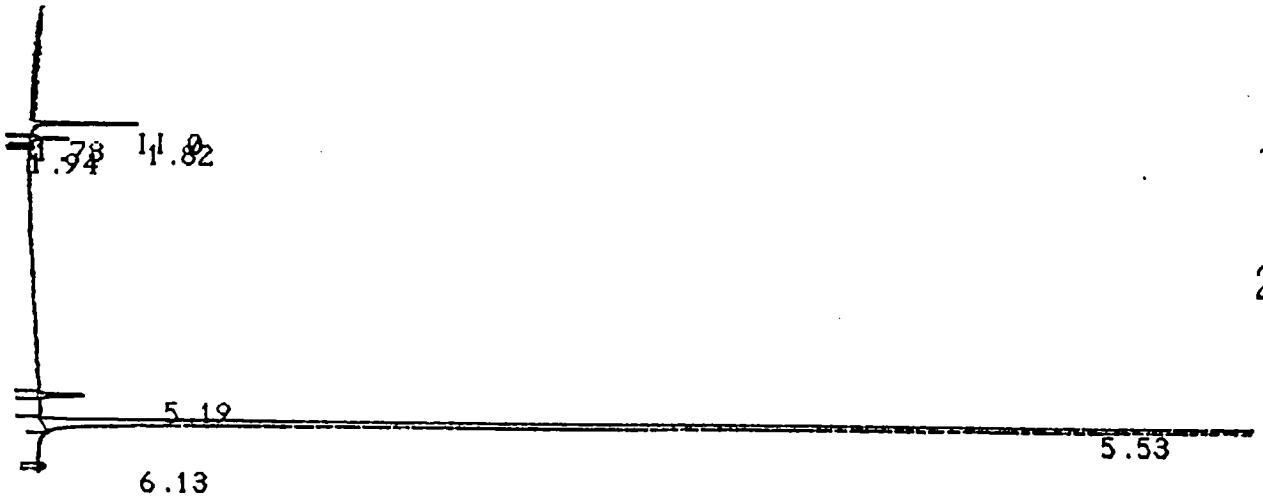
FILE 1. METHOD 0. RUN 683 INDEX 483 BIN 16

PEAK#	AREA%	RT	AREA	BC
1	0.047	1.72	41	01
2	0.936	1.79	811	02
3	0.084	1.84	73	03
4	1.697	1.95	1470	01
5	1.103	2.25	955	01
6	73.84	3.51	63958	01
7	0.844	4.96	731	01
8	0.372	6.8	322	01
9	0.455	8.74	394	01
10	0.074	10.09	64	01
11	0.125	10.3	108	01
12	0.305	10.41	264	01
13	0.095	10.8	82	01
14	0.109	11.67	94	01
15	0.201	11.78	174	02
16	2.921	11.87	2530	03
17	0.233	12.15	202	01
18	0.19	12.26	165	01
19	0.196	13.45	170	01
20	0.201	13.9	174	01
21	0.152	14.79	132	01
22	0.272	15.9	236	01
23	1.897	17.7	1643	01
24	0.336	17.89	291	01
25	0.11	18.92	95	01
26	0.241	19.13	209	01
27	4.358	19.56	3775	01
28	0.143	19.76	124	01
29	0.163	20.52	141	01
30	0.487	21.12	422	01
31	4.202	21.74	3640	01
32	2.344	24.68	2030	01
33	1.266	28.97	1097	01
TOTAL	100.		86617	

fa - 10 - 14 0.5 cc 98.4 ppm SH

CHANNEL A INJECT 10/10/92 13:57:52 STORED TO BIN # 17





DATA SAVED TO BIN # 17

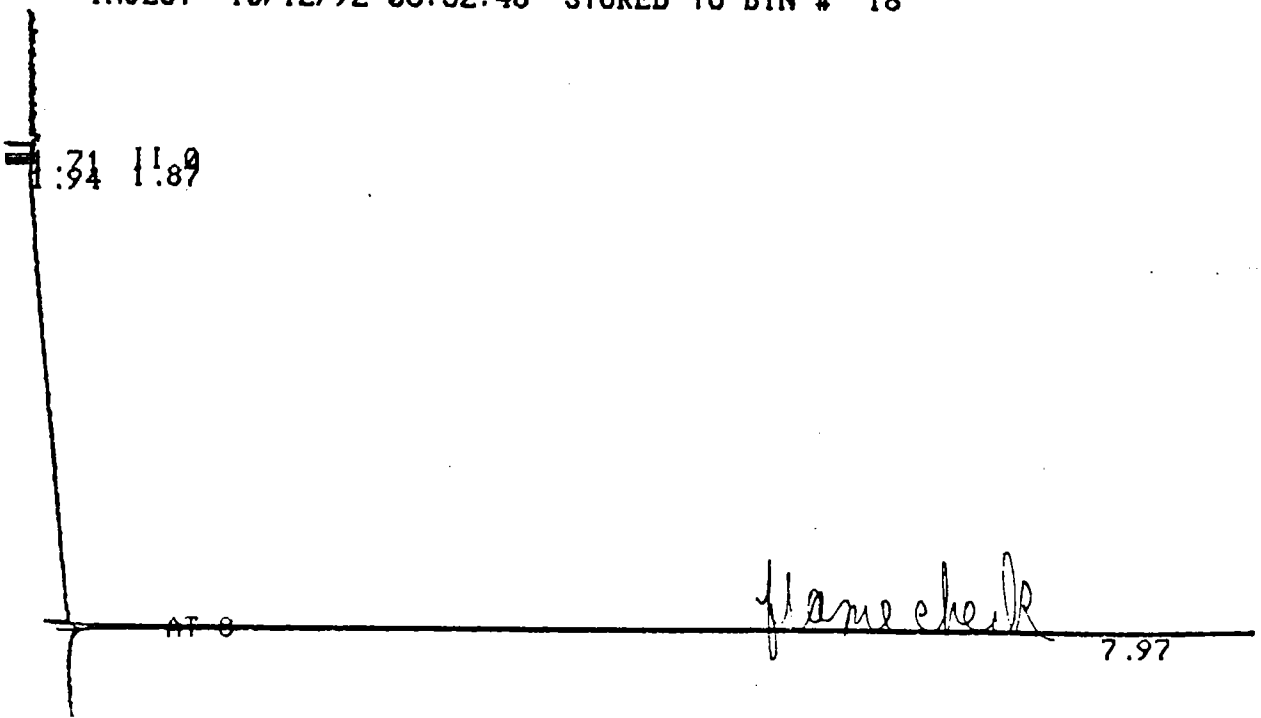
10/10/92 13:57:52 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 684 INDEX 484 BIN 17

PEAK#	AREA%	RT	AREA BC
1	0.012	1.78	49 02
2	0.144	1.82	597 03
3	0.01	1.94	40 01
4	0.229	5.19	952 01
5	99.574	5.53	413773 01
6	0.032	6.13	133 01
TOTAL	100.		415544

N2 Blank 0.5cc 8x FID

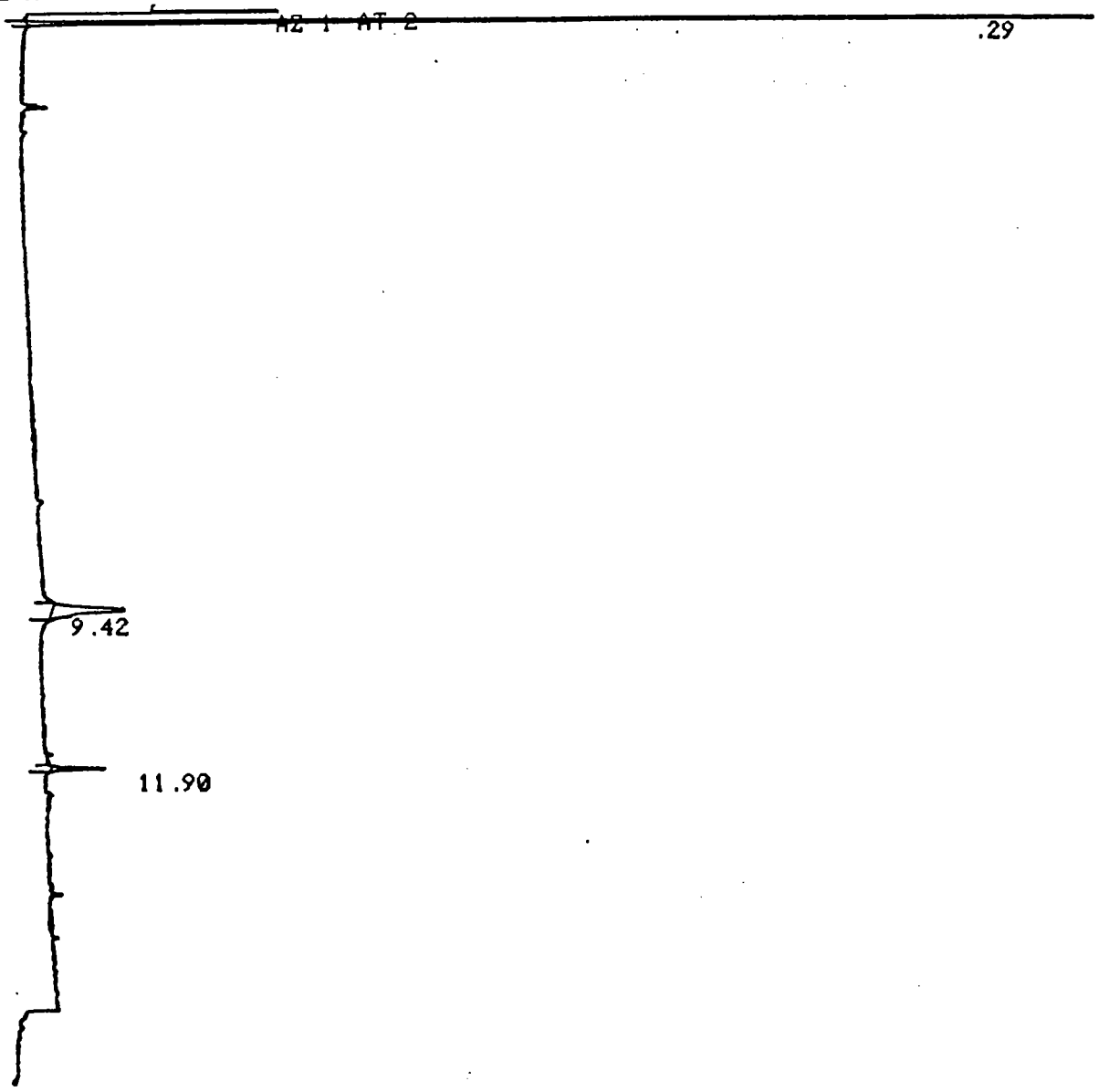
CHANNEL A INJECT 10/12/92 08:32:48 STORED TO BIN # 18



PW = 3. PT = 50. RN = 640.
IX = 447. OD = 1. PH = 0.
TB = 0. LC = 0. LS = 0.
SI = 0.

X N2 Blank

CHANNEL A INJECT 10/09/92 07:54:22 STORED TO BIN # 110



DATA SAVED TO BIN # 110

10/09/92 07:54:22 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 647 INDEX 447 BIN 110

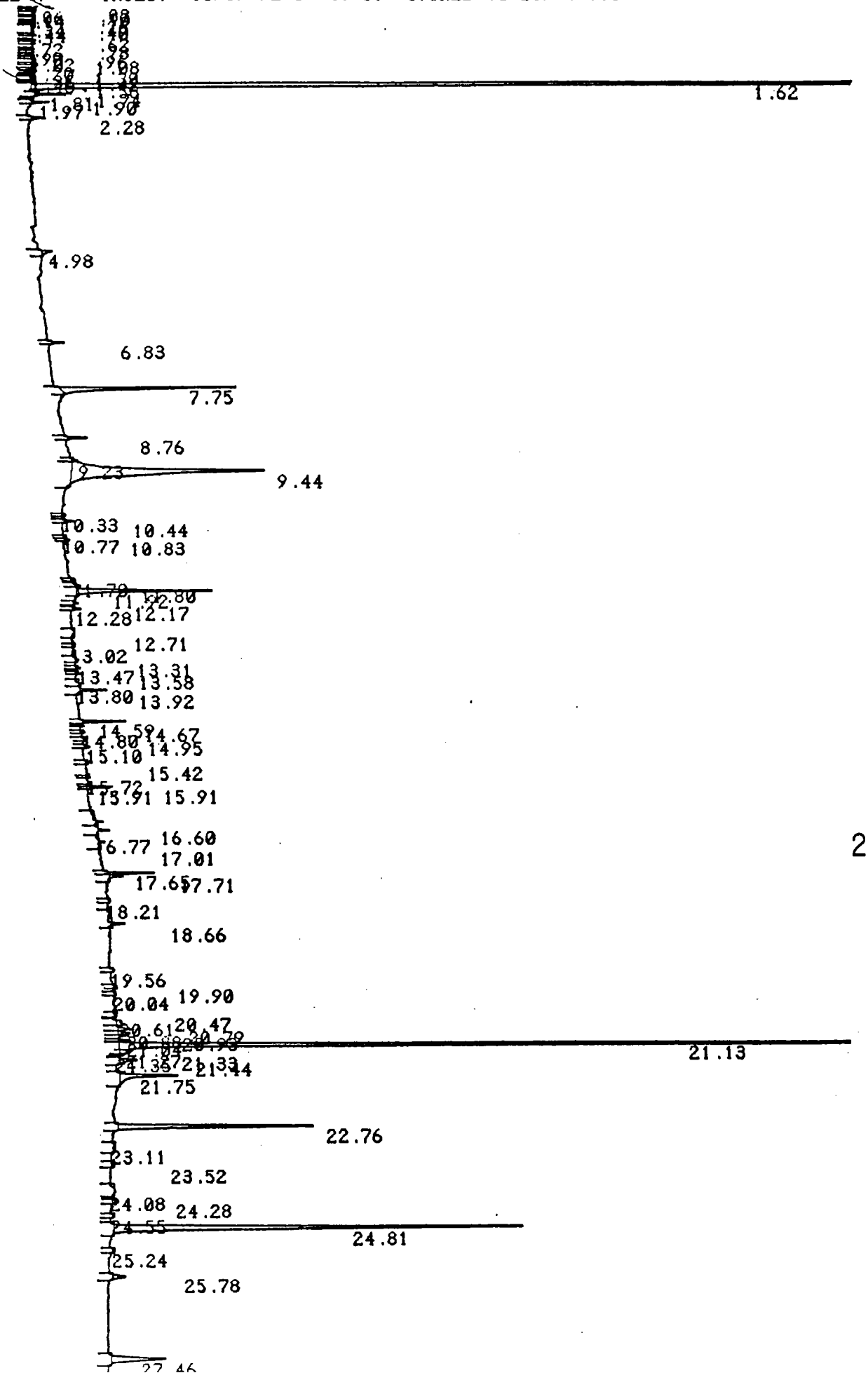
PEAK#	AREA%	RT	AREA	BC
1	85.629	0.29	12543	01
2	11.408	9.42	1671	01
3	2.963	11.9	434	01
TOTAL	100.		14648	

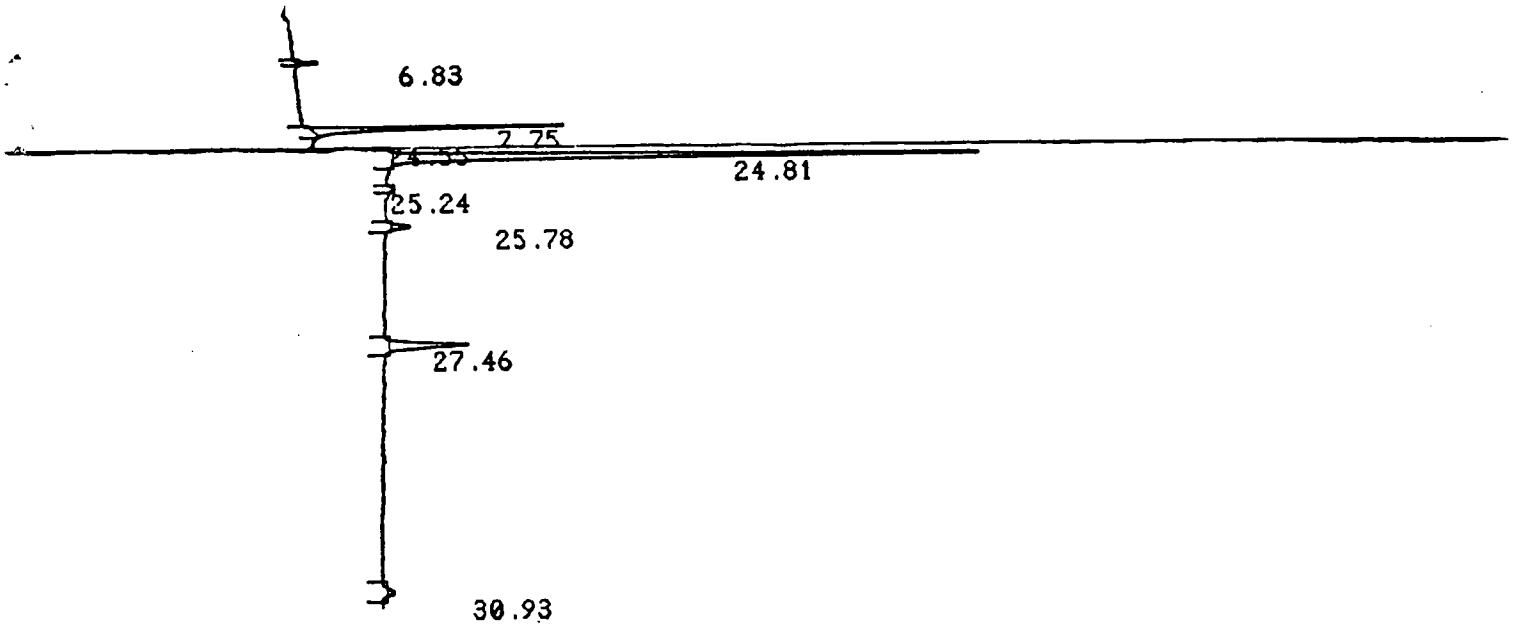
WARNING - MEMORY AT 6. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

WARNING - MEMORY AT 4. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-2 AAL-7749 Bag 1 repeat 0.5cc 8x FID

CHANNEL A INJECT 10/09/92 09:48:08 STORED TO BIN # 113





DATA SAVED TO BIN # 113

10/09/92 09:48:08 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 650 INDEX 450 BIN 113

PEAK#	AREA%	RT	AREA	BC
1	0.012	0.02	79	02
2	0.009	0.06	60	03
3	0.012	0.1	80	02
4	0.012	0.14	77	03
5	0.011	0.26	73	01
6	0.009	0.34	56	01
7	0.005	0.4	36	01
8	0.035	0.44	227	01
9	0.013	0.62	83	01
10	0.009	0.72	57	01
11	0.01	0.78	65	01
12	0.004	0.9	24	01
13	0.006	0.96	38	01
14	0.005	1.02	34	01
15	0.007	1.08	45	01
16	0.005	1.2	35	01
17	0.007	1.3	44	01
18	0.006	1.36	40	01
19	0.006	1.42	42	01
20	0.016	1.46	107	01
21	0.016	1.56	104	02
22	70.885	1.62	465793	08 cHy
23	0.007	1.74	43	05
24	0.145	1.81	955	05
25	0.01	1.9	67	02
26	0.091	1.97	600	03
27	0.073	2.28	478	01
28	0.12	4.98	787	01
29	0.071	6.83	466	01
30	1.191	7.75	7823	01
31	0.104	8.76	686	01
32	0.057	9.23	374	02
33	4.074	9.44	26768	03
34	0.016	10.33	108	01
35	0.059	10.44	387	01

delete 467199

21

31	0.104	8.76	686	01
32	0.057	9.23	374	02
33	4.074	9.44	26768	03
34	0.016	10.33	108	01
35	0.059	10.44	387	01
36	0.014	10.77	94	02
37	0.026	10.83	173	03
38	0.014	11.7	94	01
39	0.064	11.8	418	02
40	1.098	11.92	7214	03
41	0.031	12.17	204	01
42	0.046	12.28	302	01
43	0.032	12.71	207	01
44	0.005	13.02	34	01
45	0.041	13.31	268	01
46	0.027	13.47	177	01
47	0.016	13.58	106	01
48	0.051	13.8	338	02
49	0.189	13.92	1243	03
50	0.194	14.59	1274	01
51	0.014	14.67	91	01
52	0.018	14.8	121	01
53	0.021	14.95	137	01
54	0.033	15.1	215	01
55	0.012	15.42	77	01
56	0.012	15.72	82	01
57	0.068	15.91	446	02
58	0.051	15.91	336	03
59	0.093	16.6	609	02
60	0.124	16.77	818	02
61	0.061	17.01	398	03
62	0.286	17.65	1879	02
63	0.155	17.71	1021	03
64	0.015	18.21	99	01
65	0.087	18.66	574	01
66	0.033	19.56	215	01
67	0.025	19.9	162	01
68	0.024	20.04	155	01
69	0.021	20.47	138	01
70	0.167	20.61	1099	02
71	0.166	20.79	1093	02
72	0.161	20.88	1057	02
73	0.05	20.93	329	02
74	0.105	21.04	689	02
75	11.25	21.13	73928	08
76	0.056	21.27	365	06
77	0.007	21.33	47	07
78	0.187	21.44	1232	01
79	0.6	21.75	3943	01
80	1.616	22.76	10621	01
81	0.06	23.11	394	01
82	0.023	23.52	150	01
83	0.088	24.08	581	01
84	0.041	24.28	268	01
85	0.029	24.55	188	01
86	4.193	24.81	27554	01
87	0.031	25.24	206	01
88	0.182	25.78	1198	01
89	0.725	27.46	4767	01
90	0.144	30.93	945	01
TOTAL	100.		657114	≈ 189915

WARNING - MEMORY AT 1. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

31	0.104	8.76	686 01
32	0.057	9.23	374 02

PRESS 'INJECT' TO BEGIN.

X

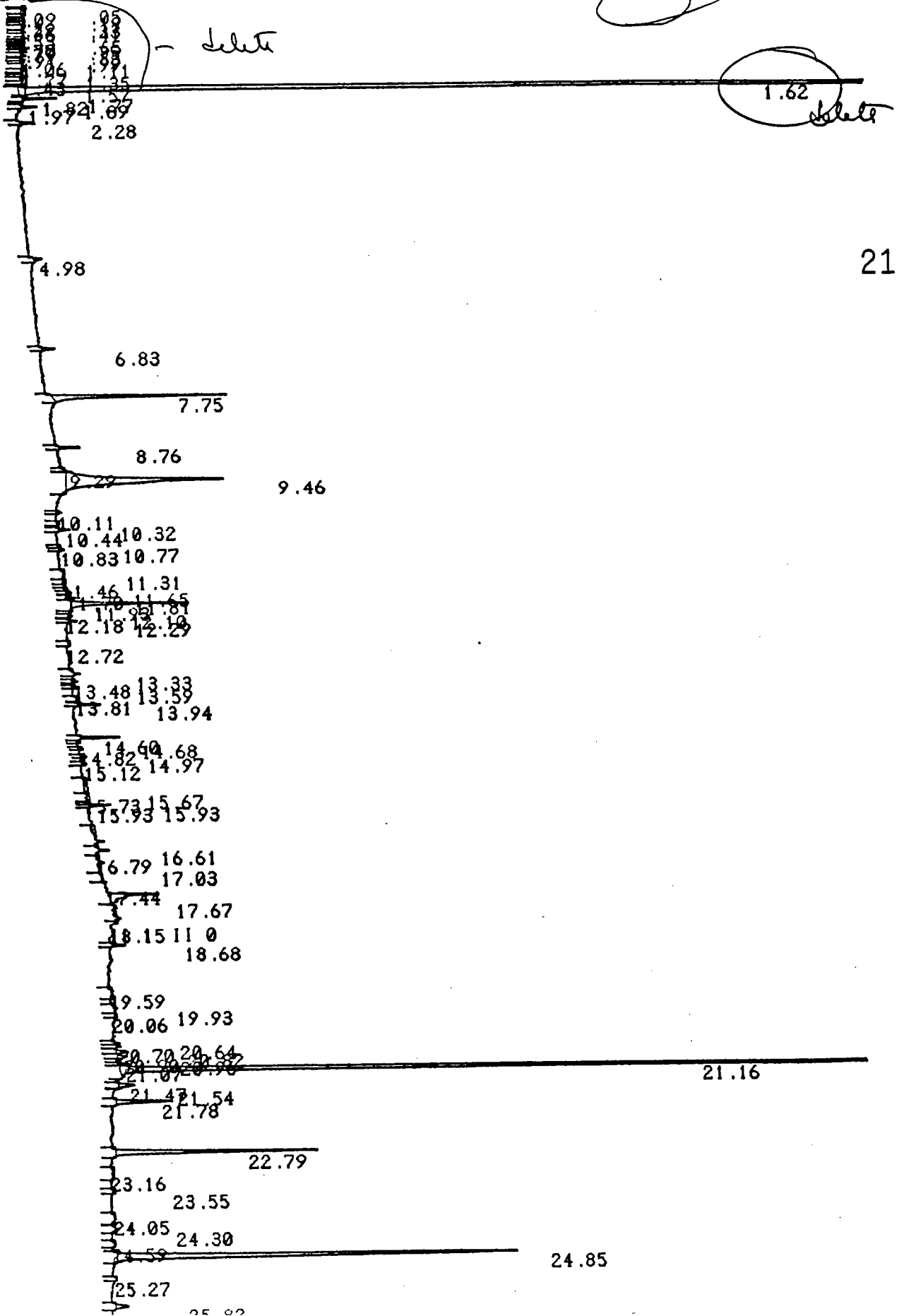
10-9-1 replot bag 1 1st run

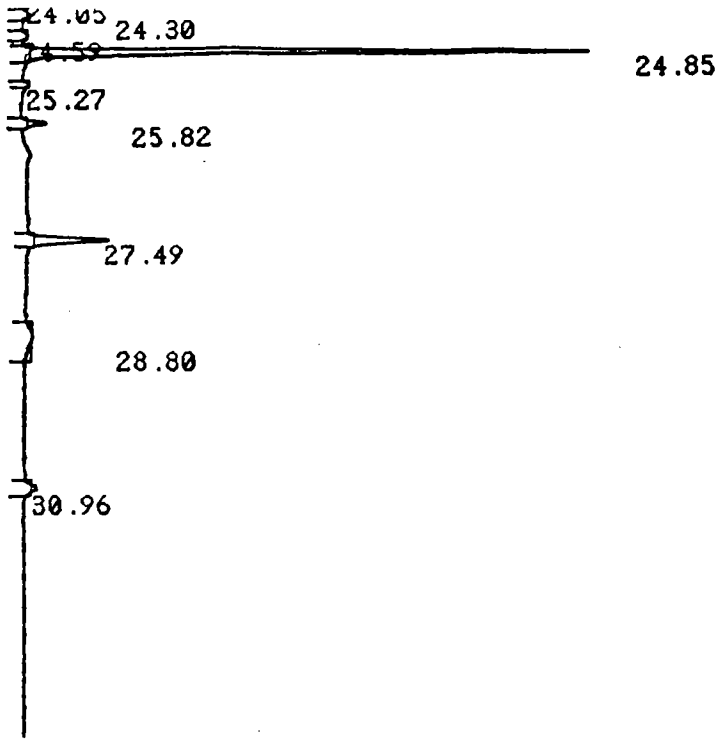
CHANNEL A INJECT 10/09/92 09:03:18 REPLAYED FROM BIN # 112

delete

1.62 delete

218





10/09/92 09:03:18 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 651 INDEX 451 BIN 112

PEAK#	AREA%	RT	AREA	BC	
1	0.009	0.05	61	01	
2	0.024	0.09	153	01	
3	0.005	0.19	30	01	
4	0.012	0.29	80	02	
5	0.011	0.33	74	02	
6	0.011	0.36	73	02	
7	0.013	0.41	87	03	
8	0.004	0.53	23	01	
9	0.009	0.65	60	01	
10	0.009	0.7	59	02	
11	0.008	0.75	51	03	delete 466162
12	0.008	0.79	54	01	
13	0.013	0.85	83	01	
14	0.019	0.91	121	02	
15	0.02	0.99	127	03	
16	0.013	1.06	84	02	
17	0.006	1.11	36	03	
18	0.01	1.27	68	01	
19	0.006	1.35	37	01	
20	0.013	1.43	82	01	
21	0.005	1.57	34	02	
22	71.448	1.62	464685	08	CH4
23	0.012	1.77	76	06	
24	0.155	1.82	1005	06	
25	0.008	1.89	53	07	
26	0.086	1.97	560	01	
27	0.066	2.28	429	01	
28	0.099	4.98	646	01	
29	0.064	6.83	418	01	
30	1.19	7.75	7739	01	
31	0.107	8.76	699	01	
32	0.052	9.29	337	02	
33	3.301	9.46	21470	03	

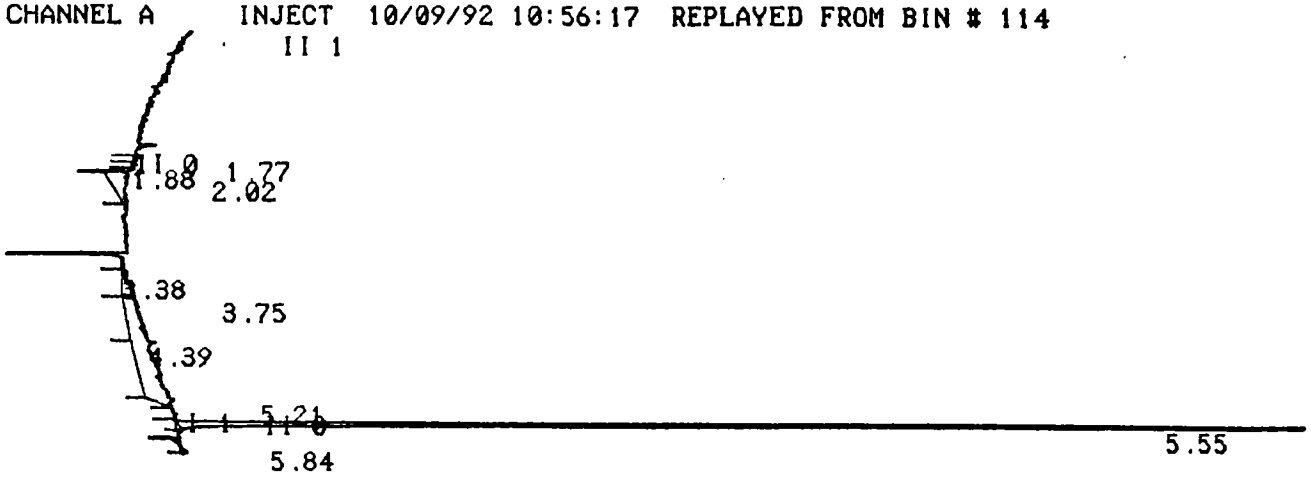
29	0.064	6.83	418 01
30	1.19	7.75	7739 01
31	0.107	8.76	699 01
32	0.052	9.29	337 02
33	3.301	9.46	21470 03
34	0.021	10.11	139 01
35	0.021	10.32	134 01
36	0.073	10.44	472 01
37	0.017	10.77	111 02
38	0.031	10.83	201 03
39	0.052	11.31	335 02
40	0.011	11.46	72 03
41	0.009	11.65	59 02
42	0.024	11.7	158 03
43	0.065	11.81	423 02
44	0.967	11.93	6287 02
45	0.026	12.1	170 02
46	0.034	12.18	220 03
47	0.054	12.29	353 01
48	0.026	12.72	166 01
49	0.063	13.33	411 01
50	0.028	13.48	179 01
51	0.017	13.59	110 01
52	0.019	13.81	126 01
53	0.124	13.94	806 01
54	0.201	14.6	1310 02
55	0.016	14.68	105 03
56	0.016	14.82	105 01
57	0.024	14.97	153 01
58	0.032	15.12	211 01
59	0.052	15.67	335 02
60	0.025	15.73	165 03
61	0.061	15.93	395 02
62	0.048	15.93	310 03
63	0.108	16.61	703 02
64	0.115	16.79	749 02
65	0.118	17.03	766 02
66	0.08	17.44	523 02
67	0.686	17.67	4463 02
68	0.14	18.15	913 03
69	0.084	18.68	547 01
70	0.06	19.59	392 01
71	0.064	19.93	417 02
72	0.019	20.06	125 03
73	0.071	20.64	461 02
74	0.07	20.7	458 02
75	0.142	20.82	925 02
76	0.139	20.9	905 02
77	0.025	20.96	160 02
78	0.112	21.07	727 02
79	11.08	21.16	72063 03
80	0.177	21.47	1152 02
81	0.005	21.54	34 03
82	0.43	21.78	2795 01
83	1.657	22.79	10778 01
84	0.042	23.16	271 01
85	0.021	23.55	139 01
86	0.073	24.05	472 01
87	0.056	24.3	362 01
88	0.037	24.59	242 01
89	4.18	24.85	27188 01
90	0.029	25.27	187 01
91	0.178	25.82	1156 01
92	0.721	27.49	4689 01
93	0.169	28.8	1096 01
94	0.14	30.96	908 01
TOTAL	100.		650381 = 18421

220

replot 11.2ppm std

10-9-3

CHANNEL A INJECT 10/09/92 10:56:17 REPLAYED FROM BIN # 114



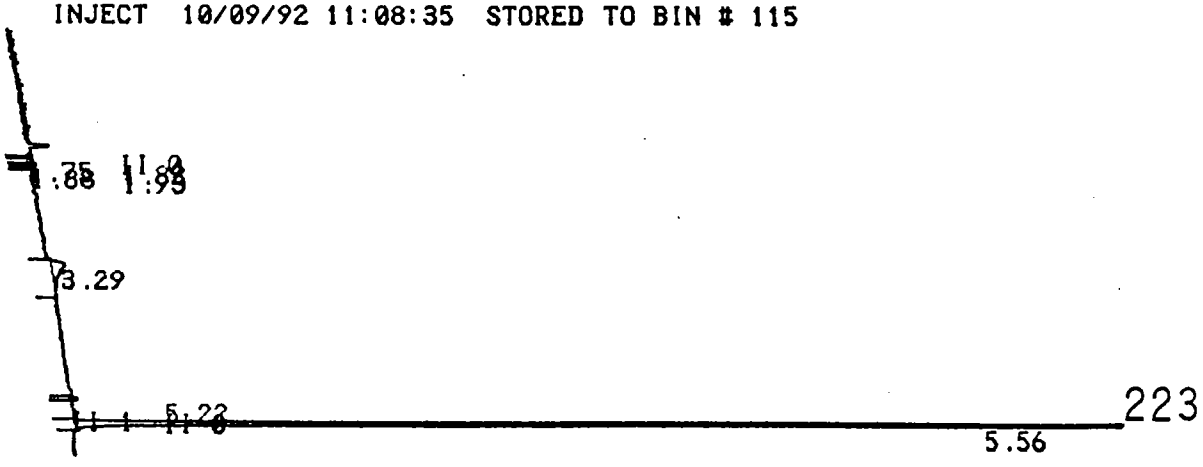
10/09/92 10:56:17 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 653 INDEX 453 BIN 114

PEAK#	AREA%	RT	AREA BC
1	0.246	1.77	200 02
2	0.116	1.88	94 03
3	4.196	2.02	3408 01
4	2.012	3.38	1634 02
5	7.595	3.75	6169 02
6	13.531	4.39	10991 02
7	1.517	5.21	1232 03
8	69.68	5.55	56600 01
9	1.109	5.84	901 01
TOTAL	100.		81229

10-9-4 11.2ppm std repeat 0.5cc 8XFID

CHANNEL A INJECT 10/09/92 11:08:35 STORED TO BIN # 115



223

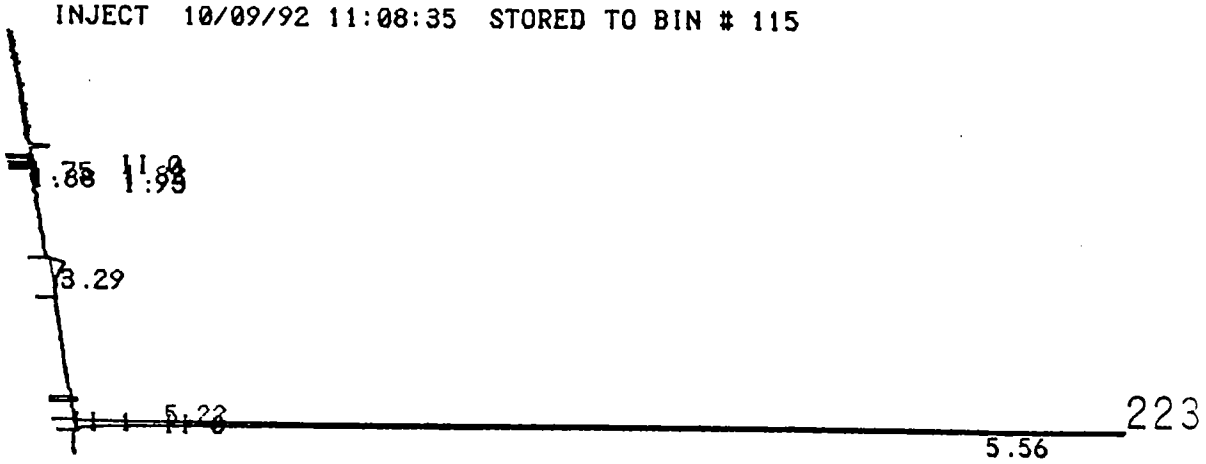
DATA SAVED TO BIN # 115

10/09/92 11:08:35 CH= "A" PS= 1.

9	1.109	5.84	901 01
TOTAL	100.		81229

10-9-4 11.2 ppm std repeat 0.5cc 8XFID

CHANNEL A INJECT 10/09/92 11:08:35 STORED TO BIN # 115



DATA SAVED TO BIN # 115

10/09/92 11:08:35 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 654 INDEX 454 BIN 115

PEAK#	AREA%	RT	AREA BC
1	0.213	1.75	131 02
2	0.208	1.82	128 02
3	0.114	1.88	70 03
4	0.081	1.93	50 01
5	2.855	3.29	1755 01
6	0.239	5.22	147 01
7	96.289	5.56	59188 01
TOTAL	100.		61469

WARNING - MEMORY AT 2. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

FI= 1. FE= 1. MN= 0.
PRESS 'ENTER' TO SKIP ENTRY
ENABLE BASELINE DRAWING? [Y/N] (Y) Y
STORAGE MENU? [Y,N] (N)

FUNCTION NUMBER [0-10] (0)

FILE NAME () ="
TIME FUNCTION VALUE
TT= -5.35 TF=" II TV= 1
TT= -5.39 TF=" II TV= 0
TT=

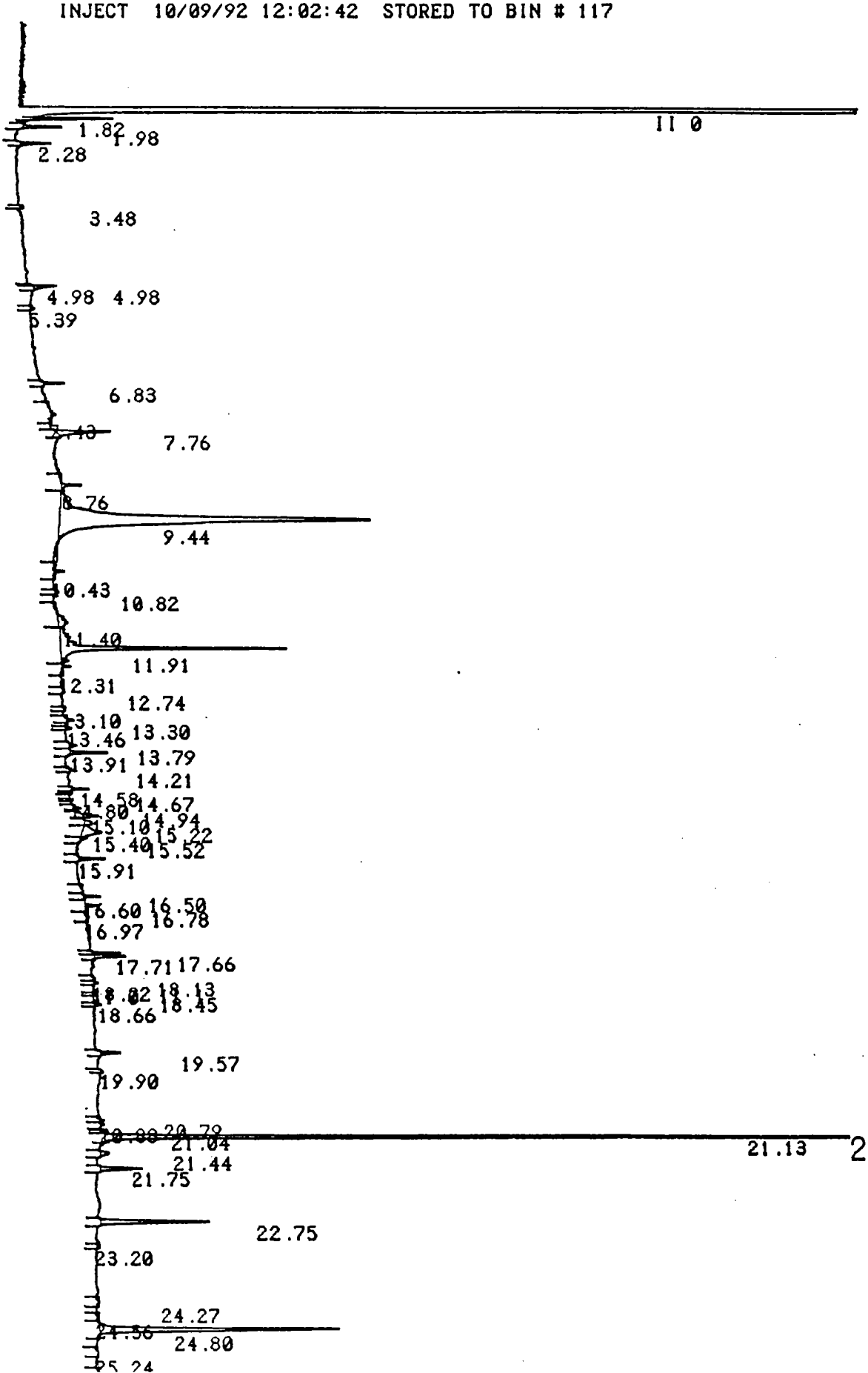
METHOD NUMBER [0,1,2,5] (0) MN=

END OF DIALOG

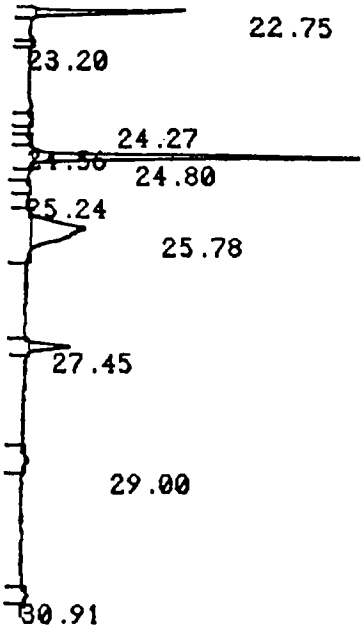
MN= 0. REM FE= 1. CH= "A" PS= 1.

10-9-6. AAL-7749 bag 2 repeat 0.5cc 8x FID

CHANNEL A INJECT 10/09/92 12:02:42 STORED TO BIN # 117



228



DATA SAVED TO BIN # 117

10/09/92 12:02:42 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 656 INDEX 456 BIN 117

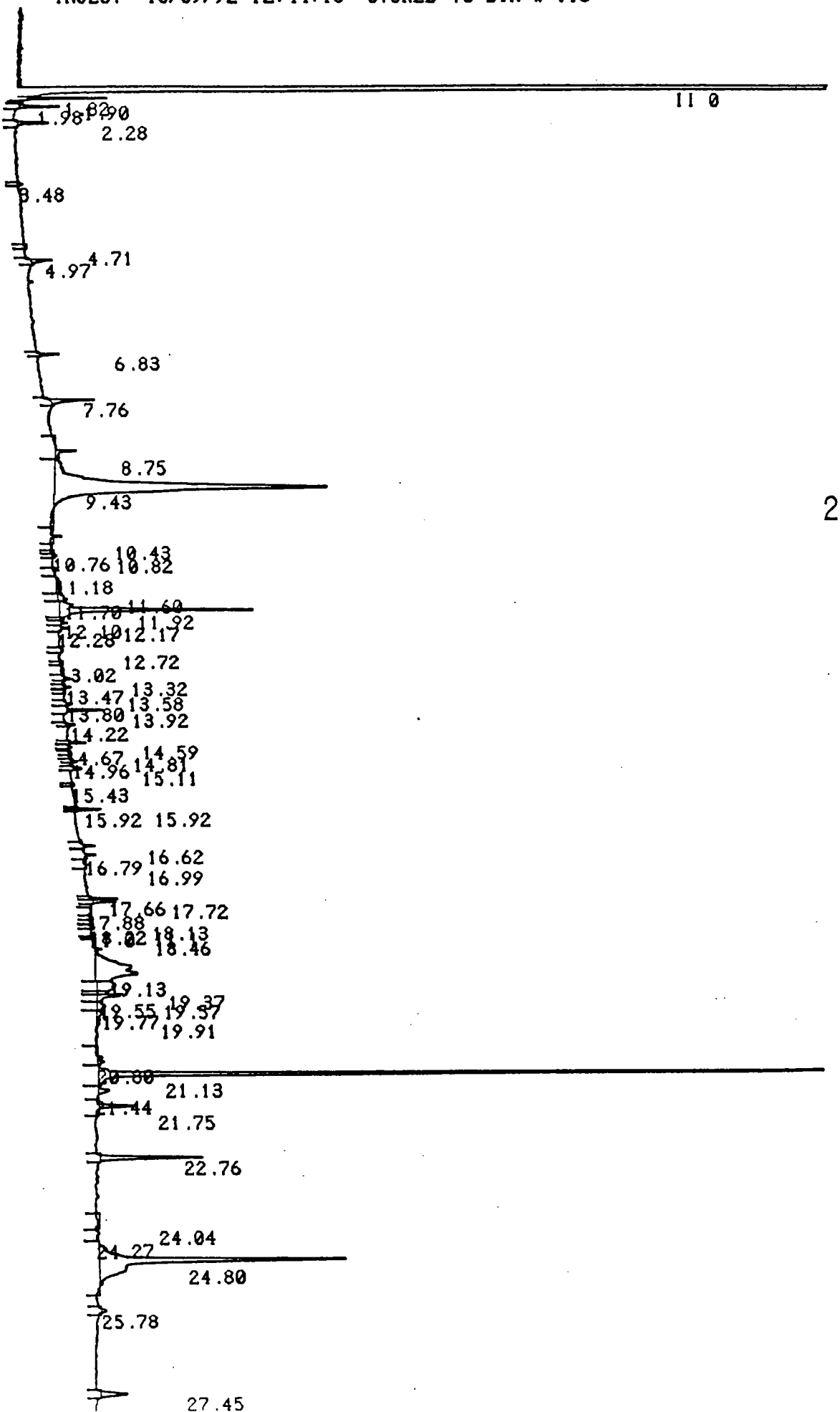
PEAK#	AREA%	RT	AREA	BC
1	1.149	1.82	2095	01
2	0.75	1.98	1368	01
3	0.608	2.28	1108	01
4	0.09	3.48	164	01
5	0.208	4.98	380	02
6	0.382	4.98	697	03
7	0.065	5.39	119	01
8	0.383	6.83	699	01
9	0.427	7.43	778	01
10	1.451	7.76	2645	01
11	0.829	8.76	1512	02
12	28.924	9.44	52740	02
13	0.194	10.43	353	03
14	0.085	10.82	155	01
15	1.292	11.4	2356	02
16	9.159	11.91	16701	02
17	0.228	12.31	416	03
18	0.129	12.74	236	01
19	0.049	13.1	90	01
20	0.253	13.3	462	01
21	0.106	13.46	193	01
22	0.297	13.79	542	02
23	0.856	13.91	1560	03
24	0.119	14.21	217	01
25	0.31	14.58	566	01
26	0.038	14.67	70	01
27	0.03	14.8	55	01
28	0.098	14.94	178	01
29	0.449	15.1	819	01
30	0.498	15.22	908	02
31	1.556	15.4	2838	02
32	0.215	15.52	392	03
33	0.57	15.91	1040	01
34	0.105	16.5	191	02
35	0.438	16.6	799	02
36	0.512	16.78	934	02
37	0.114	16.97	207	03
38	0.569	17.66	1038	02

3	0.608	2.28	1108 01
4	0.09	3.48	164 01
5	0.208	4.98	380 02
6	0.382	4.98	697 03
7	0.065	5.39	119 01
8	0.383	6.83	699 01
9	0.427	7.43	778 01
10	1.451	7.76	2645 01
11	0.829	8.76	1512 02
12	28.924	9.44	52740 02
13	0.194	10.43	353 03
14	0.085	10.82	155 01
15	1.292	11.4	2356 02
16	9.159	11.91	16701 02
17	0.228	12.31	416 03
18	0.129	12.74	236 01
19	0.049	13.1	90 01
20	0.253	13.3	462 01
21	0.106	13.46	193 01
22	0.297	13.79	542 02
23	0.856	13.91	1560 03
24	0.119	14.21	217 01
25	0.31	14.58	566 01
26	0.038	14.67	70 01
27	0.03	14.8	55 01
28	0.098	14.94	178 01
29	0.449	15.1	819 01
30	0.498	15.22	908 02
31	1.556	15.4	2838 02
32	0.215	15.52	392 03
33	0.57	15.91	1040 01
34	0.105	16.5	191 02
35	0.438	16.6	799 02
36	0.512	16.78	934 02
37	0.114	16.97	207 03
38	0.569	17.66	1038 02
39	0.666	17.71	1214 03
40	0.072	18.13	132 02
41	0.115	18.22	209 03
42	0.056	18.45	103 01
43	0.155	18.66	282 01
44	0.509	19.57	929 01
45	0.078	19.9	143 01
46	0.164	20.79	299 02
47	0.191	20.88	348 03
48	0.186	21.04	340 02
49	21.953	21.13	40030 03
50	0.454	21.44	827 01
51	1.2	21.75	2188 01
52	3.161	22.75	5764 01
53	0.063	23.2	114 01
54	0.116	24.27	212 01
55	0.082	24.56	149 02
56	8.823	24.8	16088 03
57	0.102	25.24	186 01
58	6.279	25.78	11449 01
59	1.474	27.45	2687 01
60	0.301	29.	549 01
61	0.263	30.91.	479 01
TOTAL	100.		182342

WARNING - MEMORY AT 3 K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-7 AAL-7749 Bag 2 repeat 0.5cc 8x F11>

CHANNEL A INJECT 10/09/92 12:44:18 STORED TO BIN # 118



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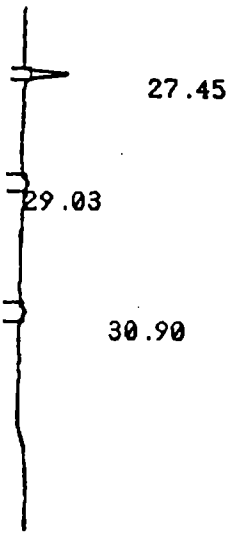


DATA SAVED TO BIN # 118

10/09/92 12:44:18 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 657 INDEX 457 BIN 118

PEAK#	AREA%	RT	AREA	BC
1	1.08	1.82	2161	01
2	0.037	1.9	75	02
3	0.732	1.98	1465	03
4	0.669	2.28	1338	01
5	0.07	3.48	141	01
6	0.03	4.71	61	01
7	0.585	4.97	1171	01
8	0.347	6.83	694	01
9	1.246	7.76	2492	01
10	1.173	8.75	2346	02
11	23.472	9.43	46955	02
12	0.235	10.43	471	03
13	0.039	10.76	79	02
14	0.091	10.82	183	03
15	0.084	11.18	168	02
16	0.747	11.6	1494	02
17	0.642	11.7	1285	02
18	6.526	11.92	13055	02
19	0.163	12.1	327	02
20	0.203	12.17	407	02
21	0.196	12.28	392	03
22	0.122	12.72	244	01
23	0.018	13.02	36	01
24	0.196	13.32	393	01
25	0.129	13.47	259	01
26	0.019	13.58	39	01
27	0.225	13.8	450	02
28	0.784	13.92	1568	03
29	0.16	14.22	321	01
30	0.257	14.59	514	01
31	0.054	14.67	108	01
32	0.041	14.81	82	01
33	0.076	14.96	153	01
34	0.188	15.11	377	01
35	0.042	15.43	85	01
36	0.237	15.92	475	02
37	0.202	15.92	405	03
38	0.263	16.62	527	01
39	0.336	16.79	672	02

8	0.347	6.83	694 01
9	1.246	7.76	2492 01
10	1.173	8.75	2346 02
11	23.472	9.43	46955 02
12	0.235	10.43	471 03
13	0.039	10.76	79 02
14	0.091	10.82	183 03
15	0.084	11.18	168 02
16	0.747	11.6	1494 02
17	0.642	11.7	1285 02
18	6.526	11.92	13055 02
19	0.163	12.1	327 02
20	0.203	12.17	407 02
21	0.196	12.28	392 03
22	0.122	12.72	244 01
23	0.018	13.02	36 01
24	0.196	13.32	393 01
25	0.129	13.47	259 01
26	0.019	13.58	39 01
27	0.225	13.8	450 02
28	0.784	13.92	1568 03
29	0.16	14.22	321 01
30	0.257	14.59	514 01
31	0.054	14.67	108 01
32	0.041	14.81	82 01
33	0.076	14.96	153 01
34	0.188	15.11	377 01
35	0.042	15.43	85 01
36	0.237	15.92	475 02
37	0.202	15.92	405 03
38	0.263	16.62	527 01
39	0.336	16.79	672 02
40	0.083	16.99	167 03
41	0.518	17.66	1037 02
42	0.5	17.72	1000 03
43	0.06	17.88	120 01
44	0.034	18.13	69 01
45	0.081	18.22	163 01
46	0.036	18.46	72 01
47	7.912	19.13	15828 02
48	1.917	19.37	3835 02
49	0.577	19.55	1154 02
50	0.855	19.57	1711 02
51	0.82	19.77	1641 02
52	1.53	19.91	3060 02
53	0.874	20.8	1748 02
54	20.886	21.13	41783 02
55	0.773	21.44	1547 02
56	1.178	21.75	2357 03
57	2.804	22.76	5610 01
58	0.16	24.04	320 02
59	0.219	24.27	439 02
60	14.484	24.8	28975 03
61	0.301	25.78	603 01
62	1.16	27.45	2321 01
63	0.259	29.03	518 01
64	0.252	30.9	505 01
TOTAL	100.		200051

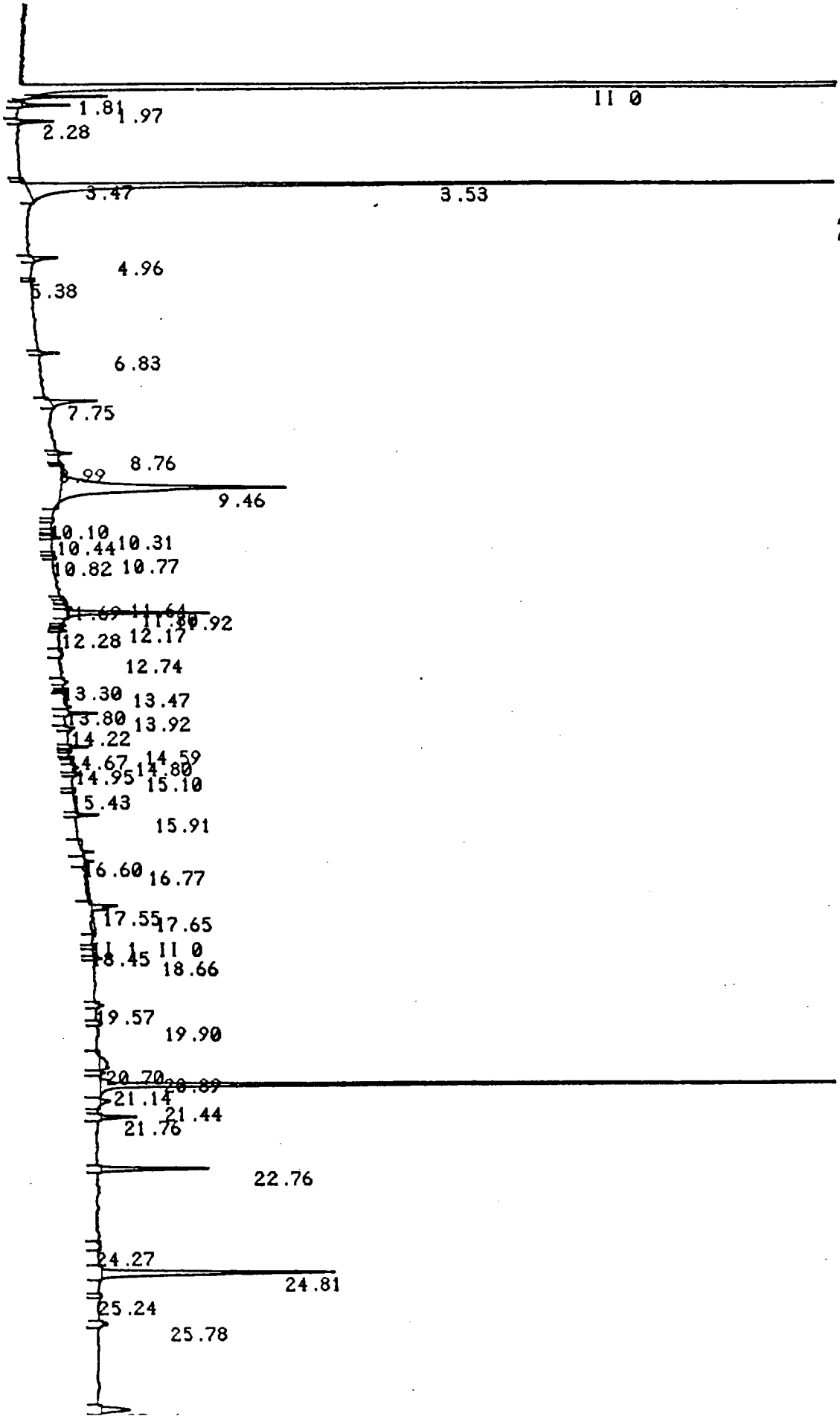
WARNING - MEMORY AT 6. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

20	0.036	12.17	177 03
21	0.082	12.27	250 05

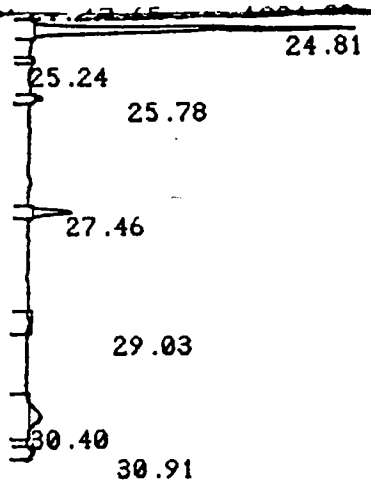
WARNING - MEMORY AT 5. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-9 AAL-7749 Bag 3 repeat 0.5cc 8xFID

CHANNEL A INJECT 10/09/92 14:15:38 STORED TO BIN # 120



23



DATA SAVED TO BIN # 120

10/09/92 14:15:38 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 659 INDEX 459 BIN 120

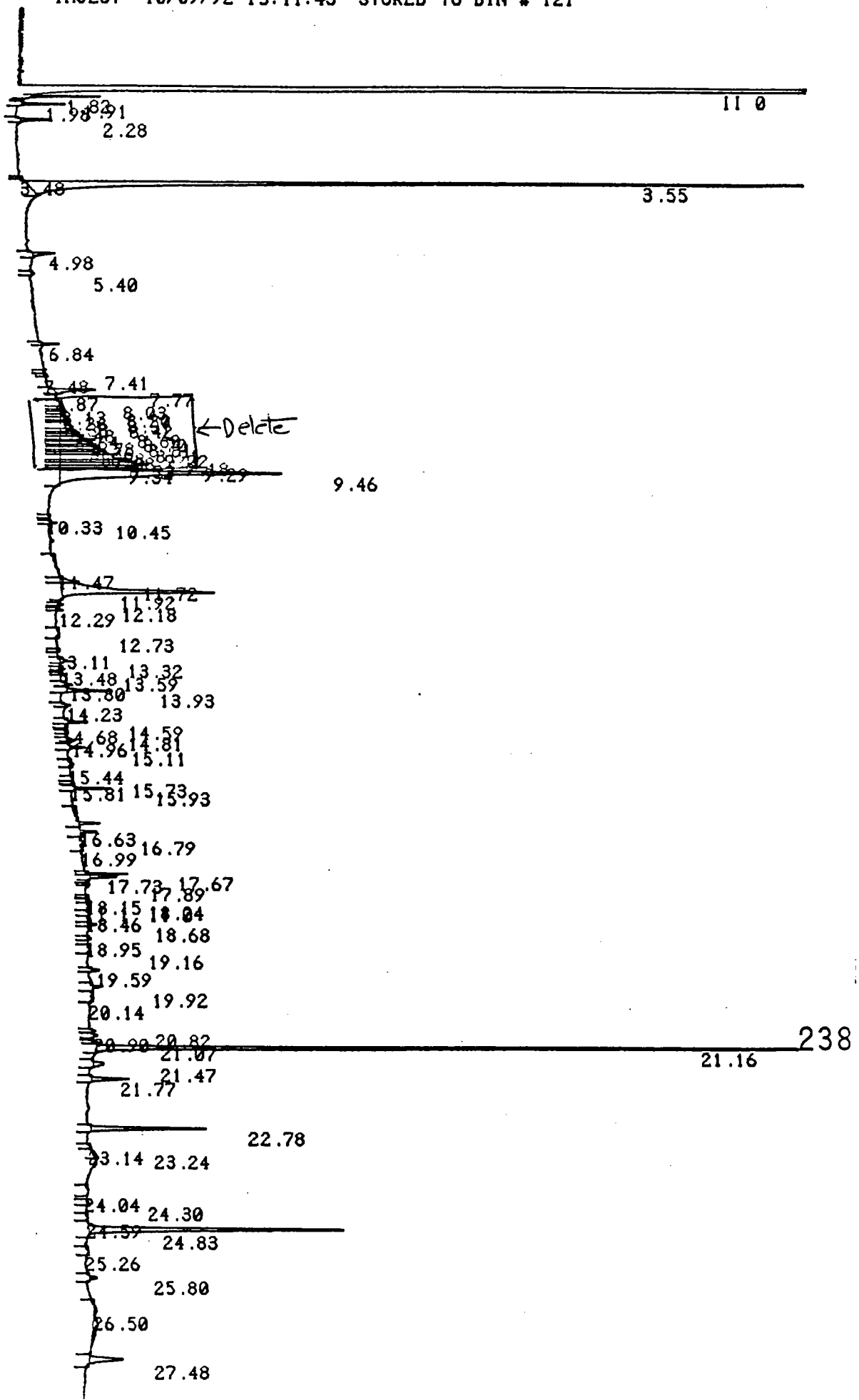
PEAK#	AREA%	RT	AREA	BC
1	1.001	1.81	2042	01
2	0.809	1.97	1650	01
3	0.664	2.28	1354	01
4	0.043	3.47	88	02
5	31.57	3.53	64394	03
6	0.625	4.96	1275	01
7	0.039	5.38	79	01
8	0.306	6.83	624	01
9	1.296	7.75	2643	01
10	0.199	8.76	405	01
11	0.039	8.99	79	01
12	15.405	9.46	31422	01
13	0.04	10.1	81	01
14	0.036	10.31	73	01
15	0.152	10.44	310	01
16	0.036	10.77	73	02
17	0.076	10.82	154	03
18	0.034	11.64	70	02
19	0.045	11.69	91	03
20	0.191	11.8	389	02
21	3.624	11.92	7392	03
22	0.06	12.17	122	01
23	0.092	12.28	187	01
24	0.109	12.74	223	01
25	0.134	13.3	273	01
26	0.052	13.47	107	01
27	0.299	13.8	609	02
28	0.639	13.92	1304	03
29	0.181	14.22	370	01
30	0.262	14.59	535	01
31	0.04	14.67	82	01
32	0.022	14.8	44	01
33	0.222	14.95	453	02
34	0.172	15.1	351	03
35	0.039	15.43	80	01
36	0.362	15.91	739	01
37	0.395	16.6	806	02
38	0.391	16.77	797	02
39	0.338	17.55	690	02
40	1.131	17.65	2306	03
41	0.034	18.45	70	01

13	0.04	10.1	81 01
14	0.036	10.31	73 01
15	0.152	10.44	310 01
16	0.036	10.77	73 02
17	0.076	10.82	154 03
18	0.034	11.64	70 02
19	0.045	11.69	91 03
20	0.191	11.8	389 02
21	3.624	11.92	7392 03
22	0.06	12.17	122 01
23	0.092	12.28	187 01
24	0.109	12.74	223 01
25	0.134	13.3	273 01
26	0.052	13.47	107 01
27	0.299	13.8	609 02
28	0.639	13.92	1304 03
29	0.181	14.22	370 01
30	0.262	14.59	535 01
31	0.04	14.67	82 01
32	0.022	14.8	44 01
33	0.222	14.95	453 02
34	0.172	15.1	351 03
35	0.039	15.43	80 01
36	0.362	15.91	739 01
37	0.395	16.6	806 02
38	0.391	16.77	797 02
39	0.338	17.55	690 02
40	1.131	17.65	2306 03
41	0.034	18.45	70 01
42	0.14	18.66	285 01
43	0.156	19.57	318 01
44	0.106	19.9	217 01
45	1.273	20.7	2596 02
46	0.281	20.89	574 02
47	21.278	21.14	43400 02
48	0.537	21.44	1095 03
49	0.888	21.76	1811 01
50	2.838	22.76	5789 01
51	0.105	24.27	215 01
52	7.89	24.81	16094 01
53	0.066	25.24	134 01
54	0.252	25.78	514 01
55	1.252	27.46	2553 01
56	0.138	29.03	282 01
57	1.39	30.4	2836 01
58	0.207	30.91	422 01
TOTAL	100.		203971

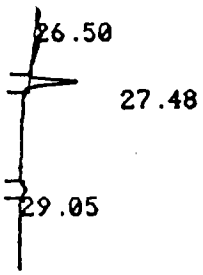
WARNING - MEMORY AT 6. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

X
10-9-10 AAL-7749 Bag 3 repeat 0.5cc 8xFID

CHANNEL A INJECT 10/09/92 15:11:43 STORED TO BIN # 121



← Delete



DATA SAVED TO BIN # 121

10/09/92 15:11:43 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 660 INDEX 460 BIN 121

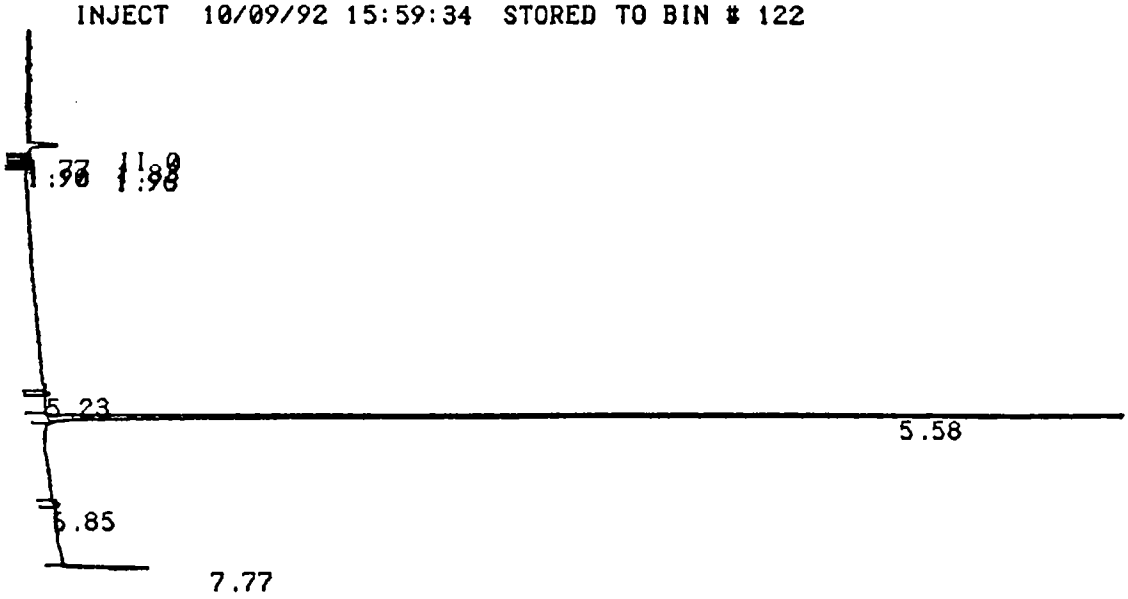
PEAK#	AREA%	RT	AREA	BC
1	0.76	1.82	1998	01
2	0.02	1.91	52	02
3	0.554	1.98	1456	03
4	0.51	2.28	1339	01
5	0.045	3.48	119	02
6	23.293	3.55	61198	03
7	0.492	4.98	1292	01
8	0.057	5.4	151	01
9	0.2	6.84	525	01
10	0.028	7.41	74	02
11	0.04	7.48	106	03
12	0.896	7.77	2354	02
13	0.011	7.87	28	03
14	0.257	8.03	674	02
15	0.172	8.13	452	02
16	0.147	8.2	386	02
17	0.182	8.26	479	02
18	0.201	8.31	527	02
19	0.26	8.38	683	02
20	0.187	8.42	490	02
21	0.721	8.48	1893	02
22	0.44	8.6	1157	02
23	0.342	8.64	899	02
24	0.535	8.7	1405	02
25	0.9	8.78	2364	02
26	0.443	8.81	1163	02
27	0.837	8.86	2198	02
28	0.721	8.91	1893	02
29	1.096	8.98	2880	02
30	0.849	9.02	2231	02
31	1.161	9.08	3051	02
32	2.672	9.18	7021	02
33	1.578	9.23	4147	02
34	2.077	9.29	5457	02
35	1.658	9.34	4357	02
36	9.93	9.46	26089	03
37	0.03	10.33	79	01
38	0.103	10.45	271	01
39	0.609	11.47	1600	02
40	0.742	11.72	1950	02
41	6.163	11.92	16193	03
42	0.065	12.18	170	01
43	0.078	12.29	205	01
44	0.086	12.73	226	01
45	0.022	13.11	58	01
46	0.185	13.32	485	01
47	0.067	13.48	176	01
48	0.022	13.59	57	01

Delete 45 & 34

30	0.049	9.02	2231 02
31	1.161	9.08	3051 02
32	2.672	9.18	7021 02
33	1.578	9.23	4147 02
34	2.077	9.29	5457 02
35	1.658	9.34	4357 02
36	9.93	9.46	26089 03
37	0.03	10.33	79 01
38	0.103	10.45	271 01
39	0.609	11.47	1600 02
40	0.742	11.72	1950 02
41	6.163	11.92	16193 03
42	0.065	12.18	170 01
43	0.078	12.29	205 01
44	0.086	12.73	226 01
45	0.022	13.11	58 01
46	0.185	13.32	485 01
47	0.067	13.48	176 01
48	0.022	13.59	57 01
49	0.156	13.8	409 01
50	0.799	13.93	2098 01
51	0.124	14.23	327 01
52	0.321	14.59	844 02
53	0.038	14.68	100 03
54	0.034	14.81	89 01
55	0.108	14.96	283 01
56	0.275	15.11	723 01
57	0.057	15.44	149 01
58	0.041	15.73	108 02
59	0.044	15.81	116 03
60	0.515	15.93	1353 01
61	0.524	16.63	1378 02
62	0.434	16.79	1139 02
63	0.185	16.99	487 03
64	0.574	17.67	1509 02
65	0.437	17.73	1147 03
66	0.024	17.89	62 01
67	0.041	18.15	108 01
68	0.071	18.24	187 01
69	0.063	18.46	165 01
70	0.107	18.68	282 01
71	0.046	18.95	122 01
72	0.059	19.16	156 01
73	0.183	19.59	480 01
74	0.201	19.92	527 02
75	0.134	20.14	352 03
76	0.081	20.82	213 01
77	0.111	20.9	291 01
78	0.174	21.07	458 02
79	16.757	21.16	44024 03
80	0.398	21.47	1046 01
81	0.792	21.77	2082 01
82	2.397	22.78	6298 01
83	0.058	23.14	152 02
84	0.118	23.24	310 03
85	0.11	24.04	289 01
86	0.082	24.3	215 01
87	0.056	24.59	146 02
88	6.763	24.83	17767 03
89	0.073	25.26	192 01
90	0.273	25.8	718 01
91	2.278	26.5	5986 02
92	1.247	27.48	3277 03
93	0.192	29.05	505 01
TOTAL	100.	262727	

10-9-11 11.2 ppm hexane std 0.5cc 8x FID

CHANNEL A INJECT 10/09/92 15:59:34 STORED TO BIN # 122



DATA SAVED TO BIN # 122

10/09/92 15:59:34 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 661 INDEX 461 BIN 122

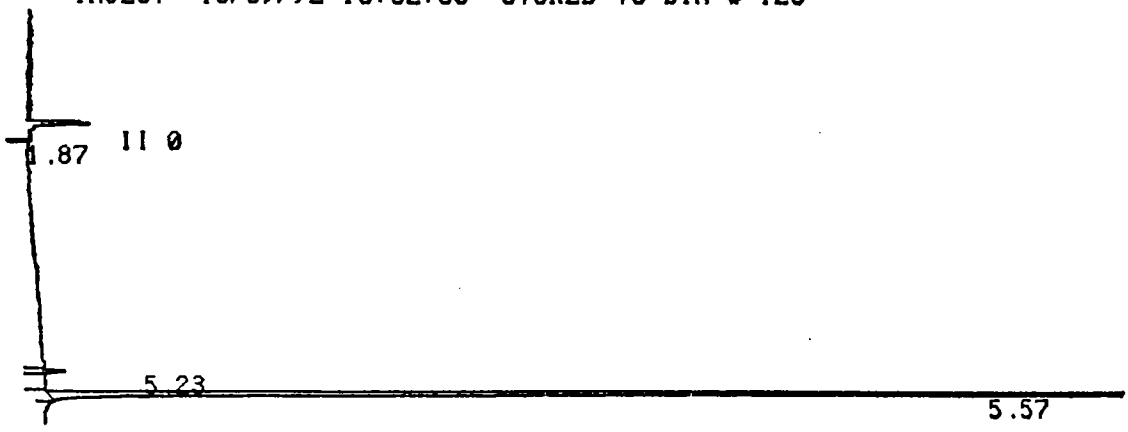
PEAK#	AREA%	RT	AREA	BC
1	0.109	1.77	59	01
2	0.152	1.83	82	01
3	0.145	1.9	78	01
4	0.143	1.96	77	01
5	0.221	5.23	119	01
6	98.684	5.58	53243	01
7	0.2	6.85	108	01
8	0.347	7.77	187	01
TOTAL	100.		53953	

10	0.113	6.84	185 02
11	0.069	6.84	114 03
12	8.184	7.17	13442 01
TOTAL	100.		164255

24

10-9-15 43.05 ppm std 0.5cc 8x FID

CHANNEL A INJECT 10/09/92 16:52:30 STORED TO BIN # 126



DATA SAVED TO BIN # 126

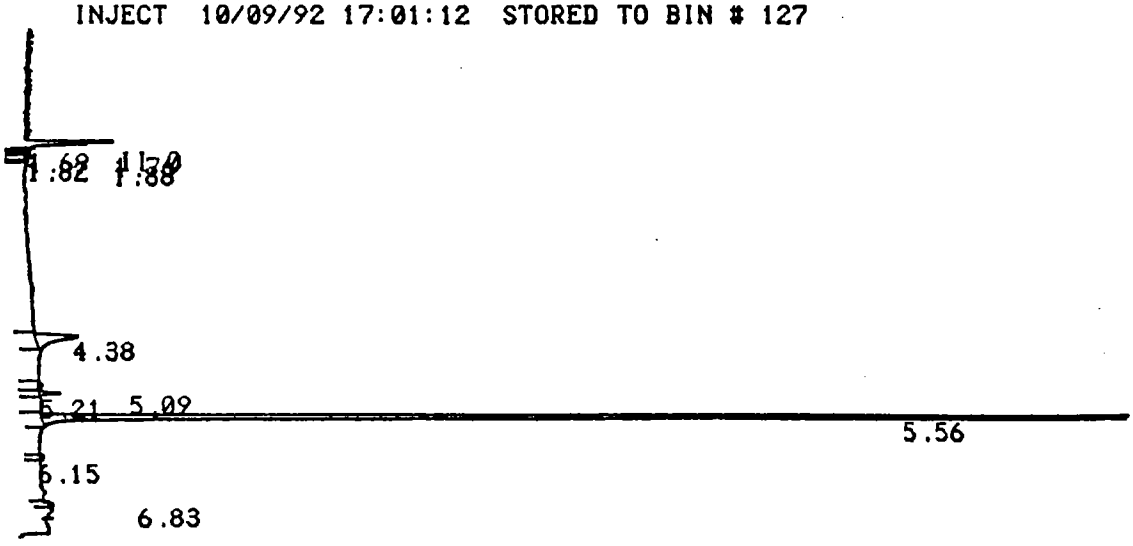
10/09/92 16:52:30 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 665 INDEX 465 BIN 126

PEAK#	AREA%	RT	AREA BC
1	0.021	1.87	46 01
2	0.234	5.23	503 01
3	99.744	5.57	214249 01
TOTAL	100.		214798

10-9-16 43.05 ppm Propane std 0.5cc 8x FID

CHANNEL A INJECT 10/09/92 17:01:12 STORED TO BIN # 127



DATA SAVED TO BIN # 127

10/09/92 17:01:12 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 666 INDEX 466 BIN 127

DATA SAVED TO BIN # 126

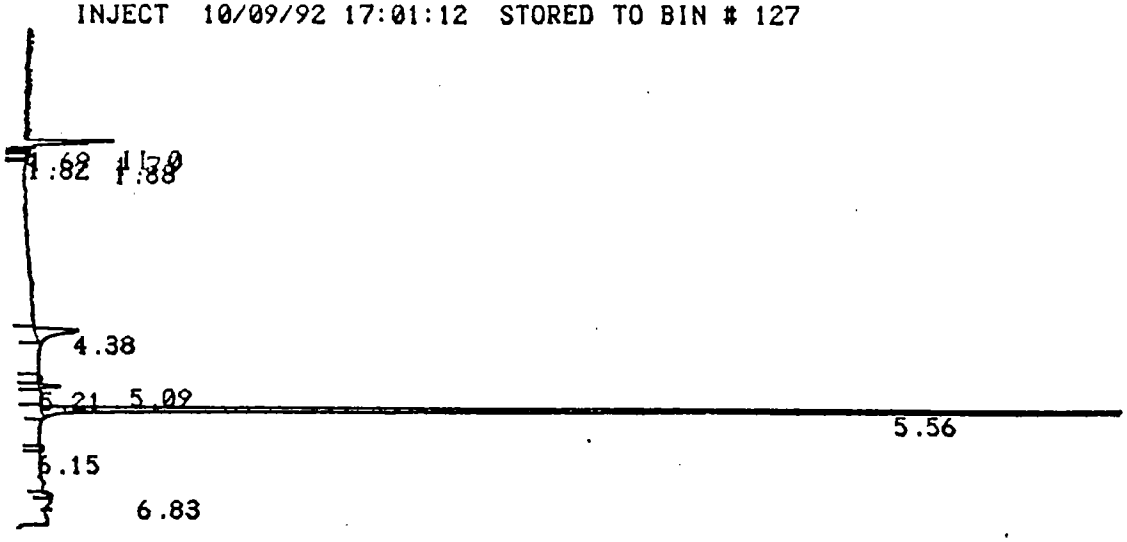
10/09/92 16:52:30 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 665 INDEX 465 BIN 126

PEAK#	AREA%	RT	AREA BC
1	0.021	1.87	46 01
2	0.234	5.23	503 01
3	99.744	5.57	214249 01
TOTAL	100.		214798

10-9-16 43.05 ppm hepane std 0.5cc 8x FID

CHANNEL A INJECT 10/09/92 17:01:12 STORED TO BIN # 127



DATA SAVED TO BIN # 127

10/09/92 17:01:12 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 666 INDEX 466 BIN 127

PEAK#	AREA%	RT	AREA BC
1	0.036	1.69	75 01
2	0.035	1.76	73 01
3	0.071	1.82	150 02
4	0.022	1.88	46 03
5	1.387	4.38	2928 01
6	0.084	5.09	177 02
7	0.231	5.21	487 03
8	98.037	5.56	206968 01
9	0.028	6.15	59 01
10	0.071	6.83	150 01
TOTAL	100.		211113

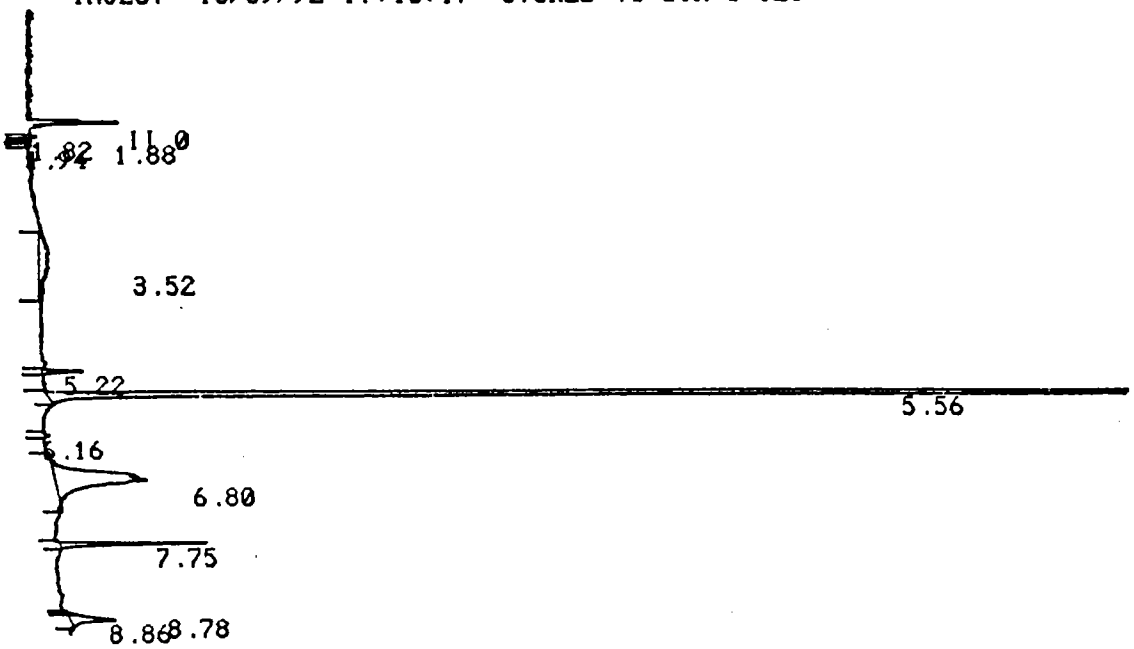
244

WARNING - MEMORY AT 8 K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-17 82.1 ppm hexane std 0.5cc 8xFID

.A FAULT 33: AT 2680

CHANNEL A INJECT 10/09/92 17:15:17 STORED TO BIN # 128



DATA SAVED TO BIN # 128

10/09/92 17:15:17 CH= "A" PS= 1.

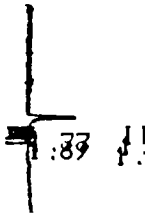
FILE 1. METHOD 0. RUN 667 INDEX 467 BIN 128

PEAK#	AREA%	RT	AREA	BC
1	0.036	1.82	157	01
2	0.018	1.88	78	01
3	0.015	1.94	63	01
4	0.642	3.52	2781	01
5	0.227	5.22	984	01
6	93.543	5.56	405118	01
7	0.035	6.16	151	01
8	3.857	6.8	16706	01
9	0.872	7.75	3775	01
10	0.062	8.78	270	02
11	0.693	8.86	3001	03
TOTAL	100.		433084	

WARNING - MEMORY AT 3. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-18 82.1 ppm hexane std 0.5cc 8x FID

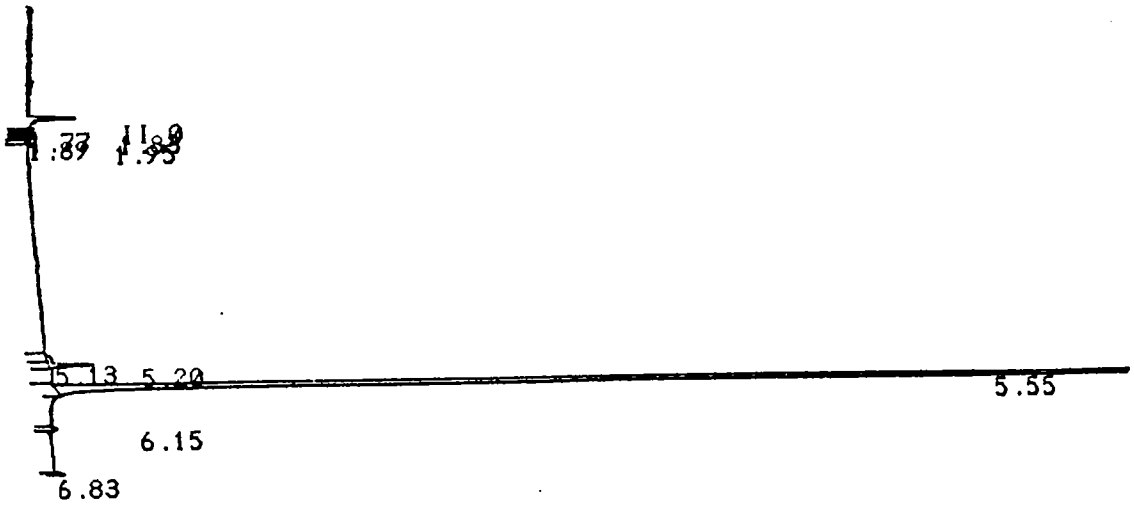
CHANNEL A INJECT 10/09/92 17:29:17 STORED TO BIN # 1



WARNING - MEMORY AT 3. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-9-18 82.1 ppm hexane std 0.5cc 8x FID

CHANNEL A INJECT 10/09/92 17:29:17 STORED TO BIN # 1



DATA SAVED TO BIN # 1

10/09/92 17:29:17 CH= "A" PS= 1.

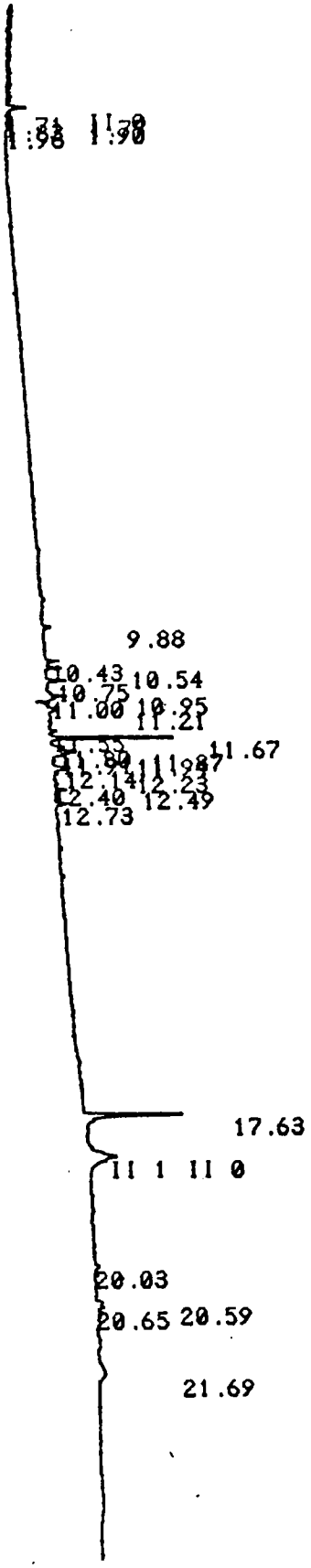
FILE 1. METHOD 0. RUN 668 INDEX 468 BIN 1

PEAK#	AREA%	RT	AREA BC
1	0.015	1.77	60 01
2	0.022	1.83	89 01
3	0.012	1.89	48 01
4	0.014	1.95	58 01
5	0.066	5.13	271 02
6	0.266	5.2	1100 03
7	99.574	5.55	411337 01
8	0.033	6.15	135 01
TOTAL	100.		413098

WARNING - MEMORY AT 0. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-10-3 N2 Blank 0.5cc 8 x FD

CHANNEL A INJECT 10/10/92 09:46:31 STORED TO BIN # 5

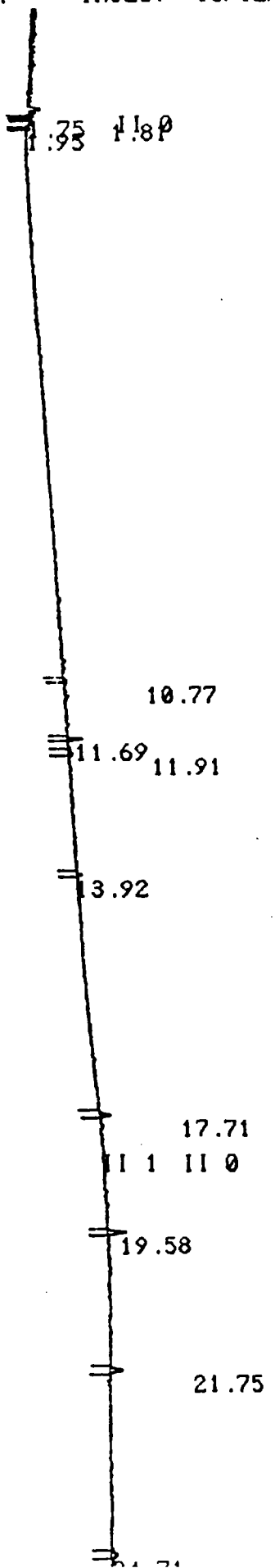


WARNING - MEMORY AT 0. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

2.

10-12-1 N2 Blank 0.5cc 8x

CHANNEL A INJECT 10/12/92 10:33:22 STORED TO BIN # 21



ER 0

DATA SAVED TO BIN # 21

10/12/92 10:33:22 CH= "A" PS= 1.

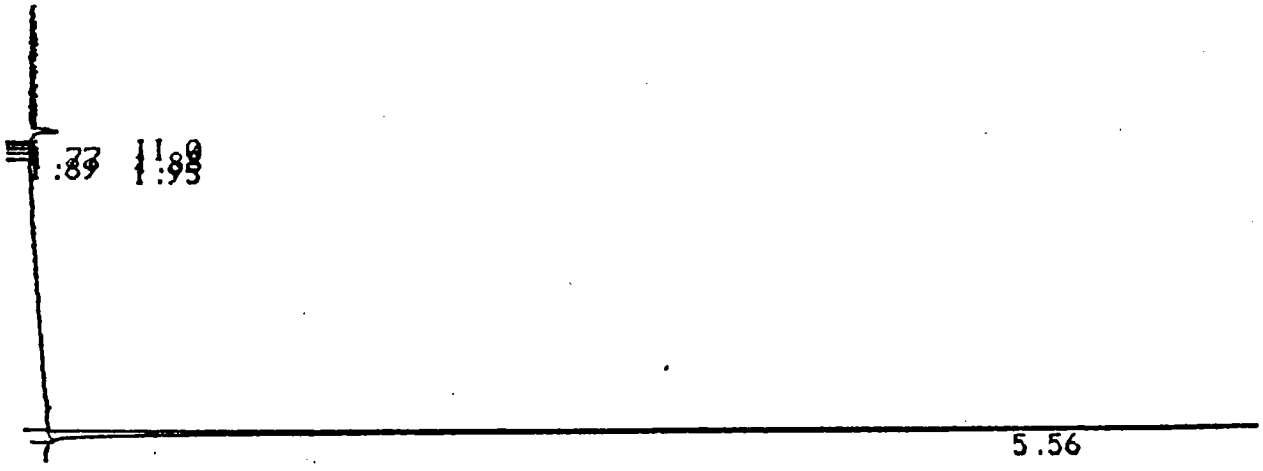
FILE 1. METHOD 0. RUN 688 INDEX 488 BIN 21

PEAK#	AREA%	RT	AREA	BC
1	3.725	1.75	98	01
2	2.623	1.81	69	01
3	2.014	1.95	53	01
4	2.052	10.77	54	01
5	13.303	11.69	350	01
6	6.005	11.91	158	01
7	4.181	13.92	110	01
8	13.417	17.71	353	01
9	21.931	19.58	577	01
10	20.487	21.75	539	01
11	10.262	24.71	270	01
TOTAL	100.		2631	

WARNING - MEMORY AT 1. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-12-92 6.8 ppm hexane std 0.5 cc

CHANNEL A INJECT 10/12/92 11:17:06 STORED TO BIN # 22



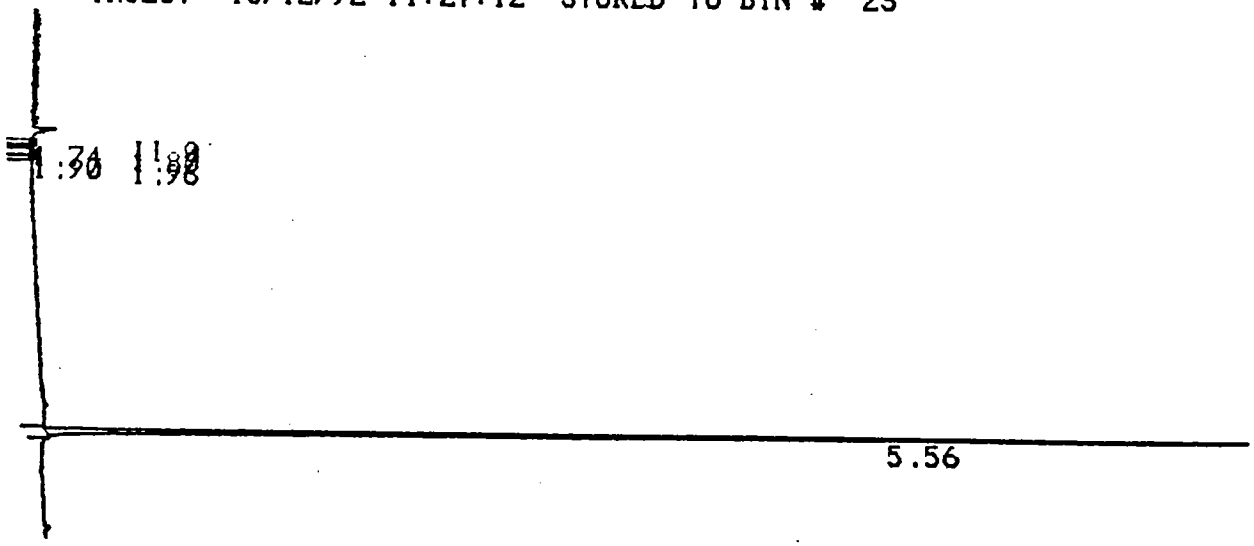
DATA SAVED TO BIN # 22

10/12/92 11:17:06 CH= "A" PS= 1.

PEAK#	AREA%	RT	AREA BC
1	0.17	1.77	51 01
2	0.22	1.83	66 01
3	0.19	1.89	57 02
4	0.383	1.95	115 03
5	99.039	5.56	29771 01
TOTAL	100.		30060

10-12-3 6.8 ppm hexane std 0.5cc 8xFID

CHANNEL A INJECT 10/12/92 11:27:12 STORED TO BIN # 23



DATA SAVED TO BIN # 23

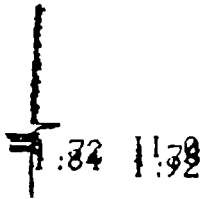
10/12/92 11:27:12 CH= "A" PS= 1.

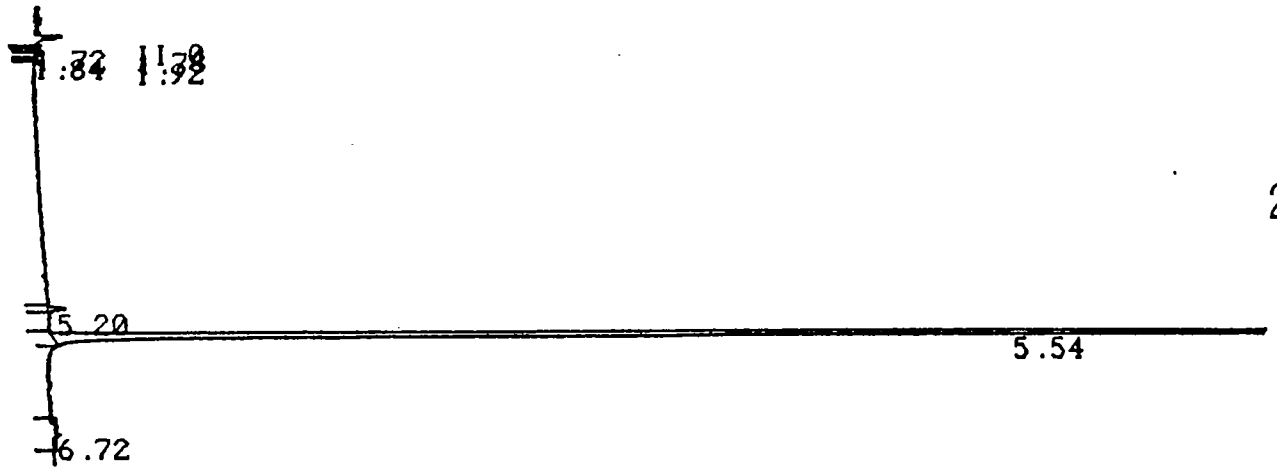
FILE 1. METHOD 0. RUN 690 INDEX 490 BIN 23

PEAK#	AREA%	RT	AREA BC
1	0.36	1.74	110 02
2	0.318	1.8	97 03
3	0.41	1.9	125 01
4	0.249	1.96	76 01
5	98.663	5.56	30113 01
TOTAL	100.		30521

10-12-4 33.5 ppm hexane std 0.5cc 8x FID

CHANNEL A INJECT 10/12/92 11:37:07 STORED TO BIN # 24





2

DATA SAVED TO BIN # 24

10/12/92 11:37:07 CH= "A" PS= 1.

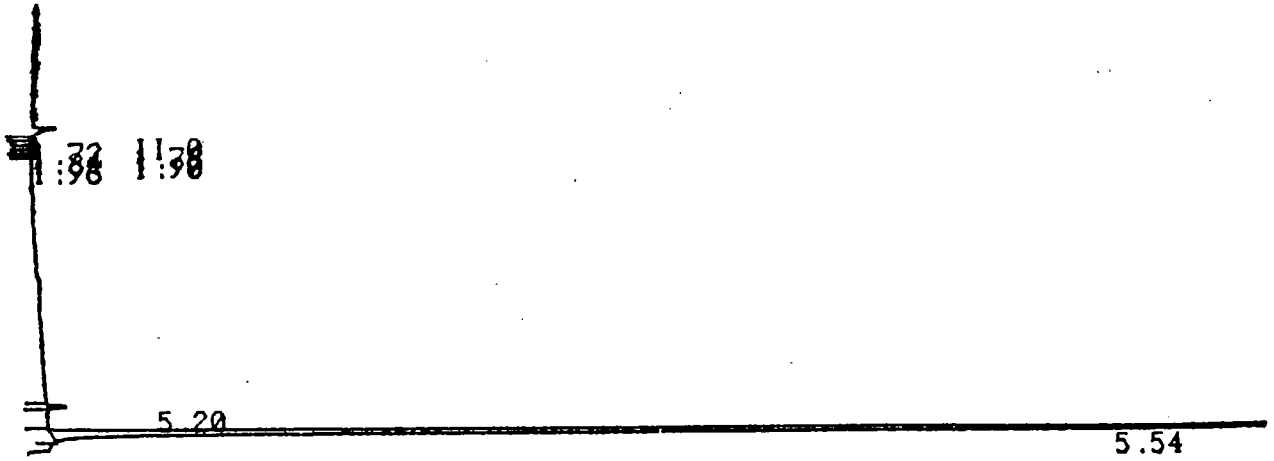
FILE 1. METHOD 0. RUN 691 INDEX 491 BIN 24

PEAK#	AREA%	RT	AREA	BC
1	0.063	1.72	99	01
2	0.046	1.78	73	01
3	0.027	1.84	42	01
4	0.031	1.92	49	01
5	0.237	5.2	373	01
6	99.206	5.54	156061	01
7	0.39	6.72	613	01
TOTAL	100.		157310	

WARNING - MEMORY AT 7. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-12-5 33.5 ppm before std 0.5cc 8*

CHANNEL A INJECT 10/12/92 11:47:45 STORED TO BIN # 25



DATA SAVED TO BIN # 25

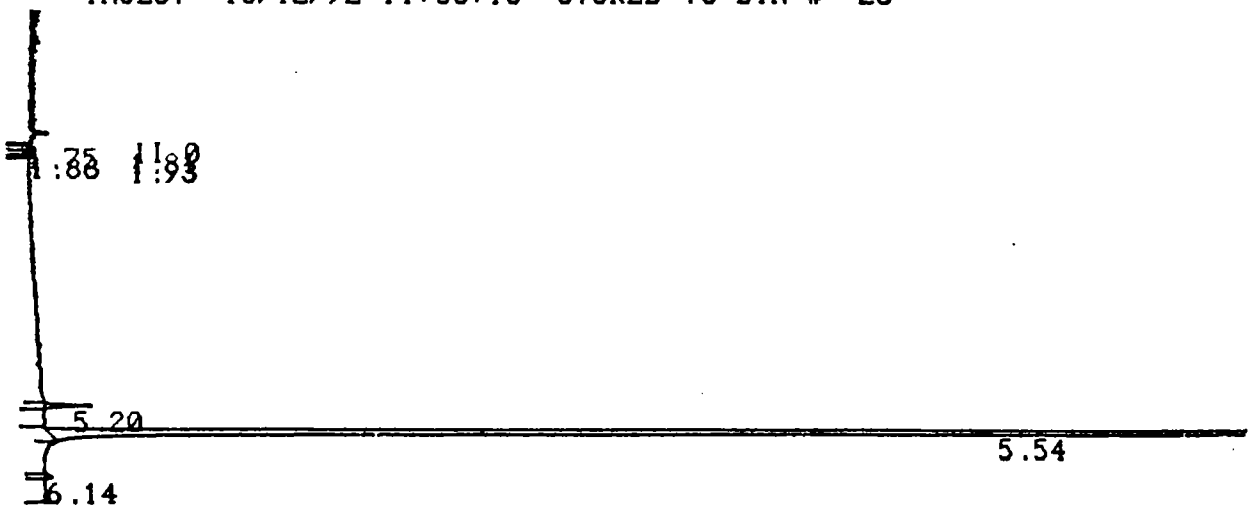
10/12/92 11:47:45 CH= "A" PS= 1.

2	0.04	1.78	65 01
3	0.042	1.84	69 01
4	0.051	1.9	83 01
5	0.021	1.96	34 01
6	0.231	5.2	376 01
7	99.567	5.54	162282 01
TOTAL	100.		162987

WARNING - MEMORY AT 4. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-12-6 98.4 ppm hexane std 0.5cc 8x FID

CHANNEL A INJECT 10/12/92 11:56:16 STORED TO BIN # 26



DATA SAVED TO BIN # 26

10/12/92 11:56:16 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 693 INDEX 493 BIN 26

PEAK#	AREA%	RT	AREA BC
1	0.01	1.75	43 01
2	0.017	1.81	74 01
3	0.013	1.86	58 01
4	0.014	1.93	62 01
5	0.21	5.2	921 01
6	99.696	5.54	437222 01
7	0.04	6.14	174 01
TOTAL	100.		438554

WARNING - MEMORY AT 1. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-12-7 98.4 ppm hexane std 0.5cc 8x FID

CHANNEL A INJECT 10/12/92 12:05:19 STORED TO BIN # 27

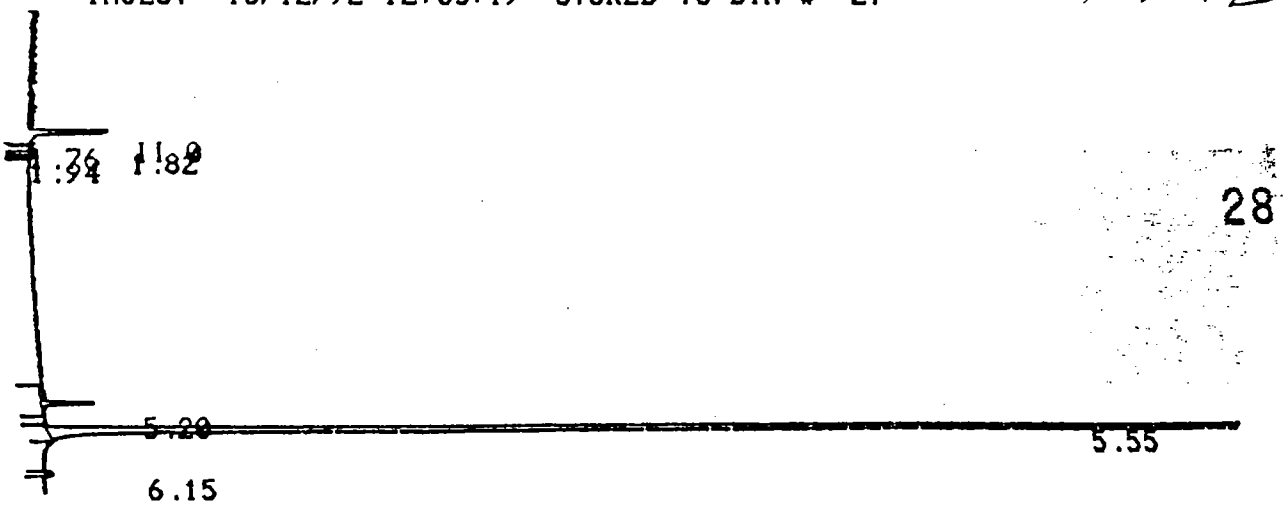
FILE 1. METHOD 0. RUN 693 INDEX 493 BIN 26

PEAK#	AREA%	RT	AREA BC
1	0.01	1.75	43 01
2	0.017	1.81	74 01
3	0.013	1.86	58 01
4	0.014	1.93	62 01
5	0.21	5.2	921 01
6	99.696	5.54	437222 01
7	0.04	6.14	174 01
TOTAL	100.		438554

WARNING - MEMORY AT 1. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-12-7 98.4 ppm hexane std 0.5cc 8x FID

CHANNEL A INJECT 10/12/92 12:05:19 STORED TO BIN # 27



DATA SAVED TO BIN # 27

10/12/92 12:05:19 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 694 INDEX 494 BIN 27

PEAK#	AREA%	RT	AREA BC
1	0.018	1.76	82 01
2	0.016	1.82	70 01
3	0.018	1.94	82 01
4	0.277	5.2	1228 01
5	99.633	5.55	442200 01
6	0.037	6.15	166 01
TOTAL	100.		443828

10-12-8 AAL-7749 Bag 5 0.5cc 8x FID

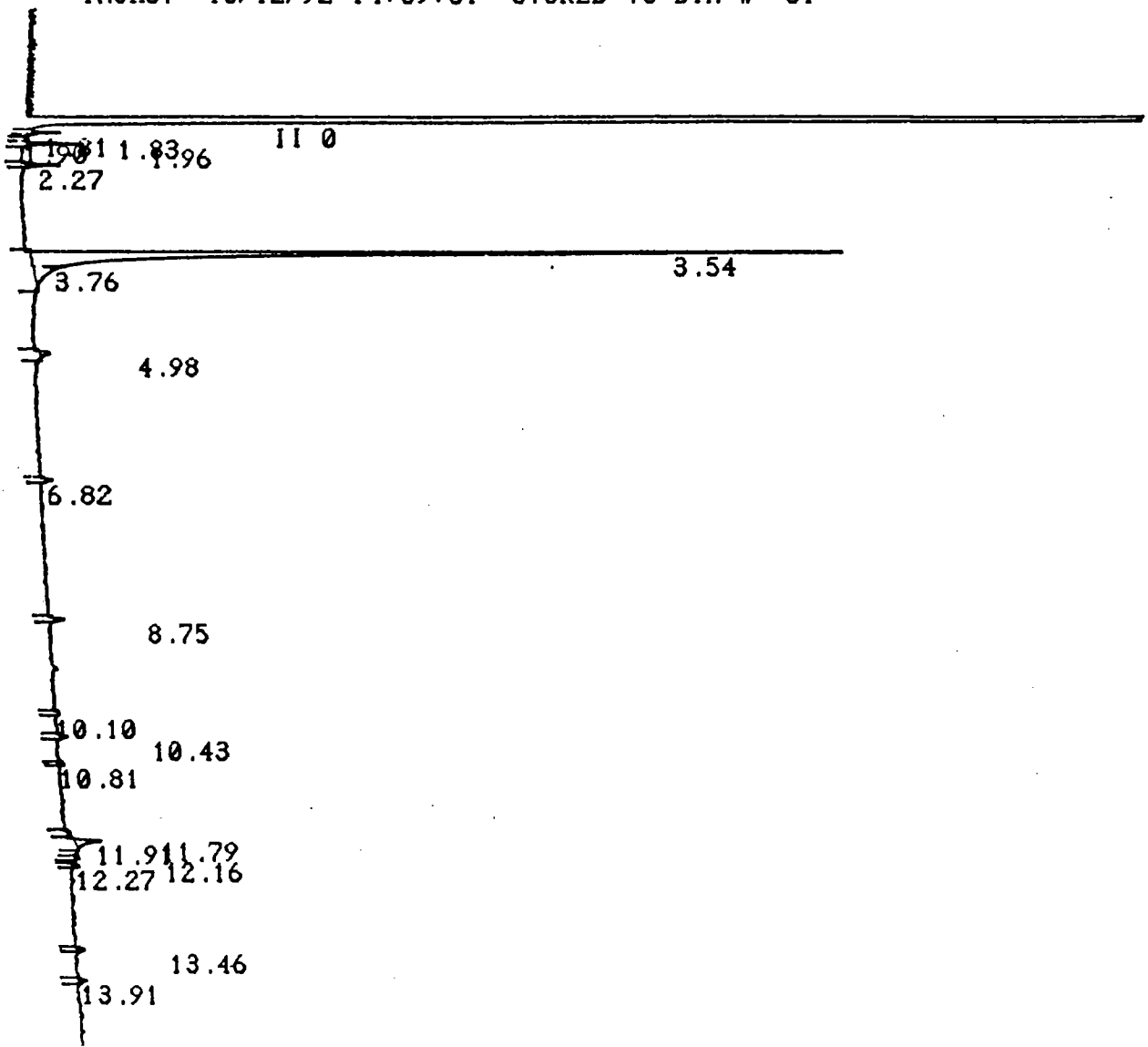
CHANNEL A INJECT 10/12/92 12:14:50 STORED TO BIN # 28

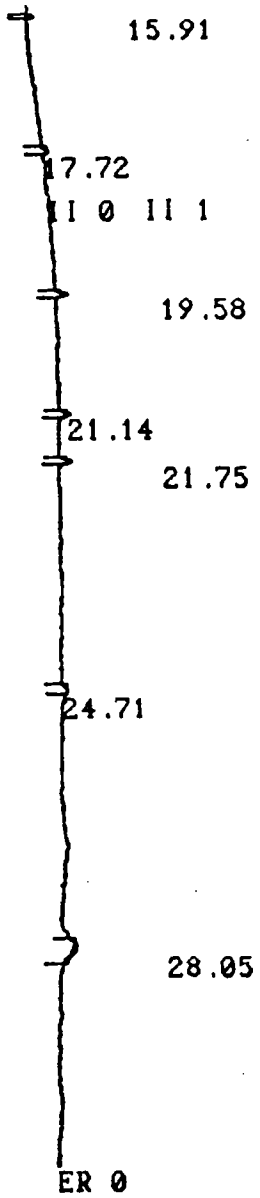
9	0.408	8.76	345 01
10	0.082	10.11	69 01
11	0.273	10.44	231 01
12	0.089	10.82	75 01
13	0.151	11.8	128 01
14	1.149	11.92	972 01
15	0.171	12.17	145 01
16	0.199	12.28	168 01
17	0.203	13.46	172 01
18	0.222	13.92	188 01
19	0.139	15.91	118 01
20	0.174	17.72	147 01
21	0.311	19.58	263 01
22	0.399	21.15	338 01
23	0.255	21.76	216 01
24	53.184	28.37	45010 01
TOTAL	100.		84630

WARNING - MEMORY AT 1. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-12-11 AAL-7749 Bag 5 0.5cc 8xFID

CHANNEL A INJECT 10/12/92 14:09:31 STORED TO BIN # 31





DATA SAVED TO BIN # 31

10/12/92 14:09:31 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 698 INDEX 498 BIN 31

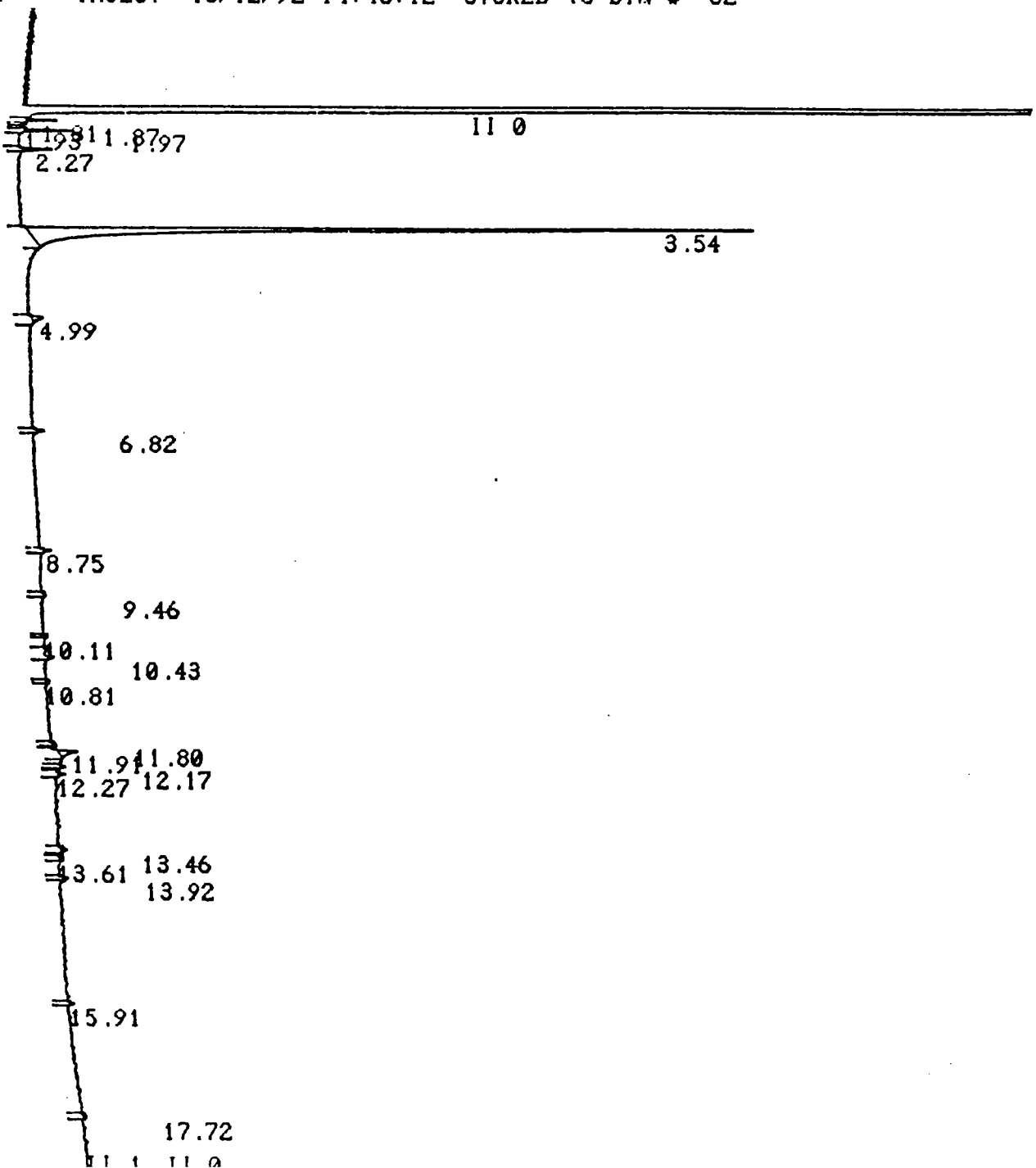
PEAK#	AREA%	RT	AREA BC
1	1.421	1.81	635 02
2	0.183	1.83	82 03
3	0.213	1.9	95 02
4	2.678	1.96	1197 03
5	1.729	2.27	773 01
6	78.935	3.54	35284 08
7	0.004	3.76	2 05
8	1.622	4.98	725 01
9	0.626	6.82	280 01
10	0.841	8.75	376 01
11	0.266	10.1	119 01
12	0.586	10.43	262 01
13	0.181	10.81	81 01
14	0.262	11.79	117 02
15	3.494	11.91	1562 03
16	0.367	12.16	164 01
17	0.347	12.27	155 01

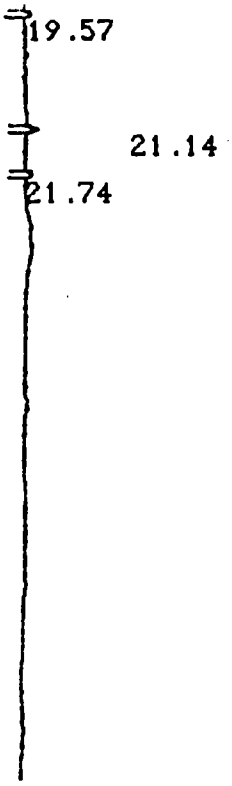
20	0.342	15.91	153 01
21	0.356	17.72	159 01
22	0.696	19.58	311 01
23	0.647	21.14	289 01
24	0.694	21.75	310 01
25	0.4	24.71	179 01
26	2.208	28.05	987 01
TOTAL	100.		44700

WARNING - MEMORY AT 1. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-12-12 AAL-7749 bag 5 repeat 0.5cc 8x

CHANNEL A INJECT 10/12/92 14:46:12 STORED TO BIN # 32





DATA SAVED TO BIN # 32

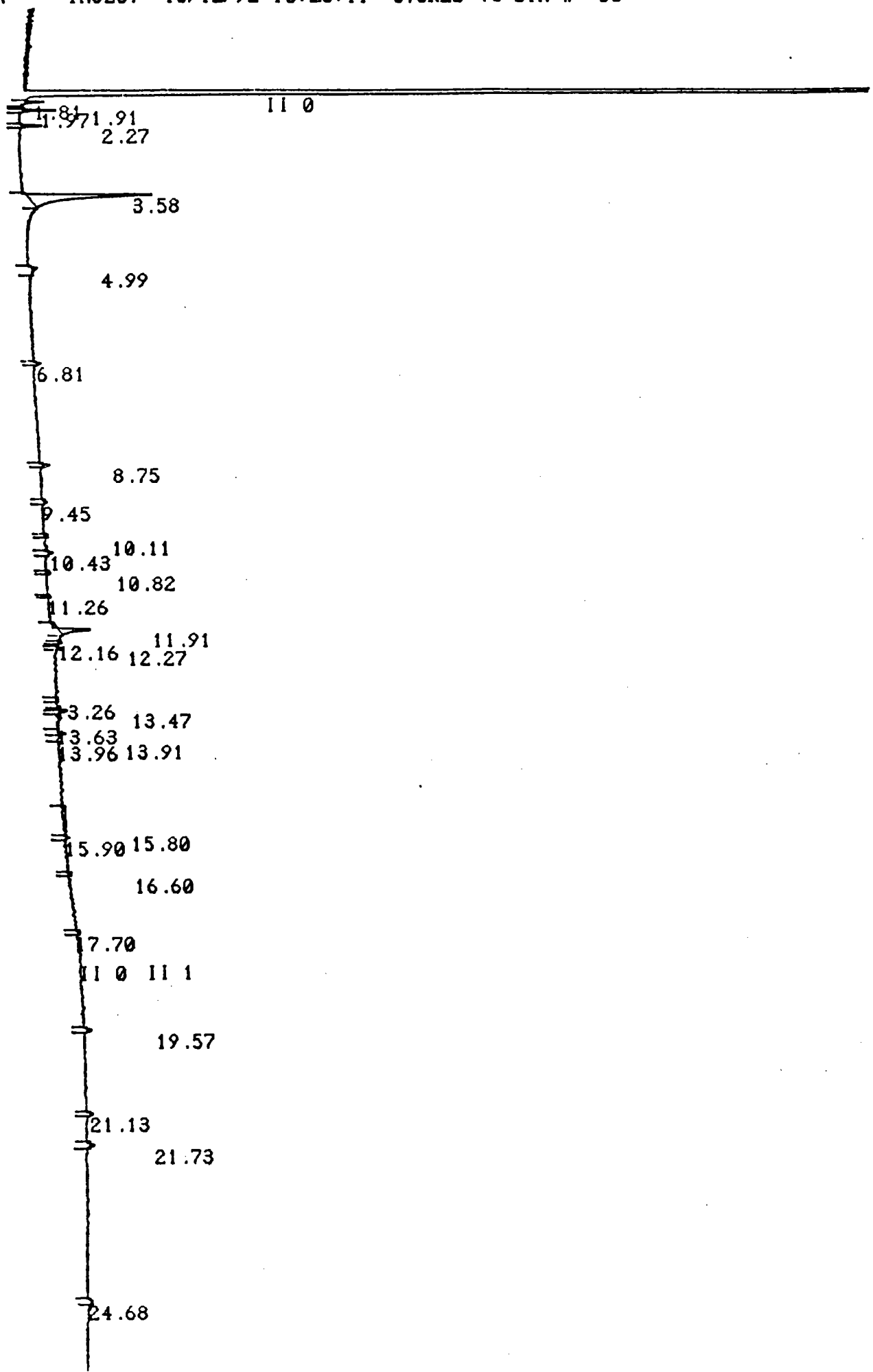
10/12/92 14:46:12 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 699 INDEX 499 BIN 32

PEAK#	AREA%	RT	AREA BC
1	1.727	1.81	710 02
2	0.263	1.87	108 03
3	0.263	1.93	108 02
4	2.731	1.97	1123 03
5	1.877	2.27	772 01
6	80.022	3.54	32905 01
7	1.89	4.99	777 01
8	0.679	6.82	279 01
9	0.786	8.75	323 01
10	0.263	9.46	108 01
11	0.195	10.11	80 01
12	0.824	10.43	339 01
13	0.236	10.81	97 01
14	0.27	11.8	111 01
15	3.329	11.91	1369 01
16	0.489	12.17	201 01
17	0.615	12.27	253 01
18	0.547	13.46	225 01
19	0.212	13.61	87 01
20	0.479	13.92	197 01
21	0.384	15.91	158 01
22	0.304	17.72	125 01
23	0.455	19.57	187 01
24	0.72	21.14	296 01
25	0.443	21.74	182 01
TOTAL	100.		41120

10-12-13 AFL-7744 Page 6 U.Sce 8 x FID

CHANNEL A INJECT 10/12/92 15:25:11 STORED TO BIN # 33



DATA SAVED TO BIN # 33

10/12/92 15:25:11 CH= "A" PS= 1.

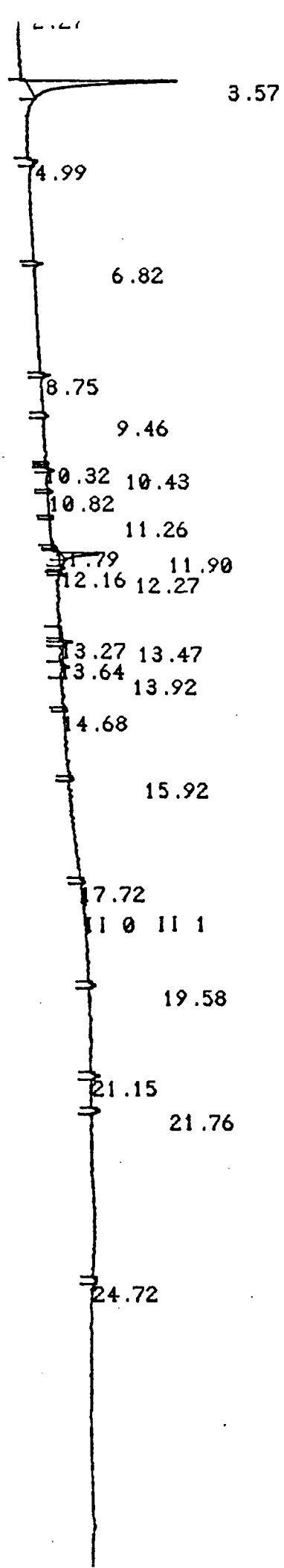
FILE 1. METHOD 0. RUN 700 INDEX 500 BIN 33

PEAK#	AREA%	RT	AREA	BC
1	3.753	1.81	774	08
2	0.475	1.91	98	06
3	4.941	1.97	1019	03
4	3.03	2.27	625	01
5	49.903	3.58	10292	01
6	2.638	4.99	544	01
7	1.11	6.81	229	01
8	1.392	8.75	287	01
9	0.655	9.45	135	01
10	0.31	10.11	64	01
11	1.522	10.43	314	01
12	0.635	10.82	131	01
13	0.272	11.26	56	01
14	10.745	11.91	2216	01
15	0.645	12.16	133	01
16	0.756	12.27	156	01
17	0.432	13.26	89	01
18	2.74	13.47	565	01
19	1.906	13.63	393	02
20	1.489	13.91	307	02
21	0.247	13.96	51	03
22	2.856	15.8	589	02
23	1.062	15.9	219	03
24	0.344	16.6	71	01
25	0.655	17.7	135	01
26	1.484	19.57	306	01
27	1.299	21.13	268	01
28	1.823	21.73	376	01
29	0.882	24.68	182	01
TOTAL	100.		20624	

WARNING - MEMORY AT 1. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-12-14 AAL-7749 Bag 6 repeat 0.5 cc 8X F ID

CHANNEL A INJECT 10/12/92 16:01:41 STORED TO BIN # 34


3.57
4.99
6.82
8.75
9.46
10.32
10.43
10.82
11.26
11.79
11.90
12.16
12.27
13.27
13.47
13.64
13.92
14.68
15.92
17.72
II 0 II 1
19.58
21.15
21.76
24.72

DATA SAVED TO BIN # 34

10/12/92 16:01:41 CH= "A" PS= 1.

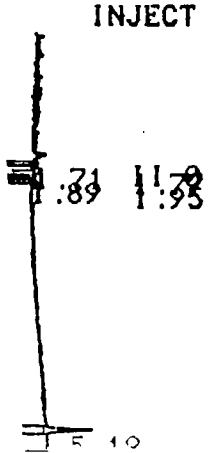
FILE 1. METHOD 0. RUN 701 INDEX 501 BIN 34

PEAK#	AREA%	RT	AREA BC
1	0.404	1.78	89 02
2	2.849	1.81	628 03
3	0.254	1.9	56 02
4	5.018	1.97	1106 03
5	3.122	2.27	688 01
6	53.469	3.57	11784 01
7	2.287	4.99	504 01
8	1.121	6.82	247 01
9	1.307	8.75	288 01
10	0.685	9.46	151 01
11	0.322	10.32	71 01
12	1.143	10.43	252 01
13	0.49	10.82	108 01
14	0.363	11.26	80 01
15	0.476	11.79	105 01
16	11.797	11.9	2600 01
17	0.672	12.16	148 01
18	0.631	12.27	139 01
19	0.998	13.27	220 02
20	3.076	13.47	678 03
21	1.357	13.64	299 02
22	1.629	13.92	359 03
23	0.118	14.68	26 01
24	0.758	15.92	167 01
25	0.662	17.72	146 01
26	1.307	19.58	288 01
27	1.525	21.15	336 01
28	1.243	21.76	274 01
29	0.917	24.72	202 01
TOTAL	100.		22039

WARNING - MEMORY AT 1. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-12-15 98.4 ppm hexane std 0.5cc 8x FID

CHANNEL A INJECT 10/12/92 16:42:01 STORED TO BIN # 35



DATA SAVED TO BIN # 35

10/12/92 16:42:01 CH= "A" PS= 1.

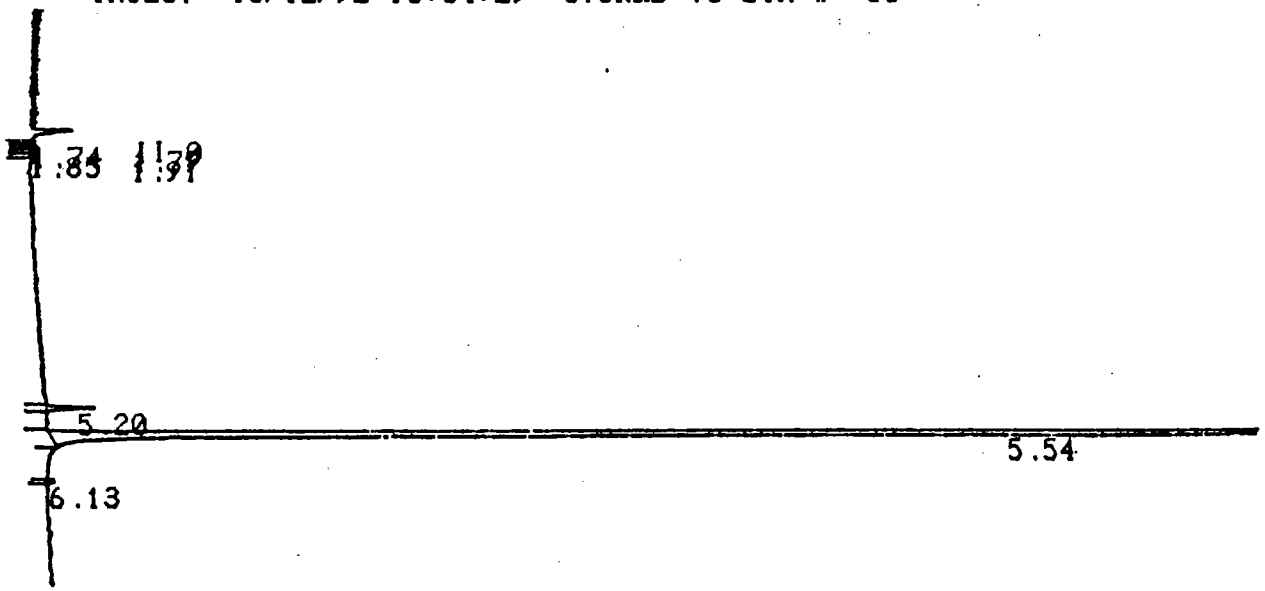
FILE 1. METHOD 0. RUN 702 INDEX 502 BIN 35

PEAK#	AREA%	RT	AREA BC
1	0.027	1.71	113 01
2	0.015	1.77	63 01
3	0.012	1.89	49 01
4	0.016	1.95	67 01
5	0.235	5.19	976 01
6	99.67	5.53	413690 01
7	0.024	6.13	100 01
TOTAL	100.		415058

WARNING - MEMORY AT 0. K - UNPROTECTED CHROMATOGRAMS WILL BE REPLACED

10-12-16 98.4 ppm std 0.5cc 8x

CHANNEL A INJECT 10/12/92 16:54:29 STORED TO BIN # 36



DATA SAVED TO BIN # 36

10/12/92 16:54:29 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 703 INDEX 503 BIN 36

PEAK#	AREA%	RT	AREA BC

2	0.014	1.79	63	01
3	0.014	1.85	60	01
4	0.017	1.91	75	01
5	0.235	5.2	1022	01
6	99.683	5.54	434257	01
7	0.028	6.13	120	01
TOTAL	100.		435640	

APPENDIX F

List of Participants

LIST OF PARTICIPANTS

ROJAC ENVIRONMENTAL SERVICES, INC.
30 Arbor Street
Hartford, CT 06106
Ms. Eszter Samodai - Project Manager
Mr. John Gammie - Project Engineer
Mr. James Davis - Project Technician
tel: (203) 232-8959

ENERGY TACTICS, INC.
124 Sills Road (Rte. 101)
P.O. Box 7
Yaphank, NY 11980
Mr. Richard Voldstad - Vice President, Engineering
Mr. Joseph Snyder - Project Engineer
tel: (516) 924-5300

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SUNY, Bldg. 40
Stony Brook, NY 11794
Mr. Gary E. Zimmerman - Principal Engineering Technician
Mr. Humberto Roman - Environmental Engineer I
tel: (516) 751-7900

CIGNA ENVIRONMENTAL HEALTH LABORATORY
94 Murphy Road
Hartford, CT 06114
Mr. James Kenny - Laboratory Manager
tel: (203) 522-3814

ATLANTIC ANALYTICAL LABORATORY, INC.
P.O. Box 220
Salem Industrial Park, Bldg. #4
Whitehouse, NJ 08888
Mr. Victor Given - Laboratory Analyst
tel: (908) 534-5600