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

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

AIR TOXIC EMISSIONS TESTING OF A NATURAL GAS FIRED TURBINE AT SYCAMORE COGENERATION COMPANY, BAKERSFIELD, CALIFORNIA

Prepared for:

Sycamore Cogeneration Company
P.O. Box 5197X
Bakersfield, California 93388

For Submittal to:

San Joaquin Valley Unified Air Pollution Control District
Air Toxic Division
2700 M Street, Suite 275
Bakerfield, California 93301

Test Date:

May 27, 1992

Report Date:

June 30, 1992

Prepared by:

Engineering-Science, Inc.
2520 Pegasus Drive
Bakersfield, California 93308
(805)393-0272

Endorsed by:

G. W. McRae

Project Manager
Engineering-Science, Inc.

Permit Holder
Company Representative

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INTRODUCTION

AIR TOXIC EMISSIONS TESTING OF A NATURAL GAS FIRED TURBINE AT SYCAMORE COGENERATION COMPANY, BAKERSFIELD, CALIFORNIA

SECTION 1

INTRODUCTION

Sycamore Cogeneration Company operates a cogeneration facility in the Kern River Oil Field, Bakersfield, California. The facility produces steam and electricity and is comprised of four, Frame 7, General Electric turbines equipped with Heat Recovery Steam Generators (HRSG) and water injection to reduce nitrogen oxide emissions. Each of the four turbines is rated at 75 Megawatts and fired on natural gas.

On May 27, 1992 Engineering-Science, Inc. (ES) conducted emission testing on Unit 2 (Unit B) at the Sycamore Cogeneration Company to meet California AB2588 air toxic emissions test requirements. Emission test measurements included Aldehydes (Formaldehyde, Acrolein and Acetaldehyde), Polycyclic Aromatic Hydrocarbons (CARB target compounds), and Volatile Organic Compounds (Benzene, Toluene, Xylene, Hexane, Ethyl benzene, Propylene and Propylene Oxide). The results from this testing will be used for a pooled source test report for Texaco's Sycamore, Kern River, and Mid-Set Cogeneration facilities and will be made available for operators of other General Electric combustion turbines.

All testing was conducted in accordance with the guidelines published by CARB for AB2588 testing. Mr. Steve Arita of the Air Toxics Division of the San Joaquin Valley Unified Air Pollution Control District (District) specified the air toxic compounds for measurement. Triplicate test runs were performed for each of the compounds.

In addition to air toxic compounds, a fuel sample was collected and analyzed for Carbon, Hydrogen, Oxygen, Nitrogen, Sulfur (CHONS) and heating value (BTU) in accordance with ASTM Method D-3588. The fuel analysis and fuel consumption (supplied by Sycamore) was used to determine exhaust gas pollutant mass emission rates in

SECTION 2

SUMMARY OF RESULTS

SECTION 2

SUMMARY OF RESULTS

The following Tables present data collected or determined during the test period on May 27, 1992 at the Sycamore Cogeneration Company, Unit 2. The unit was maintained at base load conditions, 75 megawatts. Unit operating and fuel data are presented in Appendix A. Fuel rate data was used to calculate the stack gas flow rate for each test using the F-Factor value calculated from the fuel gas analysis. Stack gas flow rate values were then used to calculate emission rates of each compound tested.

Table 2-1 presents a summary of Polycyclic Aromatic Hydrocarbons (PAH) emissions. A group of sixteen PAH compounds have been identified by the California Air Resources Board (CARB) for target analysis. Emissions of these compounds are presented in Table 2-1 in units of ng/dscm and lb/hr. Complete PAH calculations and supporting data are contained in Appendix B.

Table 2-2 presents a summary of Aldehyde emissions. Three Aldehyde compounds were targeted for emission measurement: Formaldehyde, Acetaldehyde, and Acrolein. Emissions of these compounds are presented in Table 2-2 in units of ug/dscm and lb/hr. Complete Aldehyde calculations and supporting data are contained in Appendix C.

Table 2-3 presents a summary of Volatile Organic Compounds (VOC) emissions measured by CARB Method 410A. Seven VOC compounds were targeted for emission measurement using this method. These compounds are identified in Table 2-3 along with emission values in units of ppb and lb/hr. Complete VOC calculations and supporting data are contained in Appendix D.

Table 2-4 presents a summary of the Propylene Oxide emissions measured by NIOSH Method 1612 in units of ug/dscm and lb/hr. Complete calculations and supporting data are contained in Appendix E.

Frame 7 G.E. Turbine
HRSG
Water inj. to reduce NO_x
75MW rating
Natural Gas fired

TABLE 2-1
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBONS EMISSIONS
UNIT NO. 2
SYCAMORE COGENERATION COMPANY
BAKERSFIELD, CALIFORNIA
MAY 27, 1992

	ng/dscm *					lb/hr **				
PAH Compound	Run 1	Run 2	Run 3	Average	Blank	Run 1	Run 2	Run 3	Average	Blank
Naphthalene	5.18E+02	2.52E+02	1.22E+02	2.97E+02	9.06E+01	8.97E-04	4.34E-04	2.07E-04	5.13E-04	1.56E-04
Acenaphthene	7.66E+00	3.43E+00	2.71E+00	4.60E+00	< 1.13E+00	1.33E-05	5.92E-06	4.60E-06	7.93E-06	< 1.95E-06
Acenaphthalene	1.46E+00	1.33E+00	< 1.13E+00	< 1.31E+00	< 1.13E+00	2.54E-06	2.29E-06	< 1.92E-06	< 2.25E-06	< 1.95E-06
Fluorene	1.98E+01	9.84E+00	7.89E+00	1.25E+01	1.27E+00	3.43E-05	1.70E-05	1.34E-05	2.16E-05	2.18E-06
Phenanthrene	1.44E+02	7.55E+01	4.96E+01	8.98E+01	4.08E+00	2.50E-04	1.30E-04	8.44E-05	1.55E-04	7.01E-06
Anthracene	6.09E+00	4.81E+00	3.61E+00	4.83E+00	< 1.13E+00	1.05E-05	8.28E-06	6.14E-06	8.32E-06	< 1.95E-06
Fluoranthene	1.24E+01	4.81E+00	3.83E+00	7.01E+00	3.17E+00	2.15E-05	8.28E-06	6.52E-06	1.21E-05	5.45E-06
Pyrene	4.73E+00	1.90E+00	1.98E+00	2.87E+00	2.15E+00	8.19E-06	3.27E-06	3.38E-06	4.95E-06	3.70E-06
Benzo-a-Anthracene	1.83E+00	1.90E+00	1.80E+00	1.84E+00	1.54E+00	3.16E-06	3.27E-06	3.07E-06	3.17E-06	2.65E-06
Chrysene	2.48E+00	2.52E+00	2.25E+00	2.42E+00	2.95E+00	4.29E-06	4.34E-06	3.84E-06	4.16E-06	5.06E-06
Benzo-b-Fluoranthene	< 1.13E+00	< 1.14E+00	< 1.13E+00	< 1.13E+00	< 1.13E+00	< 1.95E-06	< 1.97E-06	< 1.92E-06	< 1.95E-06	< 1.95E-06
Benzo-k-Fluoranthene	< 1.13E+00	< 1.14E+00	< 1.13E+00	< 1.13E+00	< 1.13E+00	< 1.95E-06	< 1.97E-06	< 1.92E-06	< 1.95E-06	< 1.95E-06
Benzo-a-Pyrene	< 1.13E+00	< 1.14E+00	< 1.13E+00	< 1.13E+00	< 1.13E+00	< 1.95E-06	< 1.97E-06	< 1.92E-06	< 1.95E-06	< 1.95E-06
Indeno-123-c,d-Pyrene	< 1.13E+00	< 1.14E+00	< 1.13E+00	< 1.13E+00	< 1.13E+00	< 1.95E-06	< 1.97E-06	< 1.92E-06	< 1.95E-06	< 1.95E-06
Dibenzo-ah-Anthracene	< 1.13E+00	< 1.14E+00	< 1.13E+00	< 1.13E+00	< 1.13E+00	< 1.95E-06	< 1.97E-06	< 1.92E-06	< 1.95E-06	< 1.95E-06
Benzo-ghi-Perylene	< 1.13E+00	< 1.14E+00	< 1.13E+00	< 1.13E+00	< 1.13E+00	< 1.95E-06	< 1.97E-06	< 1.92E-06	< 1.95E-06	< 1.95E-06

" < " indicates a sample with a non-detectable concentration. Laboratory Detection Limit was used for emission calculation.

* Nanograms per dry standard cubic meter

** Pounds per hour

TABLE 2-2
SUMMARY OF ALDEHYDE COMPOUNDS EMISSIONS
UNIT NO. 2
SYCAMORE COGENERATION COMPANY
BAKERSFIELD, CALIFORNIA
MAY 27, 1992

RUN #	Formaldehyde		Acetaldehyde		Acrolein	
	lb/hr*	ug/dscm**	lb/hr*	ug/dscm**	lb/hr*	ug/dscm**
1	8.17E-02	4.71E+01	1.81E-02	1.04E+01	4.18E-03	2.41E+00
2	1.18E-01	6.92E+01	8.57E-03	5.01E+00	4.92E-03	2.88E+00
3	2.88E-02	1.75E+01	3.35E-03	2.04E+00	7.15E-03	4.35E+00
AVG	7.62E-02	4.46E+01	1.00E-02	5.83E+00	5.42E-03	3.21E+00
BLANK	4.50E-03	2.65E+00	<3.10E-04	<1.83E-01	<3.10E-04	<1.83E-01

"<" Indicates a sample with a non-detectable concentration. Laboratory Detection Limit was used for emission calculation
* Pounds per hour
** Micrograms per dry standard cubic meter

TABLE 2-3
SUMMARY OF VOLATILE ORGANIC COMPOUNDS EMISSIONS
UNIT NO. 2
SYCAMORE COGENERATION COMPANY
BAKERSFIELD, CALIFORNIA
MAY 27, 1992

RUN #	Benzene		Toluene		Ethylbenzene		p-Xylene, m-Xylene		o-Xylene		Propylene		Hexane	
	lb/hr*	ppb**	lb/hr*	ppb**	lb/hr*	ppb**	lb/hr*	ppb**	lb/hr*	ppb**	lb/hr*	ppb**	lb/hr*	ppb**
1	2.36E-02	4.10E+00	1.02E-01	1.50E+01	3.44E-02	4.40E+00	7.26E-02	9.30E+00	3.28E-02	4.20E+00	<4.95E-01	<1.60E+02	1.58E-01	2.50E+01
2	4.09E-02	7.10E+00	1.36E-01	2.00E+01	4.94E-02	6.30E+00	9.40E-02	1.20E+01	4.23E-02	5.40E+00	<4.97E-01	<1.60E+02	3.31E-01	5.20E+01
3	2.30E-02	4.10E+00	9.26E-02	1.40E+01	2.97E-02	3.90E+00	6.17E-02	8.10E+00	2.82E-02	3.70E+00	<4.83E-01	<1.60E+02	1.85E-01	3.00E+01
AVG	2.92E-02	5.10E+00	1.10E-01	1.63E+01	3.78E-02	4.87E+00	7.61E-02	9.80E+00	3.44E-02	4.43E+00	<4.92E-01	<1.60E+02	2.25E-01	3.57E+01

" < " Indicates a sample with a non-detectable concentration. Laboratory Detection Limit was used for emission calculation.
* Pounds per hour
** Parts per billion

SECTION 3

SAMPLING AND ANALYSIS PROCEDURES

SECTION 3

SAMPLING AND ANALYSIS PROCEDURES

The emission testing procedures used for this testing program are documented in California Air Resources Board (CARB) Method 430 (Aldehydes), CARB Method 429 (PAH), and CARB Method 410A (VOC) and in NIOSH Method 1612 (Propylene Oxide). Additional test method information is presented in this section. The CARB Method 430 samples were analyzed for formaldehyde, acetaldehyde, and acrolein. The PAH samples were analyzed for 16 air toxic compounds targeted by CARB in the test method. Benzene, toluene, xylene, hexane, ethyl benzene, and propylene were the volatile organic compounds measured by CARB Method 410A. Propylene oxide was measured by NIOSH Method 1612 at the request of the District. All contracted laboratories followed the analysis procedures required by the methods including spikes or duplicates to validate their data.

Method Descriptions

Polycyclic Aromatic Hydrocarbons (CARB Method 429)

General

Compounds determined from this method include sixteen Polycyclic Aromatic Hydrocarbons (PAH) compounds targeted by CARB:

1. Napthalene
2. Acenaphthylene
3. Acenaphthene
4. Fluorene
5. Phenanthrene
6. Anthracene
7. Fluoranthene
8. Pyrene
9. Benzo[a]anthracene

10. Chrysene
11. Benzo[b]fluoranthene
12. Benzo[k]fluoranthene
13. Benzo[a]pyrene
14. Benzo[ghi]perylene
15. Dibenzo[ah]anthracene
16. Indeno[1,2,3-cd]pyrene.

Particulate and gaseous phase PAH compounds are extracted isokinetically from the source and collected on XAD-2 resin, in Greenberg-Smith impingers, or in upstream sampling train components (Teflon filter, sample probe, nozzle). Only the total amounts of each PAH compounds in the stack can be determined with this method (particulate PAH + gaseous PAH).

The required analytical method is isotope dilution mass spectrometry combined with high resolution gas chromatography.

Sampling Train

The sample train design includes an EPA validated emission collection system with the addition of an XAD-2 resin adsorbent cartridge to collect gaseous phase PAH. Sample gas is first drawn into a heated glass nozzle and probe assembly. Sample gas then enters the glass filter holder for particulate removal and continues through the XAD-2 resin for collection of gaseous phase PAH. A glass Hempal-type condenser is located between the filter and the XAD-2 resin cartridge to cool the stack gas below 60^{o}F prior to entering the XAD-2 resin cartridge. Aluminum foil is wrapped around the XAD-2 resin cartridge to prevent possible reactions caused by ultraviolet light. Sample gas finally enters the impingers which contain a tared quantity of water. Stack gas moisture content is calculated from the water volume increase and the sample volume measured.

Sample Recovery, Handling, and Analysis

Sample recovery is performed using a sequential wash with acetone, hexane, and methylene chloride. The sample nozzle and probe assembly is rinsed with three portions of each solvent and brushed during each rinse. The Teflon connecting tube located between the Teflon filter and the XAD-2 resin cartridge is also rinsed sequentially with the solvents. Samples are recovered into precleaned amber glass bottles with Teflon lined caps. The filter samples are stored and shipped on dry ice. The liquid samples are stored and shipped on ice or blue ice.

A blank train is prepared and set-up in a manner identical to the sampling train. The blank train is taken through all of the sampling train preparation steps including the leak check without actual sampling of the gas stream. The blank train is recovered in the same manner as the sampling train.

All solvents used for preparing the sampling train for testing and sample recovery are of spectrographic grade and stored in their original containers. All train components are free of potentially interfering materials, particularly silicone grease.

Three composite samples from each sampling run are submitted to the laboratory for analysis. The "front half" portion is comprised of the nozzle/probe wash, filter holder front half wash and the Teflon filter. The "back half" portion is comprised of the filter holder back half wash, Teflon line wash, condenser wash, and XAD-2 cartridge. The final composite sample consists of the impinger contents and associated washes.

All samples and blank are labelled, sealed, and packed into a chilled container for transportation to the laboratory for analysis. Sample extraction is begun within seven days of collection and analyzed within 40 days of extraction. The analysis is performed by a CARB certified laboratory in accordance with the method by isotope dilution mass spectrometry combined with high resolution gas chromatography.

Aldehydes: CARB Method 430

California Air Resources Board (CARB) Method 430 was used to determine aldehyde emissions. A series of 2 midget impingers containing 2,4-dinitrophenylhydrazine (DNPH) in an aqueous acidic solution were used to absorb the aldehydes from the gaseous emissions. The sample solution was extracted with an organic solvent and analyzed using reverse phase high performance liquid chromotography (HPLC) with an ultraviolet (UV) adsorption detector operated at 360nm. The aldehydes were identified and quantified by comparing retention times and area counts to standard samples.

The aldehydes of concern are formaldehyde, acetaldehyde and acrolein. Each aldehyde was reported in mass units and converted to concentration and emission rate units. The emission rate units were calculated using the flow rates determined during the test period.

Volatile Organic Compounds (CARB Method 410A)

Integrated samples were collected through a 316 stainless steel and teflon line directly into a new Tedlar bag by utilizing an evacuated chamber to draw the exhaust gas into the bag. The Tedlar bags were purged twice with the exhaust gas before collecting each sample. At the conclusion of sampling, the Tedlar bag was closed off, labeled, and delivered to the laboratory along with a chain-of-custody form. The samples were analyzed for benzene, toluene, xylene, hexane, and ethyl benzene by gas chromatography/mass spectrophotometry (GC/MS) and for propylene by gas chromatography equipped with flame ionization detection (FID).

Propylene Oxide (NIOSH Method 1612)

Propylene Oxide is collected in two glass tubes containing activated coconut shell charcoal. Sample gas travels through a 1/4 inch stainless steel sample probe prior to entering the two charcoal tubes connected in series. Teflon tubing is used to make all connections. A low volume dry gas meter, rotameter, and sample pump are used to measure sample volume and flow rate through the sampling apparatus.

Prior to sampling, a leak check is performed by plugging the inlet to the probe and monitoring flow through the rotameter and the dry gas meter. Sampling is performed at a constant flow rate of 0.2 to 0.7 liters per minute. At the conclusion of the test a final leak check of the sampling system is performed. Sampling data and leak checks are recorded on a field data sheet.

At the conclusion of the test each charcoal tube is capped, labeled, and stored on Blue ice until analysis. A chain-of-custody form is completed and remains with the tubes. Analysis is performed using Gas Chromatography with Flame Ionization Detection.

Stack Gas Molecular Weight

The carbon dioxide (CO_2), oxygen (O_2), and carbon monoide (CO) concentrations in the stack gas were used to determine the molecular weight of the stack gas. These parameters were obtained from data collected by the Unit 2 continuous emission monitors.

Fuel Gas

A fuel gas sample was collected in a stainless steel gas sample cylinder, labeled, and delivered to the laboratory with the accompanying chain-of-custody form. The samples were analyzed by gas chromatography for CHONS (carbon, hydrogen, oxygen, nitrogen, and sulfur) and heating value in accordance with ASTM Method D-3588.

SECTION 4

CALCULATIONS

SECTION 4

CALCULATIONS

This section includes sample calculations used for determining emission rates and emission concentrations of the compounds tested. Emission calculations and source test parameters for each test run are included in the Appendices for each compound along with supporting field data. Emission calculations are specified in each test method and in the Source Test Protocol for this test program. A list of nomenclature terms are included in this Section along with the specified dimensional units used in calculations.

NOMENCLATURE

A_s	= Cross-sectional area of stack (ft^2)
A_n	= Cross-sectional area of nozzle (ft^2)
B_{ws}	= Water vapor in the gas stream, proportion by volume (dimensionless)
C_p	= Pitot tube coefficient (dimensionless)
dH	= Average pressure differential across the orifice meter (inches of water)
Md	= Dry molecular weight of stack gas (lb/lb-mole)
Ms	= Wet molecular weight of stack gas (lb/lb-mole)
N	= Normality of titrant (milliequivalents/ml)
dP	= Velocity pressure of stack gas (inches of water)
Pb	= Barometric pressure at sampling site (in. Hg)
Ps	= Absolute stack gas pressure (in. Hg)
Pstd	= Standard absolute pressure (29.92 in. Hg)
Qs(std)	= Dry volumetric stack gas flow rate, standard conditions (dscfm)
Ts	= Stack temperature (^oF)
Vm	= Dry gas volume as measured by dry gas meter (dcf)
Vm(std)	= Dry gas volume as measured by dry gas meter, corrected to standard conditions (dscf)
Vw(std)	= Volume of water vapor in the gas stream, corrected to standard conditions (scf)
Vlc	= Volume of water vapor condensed in impingers and silica gel (ml)
T(std)	= Standard temperature (^oF)
Tm	= Meter temperature (^oF)
SQ.RT.dP	= Square root of velocity pressure (dimensionless)
y	= Dry gas meter calibration factor (dimensionless)
Pstatic	= Static pressure of stack (in. H_2O)
Pstack	= Static pressure of stack (in. Hg)
I	= Isokinetic sample rate (percent)
vs	= Average velocity of the stack gas (ft/sec)
Qs	= Actual stack gas flow rate at stack conditions (ft^3/min)
Θ	= Total sampling time (min)
% O_2	= Percent oxygen by volume (dry basis)
% CO_2	= Percent carbon dioxide by volume (dry basis)
% CO	= Percent carbon monoxide by volume (dry basis)
% N_2	= Percent nitrogen by volume (dry basis)
Zcf	= Zero drift correction factor
Scf	= Span drift correction factor
Cz	= Zero correction concentration
MW	= Molecular weight (lb/lb-mole)
ppm	= Parts per million by volume

lb/MMBtu	=	Emission concentration, pounds per million British thermal units
dscf/MMBtu	=	Fuel factor, dry standard cubic feet per million British thermal units
gr/scf	=	Emission concentration, grains per standard cubic foot
lb/hr	=	Emission rate, pounds per hour
FHW	=	Front Half Wash of sampling train
MF	=	Mass Filter of sampling train
BHW	=	Back Half Wash of Sampling train
gr/dscf	=	Emission concentration, grains per dry standard cubic foot
ng	=	Mass unit, nanograms
mg	=	Mass unit, milligrams
g	=	Mass unit, grams
ml	=	Unit of volume, milliliters
L	=	Unit of volume, liters
ul	=	Unit of volume, microliters
H_2SO_4	=	Chemical formula, sulfuric acid
$BaCl_2$	=	Chemical formula, barium chloride
NaOH	=	Chemical formula, sodium hydroxide
H_2S	=	Chemical formula, hydrogen sulfide
FHS	=	Front Half Sulfate of sampling train
BHS	=	Back Half Sulfate of sampling train
F-Factor	=	Fuel factor, volume of generated gases per unit of heat content (dscf/MMBtu)
^{o}F	=	Degrees Fahrenheit
^{o}R	=	Degrees Rankine
^{o}C	=	Degrees Celsius
98.076	=	Molecular weight of sulfuric acid
64.062	=	Molecular weight of sulfur dioxide
46.006	=	Molecular weight of nitrogen dioxide
28.010	=	Molecular weight of carbon monoxide
60	=	Conversion factor, minutes per hour
460	=	Conversion factor, ^{o}F to ^{o}R
15.432	=	Conversion factor, grains per gram
0.000143	=	Converson factor, pounds per grain
32/98.076	=	Conversion factor, equivalent weight of SO_2 to MW of H_2SO_4
1.60982	=	Ideal Gas Law (lb-mole x dscf/ dscf/ ^{o}R x mg)
0.00000137	=	Ideal Gas Law (lb-mole x $^{o}R/ft^3$)
0.280	=	Molecular weight of N_2 or CO, divided by 100
0.320	=	Molecular weight of O_2, divided by 100
0.440	=	Molecular weight of CO_2, divided by 100
18.0	=	Molecular weight of H_2O
32.064	=	Equivalent weight of SO_2
85.49	=	Pitot tube constant, ft/sec x $[(lb/lb\text{-}mole) \times (in.Hg)/((^{o}R) \times (in.H_2O))]^{0.5}$
8.223E-05	=	Ideal gas constant (1.37E-06 lb-mole $^{o}R/ft^3$) x (60 min/hr)

Sycamore

SAMPLE SOURCE TEST CALCULATIONS

FIELD DATA FOR CALCULATIONS

Standard Temperature, T(std)	60	°F	Standard Pressure, Pstd	29.92	"Hg
Meter Temperature, Tm	86.4	°F	Static Pressure, Pstatic	0.30	"H2O
Stack Temperature, Ts	324.2	°F	Barometric Pressure, Pb	28.95	"Hg
SQ.RT. dP	0.9593		Condensate Volume, Vlc	319.5	mℓ
Meter Ofice, dH	1.32	"H2O	Stack I.D.	169.38	inch
Meter Volume, Vm	168.678	ft3	Duct Length		inch
Meter Correction, y	1.0050		Duct Width		inch
Stack Gas Oxygen	15.06	% O2	Stack Area, As	156.477	ft2
Stack Gas Carbon Dioxide	5.84	% CO2	Test Time, Ø	240.0	min.
Stack Gas Carbon Monoxide	0.00	% CO	Nozzle Diameter	0.223	inch
Stack Gas Nitrogen	79.10	% N2	Pitot Coefficient, Cp	0.84	

CALCULATIONS

Vm(std) = [T(std) + 460 / Pstd] x Vm x y x (Pb + (dH / 13.6)) / (Tm + 460)
= [60 + 460/29.92] x 168.687 x 1.005 x (28.95 + (1.32/13.6)) / (86.4 + 460) = **156.623** dscf

Vw(std) = (0.04715 ft3/g) / 528 x [T(std) + 460] x Vlc
= 0.04715 / 528 x [60 + 460] x 319.5 = **14.836** scf

Bws = Vw(std) / [Vm(std) + Vw(std)]
= 14.836 / [156.623 + 14.836] = **0.087**

Md = (0.44 x %CO2)+(0.32 x %O2)+[0.28 x (%N2 + %CO)]
= (0.44 x 5.84) + (0.32 x 15.06) + [0.28 x (79.10 + 0.00)] = **29.54** lb/lb–mole

Ms = (Md x (1–Bws)) + (18.0 x Bws)
= (29.54 x (1 – 0.087)) + (18.0 x 0.087) = **28.54** lb/lb–mole

P(stack) = Pb + [Pstatic / 13.6]
= 28.95+ [0.30 / 13.6] = **28.97** " Hg

vs = 85.49 x Cp x (Sq.Rt. dP) x [Sq.Rt.(Ts + 460) / (Ms x P(stack))]
= 85.49 x 0.84 x (0.9593) x [Sq.Rt.(324.2 + 460)/(28.54 x 28.97)] = **67.09** ft/sec

Qs = vs x As x 60
= 67.09 x 156.477 x 60 = **629,883** acfm

Qs(std) = Qs x (1 – Bws) x [(T(std) + 460) / (Ts + 460)] x (P(stack) / Pstd)
= 629,883 x (1 – 0.087) x [(60 + 460)/(324.2 + 460)] x (28.97/29.92) = **369,444** dscfm

Area of sampling nozzle, An = [(Dn / 12) ^ 2 x Pi] / 4
= [(0.223/12) ^ 2 x 3.14159] / 4 = **0.000271** ft2

I = (Ts+460) x [(0.002669 x Vlc) + [Vm(std) / ((T(std) + 460) / Pstd)]] x 100 /
[Ø x P(stack) x An x vs x 60]

= (324.2 + 460) x [(0.002669 x 319.5) + [156.623 / (60 + 460) / 29.92)]] x 100 /
[240.0 x 28.97 x 0.000271 x 67.09 60] = **101.9** %

SAMPLE FUEL BASED CALCULATIONS

FUEL ANALYSIS DATA FOR CALCULATIONS

	Fuel Value (%), Moisture & Ash Free							
	Carbon	Hydrogen	Nitrogen	Oxygen	Sulfur	GCV* BTU/lb	ft3/lb	lb/gal
Fuel Gas	73.46	23.64	1.77	1.13	0.00	22,953	21.76	
Fuel Oil	84.96	14.85	0.02	0.13	0.06	19,240		6.50
Solid Fuel	73.46	23.64	1.77	1.13	0.00	22,953		

FUEL FLOWRATE AND STACK OXYGEN DATA FOR CALCULATIONS

	Stack Gas Oxygen	Fuel Gas Flowrate		Fuel Oil Flowrate		Solid Fuel
	%	lb/hr	ft3/hr	lb/hr	gal/hr	lb/hr
Fuel Gas	14.95	40,446	880,105			
Fuel Oil	14.37			40,248	6,195	
Solid Fuel	14.95	40,446				

HEAT INPUT CALCULATIONS, MMBTU/HR

From Fuel Gas (lb/hr) = (lb/hr fuel gas) x BTU/lb x MM/1E+06
= 40446 x 22953 / 1,000,000 = $\boxed{928.357}$ MMBTU/hr

From Fuel Gas (ft3/hr) = (ft3/hr fuel gas) x BTU/lb / (ft3/lb fuel gas) x MM/1E+06
= 880105 x 22953 / 21.76 / 1,000,000 = $\boxed{928.357}$ MMBTU/hr

From Fuel Oil (lb/hr) = (lb/hr fuel oil) x BTU/lb x MM/1E+06
= 40248 x 19240 / 1,000,000 = $\boxed{774.372}$ MMBTU/hr

From Fuel Oil (gal/hr) = (gal/hr fuel oil) x lb/gal x BTU/lb x MM/1E+06
= 6195 x 6.50 x 19240 / 1,000,000 = $\boxed{774.747}$ MMBTU/hr

From Solid Fuel (lb/hr) = (lb/hr solid fuel) x BTU/lb x MM/1E+06
= 40446 x 22953 / 1,000,000 = $\boxed{928.357}$ MMBTU/hr

F-FACTOR CALCULATIONS, DSCF/MMBTU

F-Factor, dscf/MMBTU (Using fuel gas values) = 1E+06 [3.64 scf/lb x (% H) + 1.53 scf/lb x (% C) + 0.57 scf/lb x (% S) + 0.14 scf/lb x (% N) − 0.46 scf/lb x (% O2)] / (BTU/lb) x [(Tstd + 460) / 528]

= 1E+06 [(3.64 x 23.64) + (1.53 x 73.46) + (0.57 x 0.00) + (0.14 x 1.77) − (0.46 x 1.13)] / 22,953 x [(60 + 460) / 528] = $\boxed{8502.98}$ dscf/MMBTU

FLOWRATE CALCULATIONS, DSCFM

Qs(std), dscfm (Using fuel gas values) = MMBTU/hr x [F-Factor x (20.9 / (20.9 − %O2)) x (hr / 60 min)]
= 928.357 x [8,502.98 x (20.9 / (20.9 − 14.95)) x (1/60)] = $\boxed{462130}$ dscfm

GCV = Gross Calorific Value of fuel
Standard Temperature = 60 °F

SAMPLE EMISSION CALCULATIONS

SAMPLE TEST DATA FOR CALCULATIONS

Measured Oxygen, % =	13.70	ppm =	17.20
Oxygen Correction, % =	15	ppb =	323
F-Factor, dscf/MMBTU=	8,502.03	ug of Sample =	17.2
Vm(std),ft3 =	57.321	ng of Sample =	421
Molecular Weight, MW =	46.00	grams of sample =	29.3
Qs(std), dscfm =	427,315	MMBTU/hr =	3,015.62

EMISSION CALCULATIONS, LB/HR

From ppm value :

lb/hr = (0.00000137 lb-mole °F/ft3) x 60 min/hr x Qs(std) x MW x ppm / [T(std) + 460]

= 0.00000137 x 60 x 427315 x 46.00 x 17.20 / [60 + 460] = $\boxed{53.44}$ lb/hr

From ppb value :

lb/hr = (0.00000137 lb-mole °F/ft3) x 60 min/hr x Qs(std) x MW x (ppb/1000) / [T(std) + 460]

= 0.00000137 x 60 x 427315 x 46.00 x (323/1000) / [60 + 460] = $\boxed{1.00}$ lb/hr

From ug of sample :

lb/hr = ug / (1E+06 ug/g) / (453.592 g/lb) x Qs(std) x (60 min/hr) / Vm(std)

= 17.2 / 1,000,000 / 453.592 x 427315 x 60 / 57.321 = $\boxed{1.70E-02}$ lb/hr

From ng of sample :

lb/hr = ng / (1E+09 ng/g) / (453.592 g/lb) x Qs(std) x (60 min/hr) / Vm(std)

= 421.0 / 1,000,000 / 453.592 x 427315 x 60 / 57.321 = $\boxed{4.15E-01}$ lb/hr

ppm CORRECTED FOR OXYGEN (15 % O2 correction)

ppm corrected = ppm measured x [(20.9 – O2 Correction) / (20.9 – % O2 measured)]

= 17.20 x [(20.9 – 15.0) / (20.9 – 13.70)] = $\boxed{14.09}$ ppm @ 15% O2

EMISSION CONCENTRATION, LB/MMBTU

From ppm value :

lb/MMBTU = F-Factor x MW x [(1.3711E-06 lb-mole °R/ft3) / (T(std) + 460)] x [20.9 / (20.9 – measured O2)] x ppm

= 8502.03 x 46.00 x [(1.3711E-06) / (60 + 460)] x [20.9 / (20.9 – 13.70)] x 17.20= $\boxed{0.0515}$ lb/MMBTU

From Heat Input :

lb/MMBTU = (lb/hr) / (MMBTU/hr)

= 53.44 / 3015.620 = $\boxed{0.0177}$ lb/MMBTU

Standard Temperature, T(std) = 60 °F

SECTION 5

QUALITY ASSURANCE

SECTION 5
QUALITY ASSURANCE

All equipment used in testing was checked for proper maintenance and calibrated prior to testing. Test equipment calibrations are included in this section of the report. The dry gas meter accuracy is expressed as gamma and is determined as the difference between the meter box dry gas meter and the dry gas meter used for calibration. The results of the orifice calibration are expressed as the delta H@ (dH@) at various pressure drops (inches of water), as specified in EPA publication APTD-0576. EPA Quality Assurance Branch annual audits are performed with an orifice check of each of the dry gas meters used for volumetric sampling. Control modules are manufactured by Nutech Corporation and include Model 2010 for high flowrate testing and Model 280.01B for low flowrate testing.

Exhaust gas, meter and impinger temperatures were monitored using a type-K thermocouple connected to a digital readout. The temperature readout and thermocouples are calibrated against an NIST certified digital thermometer. The calibrations are performed every six months using the procedures specified in the EPA Quality Assurance Handbook For Air Pollution Measurement Systems, 600/4-77-027b, Volume III, Stationary Source Methods.

Exhaust gas velocity was monitored using an S-type Pitot or Standard Pitot tube attached to the probe as specified in EPA Reference Method 2. A Pitot tube correction factor of 0.84 (for S-type pitot) or 0.99 (for Standard pitot) was used for determining volumetric flow through the exhaust gas stack. The standard reference number for the S-type Pitot tube proves applicable because the tube passes a dimensional calibration test for construction specifications.

At the conclusion of each test run the sampling train was leak checked at a vacuum equal to or greater than the highest vacuum observed during the test. The sampling train was considered leak free if the leak rate is less than 0.02 CFM, or 4% of sampling rate, whichever was less.

All field samples were labeled and logged in on a chain-of-custody sheet. Chain-of-custody sheets remained with samples and documented sample movement. All laboratory data was recorded in bound laboratory notebooks. Wherever possible, duplicates and spikes were performed on the samples and a Quality Control check is done. All analytical glassware used was NBS Class A. All reagents used in the field and in the laboratory was at least ACS reagent grade or the grade specified for in the method. Blanks of these reagents were evaluated for every set of tests. Sample storage did not exceed the times specified by the methods.

DRY GAS METER AND ORIFICE CALIBRATION

Meter Box # Brown IV   Barometric Press. 29.56 IN. HG.   PAH Meter Box Pretest

Date 8–Apr–92   Performed by T. Delfino

Calibration Meter Y 1.00014

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5	RUN 6
VACUUM ("Hg)	0	0	1	1	2	3
dHw ("H2O)	0.00	0.00	0.00	0.00	0.00	0.00
dHd ("H2O)	0.50	1.00	1.50	2.00	3.00	4.00
INITIAL WTM	655.083	642.592	624.784	802.319	815.129	837.288
FINAL WTM	661.309	654.714	635.216	814.658	836.635	856.188
INITIAL DGM	795.482	782.961	765.145	661.864	674.648	696.633
FINAL DGM	801.747	795.111	775.574	674.188	696.093	715.593
TEMP. WTM (°F)	79.0	78.0	71.0	80.0	80.0	79.0
TEMP. DGM (°F)	83.0	82.0	76.0	85.0	88.0	90.0
TEST TIME (MIN.)	15.0	21.0	15.0	15.0	22.0	17.0
CALCULATIONS :						
NET VOLUME WTM (Vw)	6.227	12.124	10.433	12.341	21.509	18.903
NET VOLUME DGM (Vd)	6.265	12.150	10.429	12.324	21.445	18.960
Y	1.000	1.003	1.006	1.006	1.010	1.007
ACCEPTABLE Y RANGE = 0.985 TO 1.025						
dH@	1.66	1.72	1.75	1.70	1.79	1.83
ACCEPTABLE dH@ RANGE = 1.59 TO 1.89						

AVERAGE Y = $\boxed{1.005}$

AVERAGE dH@ = $\boxed{1.74}$

CALCULATIONS :

Y = (Vw (Pb – (dHw / 13.6)) x (Td + 460)) / (Vd (Pb + (dHd / 13.6)) x (Tw + 460)

dH@ = 0.0317 x dHd / (Pb (Td + 460)) x ((Tw + 460) x time) / Vw) ^ 2

POST TEST METER CALIBRATION

PAH Meter Box Post Test

Meter Box # Brown IV

Barometric Press. 29.69 IN. HG.

Date 12-JUNE-92

Performed by T. Delfino

	RUN 1	RUN 2	RUN 3
VACUUM ("Hg)	7	7	7
dHw ("H2O)	0.00	0.00	0.00
dHd ("H2O)	2.50	2.50	2.50
INITIAL WTM	735.852	750.478	763.997
FINAL WTM	750.139	763.697	789.226
INITIAL DGM	40.725	55.698	69.790
FINAL DGM	55.373	69.492	96.093
TEMP. WTM (°F)	83.0	84.0	88.0
TEMP. DGM (°F)	82.0	83.0	86.0
TEST TIME (MIN.)	15.0	15.0	28.0
CALCULATIONS :			
NET VOLUME WTM (Vw)	14.287	13.219	25.229
NET VOLUME DGM (Vd)	14.648	13.794	26.303
Y	0.968	0.951	0.950

AVERAGE Y = 0.956

PRETEST Y = 1.005

DIFFERENCE, % = 4.9%

WHERE :

Y = (Vw (Pb – (dHw / 13.6)) x (Td + 460)) / (Vd (Pb + (dHd / 13.6)) x (Tw + 460)

Thermometer / Pyrometer Calibration

Date : 18–June–92
Calibrated by : T. Delfino

I.D. : Brown IV Pyrometer
PAH Meter Box

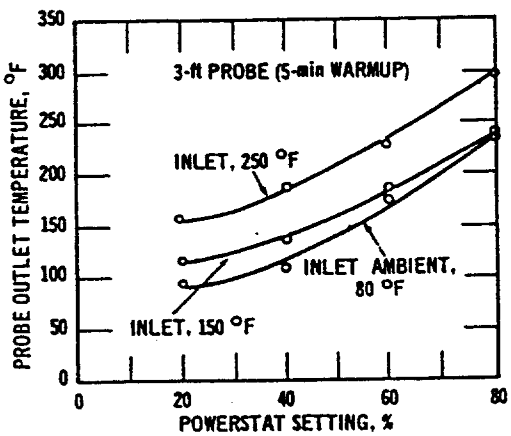
Reference Point #	Reference * Temperature °F	Pyrometer Temperature °F	Temperature difference ** %
1	32	33	−3.13
2	90	92	−2.22
3	200	202	−1.00
4	300	302	−0.67
5	400	400	0.00
6	501	499	0.40
7	600	601	−0.17
8	700	701	−0.14
9	800	801	−0.13
10	900	900	0.00
11	1000	1000	0.00
12	1100	1099	0.09
13	1300	1298	0.15
14	1600	1597	0.19
15	1800	1795	0.28
16	1995	1996	−0.05

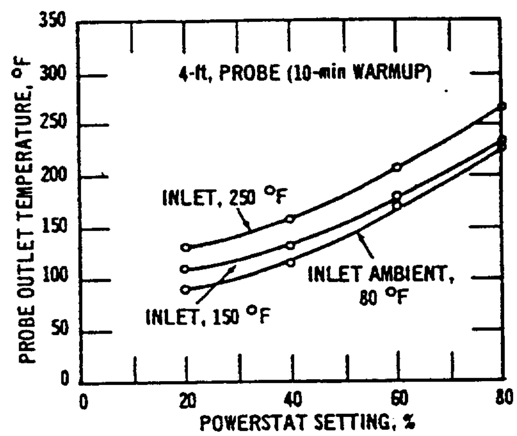
* Digital Calibrator Thermometer, S/N 28494/991
−60 °F to 1999 °F

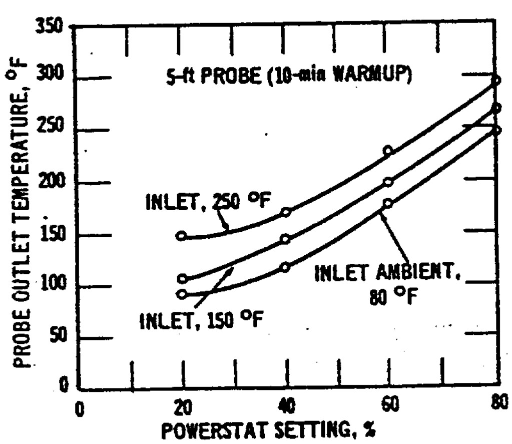
** Allowable % difference = 5 %

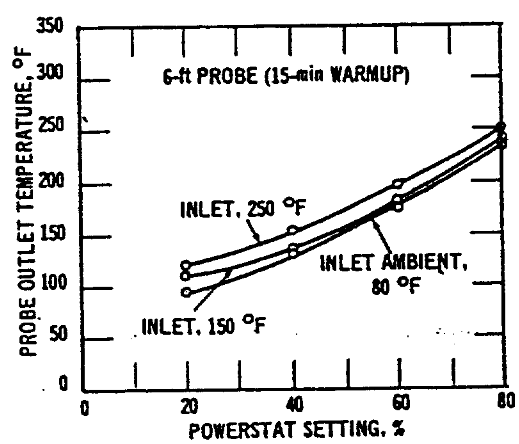
PROBE HEAT CALIBRATION

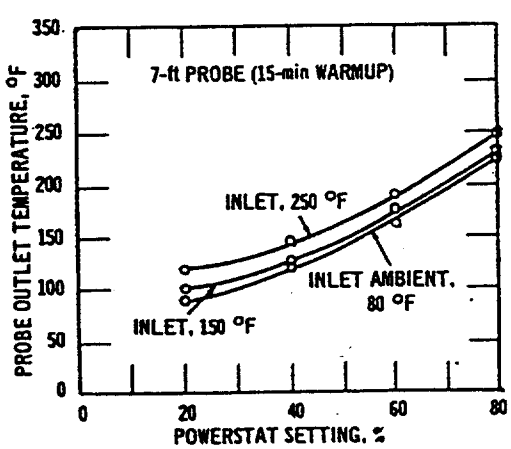
Sample probes are constructed as outlined in EPA publication PB–209 022 "Maintenance, Calibration, and Operation of Isokinetic Source Sampling Equipment". The Figures below from this publication are used to determine probe heat settings to maintain a probe temperature of 250 °F.



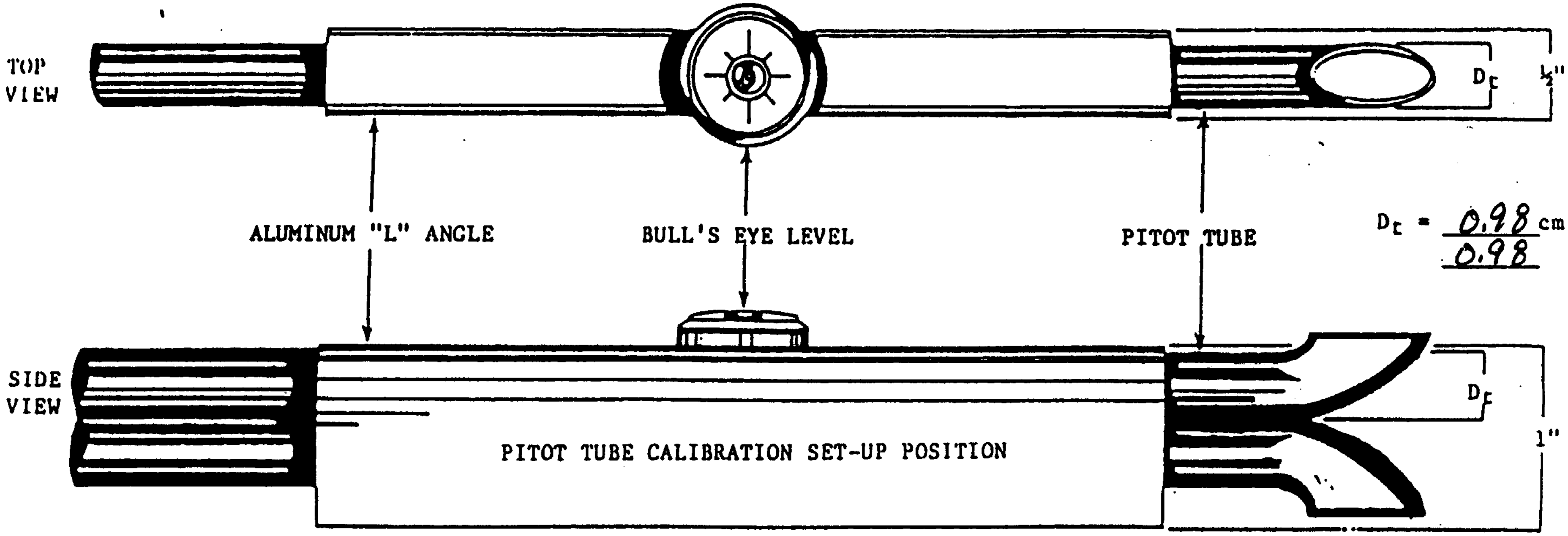




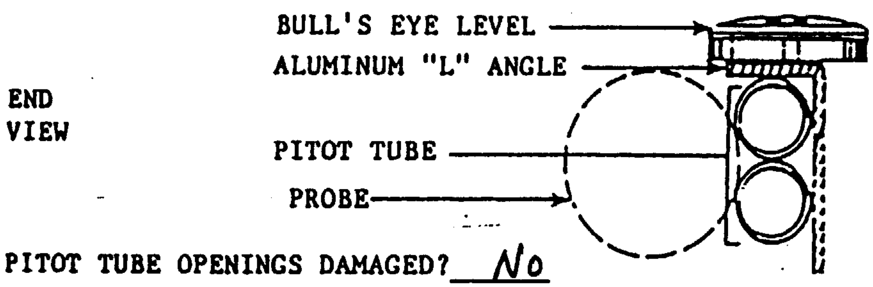


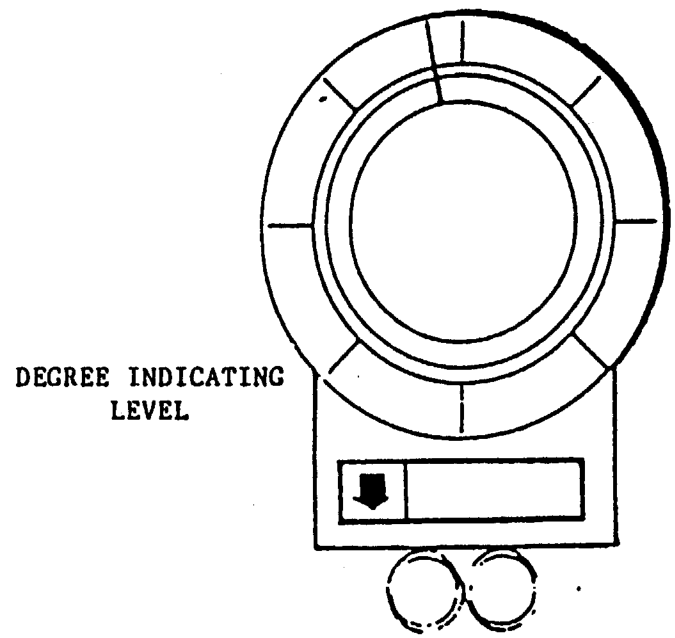


NOTE: Flow rate held constant at 0.75; 50% change in flow rate has little effect on probe temperature.



D_t = 0.98 cm.
0.98





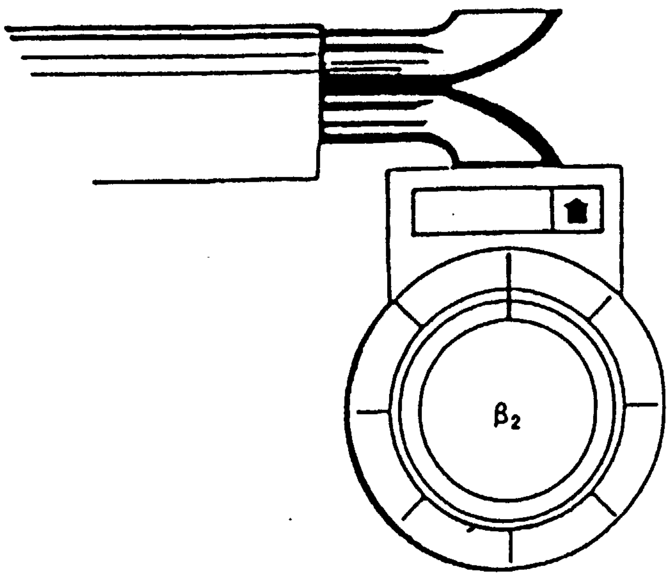
PITOT TUBE OPENINGS DAMAGED? No

COMMENTS: ____

SERIAL NO. BK010

CALIBRATED BY: Bwm

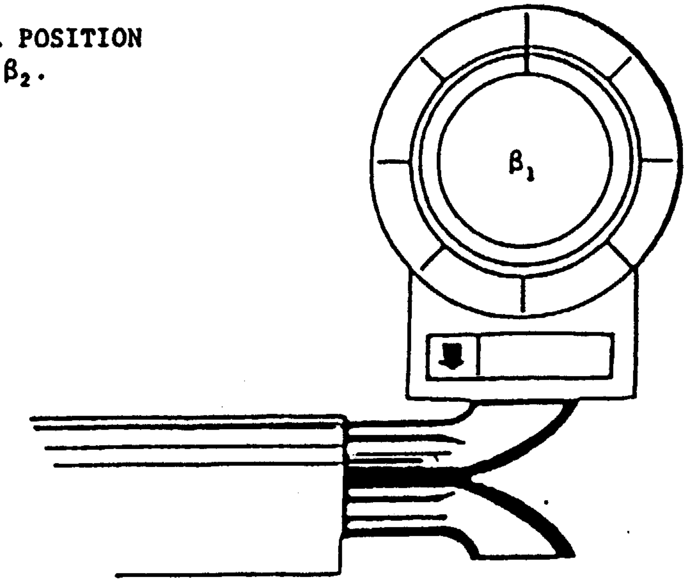
DATE 6/18/92

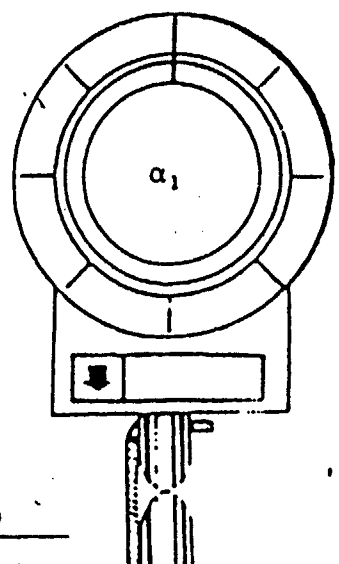


DEGREE INDICATING LEVEL POSITION
FOR DETERMINING β_1 and β_2.

β_1 = 1.5 °(<5°)

β_2 = 1.0 °(<5°)

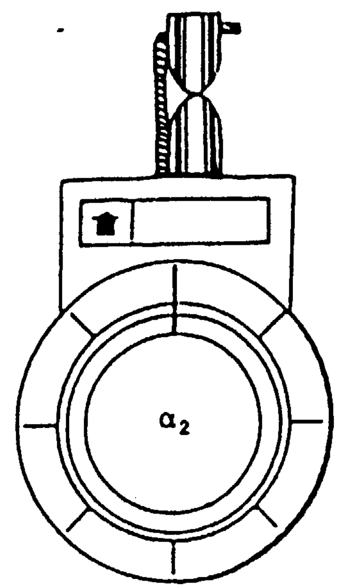




DEGREE INDICATING LEVEL
POSITION FOR DETERMINING
α_1 and α_2.

α_1 = 1.0 °(<10°)

α_2 = 1.5 °(<10°)

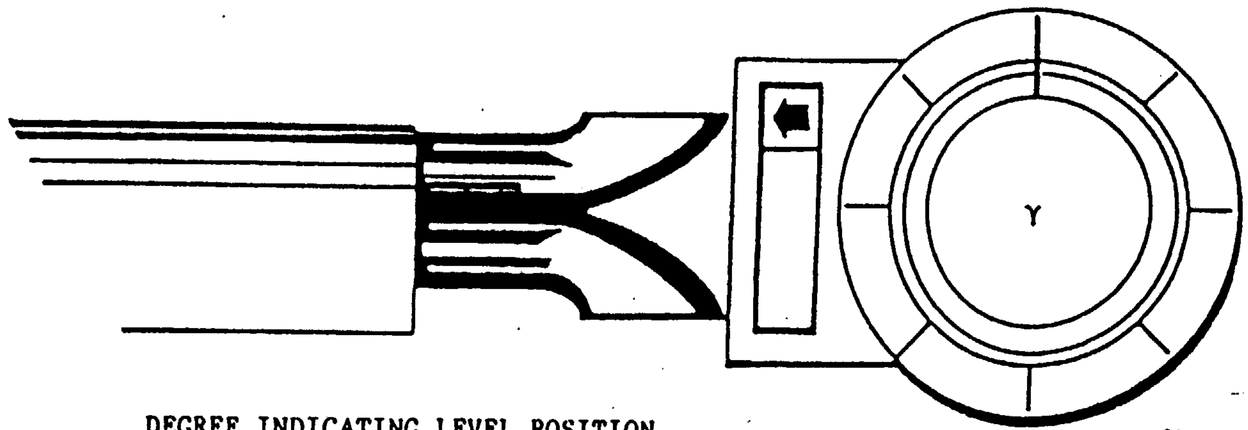


SERIAL NO. BK010

CALIBRATED BY Bum

DATE June 18, 1992

PITOT TUBE CALIBRATION; α and β DETERMINATION



DEGREE INDICATING LEVEL POSITION
FOR DETERMINING γ, THEN CALCULATING Z.

γ = 1.5 °.

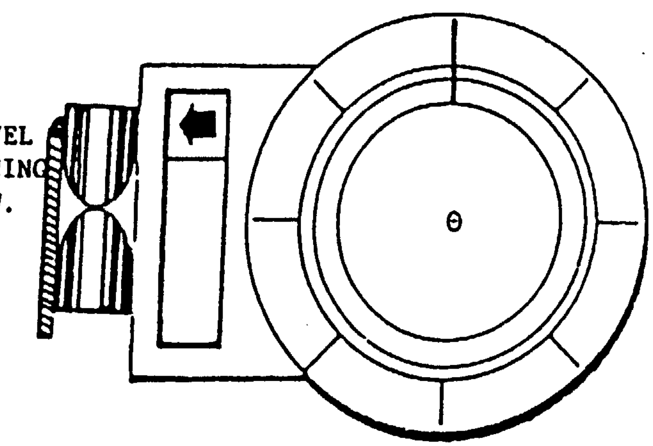
A = DISTANCE BETWEEN TIPS, $(P_a + P_b)$, cm. = 2.41.

Z = A sin γ = 0.06 cm; (<0.32 cm).

SERIAL NO. BK010

CALIBRATED BY Bwm

DATE June 18, 1992



DEGREE INDICATING LEVEL
POSITION FOR DETERMINING
Θ, THEN CALCULATING W.

Θ = 1.0 °

W = A sin Θ = 0.04 cm; (<0.08 cm).

PITOT TUBE CALIBRATION: A, W, γ, Θ and Z DETERMINATION

SINGER DRY GAS METER CALIBRATION

Meter Box #	Green II	Bar. Press.	29.51	IN. HG.
Meter Box I.D.		Performed by	D. Marsden	
		Date :	06–Apr–92	

Calibration Meter S/N	M900487
Calibration Meter Y	0.99880

Pretest / Posttest

Aldehydes Testing

	RUN 1	RUN 2	RUN 3
ROTAMETER (liter/min)			
METER	0.5	1.0	1.5
ACTUAL	0.4	1.0	1.5
dHw ("H2O)	0.03	0.05	0.07
dHd ("H2O)	0.12	0.14	0.17
INITIAL CAL. METER (WTM)	982.516	990.197	1006.891
FINAL CAL. METER (WTM)	989.252	1004.710	1029.102
NET	6.736	14.513	22.211
INITIAL DGM	118.525	135.329	151.279
FINAL DGM	125.355	150.235	174.304
NET	6.830	14.906	23.025
TEMP. WTM (°F)	67.0	66.0	66.0
TEMP. DGM (°F)	69.0	72.0	73.0
TEST TIME (MIN.)	15.0	15.0	15.0
CALCULATIONS :			
NET VOLUME WTM (Vw)	6.728	14.496	22.185
NET VOLUME DGM (Vd)	6.830	14.906	23.025
Y	0.988	0.983	0.976
ACCEPTABLE Y RANGE = 0.962 TO 1.002			

AVERAGE Y =	0.982
PRETEST Y =	
DIFFERENCE, % =	(5 % ALLOWABLE)

CALCULATIONS :

Y = (Vw (Pb – (dHw / 13.6)) x (Td + 460)) / (Vd (Pb + (dHd / 13.6)) x (Tw + 460)

Difference, % = [(Pretest – Posttest) / Pretest] x 100

Aldehydes Testing

SINGER DRY GAS METER CALIBRATION

Meter Box # VOC CONSOLE
Meter Box I.D. G2

Bar. Press. 29.85 IN. HG.
Performed by JPOLHAMUS
Date : 6-1-92

Calibration Meter S/N M900487
Calibration Meter Y 0.99880

Pretest / Posttest

	RUN 1	RUN 2	RUN 3
ROTAMETER (liter/min)			
METER	0.5	1.0	2.0
ACTUAL	0.5	1.0	2.1
dHw ("H2O)	0.00	0.00	0.00
dHd ("H2O)	1.1	1.60	2.40
INITIAL CAL. METER (WTM)	1224.642	1252.105	1282.952
FINAL CAL. METER (WTM)	1252.105	1282.952	1315.061
NET	27.463	30.847	32.109
INITIAL DGM	1874.088	1903.889	1934.448
FINAL DGM	1903.889	1934.448	1969.355
NET	29.801	30.559	34.907
TEMP. WTM (°F)	74.0	74.0	74.0
TEMP. DGM (°F)	89.0	90.0	90.0
TEST TIME (MIN.)	60.0	30.0	15.0
CALCULATIONS :			
NET VOLUME WTM (Vw)	27.430	30.810	32.070
NET VOLUME DGM (Vd)	29.801	30.559	34.907
Y	0.946	1.034	0.941

ACCEPTABLE Y RANGE = 0.954 TO 0.994

AVERAGE Y = 0.974

PRETEST Y = 0.982

DIFFERENCE, % = 0.8 (5 % ALLOWABLE)

CALCULATIONS :

Y = (Vw (Pb – (dHw / 13.6)) x (Td + 460)) / (Vd (Pb + (dHd / 13.6)) x (Tw + 460)

Difference, % = [(Pretest – Posttest) / Pretest] x 100

SINGER DRY GAS METER CALIBRATION

Meter Box #	N219253	Bar. Press.	29.58 IN. HG.
Meter Box I.D.	S1	Performed by	G. McRae
		Date :	10-Apr-92

Calibration Meter S/N M900487

Calibration Meter Y 0.99880

Pretest / Posttest

Propylene Oxide Meter Box

	RUN 1	RUN 2	RUN 3
ROTAMETER (liter/min)			
METER	0.5	1.0	2.0
ACTUAL	0.5	1.1	2.0
dHw ("H2O)	0.03	0.05	0.09
dHd ("H2O)	0.12	0.14	0.17
INITIAL CAL. METER (WTM)	934.000	944.000	969.000
FINAL CAL. METER (WTM)	941.430	959.884	999.085
NET	7.430	15.884	30.085
INITIAL DGM	539.190	549.470	575.050
FINAL DGM	546.722	565.653	606.080
NET	7.532	16.183	31.030
TEMP. WTM (°F)	69.5	71.0	72.0
TEMP. DGM (°F)	73.0	74.0	75.0
TEST TIME (MIN.)	15.0	15.0	15.0
CALCULATIONS :			
NET VOLUME WTM (Vw)	7.421	15.865	30.049
NET VOLUME DGM (Vd)	7.532	16.183	31.030
Y	0.991	0.985	0.973

ACCEPTABLE Y RANGE = 0.963 TO 1.003

AVERAGE Y = 0.983

PRETEST Y =

DIFFERENCE, % = (5 % ALLOWABLE)

CALCULATIONS :

Y = (Vw (Pb – (dHw / 13.6)) x (Td + 460)) / (Vd (Pb + (dHd / 13.6)) x (Tw + 460)

Difference, % = [(Pretest – Posttest) / Pretest] x 100

SINGER DRY GAS METER CALIBRATION

Meter Box #	N219253	Bar. Press.	29.53 IN. HG.
Meter Box I.D.	S1	Performed by	T. Delfino
		Date :	26-Jun-92

Calibration Meter S/N M900487
Calibration Meter Y 0.99880

Pretest / Posttest

Propylene Oxide Meter Box

	RUN 1	RUN 2	RUN 3
ROTAMETER (liter/min)			
METER	0.5	0.5	0.5
ACTUAL	0.5	0.5	0.5
dHw ("H2O)	0.03	0.03	0.03
dHd ("H2O)	0.12	0.11	0.12
INITIAL CAL. METER (WTM)	561.352	576.924	584.334
FINAL CAL. METER (WTM)	576.924	584.334	591.762
NET	15.572	7.410	7.428
INITIAL DGM	811.853	827.673	835.199
FINAL DGM	827.673	835.199	842.729
NET	15.820	7.526	7.530
TEMP. WTM (°F)	69.5	71.0	72.0
TEMP. DGM (°F)	73.0	74.0	75.0
TEST TIME (MIN.)	30.0	15.0	15.0
CALCULATIONS :			
NET VOLUME WTM (Vw)	15.553	7.401	7.419
NET VOLUME DGM (Vd)	15.820	7.526	7.530
Y	0.989	0.989	0.990

ACCEPTABLE Y RANGE = 0.969 TO 1.009

AVERAGE Y = 0.989

PRETEST Y = 0.983

DIFFERENCE, % = -0.7 (5 % ALLOWABLE)

CALCULATIONS :

Y = (Vw (Pb – (dHw / 13.6)) x (Td + 460)) / (Vd (Pb + (dHd / 13.6)) x (Tw + 460)

Difference, % = [(Pretest – Posttest) / Pretest] x 100

ALTA

May 21, 1992

Mr. Gary McRae
Engineering Science
2520 Pegasus Drive
Bakersfield, Ca 92649

Dear Mr. McRae,

Enclosed are six cleaned and pre-spiked resin cartridges for the analysis of polynuclear aromatic hydrocarbons (PAH) by CARB Method 429 using HRMS. Also included are six petri dishes and one trap returned for repair.

For best analytical results we recommend that acetone, methylene chloride, and hexane be used for glassware and impinger rinsing. We also recommend that the contents of each bottle are noted on the label and that impinger water is kept seperate from the rinsing solvents.

If you should have any questions, please do not hesitate to call me at (916)-933-1640.

Sincerely,

Melanee A. Schuld

Melanee A. Schuld
Associate Scientist

Alta Analytical Laboratory Inc.

5070 Robert J. Mathews Pkwy., Suite 2
El Dorado Hills, CA. 95630

FAX (916) 933-0940
(916) 933-1640

ALTA

May 29, 1992

Dennis Becvar
Engineering Science Inc.
2520 Pegasus Drive
Bakersfield, CA 93308

Dear Becvar,

The samples listed in Table 1 were received by Alta Analytical Laboratory on 29-May-92. Attached is a copy of the chain-of-custody (C-O-C) or other documentation for your records.

Analytical results are scheduled to be reported to you on or about 12-Jun-92. All sample containers and their contents will be returned to you at the above address approximately 30 calendar days following issuance of a final written report.

Please contact me if you have any questions regarding the status of the work associated with these samples at (916) 933-1640.

For rapid telephone assistance, please refer to the laboratory Identification Number: 11310 when requesting information.

Sincerely,

Robert S. Mitzel

Robert S. Mitzel
Alta Analytical Laboratory

Alta Analytical Laboratory Inc.

5070 Robert J. Mathews Pkwy., Suite 2
El Dorado Hills, CA. 95630

FAX (916) 933-0940
(916) 933-1640

ALTA

Section I. Sample Inventory

Date Received: 29-May-92

Alta Lab ID.	Client ID.
11310-1-A	BK9205168 RUN 1 FILTER
11310-1-B	BK9205170 RUN 1 XAD
11310-1-C	BK9205167 RUN 1 FHR
11310-1-D	BK9205169 RUN 1 BHR
11310-1-E	BK9205171 RUN 1 IMPINGERS
11310-2-A	BK9205173 RUN 2 FILTER
11310-2-B	BK9205175 RUN 2 XAD
11310-2-C	BK9205172 RUN 2 FHR
11310-2-D	BK9205174 RUN 2 BHR
11310-2-E	BK9205176 RUN 2 IMPINGERS
11310-3-A	BK9205178 RUN 3 FILTER
11310-3-B	BK9205180 RUN 3 XAD
11310-3-C	BK9205177 RUN 3 FHR
11310-3-D	BK9205179 RUN 3 BHR
11310-3-E	BK9205181 RUN 3 IMPINGERS
11310-4-A	BK9205183 BLANK FILTER
11310-4-B	BK9205185 BLANK XAD
11310-4-C	BK9205182 BLANK FHR
11310-4-D	BK9205184 BLANK BHR
11310-4-E	BK9205186 B~~N~~LANK IMPINGER

GXM

ENGINEERING-SCIENCE, INC.
2520 Pegasus Drive
Bakersfield, CA 93308
(805) 393-0272

CHAIN OF CUSTODY RECORD

Project No.	Project Name	Project Manager	Samples Sent To:
WA005.07	Sycamore AB2588	D. Becvar	ALTA Analytical
Samples Collected By: T. Delfino	Regulatory Agency (EPA, CARB, SCAQMD, etc.): San Joaquin Valley APCD		By: Fed. Express

Analysis Required: PAH Compounds; CARB AB2588

# on Cap	ES Lab Control No.	Test Date	Field Sample ID (Method-Run#-Sample Source)	Sample Amount	Sample Medium	Comments	PAH Compounds	CARB AB2588			
1	BK9205167	5-27-92	CARB Method 429, Run #1 Front Half Rinses	Marked			X				
	BK9205168		, Run #1 Filter	—			X				
2	BK9205169		, Run #1 Back Half Rinses	Marked			X				
	BK9205170		, Run #1 XAD-2 Trap	—			X				
3	BK9205171		, Run #1 Impingers	Marked			X				
4	BK9205172		CARB Method 429, Run #2 Front Half Rinses	Marked			X				
	BK9205173		, RUN #2 Filter	—			X				
5	BK9205174		, Run #2 Back Half Rinses	Marked			X				
	BK9205175		, Run #2 XAD-2 Trap	—			X				

Relinquished By: (Sign & Print)	Date/Time	Received By: (Sign & Print)	Comments:
G. McRae; Phone: (805) 393-0272	5-28-92 1130	Federal Express; Of: (See Air Bill)	
Phone:		J Cobabe; Of: ALTA	5-29-92 1100
Phone:		Of:	

ENGINEERING (ENCE, INC.
2520 Pegasus Drive
Bakersfield, CA 93308
(805) 393-0272

CHAIN OF CUSTODY RECORD

Project No.	Project Name	Project Manager	Samples Sent To:
WA005.07	Sycamore AB2588	D. Becvar	ALTA Analytical
Samples Collected By: T. Delfino	Regulatory Agency (EPA, CARB, SCAQMD, etc.): San Joaquin Valley APCD		By: Fed. Express

Analysis Required: PAH Compounds; CARB AB2588

	ES Lab Control No.	Test Date	Field Sample ID (Method-Run#-Sample Source)	Sample Amount	Sample Medium	Comments	PAH Compounds	CARB AB2588			
6	BK9205176	5-27-92	CARB Method 429, RUN #2 Impingers	Marked			X				
7	BK9205177		CARB Method 429, Run #3 Front Half Rinses	Marked			X				
	BK9205178		, Run #3 Filter	—			X				
8	BK9205179		, Run #3 Back Half Rinses	Marked			X				
	BK9205180		, Run #3 XAD-2 Trap	—			X				
9	BK9205181		, Run #3 Impingers	Marked			X				
10	BK9205182		CARB Method 429, BLANK Front Half Rinses	Marked			X				
	BK9205183		, BLANK Filter	—			X				
11	BK9205184		, BLANK Back Half Rinses	Marked			X				

Relinquished By: (Sign & Print)	Date/Time	Received By: (Sign & Print)	Comments:
McRae Phone: (805) 393-0272	5-28-92 1130	Federal Express Of: (see Air Bill)	
Relinquished By: (Sign & Print) Phone:	Date/Time	Received By: (Sign & Print) J Cobabe Of: ALTA J Cobabe	Comments: 5-29-92 1100
Relinquished By: (Sign & Print) Phone:	Date/Time	Received By: (Sign & Print) Of:	Comments:

ENGINEERING (ENCE, INC.
2520 Pegasus Drive
Bakersfield, CA 93308
(805) 393-0272

CHAIN OF CUSTODY RECORD

Project No.	Project Name	Project Manager	Samples Sent To:
WA005.07	Sycamore AB2588	D. Becvar	ALTA Analytical
Samples Collected By: T. Delfino	Regulatory Agency (EPA, CARB, SCAQMD, etc.) San Joaquin Valley APCD		By: Fed. Express

Analysis Required: PAH Compounds; CARB AB2588

ES Lab Control No.	Test Date	Field Sample ID (Method-Run#-Sample Source)	Sample Amount	Sample Medium	Comments	PAH Compounds	CARB AB2588			
BK9205185	5-27-92	CARB Method 429, BLANK XAD-2 Trap	—			X				
BK9205186	"	, BLANK Impingers	Marked			X				

Relinquished By: (Sign & Print)	Date/Time	Received By: (Sign & Print)	Comments:
G. W. McRae Phone: (805) 393-0272	5-28-92 1130	Federal Express Of: (see air bill)	
Relinquished By: (Sign & Print) Phone:	Date/Time	J. Cobabe Of: ALTA	5-29-92 1100
Relinquished By: (Sign & Print) Phone:	Date/Time	Received By: (Sign & Print) Of:	Comments:

USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

TRACKING NUMBER

1255M 3102410032

SENDER'S COPY

1 Sender's Federal Express Account Number: 1509-6879-8 Date: 5/27/92

From (Your Name) Please Print: Gary McRae Your Phone Number (Very Important): (805) 395-0072

Company: ENGINEERING SCIENCE INC Department/Floor No.

Street Address: 2520 PEGASUS DR

City: BAKERSFIELD State: CA ZIP Required: 93308

2 To (Recipient's Name) Please Print: Bob Melzel Recipient's Phone Number (Very Important): (916) 933-1640

Company: ALTA Analytical Department/Floor No.

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 5070 Robert J. Mathews Parkway

City: El Dorado Hills State: CA ZIP Required: 95630

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.): SYCAMORE AB2588

H IF HOLD FOR PICK-UP, Print FEDEX Address Here (Not available at all locations)
Street Address
City State ZIP Required

3 PAYMENT 1 [x] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash/Check Acct./Credit Card No. Exp. Date

4 SERVICES (Check only one box)
- Priority Overnight (Delivery by next business morning†) 11 [x]
- Standard Overnight (Delivery by next business afternoon†) 51 [ ]
- Economy Two-Day (Delivery by second business day†) 30 [ ]
- Government Overnight (Restricted to authorized users only) 41 [ ]
- Freight Service (for Extra Large or any package over 150 lbs.): 70 [ ] OVERNIGHT FREIGHT ** (Confirmed reservation required) 80 [ ] TWO-DAY FREIGHT **
- † Delivery commitment may be later in some areas. **Declared Value Limit $100. **Call for delivery schedule.

INSTRUCTIONS (Mark appropriate boxes)
- Dangerous Goods as per attached Shipper's Declaration [ ]
- Dangerous Goods Shipper's Declaration not required [ ]
- Cargo Aircraft only [ ]

DELIVERY AND SPECIAL HANDLING (Check services required)
1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [x] DELIVER WEEKDAY
3 [ ] DELIVER SATURDAY (Extra charge) (Not available to all locations)
4 [x] DANGEROUS GOODS (Extra charge)
6 [x] DRY ICE ______ Lbs.
- Dangerous Goods Shipper's Declaration not required
- Dry Ice, 9, UN 1845, ______ x ______ kg. III
7 [ ] OTHER SPECIAL SERVICE
11 [ ] DESCRIPTION
12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
Total 1	Total 20	Total

DIM SHIPMENT (Chargeable Weight) [ ] ______ lbs.

Received At: 1 [ ] Regular Stop 2 [ ] On-Call Stop 3 [ ] Drop Box 4 [ ] B.S.C. 5 [ ] Station
FedEx Emp. No. Date/Time

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Use of this airbill constitutes your agreement to the service conditions in our current Service Guide, available upon request. See back of sender's copy of this airbill for information. Service conditions may vary for Government Overnight Service. See U.S. Government Service Guide for details.

We will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, and document your actual loss for a timely claim. Limitations found in the current Federal Express Service Guide apply. Your right to recover from Federal Express for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the declared value specified to left. Recovery cannot exceed actual documented loss. The maximum Declared Value for FedEx Letter and FedEx Pak packages is $100.00.

In the event of untimely delivery, Federal Express will at your request and with some limitations, refund all transportation charges paid. See Service Guide for further information.

SIGNATURE RELEASE UNAVAILABLE

Federal Express Use: Base Charges / Declared Value Charge / Other 1 / Other 2 / Total Charges

REVISION DATE 2/91 PART #137211 FORMAT #069 MBFAN 5/91

069

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3102410032 AIRBILL NUMBER

SHIPPER'S CERTIFICATION FOR RESTRICTED ARTICLES/DANGEROUS GOODS

CHECK ONE [ ] 49 CFR [ ] IATA/ICAO (TYPE OR PRINT)

DANGEROUS GOODS IDENTIFICATION PROPER SHIPPING NAME	CLASS OR DIVISION	UN OR ID NO	SUBSIDIARY RISK	QUANTITY AND TYPE OF PACKING	PACKING INST	AUTHORIZATION
Dry Ice Filter Samples ~~[illegible]~~	ORM-A	UN 1845		10 lbs. Dry Ice in Dewar Flask		

ADDITIONAL HANDLING INFORMATION

TRANSPORT DETAILS	THIS SHIPMENT IS WITHIN THE LIMITATIONS PRESCRIBED FOR	PASSENGER AIRCRAFT	~~CARGO AIRCRAFT ONLY~~	(DELETE-NONAPPLICABLE)
AIRPORT OF DEPARTURE	AIRPORT OF DESTINATION / SHIPMENT TYPE	~~NON-RADIOACTIVE~~	~~RADIOACTIVE~~	(DELETE-NONAPPLICABLE)

IF ACCEPTABLE FOR PASSENGER AIRCRAFT, THIS SHIPMENT CONTAINS RADIOACTIVE MATERIAL INTENDED FOR USE IN, OR INCIDENT TO, RESEARCH, MEDICAL DIAGNOSIS OR TREATMENT.

I HEREBY DECLARE THAT THE CONTENTS OF THIS CONSIGNMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY PROPER SHIPPING NAME AND ARE CLASSIFIED, PACKED, MARKED, AND LABELED, AND ARE IN ALL RESPECTS IN PROPER CONDITION FOR TRANSPORT BY AIR ACCORDING TO THE APPLICABLE INTERNATIONAL AND NATIONAL GOVERNMENT REGULATIONS.

NAME AND TITLE OF SHIPPER: Gary McRae, Engineering Science
PLACE AND DATE

EMERGENCY TELEPHONE NUMBER: (805) 321-0261
SIGNATURE OF SHIPPER: G. W. McRae

SEE WARNING ON BACK

ALTA Analytical Laboratory

CARB 429
PAH
Filter Samples

Batch ID: 11310

Sample Log-In Checklist		Yes	No
1.	Samples Arrived by: Fed Ex		
2.	Airbill Present? Number 3102410032	✓	
3.	Shipping Container is Intact?	✓	
4.	Custody Seals Present? Number		✓
	If yes, are they intact? N/A		
5.	Sample Containers Intact?	✓	
6.	Shipping Preservation: Dry Ice/Blue Ice/None		
7.	Temperature: -50°C		
8.	Chain of Custody Present?	✓	
9.	Discrepancies in Chain of Custody?		
10.	Packing Retained?	✓	

Name: J Colak

Date Rcv'd: 5-29-92

Comments:

FEDERAL EXPRESS

USE THIS AIRBILL FOR DANGEROUS GOODS SHIPMENTS ONLY WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

PACKAGE TRACKING NUMBER 3102410043

1255m 3102410043

SENDER'S COPY

1 Sender's Federal Express Account Number: 1509-6879-8 Date: 5/23/12

From (Your Name) Please Print: Gary McRae
Your Phone Number (Very Important): (805) 393-0270
Company: ENGINEERING SCIENCE, INC
Department/Floor No.:
Street Address: 2520 PEGASUS DR
City: BAKERSFIELD State: CA ZIP Required: 93308

2 To (Recipient's Name) Please Print: Bob Mitzel
Recipient's Phone Number (Very Important): (916) 933-1640
Company: ALTA Analytical
Department/Floor No.:
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 5070 Robert J. Mathews Parkway
City: El Dorado Hills State: CA ZIP Required: 95630

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.): SYCAMORE AB2588

H IF HOLD FOR PICK-UP, Print FEDEX Address Here (Not available at all locations)
Street Address
City State ZIP Required

3 PAYMENT 1 ☐ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☐ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☐ Cash/Check
Acct./Credit Card No. Exp. Date

4 SERVICES (Check only one box)
Priority Overnight (Delivery by next business morning†) 11 ☒
Standard Overnight (Delivery by next business afternoon†) 51 ☐
Economy Two-Day (Delivery by second business day†) 30 ☐
Government Overnight (Restricted to authorized users only) 41 ☐

Freight Service (for Extra Large or any package over 150 lbs.)
70 ☐ OVERNIGHT FREIGHT ** (Confirmed reservation required)
80 ☐ TWO-DAY FREIGHT **
†Delivery commitment may be later in some areas. *Declared Value Limit $100. **Call for delivery schedule.

INSTRUCTIONS (Mark appropriate boxes)
- Dangerous Goods as per attached Shipper's Declaration ☐
- Dangerous Goods Shipper's Declaration not required ☐
- Cargo Aircraft only ☐

DELIVERY AND SPECIAL HANDLING (Check services required)
1 ☐ HOLD FOR PICK-UP (Fill in Box H)
2 ☒ DELIVER WEEKDAY
3 ☐ DELIVER SATURDAY (Extra charge) (Not available to all locations)
4 ☒ DANGEROUS GOODS (Extra charge)
6 ☐ DRY ICE ____ Lbs.
- Dangerous Goods Shipper's Declaration not required
- Dry Ice, 9, UN 1845, ____ x ____ kg. III
7 ☐ OTHER SPECIAL SERVICE
11 ☐ DESCRIPTION
12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
Total 1	Total 27	Total

DIM SHIPMENT (Chargeable Weight) ☐ ____ lbs.

Received At: 1 ☐ Regular Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

FedEx Emp. No. Date/Time

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Use of this airbill constitutes your agreement to the service conditions in our current Service Guide, available upon request. See back of sender's copy of this airbill for information. Service conditions may vary for Government Overnight Service. See U.S. Government Service Guide for details.

We will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, and document your actual loss for a timely claim. Limitations found in the current Federal Express Service Guide apply. Your right to recover from Federal Express for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the declared value specified to left. Recovery cannot exceed actual documented loss. The maximum Declared Value for FedEx Letter and FedEx Pak packages is $100.00.

In the event of untimely delivery, Federal Express will at your request and with some limitations, refund all transportation charges paid. See Service Guide for further information.

SIGNATURE RELEASE UNAVAILABLE

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 2/91 PART #137211 FORMAT #069 MBFAN 5/91
069
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3102410043 AIRBILL NUMBER

SHIPPER'S CERTIFICATION FOR RESTRICTED ARTICLES/DANGEROUS GOODS

CHECK ONE → ☐ 49 CFR ☐ IATA/ICAO (TYPE OR PRINT)

DANGEROUS GOODS IDENTIFICATION PROPER SHIPPING NAME	CLASS OR DIVISION	UN OR ID NO.	SUBSIDIARY RISK	QUANTITY AND TYPE OF PACKING	PACKING INST.	AUTHORIZATION
Flammable Liquid NOS (Acetone, Hexane, Methylene Chloride)	Flammable Liquid	UN 1993		12 bottles with a total of approx. 1.5 gal packed with blue ice	-	

ADDITIONAL HANDLING INFORMATION

TRANSPORT DETAILS	THIS SHIPMENT IS WITHIN THE LIMITATIONS PRESCRIBED FOR ▶	~~PASSENGER AIRCRAFT~~	CARGO AIRCRAFT ONLY	(DELETE-NONAPPLICABLE)
AIRPORT OF DEPARTURE	AIRPORT OF DESTINATION / SHIPMENT TYPE ▶	NON-RADIOACTIVE	~~RADIOACTIVE~~	~~(DELETE-NONAPPLICABLE)~~

IF ACCEPTABLE FOR PASSENGER AIRCRAFT, THIS SHIPMENT CONTAINS RADIOACTIVE MATERIAL INTENDED FOR USE IN, OR INCIDENT TO, RESEARCH, MEDICAL DIAGNOSIS OR TREATMENT.

I HEREBY DECLARE THAT THE CONTENTS OF THIS CONSIGNMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY PROPER SHIPPING NAME AND ARE CLASSIFIED, PACKED, MARKED, AND LABELED, AND ARE IN ALL RESPECTS IN PROPER CONDITION FOR TRANSPORT BY AIR ACCORDING TO THE APPLICABLE INTERNATIONAL AND NATIONAL GOVERNMENT REGULATIONS.

NAME AND TITLE OF SHIPPER: Gary McRae Engineering Science
PLACE AND DATE:
EMERGENCY TELEPHONE NUMBER: (805) 321-0261
SIGNATURE OF SHIPPER: G. McRae

SEE WARNING ON BACK

CARB 429
PAH
Liquid Samples

ALTA Analytical Laboratory

Batch ID: 11310

Sample Log-In Checklist		Yes	No
1.	Samples Arrived by: Fed EX		
2.	Airbill Present? Number 3102410043	✓	
3.	Shipping Container is Intact?	✓	
4.	Custody Seals Present? Number ______		✓
	If yes, are they intact? N/A		
5.	Sample Containers Intact?	✓	
6.	Shipping Preservation: Ice/Blue Ice/None		
7.	Temperature: 2°C		
8.	Chain of Custody Present?	✓	
9.	Discrepancies in Chain of Custody?		
10.	Packing Retained?	✓	

Name: J. Cobabe   Date Rcv'd: 5-29-92

Comments:

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER
2386782716

2097N 2386782716

RECIPIENT'S COPY

Date: 5-26-92

1 From (Your Name) Please Print: Kochy Fung
Your Phone Number (Very Important): (818)-718-6070
Department/Floor No.
Company: ATMAA INC
Street Address: 21354 NORDHOFF ST STE 113
City: CHATSWORTH State: CA ZIP Required: 91311

2 To (Recipient's Name) Please Print: ~~Hery~~ Mervyn Soares
Recipient's Phone Number (Very Important): ( )
Department/Floor No.
Company: Sycamore Cogeneration Company
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): SW China Grade Loop
City: Bakersfield State: CA ZIP Required: 93380

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.)

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address
City State ZIP Required

3 PAYMENT 1 ☒ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☐ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☐ Cash/Check

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
- 11 ☒ YOUR PACKAGING
- 16 ☐ FEDEX LETTER *
- 12 ☐ FEDEX PAK *
- 13 ☐ FEDEX BOX
- 14 ☐ FEDEX TUBE

Standard Overnight (Delivery by next business afternoon†)
- 51 ☐ YOUR PACKAGING
- 56 ☐ FEDEX LETTER *
- 52 ☐ FEDEX PAK *
- 53 ☐ FEDEX BOX
- 54 ☐ FEDEX TUBE

Economy Two-Day (Delivery by second business day†)
- 30 ☐ ECONOMY

Government Overnight (Restricted to authorized users only)
- 46 ☐ GOV'T LETTER
- 41 ☐ GOV'T PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
- 70 ☐ OVERNIGHT FREIGHT ** (Confirmed reservation required)
- 80 ☒ TWO-DAY FREIGHT **

† Delivery commitment may be later in some areas.
* Declared Value Limit $100.
** Call for delivery schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)
- 1 ☐ HOLD FOR PICK-UP (Fill in Box H)
- 2 ☒ DELIVER WEEKDAY
- 3 ☐ DELIVER SATURDAY (Extra charge) (Not available to all locations)
- 4 ☐ DANGEROUS GOODS (Extra charge)
- 5 ☐
- 6 ☐ DRY ICE ____ Lbs.
- 7 ☐ OTHER SPECIAL SERVICE
- 8 ☐
- 9 ☐ SATURDAY PICK-UP (Extra charge)
- 10 ☐
- 11 ☐ DESIGNATION
- 12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

6 PACKAGES | WEIGHT In Pounds Only | YOUR DECLARED VALUE
1 | 8 |
1 | 8 |
Total 2 | Total 16 | Total

DIM SHIPMENT (Chargeable Weight) ☐ ____ lbs.
L x W x H

Received At: 1 ☐ Regular Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

Emp. No. | Date
☐ Cash Received
☒ Return Shipment
☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold
Street Address
City State Zip
Received By:
X
Date/Time Received | FedEx Employee Number

7 Release Signature:
FedEx Emp. No. Date/Time

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 6/91
PART #137204 FXEM 3/92
FORMAT #099
099
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Receiving DNPH charged impingers
at site.

ENGINEERING(:IENCE, INC.
2520 Pegasus Drive
Bakersfield, CA 93308
(805) 393-0272

CHAIN OF CUSTODY RECORD

Project No.	Project Name	Project Manager	Samples Sent To:
WA005.07	Sycamore AB2588	D. Becvar	AtmAA, Inc.
Samples Collected By	**Regulatory Agency (EPA, CARB, SCAQMD, etc.)**		**By:**
T. Delfino / J. P[illegible]s	San Joaquin Valley APCD		Fed. Express

Analysis Required

ES Lab Control No.	Test Date	Field Sample ID (Method-Run#-Sample Source)	Sample Amount	Sample Medium	Comments	Acrolein	Acetaldehyde	Formaldehyde		vol, ml
BK9205160	5-27-92	CARB Method 430, Run #1 Impinger #1	80.9g ~~92.0g~~ gwm	DNPH	91502-1	X	X	X		17.8
BK9205161	↓	↓ , Run #1 Impinger #2	69.6g ~~80.7g~~	↓	91502-2	X	X	X		8.2
BK9205162	↓	↓ , Run #2 Impinger #3	77.8g	↓	91502-3	X	X	X		14.8
BK9205163	↓	↓ , Run #2 Impinger #4	69.6g	↓	91502-4	X	X	X		8.6
BK9205164	↓	↓ , Run #3 Impinger #5	78.7g	↓	91502-5	X	X	X		16.6
BK9205165	↓	↓ , Run #3 Impinger #6	70.7g	↓	91502-6	X	X	X		9.6
BK9205166	↓	↓ , BLANK Impinger #7	71.1g gwm ~~82.1g~~	↓	91502-7	X	X	X		9.0

Relinquished By: (Sign & Print)	Date/Time	Received By: (Sign & Print)	Comments:
G. W. McR[illegible] Phone: (805) 393-0272	5-28-92 1130	Federal Express Of: (see Air Bill)	
Relinquished By: (Sign & Print) Phone:	Date/Time	Received By: (Sign & Print) Karen Porter Karen Porter Of: AtmAA	Comments:
Relinquished By: (Sign & Print) Phone:	Date/Time	Received By: (Sign & Print) Of:	Comments:

FEDERAL EXPRESS

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

PACKAGE TRACKING NUMBER 1974264073

2021M 1974264073

SENDER'S COPY

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1509-6879-8 — Date: 5/28/92

From (Your Name) Please Print: Gary McRae — Your Phone Number (Very Important): (805) 393-0272

Company: ENGINEERING SCIENCE INC — Department/Floor No.

Street Address: 2520 PEGASUS DR

City: BAKERSFIELD — State: CA — ZIP Required: 93308

2 To (Recipient's Name) Please Print: Kochy Fung — Recipient's Phone Number (Very Important): (818) 718-6070

Company: AtmAA — Department/Floor No.

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 21354 Nordhoff St, Suite 113

City: Chatsworth — State: CA — ZIP Required: 91311

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): SYCAMORE AB2587

H IF HOLD FOR PICK-UP, Print FEDEX Address Here — Street Address — City — State — ZIP Required

3 PAYMENT 1 [x] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No 4 [ ] Bill Credit Card 5 [ ] Cash/Check — Acct./Credit Card No. — Exp. Date

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†): 11 [x] YOUR PACKAGING; 16 [ ] FEDEX LETTER*; 12 [ ] FEDEX PAK*; 13 [ ] FEDEX BOX; 14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon†): 51 [ ] YOUR PACKAGING; 56 [ ] FEDEX LETTER*; 52 [ ] FEDEX PAK*; 53 [ ] FEDEX BOX; 54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day†): 30 [ ] ECONOMY

Government Overnight (Restricted to authorized users only): 46 [ ] GOVT LETTER; 41 [ ] GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.): 70 [ ] OVERNIGHT FREIGHT**; 80 [ ] TWO-DAY FREIGHT**

5 DELIVERY AND SPECIAL HANDLING (Check services required)

1 [ ] HOLD FOR PICK-UP (Fill in Box H); 2 [x] DELIVER WEEKDAY; 3 [ ] DELIVER SATURDAY (Extra charge) (Not available to all locations); 4 [ ] DANGEROUS GOODS (Extra charge); 5 [ ]; 6 [ ] DRY ICE ____ Lbs.; 7 [ ] OTHER SPECIAL SERVICE; 8 [ ]; 9 [ ] SATURDAY PICK-UP (Extra charge); 10 [ ]; 11 [ ] DESCRIPTION

6 PACKAGES — WEIGHT In Pounds Only — YOUR DECLARED VALUE (See right)

Total 1 — Total 10 — Total

DIM SHIPMENT (Chargeable Weight) ____ lbs. L x W x H =

Received At: 1 [ ] Regular Stop 3 [ ] Drop Box

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Use of this airbill constitutes your agreement to the service conditions in our current Service Guide, available upon request. See back of sender's copy of this airbill for information. Service conditions may vary for Government Overnight Service. See U.S. Government Service Guide for details.

We will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, and document your actual loss for a timely claim. Limitations found in the current Federal Express Service Guide apply. Your right to recover from Federal Express for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the declared value specified to the left. Recovery cannot exceed actual documented loss. The maximum Declared Value for FedEx Letter and FedEx Pak packages is $100.00.

In the event of untimely delivery, Federal Express will at your request and with some limitations, refund all transportation charges paid. See Service Guide for further information.

Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

7 Release Signature:

Federal Express Use: Base Charges; Declared Value Charge; Other 1; Other 2; Total Charges

REVISION DATE 6/91 PART #137204 FXEM 1/92 FORMAT #099

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FEDERAL EXPRESS

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
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QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 1974264040

2021M 1974264040

SENDER'S COPY

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1509-6879-8 — Date: 5/28/92

From (Your Name) Please Print: Gary McRae — Your Phone Number (Very Important): (805) 393-0272

Company: ENGINEERING SCIENCE INC — Department/Floor No.

Street Address: 2520 PEGASUS DR

City: BAKERSFIELD — State: CA — ZIP Required: 93308

2 To (Recipient's Name) Please Print: Kochy Fung — Recipient's Phone Number (Very Important): (818) 718-6070

Company: AtmAA — Department/Floor No.

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 21354 Nordhoff St, Suite 113

City: Chatsworth — State: CA — ZIP Required: 91311

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): SYCAMORE AB2588

H IF HOLD FOR PICK-UP, Print FEDEX Address Here — Street Address — City — State — ZIP Required

3 PAYMENT 1 [x] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash/Check — Acct./Credit Card No. — Exp. Date

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†): 11 [x] YOUR PACKAGING; 16 [ ] FEDEX LETTER*; 12 [ ] FEDEX PAK*; 13 [ ] FEDEX BOX; 14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon†): 51 [ ] YOUR PACKAGING; 56 [ ] FEDEX LETTER*; 52 [ ] FEDEX PAK*; 53 [ ] FEDEX BOX; 54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day†): 30 [ ] ECONOMY

Government Overnight (Restricted to authorized users only): 46 [ ] GOVT LETTER; 41 [ ] GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.): 70 [ ] OVERNIGHT FREIGHT**; 80 [ ] TWO-DAY FREIGHT**

(Confirmed reservation required)

† Delivery commitment may be later in some areas.

*Declared Value Limit $100.

**Call for delivery schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)

1 [ ] HOLD FOR PICK-UP (Fill in Box H); 2 [x] DELIVER WEEKDAY; 3 [ ] DELIVER SATURDAY (Extra charge) (Not available to all locations); 4 [ ] DANGEROUS GOODS (Extra charge); 5 [ ]; 6 [ ] DRY ICE ____ Lbs.; 7 [ ] OTHER SPECIAL SERVICE; 8 [ ]; 9 [ ] SATURDAY PICK-UP (Extra charge); 10 [ ]; 11 [ ] DESCRIPTION; 12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6 PACKAGES — WEIGHT In Pounds Only — YOUR DECLARED VALUE (See right)

Total 1 — Total 1 — Total

DIM SHIPMENT (Chargeable Weight) ____ lbs. L x W x H =

Received At: 1 [ ] Regular Stop 3 [ ] Drop Box 4 [ ] B.S.C. 2 [ ] On-Call Stop 5 [ ] Station

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Use of this airbill constitutes your agreement to the service conditions in our current Service Guide, available upon request. See back of sender's copy of this airbill for information. Service conditions may vary for Government Overnight Service. See U.S. Government Service Guide for details.

We will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, and document your actual loss for a timely claim. Limitations found in the current Federal Express Service Guide apply. Your right to recover from Federal Express for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the declared value specified to the left. Recovery cannot exceed actual documented loss. The maximum Declared Value for FedEx Letter and FedEx Pak packages is $100.00.

In the event of untimely delivery, Federal Express will at your request and with some limitations, refund all transportation charges paid. See Service Guide for further information.

Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

7 Release Signature:

FedEx Emp. No. — Date/Time

Federal Express Use: Base Charges; Declared Value Charge; Other 1; Other 2; Total Charges

REVISION DATE 6/91 PART #137204 FXEM 1/92 FORMAT #099

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ENGINEERING IENCE, INC.
2520 Pegasus Drive
Bakersfield, CA 93308
(805) 393-0272

CHAIN OF CUSTODY RECORD

#4201

Project No.	Project Name	Project Manager	Samples Sent To:	Analysis Required
WA005.07	Sycamore AB2508	D. Becvar	Performance Analytical	Propylene Oxide
Samples Collected By: T Delfino	Regulatory Agency (EPA, CARB, SCAQMD, etc.): San Jaoquin Valley APCD		By: Fed. Express	

ES Lab Control No.	Test Date	Field Sample ID (Method-Run#-Sample Source)	Sample Amount	Sample Medium	Comments	Propylene Oxide				
BK9205150	5-27-92	NIOSH Method 1612, Run #1 Tube #1		Charcoal Tube	9202187	X				
BK9205151		, Run #1 Tube #2			9202188	X				
BK9205152		, Run #2 Tube #1			9202189	X				
BK9205153		, Run #2 Tube #2			9202190	X				
BK9205154		, Run #3 Tube #1			9202191	X				
BK9205155		, Run #3 Tube #2			9202192	X				
BK9205156		, BLANK TUBE			9202193	X				

Relinquished By: (Sign & Print)	Date/Time	Received By: (Sign & Print)	Comments:
Geo. McRae Phone: (805) 393-0272	5-28-92 1130	Federal Express Of: (See Air Bill)	
Relinquished By: (Sign & Print) Phone:	Date/Time	Manuel Gill MANUEL GILL Of: PERFORMANCE ANALYTICAL INC.	5-29-92 10:11
Relinquished By: (Sign & Print) Phone:	Date/Time	Received By: (Sign & Print) Of:	Comments:

ENGINEERIN ENCE, INC.
2520 Pegasus Drive
Bakersfield, CA 93308
(805) 393-0272

#4200

CHAIN OF CUSTODY RECORD

Project No.	Project Name	Project Manager	Samples Sent To:
WAC05.07	Sycamore AB2588	D. Becvar	Performance Analytical
Samples Collected By: T. Defino / J. Polhamus	Regulatory Agency (EPA, CARB, SCAQMD, etc.): San Joaquin Valley APCD		By: Fed. Express

ES Lab Control No.	Test Date	Field Sample ID (Method-Run#-Sample Source)	Sample Amount	Sample Medium	Comments	Xylene	Toluene	Benzene	Hexane	Propylene	Ethyl Benzene
BK9205157	5-27-92	CARB Method 410A, Run #1	10 l	Tedlar Bag	9202184	X	X	X	X	X	X
BK9205158	"	" ", Run #2	10 l	"	9202185	X	X	X	X	X	X
BK9205159	"	" ", Run #3	10 l	"	9202186	X	X	X	X	X	X

Relinquished By: (Sign & Print)	Date/Time	Received By: (Sign & Print)	Comments:
[signature] W. Mc[illegible] Phone: (805) 393-0272	5-28-92 1130	Federal Express Of: (see Air Bill)	
Relinquished By: (Sign & Print) Phone:	Date/Time	Received By: (Sign & Print) [signature] MANUEL GILL Of: PERFORMANCE ANALYTICAL INC	Comments: 5-29-92 10:10
Relinquished By: (Sign & Print) Phone:	Date/Time	Received By: (Sign & Print) Of:	Comments:

FEDERAL EXPRESS

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USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE TRACKING NUMBER
1974264062

2021M 1974264062

SENDER'S COPY

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1509-6879-8
Date: 5/28/92

From (Your Name) Please Print: Gary McRae
Your Phone Number (Very Important): (805) 393-0272
Department/Floor No.
Company: ENGINEERING SCIENCE INC
Street Address: 2520 PEGASUS DR
City: BAKERSFIELD State: CA ZIP Required: 93308

2 To (Recipient's Name) Please Print: Michael Tuday
Recipient's Phone Number (Very Important): (818) 727-1137
Department/Floor No.
Company: Performance Analytical
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 20954 Osborne St.
City: Canoga Park State: CA ZIP Required: 91304

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): SYCAMORE AB2588

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address
City State ZIP Required

3 PAYMENT 1 ☐ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☐ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☒ Cash/Check
Acct./Credit Card No. Exp. Date

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning)
11 ☒ YOUR PACKAGING
16 ☐ FEDEX LETTER *
12 ☐ FEDEX PAK *
13 ☐ FEDEX BOX
14 ☐ FEDEX TUBE

Standard Overnight (Delivery by next business afternoon)
51 ☐ YOUR PACKAGING
56 ☐ FEDEX LETTER *
52 ☐ FEDEX PAK *
53 ☐ FEDEX BOX
54 ☐ FEDEX TUBE

Economy Two-Day (Delivery by second business day)
30 ☐ ECONOMY

Government Overnight (Restricted to authorized users only)
46 ☐ GOV'T LETTER
41 ☐ GOV'T PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
70 ☐ OVERNIGHT FREIGHT ** (Confirmed reservation required)
80 ☐ TWO-DAY FREIGHT **

† Delivery commitment may be later in some areas.
* Declared Value Limit $100.
** Call for delivery schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)
1 ☐ HOLD FOR PICK-UP (Fill in Box H)
2 ☒ DELIVER WEEKDAY
3 ☐ DELIVER SATURDAY (Extra charge) (Not available to all locations)
4 ☐ DANGEROUS GOODS (Extra charge)
5 ☐
6 ☐ DRY ICE ______ Lbs.
7 ☐ OTHER SPECIAL SERVICE ______
8 ☐
9 ☐ SATURDAY PICK-UP (Extra charge)
10 ☐
11 ☐ DESCRIPTION
12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

6
PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
Total 1	Total 15	Total

DIM SHIPMENT (Chargeable Weight) 22 lbs.
L x W x H =

Received At
1 ☐ Regular Stop 3 ☐ Drop Box
2 ☐ On-Call Stop 4 ☐ B.S.C. 5 ☐ Station

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

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Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

7 Release Signature:

FedEx Emp. No. Date/Time

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 6/91
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FORMAT #099

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SECTION 6

APPENDICES

ENGINEERIN(.ENCE, INC.
2520 Pegasus Drive
Bakersfield, CA 93308
(805) 393-0272

#4200

CHAIN OF CUSTODY RECORD

Project No.	Project Name	Project Manager	Samples Sent To:
WAC05.07	Sycamore AB2588	D. Becvar	Performance Analytical

Samples Collected By	Regulatory Agency (EPA, CARB, SCAQMD, etc.)	By:
T. DeFinc / J Polhamus	San Joaquin Valley APCD	Fed. Express

ES Lab Control No.	Test Date	Field Sample ID (Method-Run#-Sample Source)	Sample Amount	Sample Medium	Comments	Xylene	Toluene	Benzene	Hexane	Propylene	Ethyl Benzene
BK9205157	5-27-92	CARB Method 410A, Run #1	10 l	Tedlar Bag	9202184	X	X	X	X	X	X
BK9205158	"	" ", Run#2	10 l	"	9202185	X	X	X	X	X	X
BK9205159	"	" ", Run#3	10 l	"	9202186	X	X	X	X	X	X

Relinquished By: (Sign & Print)	Date/Time	Received By: (Sign & Print)	Comments:
[signature] W. Mc[illegible] Phone: (805) 393-0272	5-28-92 1130	Federal Express Of: (see Air Bill)	
Relinquished By: (Sign & Print) Phone:	Date/Time	Received By: (Sign & Print) [signature] MANUEL GILL Of: PERFORMANCE ANALYTICAL INC	Comments: 5-29-92 10:10
Relinquished By: (Sign & Print) Phone:	Date/Time	Received By: (Sign & Print) Of:	Comments:

FEDERAL EXPRESS

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USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 1974264062

2021M 1974264062

SENDER'S COPY

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1509-6879-8 — Date: 5/28/92

From (Your Name) Please Print: Gary McRae — Your Phone Number (Very Important): (805) 393-0272 — Department/Floor No.

Company: ENGINEERING SCIENCE INC

Street Address: 2920 PEGASUS DR

City: BAKERSFIELD — State: CA — ZIP Required: 93308

2 To (Recipient's Name) Please Print: Michael Tuday — Recipient's Phone Number (Very Important): (818) 7??-1151 — Department/Floor No.

Company: Performance Analytical

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 20954 Osborne St.

City: Canoga Park — State: CA — ZIP Required: 91304

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): SYCAMORE AB2598

H IF HOLD FOR PICK-UP, Print FEDEX Address Here — Street Address — City — State — ZIP Required

3 PAYMENT 1 [x] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash/Check — Acct./Credit Card No. — Exp. Date

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)	Standard Overnight (Delivery by next business afternoon†)
11 [x] YOUR PACKAGING	51 [ ] YOUR PACKAGING
16 [ ] FEDEX LETTER *	56 [ ] FEDEX LETTER *
12 [ ] FEDEX PAK *	52 [ ] FEDEX PAK *
13 [ ] FEDEX BOX	53 [ ] FEDEX BOX
14 [ ] FEDEX TUBE	54 [ ] FEDEX TUBE
Economy Two-Day (Delivery by second business day†)	**Government Overnight** (Restricted for authorized users only)
30 [ ] ECONOMY	46 [ ] GOV'T LETTER
	41 [ ] GOV'T PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)
70 [ ] OVERNIGHT FREIGHT ** (Confirmed reservation required) — 80 [ ] TWO-DAY FREIGHT **
† Delivery commitment may be later in some areas. * Declared Value Limit $100. ** Call for delivery schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)

1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [x] DELIVER WEEKDAY
3 [ ] DELIVER SATURDAY (Extra charge) (Not available to all locations)
4 [ ] DANGEROUS GOODS (Extra charge)
5 [ ]
6 [ ] DRY ICE ______ Lbs.
7 [ ] OTHER SPECIAL SERVICE ______
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra charge)
10 [ ]
11 [ ] DESCRIPTION
12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6 PACKAGES — WEIGHT In Pounds Only — YOUR DECLARED VALUE (See right)
Total 1 — Total 15 — Total

DIM SHIPMENT (Chargeable Weight) 22 lbs.
L x W x H =

Received At: 1 [ ] Regular Stop 2 [ ] On-Call Stop 3 [ ] Drop Box 4 [ ] B.S.C. 5 [ ] Station

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

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We will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, and document your actual loss for a timely claim. Limitations found in the current Federal Express Service Guide apply. Your right to recover from Federal Express for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the declared value specified to the left. Recovery cannot exceed actual documented loss. The maximum Declared Value for FedEx Letter and FedEx Pak packages is $100.00.

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7 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature: ______

FedEx Emp. No. — Date/Time

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 6/91
PART #137204 FXEM 1/92
FORMAT #099

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Performance Analytical Inc.
Environmental Testing and Consulting

LABORATORY REPORT

Client:	ENGINEERING-SCIENCE, INC.	Date of Report:	06/02/92
Address:	2520 Pegasus Drive	Date Received:	05/29/92
	Bakersfield, CA 93308	PAI Project No:	4200,4201
Contact:	Mr. Gary McRae	Purchase Order:	Verbal

Client Project: Sycamore AB2588 #WA005.07

Seven (7) Charcoal Tube Samples labeled: "BK9205150" through "BK9205156"

Three (3) Tedlar Bag Samples labeled: "BK9205157" through "BK9205159"

The samples were received at the laboratory under chain of custody on May 29, 1992. The samples were received intact. All of the charcoal tube samples were received wet, except the sample BK9205156. The dates of analysis are indicated on the attached data sheets.

Propylene Oxide Analysis

The charcoal tube samples were analyzed for Propylene Oxide according to NIOSH Method 1612. The analyses were performed using a gas chromatograph equipped with a flame ionization detector.

Propylene Analysis

The Tedlar bag samples were analyzed for Propylene using a gas chromatograph equipped with a flame ionization detector.

Data Release Authorization:

Ku-Jih Chen
Principal Chemist

Reviewed and Approved:

Christopher Casteel
Christopher Casteel
Laboratory Manager

20954 Osborne Street, Canoga Park, CA 91304 • Phone 818 709-1139 • Fax 818 709-2915

Performance Analytical Inc.
Environmental Testing and Consulting

Volatile Organic Compound Analysis

The Tedlar Bag samples were also analyzed for Benzene, Toluene, Ethylbenzene, Total Xylenes and Hexane by gas chromatography/mass spectrometry (GC/MS). The analyses were performed according to the methodology outlined in EPA Method TO-14 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, EPA 600/4-84-041, U.S. Environmental Protection Agency, Research Triangle Park, NC, April, 1984 and May, 1988. The method was modified for using Tedlar Bags. The analyses were performed by gas chromatography/mass spectrometry utilizing thermal desorption/ cryogenic concentration. The instrumentation used for sample analysis was comprised of a Finnigan Model 4500 GC/MS/DS interfaced to an Entech 2000 automated whole air inlet system/cryogenic concentrator. A thick film (5 micron) crossbonded 100% Dimethylpolysiloxane megabore column (RT_x-1, Restek Corporation, Bellefonte, PA) was used to achieve chromatographic separation.

The results of analyses are included on the attached data sheets.

20954 Osborne Street, Canoga Park, CA 91304 • Phone 818 709-1139 • Fax 818 709-2915

ENGINEERING(IENCE, INC.
2520 Pegasus Drive
Bakersfield, CA 93308
(805) 393-0272

CHAIN OF CUSTODY RECORD

Lab 31763

Project No.	Project Name	Project Manager	Samples Sent To:
WA005.07	SYCAmore Cogen	DENNIS BECVAR	ZALCO LAB Bakersfield, CA
Samples Collected By: T. DELFINO	Regulatory Agency (EPA, CARB, SCAQMD, etc.): SJVAPCD		By:

Analysis Required

ES Lab Control No.	Test Date	Field Sample ID (Method-Run#-Sample Source)	Sample Amount	Sample Medium	Comments	CHONS	BTU			
BK9205194	5/27/92	AIR TOXICS Fuel gas Sample				+	X			
BK9205195	5/27/92	Back-up Fuel gas Sample			Back-up ONLY	X	X			

Relinquished By: (Sign & Print)	Date/Time	Received By: (Sign & Print)	Comments:
Troy Delfino Troy Delfino Phone: 805-393-0272	5-28/0805	TRUDI SMITH Of: Trudi Smith	
Relinquished By: (Sign & Print) Phone:	Date/Time	Received By: (Sign & Print) Of:	Comments:
Relinquished By: (Sign & Print) Phone:	Date/Time	Received By: (Sign & Print) Of:	Comments:

SECTION 6

APPENDICES

APPENDIX A

GENERAL SOURCE DATA

SOURCE SAMPLING DATA SHEET

SOURCE : UNIT 2, HRSG STACK DATE : 5/27/92

I. PRETEST DETERMINATIONS

1. Number of sample points determination : **#PTS** Program *
   Calculate equivalent diameter for rectangular stacks : **EQIV** Program

Stack diameter (Equiv. dia.)	169	in / ft		
Upstream Disturbance	84	in / ft	______	diameter
Downstream Disturbance	312	in / ft	______	diameter
Number of sample points	12			

2. Sample point locations. For circular stacks : **LOC** Program

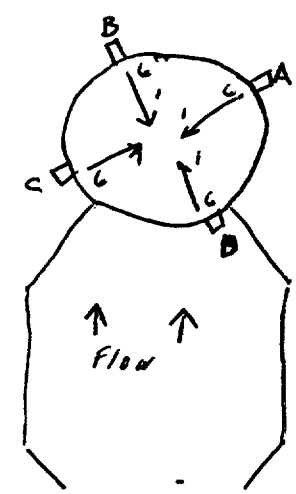
Port Length 13.5 in. Port I.D. 3 in. Port Type male pipe

Pt. # 1	17.1	Pt. # 4	43.5	Pt. # 7		Pt. # 10		inch
2	24.8	5	55.8	8		11		
3	33.5	6	73.7	9		12		

3. Velocity traverse data :

dP Max	______	"H2O
dP Avg	______	"H2O
Ts	______	°F

Sample Location Diagram



① LONG CHAINS
② 150' Rope
③ XTRA power cords
④ power ON stack not reliable
⑤ HAS pulley stand

4. Other estimated/measured data :

Tm	90	°F
Bws	0.10	fraction
dH@	1.74	
O2	15.0	%
CO2	4.0	%
Pb	28.95	"Hg

5. Sampling nozzle selection : **NOZZ** Program

Suggested Nozzle : ______ inch
Actual Nozzle : 0.223 inch

Field Nozzle Calibration :

1		inch
2		
3		
Average	0.223	

6. K factor determination : K factor : 1.4933 **KFAC** Program

II. TEST PROCEDURES

1. Sample point dH determinations : **DH** Program
2. Calculate average test values at end of test run : **AVG** Program

III. POST TEST CALCULATIONS

1. Calculate sample run values : **ISO** Program

* Program refers to HP–42S calculator programs.

ZALCO LABORATORIES, INC.

Analytical & Consulting Services

ENGINEERING SCIENCE
2520 Pegasus Drive
Bakersfield, CA 93308

Lab. No.: 031763_001
Received: May 29, 1992
Reported: May 29, 1992

Attention: Gary McRae

Sample Description: BK9205194 Air Toxics Fuel Gas 5/27

* CHROMATOGRAPHIC ANALYSIS (Z 1635) *

Components	Mole %	Wt %	CHONS	Wt %
Hydrogen	0.000	0.000	CARBON	73.46
Carbon Dioxide	.557	1.408	HYDROGEN	23.64
Oxygen	.059	.108	OXYGEN	1.13
Nitrogen	1.097	1.766	NITROGEN	1.77
Carbon Monoxide	0.000	0.000	SULFUR	0.00
Hydrogen Sulfide	0.000	0.000		
Methane	91.990	84.761	Totals	99.99
Ethane	5.150	8.894	Total H/C	.32
Propane	.993	2.515		
IsoButane	.075	.250		
N-Butane	.046	.153		
IsoPentane	.015	.060		
N-Pentane	.009	.036		
Hexanes+	.010	.049		
Totals =	100.000	100.000		

SPECIFIC GRAVITY (Air = 1)		.6022
SPECIFIC VOLUME, cu.ft./lb	*	21.76
GROSS CALORIFIC VALUE, BTU/cu.ft.	*	1037.03
GROSS CALORIFIC VALUE, BTU/cu.ft.	**	1054.96
GROSS CALORIFIC VALUE, BTU/lb	**	22953.16
NET CALORIFIC VALUE, BTU/cu.ft.	**	951.81
NET CALORIFIC VALUE, BTU/lb	**	20708.75
DSCF EXHAUST PER SCF FUEL (0% Oxygen)		8.9505
COMPRESSIBILITY FACTOR 'Z' (60 F,1 ATM)		.9978

EPA 'F' Factor @ 68 F: 8633.034 DSCF / MM Btu.
KCAPCD 'F' Factor @ 60 F: 8503.538 DSCF / MM Btu.

* Water Saturated

** Dry Gas @ 60 F, 14.73 psia

Kathe Zimmerman
Analyst

Jim Etherton
Laboratory Director

4309 Armour Avenue Bakersfield, California 93308

(805) 395-0539 FAX (805) 395-3069

3350 DATA LOOP Report - PAGE Format

Method for Natural Gas analysis. ADC_1 Page 1
Sample Name : BK9205194 Air Toxics Fuel Gas 5/27 Report No : 52.00
0141, 031763_001, May 29, 1992

Instrument : ADC_1 Application : Loop
Calculation : ExternalSTD Quantitation: AreaUnits

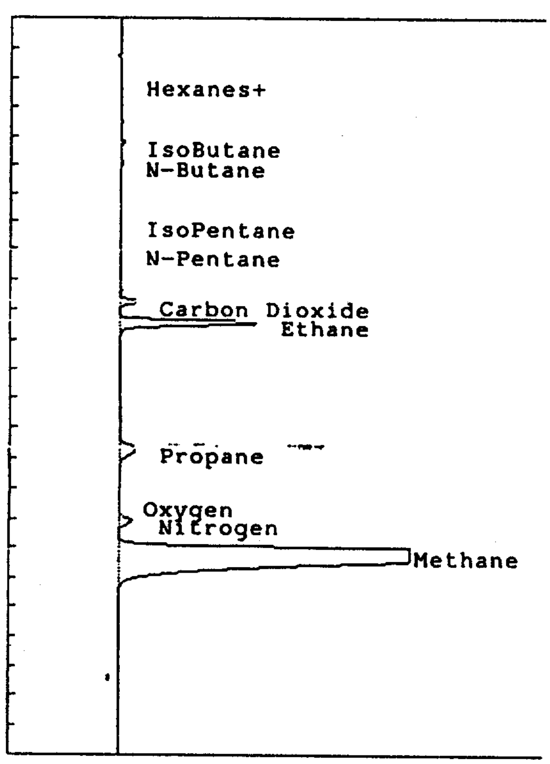
Result File : /DATA/LOOP/RESULT/ADC_1/ES31763_001.RES
Run Time : 25.00 Minutes Injected on Fri May 29, 1992 9:52:12 am
Sequence file :
Subsequence/Sample : /
Run Status : RunStatusOK
EndOffBaseline

Pk#	RT	ID-tm	Factor	Area	Code	UNMOL%	Name
1	1.51		0.00000E+00	652	BB	0.0000	
2	2.10	2.13	1.12917E-05	872	BB	.0098	Hexanes+
3	3.50		0.00000E+00	993	BV	0.0000	
4	3.61		0.00000E+00	71	PB	0.0000	
5	4.22	4.20	1.74021E-05	4231	BV	.0736	IsoButane
6	4.91	4.95	1.69142E-05	2663	PB	.0450	N-Butane
7	7.09	7.20	1.47304E-05	976	BB	.0144	IsoPentane
8	8.06	8.15	1.41261E-05	603	BB	.0085	N-Pentane
9	9.37		0.00000E+00	1265	PV	0.0000	
10	9.72	9.75	2.79733E-05	19608	VV	.5485	Carbon Dioxide
11	10.35	10.24	2.57603E-05	196877	VB	5.0716	Ethane
12	14.69	14.30	2.05629E-05	47558	BV	.9779	Propane
13	15.85		0.00000E+00	602	PV	0.0000	
14	16.45	#16.44	4.62950E-05	1256	VV	.0581	Oxygen
15	17.07	17.15	3.43085E-05	31503	VV	1.0808	Nitrogen
16	18.10	#18.10	4.10663E-05	2206070	VB	90.5952	Methane

Total Area : 2515798 Total UNMOL% : 98.484

Report Time : Fri May 29, 1992 10:17:51 am

Method : /DATA/LOOP/METHOD/CHONS1A.MTH
Report File : /DATA/LOOP/FORMAT/PAGE.FMT



hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
08:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
08:30	B	10.72	872.17	Prc Dn	Prc Dn	7.25	52.50	.68
08:30	C	9.91	806.47	Prc Dn	Prc Dn	6.69	48.41	.67
08:30	D	11.05	899.75	Prc Dn	Prc Dn	6.91	50.05	.63

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
08:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
08:45	B	3.46	14.84	3	3	.007	6.26	38	37	.135	119.95
08:45	C	3.58	14.64	3	3	.006	4.67	44	42	.154	123.94
08:45	D	3.58	14.64	4	4	.009	Other	39	37	.136	Other

08:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.31 Unit C 4.65 Unit D 8.07

Fifteen Minute Log - Plant Signals

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
08:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
08:45	B	10.76	875.93	Prc Dn	Prc Dn	7.36	53.25	.68
08:45	C	9.94	808.99	Prc Dn	Prc Dn	6.71	48.59	.68
08:45	D	11.05	899.49	Prc Dn	Prc Dn	6.91	50.06	.63

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
09:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
09:00	B	3.46	14.84	3	3	.007	6.27	38	37	.135	119.01
09:00	C	3.57	14.66	3	3	.006	4.68	44	42	.154	124.13
09:00	D	3.57	14.64	4	4	.009	8.00	39	37	.136	124.57

09:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.38 Unit C 4.74 Unit D 8.14

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
09:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
09:00	B	10.79	878.55	Prc Dn	Prc Dn	7.42	53.69	.69
09:00	C	9.98	812.29	Prc Dn	Prc Dn	6.84	49.54	.69
09:00	D	11.06	900.13	Prc Dn	Prc Dn	6.91	50.02	.62

One Hour Log - Emissions

Time CO2 Calc O2 ---- CO ---- ---- NOx (Outlet) ----

hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx ppm	NOx ppmC	NOx #/mmBTU	NOx #/hr
09:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
09:00	B	3.46	14.84	3	3	.007	6.26	38	37	.136	119.23
09:00	C	3.57	14.65	3	3	.006	4.68	44	42	.154	124.13
09:00	D	3.58	14.64	4	4	.009	8.00	39	37	.136	122.57

09:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.41 Unit C 4.81 Unit D 8.11

One Hour Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
09:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
09:00	B	10.74	873.70	Prc Dn	Prc Dn	7.30	52.88	.68
09:00	C	9.93	807.80	Prc Dn	Prc Dn	6.72	48.69	.68
09:00	D	11.06	899.90	Prc Dn	Prc Dn	6.91	50.04	.62

Fifteen Minute Log - Emissions

Time CO2 Calc O2 ---------- CO ---------- ---------- NOx (Outlet) ----------

Start Run #1 PAH

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
09:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
09:15	B	3.45	14.86	3	3	.007	6.34	37	36	.133	118.58
09:15	C	3.57	14.65	3	3	.006	4.68	44	42	.153	124.23
09:15	D	3.57	14.65	4	4	.009	8.01	39	37	.136	122.41

09:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.47 Unit C 4.83 Unit D 8.25

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
09:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
09:15	B	10.63	881.36	Prc Dn	Prc Dn	7.44	53.88	.69
09:15	C	9.97	813.20	Prc Dn	Prc Dn	6.83	49.42	.68
09:15	D	11.04	898.69	Prc Dn	Prc Dn	6.91	50.06	.63

Start Run #1 VOC

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx ppmC	NOx #/mmBTU	NOx #/hr
09:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
09:30	B	3.45	14.87	3	3	.007	6.37	37	36	.133	[illegible]18.01
09:30	C	3.57	14.66	3	3	.006	4.75	43	41	.150	123.95
09:30	D	3.57	14.66	4	4	.009	8.04	39	37	.136	122.[illegible]

09:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.52 Unit C 4.94 Unit D 8.51

Fifteen Minute Log - Plant Signals

Time ------ Gas ------ ------ Oil ------ ------ H2O ------ H2O Inj
hh:mm Unit #/sec mmBTU #/sec mmBTU #/sec gal/min Ratio

09:30	B	10.85	882.70	Prc Dn	Prc Dn	7.48	54.16	.69
09:30	C	10.03	816.01	Prc Dn	Prc Dn	6.90	49.94	.69
09:30	D	11.03	897.91	Prc Dn	Prc Dn	6.91	50.05	.63

F i f t e e n   M i n u t e   L o g   -   E m i s s i o n s

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
09:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
09:45	B	3.43	14.90	3	3	.008	6.48	36	35	.130	117.16
09:45	C	3.57	14.65	3	3	.006	4.78	42	40	.147	123.12
09:45	D	3.56	14.67	4	4	.009	8.03	39	37	.136	122.20

09:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.55 Unit C 4.89 Unit D 8.17

F i f t e e n   M i n u t e   L o g   -   P l a n t   S i g n a l s

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

09:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
09:45	B	10.86	884.23	Prc Dn	Prc Dn	7.58	54.87	.70
09:45	C	10.05	817.86	Prc Dn	Prc Dn	6.92	50.11	.69
09:45	D	11.01	896.41	Prc Dn	Prc Dn	6.86	49.69	.62

F i f t e e n   M i n u t e   L o g   -   E m i s s i o n s

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
10:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
10:00	B	3.40	14.94	4	3	.008	6.64	36	36	.131	116.47
10:00	C	3.57	14.65	3	3	.006	4.85	42	40	.147	122.03
10:00	D	3.56	14.67	4	4	.009	8.12	38	36	.134	121.66

10:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.54 Unit C 4.87 Unit D 8.13

F i f t e e n   M i n u t e   L o g   -   P l a n t   S i g n a l s

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
10:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
10:00	B	10.86	884.05	Prc Dn	Prc Dn	7.55	54.64	.69
10:00	C	10.05	817.65	Prc Dn	Prc Dn	6.94	50.22	.69
10:00	D	11.01	896.05	Prc Dn	Prc Dn	6.88	49.79	.62

O n e   H o u r   L o g   -   E m i s s i o n s

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr

10:00	C	3.57	14.65	3	3	.006	4.86	43	40	.149	121.77
10:00	D	3.56	14.66	4	4	.009	8.12	39	37	.135	121.66

10:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.55 Unit C 4.91 Unit D 8.13

O n e   H o u r   L o g   -   P l a n t   S i g n a l s

Time		----- Gas	-----	----- Oil	-----	----- H2O	-----	H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
10:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
10:00	B	10.85	883.10	Prc Dn	Prc Dn	7.51	54.39	.69
10:00	C	10.03	816.20	Prc Dn	Prc Dn	6.90	49.92	.69
10:00	D	11.02	897.30	Prc Dn	Prc Dn	6.89	49.90	.62

F i f t e e n   M i n u t e   L o g   -   E m i s s i o n s

Time		CO2	Calc O2	-------------	------------- CO	-------------	-------------	---------	--------- NOx (Outlet)	---------	---------
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
10:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

10:15	B	3.40	14.94	4	3	.008	6.74	35	35	.129	115.55
10:15	C	3.56	14.68	3	3	.006	4.87	42	39	.145	120.[illegible]
10:15	D	3.55	14.68	4	4	.009	8.17	39	37	.135	121.29

10:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.55 Unit C 4.82 Unit D 8.12

F i f t e e n   M i n u t e   L o g   -   P l a n t   S i g n a l s

Time		----- Gas	-----	----- Oil	-----	----- H2O	-----	H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
10:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
10:15	B	10.87	884.62	Prc Dn	Prc Dn	7.61	55.08	.70
10:15	C	10.08	820.25	Prc Dn	Prc Dn	7.04	50.94	.70
10:15	D	11.00	895.35	Prc Dn	Prc Dn	6.91	49.99	.63

$O_2\% = 14.91$
$CO_2\% = 3.42$

End Run #1 VOC

F i f t e e n   M i n u t e   L o g   -   E m i s s i o n s

Time		CO2	Calc O2	-------------	------------- CO	-------------	-------------	---------	--------- NOx (Outlet)	---------	---------
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
10:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
10:30	B	3.37	15.00	3	3	.008	6.87	35	35	.127	114.33
10:30	C	3.55	14.69	3	3	.006	4.87	42	40	.147	120.11
10:30	D	3.54	14.71	4	4	.009	8.21	38	36	.134	120.7[illegible]

10:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.54 Unit C 4.79 Unit D [illegible]

F i f t e e n   M i n u t e   L o g   -   P l a n t   S i g n a l s

Time		----- Gas	-----	----- Oil	-----	----- H2O	-----	H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
10:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
10:30	B	10.91	887.77	Prc Dn	Prc Dn	7.66	55.48	.70

10:30	D	10.99	894.66	Prc Dn	Prc Dn	6.93	50.14	.63

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
10:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
10:45	B	3.37	15.00	4	4	.008	6.94	35	35	.128	114.04
10:45	C	3.59	14.68	3	3	.006	4.91	41	39	.142	119.07
10:45	D	3.54	14.70	4	4	.009	8.23	38	36	.134	120.[illegible]

10:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.59 Unit C 4.81 Unit D 8.13

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
10:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
10:45	B	10.92	888.93	Prc Dn	Prc Dn	7.71	55.84	.71

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

10:45	C	10.11	822.48	Prc Dn	Prc Dn	7.07	51.22	.70
10:45	D	10.99	894.09	Prc Dn	Prc Dn	6.91	50.05	.63

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
11:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
11:00	B	3.34	15.05	3	3	.008	6.89	36	36	.133	114.5[illegible]
11:00	C	3.55	14.69	3	3	.006	4.89	42	40	.147	119.21
11:00	D	3.52	14.74	4	4	.009	8.17	40	39	.142	121.75

11:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.63 Unit C 4.82 Unit D 8.[illegible]2

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
11:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
11:00	B	10.87	885.12	Prc Dn	Prc Dn	7.30	52.83	.67
11:00	C	10.10	821.75	Prc Dn	Prc Dn	6.98	50.54	.69
11:00	D	10.96	891.82	Prc Dn	Prc Dn	6.74	48.78	.61

One Hour Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
11:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
11:00	B	3.37	15.00	3	3	.008	6.89	35	35	.129	114.61

One Hour Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
11:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
11:00	B	10.89	886.60	Prc Dn	Prc Dn	7.57	54.81	.69
11:00	C	10.09	821.40	Prc Dn	Prc Dn	7.03	50.87	.70
11:00	D	10.98	894.00	Prc Dn	Prc Dn	6.87	49.74	.63

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
11:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
11:15	B	3.33	15.07	3	3	.007	6.82	37	38	.139	116.73
11:15	C	3.54	14.69	3	3	.006	4.91	42	40	.147	119.55
11:15	D	3.54	14.71	4	4	.009	8.12	39	37	.136	121.77

Daily Logs for Wed 27 May 1992

***** Sycamore Cogeneration Company *****

Bakersfield, California

11:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.63 Unit C 4.82 Unit D 8.11

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
11:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
11:15	B	10.87	884.69	Prc Dn	Prc Dn	7.21	52.17	.66
11:15	C	10.09	821.15	Prc Dn	Prc Dn	6.87	49.72	.68
11:15	D	10.95	890.83	Prc Dn	Prc Dn	6.65	48.17	.61

Start Run#1 Aldehydes

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
11:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
11:30	B	3.41	14.93	3	3	.008	6.73	38	37	.137	118.85
11:30	C	3.54	14.69	3	3	.006	4.89	41	39	.145	119.19
11:30	D	3.52	14.74	4	4	.009	7.99	40	39	.142	123.42

11:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.66 Unit C 4.83 Unit D 8.08

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
11:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
11:30	B	10.87	884.39	Prc Dn	Prc Dn	7.03	50.90	.65
11:30	C	10.11	822.69	Prc Dn	Prc Dn	6.85	49.58	.68
11:30	D	10.93	889.46	Prc Dn	Prc Dn	6.50	47.07	.59

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
11:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
11:45	B	3.39	14.97	3	3	.008	6.58	39	38	.141	121.74
11:45	C	3.52	14.73	3	3	.006	4.81	43	41	.151	121.14
11:45	D	3.52	14.74	4	4	.009	7.92	40	38	.141	124.7[illegible]

11:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.67 Unit C 4.83 Unit D 8.06

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
11:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
11:45	B	10.86	884.03	Prc Dn	Prc Dn	7.07	51.17	.65
11:45	C	10.10	822.11	Prc Dn	Prc Dn	6.76	48.97	.67
11:45	D	10.91	887.79	Prc Dn	Prc Dn	6.50	47.07	.60

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
12:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
12:00	B	3.40	14.95	3	3	.007	6.51	39	38	.142	123.52
12:00	C	3.53	14.71	3	3	.006	4.79	43	41	.149	121.67
12:00	D	3.52	14.74	4	4	.009	7.85	40	39	.142	124.73

12:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.68 Unit C 4.84 Unit D 8.05

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
12:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
12:00	B	10.85	862.94	Prc Dn	Prc Dn	6.92	50.08	.64
12:00	C	10.09	821.18	Prc Dn	Prc Dn	6.68	48.37	.66
12:00	D	10.91	888.27	Prc Dn	Prc Dn	6.49	46.97	.59

One Hour Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
12:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
12:00	B	3.38	14.97	3	3	.007	6.52	38	38	.139	123.40
12:00	C	3.54	14.71	3	3	.006	4.79	42	40	.148	121.64
12:00	D	3.52	14.73	4	4	.009	7.85	40	38	.140	124.73

12:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.68 Unit C 4.85 Unit D 8.04

One Hour Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
12:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
12:00	B	10.86	884.00	Prc Dn	Prc Dn	7.05	51.08	.63
12:00	C	10.10	821.80	Prc Dn	Prc Dn	6.79	49.16	.67
12:00	D	10.72	889.10	Prc Dn	Prc Dn	6.54	47.32	.60

Start Run #1
Propylene Oxide

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx ppmC	NOx #/mmBTU	NOx #/hr
12:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
12:15	B	3.40	14.94	3	3	.007	6.40	39	39	.143	124.62
12:15	C	3.52	14.74	3	3	.006	4.79	43	41	.152	122.86
12:15	D	3.51	14.76	4	4	.009	7.74	41	40	.146	126.95

12:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.65 Unit C 4.85 Unit D 8.01

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
12:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
12:15	B	10.86	883.65	Prc Dn	Prc Dn	6.92	50.07	.64
12:15	C	10.11	822.49	Prc Dn	Prc Dn	6.72	48.63	.66
12:15	D	10.91	888.10	Prc Dn	Prc Dn	6.40	46.36	.59

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx ppmC	NOx #/mmBTU	NOx #/hr
12:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
12:30	B	3.41	14.94	3	3	.007	6.35	39	38	.141	125.51
12:30	C	3.53	14.73	3	3	.006	4.80	42	40	.149	123.71
12:30	D	3.51	14.76	4	4	.009	7.79	40	39	.143	127.02

12:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.65 Unit C 4.85 Unit D 8.00

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
12:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
12:30	B	10.87	884.51	Prc Dn	Prc Dn	6.85	49.59	.63
12:30	C	10.12	823.93	Prc Dn	Prc Dn	6.69	48.41	.66
12:30	D	10.92	888.86	Prc Dn	Prc Dn	6.44	46.62	.59

F i f t e e n M i n u t e L o g - E m i s s i o n s

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
12:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
12:45	B	3.39	14.97	3	3	.007	6.29	39	39	.144	125.67
12:45	C	3.52	14.74	3	3	.006	4.83	43	41	.151	123.66
12:45	D	3.51	14.76	4	4	.009	7.74	41	39	.144	127.62

12:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.61 Unit C 4.85 Unit D 7.96

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
12:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
12:45	B	10.81	879.61	Prc Dn	Prc Dn	6.78	49.07	.63
12:45	C	10.07	819.46	Prc Dn	Prc Dn	6.65	48.13	.66
12:45	D	10.88	895.47	Prc Dn	Prc Dn	6.37	46.12	.59

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

F i f t e e n M i n u t e L o g - E m i s s i o n s

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
13:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
13:00	B	3.37	15.00	3	3	.007	6.27	40	40	.146	126.56
13:00	C	3.52	14.74	3	3	.006	4.87	43	41	.151	123.68
13:00	D	3.51	14.76	4	4	.009	7.72	41	39	.144	127.75

13:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.56 Unit C 4.85 Unit D 7.91

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
13:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
13:00	B	10.73	872.97	Prc Dn	Prc Dn	6.61	47.83	.62
13:00	C	10.00	813.70	Prc Dn	Prc Dn	6.52	47.21	.65
13:00	D	10.67	885.07	Prc Dn	Prc Dn	6.37	46.09	.59

O n e H o u r L o g - E m i s s i o n s

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
13:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
13:00	B	3.39	14.96	3	3	.007	6.27	39	39	.144	126.56
13:00	C	3.52	14.74	3	3	.006	4.86	43	41	.151	123.71
13:00	D	3.51	14.76	4	4	.009	7.72	41	39	.144	127.75

13:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.56 Unit C 4.85 Unit D 7.91

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
13:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
13:00	B	10.81	880.20	Prc Dn	Prc Dn	6.79	49.14	.63
13:00	C	10.07	819.90	Prc Dn	Prc Dn	6.64	48.10	.66
13:00	D	10.90	886.90	Prc Dn	Prc Dn	6.39	46.30	.59

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
13:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
13:15	B	3.37	15.00	3	3	.007	6.30	40	40	.148	127.14
13:15	C	3.51	14.75	3	3	.006	4.86	44	42	.155	123.95
13:15	D	3.50	14.77	4	4	.008	7.66	41	39	.146	127.53

13:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.51 Unit C 4.85 Unit D 7.84

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
13:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
13:15	B	10.69	869.70	Prc Dn	Prc Dn	6.53	47.30	.61
13:15	C	9.95	809.55	Prc Dn	Prc Dn	6.42	46.47	.65
13:15	D	10.87	884.87	Prc Dn	Prc Dn	6.31	45.68	.58

$O_2\% = 14.95$
$CO_2\% = 3.40$
End Run #1 PAH

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
13:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
13:30	B	3.36	15.02	3	3	.007	6.24	40	40	.149	128.27
13:30	C	3.50	14.77	3	3	.006	4.85	45	44	.160	125.85
13:30	D	3.50	14.78	4	4	.009	7.59	42	40	.149	128.68

13:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.44 Unit C 4.85 Unit D 7.79

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
13:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
13:30	B	10.68	869.60	Prc Dn	Prc Dn	6.53	47.27	.61
13:30	C	9.99	812.87	Prc Dn	Prc Dn	6.51	47.13	.65
13:30	D	10.87	885.03	Prc Dn	Prc Dn	6.28	45.48	.58

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
13:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
13:45	B	3.33	15.06	3	3	.007	6.25	40	41	.150	129.38
13:45	C	3.51	14.75	3	3	.006	4.90	43	41	.152	125.74
13:45	D	3.49	14.79	4	4	.009	7.62	41	39	.144	128.68

13:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.38 Unit C 4.95 Unit D 7.76

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
13:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
13:45	B	10.69	870.37	Prc Dn	Prc Dn	6.59	47.71	.62
13:45	C	9.98	812.10	Prc Dn	Prc Dn	6.48	46.89	.65
13:45	D	10.89	886.01	Prc Dn	Prc Dn	6.38	46.22	.59

Fifteen Minute Log - Emissions

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
14:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
14:00	B	3.33	15.07	3	3	.007	6.29	40	40	.149	129.88
14:00	C	3.50	14.77	3	3	.006	4.88	44	42	.155	126.40
14:00	D	3.49	14.79	4	4	.009	7.62	42	40	.148	129.76

14:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.35 Unit C 4.85 Unit D 7.73

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
14:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
14:00	B	10.69	870.26	Prc Dn	Prc Dn	6.60	47.76	.62
14:00	C	9.95	809.65	Prc Dn	Prc Dn	6.44	46.63	.65
14:00	D	10.87	885.06	Prc Dn	Prc Dn	6.33	45.86	.58

O_2 % = 15.00
CO_2 % = 3.37

End Run #1 Propylene Oxide

One Hour Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
14:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
14:00	B	3.35	15.04	3	3	.007	6.29	40	40	.149	129.88
14:00	C	3.51	14.76	3	3	.006	4.89	44	42	.156	126.42
14:00	D	3.50	14.78	4	4	.009	7.62	41	40	.147	129.64

14:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.36 Unit C 4.85 Unit D 7.73

One Hour Log - Plant Signals

hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
14:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
14:00	B	10.69	870.00	Prc Dn	Prc Dn	6.56	47.51	.61
14:00	C	9.97	811.00	Prc Dn	Prc Dn	6.46	46.78	.65
14:00	D	10.88	885.20	Prc Dn	Prc Dn	6.33	45.81	.58

Start Run #2 PAH

Start Run #2 VO

F i f t e e n M i n u t e L o g - E m i s s i o n s

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
14:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
14:15	B	3.30	15.12	3	3	.007	6.26	40	41	.150	130.26
14:15	C	3.51	14.76	3	3	.006	4.89	44	43	.157	126.65
14:15	D	3.49	14.79	4	4	.009	7.69	41	40	.146	129.92

14:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.32 Unit C 4.85 Unit D 7.70

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Daily Logs for Wed 27 May 1992

***** Sycamore Cogeneration Company *****

Bakersfield, California

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
14:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
14:15	B	10.75	875.07	Prc Dn	Prc Dn	6.66	48.19	.62
14:15	C	9.95	810.06	Prc Dn	Prc Dn	6.41	46.39	.64
14:15	D	10.88	885.46	Prc Dn	Prc Dn	6.34	45.92	.58

F i f t e e n M i n u t e L o g - E m i s s i o n s

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
14:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
14:30	B	3.30	15.13	3	3	.007	6.30	40	40	.149	130.47
14:30	C	3.50	14.78	3	3	.006	4.85	44	43	.157	126.06
14:30	D	3.49	14.78	4	4	.009	7.78	40	39	.142	128.56

14:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.30 Unit C 4.83 Unit D 7.72

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
14:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
14:30	B	10.77	876.55	Prc Dn	Prc Dn	6.67	48.31	.62
14:30	C	9.99	812.99	Prc Dn	Prc Dn	6.40	46.37	.64
14:30	D	10.88	885.25	Prc Dn	Prc Dn	6.33	45.86	.58

Start Run #2 Propylene Oxide

F i f t e e n M i n u t e L o g - E m i s s i o n s

Time CO2 Calc O2 CO NOx (Outlet)

Time	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx ppm	NOx ppmC	NOx #/mmBTU	NOx #/hr
14:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
14:45	B	3.29	15.14	3	3	.007	6.29	40	41	.150	130.56
14:45	C	3.51	14.77	3	3	.006	4.78	44	42	.155	126.74
14:45	D	3.49	14.79	4	4	.009	7.76	41	40	.147	129.19

14:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.28 Unit C 4.84 Unit D 7.71

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
14:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
14:45	B	10.77	876.93	Prc Dn	Prc Dn	6.83	49.48	.63
14:45	C	10.02	815.49	Prc Dn	Prc Dn	6.52	47.22	.65
14:45	D	10.87	885.08	Prc Dn	Prc Dn	6.29	45.50	.58

Fifteen Minute Log - Emissions

Time CO2 Calc O2 ------------- CO ------------- --------- NOx (Outlet) ---------

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
15:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
15:00	B	3.39	14.96	3	3	.007	6.26	39	39	.145	127.52
15:00	C	3.50	14.78	3	3	.006	4.75	44	43	.157	127.41
15:00	D	3.49	14.80	4	4	.009	7.76	41	40	.148	129.13

15:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.27 Unit C 4.83 Unit D 7.70

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
15:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
15:00	B	10.75	874.95	Prc Dn	Prc Dn	6.75	48.88	.63
15:00	C	10.00	813.85	Prc Dn	Prc Dn	6.48	46.91	.65
15:00	D	10.88	885.60	Prc Dn	Prc Dn	6.26	45.32	.56

$O_2\% = 15.09$
$CO_2\% = 3.32$

End Run # 2 VOC

One Hour Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx ppm	NOx ppmC	NOx #/mmBTU	NOx #/hr
15:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
15:00	B	3.31	15.10	3	3	.007	6.25	40	40	.148	129.87
15:00	C	3.50	14.77	3	3	.006	4.75	44	43	.157	127.41
15:00	D	3.49	14.79	4	4	.009	7.77	41	40	.146	129.12

15:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.27 Unit C 4.83 Unit D 7.70

One Hour Log - Plant Signals

Time ----- Gas ----- ----- Oil ----- ----- H2O ----- H2O Inj

15:00	B	10.76	875.90	Prc Dn	Prc Dn	6.73	48.72	.62
15:00	C	9.99	813.10	Prc Dn	Prc Dn	6.45	46.72	.65
15:00	D	10.88	885.40	Prc Dn	Prc Dn	6.30	45.65	.58

F i f t e e n   M i n u t e   L o g   -   E m i s s i o n s

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
15:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
15:15	B	3.38	14.99	3	3	.007	6.26	40	40	.148	129.16
15:15	C	3.50	14.78	3	3	.006	4.72	44	42	.156	127.23
15:15	D	3.49	14.78	4	4	.009	7.78	40	39	.145	128.67

15:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.27 Unit C 4.82 Unit D 7.71

F i f t e e n   M i n u t e   L o g   -   P l a n t   S i g n a l s

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

15:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
15:15	B	10.70	871.19	Prc Dn	Prc Dn	6.63	47.97	.62
15:15	C	9.96	810.53	Prc Dn	Prc Dn	6.42	46.45	.64
15:15	D	10.89	885.95	Prc Dn	Prc Dn	6.33	45.84	.58

O_2% = 15.01
CO_2% = 3.36

End Run #1 Aldehyde

F i f t e e n   M i n u t e   L o g   -   E m i s s i o n s

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
15:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
15:30	B	3.36	15.02	3	3	.007	6.18	41	41	.150	129.17
15:30	C	3.50	14.77	3	3	.006	4.76	45	43	.158	127.26
15:30	D	3.48	14.81	4	4	.008	7.67	42	41	.149	130.09

15:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.24 Unit C 4.82 Unit D 7.68

F i f t e e n   M i n u t e   L o g   -   P l a n t   S i g n a l s

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
15:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
15:30	B	10.63	865.27	Prc Dn	Prc Dn	6.51	47.13	.61
15:30	C	9.92	807.49	Prc Dn	Prc Dn	6.42	46.49	.65
15:30	D	10.88	885.78	Prc Dn	Prc Dn	6.30	45.58	.58

3.34 15.05

F i f t e e n   M i n u t e   L o g   -   E m i s s i o n s

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
15:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn

15:45	C	3.48	14.80	3	3	.006	4.76	46	45	.165	[illegible]9
15:45	D	3.49	14.79	4	4	.009	7.65	41	40	.146	[illegible].89

15:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.23 Unit C 4.82 Unit D 7.67

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
15:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
15:45	B	10.61	863.48	Prc Dn	Prc Dn	6.65	48.13	.63
15:45	C	9.90	805.45	Prc Dn	Prc Dn	6.51	47.16	.66
15:45	D	10.88	885.48	Prc Dn	Prc Dn	6.36	46.05	.58

Start Run # 2 Aldehyde

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
16:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

1[illegible]00	B	3.39	14.97	3	3	.007	6.06	41	40	.149	130.85
[illegible]00	C	3.50	14.77	3	3	.006	4.78	43	42	.153	127.71
16:00	D	3.49	14.79	4	4	.009	7.67	41	40	.146	129.44

16:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.20 Unit C 4.80 Unit D 7.68

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
16:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
16:00	B	10.59	862.19	Prc Dn	Prc Dn	6.60	47.76	.62
16:00	C	9.88	803.95	Prc Dn	Prc Dn	6.55	47.46	.66
16:00	D	10.89	886.17	Prc Dn	Prc Dn	6.35	45.98	.58

One Hour Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
16:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
16:00	B	3.37	15.00	3	3	.007	6.05	41	41	.151	130.59
16:00	C	3.50	14.78	3	3	.006	4.78	44	43	.158	127.71
16:00	D	3.49	14.80	4	4	.009	7.67	41	40	.146	129.44

16:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.20 Unit C 4.81 Unit D 7.69

One Hour Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
16:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn

16:00	D	10.89	885.80	Prc Dn	Prc Dn	6.33	45.86	.58

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
16:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
16:15	B	3.37	15.00	3	3	.007	5.96	41	41	.152	131.18
16:15	C	3.49	14.79	3	3	.006	4.61	45	43	.159	127.94
16:15	D	3.48	14.81	4	4	.009	7.67	41	40	.146	129.94

16:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.16 Unit C 4.80 Unit D 7.71

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
16:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
16:15	B	10.57	860.63	Prc Dn	Prc Dn	6.58	47.67	.62

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

16:15	C	9.87	803.23	Prc Dn	Prc Dn	6.45	46.71	.65
16:15	D	10.89	886.52	Prc Dn	Prc Dn	6.40	46.34	.59

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
16:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
16:30	B	3.35	15.04	3	3	.007	5.96	41	42	.153	131.56
16:30	C	3.49	14.79	3	3	.006	4.80	44	43	.156	127.47
16:30	D	3.48	14.80	4	4	.009	7.71	41	40	.147	129.61

16:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.15 Unit C 4.80 Unit D 7.72

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
16:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
16:30	B	10.56	859.75	Prc Dn	Prc Dn	6.61	47.88	.63
16:30	C	9.87	803.51	Prc Dn	Prc Dn	6.50	47.08	.66
16:30	D	10.91	887.99	Prc Dn	Prc Dn	6.38	46.20	.58

$O_2\% =$
$CO_2\% = 3.36$

End Run #2 Propylene Oxide

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
16:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
16:45	B	3.36	15.02	3	3	.007	5.95	41	41	.151	130.22
16:45	C	3.49	14.80	3	3	.006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

16:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.12 Unit C 4.79 Unit D 7.74

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
16:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
16:45	B	10.54	858.04	Prc Dn	Prc Dn	6.56	47.47	.62
16:45	C	9.87	803.03	Prc Dn	Prc Dn	6.49	46.97	.66
16:45	D	10.90	887.30	Prc Dn	Prc Dn	6.49	47.00	.60

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
17:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
17:00	B	3.34	15.05	3	3	.007	5.97	40	41	.150	130.28
17:00	C	3.49	14.79	3	3	.006	4.79	45	43	.158	126.42

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

17:00	D	3.48	14.80	4	4	.009	7.79	41	40	.147	128.73

17:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.09 Unit C 4.77 Unit D 7.74

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
17:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
17:00	B	10.54	858.22	Prc Dn	Prc Dn	6.52	47.19	.62
17:00	C	9.85	801.85	Prc Dn	Prc Dn	6.40	46.35	.65
17:00	D	10.87	884.78	Prc Dn	Prc Dn	6.31	45.67	.58

One Hour Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
17:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
17:00	B	3.35	15.03	3	3	.007	5.97	41	41	.151	130.29
17:00	C	3.49	14.79	3	3	.006	4.79	44	43	.158	126.53
17:00	D	3.48	14.80	4	4	.009	7.79	41	39	.145	128.73

17:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.09 Unit C 4.77 Unit D 7.74

One Hour Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
17:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
17:00	B	10.56	859.20	Prc Dn	Prc Dn	6.57	47.55	.62
17:00	C	9.87	802.90	Prc Dn	Prc Dn	6.46	46.78	.65
17:00	D	10.89	884.60	Prc Dn	Prc Dn	6.40	46.30	.59

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
17:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
17:15	B	3.35	15.04	3	3	.007	6.04	41	41	.153	130.25
17:15	C	3.49	14.80	3	3	.006	4.79	44	43	.158	126.20
17:15	D	3.47	14.82	4	4	.009	7.76	41	40	.148	129.06

17:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.09 Unit C 4.77 Unit D 7.74

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
17:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
17:15	B	10.51	855.72	Prc Dn	Prc Dn	6.51	47.14	.62
17:15	C	9.83	799.92	Prc Dn	Prc Dn	6.40	46.32	.65
17:15	D	10.88	885.22	Prc Dn	Prc Dn	6.31	45.67	.58

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
17:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
17:30	B	3.33	15.07	3	3	.007	6.07	41	41	.152	129.72
17:30	C	3.48	14.80	3	3	.006	4.79	44	43	.159	126.40
17:30	D	3.48	14.81	4	4	.009	7.76	41	40	.146	128.66

17:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.07 Unit C 4.78 Unit D 7.71

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
17:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
17:30	B	10.53	856.71	Prc Dn	Prc Dn	6.52	47.24	.62
17:30	C	9.84	800.76	Prc Dn	Prc Dn	6.39	46.30	.65
17:30	D	10.87	884.62	Prc Dn	Prc Dn	6.36	46.07	.59

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
17:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
17:45	B	3.33	15.07	3	3	.007	6.12	40	41	.150	129.44
17:45	C	3.48	14.81	3	3	.006	4.77	44	43	.158	126.96
17:45	D	3.48	14.81	4	4	.009	7.68	41	40	.146	129.77

17:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.07 Unit C 4.79 Unit D 7.72

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
17:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
1[illegible]5	B	10.58	861.42	Prc Dn	Prc Dn	6.60	47.81	.62
17:45	C	9.88	804.45	Prc Dn	Prc Dn	6.42	46.50	.65
17:45	D	10.86	884.17	Prc Dn	Prc Dn	6.37	46.09	.59

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
18:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
18:00	B	3.31	15.11	3	3	.007	6.18	40	41	.150	[illegible].61
18:00	C	3.49	14.79	3	3	.006	4.83	43	42	.154	126.15
18:00	D	3.47	14.82	4	4	.009	7.74	40	39	.144	129.12

18:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.07 Unit C 4.80 Unit D 7.73

Daily Logs for Wed 27 May 1992

***** Sycamore Cogeneration Company *****

Bakersfield, California

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
18:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
18:00	B	10.61	863.76	Prc Dn	Prc Dn	6.67	48.26	.63
18:00	C	9.90	805.61	Prc Dn	Prc Dn	6.53	47.30	.66
18:00	D	10.87	884.60	Prc Dn	Prc Dn	6.42	46.48	.59

One Hour Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
18:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
18:00	B	3.33	15.07	3	3	.007	6.18	40	41	.151	129.61
18:00	C	3.49	14.80	3	3	.006	4.83	44	43	.157	126.15
18:00	D	3.48	14.82	4	4	.009	7.73	41	40	.146	129.26

18:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.07 Unit C 4.80 Unit D 7.73

One Hour Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
18:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
18:00	B	10.56	859.40	Prc Dn	Prc Dn	6.58	47.61	.62
18:00	C	9.86	802.70	Prc Dn	Prc Dn	6.44	46.60	.65
18:00	D	10.87	884.70	Prc Dn	Prc Dn	6.36	46.08	.59

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
18:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
18:15	B	3.29	15.15	3	3	.007	6.21	39	40	.148	128.82
18:15	C	3.48	14.80	3	3	.006	4.64	43	42	.154	125.56
18:15	D	3.47	14.83	4	4	.009	7.70	41	40	.148	129.14

18:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.07 Unit C 4.81 Unit D 7.71

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
18:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
18:15	B	10.59	862.12	Prc Dn	Prc Dn	6.62	47.54	.63
18:15	C	9.89	804.69	Prc Dn	Prc Dn	6.45	46.68	.65
18:15	D	10.87	884.62	Prc Dn	Prc Dn	6.30	45.59	.58

O_2 % = 15.05
CO_2 % = 3.34
End Run # 2 PAH

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
18:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
18:30	B	3.28	15.16	3	3	.007	6.23	40	41	.151	128.84
18:30	C	3.48	14.81	3	3	.006	4.83	45	43	.159	125.84
18:30	D	3.48	14.82	4	4	.009	7.70	41	40	.147	129.45

18:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.09 Unit C 4.81 Unit D 7.73

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
18:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
18:30	B	10.56	859.47	Prc Dn	Prc Dn	6.54	47.38	.62
18:30	C	9.86	802.31	Prc Dn	Prc Dn	6.38	46.17	.65
18:30	D	10.88	885.77	Prc Dn	Prc Dn	6.43	46.55	.59

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
18:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
18:45	B	3.27	15.17	3	3	.007	6.23	41	42	.154	129.81
18:45	C	3.48	14.80	3	3	.006	4.86	45	43	.159	125.90
18:45	D	3.49	14.80	4	4	.009	7.68	40	39	.144	128.85

18:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.10 Unit C 4.82 Unit D 7.73

Time		---- Gas	----	---- Oil	----	---- H2O	----	H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
18:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
18:45	B	10.52	856.40	Prc Dn	Prc Dn	6.49	47.02	.62
18:45	C	9.82	799.47	Prc Dn	Prc Dn	6.39	46.23	.65
45	D	10.80	885.45	Prc Dn	Prc Dn	6.45	46.70	.59

Start Run #3 PAH
+
Start Run #3 VOC

F i f t e e n M i n u t e L o g - E m i s s i o n s

Time		CO2	Calc O2	---- CO	----	----	----	---- NOx (Outlet)	----	----	----
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
19:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
19:00	B	3.27	15.18	3	3	.007	6.13	41	42	.154	130.47
19:00	C	3.48	14.81	3	3	.006	4.80	46	45	.164	127.49
19:00	D	3.47	14.82	4	4	.008	7.59	42	40	.149	129.89

19:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.10 Unit C 4.81 Unit D 7.71

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Time		---- Gas	----	---- Oil	----	---- H2O	----	H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
19:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
19:00	B	10.47	852.53	Prc Dn	Prc Dn	6.47	46.84	.62
19:00	C	9.75	793.78	Prc Dn	Prc Dn	6.26	45.32	.64
19:00	D	10.86	883.86	Prc Dn	Prc Dn	6.34	45.92	.58

O n e H o u r L o g - E m i s s i o n s

Time		CO2	Calc O2	---- CO	----	----	----	---- NOx (Outlet)	----	----	----
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
19:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
19:00	B	3.28	15.17	3	3	.007	6.13	40	41	.152	130.46
19:00	C	3.48	14.81	3	3	.006	4.80	45	43	.159	127.49
19:00	D	3.48	14.82	4	4	.009	7.59	41	40	.147	129.89

19:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.10 Unit C 4.81 Unit D 7.70

O n e H o u r L o g - P l a n t S i g n a l s

Time		---- Gas	----	---- Oil	----	---- H2O	----	H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
19:00	B	10.54	857.60	Prc Dn	Prc Dn	6.53	47.29	.62
19:00	C	9.83	800.10	Prc Dn	Prc Dn	6.37	46.10	.65
19:00	D	10.87	884.90	Prc Dn	Prc Dn	6.38	46.19	.59

Start Run #3 Propylene Oxide

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
19:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
19:15	B	3.35	15.04	3	3	.007	6.01	42	42	.155	131.56
19:15	C	3.48	14.81	3	3	.006	4.76	45	44	.162	128.41
19:15	D	3.49	14.80	4	4	.009	7.61	41	39	.145	129.2

19:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.09 Unit C 4.80 Unit D 7.69

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
19:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
19:15	B	10.43	849.20	Prc Dn	Prc Dn	6.40	46.35	.61
19:15	C	9.72	791.07	Prc Dn	Prc Dn	6.27	45.39	.65
19:15	D	10.86	883.63	Prc Dn	Prc Dn	6.45	46.70	.59

Fifteen Minute Log - Emissions

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
19:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
19:30	B	3.34	15.05	3	3	.007	5.96	42	42	.155	132.02
19:30	C	3.49	14.79	3	3	.006	4.74	45	44	.162	128.33
19:30	D	3.49	14.79	4	4	.009	7.57	41	40	.146	128.91

19:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.09 Unit C 4.79 Unit D 7.68

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
19:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
19:30	B	10.41	847.13	Prc Dn	Prc Dn	6.40	46.32	.61
19:30	C	9.69	788.39	Prc Dn	Prc Dn	6.26	45.34	.65
19:30	D	10.87	884.78	Prc Dn	Prc Dn	6.40	46.35	.59

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
19:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
19:45	B	3.38	14.99	3	3	.007	5.86	42	42	.155	131.71
19:45	C	3.48	14.80	3	3	.006	4.65	46	45	.164	128.65
19:45	D	3.49	14.78	4	4	.009	7.57	41	39	.145	129.26

19:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.07 Unit C 4.76 Unit D 7.64

Fifteen Minute Log - Plant Signals

hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
19:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
19:45	B	10.36	843.53	Prc Dn	Prc Dn	6.31	45.68	.61
19:45	C	9.64	784.41	Prc Dn	Prc Dn	6.13	44.37	.64
19:45	D	10.87	884.56	Prc Dn	Prc Dn	6.40	46.36	.59

O_2% = 15.05
CO_2% = 3.34
End Run #2 Aldehyd
and

F i f t e e n   M i n u t e   L o g - E m i s s i o n s

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx ppmC	NOx #/mmBTU	NOx #/hr
20:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
20:00	B	3.35	15.02	3	3	.007	5.82	43	43	.159	132.24
20:00	C	3.49	14.80	3	3	.006	4.63	46	45	[illegible]	[illegible]
20:00	D	3.49	14.79	4	4	.009	7.58	41	40	[illegible]	[illegible]

20:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.04 Unit C 4.76 Unit D 7.64

F i f t e e n   M i n u t e   L o g - P l a n t   S i g n a l s

End Run #3
VOC
O_2% = 15.07
CO_2% = 3.34

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
20:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
20:00	B	10.37	843.75	Prc Dn	Prc Dn	6.72	48.65	.65
20:00	C	9.61	781.78	Prc Dn	Prc Dn	6.12	44.34	.64
20:00	D	10.86	883.94	Prc Dn	Prc Dn	6.38	46.21	.59

O n e   H o u r   L o g - E m i s s i o n s

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx ppmC	NOx #/mmBTU	NOx #/hr
20:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
20:00	B	3.36	15.02	3	3	.007	5.81	42	42	.156	132.30
20:00	C	3.48	14.80	3	3	.006	4.63	46	44	.163	128.46
20:00	D	3.49	14.79	4	4	.009	7.58	41	40	.146	128.92

20:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.04 Unit C 4.75 Unit D 7.63

O n e   H o u r   L o g - P l a n t   S i g n a l s

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
20:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
20:00	B	10.39	845.90	Prc Dn	Prc Dn	6.46	46.75	.62
20:00	C	9.66	786.40	Prc Dn	Prc Dn	6.20	44.86	.64
20:00	D	10.86	884.20	Prc Dn	Prc Dn	6.41	46.41	.59

------Description------	--Date--	Time hh:mm	Zero Expectd	Zero Actual	Zero %Drift	Upscale Expectd	Upscale Actual	Upscale %Drift	Fail 1 Dy	Fail [illegible] Dy

Fifteen Minute Log - Emissions

Start Run #3
Aldehyde

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
20:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
20:15	B	3.17	15.36	3	4	.008	6.03	36	38	.140	128.88
[illegible]15	C	Other	Other	Other	Other	Other	4.62	Other	Other	Other	128.56
[illegible]15	D	Other	Other	Other	Other	Other	7.58	Other	Other	Other	129.18

20:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.08 Unit C 4.75 Unit D 7.64

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
20:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
20:15	B	10.35	842.29	Prc Dn	Prc Dn	6.65	48.14	.64
20:15	C	9.60	781.63	Prc Dn	Prc Dn	6.12	44.31	.64
20:15	D	10.87	884.61	Prc Dn	Prc Dn	6.43	46.59	.59

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
20:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
20:30	B	3.39	14.98	3	3	.007	5.99	41	41	.151	127.67
20:30	C	3.51	14.76	3	3	.006	4.54	46	44	.163	128.01
20:30	D	3.51	14.75	4	4	.009	7.73	40	38	.141	127.77

20:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.06 Unit C 4.72 Unit D 7.66

Fifteen Minute Log - Plant Signals

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
20:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
20:30	B	10.36	843.17	Prc Dn	Prc Dn	6.53	47.24	.63
20:30	C	9.61	782.26	Prc Dn	Prc Dn	6.12	44.30	.64
20:30	D	10.87	884.99	Prc Dn	Prc Dn	6.43	46.59	.59

Fifteen Minute Log - Emissions

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
20:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
20:45	B	3.37	14.99	3	3	.007	6.03	41	41	.151	126.72
20:45	C	3.50	14.77	3	3	.006	4.58	46	45	.165	128.70
20:45	D	3.51	14.76	4	4	.009	7.70	42	40	.148	128.63

20:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.04 Unit C 4.70 Unit D 7.64

Time		------ Gas	------	------ Oil	------	------ H2O	------	H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
20:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
20:45	B	10.39	845.88	Prc Dn	Prc Dn	6.57	47.58	.63
20:45	C	9.64	784.90	Prc Dn	Prc Dn	6.18	44.72	.64
20:45	D	10.89	886.42	Prc Dn	Prc Dn	6.30	45.59	.58

F i f t e e n   M i n u t e   L o g   -   E m i s s i o n s

Time		CO2	Calc O2	-------------	------------- CO	-------------	-------------	---------	--------	NOx (Outlet)	--------
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
21:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
21:00	B	3.37	14.99	3	3	.007	6.04	41	41	.151	125.72
21:00	C	3.52	14.75	3	3	.006	4.57	45	44	.160	127.53
21:00	D	3.51	14.75	4	4	.009	7.73	40	39	.143	12[illegible].80

21:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 6.00 Unit C 4.68 Unit D 7.63

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

F i f t e e n   M i n u t e   L o g   -   P l a n t   S i g n a l s

Time		------ Gas	------	------ Oil	------	------ H2O	------	H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
21:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
21:00	B	10.40	846.78	Prc Dn	Prc Dn	6.55	47.43	.63
21:00	C	9.66	785.97	Prc Dn	Prc Dn	6.25	45.26	.65
21:00	D	10.92	888.81	Prc Dn	Prc Dn	6.43	46.57	.59

O_2% = 15.05
CO_2% = 3.34
End Run #3 Propylene Oxide

O n e   H o u r   L o g   -   E m i s s i o n s

Time		CO2	Calc O2	-------------	------------- CO	-------------	-------------	---------	--------	NOx (Outlet)	--------
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
21:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
21:00	B	3.36	15.02	3	3	.007	5.92	41	41	.150	126.71
21:00	C	3.51	14.76	3	3	.006	4.58	46	44	.162	127.33
21:00	D	3.51	14.76	4	4	.009	7.70	41	39	.144	128.20

21:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.95 Unit C 4.67 Unit D 7.63

O n e   H o u r   L o g   -   P l a n t   S i g n a l s

Time		------ Gas	------	------ Oil	------	------ H2O	------	H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
21:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
21:00	B	10.36	844.50	Prc Dn	Prc Dn	6.57	47.60	.63
21:00	C	9.63	783.70	Prc Dn	Prc Dn	6.17	44.65	.64
21:00	D	10.89	886.20	Prc Dn	Prc Dn	6.40	46.34	.59

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
21:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
21:15	B	3.36	15.01	3	3	.007	5.87	41	41	.153	128.02
21:15	C	3.50	14.76	3	3	.006	4.57	46	45	.164	127.91
21:15	D	3.50	14.77	4	4	.008	7.65	42	40	.148	128.79

:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.97 Unit C 4.65 Unit D 7.62

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
21:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
21:15	B	10.41	847.05	Prc Dn	Prc Dn	6.54	47.32	.63
21:15	C	9.66	786.46	Prc Dn	Prc Dn	6.22	45.02	.64
21:15	D	10.92	888.82	Prc Dn	Prc Dn	6.37	46.09	.58

F i f t e e n M i n u t e L o g - E m i s s i o n s

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
21:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
21:30	B	3.36	15.02	3	3	.007	5.91	41	41	.152	128.54
21:30	C	3.51	14.75	3	3	.006	4.61	46	44	.164	128.32
21:30	D	3.51	14.75	4	4	.009	7.58	41	39	.143	129.57

21:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.95 Unit C 4.64 Unit D 7.62

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
21:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
21:30	B	10.42	848.45	Prc Dn	Prc Dn	6.53	47.31	.63
21:30	C	9.67	786.81	Prc Dn	Prc Dn	6.21	44.98	.64
21:30	D	10.95	891.12	Prc Dn	Prc Dn	6.54	47.34	.60

F i f t e e n M i n u t e L o g - E m i s s i o n s

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
21:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
:45	B	3.35	15.04	3	3	.007	5.91	41	41	.153	128.99
21:45	C	3.51	14.75	3	3	.006	4.61	46	44	.163	128.08
21:45	D	3.52	14.74	4	4	.009	7.60	41	39	.144	128.91

21:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.93 Unit C 4.61 Unit D 7.61

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
21:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
21:45	B	10.42	848.45	Prc Dn	Prc Dn	6.52	47.18	.63
21:45	C	9.69	788.41	Prc Dn	Prc Dn	6.29	45.53	.65
21:45	D	10.95	891.43	Prc Dn	Prc Dn	6.50	47.06	.59

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
22:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
22:00	B	3.32	15.09	3	3	.007	5.96	41	42	.154	129.52
22:00	C	3.52	14.73	3	3	.006	4.64	46	44	.161	128.35
22:00	D	3.52	14.75	4	4	.008	7.55	42	40	.147	129.78

22:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.94 Unit C 4.62 Unit D 7.61

Fifteen Minute Log - Plant Signals

Daily Logs for Wed 27 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
22:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
22:00	B	10.44	850.03	Prc Dn	Prc Dn	6.53	47.31	.63
22:00	C	9.70	789.19	Prc Dn	Prc Dn	6.32	45.78	.65
22:00	D	10.96	891.77	Prc Dn	Prc Dn	6.40	46.33	.58

One Hour Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
22:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
22:00	B	3.35	15.04	3	3	.007	5.96	41	41	.153	129.52
22:00	C	3.51	14.75	3	3	.006	4.64	46	44	[illegible]	128.35
22:00	D	3.51	14.75	4	4	.009	7.53	41	40	.144	130.10

22:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.90 Unit C 4.62 Unit D 7.60

One Hour Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
22:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
22:00	B	10.43	848.50	Prc Dn	Prc Dn	6.53	47.28	.63
22:00	C	9.68	787.70	Prc Dn	Prc Dn	6.26	45.33	.65
22:00	D	10.95	890.80	Prc Dn	Prc Dn	6.45	46.70	.59

Fifteen Minute Log - Emissions

22:15	C	3.51	14.75	3	3	.006	4.62	46	44	.162	128.14
22:15	D	3.51	14.75	4	4	.008	7.60	42	40	.147	129.71

22:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.95 Unit C 4.61 Unit D 7.61

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Time		------ Gas ------		------ Oil ------		------ H2O ------		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
22:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
22:15	B	10.46	851.73	Prc Dn	Prc Dn	6.55	47.42	.63
22:15	C	9.71	790.29	Prc Dn	Prc Dn	6.33	45.85	.65
22:15	D	10.96	892.19	Prc Dn	Prc Dn	6.39	46.29	.58

F i f t e e n M i n u t e L o g - E m i s s i o n s

Time CO2 Calc O2 -------------- CO -------------- --------- NOx (Outlet) ----------

Daily Logs for Wed 27 May 1992

***** Sycamore Cogeneration Company *****

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hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
22:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
22:30	B	3.31	15.11	3	3	.007	6.00	40	41	.151	130.10
22:30	C	3.52	14.73	3	3	.006	4.61	46	44	.161	127.83
22:30	D	3.51	14.75	4	4	.008	7.56	41	40	.146	130.28

22:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.97 Unit C 4.59 Unit D 7.61

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Time		------ Gas ------		------ Oil ------		------ H2O ------		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
22:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
22:30	B	10.47	852.26	Prc Dn	Prc Dn	6.56	47.51	.63
22:30	C	9.71	790.64	Prc Dn	Prc Dn	6.34	45.91	.65
22:30	D	10.97	892.85	Prc Dn	Prc Dn	6.47	46.82	.59

F i f t e e n M i n u t e L o g - E m i s s i o n s

Time		CO2	Calc O2	-------------- CO	--------------			--------- NOx (Outlet)	----------		
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
22:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
22:45	B	3.30	15.12	3	3	.007	6.03	41	42	.155	130.89
22:45	C	3.52	14.74	3	3	.006	4.57	46	44	.162	127.78
22:45	D	3.52	14.73	4	4	.009	7.63	40	39	.142	129.90

22:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.99 Unit C 4.59 Unit D 7.64

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Time		------ Gas ------		------ Oil ------		------ H2O ------		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
22:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
[illegible]	B	[illegible]	[illegible]	Prc Dn	Prc Dn	6.60	47.80	.63

22:45	B	10.49	853.82	Prc Dn	Prc Dn	6.60	47.80	.63
22:45	C	9.72	790.87	Prc Dn	Prc Dn	6.33	45.86	.65
22:45	D	11.00	894.97	Prc Dn	Prc Dn	6.59	47.68	.60

F i f t e e n   M i n u t e   L o g   -   E m i s s i o n s

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
		Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
23:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	42	42	.153	131.02
23:00	B	3.39	14.96	3	3	.007	5.97	42	42	.153	131.02
23:00	C	3.52	14.73	3	3	.006	4.54	46	44	.162	128.02
23:00	D	3.52	14.74	4	4	.008	7.61	42	40	.148	130.13

23:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.99 Unit C 4.58 Unit D 7.62

F i f t e e n   M i n u t e   L o g   -   P l a n t   S i g n a l s

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio

$O_2\% = 15.06$

$CO_2\% = 3.34$

End Run #3 PAH

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***** Sycamore Cogeneration Company *****
Bakersfield, California

23:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
23:00	B	10.48	852.89	Prc Dn	Prc Dn	6.60	47.77	.63
23:00	C	9.71	790.42	Prc Dn	Prc Dn	6.38	46.19	.66
23:00	D	10.97	893.15	Prc Dn	Prc Dn	6.40	46.34	.58

O n e   H o u r   L o g   -   E m i s s i o n s

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
				Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
23:00	A	Prc Dn	Prc Dn								
23:00	B	3.33	15.08	3	3	.007	5.99	41	42	.154	131.02
23:00	C	3.52	14.74	3	3	.006	4.54	46	44	.162	128.02
23:00	D	3.52	14.75	4	4	.008	7.61	41	40	.146	130.13

23:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.96 Unit C 4.59 Unit D 7.61

O n e   H o u r   L o g   -   P l a n t   S i g n a l s

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
23:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
23:00	B	10.48	852.70	Prc Dn	Prc Dn	6.58	47.63	.63
23:00	C	9.71	790.60	Prc Dn	Prc Dn	6.35	45.95	.65
23:00	D	10.98	893.30	Prc Dn	Prc Dn	6.46	46.78	.59

F i f t e e n   M i n u t e   L o g   -   E m i s s i o n s

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
				Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn

23:15	C	3.52	14.75	3	3	.006	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23:15	D	3.52	14.73	4	4	.009	7.63	40	38	.142	128.89

23:15 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.92 Unit C 4.58 Unit D 7.63

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
23:15	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
23:15	B	10.49	852.67	Prc Dn	Prc Dn	6.58	47.64	.63
23:15	C	9.71	790.46	Prc Dn	Prc Dn	6.36	46.07	.66
23:15	D	11.00	895.53	Prc Dn	Prc Dn	6.66	48.25	.61

F i f t e e n M i n u t e L o g - E m i s s i o n s

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
23:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn

23:30	B	3.41	14.93	3	3	.007	5.82	42	42	.155	131.29
23:30	C	3.51	14.75	3	3	.006	4.55	46	44	.162	128.00
23:30	D	3.52	14.74	4	4	.008	7.56	42	40	.149	129.72

23:30 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.91 Unit C 4.59 Unit D 7.57

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
23:30	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
23:30	B	10.48	853.09	Prc Dn	Prc Dn	6.63	47.99	.63
23:30	C	9.70	789.27	Prc Dn	Prc Dn	6.36	46.02	.66
23:30	D	10.99	894.75	Prc Dn	Prc Dn	6.49	46.98	.59

F i f t e e n M i n u t e L o g - E m i s s i o n s

Time hh:mm	Unit	CO2 Pct	Calc O2 pct	CO ppm	CO ppmC	CO #/mmBTU	CO #/hr	NOx (Outlet) ppm	NOx (Outlet) ppmC	NOx (Outlet) #/mmBTU	NOx (Outlet) #/hr
23:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
23:45	B	3.33	15.02	3	3	.007	5.73	41	42	.155	129.21
23:45	C	3.37	15.00	3	3	.006	4.33	51	51	.190	125.52
23:45	D	3.36	15.02	4	4	.008	7.06	53	53	.195	133.16

23:45 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.89 Unit C 4.50 Unit D 7.43

F i f t e e n M i n u t e L o g - P l a n t S i g n a l s

Time hh:mm	Unit	Gas #/sec	Gas mmBTU	Oil #/sec	Oil mmBTU	H2O #/sec	H2O gal/min	H2O Inj Ratio
23:45	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
[illegible]	B	[illegible]	[illegible]	Prc Dn	Prc Dn	4.73	34.27	.50

[illegible]:45	D	9.52	774.53	Prc Dn	Prc Dn	4.51	32.68	.47

Fifteen Minute Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
00:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
00:00	B	3.29	15.14	3	3	.006	5.45	47	48	.178	126.62
00:00	C	3.36	15.02	3	3	.006	4.08	54	54	.198	123.98
00:00	D	3.41	14.93	5	4	.010	7.02	44	44	.161	129.42

00:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.79 Unit C 4.42 Unit D 7.39

Fifteen Minute Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
00:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
00:00	B	8.95	728.11	Prc Dn	Prc Dn	4.12	29.81	.44

Daily Logs for Thu 28 May 1992
***** Sycamore Cogeneration Company *****
Bakersfield, California

$O_2 = 15.06\%$
$CO_2 = 3.34\%$
End Run #3
~~Aldehyde~~

00:00	C	7.57	616.45	Prc Dn	Prc Dn	2.88	20.87	.38
00:00	D	8.92	726.02	Prc Dn	Prc Dn	4.03	29.17	.45

One Hour Log - Emissions

Time		CO2	Calc O2	CO				NOx (Outlet)			
hh:mm	Unit	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	ppm	ppmC	#/mmBTU	#/hr
00:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
00:00	B	3.35	15.03	3	3	.007	5.42	43	44	.160	128.65
00:00	C	3.45	14.87	3	3	.006	4.13	49	48	.176	124.16
00:00	D	3.45	14.86	4	4	.009	7.02	45	44	.162	129.42

00:00 CO #/hr (3-hr avg) Unit A Prc Dn Unit B 5.79 Unit C 4.43 Unit D 7.39

One Hour Log - Plant Signals

Time		Gas		Oil		H2O		H2O Inj
hh:mm	Unit	#/sec	mmBTU	#/sec	mmBTU	#/sec	gal/min	Ratio
00:00	A	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
00:00	B	9.81	798.20	Prc Dn	Prc Dn	5.51	39.93	.56
00:00	C	8.80	716.00	Prc Dn	Prc Dn	4.88	35.35	.54
00:00	D	10.11	822.70	Prc Dn	Prc Dn	5.42	39.27	.53

Daily Summary Report ending Wed 27 May 1992 Page - 2
***** Sycamore Cogeneration Company *****
Bakersfield, California

************************************ U N I T A **

Time	Calc O2	CO2	---------- CO	----------	----------	----------	2 hr	-------- Outlet NOx	----------	----------	----------
hh:mm	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	#/hr	ppm	ppmC	#/mmBTU	#/h
01:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
02:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
03:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
04:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
05:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
06:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
07:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
08:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
09:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
10:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
11:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
12:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
13:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
14:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
15:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
16:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
17:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
18:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
19:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
20:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
21:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
22:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
23:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
24:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc
Avgs.											
Total pounds											

Daily Summary Report ending Wed 27 May 1992 Page - 3
***** Sycamore Cogeneration Company *****
Bakersfield, California

********************************	UNIT A				**************************		
T	Total Gas		Total Oil		H2O	Inj.	Total H2O
hh:mm	#/sec	mmBTU	#/sec	mmBTU	gal/min	Ratio	#/sec
01:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
02:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
03:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
04:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
05:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
06:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
07:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
08:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
09:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
10:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
11:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
12:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
13:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
14:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
15:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
16:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
17:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
18:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
19:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
20:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
21:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
22:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
23:00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
[illegible]00	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn	Prc Dn
Avgs.							
Totals							

Note: Totals divided by 100

Daily Summary Report ending Wed 27 May 1992 Page - 4
***** Sycamore Cogeneration Company *****
Bakersfield, California

************************************ U N I T   B ***********************************

Time	Calc O2	CO2	---- CO ----				2 hr	---- Outlet NOx ----			
hh:mm	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	#/hr	ppm	ppmC	#/mmBTU	#/hr
01:00	14.91	3.43	3.30	3.242	.01	5.49	5.94	46.35	45.600	.17	126.5
02:00	14.91	3.42	3.44	3.384	.01	5.70	5.59	46.46	45.750	.17	126.[illegible]
03:00	14.94	3.41	3.50	3.461	.01	5.82	5.76	46.11	45.590	.17	126.[illegible]
04:00	15.01	3.36	3.32	3.334	.01	5.60	5.71	45.84	45.970	.17	126.[illegible]
05:00	14.88	3.44	3.44	3.366	.01	5.66	5.63	46.58	45.620	.17	126.2
06:00	14.89	3.44	3.37	3.309	.01	5.57	5.62	46.38	45.480	.17	125.9
07:00	14.87	3.45	3.57	3.495	.01	6.23	5.90	43.53	42.580	.16	124.[illegible]
08:00	14.84	3.46	3.60	3.517	.01	6.75	6.49	39.57	38.560	.14	121.[illegible]
09:00	14.84	3.46	3.28	3.194	.01	6.26	6.50	37.98	36.970	.14	119.2
10:00	14.89	3.43	3.42	3.359	.01	6.64	6.45	36.49	35.820	.13	116.[illegible]
11:00	15.00	3.37	3.47	3.474	.01	6.89	6.77	35.12	35.110	.13	114.[illegible]
12:00	14.99	3.38	3.30	3.292	.01	6.52	6.70	37.96	37.880	.14	123.[illegible]
13:00	14.96	3.39	3.19	3.176	.01	6.27	6.40	39.23	38.990	.14	126.[illegible]
14:00	15.04	3.35	3.20	3.220	.01	6.29	6.28	40.19	40.460	.15	129.[illegible]
15:00	15.10	3.31	3.13	3.187	.01	6.25	6.27	39.53	40.240	.15	129.[illegible]
16:00	15.00	3.37	3.12	3.116	.01	6.05	6.15	40.91	40.920	.15	130.[illegible]
17:00	15.03	3.35	3.08	3.101	.01	5.97	6.01	40.93	41.130	.15	130.2
18:00	15.07	3.33	3.17	3.216	.01	6.18	6.08	40.48	40.990	.15	129.[illegible]
19:00	15.17	3.28	3.09	3.187	.01	6.13	6.16	40.05	41.220	.15	130.4
20:00	15.02	3.36	3.06	3.067	.01	5.81	5.97	42.34	42.490	.16	132.[illegible]
21:00	15.02	3.36	3.11	3.129	.01	5.92	5.87	40.56	40.710	.15	126.[illegible]
22:00	15.04	3.35	3.11	3.134	.01	5.96	5.94	41.15	41.440	.15	129.[illegible]
23:00	15.08	3.33	3.09	3.138	.01	5.99	5.97	41.15	41.730	.15	131.[illegible]
24:00	15.03	3.35	2.98	3.000	.01	5.42	5.70	43.28	43.560	.16	128.[illegible]
Avgs.	14.98	3.38	3.26	3.254	.01	6.06		41.59	41.450	.15	126.4
Total pounds						145.37					3033.[illegible]

Daily Summary Report ending Wed 27 May 1992 Page - 5
***** Sycamore Cogeneration Company *****
Bakersfield, California

	********************************	U N I T	B	******************	**************		
e	Total Gas		Total Oil		H2O	Inj.	Total H2O
hh:mm	#/sec	mmBTU	#/sec	mmBTU	gal/min	Ratio	#/sec
01:00	9.27	754.60	Prc Dn	Prc Dn	33.95	.51	4.69
02:00	9.23	751.60	Prc Dn	Prc Dn	35.38	.53	4.89
03:00	9.23	750.90	Prc Dn	Prc Dn	35.60	.53	4.92
04:00	9.22	750.00	Prc Dn	Prc Dn	35.36	.53	4.88
05:00	9.23	751.20	Prc Dn	Prc Dn	36.09	.54	4.98
06:00	9.23	751.10	Prc Dn	Prc Dn	36.34	.54	5.02
07:00	9.74	792.70	Prc Dn	Prc Dn	42.52	.60	5.87
08:00	10.55	858.50	Prc Dn	Prc Dn	50.57	.66	6.99
09:00	10.74	873.70	Prc Dn	Prc Dn	52.88	.68	7.30
10:00	10.85	883.10	Prc Dn	Prc Dn	54.39	.69	7.51
11:00	10.89	886.60	Prc Dn	Prc Dn	54.81	.69	7.57
12:00	10.86	884.00	Prc Dn	Prc Dn	51.08	.65	7.05
13:00	10.81	880.20	Prc Dn	Prc Dn	49.14	.63	6.79
14:00	10.69	870.00	Prc Dn	Prc Dn	47.51	.61	6.56
15:00	10.76	875.90	Prc Dn	Prc Dn	48.72	.62	6.73
16:00	10.63	865.50	Prc Dn	Prc Dn	47.75	.62	6.59
17:00	10.56	859.20	Prc Dn	Prc Dn	47.55	.62	6.57
18:00	10.56	859.40	Prc Dn	Prc Dn	47.61	.62	6.56
19:00	10.54	857.60	Prc Dn	Prc Dn	47.29	.62	6.53
20:00	10.39	845.90	Prc Dn	Prc Dn	46.75	.62	6.46
21:00	10.38	844.50	Prc Dn	Prc Dn	47.60	.63	6.57
22:00	10.43	848.50	Prc Dn	Prc Dn	47.28	.63	6.53
23:00	10.48	852.70	Prc Dn	Prc Dn	47.63	.63	6.58
00	9.81	798.20	Prc Dn	Prc Dn	39.93	.56	5.51
Avgs.		831.07			45.16	.61	
Totals	2.45	199.46					1.50

Note: Totals divided by 100

Daily Summary Report ending Wed 27 May 1992 Page - 6
***** Sycamore Cogeneration Company *****
Bakersfield, California

************************************ U N I T C ***********************************

Time	Calc O2	CO2	CO				2 hr	Outlet NOx			
hh:mm	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	#/hr	ppm	ppmC	#/mmBTU	#/hr
01:00	14.89	3.43	3.03	2.979	.01	4.01	4.30	59.02	57.940	.21	126.3
02:00	14.90	3.43	2.94	2.897	.01	3.89	3.95	59.04	58.090	.21	126.4
03:00	14.90	3.43	2.92	2.866	.01	3.85	3.87	58.91	57.890	.21	127.8
04:00	14.89	3.44	2.96	2.905	.01	3.90	3.87	58.53	57.430	.21	126.4
05:00	14.88	3.44	2.95	2.893	.01	3.88	3.89	58.50	57.360	.21	126.6
06:00	14.90	3.43	2.96	2.909	.01	3.86	3.87	59.41	58.400	.21	127.4
07:00	14.71	3.54	3.12	2.971	.01	4.57	4.21	53.31	51.070	.19	126.5
08:00	14.51	3.65	3.18	2.935	.01	5.19	4.88	46.83	43.240	.16	125.8
09:00	14.65	3.57	2.74	2.589	.01	4.68	4.94	44.24	41.730	.15	124.1
10:00	14.65	3.57	2.82	2.660	.01	4.86	4.77	42.86	40.490	.15	121.[illegible]
11:00	14.69	3.55	2.80	2.660	.01	4.89	4.87	41.56	39.450	.14	119.2
12:00	14.71	3.54	2.73	2.606	.01	4.79	4.84	42.20	40.220	.15	121.8
13:00	14.74	3.52	2.76	2.642	.01	4.86	4.83	42.71	40.880	.15	123.7
14:00	14.76	3.51	2.80	2.689	.01	4.89	4.87	43.99	42.290	.16	126.4
15:00	14.77	3.50	2.71	2.610	.01	4.75	4.82	44.19	42.530	.16	127.4
16:00	14.78	3.50	2.74	2.641	.01	4.78	4.77	44.50	42.910	.16	127.7
17:00	14.79	3.49	2.76	2.664	.01	4.79	4.79	44.28	42.770	.16	126.5
18:00	14.80	3.49	2.78	2.689	.01	4.83	4.81	44.13	42.680	.16	12[illegible].1
19:00	14.81	3.48	2.77	2.678	.01	4.80	4.82	44.67	43.240	.16	127.4
20:00	14.80	3.48	2.72	2.627	.01	4.63	4.72	45.81	44.300	.16	128.4
21:00	14.76	3.51	2.71	2.604	.01	4.58	4.60	45.87	44.070	.16	127.2
22:00	14.75	3.51	2.74	2.630	.01	4.64	4.61	46.10	44.240	.16	128.3
23:00	14.74	3.52	2.68	2.563	.01	4.54	4.59	45.91	43.980	.16	128.0
24:00	14.87	3.45	2.64	2.584	.01	4.13	4.33	48.75	47.780	.18	124.1
Avgs.	14.78	3.50	2.83	2.729	.01	4.52		48.56	46.874	.17	126.0
Total pounds						108.60					3026.0

Daily Summary Report ending Wed 27 May 1992 Page - 7
***** Sycamore Cogeneration Company *****
Bakersfield, California

******************************** U N I T C ******************************

Time	Total Gas		Total Oil		H2O	Inj.	Total H2O
hh:mm	#/sec	mmBTU	#/sec	mmBTU	gal/min	Ratio	#/sec
01:00	7.39	601.50	Prc Dn	Prc Dn	17.41	.32	2.40
02:00	7.37	599.60	Prc Dn	Prc Dn	19.57	.37	2.70
03:00	7.34	599.10	Prc Dn	Prc Dn	19.67	.37	2.72
04:00	7.35	598.50	Prc Dn	Prc Dn	19.60	.37	2.71
05:00	7.36	599.30	Prc Dn	Prc Dn	20.00	.37	2.76
06:00	7.29	592.90	Prc Dn	Prc Dn	19.35	.37	2.67
07:00	8.25	671.70	Prc Dn	Prc Dn	30.15	.48	4.16
08:00	9.74	793.00	Prc Dn	Prc Dn	46.03	.65	6.36
09:00	9.93	807.80	Prc Dn	Prc Dn	48.69	.68	6.72
10:00	10.03	816.20	Prc Dn	Prc Dn	49.92	.69	6.90
11:00	10.09	821.40	Prc Dn	Prc Dn	50.87	.70	7.03
12:00	10.10	821.80	Prc Dn	Prc Dn	49.16	.67	6.79
13:00	10.07	819.90	Prc Dn	Prc Dn	48.10	.66	6.64
14:00	9.97	811.00	Prc Dn	Prc Dn	46.78	.65	6.46
15:00	9.99	813.10	Prc Dn	Prc Dn	46.72	.65	6.45
16:00	9.91	806.90	Prc Dn	Prc Dn	46.89	.65	6.48
17:00	9.87	802.90	Prc Dn	Prc Dn	46.78	.65	6.46
18:00	9.86	802.70	Prc Dn	Prc Dn	46.60	.65	6.44
19:00	9.83	800.10	Prc Dn	Prc Dn	46.10	.65	6.37
20:00	9.66	786.40	Prc Dn	Prc Dn	44.86	.64	6.20
21:00	9.63	783.70	Prc Dn	Prc Dn	44.65	.64	6.17
22:00	9.68	787.70	Prc Dn	Prc Dn	45.33	.65	6.26
23:00	9.71	790.60	Prc Dn	Prc Dn	45.95	.65	6.35
[illegible]00	8.80	716.00	Prc Dn	Prc Dn	35.35	.54	4.88
Avgs.		743.49			38.94	.57	
Totals	2.19	178.44					1.29

Note: Totals divided by 100

Daily Summary Report ending Wed 27 May 1992 Page - 8

***** Sycamore Cogeneration Company *****

Bakersfield, California

** U N I T D **

Time	Calc O2	CO2	CO				2 hr	Outlet NOx			
hh:mm	Pct	pct	ppm	ppmC	#/mmBTU	#/hr	#/hr	ppm	ppmC	#/mmBTU	#/h
01:00	14.78	3.50	4.29	4.132	.01	6.70	7.02	50.78	48.960	.18	130.
02:00	14.81	3.48	4.52	4.379	.01	7.11	6.91	50.03	48.460	.18	127.
03:00	14.81	3.48	4.61	4.463	.01	7.24	7.17	49.00	47.430	.17	126.
04:00	14.79	3.49	4.45	4.295	.01	6.96	7.10	49.81	48.090	.18	128.
05:00	14.79	3.49	4.50	4.344	.01	7.03	6.99	50.21	48.490	.18	128.
06:00	14.79	3.49	4.58	4.427	.01	7.15	7.09	49.05	47.360	.17	125.
07:00	14.65	3.57	4.76	4.489	.01	8.04	7.59	45.10	42.710	.16	123.
08:00	14.49	3.66	4.47	4.113	.01	8.28	8.16	39.82	36.670	.14	121.
09:00	14.64	3.58	4.21	3.972	.01	8.00	8.14	39.23	36.990	.14	122.
10:00	14.66	3.56	4.26	4.034	.01	8.12	8.06	38.87	36.760	.14	121.
11:00	14.71	3.54	4.27	4.072	.01	8.16	8.14	38.87	37.040	.14	122.
12:00	14.73	3.52	4.12	3.944	.01	7.85	8.01	39.83	38.080	.14	124.
13:00	14.76	3.51	4.04	3.887	.01	7.72	7.78	40.72	39.140	.14	127.
14:00	14.78	3.50	3.99	3.844	.01	7.62	7.67	41.25	39.770	.15	127.
15:00	14.79	3.49	4.05	3.915	.01	7.77	7.69	40.97	39.570	.15	129.
16:00	14.80	3.49	4.00	3.868	.01	7.67	7.72	41.06	39.680	.15	129.
17:00	14.80	3.48	4.05	3.922	.01	7.79	7.73	40.75	39.420	.14	128.
18:00	14.82	3.48	4.02	3.896	.01	7.73	7.76	40.87	39.630	.15	129.
19:00	14.82	3.48	3.95	3.831	.01	7.59	7.66	41.10	39.850	.15	129.
20:00	14.79	3.49	3.96	3.829	.01	7.58	7.59	41.00	39.590	.15	128.
21:00	14.76	3.51	4.03	3.871	.01	7.70	7.64	40.79	39.160	.14	128.
22:00	14.75	3.51	3.93	3.771	.01	7.53	7.62	41.29	39.640	.15	130.
23:00	14.75	3.52	3.97	3.805	.01	7.61	7.57	41.26	39.540	.15	130.
24:00	14.86	3.45	3.98	3.885	.01	7.02	7.32	44.79	43.830	.16	129.
Avgs.	14.76	3.51	4.21	4.041	.01	7.58		43.19	41.494	.15	127.
Total pounds						181.96					3056.

Daily Summary Report ending Wed 27 May 1992 Page - 9
***** Sycamore Cogeneration Company *****
Bakersfield, California

************************************ U N I T D *****************************

Time hh:mm	Total Gas #/sec	Total Gas mmBTU	Total Oil #/sec	Total Oil mmBTU	H2O gal/min	Inj. Ratio	Total H2O #/sec
01:00	8.90	724.40	Prc Dn	Prc Dn	26.24	.41	3.62
02:00	8.90	724.60	Prc Dn	Prc Dn	28.33	.44	3.91
03:00	8.90	724.30	Prc Dn	Prc Dn	29.20	.45	4.03
04:00	8.89	723.60	Prc Dn	Prc Dn	28.66	.44	3.96
05:00	8.87	721.80	Prc Dn	Prc Dn	28.81	.45	3.98
06:00	8.87	722.10	Prc Dn	Prc Dn	29.33	.46	4.05
07:00	9.78	796.10	Prc Dn	Prc Dn	38.53	.53	5.32
08:00	11.05	899.50	Prc Dn	Prc Dn	50.18	.63	6.93
09:00	11.06	899.90	Prc Dn	Prc Dn	50.04	.62	6.91
10:00	11.02	897.30	Prc Dn	Prc Dn	49.90	.62	6.89
11:00	10.98	894.00	Prc Dn	Prc Dn	49.74	.63	6.87
12:00	10.92	889.10	Prc Dn	Prc Dn	47.32	.60	6.54
13:00	10.90	886.90	Prc Dn	Prc Dn	46.30	.59	6.39
14:00	10.89	885.20	Prc Dn	Prc Dn	45.81	.58	6.33
15:00	10.88	885.40	Prc Dn	Prc Dn	45.65	.58	6.30
16:00	10.88	885.80	Prc Dn	Prc Dn	45.86	.58	6.33
17:00	10.89	886.60	Prc Dn	Prc Dn	46.30	.59	6.40
18:00	10.87	884.70	Prc Dn	Prc Dn	46.08	.59	6.36
19:00	10.87	884.90	Prc Dn	Prc Dn	46.19	.59	6.38
20:00	10.86	884.20	Prc Dn	Prc Dn	46.41	.59	6.41
21:00	10.89	886.20	Prc Dn	Prc Dn	46.34	.59	6.40
22:00	10.95	890.80	Prc Dn	Prc Dn	46.70	.59	6.45
[illegible]:00	10.98	893.30	Prc Dn	Prc Dn	46.78	.59	6.46
[illegible]:00	10.11	822.70	Prc Dn	Prc Dn	39.27	.53	5.42
Avgs.		841.39			41.83	.55	[illegible].39
Totals	2.48	201.93					

Note: Totals divided by 100

	74.82	MW	VOLTS1	14.44	KV
TTXD1_8	1019	DEG F	TTXSP1	70	DEG F
TTXD1_9	1013	DEG F	TTXSP2	57	DEG F
TTXD1_10	1029	DEG F	L71HG_HF	0	LOGIC
TTXD1_11	1008	DEG F	L30HP1	0	LOGIC
TTXD1_12	1003	DEG F	L30HP2	0	LOGIC
TTXD1_13	979	DEG F	CNTR_04	000 165	CNTS
TTXD1_14	1034	DEG F			
TTXD1_15	993	DEG F			

DELETE ENTRY

SET LOG ON/OFF

SET TIME ON/OFF

LOG PERIOD = 0480 MINUTES

Start Run #1 VOC
Start Run #1 PAH

DATA LIST 12 DEMAND DISPLAY 27 MAY 92 10:18:32

PAGE 01

PREVIOUS PAGE

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	57	DEG F	TTXD1_16	993	DEG F
TTXD1_1	1036	DEG F	TTXD1_17	1010	DEG F
TTXD1_2	987	DEG F	TTXD1_18	1009	DEG F
TTXD1_3	1001	DEG F	TTXC	1011	DEG F
TTXD1_4	1045	DEG F	TTXM	1011	DEG F
TTXD1_5	1007	DEG F	TNH	100.0	% SPD
TTXD1_6	1027	DEG F	TNR	103.9	% SPD
TTXD1_7	1006	DEG F	DW	74.51	MW
TTXD1_8	1021	DEG F	VOLTS1	14.44	KV
TTXD1_9	1013	DEG F	TTXSP1	67	DEG F
TTXD1_10	1031	DEG F	TTXSP2	57	DEG F
TTXD1_11	1008	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1003	DEG F	L30HP1	0	LOGIC
TTXD1_13	978	DEG F	L30HP2	0	LOGIC
TTXD1_14	1033	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	988	DEG F			

NEXT PAGE

INSERT ENTRY

DELETE ENTRY

SET LOG ON/OFF

SET TIME ON/OFF

LOG PERIOD = 0480 MINUTES

DATA LIST 12 DEMAND DISPLAY 27 MAY 92 10:18:41

PAGE 00

PREVIOUS PAGE

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.45	V DC	BB3	0.21	IPS
FTG	76	DEG F	BB4	0.08	IPS
FQG	11.376	#/SEC	BB5	0.12	IPS
FPRG	197.5	PSIG	BB7	0.04	IPS
FQT	11.363	#/SEC	BB8	0.04	IPS
FLAME	#3#4#7#8		BB9	0.07	IPS
WSQ	8.705	#/SEC	CSGV	83.5	DEG
CTIM	66	DEG F	TIMR_01	37 246.7	HOURS
[illegible]	213	RPM	LTTH1	125	DEG F

NEXT PAGE

INSERT ENTRY

DELETE

WQJ	7.728	#/SEC	S125P	65.76	V DC
FSR	61.1	% FSR	HPA1	96.0	% H2
WXJ	0.685	RATIO	HPA2	100.0	% H2
WSQ	8.705	#/SEC	CPD	145.9	PSIG
BB1	0.08	IPS	CTD	649	DEG F
BB2	0.08	IPS	TTXSP2	56	DEG F

SET LOG ON/OFF

SET TIME ON/OFF

LOG PERIOD = 0480 MINUTES

End Run #1 VOC Fuel Rate: 11.376 #/sec

RUN STATUS 27 MAY 92 10:19:12

BASE LOAD

SELECT REM : BASE

CONTRL	TEMP	SPREAD	66DEG F
FSR	60.8% FSR	MAXVIB	0.23IPS
SPEED	3601RPM	WATTS	74.57MW
TX	1012DEG F	MVARS	14.23 LAG
TNHSET	103.9% SPD		
FUEL	100.0% GAS	IGV FULL OPEN	

SELECT:
FLAME #3#4#7#8
LTTH1 124 DEG F
DW 74.57 MW

ALARM ACK

ACKNOWLEDGED ALARMS: 5

HOUR LOG ------------------ ROLLING AVG ------------------------------

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 10:28:00	11.281	7.728	0.686	0.660	66

DATA LIST 12 DEMAND DISPLAY 27 MAY 92 11:05:58

PAGE 00
PREVIOU
PAGE

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.46	V DC	BB3	0.24	IPS
FTG	74	DEG F	BB4	0.09	IPS
FQG	11.245	#/SEC	BB5	0.12	IPS
FPRG	197.4	PSIG	BB7	0.05	IPS

NEXT PAGE

[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
WSO	8.209	#/SEC	CSGV	83.5	DEG
CTIM	68	DEG F	TIMR_01	37 247.5	HOURS
WQJF_PR	199	RPM	LTTH1	125	DEG F
WXC	0.625	RATIO	S125N	-65.32	V DC
WQJ	7.230	#/SEC	S125P	65.61	V DC
FSR	60.7	% FSR	HPA1	96.0	% H2
WXJ	0.644	RATIO	HPA2	100.0	% H2
WSQ	8.209	#/SEC	CPD	144.8	PSIG
BB1	0.07	IPS	CTD	651	DEG F
BB2	0.08	IPS	TTXSP2	59	DEG F

DELETE ENTRY

SET LOG ON/OFF

SET TIME ON/OFF

LOG PERIOD = 0480 MINUTES

DATA LIST 12 DEMAND DISPLAY 27 MAY 92 11:06:06 PAGE 01

PREVIOUS PAGE

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	56	DEG F	TTXD1_16	996	DEG F
TTXD1_1	1041	DEG F	TTXD1_17	1010	DEG F
TTXD1_2	986	DEG F	TTXD1_18	1009	DEG F
TTXD1_3	999	DEG F	TTXC	1011	DEG F
TTXD1_4	1043	DEG F	TTXM	1013	DEG F
TTXD1_5	1011	DEG F	TNH	100.0	% SPD
TTXD1_6	1028	DEG F	TNR	103.8	% SPD
TTXD1_7	1009	DEG F	DW	73.44	MW
TTXD1_8	1019	DEG F	VOLTS1	14.44	KV
TTXD1_9	1012	DEG F	TTXSP1	65	DEG F
TTXD1_10	1030	DEG F	TTXSP2	57	DEG F
TTXD1_11	1009	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1003	DEG F	L30HP1	0	LOGIC
TTXD1_13	978	DEG F	L30HP2	0	LOGIC
TTXD1_14	1035	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	985	DEG F			

NEXT PAGE

INSERT ENTRY

DELETE ENTRY

SET LOG ON/OFF

SET TIME ON/OFF

LOG PERIOD = 0480 MINUTES

HOUR LOG -------------------- ROLLING AVG ------------------------------

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 11:28:00	11.284	7.435	0.659	0.634	67

Start Run #1
Aldehydes

DATA LIST 12 27 MAY 92 12:07:01 PAGE00[illegible]

DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS

FTG	75	DEG F	BB4	0.08	IPS
FQG	11.293	#/SEC	BB5	0.11	IPS
FPRG	197.6	PSIG	BB7	0.05	IPS
FQT	11.308	#/SEC	BB8	0.05	IPS
FLAME	#3#4#7#8		BB9	0.06	IPS
WSQ	8.022	#/SEC	CSGV	83.5	DEG
CTIM	68	DEG F	TIMR_01	37 248.5	HOURS
WQJF_PR	193	RPM	LTTH1	125	DEG F
WXC	0.605	RATIO	S125N	-65.32	V DC
WQJ	7.081	#/SEC	S125P	65.46	V DC
FSR	60.7	% FSR	HPA1	95.8	% H2
WXJ	0.624	RATIO	HPA2	100.0	% H2
WSQ	8.022	#/SEC	CPD	144.4	PSIG
BB1	0.07	IPS	CTD	651	DEG F
BB2	0.08	IPS	TTXSP2	57	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

27 MAY 92 12:07:08 PAGE001

DATA LIST 12

DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	55	DEG F	TTXD1_16	1001	DEG F
TTXD1_1	1045	DEG F	TTXD1_17	1015	DEG F
TTXD1_2	991	DEG F	TTXD1_18	1013	DEG F
TTXD1_3	1004	DEG F	TTXC	1015	DEG F
TTXD1_4	1048	DEG F	TTXM	1014	DEG F
TTXD1_5	1011	DEG F	TNH	100.0	% SPD
TTXD1_6	1032	DEG F	TNR	103.9	% SPD
TTXD1_7	1012	DEG F	DW	73.82	MW
TTXD1_8	1021	DEG F	VOLTS1	14.42	KV
TTXD1_9	1013	DEG F	TTXSP1	69	DEG F
TTXD1_10	1030	DEG F	TTXSP2	57	DEG F
TTXD1_11	1010	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1003	DEG F	L30HP1	0	LOGIC
TTXD1_13	980	DEG F	L30HP2	0	LOGIC
TTXD1_14	1041	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	992	DEG F			

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

HOUR LOG ------------------ ROLLING AVG ----------------------------

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 12:28:00	11.262	7.053	0.627	0.603	68

Start Run #1 Propylene Oxide

27 MAY 92 13:07:01 PAGE00C

DATA LIST 12

DEMAND DISPLAY

FPG	3.45	V DC	BB3	0.24	IPS
FTG	88	DEG F	BB4	0.08	IPS
FQG	11.025	#/SEC	BB5	0.11	IPS
FPRG	157.5	PSIG	BB7	0.05	IPS
FQT	11.054	#/SEC	BB8	0.05	IPS
FLAME	#3#4#7#8		BB9	0.06	IPS
WSQ	7.55c	#/SEC	CSGV	83.5	DEG
CTIM	71	DEG F	TIMR_01	37 249.5	HOURS
WQJF_PR	179	RPM	LTTH1	127	DEG F
WXC	0.572	RATIO	S125N	-65.25	V DC
WQJ	6.533	#/SEC	S125P	65.61	V DC
FSR	60.6	% FSR	HPA1	95.7	% H2
WXJ	0.592	RATIO	HPA2	100.0	% H2
WSQ	7.556	#/SEC	CPD	143.3	PSIG
BB1	0.07	IPS	CTD	653	DEG F
BB2	0.08	IPS	TTXSP2	60	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

DATA LIST 12 27 MAY 92 13:07:07 PAGE001

DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	53	DEG F	TTXD1_16	1000	DEG F
TTXD1_1	1047	DEG F	TTXD1_17	1016	DEG F
TTXD1_2	993	DEG F	TTXD1_18	1013	DEG F
TTXD1_3	1007	DEG F	TTXC	1016	DEG F
TTXD1_4	1047	DEG F	TTXM	1015	DEG F
TTXD1_5	1012	DEG F	TNH	100.0	% SPD
TTXD1_6	1031	DEG F	TNR	103.9	% SPD
TTXD1_7	1011	DEG F	DW	72.70	MW
TTXD1_8	1024	DEG F	VOLTS1	14.42	KV
TTXD1_9	1017	DEG F	TTXSP1	65	DEG F
TTXD1_10	1035	DEG F	TTXSP2	60	DEG F
TTXD1_11	1013	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1007	DEG F	L30HP1	0	LOGIC
TTXD1_13	982	DEG F	L30HP2	0	LOGIC
TTXD1_14	1042	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	986	DEG F			

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

Fuel Ra
End Run #1 PAH = 11.23

HOUR LOG ---------------------- ROLLING AVG ------------------------------------

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 13:28:00	11.127	6.725	0.603	0.578	69

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.45	V DC	BB3	0.24	IPS
FTG	85	DEG F	BB4	0.08	IPS
FQG	11.160	#/SEC	BB5	0.11	IPS
FPRG	197.4	PSIG	BB7	0.05	IPS
FQT	11.167	#/SEC	BB8	0.05	IPS
FLAME	#3#4#7#8		BB9	0.06	IPS
WSQ	8.133	#/SEC	CSGV	83.5	DEG
CTIM	69	DEG F	TIMR_01	37 250.5	HOURS
WQJF_FR	191	RPM	LTTH1	127	DEG F
WXC	0.581	RATIO	S125N	-65.32	V DC
WQJ	6.921	#/SEC	S125P	65.61	V DC
FSR	60.9	% FSR	HPA1	95.5	% H2
WXJ	0.620	RATIO	HPA2	100.0	% H2
WSQ	8.133	#/SEC	CPD	143.8	PSIG
BB1	0.07	IPS	CTD	652	DEG F
BB2	0.07	IPS	TTXSP2	58	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	55	DEG F	TTXD1_16	998	DEG F
TTXD1_1	1044	DEG F	TTXD1_17	1012	DEG F
TTXD1_2	990	DEG F	TTXD1_18	1010	DEG F
TTXD1_3	1006	DEG F	TTXC	1014	DEG F
TTXD1_4	1046	DEG F	TTXM	1014	DEG F
TTXD1_5	1014	DEG F	TNH	100.0	% SPD
TTXD1_6	1032	DEG F	TNR	103.9	% SPD
TTXD1_7	1009	DEG F	DW	73.32	MW
TTXD1_8	1022	DEG F	VOLTS1	14.44	KV
TTXD1_9	1014	DEG F	TTXSP1	64	DEG F
TTXD1_10	1032	DEG F	TTXSP2	58	DEG F
TTXD1_11	1010	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1006	DEG F	L30HP1	0	LOGIC
TTXD1_13	982	DEG F	L30HP2	0	LOGIC
TTXD1_14	1038	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	988	DEG F			

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

End Run #1 Propylene Oxide Fuel Rate = 11.093

HOUR LOG -------------------- ROLLING AVG ------------------------------

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 14:28:00	11.126	6.739	0.605	0.579	69

Start Run #2 PAH

Start Run #2 Propylene Oxide

Start Run #2 VOC

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.46	V DC	BB3	0.23	IPS
FTG	90	DEG F	BB4	0.08	IPS
FQG	11.073	#/SEC	BB5	0.11	IPS
FPRG	197.4	PSIG	BB7	0.05	IPS
FQT	11.127	#/SEC	BB8	0.05	IPS
FLAME	#3#4#7#8		BB9	0.07	IPS
WSQ	8.450	#/SEC	CSGV	83.5	DEG
CTIM	69	DEG F	TIMR_01	37 251.5	HOURS
WQJF_PR	185	RPM	LTTH1	127	DEG F
WXC	0.576	RATIO	S125N	-65.32	V DC
WQJ	6.732	#/SEC	S125P	65.61	V DC
FSR	60.5	% FSR	HPA1	95.4	% H2
WXJ	0.610	RATIO	HPA2	100.0	% H2
WSQ	8.450	#/SEC	CPD	143.8	PSIG
BB1	0.07	IPS	CTD	652	DEG F
BB2	0.08	IPS	TTXSP2	58	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	56	DEG F	TTXD1_16	997	DEG F
TTXD1_1	1043	DEG F	TTXD1_17	1016	DEG F
TTXD1_2	990	DEG F	TTXD1_18	1011	DEG F
TTXD1_3	1005	DEG F	TTXC	1014	DEG F
TTXD1_4	1047	DEG F	TTXM	1015	DEG F
TTXD1_5	1012	DEG F	TNH	100.0	% SPD
TTXD1_6	1030	DEG F	TNR	103.9	% SPD
TTXD1_7	1011	DEG F	DW	73.01	MW
TTXD1_8	1020	DEG F	VOLTS1	14.43	KV
TTXD1_9	1015	DEG F	TTXSP1	67	DEG F
TTXD1_10	1033	DEG F	TTXSP2	58	DEG F
TTXD1_11	1011	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1005	DEG F	L30HP1	0	LOGIC
TTXD1_13	979	DEG F	L30HP2	0	LOGIC
TTXD1_14	1038	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	987	DEG F			

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

End Run #2 VOC
Fuel Rate = 11.073

Fuel Rate = 11.138#/sec

End Run #1 Aldehydes

HOUR LOG ------------------------ ROLLING AVG ------------------------

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 15:28:00	11.111	6.793	0.611	0.584	69

27 MAY 92 16:00:21.00 120 HYDROGEN PRESS LOW (SKID) ALARM

Start Run # 2
Aldehyde

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.43	V DC	BB3	0.23	IPS
FTG	102	DEG F	BB4	0.08	IPS
FQG	10.958	#/SEC	BB5	0.11	IPS
FPRG	197.4	PSIG	BB7	0.05	IPS
FQT	10.942	#/SEC	BB8	0.05	IPS
FLAME	#3#4#7#8		BB9	0.07	IPS
WSQ	8.276	#/SEC	CSGV	83.5	DEG
CTIM	69	DEG F	TIMR_01	37 252.5	HOURS
WQJF_PR	180	RPM	LTTH1	128	DEG F
WXC	0.585	RATIO	S125N	-65.25	V DC
WQJ	6.513	#/SEC	S125P	65.54	V DC
FSR	60.8	% FSR	HPA1	95.3	% H2
WXJ	0.595	RATIO	HPA2	100.0	% H2
WSQ	8.276	#/SEC	CPD	143.6	PSIG
BB1	0.07	IPS	CTD	651	DEG F
BB2	0.07	IPS	TTXSP2	59	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	54	DEG F	TTXD1_16	998	DEG F
TTXD1_1	1044	DEG F	TTXD1_17	1014	DEG F
TTXD1_2	990	DEG F	TTXD1_18	1011	DEG F
TTXD1_3	1005	DEG F	TTXC	1013	DEG F
TTXD1_4	1045	DEG F	TTXM	1013	DEG F
TTXD1_5	1012	DEG F	TNH	100.0	% SPD
TTXD1_6	1031	DEG F	TNR	103.9	% SPD
TTXD1_7	1010	DEG F	DW	72.70	MW
TTXD1_8	1020	DEG F	VOLTS1	14.41	KV
TTXD1_9	1013	DEG F	TTXSP1	65	DEG F
TTXD1_10	1032	DEG F	TTXSP2	59	DEG F
TTXD1_11	1010	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1004	DEG F	L30HP1	0	LOGIC
TTXD1_13	979	DEG F	L30HP2	0	LOGIC
TTXD1_14	1037	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	985	DEG F			

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

27 MAY 92 16:18:28.00 120 HYDROGEN PRESS LOW (SKID) NORMAL

HOUR LOG ------------------- ROLLING AVG --

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 16:28:00	10.983	6.722	0.612	0.588	68

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.45	V DC	BB3	0.23	IPS
FTG	103	DEG F	BB4	0.08	IPS
FQG	10.936	#/SEC	BB5	0.11	IPS
FPRG	197.5	PSIG	BB7	0.04	IPS
FQT	10.911	#/SEC	BB8	0.04	IPS
FLAME	#3#4#7#8		BB9	0.06	IPS
WSQ	7.836	#/SEC	CSGV	83.5	DEG
CTIM	69	DEG F	TIMR_01	37 253.5	HOURS
WQJF_PR	182	RPM	LTTH1	128	DEG F
WXC	0.585	RATIO	S125N	-65.39	V DC
WQJ	6.633	#/SEC	S125P	65.46	V DC
FSR	60.6	% FSR	HPA1	95.4	% H2
WXJ	0.605	RATIO	HPA2	100.0	% H2
WSQ	7.836	#/SEC	CPD	143.1	PSIG
BB1	0.07	IPS	CTD	653	DEG F
BB2	0.08	IPS	TTXSP2	60	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	59	DEG F	TTXD1_16	998	DEG F
TTXD1_1	1045	DEG F	TTXD1_17	1015	DEG F
TTXD1_2	988	DEG F	TTXD1_18	1012	DEG F
TTXD1_3	1003	DEG F	TTXC	1015	DEG F
TTXD1_4	1048	DEG F	TTXM	1014	DEG F
TTXD1_5	1015	DEG F	TNH	100.0	% SPD
TTXD1_6	1033	DEG F	TNR	103.9	% SPD
TTXD1_7	1016	DEG F	DW	73.13	MW
TTXD1_8	1022	DEG F	VOLTS1	14.41	KV
TTXD1_9	1016	DEG F	TTXSP1	68	DEG F
TTXD1_10	1034	DEG F	TTXSP2	60	DEG F
TTXD1_11	1011	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1005	DEG F	L30HP1	0	LOGIC
TTXD1_13	981	DEG F	L30HP2	0	LOGIC
TTXD1_14	1039	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	988	DEG F			

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

End Run #2 Propylene Oxide   Fuel Rate =

HOUR LOG ---------------------- ROLLING AVG --

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 17:28:00	10.925	6.639	0.608	0.584	69

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.46	V DC	BB3	0.24	IPS
FTG	91	DEG F	BB4	0.08	IPS
FQG	11.024	#/SEC	BB5	0.11	IPS
FPRG	197.5	PSIG	BB7	0.04	IPS
FQT	11.042	#/SEC	BB8	0.04	IPS
FLAME	#3#4#7#8		BB9	0.06	IPS
WSQ	8.394	#/SEC	CSGV	83.6	DEG
CTIM	69	DEG F	TIMR_01	37 254.5	HOURS
WQJF_PR	183	RPM	LTTH1	128	DEG F
WXC	0.586	RATIO	S125N	-65.39	V DC
WQJ	6.702	#/SEC	S125P	65.54	V DC
FSR	60.4	% FSR	HPA1	95.5	% H2
WXJ	0.613	RATIO	HPA2	100.0	% H2
WSQ	8.394	#/SEC	CPD	143.4	PSIG
BB1	0.07	IPS	CTD	654	DEG F
BB2	0.07	IPS	TTXSP2	61	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	57	DEG F	TTXD1_16	1000	DEG F
TTXD1_1	1046	DEG F	TTXD1_17	1018	DEG F
TTXD1_2	994	DEG F	TTXD1_18	1013	DEG F
TTXD1_3	1007	DEG F	TTXC	1016	DEG F
TTXD1_4	1050	DEG F	TTXM	1015	DEG F
TTXD1_5	1014	DEG F	TNH	100.0	% SPD
TTXD1_6	1031	DEG F	TNR	103.8	% SPD
TTXD1_7	1013	DEG F	DW	73.13	MW
TTXD1_8	1024	DEG F	VOLTS1	14.41	KV
TTXD1_9	1018	DEG F	TTXSP1	69	DEG F
TTXD1_10	1035	DEG F	TTXSP2	61	DEG F
TTXD1_11	1013	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1007	DEG F	L30HP1	0	LOGIC
TTXD1_13	982	DEG F	L30HP2	0	LOGIC
TTXD1_14	1039	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	990	DEG F			

Fuel Rate = 10.998 #/s

REMOTE LINK HEALTHY

End Run #2 PAH

LOG PERIOD = 0060 MINUTES

HOUR LOG ------------------------ ROLLING AVG --

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 18:28:00	10.987	6.718	0.611	0.585	69

Start Run #3 PAH
Start Run #3 VOC

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.46	V DC	BB3	0.22	IPS
FTG	96	DEG F	BB4	0.08	IPS
FQG	10.862	#/SEC	BB5	0.11	IPS
FPRG	197.6	PSIG	BB7	0.04	IPS
FQT	10.850	#/SEC	BB8	0.04	IPS
FLAME	#3#4#7#8		BB9	0.06	IPS
WSQ	7.679	#/SEC	CSGV	83.5	DEG
CTIM	68	DEG F	TIMR_01	37 255.5	HOURS
WQJF_PR	180	RPM	LTTH1	128	DEG F
WXC	0.576	RATIO	S125N	-65.03	V DC
WQJ	6.543	#/SEC	S125P	65.83	V DC
FSR	59.6	% FSR	HPA1	95.7	% H2
WXJ	0.599	RATIO	HPA2	100.0	% H2
WSQ	7.679	#/SEC	CPD	143.7	PSIG
BB1	0.07	IPS	CTD	652	DEG F
BB2	0.08	IPS	TTXSP2	61	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	58	DEG F	TTXD1_16	1000	DEG F
TTXD1_1	1041	DEG F	TTXD1_17	1015	DEG F
TTXD1_2	990	DEG F	TTXD1_18	1011	DEG F
TTXD1_3	1003	DEG F	TTXC	1015	DEG F
TTXD1_4	1047	DEG F	TTXM	1016	DEG F
TTXD1_5	1018	DEG F	TNH	100.0	% SPD
TTXD1_6	1032	DEG F	TNR	103.8	% SPD
TTXD1_7	1015	DEG F	DW	72.88	MW
TTXD1_8	1022	DEG F	VOLTS1	14.45	KV
TTXD1_9	1015	DEG F	TTXSP1	66	DEG F
TTXD1_10	1034	DEG F	TTXSP2	61	DEG F
TTXD1_11	1012	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1006	DEG F	L30HP1	0	LOGIC
TTXD1_13	981	DEG F	L30HP2	0	LOGIC
TTXD1_14	1040	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	987	DEG F			

REMOTE LINK HEALTHY

HOUR LOG -------------------- ROLLING AVG ------------------------------

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 19:28:00	10.854	6.553	0.604	0.576	69

Start Run #3 Propylene Oxide

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.46	V DC	BB3	0.22	IPS
FTG	98	DEG F	BB4	0.08	IPS
FQG	10.744	#/SEC	BB5	0.11	IPS
FPRG	197.4	PSIG	BB7	0.04	IPS
FQT	10.762	#/SEC	BB8	0.04	IPS
FLAME	#3#4#7#8		BB9	0.06	IPS
WSQ	8.340	#/SEC	CSGV	83.5	DEG
CTIM	68	DEG F	TIMR_01	37 256.5	HOURS
WQJF_FR	183	RPM	LTTH1	126	DEG F
WXC	0.600	RATIO	S125N	-65.17	V DC
WQJ	6.742	#/SEC	S125P	65.61	V DC
FSR	59.5	% FSR	HPA1	95.7	% H2
WXJ	0.629	RATIO	HPA2	100.0	% H2
WSQ	8.340	#/SEC	CPD	144.2	PSIG
BB1	0.08	IPS	CTD	651	DEG F
BB2	0.08	IPS	TTXSP2	62	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	58	DEG F	TTXD1_16	998	DEG F
TTXD1_1	1043	DEG F	TTXD1_17	1015	DEG F
TTXD1_2	991	DEG F	TTXD1_18	1010	DEG F
TTXD1_3	1003	DEG F	TTXC	1015	DEG F
TTXD1_4	1050	DEG F	TTXM	1014	DEG F
TTXD1_5	1013	DEG F	TNH	100.0	% SPD
TTXD1_6	1031	DEG F	TNR	103.8	% SPD
TTXD1_7	1014	DEG F	DW	73.26	MW
TTXD1_8	1022	DEG F	VOLTS1	14.42	KV
TTXD1_9	1015	DEG F	TTXSP1	69	DEG F
TTXD1_10	1032	DEG F	TTXSP2	62	DEG F
TTXD1_11	1011	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1006	DEG F	L30HP1	0	LOGIC
TTXD1_13	983	DEG F	L30HP2	0	LOGIC
TTXD1_14	1037	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	988	DEG F			

End Run #3 VOC Fuel Rate = 10.803

Fuel Rate 10.909

End Run #2 Aldehydes

LOG PERIOD = 0060 MINUTES

HOUR LOG ---------------------- ROLLING AVG --

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 20:28:00	10.751	6.667	0.620	0.594	69

Start Run#3 Aldehydes

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.45	V DC	BB3	0.24	IPS
FTG	94	DEG F	BB4	0.08	IPS
FQG	10.847	#/SEC	BB5	0.12	IPS
FPRG	197.4	PSIG	BB7	0.04	IPS
FQT	10.803	#/SEC	BB8	0.04	IPS
FLAME	#3#4#7#8		BB9	0.06	IPS
WSQ	7.800	#/SEC	CSGV	83.6	DEG
CTIM	66	DEG F	TIMR_01	37 257.5	HOURS
WQJF_PR	182	RPM	LTTH1	122	DEG F
WXC	0.594	RATIO	S125N	-65.32	V DC
WQJ	6.633	#/SEC	S125P	65.61	V DC
FSR	59.5	% FSR	HPA1	95.9	% H2
WXJ	0.610	RATIO	HPA2	100.0	% H2
WSQ	7.800	#/SEC	CPD	145.0	PSIG
BB1	0.07	IPS	CTD	648	DEG F
BB2	0.08	IPS	TTXSP2	61	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

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DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	58	DEG F	TTXD1_16	996	DEG F
TTXD1_1	1038	DEG F	TTXD1_17	1013	DEG F
TTXD1_2	991	DEG F	TTXD1_18	1007	DEG F
TTXD1_3	1001	DEG F	TTXC	1012	DEG F
TTXD1_4	1048	DEG F	TTXM	1012	DEG F
TTXD1_5	1011	DEG F	TNH	100.0	% SPD
TTXD1_6	1028	DEG F	TNR	103.8	% SPD
TTXD1_7	1010	DEG F	DW	74.07	MW
TTXD1_8	1017	DEG F	VOLTS1	14.42	KV
TTXD1_9	1012	DEG F	TTXSP1	68	DEG F
TTXD1_10	1032	DEG F	TTXSP2	61	DEG F
TTXD1_11	1008	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1004	DEG F	L30HP1	0	LOGIC
TTXD1_13	980	DEG F	L30HP2	0	LOGIC
TTXD1_14	1036	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	[illegible]	DEG F			

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

Propylene Oxide Fuel Rate
End Run #3 10,796

HOUR LOG ---------------------- ROLLING AVG --------------------------------

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 21:28:00	10.798	6.663	0.617	0.590	66

DATA LIST 12 27 MAY 92 22:07:01 PAGE00[illegible]

DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.45	V DC	BB3	0.24	IPS
FTG	89	DEG F	BB4	0.08	IPS
FQG	10.905	#/SEC	BB5	0.12	IPS
FPRG	197.5	PSIG	BB7	0.04	IPS
FQT	10.889	#/SEC	BB8	0.04	IPS
FLAME	#3#4#7#8		BB9	0.07	IPS
WSQ	8.295	#/SEC	CSGV	83.6	DEG
CTIM	64	DEG F	TIMR_01	37 258.5	HOURS
WQJF_PR	183	RPM	LTTH1	121	DEG F
WXC	0.597	RATIO	S125N	-65.03	V DC
WQJ	6.862	#/SEC	S125P	65.76	V DC
FSR	59.6	% FSR	HPA1	96.1	% H2
WXJ	0.620	RATIO	HPA2	100.0	% H2
WSQ	8.295	#/SEC	CPD	146.0	PSIG
BB1	0.07	IPS	CTD	649	DEG F
BB2	0.08	IPS	TTXSP2	62	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

DATA LIST 12 27 MAY 92 22:07:08 PAGE001

DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	60	DEG F	TTXD1_16	993	DEG F
TTXD1_1	1036	DEG F	TTXD1_17	1012	DEG F
TTXD1_2	989	DEG F	TTXD1_18	1005	DEG F
TTXD1_3	1005	DEG F	TTXC	1011	DEG F
TTXD1_4	1048	DEG F	TTXM	1011	DEG F
TTXD1_5	1004	DEG F	TNH	100.1	% SPD
TTXD1_6	1027	DEG F	TNR	103.8	% SPD
TTXD1_7	1007	DEG F	DW	74.44	MW
TTXD1_8	1017	DEG F	VOLTS1	14.43	KV
TTXD1_9	1012	DEG F	TTXSP1	71	DEG F
TTXD1_10	1030	DEG F	TTXSP2	62	DEG F
TTXD1_11	1007	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1003	DEG F	L30HP1	0	LOGIC
TTXD1_13	978	DEG F	L30HP2	0	LOGIC

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

HOUR LOG -------------------- ROLLING AVG --

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 22:28:00	10.843	6.655	0.614	0.599	65

27 MAY 92 22:30:09.00 120 HYDROGEN PRESS LOW (SKID) ALARM

DATA LIST 12 27 MAY 92 23:07:01 PAGE00(

DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.45	V DC	BB3	0.22	IPS
FTG	87	DEG F	BB4	0.08	IPS
FQG	10.839	#/SEC	BB5	0.12	IPS
FPRG	197.4	PSIG	BB7	0.04	IPS
FQT	10.839	#/SEC	BB8	0.04	IPS
FLAME	#3#4#7#8		BB9	0.07	IPS
WSQ	7.781	#/SEC	CSGV	83.5	DEG
CTIM	64	DEG F	TIMR_01	37 259.5	HOURS
WQJF_PR	183	RPM	LTTH1	119	DEG F
WXC	0.590	RATIO	S125N	-65.39	V DC
WQJ	6.722	#/SEC	S125P	65.46	-V DC
FSR	59.6	% FSR	HPA1	96.2	% H2
WXJ	0.616	RATIO	HPA2	100.0	% H2
WSQ	7.781	#/SEC	CPD	145.8	PSIG
BB1	0.08	IPS	CTD	647	DEG F
BB2	0.08	IPS	TTXSP2	62	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

DATA LIST 12 27 MAY 92 23:07:08 PAGE00(

DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
TTXSP3	58	DEG F	TTXD1_16	994	DEG F
TTXD1_1	1034	DEG F	TTXD1_17	1010	DEG F
TTXD1_2	986	DEG F	TTXD1_18	1008	DEG F
TTXD1_3	999	DEG F	TTXC	1010	DEG F
TTXD1_4	1047	DEG F	TTXM	1010	DEG F
TTXD1_5	1008	DEG F	TNH	100.0	% SPD
TTXD1_6	1027	DEG F	TNR	103.8	% SPD

TTXD1_8	1017	DEG F	VOLTS1	14.42	KV
TTXD1_9	1011	DEG F	TTXSP1	72	DEG F
TTXD1_10	1029	DEG F	TTXSP2	62	DEG F
TTXD1_11	1005	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1002	DEG F	L30HP1	0	LOGIC
TTXD1_13	976	DEG F	L30HP2	0	LOGIC
TTXD1_14	1035	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	991	DEG F			

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

End Run #3 PAH Fuel Rate = 10.839

HOUR LOG ------------------- ROLLING AVG ---------------------------------------

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
27 MAY 92 23:28:00	10.876	6.716	0.618	0.593	64

27 MAY 92 23:33:17.12 120 HYDROGEN PRESS LOW (SKID) NORMAL

DATA LIST 12 28 MAY 92 00:07:01 PAGE000

DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.44	V DC	BB3	0.20	IPS
FTG	89	DEG F	BB4	0.07	IPS
FQG	9.262	#/SEC	BB5	0.09	IPS
FPRG	197.4	PSIG	BB7	0.03	IPS
FQT	9.271	#/SEC	BB8	0.03	IPS
FLAME	#3#4#7#8		BB9	0.06	IPS
WSQ	5.599	#/SEC	CSGV	63.8	DEG
CTIM	63	DEG F	TIMR_01	37 260.5	HOURS
WQJF_PR	114	RPM	LTTH1	118	DEG F
WXC	0.419	RATIO	S125N	-65.39	V DC
WQJ	4.153	#/SEC	S125P	65.54	V DC
FSR	52.4	% FSR	HPA1	96.2	% H2
WXJ	0.452	RATIO	HPA2	100.0	% H2
WSQ	5.599	#/SEC	CPD	124.2	PSIG
BB1	0.07	IPS	CTD	602	DEG F
BB2	0.07	IPS	TTXSP2	69	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

DATA LIST 12 28 MAY 92 00:07:08 PAGE001

DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS

TTXD1_1	1050	DEG F	TTXD1_17	1026	DEG F
TTXD1_2	1006	DEG F	TTXD1_18	983	DEG F
TTXD1_3	1025	DEG F	TTXC	1018	DEG F
TTXD1_4	1035	DEG F	TTXM	1019	DEG F
TTXD1_5	1054	DEG F	TNH	100.0	% SPD
TTXD1_6	996	DEG F	TNR	103.0	% SPD
TTXD1_7	1012	DEG F	DW	82.65	MW
TTXD1_8	1033	DEG F	VOLTS1	14.42	KV
TTXD1_9	1010	DEG F	TTXSP1	101	DEG F
TTXD1_10	1044	DEG F	TTXSP2	69	DEG F
TTXD1_11	1015	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1006	DEG F	L30HP1	0	LOGIC
TTXD1_13	997	DEG F	L30HP2	0	LOGIC
TTXD1_14	1054	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	954	DEG F			

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

Fuel Rate
End Run #3 Aldehydes 10.463

HOUR LOG -------------------- ROLLING AVG --

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
28 MAY 92 00:28:00	9.401	4.351	0.461	0.432	64

DATA LIST 12 28 MAY 92 01:07:01 PAGE00C

DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.45	V DC	BB3	0.20	IPS
FTG	95	DEG F	BB4	0.07	IPS
FQG	9.171	#/SEC	BB5	0.10	IPS
FPRG	197.3	PSIG	BB7	0.03	IPS
FQT	9.191	#/SEC	BB8	0.03	IPS
FLAME	#3#4#7#8		BB9	0.06	IPS
WSQ	5.675	#/SEC	CSGV	63.4	DEG
CTIM	63	DEG F	TIMR_01	37 261.5	HOURS
WQJF_PR	114	RPM	LTTH1	119	DEG F
WXC	0.413	RATIO	S125N	-65.39	V DC
WQJ	4.173	#/SEC	S125P	65.46	V DC
FSR	52.1	% FSR	HPA1	96.5	% H2
WXJ	0.451	RATIO	HPA2	100.0	% H2
WSG	5.675	#/SEC	CPD	123.5	PSIG
BB1	0.07	IPS	CTD	602	DEG F
BB2	0.07	IPS	TTXSP2	70	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

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DEMAND DISPLAY

TTXSP3	62	DEG F	TTXD1_16	1003	DEG F
TTXD1_1	1052	DEG F	TTXD1_17	1028	DEG F
TTXD1_2	1008	DEG F	TTXD1_18	984	DEG F
TTXD1_3	1027	DEG F	TTXC	1020	DEG F
TTXD1_4	1039	DEG F	TTXM	1021	DEG F
TTXD1_5	1054	DEG F	TNH	100.0	% SPD
TTXD1_6	993	DEG F	TNR	103.0	% SPD
TTXD1_7	1016	DEG F	DW	62.40	MW
TTXD1_8	1033	DEG F	VOLTS1	14.43	KV
TTXD1_9	1010	DEG F	TTXSP1	102	DEG F
TTXD1_10	1047	DEG F	TTXSP2	70	DEG F
TTXD1_11	1016	DEG F	L71HG_HF	0	LOGIC
TTXD1_12	1008	DEG F	L30HP1	0	LOGIC
TTXD1_13	999	DEG F	L30HP2	0	LOGIC
TTXD1_14	1055	DEG F	CNTR_04	000 165	CNTS
TTXD1_15	953	DEG F			

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

HOUR LOG ------------------------- ROLLING AVG ---

TIME	GAS FUEL #/SEC	WATER #/SEC	ACTUAL RATIO	REQUIRED RATIO	AMBIENT DEG F
28 MAY 92 01:28:00	9.246	4.136	0.447	0.417	64

DATA LIST 12 28 MAY 92 02:07:01 PAGE001

DEMAND DISPLAY

NAME	VALUE	UNITS	NAME	VALUE	UNITS
FPG	3.46	V DC	BB3	0.21	•IPS
FTG	89	DEG F	BB4	0.07	IPS
FQG	9.280	#/SEC	BB5	0.09	IPS
FPRG	197.5	PSIG	BB7	0.03	IPS
FQT	9.283	#/SEC	BB8	0.03	IPS
FLAME	#3#4#7#8		BB9	0.05	IPS
WSQ	5.804	#/SEC	CSGV	62.9	DEG
CTIM	62	DEG F	TIMR_01	37 262.5	HOURS
WQJF_PR	111	RPM	LTTH1	117	DEG F
WXC	0.420	RATIO	S125N	-65.32	V DC
WQJ	4.073	#/SEC	S125P	65.54	V DC
FSR	52.1	% FSR	HPA1	96.5	% H2
WXJ	0.440	RATIO	HPA2	100.0	% H2
WSQ	5.804	#/SEC	CPD	123.4	PSIG
BB1	0.07	IPS	CTD	599	DEG F
BB2	0.07	IPS	TTXSP2	72	DEG F

REMOTE LINK HEALTHY

LOG PERIOD = 0060 MINUTES

DATA LIST 12 28 MAY 92 02:07:08 PAGE001

DEMAND DISPLAY

APPENDIX B

CARB METHOD 429

POLYCYCLIC AROMATIC HYDROCARBONS
EMISSION CALCULATIONS (lb/hr)

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May -92

PAH Compound	Sample Weight, (ng)				lb/hr				
	Run 1	Run 2	Run 3	Blank	Run 1	Run 2	Run 3	Average	Blank
Naphthalene	2.30E+03	1.10E+03	5.40E+02	4.00E+02	8.97E-04	4.34E-04	2.07E-04	5.13E-04	1.56E-04
2-Methyl-Naphthalene									
2-Chloro-Naphthalene									
Acenaphthene	3.40E+01	1.50E+01	1.20E+01	<5.00E+00	1.33E-05	5.92E-06	4.60E-06	7.93E-06	<1.95E-06
Acenaphthalene	6.50E+00	5.80E+00	<5.00E+00	<5.00E+00	2.54E-06	2.29E-06	<1.92E-06	<2.25E-06	<1.95E-06
Fluorene	8.80E+01	4.30E+01	3.50E+01	5.60E+00	3.43E-05	1.70E-05	1.34E-05	2.16E-05	2.18E-06
Phenanthrene	6.40E+02	3.30E+02	2.20E+02	1.80E+01	2.50E-04	1.30E-04	8.44E-05	1.55E-04	7.01E-06
Anthracene	2.70E+01	2.10E+01	1.60E+01	<5.00E+00	1.05E-05	8.28E-06	6.14E-06	8.32E-06	<1.95E-06
Fluoranthene	5.50E+01	2.10E+01	1.70E+01	1.40E+01	2.15E-05	8.28E-06	6.52E-06	1.21E-05	5.45E-06
Pyrene	2.10E+01	8.30E+00	8.80E+00	9.50E+00	8.19E-06	3.27E-06	3.38E-06	4.95E-06	3.70E-06
Benzo-a-Anthracene	8.10E+00	8.30E+00	8.00E+00	6.80E+00	3.16E-06	3.27E-06	3.07E-06	3.17E-06	2.65E-06
Chrysene	1.10E+01	1.10E+01	1.00E+01	1.30E+01	4.29E-06	4.34E-06	3.84E-06	4.16E-06	5.06E-06
Benzo-b-Fluoranthene	<5.00E+00	<5.00E+00	<5.00E+00	<5.00E+00	<1.95E-06	<1.97E-06	<1.92E-06	<1.95E-06	<1.95E-06
Benzo-k-Fluoranthene	<5.00E+00	<5.00E+00	<5.00E+00	<5.00E+00	<1.95E-06	<1.97E-06	<1.92E-06	<1.95E-06	<1.95E-06
Benzo-e-Pyrene									
Benzo-a-Pyrene	<5.00E+00	<5.00E+00	<5.00E+00	<5.00E+00	<1.95E-06	<1.97E-06	<1.92E-06	<1.95E-06	<1.95E-06
Perylene									
Indeno-123-c,d-Pyrene	<5.00E+00	<5.00E+00	<5.00E+00	<5.00E+00	<1.95E-06	<1.97E-06	<1.92E-06	<1.95E-06	<1.95E-06
Dibenzo-ah-Anthracene	<5.00E+00	<5.00E+00	<5.00E+00	<5.00E+00	<1.95E-06	<1.97E-06	<1.92E-06	<1.95E-06	<1.95E-06
Benzo-ghi-Perylene	<5.00E+00	<5.00E+00	<5.00E+00	<5.00E+00	<1.95E-06	<1.97E-06	<1.92E-06	<1.95E-06	<1.95E-06

" < " indicates a sample with a non-detectable concentration. Laboratory Detection Limit was used for emission calculation.

lb/hr = ng / (1E+09 ng/g) / (453.592 g/lb) x Qs(std) x (60 min/hr) / Vm(std)

	Run 1	Run 2	Run 3	Blank Value (avg)
Vm(std), ft3 =	156.687	154.302	156.624	155.871
Qs(std), ft3/min =	462,130	460,114	454,239	458,828

POLYCYCLIC AROMATIC HYDROCARBONS
EMISSION CALCULATIONS (ng/dscm)

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May -92

	Sample Weight, (ng)				ng/dscm				
PAH Compound	Run 1	Run 2	Run 3	Blank	Run 1	Run 2	Run 3	Average	Blank
Naphthalene	2.30E+03	1.10E+03	5.40E+02	4.00E+02	5.18E+02	2.52E+02	1.22E+02	2.97E+02	9.06E+01
2-Methyl-Naphthalene									
2-Chloro-Naphthalene									
Acenaphthene	3.40E+01	1.50E+01	1.20E+01	<5.00E+00	7.66E+00	3.43E+00	2.71E+00	4.60E+00	<1.13E+00
Acenaphthalene	6.50E+00	5.80E+00	<5.00E+00	<5.00E+00	1.46E+00	1.33E+00	<1.13E+00	<1.31E+00	<1.13E+00
Fluorene	8.80E+01	4.30E+01	3.50E+01	5.60E+00	1.98E+01	9.84E+00	7.89E+00	1.25E+01	1.27E+00
Phenanthrene	6.40E+02	3.30E+02	2.20E+02	1.80E+01	1.44E+02	7.55E+01	4.96E+01	8.98E+01	4.08E+00
Anthracene	2.70E+01	2.10E+01	1.60E+01	<5.00E+00	6.09E+00	4.81E+00	3.61E+00	4.83E+00	<1.13E+00
Fluoranthene	5.50E+01	2.10E+01	1.70E+01	1.40E+01	1.24E+01	4.81E+00	3.83E+00	7.01E+00	3.17E+00
Pyrene	2.10E+01	8.30E+00	8.80E+00	9.50E+00	4.73E+00	1.90E+00	1.98E+00	2.87E+00	2.15E+00
Benzo-a-Anthracene	8.10E+00	8.30E+00	8.00E+00	6.80E+00	1.83E+00	1.90E+00	1.80E+00	1.84E+00	1.54E+00
Chrysene	1.10E+01	1.10E+01	1.00E+01	1.30E+01	2.48E+00	2.52E+00	2.25E+00	2.42E+00	2.95E+00
Benzo-b-Fluoranthene	<5.00E+00	<5.00E+00	<5.00E+00	<5.00E+00	<1.13E+00	<1.14E+00	<1.13E+00	<1.13E+00	<1.13E+00
Benzo-k-Fluoranthene	<5.00E+00	<5.00E+00	<5.00E+00	<5.00E+00	<1.13E+00	<1.14E+00	<1.13E+00	<1.13E+00	<1.13E+00
Benzo-e-Pyrene									
Benzo-a-Pyrene	<5.00E+00	<5.00E+00	<5.00E+00	<5.00E+00	<1.13E+00	<1.14E+00	<1.13E+00	<1.13E+00	<1.13E+00
Perylene									
Indeno-123-c,d-Pyrene	<5.00E+00	<5.00E+00	<5.00E+00	<5.00E+00	<1.13E+00	<1.14E+00	<1.13E+00	<1.13E+00	<1.13E+00
Dibenzo-ah-Anthracene	<5.00E+00	<5.00E+00	<5.00E+00	<5.00E+00	<1.13E+00	<1.14E+00	<1.13E+00	<1.13E+00	<1.13E+00
Benzo-ghi-Perylene	<5.00E+00	<5.00E+00	<5.00E+00	<5.00E+00	<1.13E+00	<1.14E+00	<1.13E+00	<1.13E+00	<1.13E+00

" < " indicates a sample with a non-detectable concentration. Laboratory Detection Limit was used for emission calculation.

ng/dscm = ng / [Vm(std) x 0.028317 m3/ft3]

	Run 1	Run 2	Run 3	Blank Value (avg)
Vm(std), ft3 =	156.687	154.302	156.624	155.871

POLYCYCLIC AROMATIC HYDROCARBONS
EMISSION CALCULATIONS (lb/MMBtu)

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May -92

	lb/hr				lb/MMBtu				
PAH Compound	Run 1	Run 2	Run 3	Blank	Run 1	Run 2	Run 3	Average	Blank
Naphthalene	8.97E-04	4.34E-04	2.07E-04	1.56E-04	9.67E-07	4.77E-07	2.31E-07	5.58E-07	1.71E-07
2-Methyl-Naphthalene									
2-Chloro-Naphthalene									
Acenaphthene	1.33E-05	5.92E-06	4.60E-06	<1.95E-06	1.43E-08	6.51E-09	5.14E-09	8.65E-09	<2.14E-09
Acenaphthalene	2.54E-06	2.29E-06	<1.92E-06	<1.95E-06	2.73E-09	2.52E-09	<2.14E-09	<2.46E-09	<2.14E-09
Fluorene	3.43E-05	1.70E-05	1.34E-05	2.18E-06	3.70E-08	1.87E-08	1.50E-08	2.35E-08	2.39E-09
Phenanthrene	2.50E-04	1.30E-04	8.44E-05	7.01E-06	2.69E-07	1.43E-07	9.42E-08	1.69E-07	7.69E-09
Anthracene	1.05E-05	8.28E-06	6.14E-06	<1.95E-06	1.13E-08	9.11E-09	6.85E-09	9.10E-09	<2.14E-09
Fluoranthene	2.15E-05	8.28E-06	6.52E-06	5.45E-06	2.31E-08	9.11E-09	7.28E-09	1.32E-08	5.98E-09
Pyrene	8.19E-06	3.27E-06	3.38E-06	3.70E-06	8.83E-09	3.60E-09	3.77E-09	5.40E-09	4.06E-09
Benzo-a-Anthracene	3.16E-06	3.27E-06	3.07E-06	2.65E-06	3.40E-09	3.60E-09	3.43E-09	3.48E-09	2.91E-09
Chrysene	4.29E-06	4.34E-06	3.84E-06	5.06E-06	4.62E-09	4.77E-09	4.28E-09	4.56E-09	5.56E-09
Benzo-b-Fluoranthene	<1.95E-06	<1.97E-06	<1.92E-06	<1.95E-06	<2.10E-09	<2.17E-09	<2.14E-09	<2.14E-09	<2.14E-09
Benzo-k-Fluoranthene	<1.95E-06	<1.97E-06	<1.92E-06	<1.95E-06	<2.10E-09	<2.17E-09	<2.14E-09	<2.14E-09	<2.14E-09
Benzo-e-Pyrene									
Benzo-a-Pyrene	<1.95E-06	<1.97E-06	<1.92E-06	<1.95E-06	<2.10E-09	<2.17E-09	<2.14E-09	<2.14E-09	<2.14E-09
Perylene									
Indeno-123-c,d-Pyrene	<1.95E-06	<1.97E-06	<1.92E-06	<1.95E-06	<2.10E-09	<2.17E-09	<2.14E-09	<2.14E-09	<2.14E-09
Dibenzo-ah-Anthracene	<1.95E-06	<1.97E-06	<1.92E-06	<1.95E-06	<2.10E-09	<2.17E-09	<2.14E-09	<2.14E-09	<2.14E-09
Benzo-ghi-Perylene	<1.95E-06	<1.97E-06	<1.92E-06	<1.95E-06	<2.10E-09	<2.17E-09	<2.14E-09	<2.14E-09	<2.14E-09

" < " indicates a sample with a non-detectable concentration. Laboratory Detection Limit was used for emission calculation.

lb/MMBtu = (lb/hr) / (MMBtu/hr)

	Run 1	Run 2	Run 3	Blank Value (avg)
Heat Input, MMBtu/hr =	928.364	908.780	895.641	910.928

POLYCYCLIC AROMATIC HYDROCARBONS
ANALYTICAL DATA

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27–May –92

PAH Compound	Sample Weight (ng) Run 1	Sample Weight (ng) Run 2	Sample Weight (ng) Run 3	Sample Weight (ng) Blank	Laboratory Detection Limit (ng) Run 1	Laboratory Detection Limit (ng) Run 2	Laboratory Detection Limit (ng) Run 3	Laboratory Detection Limit (ng) Blank
Naphthalene	2300	1100	540	400				
2–Methyl–Naphthalene								
2–Chloro–Naphthalene								
Acenaphthene	34	15	12					5
Acenaphthalene	6.5	5.8					5	5
Fluorene	88	43	35	5.6				
Phenanthrene	640	330	220	18				
Anthracene	27	21	16					5
Fluoranthene	55	21	17	14				
Pyrene	21	8.3	8.8	9.5				
Benzo–a–Anthracene	8.1	8.3	8	6.8				
Chrysene	11	11	10	13				
Benzo–b–Fluoranthene					5	5	5	5
Benzo–k–Fluoranthene					5	5	5	5
Benzo–e–Pyrene								
Benzo–a–Pyrene					5	5	5	5
Perylene								
Indeno–123–c,d–Pyrene					5	5	5	5
Dibenzo–ah–Anthracene					5	5	5	5
Benzo–ghi–Perylene					5	5	5	5

27-May-92

POLYCYCLIC AROMATIC HYDROCARBONS
MINIMUM DETECTABLE CONCENTRATION

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

PAH Compound	Laboratory Detection Limit ng (1)				Minimum Detectable Concentration, ng/dscm (2)			
	Run 1	Run 2	Run 3	Blank	Run 1	Run 2	Run 3	Blank
Naphthalene								
2-Methyl-Naphthalene								
2-Chloro-Naphthalene								
Acenaphthene				5				1.13E+00
Acenaphthalene			5	5			1.13E+00	1.13E+00
Fluorene								
Phenanthrene								
Anthracene				5				1.13E+00
Fluoranthene								
Pyrene								
Benzo-a-Anthracene								
Chrysene								
Benzo-b-Fluoranthene	5	5	5	5	1.13E+00	1.14E+00	1.13E+00	1.13E+00
Benzo-k-Fluoranthene	5	5	5	5	1.13E+00	1.14E+00	1.13E+00	1.13E+00
Benzo-e-Pyrene								
Benzo-a-Pyrene	5	5	5	5	1.13E+00	1.14E+00	1.13E+00	1.13E+00
Perylene								
Indeno-123-c,d-Pyrene	5	5	5	5	1.13E+00	1.14E+00	1.13E+00	1.13E+00
Dibenzo-ah-Anthracene	5	5	5	5	1.13E+00	1.14E+00	1.13E+00	1.13E+00
Benzo-ghi-Perylene	5	5	5	5	1.13E+00	1.14E+00	1.13E+00	1.13E+00

(1) Laboratory Detection Limit, ng = As / (Ais x RRF)
where : As = Mean noise for the congener mass chromatogram at the m/z.
Ais = SIM response for the internal standard ion (m/z).
RRF = Relative response factor = (As x Cis) / (Ais x Cs)
, where : Cis = Concentration of the appropriate internal standard, ng/ul.
Cs = Concentration of the native ion of interest.

(2) Minimum Detectable Concentration, ng/dscm = Laboratory Detection Limit / [Vm(std) x 0.028317 m3/ft3]

	Run 1	Run 2	Run 3	Blank Value (avg)
Vm(std), ft3 =	156.687	154.302	156.624	155.871

POLYCYCLIC AROMATIC HYDROCARBONS
FIELD DATA SUMMARY

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May-92

	Run 1	Run 2	Run 3
Vlc, Volume of water vapor condensed in impingers and silica gel	322.8	312.3	319.5
Vm, Dry gas volume as measured by dry gas meter (dcf)	170.944	167.975	168.678
y, Dry gas meter calibration factor (dimensionless)	1.005	1.005	1.005
Pb, Barometric Pressure at sampling site (in. Hg)	28.95	28.93	28.95
Ps, Absolute stack gas pressure (in. Hg.)	28.97	28.95	28.97
dH, Average pressure differential across the orifice meter (in. H2O)	1.38	1.37	1.32
Tm, Meter temperature (°R)	553.60	552.00	546.40
Vm(std), Dry gas volume as measured by dry gas meter, corrected to standard conditions (dscf)	156.687	154.302	156.624
Bws, Water vapor in the gas stream, proportion by volume (dimensionless)	0.087	0.086	0.087
%CO2, Percent carbon dioxide by volume (dry basis)	5.95	5.85	5.84
%O2, Percent oxygen by volume (dry basis)	14.95	15.05	15.06
Md, Dry molecular weight of stack gas (lb/lb-mole)	29.55	29.54	29.54
Ms, Wet molecular weight of stack gas (lb/lb-mole)	28.54	28.55	28.54
Cp, Pitot tube coefficient (dimensionless)	0.84	0.84	0.84
Sq.Rt. dP, Average square root of velocity pressure of stack gas (in. of H2O)	0.9628	0.9593	0.9593
Ts, Stack temperature (°R)	788.5	786.3	784.2
As, Cross-sectional area of stack (ft2)	156.477	156.477	156.477
Qs(std), Dry volumetric stack gas flow rate, standard conditions (dscfm)	462,130	460,114	454,239
An, Cross-sectional area of nozzle (ft2)	2.71E-04	2.71E-04	2.71E-04
Ø, Total sampling time (min)	240.0	240.0	240.0
I, Isokinetic sample rate (percent)	101.94	100.50	101.90

POLYCYCLIC AROMATIC HYDROCARBONS
SOURCE TEST CALCULATIONS

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27–May 92
Run No. 1

FIELD DATA

Standard Temperature, T(std)	60	°F	Standard Pressure, Pstd	29.92	"Hg
Meter Temperature, Tm	93.6	°F	Static Pressure, Pstatic	0.30	"H2O
Stack Temperature, Ts	328.5	°F	Barometric Pressure, Pb	28.95	"Hg
SQ.RT. dP	0.9628		Condensate Volume, Vlc	322.8	mℓ
Meter Orfice, dH	1.38	"H2O	Stack I.D.	169.38	inch
Meter Volume, Vm	170.944	ft3	Duct Length	0.00	inch
Meter Correction, y	1.0050		Duct Width	0.00	inch
Stack Gas Oxygen	14.95	% O2	Stack Area, As	156.477	ft2
Stack Gas Carbon Dioxide	5.95	% CO2	Test Time, Ø	240.0	min.
Stack Gas Carbon Monoxide	0.00	% CO	Nozzle Diameter	0.223	inch
Stack Gas Nitrogen	79.10	% N2	Pitot Coefficient, Cp	0.84	

CALCULATIONS

Vm(std) = [T(std) + 460 / Pstd] x Vm x y x (Pb + (dH / 13.6)) / (Tm + 460)	156.687	dscf
Vw(std) = (0.04715 ft3/g) / 528 x [T(std) + 460] x Vlc	14.989	scf
Bws = Vw(std) / [Vm(std) + Vw(std)]	0.087	
Bws @ Saturated Conditions = Vapor Press. of H2O @ Dew Point Temp. / (Pstack, in.Hg.)	Lower Bws Value Used 1.000	
% Excess Air =(%O2 – 0.5%CO) / [0.264%N2 – (%O2–0.5%CO)] x 100		%
Md = (0.44 x %CO2)+(0.32 x %O2)+[0.28 x (%N2 + %CO)]	29.55	lb/lb–mole
Ms = (Md x (1–Bws)) + (18.0 x Bws)	28.54	lb/lb–mole
P(stack) = Pb + [Pstatic / 13.6]	28.97	"Hg
vs = 85.49 x Cp x (Sq.Rt. dP) x [Sq.Rt.(Ts + 460) / (Ms x P(stack))]	67.52	ft/sec
Qs = vs x As x 60	633,878	acfm
* Qs(std) = Qs x (1 – Bws) x [(T(std) + 460) / (Ts + 460)] x (P(stack) / Pstd)	462,130	dscfm
Area of sampling nozzle, An = [(Dn / 12) ^ 2 x Pi] / 4	0.000271	ft2
I = (Ts+460) x [(0.002669 x Vlc) + [Vm(std) / ((T(std) + 460) / Pstd)]] x 100 / [Ø x P(stack) x An x vs x 60]	101.94	%

* Qs(std) value was determined by alternate means

POLYCYCLIC AROMATIC HYDROCARBONS
SOURCE TEST CALCULATIONS

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27–May 92
Run No. 2

FIELD DATA

Standard Temperature, T(std)	60	°F	Standard Pressure, Pstd	29.92	"Hg
Meter Temperature, Tm	92.0	°F	Static Pressure, Pstatic	0.30	"H2O
Stack Temperature, Ts	326.3	°F	Barometric Pressure, Pb	28.93	"Hg
SQ.RT. dP	0.9593		Condensate Volume, Vlc	312.3	mℓ
Meter Orfice, dH	1.37	"H2O	Stack I.D.	169.38	inch
Meter Volume, Vm	167.975	ft3	Duct Length	0.00	inch
Meter Correction, y	1.0050		Duct Width	0.00	inch
Stack Gas Oxygen	15.05	% O2	Stack Area, As	156.477	ft2
Stack Gas Carbon Dioxide	5.85	% CO2	Test Time, Ø	240.0	min.
Stack Gas Carbon Monoxide	0.00	% CO	Nozzle Diameter	0.223	inch
Stack Gas Nitrogen	79.10	% N2	Pitot Coefficient, Cp	0.84	

CALCULATIONS

Vm(std) = [T(std) + 460 / Pstd] x Vm x y x (Pb + (dH / 13.6)) / (Tm + 460)	154.302	dscf
Vw(std) = (0.04715 ft3/g) / 528 x [T(std) + 460] x Vlc	14.502	scf
Bws = Vw(std) / [Vm(std) + Vw(std)]	0.086	
	Lower Bws Value Used	
Bws @ Saturated Conditions = Vapor Press. of H2O @ Dew Point Temp. / (Pstack, in.Hg.)	1.000	
% Excess Air =(%O2 – 0.5%CO) / [0.264%N2 – (%O2–0.5%CO)] x 100		%
Md = (0.44 x %CO2)+(0.32 x %O2)+[0.28 x (%N2 + %CO)]	29.54	lb/lb–mole
Ms = (Md x (1–Bws)) + (18.0 x Bws)	28.55	lb/lb–mole
P(stack) = Pb + [Pstatic / 13.6]	28.95	"Hg
vs = 85.49 x Cp x (Sq.Rt. dP) x [Sq.Rt.(Ts + 460) / (Ms x P(stack))]	67.19	ft/sec
Qs = vs x As x 60	630,852	acfm
* Qs(std) = Qs x (1 – Bws) x [(T(std) + 460) / (Ts + 460)] x (P(stack) / Pstd)	460,114	dscfm
Area of sampling nozzle, An = [(Dn / 12) ^ 2 x Pi] / 4	0.000271	ft2
I = (Ts+460) x [(0.002669 x Vlc) + [Vm(std) / ((T(std) + 460) / Pstd)]] x 100 / [Ø x P(stack) x An x vs x 60]	100.50	%

* Qs(std) value was determined by alternate means

POLYCYCLIC AROMATIC HYDROCARBONS
SOURCE TEST CALCULATIONS

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27–May 92
Run No. 3

FIELD DATA

Standard Temperature, T(std)	60	°F	Standard Pressure, Pstd	29.92	"Hg
Meter Temperature, Tm	86.4	°F	Static Pressure, Pstatic	0.30	"H2O
Stack Temperature, Ts	324.2	°F	Barometric Pressure, Pb	28.95	"Hg
SQ.RT. dP	0.9593		Condensate Volume, Vlc	319.5	mℓ
Meter Orfice, dH	1.32	"H2O	Stack I.D.	169.38	inch
Meter Volume, Vm	168.678	ft3	Duct Length	0.00	inch
Meter Correction, y	1.0050		Duct Width	0.00	inch
Stack Gas Oxygen	15.06	% O2	Stack Area, As	156.477	ft2
Stack Gas Carbon Dioxide	5.84	% CO2	Test Time, Ø	240.0	min.
Stack Gas Carbon Monoxide	0.00	% CO	Nozzle Diameter	0.223	inch
Stack Gas Nitrogen	79.10	% N2	Pitot Coefficient, Cp	0.84	

CALCULATIONS

Vm(std) = [T(std) + 460 / Pstd] x Vm x y x (Pb + (dH / 13.6)) / (Tm + 460)	156.624	dscf
Vw(std) = (0.04715 ft3/g) / 528 x [T(std) + 460] x Vlc	14.836	scf
Bws = Vw(std) / [Vm(std) + Vw(std)]	0.087	
Bws @ Saturated Conditions = Vapor Press. of H2O @ Dew Point Temp. / (Pstack, in.Hg.)	Lower Bws Value Used 1.000	
% Excess Air =(%O2 – 0.5%CO) / [0.264%N2 – (%O2–0.5%CO)] x 100		%
Md = (0.44 x %CO2)+(0.32 x %O2)+[0.28 x (%N2 + %CO)]	29.54	lb/lb–mole
Ms = (Md x (1–Bws)) + (18.0 x Bws)	28.54	lb/lb–mole
P(stack) = Pb + [Pstatic / 13.6]	28.97	"Hg
vs = 85.49 x Cp x (Sq.Rt. dP) x [Sq.Rt.(Ts + 460) / (Ms x P(stack))]	67.09	ft/sec
Qs = vs x As x 60	629,883	acfm
* Qs(std) = Qs x (1 – Bws) x [(T(std) + 460) / (Ts + 460)] x (P(stack) / Pstd)	454,239	dscfm
Area of sampling nozzle, An = [(Dn / 12) ^2 x Pi] / 4	0.000271	ft2
I = (Ts+460) x [(0.002669 x Vlc) + [Vm(std) / ((T(std) + 460) / Pstd)]] x 100 / [Ø x P(stack) x An x vs x 60]	101.90	%

* Qs(std) value was determined by alternate means

FUEL BASED CALCULATIONS

SYCAMORE COGENERATION AB258
UNIT 2 (B) – CARB METHOD 429 (PAH)

May 27, 1992

FUEL ANALYSIS DATA

Run #	Carbon	Hydrogen	Nitrogen	Oxygen	Sulfur	GCV BTU/lb	ft3/lb	lb/gal
	Fuel Value (%), Moisture & Ash Free							
1	73.46	23.64	1.77	1.13	0.00	22,953		
2	73.46	23.64	1.77	1.13	0.00	22,953		
3	73.46	23.64	1.77	1.13	0.00	22,953		

CALCULATIONS

Run #	Stack Gas Oxygen %	Fuel Gas Flowrate lb/hr	Fuel Gas Flowrate ft3/hr	Fuel Oil Flowrate lb/hr	Fuel Oil Flowrate gal/hr	Solid Fuel lb/hr	Heat Input MMBTU/hr	F–Factor dscf/MMBTU	Qs(std) dscfm
1	14.95	40,446					928.364	8,502.92	462,130
2	15.05	39,593					908.780	8,502.92	460,114
3	15.06	39,020					895.641	8,502.92	454,239

Heat Input, MMBTU/hr = (lb/hr fuel gas) x BTU/lb x MM/1E+06

= (ft3/hr fuel gas) x BTU/lb / (ft3/lb fuel gas) x MM/1E+06

= (lb/hr fuel oil) x BTU/lb x MM/1E+06

= (gal/hr fuel oil) x lb/gal x BTU/lb x MM/1E+06

= (lb/hr solid fuel) x BTU/lb x MM/1E+06

F–Factor, dscf/MMBTU = 1E+06 [3.64 scf/lb x (% H) + 1.53 scf/lb x (% C) + 0.57 scf/lb x (% S) + 0.14 scf/lb x (% N) – 0.46 scf/lb x (% O2)] / (BTU/lb) x [(Tstd + 460) / 528]

Qs(std), dscfm = MMBTU/hr x [F–Factor x (20.9 / (20.9 – %O2)) x (hr / 60 min)]

GCV = Gross Calorific Value of fuel

Standard Temperature = 60 °F

FIELD DATA SHEET

ENGINEERING–SCIENCE, INC.

Company: SYCAMORE COGENERATION
Test Location: UNIT # 2, HRSG Stack
Test Method / Parameter: CARB 429 / PAH

Run #: 1
Date: 5/27/92
Operator: T Delfino

Stack Dimensions: 14' 13/8' (169.38")
Barometric Pressure: 28.95 "Hg
Static Pressure: +0.3 "H2O
Pitot Coeff.: 0.84
Filter #: Teflon Untared
Control Box #: BL ~~II~~
Orifice dH@ / y: 1.74 / 1.005
Probe Type / Length: GL / 8'
Nozzle # / Size: GL / 0.223

IMPINGER CONTENTS, ml / grams				
Impinger	Contents	Final	Initial	Net
1	EMPTY	764.4	494.3	270.1
2	Sodium~	658.0	646.6	11.4
3	EMPTY	521.2	519.0	2.2
4				
5				
	Silica Gel	813.4	774.3	39.1
			TOTAL:	322.8

$K^{FAC} = 1.4933$

GAS COMPOSITION			
Time	O2	CO2	CO

LEAK RATE	~~cfm~~ / lpm	"Hg Vacuum
Initial	0.010	15"
Final	0.014	13"

Sample Point	Time (0900)	Gas Meter (ft3 / liters)	dP "H2O	dH "H2O	Temperature, °F Meter	Stack	Probe	Oven	Impinger	Vacuum "Hg	~~Rotameter (liters/min)~~ XAD TEMP °F	Comments
A-1	0	23.825	0.95	1.42	92	327	250	242	60	12	53	
2	10	30.87	0.92	1.37	92	328	250	246	58	12	53	
3	20	37.9	0.85	1.27	95	330	250	247	57	12	54	
4	30	45.3	0.90	1.34	97	334	250	245	57	12	54	
5	40	52.3	0.92	1.37	97	329	25	248	58	12	55	
6	50	59.4	0.92	1.37	100	337						
	60	66.647			1							
	1000 (1005)											
B-1	0	66.647	0.95	1.42	97	334	250	249	60	12	56	
2	10	73.8	0.97	1.45	96	330	250	246	58	13	56	
3	20	80.1	0.97	1.45	94	331	250	248	57	13	55	
4	30	87.1	0.94	1.40	92	330	250	250	58	13	56	
5	40	94.9	0.90	1.34	92	332	250	247	59	13	57	
6	50	101.6	0.90	1.34	92	331	250	246	58	13	57	
	60	109.247										
	1105											

Stephanie Frost

RUN -1 / PAH

Sample Point	Time	Gas Meter (ft3 / liters)	dP "H2O	dH "H2O	Temperature, °F Meter	Stack	Probe	Oven	Impinger	Vacuum "Hg	Rotameter (liters/min)	Comments
	1117										XAD °F	
C-1	0	109.247	0.92	1.37	92	326	250	247	58	13	59	
2	10	117.0	0.92	1.37	92	325	250	249	59	13	59	
3	20	124.6	0.95	1.42	92	325	250	247	59	13	60	
4	30	131.9	0.96	1.43	92	325	250	245	60	13	59	
5	40	139.1	0.95	1.42	92	326	250	243	61	13	59	
6	50	145.4	0.92	1.37	93	326	250	247	60	13	59	
	60	152.238										
	1217 1222											
D-1	0	152.238	0.90	1.34	92	327	250	246	60	13	60	
2	10	159.2	0.90	1.34	92	328	250	243	59	13	59	
3	20	166.2	0.92	1.37	93	327	250	248	58	13	58	
4	30	174.2	0.92	1.37	94	327	250	247	58	13	58	
5	40	180.6	0.95	1.42	94	325	250	249	59	13	59	
6	50	187.7	0.95	1.42	93	325	250	247	58	13	61	Pitot leak ✓ OK
	60	194.769										
	1322											
total/Avg.	240 min.	~~194.769~~ TD	$\sqrt{0.96275}$	1.38	93.63	328.54						
		170.944										

FIELD DATA SHEET

ENGINEERING–SCIENCE, INC.

Company: SYCAMORE Cogeneration
Test Location: UNIT B - HRSG STACK
Test Method / Parameter: CARB DRAFT 429 / PAH

Run #: 2
Date: 5/27/92
Operator: T. DELFINO

Stack Dimensions: 169.38" ID
Barometric Pressure: 28.93 "Hg
Static Pressure: 0.30 "H2O
Pitot Coeff.: 0.84
Filter #: Teflon Untared
Control Box #: BR II
Orifice dH@ / y: 1.74 / 1.005
Probe Type / Length: GL / 8'
Nozzle # / Size: GL / 0.223

IMPINGER CONTENTS, ml / grams				
Impinger	Contents	Final	Initial	Net
1	EMPTY	766.4	481.0	285.4
2	Sodium ~	615.3	621.1	−5.8
3	EMPTY	529.6	528.7	0.9
4				
5				
	Silica Gel	809.6	777.8	31.8
			TOTAL:	312.3

GAS COMPOSITION			
Time	O2	CO2	CO

LEAK RATE	cfm / lpm	"Hg Vacuum
Initial	.012	15"
Final	0.011	11

Sample Point	Time (1400)	Gas Meter (ft3 / liters)	dP "H2O	dH "H2O	Temperature, °F Meter	Stack	Probe	Oven	Impinger	Vacuum "Hg	~~Rotameter (liters/min)~~ XAD °F	Comments
A-1	0	195.398	0.90	1.34	93	329	250	252	58	8.0	54	
2	10	202.4	0.92	1.37	92	327	250	246	57	8.0	54	
3	20	210.0	0.94	1.40	92	325	250	245	56	8.0	55	
4	30	216.5	0.90	1.34	92	327	250	247	55	8.0	55	
5	40	223.6	0.90	1.34	92	329	250	247	55	8.0	55	
6	50	230.1	0.92	1.37	92	325	250	246	56	8.0	56	
	60	236.947										
B-1	0	236.947	0.95	1.42	92	326	250	248	57	8.0	56	
2	10	243.0	0.95	1.42	91	327	250	245	58	8.0	57	
3	20	252.0	0.92	1.37	91	329	250	242	58	8.0	57	
4	30	259.1	0.90	1.34	91	327	250	246	60	8.0	57	
5	40	266.0	0.92	1.37	92	325	250	245	60	8.0	58	
6	50	274.3	0.90	1.34	92	325	250	247	58	8.0	57	
	60	281.265										

RUN -2 / CARB Draft 429 / PAH

Sample Point	Time	Gas Meter (ft3 / liters)	dP "H2O	dH "H2O	Temperature, °F Meter	Stack	Probe	Oven	Impinger	Vacuum "Hg	~~Rotameter (liters/min)~~ XAD °F	Comments
C-1	0	281.265	0.94	1.40	91	323	250	245	55	~~8.0~~	54	
2	10	287.8	0.96	1.43	91	325	250	249	54	8.0	54	
3	20	294.1	0.92	1.37	91	325	250	250	53	9.0	53	
4	30	301.6	0.88	1.31	92	324	250	250	54	9.0	54	
5	40	307.2	0.92	1.37	91	326	250	253	56	9.0	55	
6	50	314.3	0.92	1.37	91	324	250	251	56	9.0	55	
	60	321.267										
D-1	0	321.267	0.95	1.42	92	328	250	252	56	9.0	57	
2	10	328.470	0.94	1.40	92	328	250	250	56	9.0	58	
3	20	335.6	0.92	1.37	93	327	250	247	57	9.0	58	
4	30	342.9	0.92	1.37	94	325	250	253	57	9.0	59	
5	40	349.7	0.90	1.34	94	327	250	254	58	9.0	59	
6	50	356.4	0.90	1.34	95	327	250	257	59	9.0	57	Pitot leak ✓ OK
	60	363.373										
	1817											
24	240 min	167.975	$\sqrt{0.95933}$	1.37	92.04	326.25						

FIELD DATA SHEET

ENGINEERING–SCIENCE, INC.

Company: Sycamore Cogen
Test Location: Unit #2 HRSG Stack
Test Method / Parameter: CARB Method 429 / PAH
Run #: 3
Date: 5/27/92
Operator: T. DELFINO

Stack Dimensions: 169.38" I.D.
Barometric Pressure: 28.95 "Hg
Static Pressure: +0.3 "H2O
Pitot Coeff.: 0.84
Filter #: Teflon Untared
Control Box #: BR IV
Orifice dH@ / y: 1.741 / 1.005
Probe Type / Length: GL / 8'
Nozzle # / Size: GL / 0.223

IMPINGER CONTENTS, ml / grams				
Impinger	Contents	Final	Initial	Net
1	EMPTY	778.5	495.2	283.3
2	Sodium ...	639.2	646.2	-7.0
3	EMPTY	519.8	519.7	0.1
4				
5				
	Silica Gel	829.0	785.9	43.1
			TOTAL:	319.5

GAS COMPOSITION			
Time	O2	CO2	CO

LEAK RATE	cfm / lpm	"Hg Vacuum
Initial	0.009	15"
Final	0.007	11"

Sample Point	Time 1840	Gas Meter (ft3 / liters)	dP "H2O	dH "H2O	Temperature, °F Meter	Stack	Probe	Oven	Impinger	Vacuum "Hg	~~Rotameter (liters/min)~~ XAD TEMP (°F)	Comments
A-1	0	364.482	0.88	1.31	92	322	250	245	59	9.0	58	
2	10	371.5	0.90	1.34	92	324	250	247	57	9.0	57	
3	20	379.2	0.90	1.34	92	326	250	240	57	9.0	55	
4	30	386.4	0.92	1.37	91	325	250	243	55	9.0	53	
5	40	393.7	0.94	1.40	91	324	250	245	55	9.0	53	
6	50	400.5	0.92	1.37	90	324	250	246	52	9.0	52	
	60	407.625										
B-1	0	407.625	.92	1.37	89	326	250	248	57	9.0	52	
2	10	412.3	0.94	1.40	88	327	250	247	54	9.0	52	
3	20	419.2	0.92	1.37	87	325	250	249	54	9.0	51	
4	30	426.5	0.92	1.37	86	324	250	247	52	9.0	50	
5	40	433.5	0.92	1.37	86	324	250	248	52	9.0	50	
6	50	440.9	0.90	1.34	85	323	250	243	50	9.0	51	
	60	448.862										

RUN -3 / CARB 429 - PAH

Sample Point	Time	Gas Meter (ft3 / liters)	dP "H2O	dH "H2O	Temperature, °F Meter	Stack	Probe	Oven	Impinger	Vacuum "Hg	Rotameter (liters/min) XADTEMP °F	Comments
C-1	0	448.862	0.96	~~1.48~~ 1.48	85	324	250	241	53	9.0	51	
2	10	455.1	0.94	1.40	85	323	250	245	52	9.0	51	
3	20	462.5	0.94	1.40	84	323	250	247	53	9.0	51	
4	30	469.9	0.88	1.31	84	325	250	246	54	9.0	50	
5	40	477.6	0.92	1.37	83	324	250	240	54	9.0	50	
6	50	484.7	0.95	1.42	83	324	250	243	53	9.0	49	
	60	491.362										
D-1	0	491.362	0.90	1.34	83	325	290	243	53	9.0	49	
2	10	498.5	0.92	1.37	83	324	250	245	54	9.0	47	
3	20	505.3	0.94	1.40	84	324	250	249	53	9.0	47	
4	30	512.6	0.94	1.40	84	323	250	252	53	9.0	48	
5	40	519.9	0.92	1.37	83	324	250	247	52	9.0	47	
6	50	526.3	0.90	1.34	83	323	250	243	52	9.0	45	pitot leak ✓. OK
	60	533.160										
	2304											
24	240 min.	168.678	$\sqrt{0.9593}$	1.32	86.38	324.17						

ALTA

June 10, 1992

Alta Batch I.D.: 11310

Mr. Gary McRae
Engineering Science Inc.
2520 Pegasus Drive
Bakersfield, CA 93308

Dear Mr. McRae,

Enclosed are the results for the four MM5 trains received at Alta Analytical Laboratory on May 29, 1992. This work was identified as your Project # WA005.07. These samples were analyzed using CARB Method 429 for polycylcic aromatic hydrocarbons (PAH) using High Resolution Mass Spectrometry (HRMS). A standard turnaround time was requested for this work.

Sample ID. Run 1 had two internal standard recoveries below 50%. However, the signal-to-noise ratio was greater than 10:1, therefore no further action was required, as per the method.

The following report consists of a Sample Inventory (Section I), Analytical Results (Section II) and the Appendix. The Appendix contains a copy of the chain-of-custody, a list of data qualifiers and abbreviations and copies of the raw data (if requested).

If you have any questions regarding this report please feel free to contact me.

Sincerely,

Robert S. Mitzel
Director of Operations

Alta Analytical Laboratory Inc.

5070 Robert J. Mathews Pkwy., Suite 2
El Dorado Hills, CA. 95630

FAX (916) 933-0940
(916) 933-1640

ALTA

Section I. Sample Inventory

Date Received: 29-May-92

Alta Lab ID.	Client ID.	
11310-1-A	BK9205168 RUN 1 FILTER	
11310-1-B	BK9205170 RUN 1 XAD	
11310-1-C	BK9205167 RUN 1 FHR	RUN 1
11310-1-D	BK9205169 RUN 1 BHR	
11310-1-E	BK9205171 RUN 1 IMPINGERS	
11310-2-A	BK9205173 RUN 2 FILTER	
11310-2-B	BK9205175 RUN 2 XAD	
11310-2-C	BK9205172 RUN 2 FHR	RUN 2
11310-2-D	BK9205174 RUN 2 BHR	
11310-2-E	BK9205176 RUN 2 IMPINGERS	
11310-3-A	BK9205178 RUN 3 FILTER	
11310-3-B	BK9205180 RUN 3 XAD	
11310-3-C	BK9205177 RUN 3 FHR	RUN 3
11310-3-D	BK9205179 RUN 3 BHR	
11310-3-E	BK9205181 RUN 3 IMPINGERS	
11310-4-A	BK9205183 BLANK FILTER	
11310-4-B	BK9205185 BLANK XAD	
11310-4-C	BK9205182 BLANK FHR	BLANK
11310-4-D	BK9205184 BLANK BHR	
11310-4-E	BK9205186 B~~M~~LANK IMPINGER	

GM

SECTION II.

ALTA

POLYCYCLIC AROMATIC HYROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

METHOD BLANK
Lab ID: 11310-MB-PAH
Matrix: MM5

Date Received: NA
Date Extracted: 6/01/92
Sample Amount: Sample

ICAL ID: IPAH
QC Lot: LC0601M
Units: ng/sample

Compound	Conc.	R.L.	Qualifier
Naphthalene	ND	12.5	
Acenaphthylene	ND	5.0	
Acenaphthene	ND	5.0	
Fluorene	ND	5.0	
Phenanthrene	ND	12.5	
Anthracene	ND	5.0	
Fluoranthene	ND	5.0	
Pyrene	ND	5.0	
Benz(a)anthracene	ND	5.0	
Chrysene	ND	5.0	
Benzo(b)fluoranthene	ND	5.0	
Benzo(k)fluoranthene	ND	5.0	
Benzo(a)pyrene	ND	5.0	
Benzo(e)pyrene	NA	NA	
Indeno(1,2,3-c,d)pyrene	ND	5.0	
Dibenz(a,h)anthracene	ND	5.0	
Benzo(g,h,i)perylene	ND	5.0	

Analyst: BS

Reviewer: BPM

ALTA

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

METHOD BLANK
Lab ID: 11310-MB-PAH

Isotopic Recovery Results

Internal Standard:	% R	Qualifier
d_8-Naphthalene	63	
d_8-Acenaphthylene	58	
d_{10}-Acenaphthene	62	
d_{10}-Fluorene	65	
d_{10}-Phenanthrene	66	
d_{10}-Anthracene	65	
d_{10}-Fluoranthene	82	
d_{10}-Pyrene	84	
d_{12}-Benz(a)anthracene	78	
d_{12}-Chrysene	92	
d_{12}-Benzo(b)fluoranthene	92	
d_{12}-Benzo(k)fluoranthene	90	
d_{12}-Benzo(a)pyrene	79	
d_{12}-Indeno(1,2,3-c,d)pyrene	101	
d_{12}-Benzo(g,h,i)perylene	99	
d_{14}-Dibenz(a,h)anthracene	96	

Pre-spike Recovery Standard:

d_{12}-Benzo(e)pyrene	NA
d_{14}-Terphenyl	NA

Date Analyzed: 6/04/92

Analyst: [signature]

Reviewer: [signature]

ALTA

POLYCYCLIC AROMATIC HYROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

XAD QC BLANK
Lab ID: XADQC-MB-PAH
Matrix: MM5

Date Received: NA
Date Extracted: 4/20/92
Sample Amount: Sample

ICAL ID: IPAH
QC Lot: NA
Units: ng/sample

Compound	Conc.	R.L.	Qualifier
Naphthalene	540	12.5	
Acenaphthylene	ND	5.0	
Acenaphthene	ND	5.0	
Fluorene	11	5.0	
Phenanthrene	23	12.5	
Anthracene	ND	5.0	
Fluoranthene	ND	5.0	
Pyrene	ND	5.0	
Benz(a)anthracene	ND	5.0	
Chrysene	ND	5.0	
Benzo(b)fluoranthene	ND	5.0	
Benzo(k)fluoranthene	ND	5.0	
Benzo(a)pyrene	ND	5.0	
Benzo(e)pyrene	NA	5.0	
Indeno(1,2,3-c,d)pyrene	ND	5.0	
Dibenz(a,h)anthracene	ND	5.0	
Benzo(g,h,i)perylene	ND	5.0	

Analyst:

Reviewer:

ALTA

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

XAD QC BLANK
Lab ID: XADQC-MB-PAH

Isotopic Recovery Results

Internal Standard:	% R	Qualifier
d_8-Naphthalene	29	H
d_8-Acenaphthylene	43	H
d_{10}-Acenaphthene	45	H
d_{10}-Fluorene	37	H
d_{10}-Phenanthrene	36	H
d_{10}-Anthracene	38	H
d_{10}-Fluoranthene	54	
d_{10}-Pyrene	51	
d_{12}-Benz(a)anthracene	47	H
d_{12}-Chrysene	49	H
d_{12}-Benzo(b)fluoranthene	53	
d_{12}-Benzo(k)fluoranthene	49	H
d_{12}-Benzo(a)pyrene	41	H
d_{12}-Indeno(1,2,3-c,d)pyrene	39	H
d_{12}-Benzo(g,h,i)perylene	38	H
d_{14}-Dibenz(a,h)anthracene	38	H

Pre-spike Recovery Standard:

d_{12}-Benzo(e)pyrene	NA
d_{14}-Terphenyl	NA

Date Analyzed: 5/05/92

Analyst: [signature]

Reviewer: [signature]

ALTA

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

LCS RESULTS
Lab ID: 11310-LCS1/LCS2
Matrix: MM5

Date Received: NA
Date Extracted: 6/01/92
Sample Amount: Sample

ICAL ID: IPAH
QC Lot: LC0601M
Units: NA

COMPOUND	LCS1 % R	LCS2 % R	RPD %
Naphthalene	99	98	1.0
Acenaphthylene	98	100	2.0
Acenaphthene	96	96	0.0
Fluorene	94	98	4.2
Phenanthrene	95	92	3.2
Anthracene	89	89	0.0
Fluoranthene	88	85	3.5
Pyrene	89	90	1.1
Benz(a)anthracene	93	94	1.1
Chrysene	95	98	3.1
Benzo(b)fluoranthene	97	97	0.0
Benzo(k)fluoranthene	92	95	3.2
Benzo(a)pyrene	101	104	2.9
Benzo(e)pyrene	NA	NA	NA
Indeno(1,2,3-c,d)pyrene	91	98	7.4
Dibenz(a,h)anthracene	109	110	0.91
Benzo(g,h,i)perylene	100	101	1.0

Analyst: [signature]

Reviewer: [signature]

ALTA

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

LCS RESULTS
Lab ID: 11310-LCS1/LCS2

Isotopic Recovery Results

Internal Standard:	LCS1 % R	LCS2 % R
d_8-Napththalene	71	72
d_8-Acenaphthylene	69	72
d_{10}-Acenaphthene	74	75
d_{10}-Fluorene	73	73
d_{10}-Phenanthrene	72	75
d_{10}-Anthracene	57	53
d_{10}-Fluoranthene	104	118
d_{10}-Pyrene	104	118
d_{12}-Benz(a)anthracene	89	99
d_{12}-Chrysene	95	101
d_{12}-Benzo(b)fluoranthene	98	107
d_{12}-Benzo(k)fluoranthene	93	99
d_{12}-Benzo(a)pyrene	84	92
d_{12}-Indeno(1,2,3-c,d)pyrene	99	108
d_{12}-Benzo(g,h,i)perylene	97	104
d_{14}-Dibenz(a,h)anthracene	93	102

Date Analyzed: 6/04/92

Analyst: [signature]

Reviewer: [signature]

ALTA

POLYCYCLIC AROMATIC HYROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

Sample ID: RUN 1
Lab ID: 11310-001-PAH
Matrix: MM5

Date Received: 5/29/92
Date Extracted: 6/01/92
Sample Amount: Sample

ICAL ID: IPAH
QC Lot: LC0601M
Units: ng/sample

Compound	Conc.	R.L.	Qualifier
Naphthalene	2300	12.5	
Acenaphthylene	6.5	5.0	
Acenaphthene	34	5.0	
Fluorene	88	5.0	
Phenanthrene	640	12.5	
Anthracene	27	5.0	
Fluoranthene	55	5.0	
Pyrene	21	5.0	
Benz(a)anthracene	8.1	5.0	
Chrysene	11	5.0	
Benzo(b)fluoranthene	ND	5.0	
Benzo(k)fluoranthene	ND	5.0	
Benzo(a)pyrene	ND	5.0	
Benzo(e)pyrene	NA	NA	
Indeno(1,2,3-c,d)pyrene	ND	5.0	
Dibenz(a,h)anthracene	ND	5.0	
Benzo(g,h,i)perylene	ND	5.0	

Analyst: EB

Reviewer: bmj

ALTA

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

Sample ID: RUN 1
Lab ID: 11310-001-PAH

Isotopic Recovery Results

Internal Standard:	% R	Qualifier
d_8-Naphthalene	26	H
d_8-Acenaphthylene	44	H
d_{10}-Acenaphthene	54	
d_{10}-Fluorene	77	
d_{10}-Phenanthrene	104	
d_{10}-Anthracene	81	
d_{10}-Fluoranthene	73	
d_{10}-Pyrene	71	
d_{12}-Benz(a)anthracene	78	
d_{12}-Chrysene	83	
d_{12}-Benzo(b)fluoranthene	95	
d_{12}-Benzo(k)fluoranthene	88	
d_{12}-Benzo(a)pyrene	84	
d_{12}-Indeno(1,2,3-c,d)pyrene	114	
d_{12}-Benzo(g,h,i)perylene	103	
d_{14}-Dibenz(a,h)anthracene	112	
Pre-spike Recovery Standard:		
d_{12}-Benzo(e)pyrene	86	
d_{14}-Terphenyl	134	

Date Analyzed: 6/04/92

Analyst: BD

Reviewer: BM

ALTA

POLYCYCLIC AROMATIC HYROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

Sample ID: RUN 2
Lab ID: 11310-002-PAH
Matrix: MM5

Date Received: 5/29/92
Date Extracted: 6/01/92
Sample Amount: Sample

ICAL ID: IPAH
QC Lot: LC0601M
Units: ng/sample

Compound	Conc.	R.L.	Qualifier
Naphthalene	1100	12.5	
Acenaphthylene	5.8	5.0	
Acenaphthene	15	5.0	
Fluorene	43	5.0	
Phenanthrene	330	12.5	
Anthracene	21	5.0	
Fluoranthene	21	5.0	
Pyrene	8.3	5.0	
Benz(a)anthracene	8.3	5.0	
Chrysene	11	5.0	
Benzo(b)fluoranthene	ND	5.0	
Benzo(k)fluoranthene	ND	5.0	
Benzo(a)pyrene	ND	5.0	
Benzo(e)pyrene	NA	NA	
Indeno(1,2,3-c,d)pyrene	ND	5.0	-
Dibenz(a,h)anthracene	ND	5.0	
Benzo(g,h,i)perylene	ND	5.0	

Analyst: 6

Reviewer: bhy

ALTA

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

Sample ID: RUN 2
Lab ID: 11310-002-PAH

Isotopic Recovery Results

Internal Standard:	% R	Qualifier
d_8-Naphthalene	62	
d_8-Acenaphthylene	62	
d_{10}-Acenaphthene	70	
d_{10}-Fluorene	79	
d_{10}-Phenanthrene	97	
d_{10}-Anthracene	75	
d_{10}-Fluoranthene	75	
d_{10}-Pyrene	75	
d_{12}-Benz(a)anthracene	87	
d_{12}-Chrysene	90	
d_{12}-Benzo(b)fluoranthene	104	
d_{12}-Benzo(k)fluoranthene	98	
d_{12}-Benzo(a)pyrene	94	
d_{12}-Indeno(1,2,3-c,d)pyrene	122	
d_{12}-Benzo(g,h,i)perylene	116	
d_{14}-Dibenz(a,h)anthracene	117	
Pre-spike Recovery Standard:		
d_{12}-Benzo(e)pyrene	110	
d_{14}-Terphenyl	134	

Date Analyzed: 6/04/92

Analyst: BS

Reviewer: BM

ALTA

POLYCYCLIC AROMATIC HYROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

Sample ID: RUN 3
Lab ID: 11310-003-PAH
Matrix: MM5

Date Received: 5/29/92
Date Extracted: 6/01/92
Sample Amount: Sample

ICAL ID: IPAH
QC Lot: LC0601M
Units: ng/sample

Compound	Conc.	R.L.	Qualifier
Naphthalene	540	12.5	
Acenaphthylene	ND	5.0	
Acenaphthene	12	5.0	
Fluorene	35	5.0	
Phenanthrene	220	12.5	
Anthracene	16	5.0	
Fluoranthene	17	5.0	
Pyrene	8.8	5.0	
Benz(a)anthracene	8.0	5.0	
Chrysene	10	5.0	
Benzo(b)fluoranthene	ND	5.0	
Benzo(k)fluoranthene	ND	5.0	
Benzo(a)pyrene	ND	5.0	
Benzo(e)pyrene	NA	NA	
Indeno(1,2,3-c,d)pyrene	ND	5.0	
Dibenz(a,h)anthracene	ND	5.0	
Benzo(g,h,i)perylene	ND	5.0	

Analyst: [signature]

Reviewer: bbm

ALTA

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

Sample ID: RUN 3
Lab ID: 11310-003-PAH

Isotopic Recovery Results

Internal Standard:	% R	Qualifier
d_8-Naphthalene	79	
d_8-Acenaphthylene	67	
d_{10}-Acenaphthene	82	
d_{10}-Fluorene	81	
d_{10}-Phenanthrene	93	
d_{10}-Anthracene	78	
d_{10}-Fluoranthene	71	
d_{10}-Pyrene	70	
d_{12}-Benz(a)anthracene	82	
d_{12}-Chrysene	81	
d_{12}-Benzo(b)fluoranthene	89	
d_{12}-Benzo(k)fluoranthene	91	
d_{12}-Benzo(a)pyrene	77	
d_{12}-Indeno(1,2,3-c,d)pyrene	98	
d_{12}-Benzo(g,h,i)perylene	93	
d_{14}-Dibenz(a,h)anthracene	101	
Pre-spike Recovery Standard:		
d_{12}-Benzo(e)pyrene	108	
d_{14}-Terphenyl	136	

Date Analyzed: 6/04/92

Analyst: BS

Reviewer: BSM

ALTA

POLYCYCLIC AROMATIC HYROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

Sample ID: BLANK
Lab ID: 11310-004-PAH
Matrix: MM5

Date Received: 5/29/92
Date Extracted: 6/01/92
Sample Amount: Sample

ICAL ID: IPAH
QC Lot: LC0601M
Units: ng/sample

Compound	Conc.	R.L.	Qualifier
Naphthalene	400	12.5	
Acenaphthylene	ND	5.0	
Acenaphthene	ND	5.0	
Fluorene	5.6	5.0	
Phenanthrene	18	12.5	
Anthracene	ND	5.0	
Fluoranthene	14	5.0	
Pyrene	9.5	5.0	
Benz(a)anthracene	6.8	5.0	
Chrysene	13	5.0	
Benzo(b)fluoranthene	ND	5.0	
Benzo(k)fluoranthene	ND	5.0	
Benzo(a)pyrene	ND	5.0	
Benzo(e)pyrene	NA	NA	
Indeno(1,2,3-c,d)pyrene	ND	5.0	
Dibenz(a,h)anthracene	ND	5.0	
Benzo(g,h,i)perylene	ND	5.0	

Analyst: BS

Reviewer: BBM

ALTA

POLYCYCLIC AROMATIC HYDROCARBONS (PAH)
CALIFORNIA AIR RESOURCES BOARD METHOD 429

Sample ID: BLANK
Lab ID: 11310-004-PAH

Isotopic Recovery Results

Internal Standard:	% R	Qualifier
d_8-Naphthalene	59	
d_8-Acenaphthylene	57	
d_{10}-Acenaphthene	64	
d_{10}-Fluorene	70	
d_{10}-Phenanthrene	87	
d_{10}-Anthracene	75	
d_{10}-Fluoranthene	101	
d_{10}-Pyrene	102	
d_{12}-Benz(a)anthracene	104	
d_{12}-Chrysene	104	
d_{12}-Benzo(b)fluoranthene	109	
d_{12}-Benzo(k)fluoranthene	103	
d_{12}-Benzo(a)pyrene	97	
d_{12}-Indeno(1,2,3-c,d)pyrene	117	
d_{12}-Benzo(g,h,i)perylene	107	
d_{14}-Dibenz(a,h)anthracene	108	
Pre-spike Recovery Standard:		
d_{12}-Benzo(e)pyrene	105	
d_{14}-Terphenyl	131	

Date Analyzed: 6/04/92

Analyst: GS

Reviewer: BM

ALTA

APPENDIX

ALTA

DATA QUALIFIERS & ABBREVIATIONS

A	The amount detected is below the Method Quantitation Limit.
B	This compound was also detected in the blank.
C	The amount detected is less than five times the Method Quantitation Limit.
D	The amount reported is the maximum possible concentration.
E	The detection limit was raised above the Method Quantitation Limit due to chemical interferences.
F	This result has been reported off the DB-225 column.
G	This resulted has been reported off the SP-2331 column.
H	The signal-to-noise ratio is greater than 10:1.
I	Chemical Interference

Conc.	Concentration
D.L.	Detection Limit
NA	Not applicable
S/N	Signal-to-noise
MPC	Maximum Possible Concentration
*	See Cover Letter
R.L.	Reporting Limit

PROCESS SHEET

CLIENT ~~11310~~ Eng. Science CM/SD 68ny PAGE 1 OF 1

Batch ID 11310 Sample No. 1-4 Stor. Loc. R-4

Matrix MM5 TAT 21 Date in Prep 6/1/92 DUE 6/19/92

ANALYSIS:: HR PAH

PREP METHOD:: 8290 8280 551 1613A 428 429 429 DBD/DBF PCB STALLINGS(8290) 613 513

SPIKE STD:: 8290 8280 551 1613A 428 HRPAH LRPAH DBD/DBF PCB Coplanar → 25 ul A.S. & I.S.

QC:: LCS1/LCS2 BATCH ID 25 ul NS DUP ID ____ MS/MSD ID ____

CLEANUPS:: ABP SILFIL-MSG-CC BA PCB Coplanar's PAH FV 500 ul

1/2 clean-up
1/2 archive

ALTA

Section I. Sample Inventory

Date Received: 29-May-92

Alta Lab ID.	Client ID.	
11310-1-A	BK9205168 RUN 1 FILTER	HRPAH
11310-1-B	BK9205170 RUN 1 XAD	
11310-1-C	BK9205167 RUN 1 FHR	
11310-1-D	BK9205169 RUN 1 BHR	
11310-1-E	BK9205171 RUN 1 IMPINGERS	
11310-2-A	BK9205173 RUN 2 FILTER	HRPAH
11310-2-B	BK9205175 RUN 2 XAD	
11310-2-C	BK9205172 RUN 2 FHR	
11310-2-D	BK9205174 RUN 2 BHR	
11310-2-E	BK9205176 RUN 2 IMPINGERS	
11310-3-A	BK9205178 RUN 3 FILTER	HRPAH
11310-3-B	BK9205180 RUN 3 XAD	
11310-3-C	BK9205177 RUN 3 FHR	
11310-3-D	BK9205179 RUN 3 BHR	
11310-3-E	BK9205181 RUN 3 IMPINGERS	
11310-4-A	BK9205183 BLANK FILTER	HRPAH
11310-4-B	BK9205185 BLANK XAD	
11310-4-C	BK9205182 BLANK FHR	
11310-4-D	BK9205184 BLANK BHR	
11310-4-E	BK9205186 B~~N~~LANK IMPINGER	

Need to ship Friday for Tuesday delivery Monday a Holiday

ALTA

AIR APPARATUS SHIPPING REQUEST
(2/12/92)

Date Required by Client: May 26th '92   Carrier: FED-EX UPS

Company Name: Engineering Science

Contact Name: Mr. Gary McRae

Address: 2520 Pegasus Drive
Bakersfield CA. 93308

Phone: 805-393-0272

FAX:

---

25 ul Prespike

Number of traps: 6   Prep for: DD/DF HRPAH PCB LRPAH
OTHER (specify):

XAD2 batch no.: ST 631

Pre-spiked with: 25 ul HRPAH dibenzo-a-pyrene 911217A and 25 ul HRPAH d14-terphenyl 911217B

Pre-spiked by: ms   Witness: [illegible]   Date: 5.21.92

Number of traps: Prep for: DD/DF HRPAH PCB LRPAH
OTHER (specify):

XAD2 batch no.:

Pre-spiked with:

Pre-spiked by: Witness: Date:

Number of traps: Prep for: DD/DF HRPAH PCB LRPAH
OTHER (specify):

XAD2 batch no.:

Pre-spiked with:

Pre-spiked by: Witness: Date:

Number of filters:

Number of PUFs:

QC blanks to be archived at ALTA? YES NO

Date shipped: 5.21.92   Carrier: Fed Ex

Airbill No. 221 4160830   2day vs overnight: overnight (standard)

S.O.P. for Sample Preparation for the analysis of Polynuclear Aromatics by Method 429.

(pth-2/13/92)

(Ref.CARB 429)

EXTRACTION:

A) RESIN & FILTER

-Combine resin and filter in soxhlet.
-Add PAH-IS, and NS to LCS's.
-Assemble apparatus and extract for 16 hours with $MeCl_2$.

B) IMPINGER CONTENTS

-Transfer impinger contents to an appropriate sep. funnel.
-Drain any organic solvent into a round bottom flask.
-Add PAH-AS
-Extract 3x with 60ml $MeCl_2$.

C) RINSES

-Combine rinses into a round bottom flask.
-Roto-evap to <5ml. (do not allow solvent to bubble).

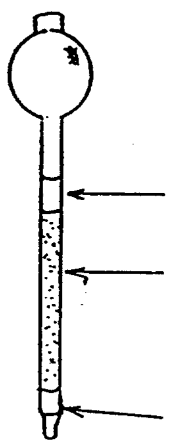
COMBINING/SPLITTING:

-Combine products of steps A,B & C above through Na2SO4 into a 1 liter bottle.
-Measure and divide the combined sample extract as per the flow chart using grad. cylinders. Store the Archive portion of sample extract in the 1 liter bottle.
-Roto-evap the remaining extract to < 5ml.
-Add 75ml Hexane.
-Roto-evap to ~2ml. (do not allow extract to bubble.)
-Proceed with clean-up if necessary.

S.O.P. for Sample Preparation for the analysis of Polynuclear Aromatics by Method 429.

CLEAN-UP:

11.5mm x 160mm



-Pre-rinse column with 20ml hexane.
-Transfer extract.
-Rinse container with 2ml hexane and add to column.
-Elute with 25ml hexane.
-Elute with 30ml 40% $MeCl_2$/ hexane.
-Collect both rinses and roto evap to < 5ml.
-Quantitatively transfer to an 8ml test tube, N_2^* to 0.5ml.
-Transfer to a crimp top auto inj. vial.
-Add PAH-RS, mix well.

Silica gel is soxhlet cleaned for 16 hours with MeCl2 then activated and stored @130 C.
Na_2SO_4 is $MeCl_2$ rinsed and dried.

*-Nitrogen for PAH concentration steps must be grade 5.0 and charcoal filtered.

ALTA

AIR SAMPLE EXTRACTION

Batch ID :: 11310 Matrix :: MM5' PUF

Analytes :: PAH PCB DD/DF PHENOL(S) CHLOROPHENOLS 8270 CHLOROBENZENES

SAMPLE NO.	NS	TOL SOX CHEM/DATE	MeCl2 SOX CHEM/DATE	IMPIN EXT CHEM/DATE	AS CHEM/WIT/DATE
11310-MB			ms 6.1.92	PM 6.1.92	PM JMF 6.1.92
-LCS1	AG				
-LCS2	AG				
-1					
-2					
-3					
-4		NA			

IS 25 ul HRPAH IS 911217D

NS 25 ul HRPAH NS 911217C

AS 25 ul HRPAH - AS 911217F

IS/NS Spike Witness/Date PM 6.1.92

Split Date 6.2.92 Number of portions 2

Analyses 1/2 PAH 1/2 archive

Comments: NO resin available for MB and LCS's (ST631)

ALTA

AIR SAMPLE
CLEANUPS/RECOVERY STANDARD

BATCH ID 11310

Sample No.	PAH CLNUP CHEM/DATE	PAH RS CHEM/WIT/DATE	PCB CLNUP CHEM/DATE	PCB RS CHEM/WIT/DATE
11310.MB	Pno ms 6.2.92	Pno ms 6.2.92		
.LCS1				
.LCS2				
.1				
.2				
.3				N/A
.4				

COMMENTS:

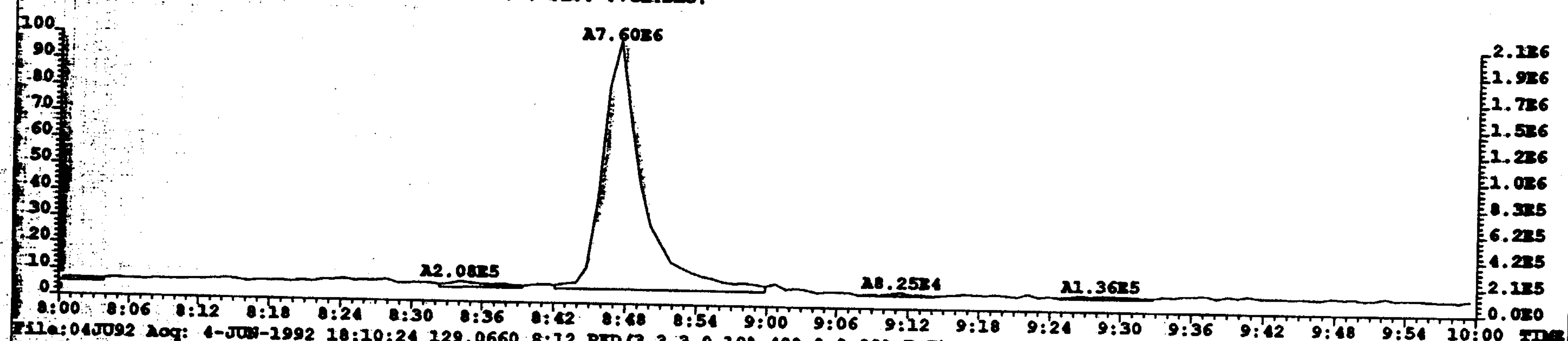
RS: 50 μl HRPAH-RS
911217E

05-JUN-1992 11:15:17 AM DIOXIN/FURAN RESULTS 11310-MB

Mass Spec : VG1 Results : 04JU92121.RES : PAH.TRG
GC Column : DB5 Date analyzed : 4-JUN-1992
Data file : 04JU92 11310MB METHOD BLANK :MSF : Cal : IPAH.RRF
Weight : 1

Name	Total Response	Isotope Ratio		R.T. mm:ss		RRF	pg/ :	% Rec
D1-2-METHYL-NAPHTHALENE	212000000	1.00	T	10: 14	Y	1	200.00	
D8-NAPHTHALENE	247383000	1.00	T	8: 45	Y	1.9e+00	125.06	63
NAPHTHALENE	15208758	1.00	T	8: 47	Y	9.9e-01	12.37 RL=12.5	
NAPHTHALENE-2ND	1456101	1.00	T	8: 47	Y	1.0e-01	11.28	
D8-ACENAPTHYLENE	194565060	1.00	T	11: 47	Y	1.6e+00	115.96	58
ACENAPTHYLENE	565703	1.00	T	11: 49	Y	1.1e+00	0.54 RL=5.0	
ACENAPTHYLENE-2ND	272818	1.00	T	11: 40	Y	1.4e-01	1.95	
D10-ACENAPHTHENE	130003340	1.00	T	12: 2	Y	9.9e-01	124.05	62
ACENAPHTHENE	428240	1.00	T	12: 6	Y	1.1e+00	0.61 RL=5.0	
D10-FLUORENE	151845460	1.00	T	12: 55	Y	1.1e+00	129.74	65
FLUORENE	1653414	1.00	T	12: 57	Y	9.5e-01	2.29 RL=5.0	
D10-PHENANTHRENE	129611240	1.00	T	14: 16	Y	9.3e-01	132.13	66
PHENANTHRENE	6330452	1.00	T	14: 19	Y	1.3e+00	7.31	
PHENANTHRENE-2ND	973598	1.00	T	14: 19	Y	1.3e-01	11.20 RL=12.5	
ANTHRACENE	* No Peak	0.00	T	14: 24	N	1.4e+00	0.00	
D10-ANTHRACENE	120189960	1.00	T	14: 21	Y	8.7e-01	130.51	65
D12-PERYLENE	140600140	1.00	T	24: 8	Y	1	200.00	
D10-FLUORANTHENE	238001600	1.00	T	15: 52	Y	2.1e+00	163.58	82
FLUORANTHENE	1837640	1.00	T	15: 54	Y	1.2e+00	1.34 RL=5.0	
D10-PYRENE	221044000	1.00	T	16: 14	Y	1.9e+00	167.20	84
PYRENE	1470456	1.00	T	16: 16	Y	1.3e+00	1.06 RL=5.0	
D12-BENZ(A)ANTHRACENE	139531320	1.00	T	18: 34	Y	1.3e+00	155.39	78
BENZ(A)ANTHRACENE	269435	1.00	T	18: 39	Y	1.2e+00	0.31 RL=5.0	
D12-CHRYSENE	257443400	1.00	T	18: 39	Y	2.0e+00	183.78	92
CHRYSENE	1740475	1.00	T	18: 44	Y	1.0e+00	1.32 RL=5.0	
D12-BENZO(B)FLUORANTHENE	232581000	1.00	T	22: 10	Y	8.9e-01	369.97	92
BENZO(B)FLUORANTHENE	1819855	1.00	T	22: 18	Y	1.5e+00	2.07 RL=5.0	
D12-BENZO(K)FLUORANTHENE	385299000	1.00	T	22: 19	Y	1.5e+00	360.88	90
BENZO(K)FLUORANTHENE	* No Peak	0.00	T	22: 24	N	1.3e+00	0.00 RL=5.0	
BENZO-E-PYRENE	596103	1.00	T	23: 35	Y	1.1e+00	0.59	
D12-BENZO(A)PYRENE	285572200	1.00	T	23: 44	Y	1.3e+00	317.26	79
BENZO(A)PYRENE	146967	1.00	T	23: 52	Y	1.2e+00	0.18 RL=5.0	
D12-INDENO()PYRENE	191691800	1.00	T	28: 55	Y	6.7e-01	405.31	101
INDENO(1,2,3-CD)PYRENE	406732	1.00	T	29: 3	Y	1.9e+00	0.45 RL=5.0	
14-DIBENZO-AH-ANTHRACENE	163530920	1.00	T	28: 57	Y	6.0e-01	385.22	96
DIBENZO-AH-ANTHRACENE	26354	1.00	T	29: 5	Y	1.4e+00	0.05 RL=5.0	
D12-BENZO(GHI)PERYLENE	162775620	1.00	T	30: 19	Y	5.9e-01	394.74	99
BENZO(GHI)PERYLENE	318131	1.00	T	30: 30	Y	2.2e+00	0.36 RL=5.0	
D10-PYRENE	238001600	1.00	T	15: 52	Y	1.0e+00	400.00	
D14-TERPHENYL	89344	1.00	T	16: 23	Y	1.1e+00	0.14	0
D12-BENZO(A)PYRENE	* No Peak	0.00	T	23: 49	N	1.0e+00	800.00	
D12-BENZO-E-PYRENE	* No Peak	0.00	T	23: 32	N	4.3e-01	*NoR?	

File:04JU92 Acq: 4-JUN-1992 18:10:24 128.0626 S:12 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:11310MB :METHOD BLANK :MSF :CC : : :1:: :VG1:DB5:



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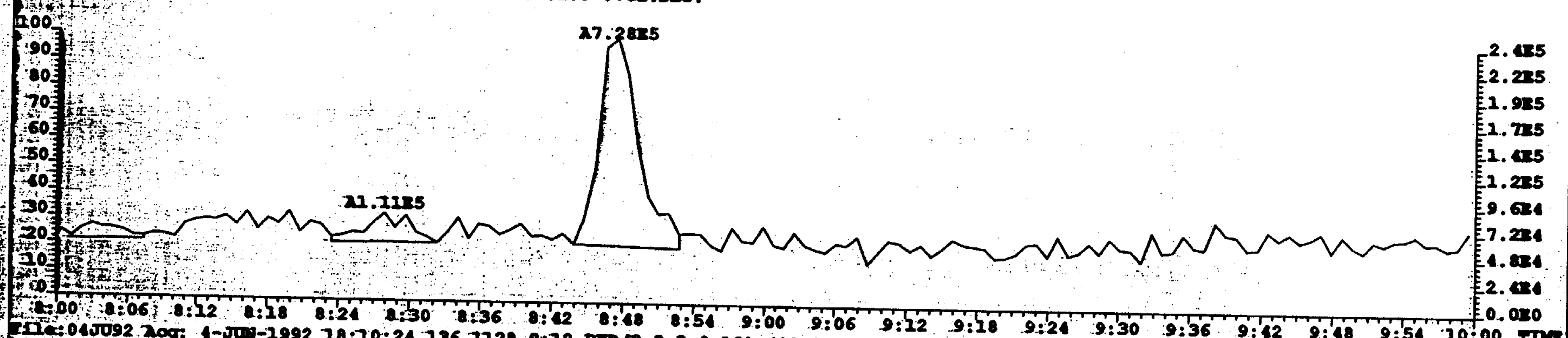

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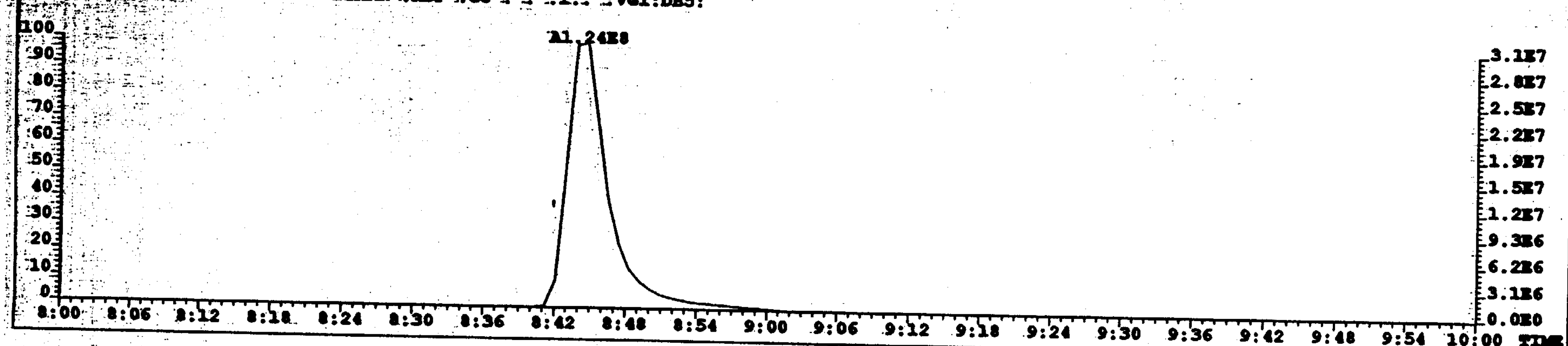

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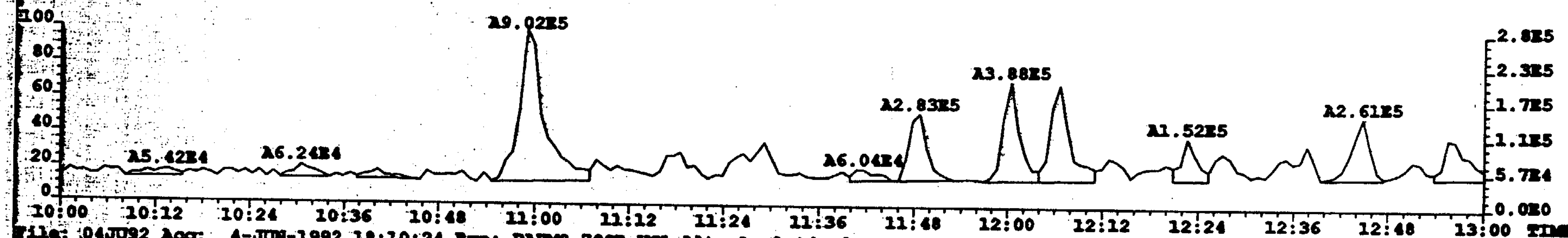

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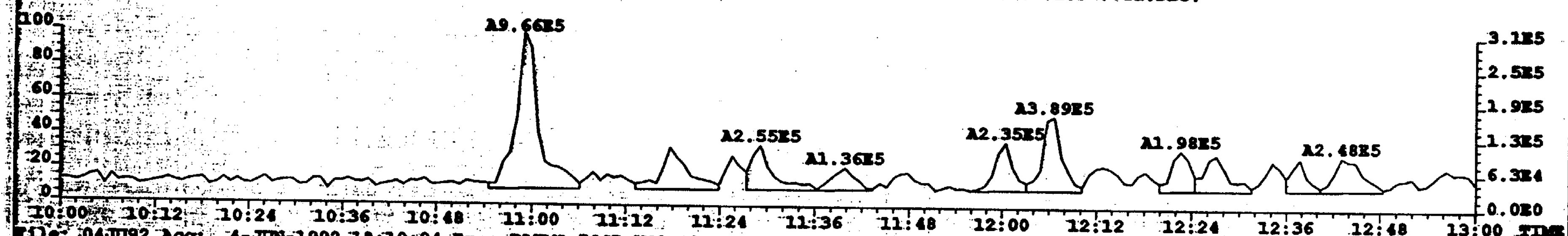

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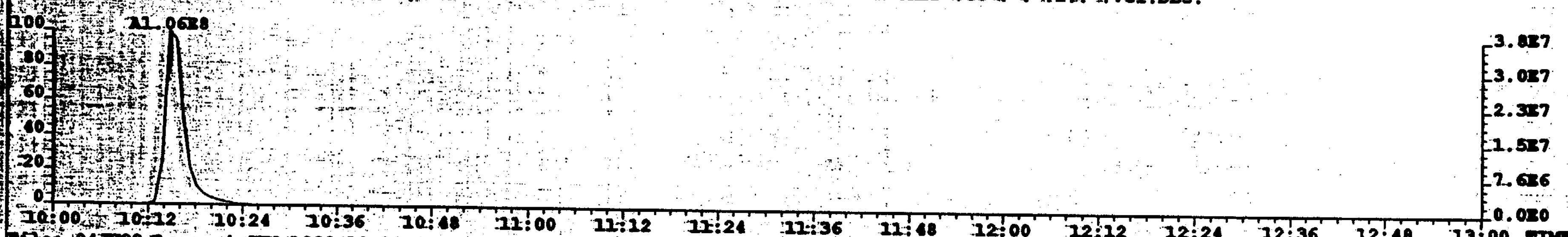

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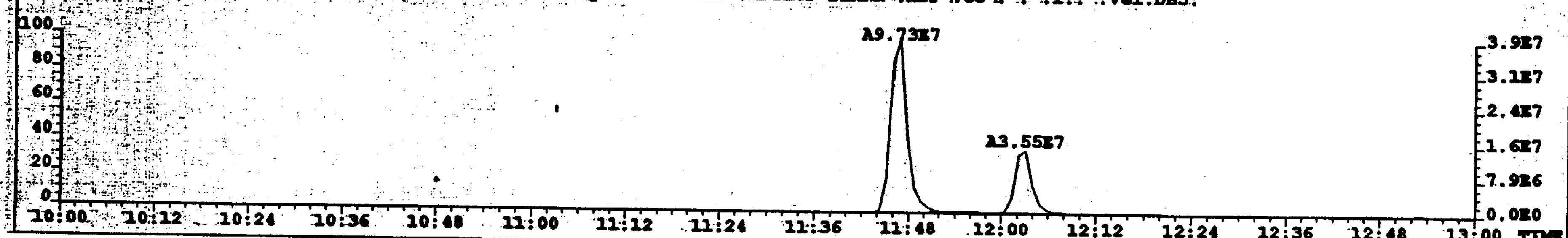

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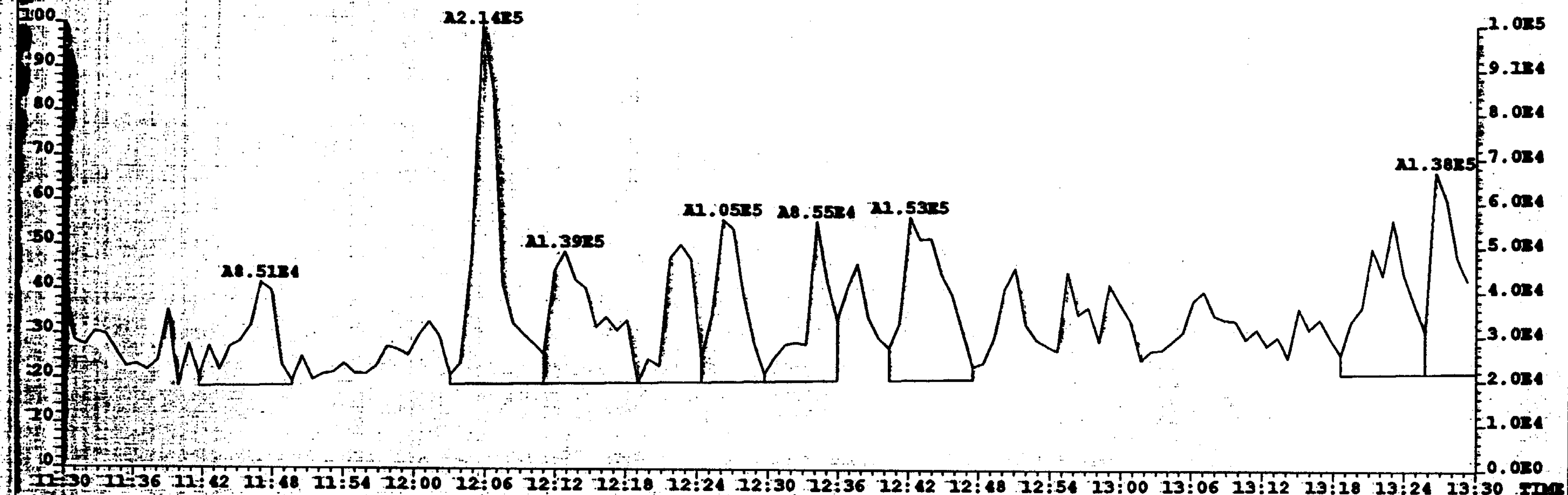
154.0783 S:12 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: I1310MB :METHOD BLANK :MSF :CC : : :1:: :VG1:DB5:



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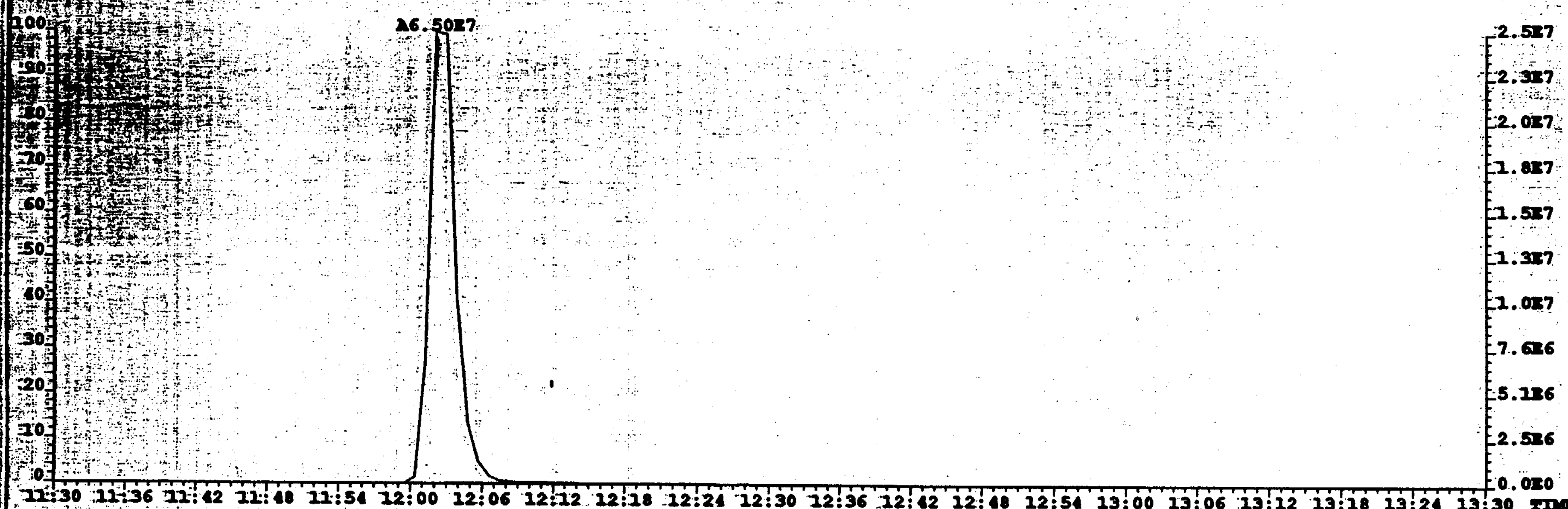

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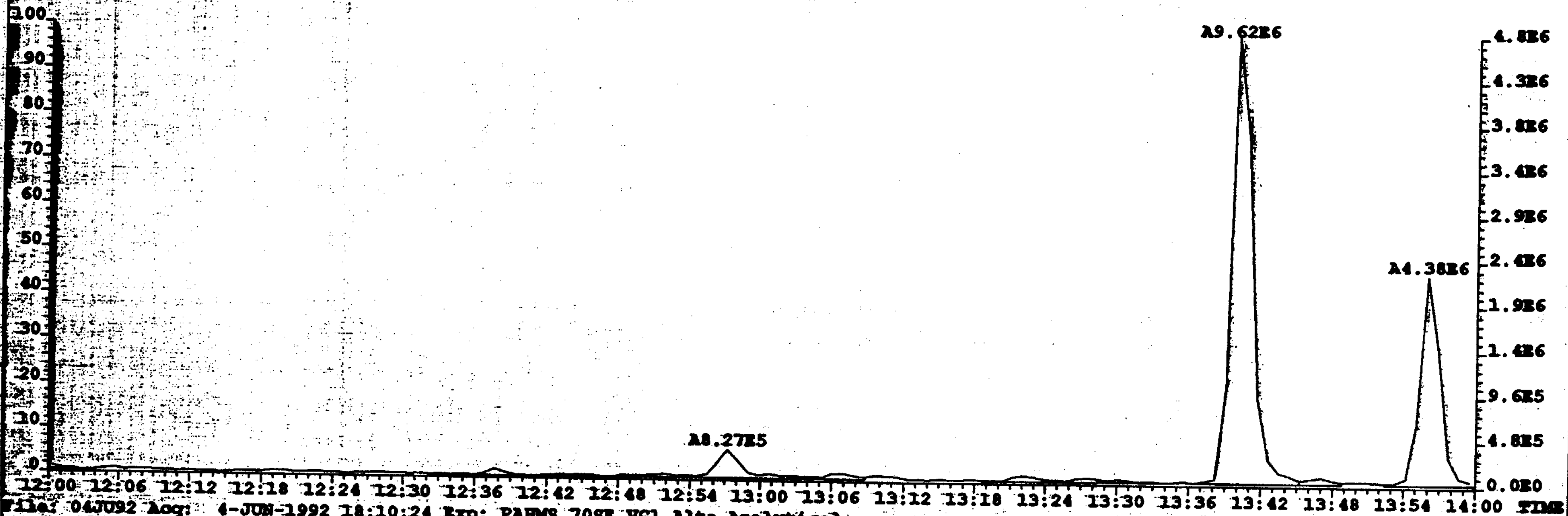

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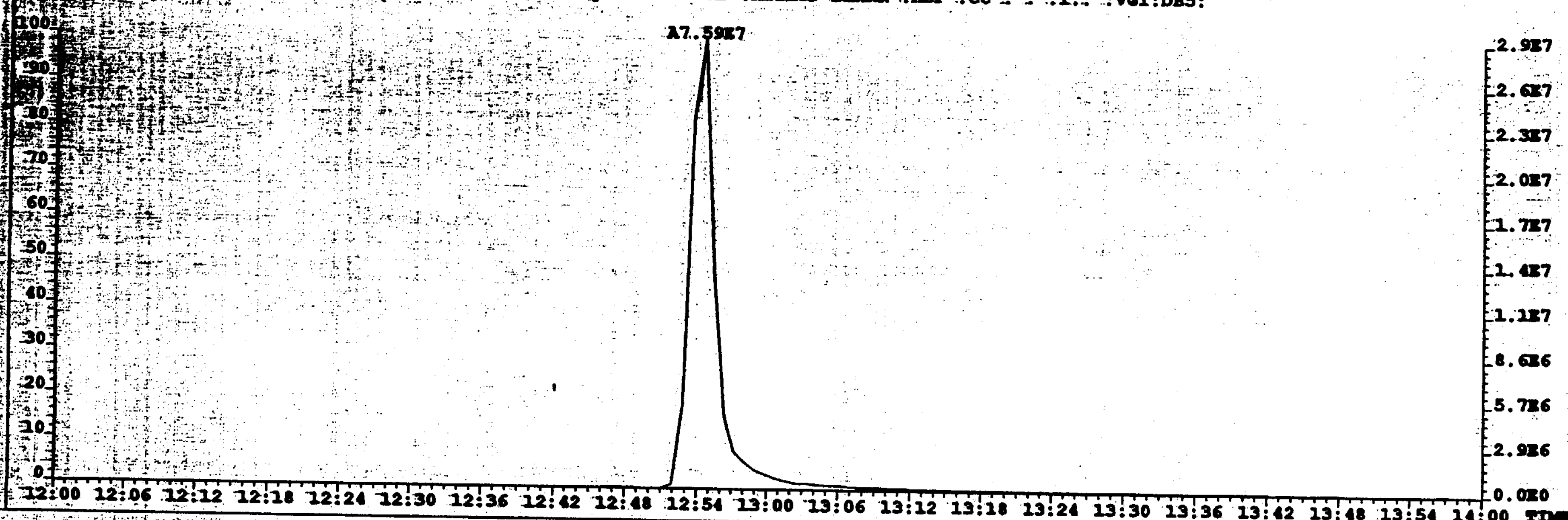

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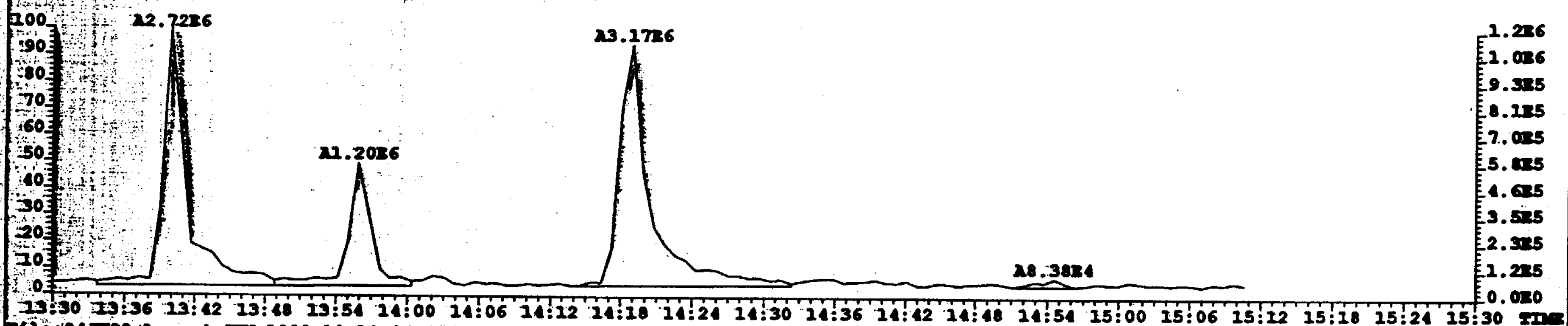

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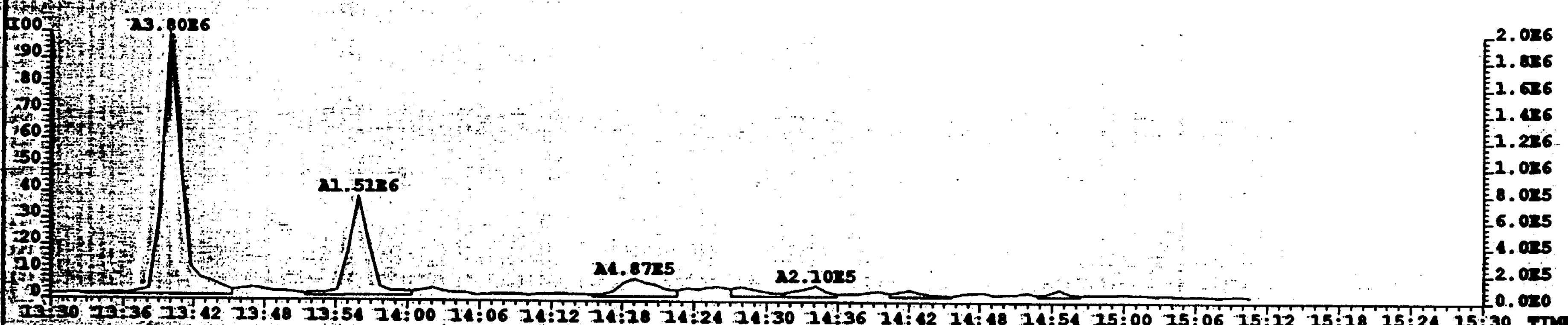

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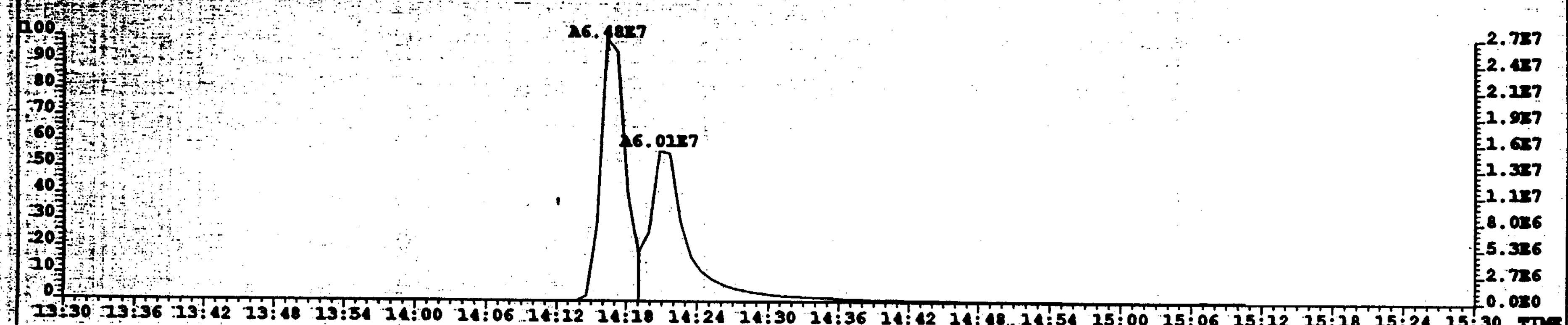
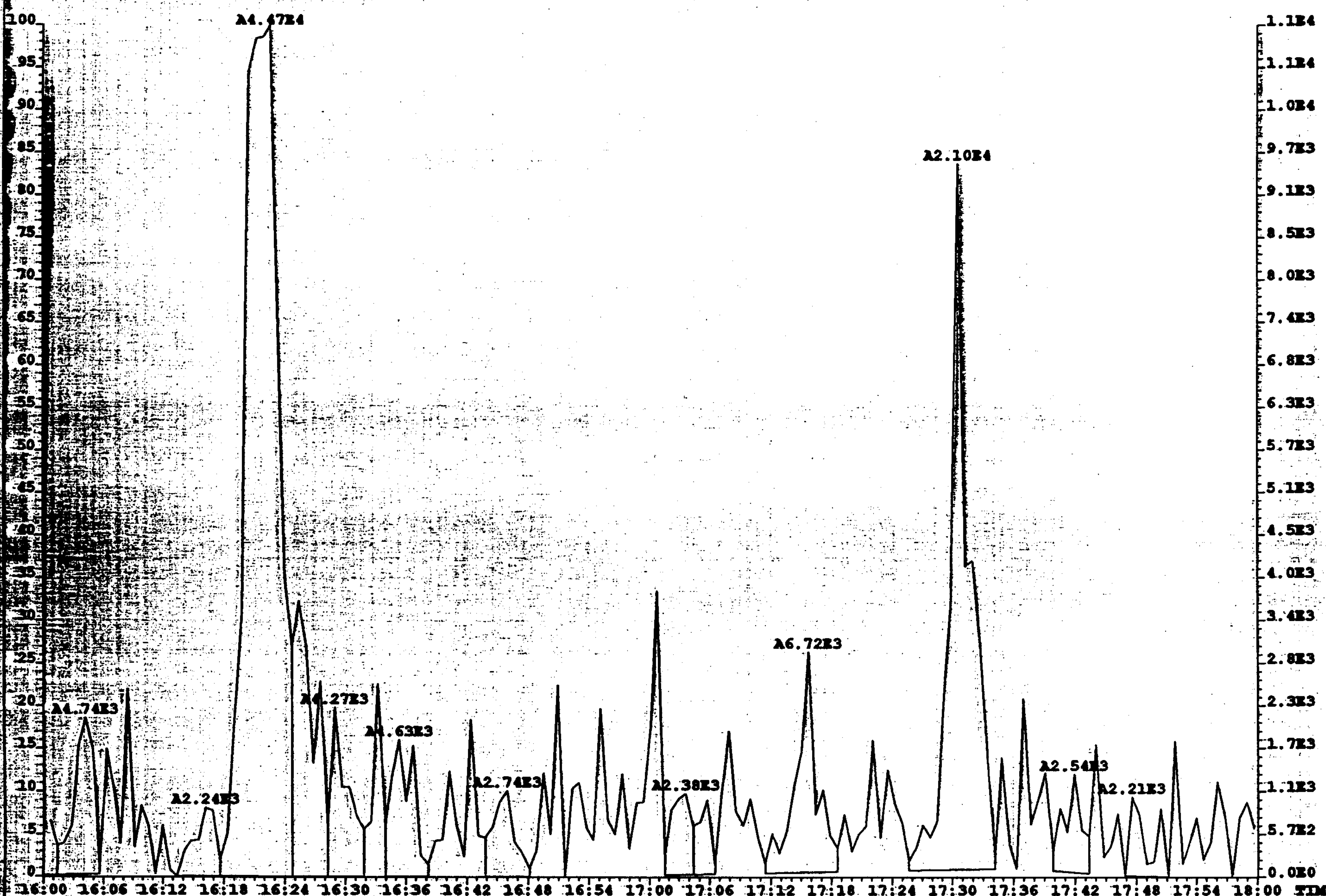
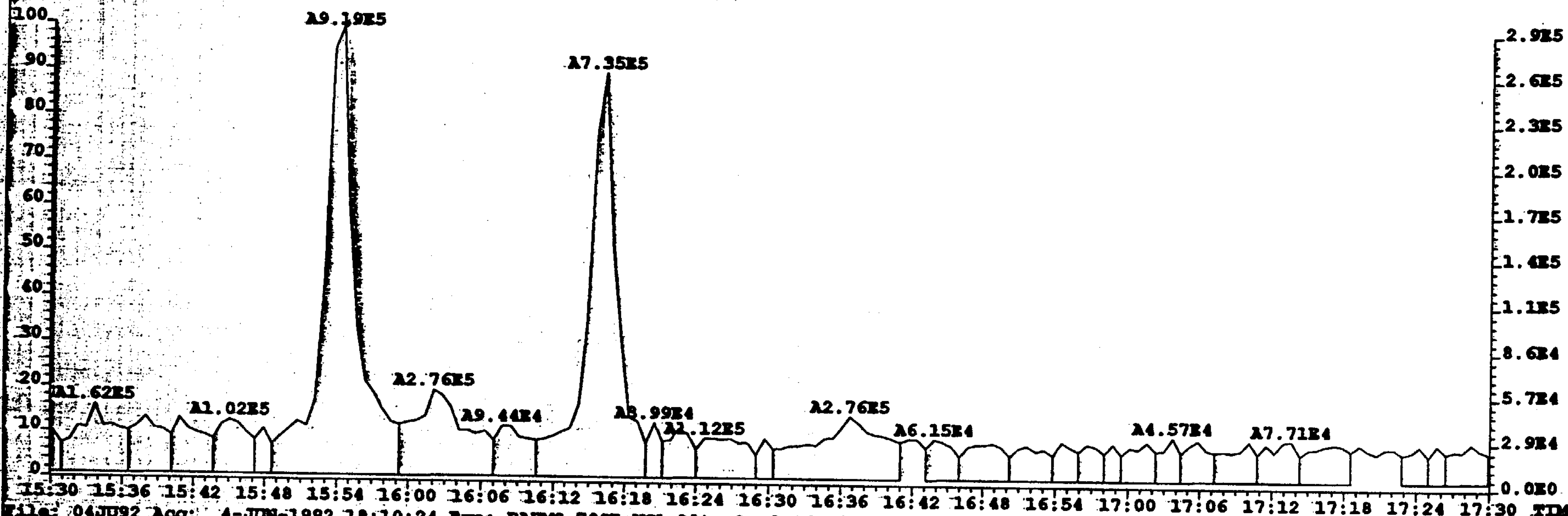


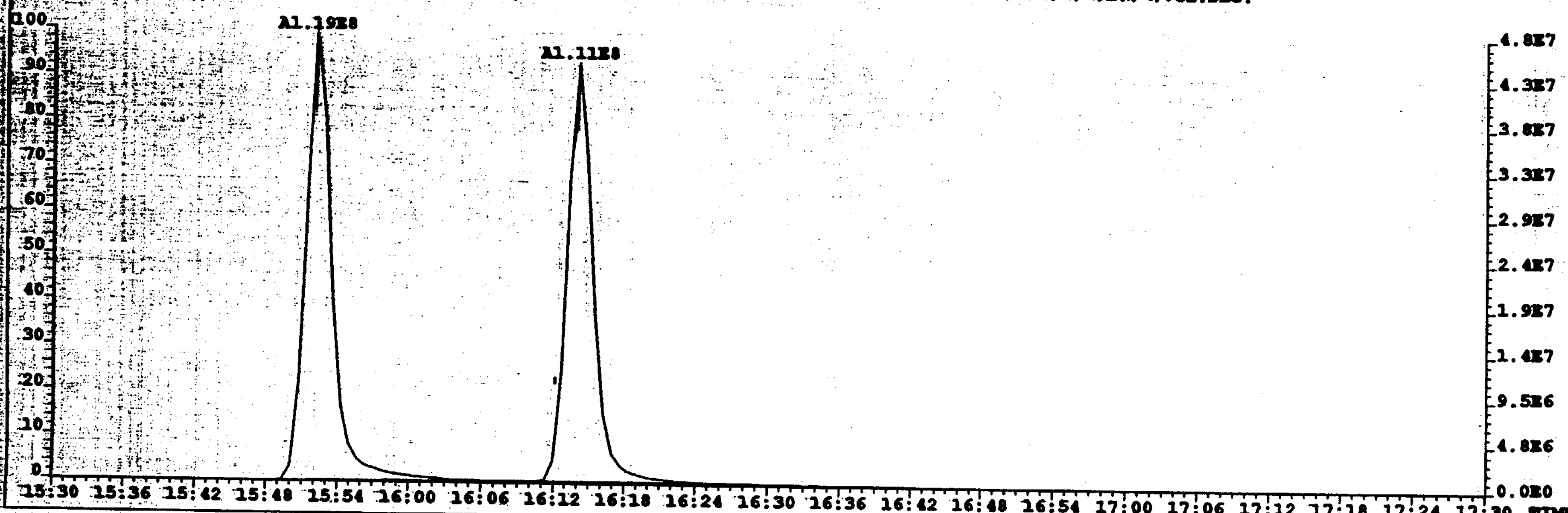
File: 04JU92 Acq: 4-JUN-1992 18:10:24 Exp: PAHMS 70SE VG1 Alta Analytical
244.1974 S:12 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310MB :METHOD BLANK :MSF :CC : : :1:: :VG1:DB5:



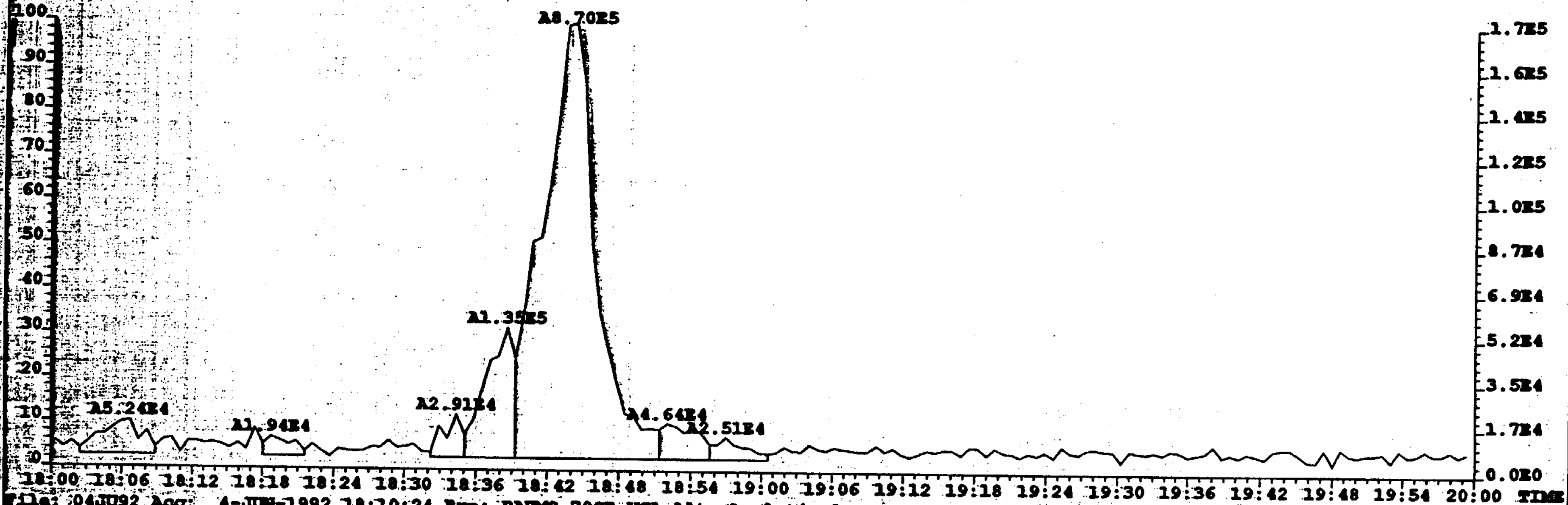
File: 04JU92 Acq: 4-JUN-1992 18:10:24 Exp: PAHMS 70SE VG1 Alta Analytical
202.0782 S:12 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310MB :METHOD BLANK :MSF :CC : : :1:: :VG1:DB5:



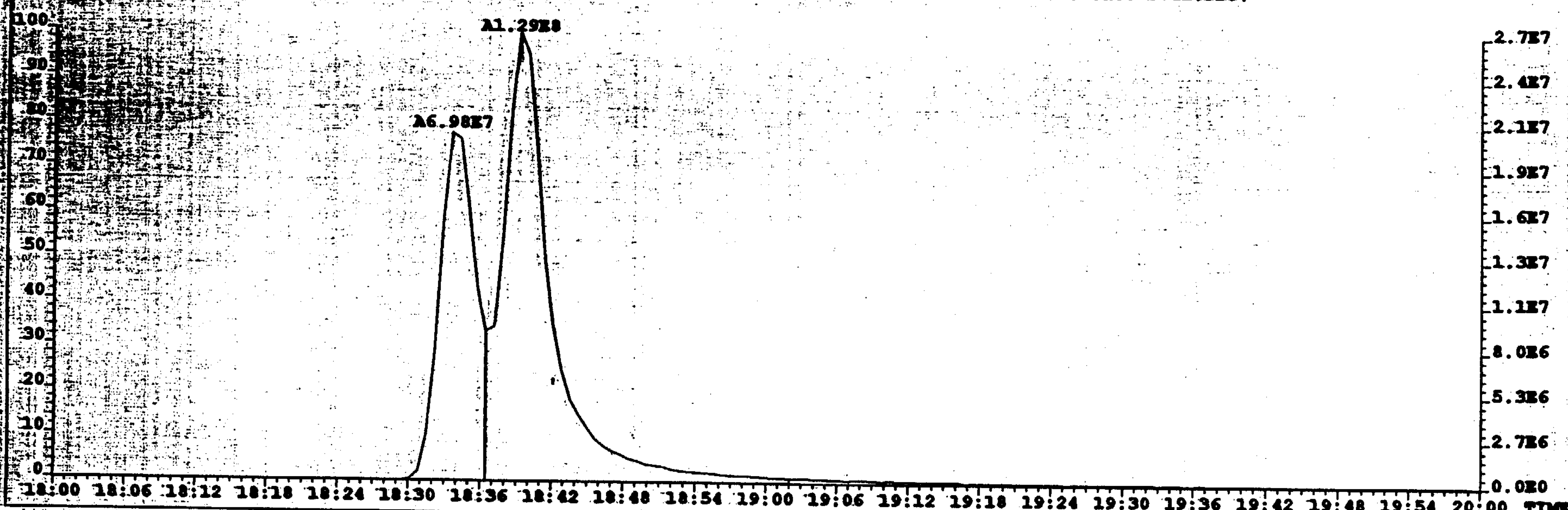
File: 04JU92 Acq: 4-JUN-1992 18:10:24 Exp: PAHMS 70SE VG1 Alta Analytical
212.1410 S:12 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310MB :METHOD BLANK ::MSF ::CC :: : ::1:: ::VG1:DB5:



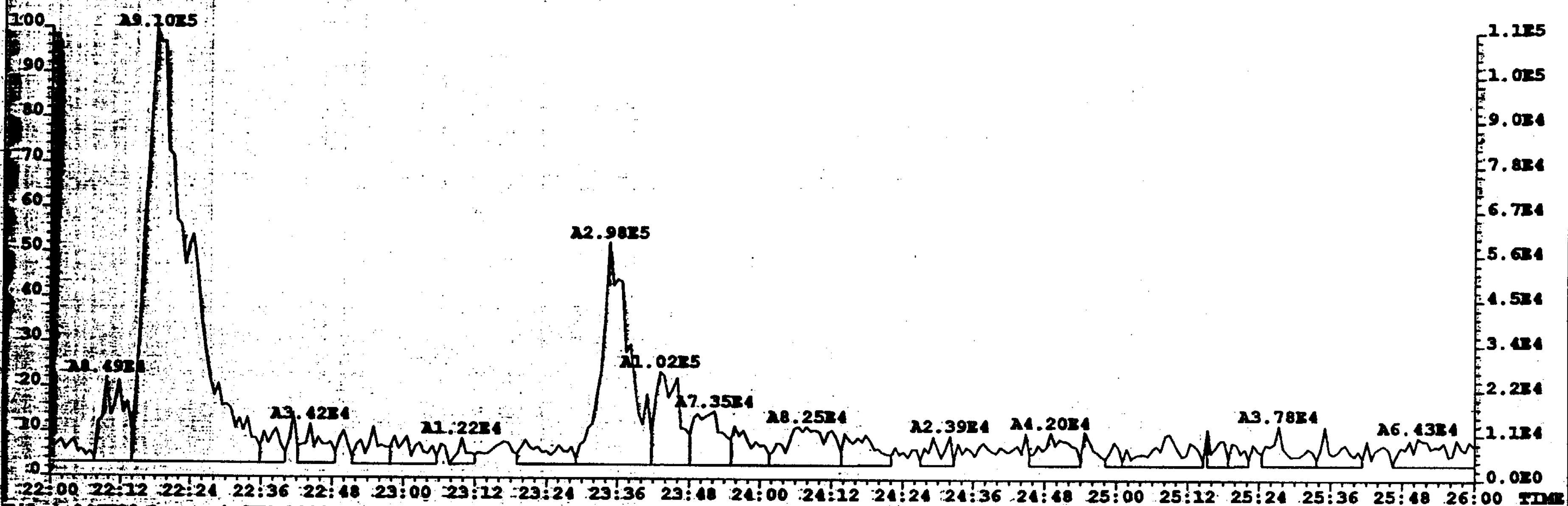
File: 04JU92 Acq: 4-JUN-1992 18:10:24 Exp: PAHMS 70SE VG1 Alta Analytical
228.0939 S:12 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310MB :METHOD BLANK :MSF :CC : : :1:: :VG1:DB5:



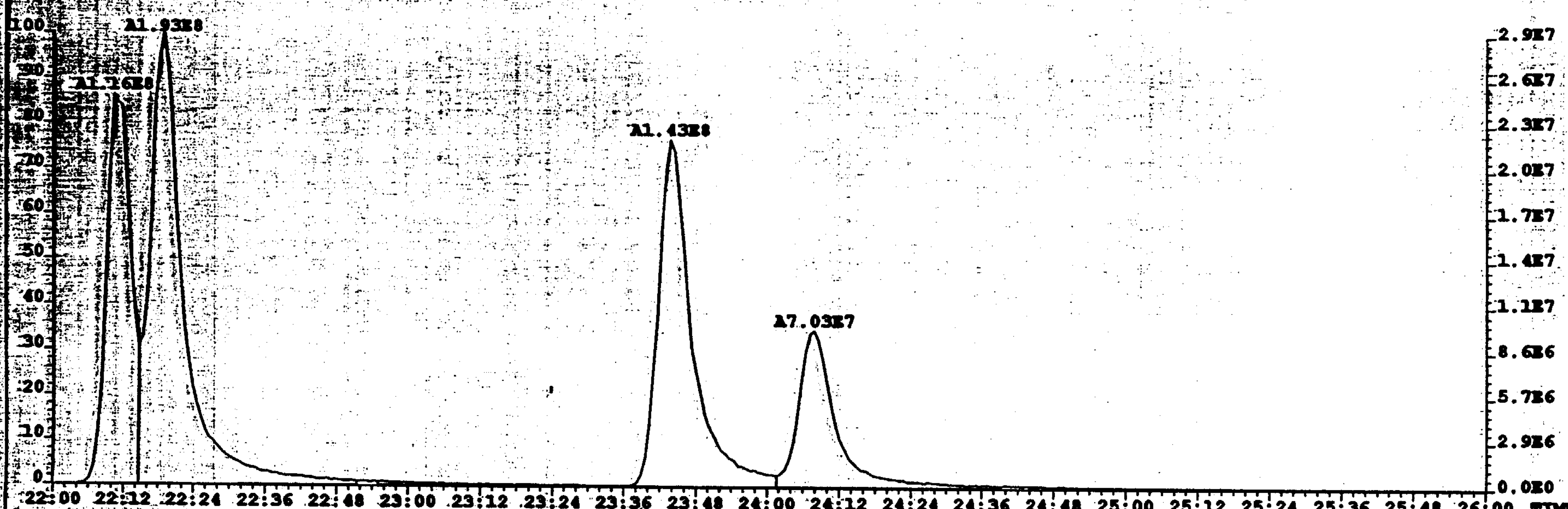
File: 04JU92 Acq: 4-JUN-1992 18:10:24 Exp: PAHMS 70SE VG1 Alta Analytical
240.1692 S:12 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310MB :METHOD BLANK ::MSF ::CC :: :: ::1:: ::VG1:DB5:



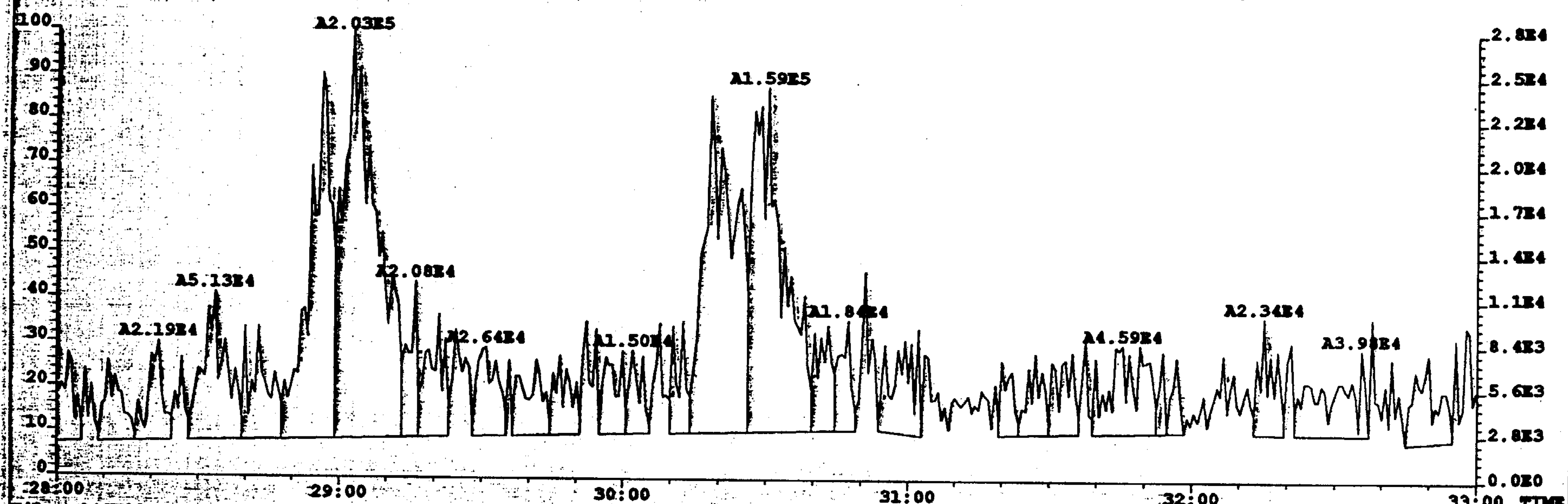
File: 04JU92 Acq: 4-JUN-1992 18:10:24 Exp: PAHMS 70SE VG1 Alta Analytical
252.0939 S:12 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310MB :METHOD BLANK :MSF :CC : : :1:: :VG1:DB5:



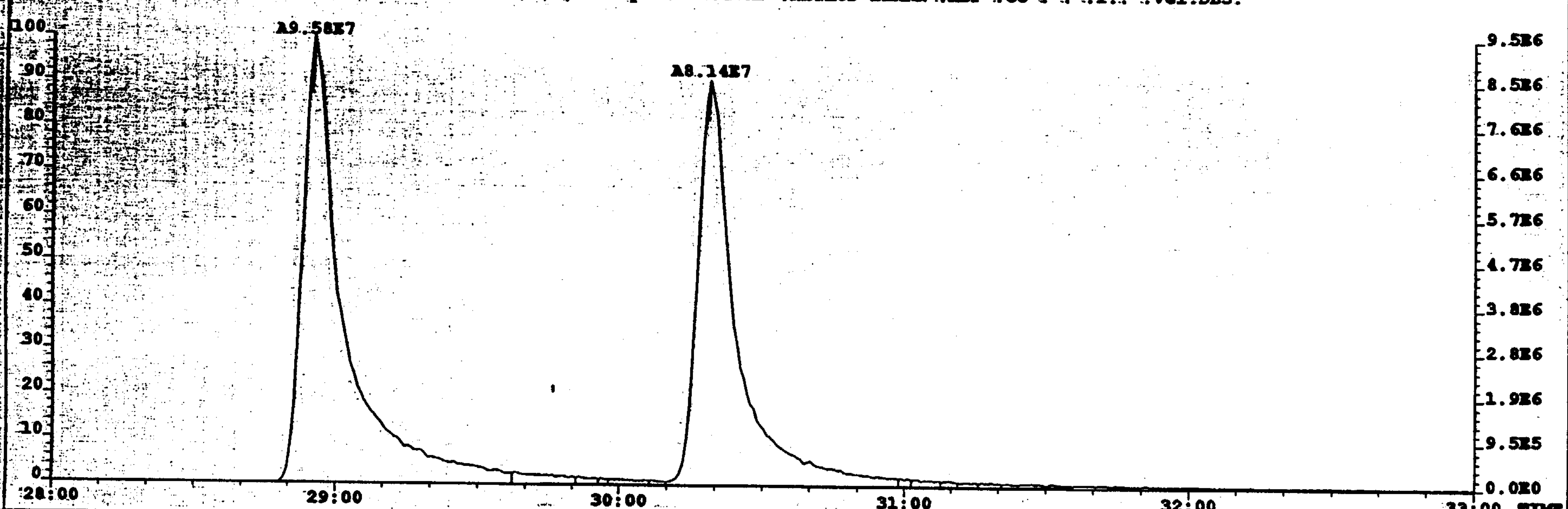
File: 04JU92 Acq: 4-JUN-1992 18:10:24 Exp: PAHMS 70SE VG1 Alta Analytical
264.1692 S:12 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310MB :METHOD BLANK :MSF :CC : : :1:: :VG1:DB5:



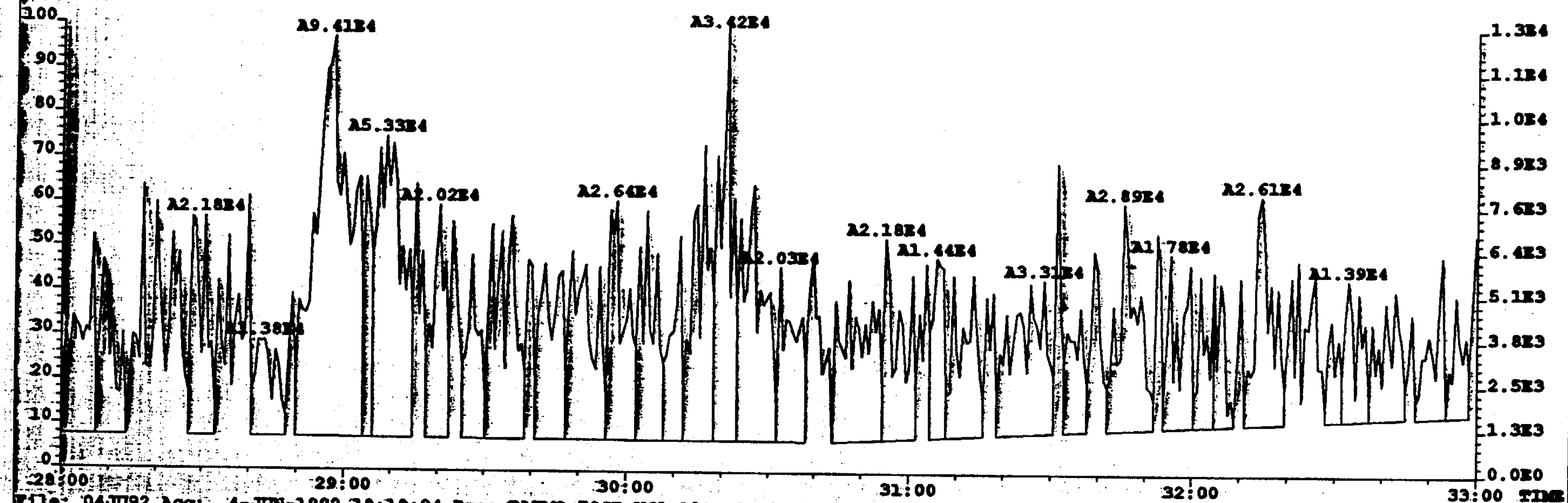
File: 04JU92 Acq: 4-JUN-1992 18:10:24 Exp: PAHMS 70SE VG1 Alta Analytical
276.0939 S:12 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310MB :METHOD BLANK :MSF :CC : : :1:: :VG1:DB5:



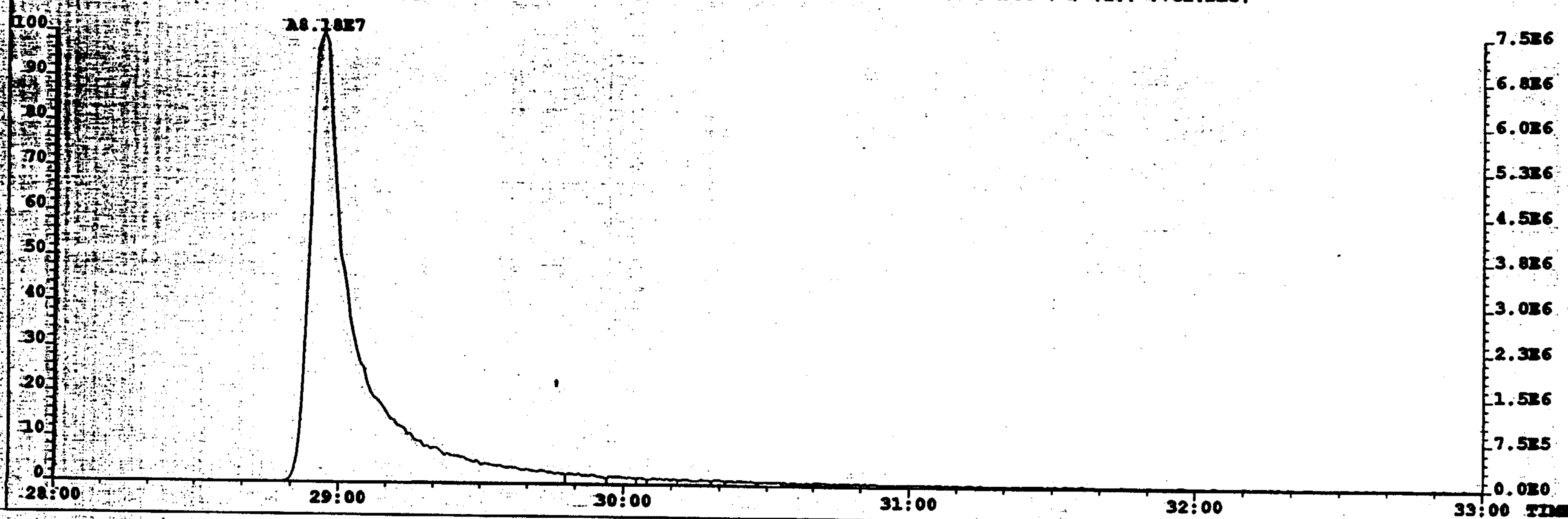
File: 04JU92 Acq: 4-JUN-1992 18:10:24 Exp: PAHMS 70SE VG1 Alta Analytical
288.1692 S:12 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310MB :METHOD BLANK :MSF :CC : : :1:: :VG1:DB5:



File: 04JU92 Acq: 4-JUN-1992 18:10:24 Exp: PAHMS 70SE VG1 Alta Analytical
278.1096 S:12 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310MB :METHOD BLANK :MSF :CC : : :1:: :VG1:DB5:



File: 04JU92 Acq: 4-JUN-1992 18:10:24 Exp: PAHMS 70SE VG1 Alta Analytical
292.1974 S:12 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310MB :METHOD BLANK :MSF :CC : : :1:: :VG1:DB5:



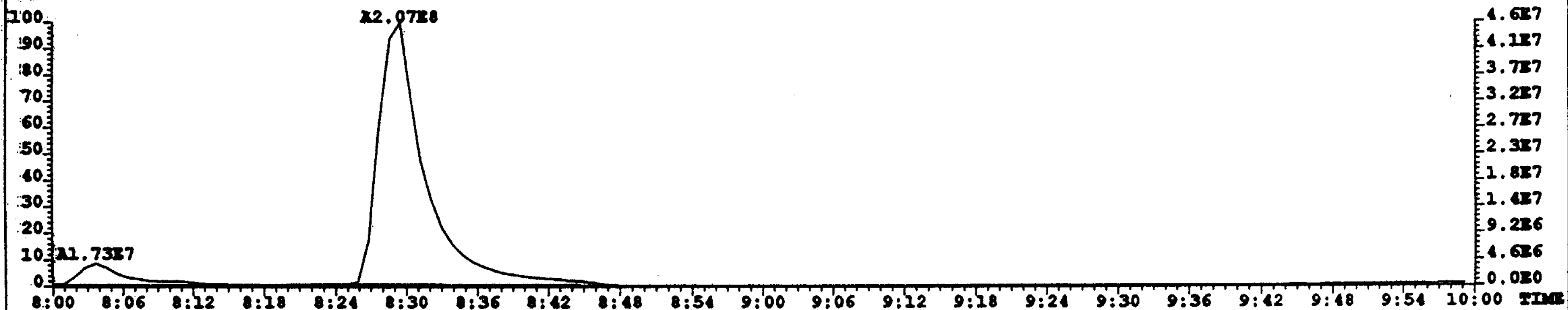
Date extracted 7/20/92

05-MAY-1992 09:51:04 AM DIOXIN/FURAN RESULTS **XAD QC Blank**

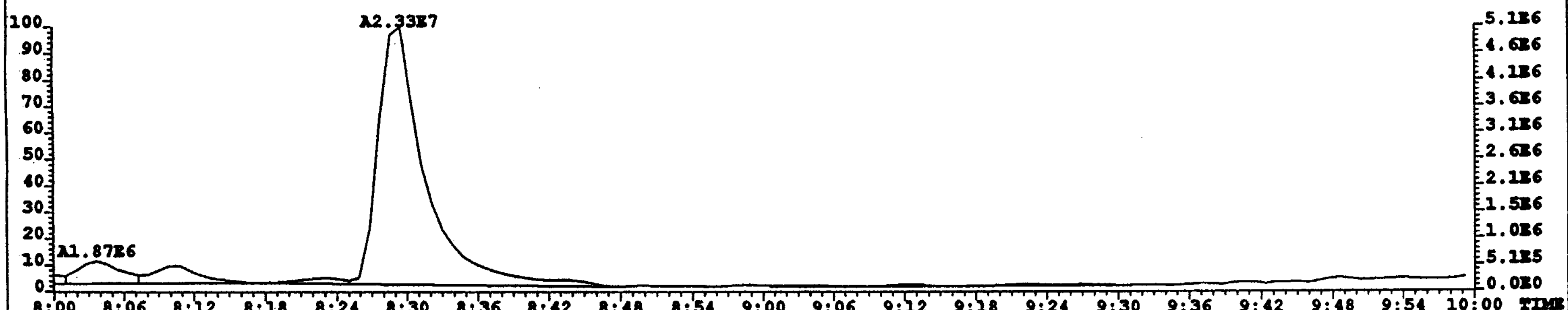
Mass Spec : VG1 Results : 05MY92031.RES : PAH.TRG
GC Column : DB5 Date analyzed : 5-MAY-1992
Data file : 05MY92 QC0505 :XAD QC 631 :: :: : : Cal : 05MY92011.RRF
Weight : 1

Name	Total Response	Isotope Ratio		R. T. mm:ss		RRF	pg/ :	% Rec
D1-2-METHYL-NAPHTHALENE	463992600	1.00	T	9: 58	Y	1	200.00	
D8-NAPHTHALENE	344953800	1.00	T	8: 26	Y	1.3e+00	114.34	29
NAPHTHALENE	413600600	1.00	T	8: 29	Y	8.8e-01	544.73 540	
NAPHTHALENE-2ND	46591360	1.00	T	8: 29	Y	9.8e-02	551.51	
D8-ACENAPTHYLENE	833935800	1.00	T	11: 30	Y	2.1e+00	171.00	43
ACENAPTHYLENE	3174048	1.00	T	11: 31	Y	9.0e-01	1.69 <5	
ACENAPTHYLENE-2ND	1451967	1.00	T	11: 23	Y	1.4e-01	5.04	
D10-ACENAPHTHENE	612759600	1.00	T	11: 46	Y	1.5e+00	179.33	45
ACENAPHTHENE	3030506	1.00	T	11: 49	Y	8.4e-01	2.36 <5	
D10-FLUORENE	969235600	1.00	T	12: 37	Y	2.8e+00	149.04	37
FLUORENE	18595508	1.00	T	12: 39	Y	6.9e-01	11.19 11	
D10-PHENANTHRENE	1154349400	1.00	T	13: 59	Y	3.5e+00	142.97	36
PHENANTHRENE	69483880	1.00	T	14: 2	Y	1.1e+00	22.78 23	
PHENANTHRENE-2ND	19196994	1.00	T	14: 2	Y	1.1e-01	~~60.97~~	
ANTHRACENE	69483880	1.00	T	14: 2	Y	9.8e-01	~~24.67~~ <5	
D10-ANTHRACENE	1154349400	1.00	T	13: 59	Y	3.3e+00	150.12	38
D12-PERYLENE	510510000	1.00	T	23: 21	Y	1	200.00	
D10-FLUORANTHENE	1139320800	1.00	T	15: 33	Y	2.1e+00	215.32	54
FLUORANTHENE	11700662	1.00	T	15: 34	Y	1.1e+00	3.67 <5	
D10-PYRENE	966267800	1.00	T	15: 54	Y	1.8e+00	205.55	51
PYRENE	9015036	1.00	T	15: 56	Y	1.3e+00	2.90 <5	
D12-BENZ(A)ANTHRACENE	654772400	1.00	T	18: 7	Y	1.4e+00	189.66	47
BENZ(A)ANTHRACENE	* No Peak	0.00	T	18: 11	N	1.3e+00	0.00 <5	
D12-CHRYSENE	916117600	1.00	T	18: 12	Y	1.8e+00	196.43	49
CHRYSENE	9531784	1.00	T	18: 16	Y	1.1e+00	3.87 <5	
D12-BENZO(B)FLUORANTHENE	1116352800	1.00	T	21: 31	Y	1.0e+00	423.37	53
BENZO(B)FLUORANTHENE	4474992	1.00	T	21: 38	Y	1.5e+00	2.19 <5	
D12-BENZO(K)FLUORANTHENE	1636107800	1.00	T	21: 39	Y	1.6e+00	394.54	49
BENZO(K)FLUORANTHENE	* No Peak	0.00	T	21: 44	N	1.2e+00	0.00 <5	
BENZO-E-PYRENE	1527384	1.00	T	22: 50	Y	1.0e+00	0.72	
D12-BENZO(A)PYRENE	1178863400	1.00	T	22: 58	Y	1.4e+00	329.63	41
BENZO(A)PYRENE	* No Peak	0.00	T	23: 6	N	1.0e+00	0.00 <5	
D12-INDENO()PYRENE	787725600	1.00	T	29: 34	Y	9.8e-01	315.83	39
INDENO(1,2,3-CD)PYRENE	* No Peak	0.00	T	29: 46	N	1.3e+00	0.00 <5	
14-DIBENZO-AH-ANTHRACENE	671427600	1.00	T	29: 38	Y	8.7e-01	302.72	38
DIBENZO-AH-ANTHRACENE	335372	1.00	T	29: 51	Y	1.4e+00	0.28 <5	
D12-BENZO(GHI)PERYLENE	576621000	1.00	T	31: 33	Y	7.4e-01	303.59	38
BENZO(GHI)PERYLENE	999217	1.00	T	31: 47	Y	2.2e+00	0.64 <5	
D10-PYRENE	966267800	1.00	T	15: 54	Y	1.0e+00	400.00	
D14-TERPHENYL	258683	1.00	T	16: 1	Y	1.1e+00	0.09	0
D12-BENZO(A)PYRENE	1178863400	1.00	T	22: 58	Y	1.0e+00	800.00	
D12-BENZO-E-PYRENE	* No Peak	0.00	T	22: 42	N	4.9e-01	0.00	0

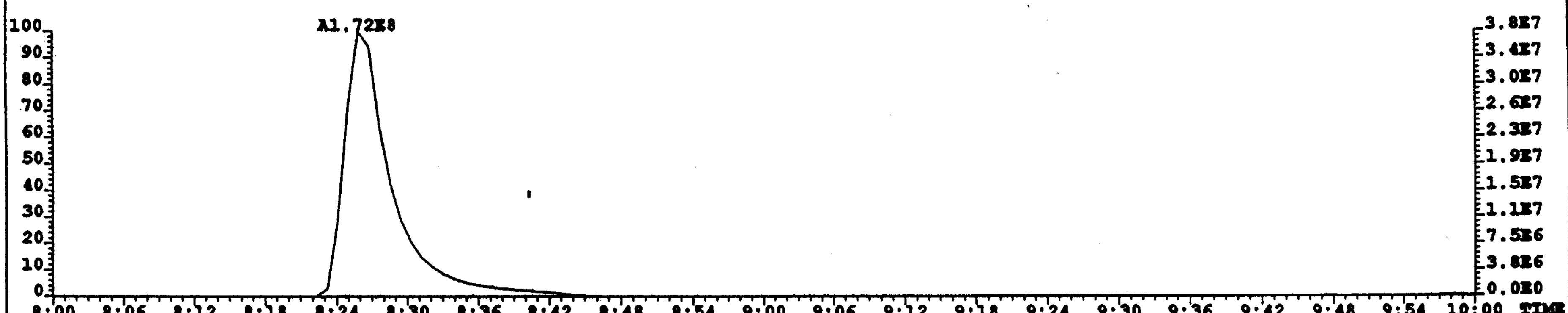
File:05MY92 Acq: 5-MAY-1992 08:59:24 128.0626 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



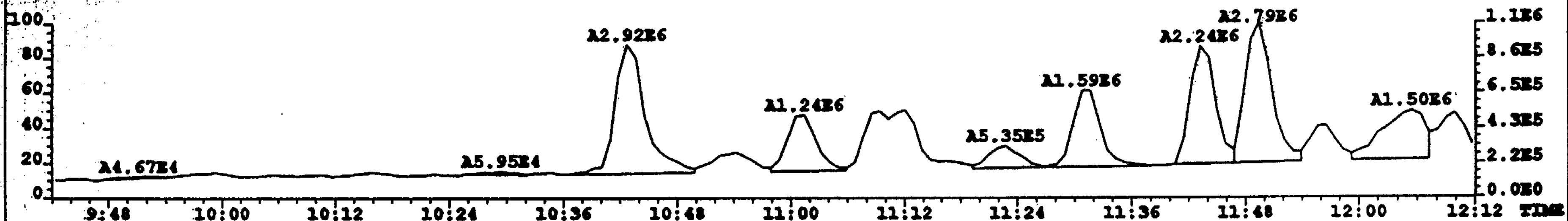
File:05MY92 Acq: 5-MAY-1992 08:59:24 129.0660 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



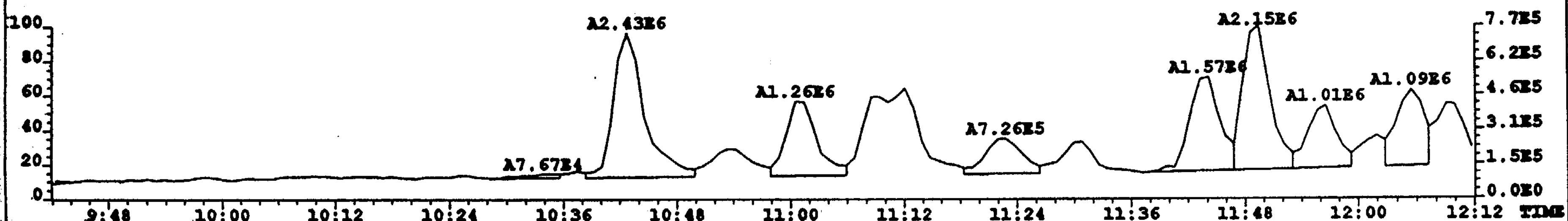
File:05MY92 Acq: 5-MAY-1992 08:59:24 136.1128 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



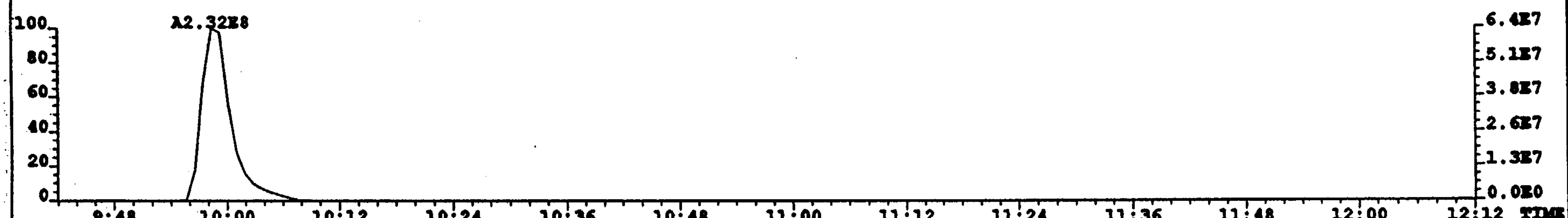
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
152.0626 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



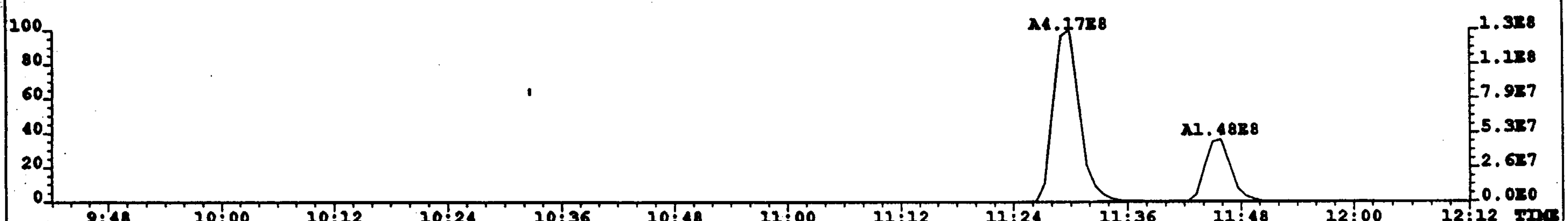
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
153.0660 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



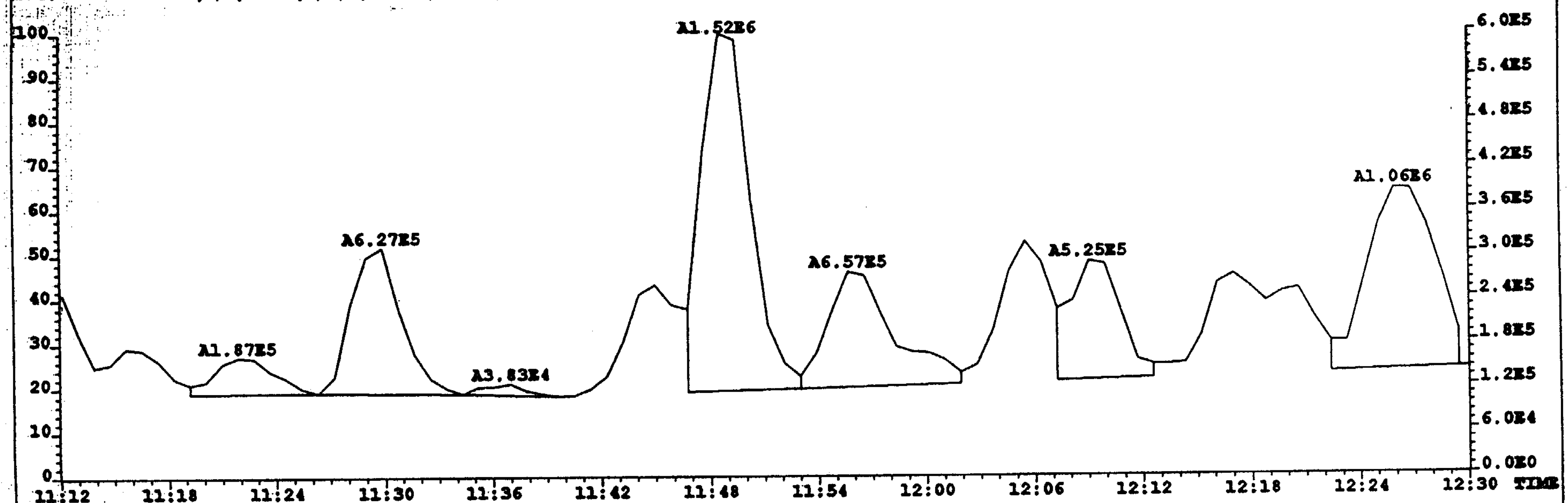
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
152.1410 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



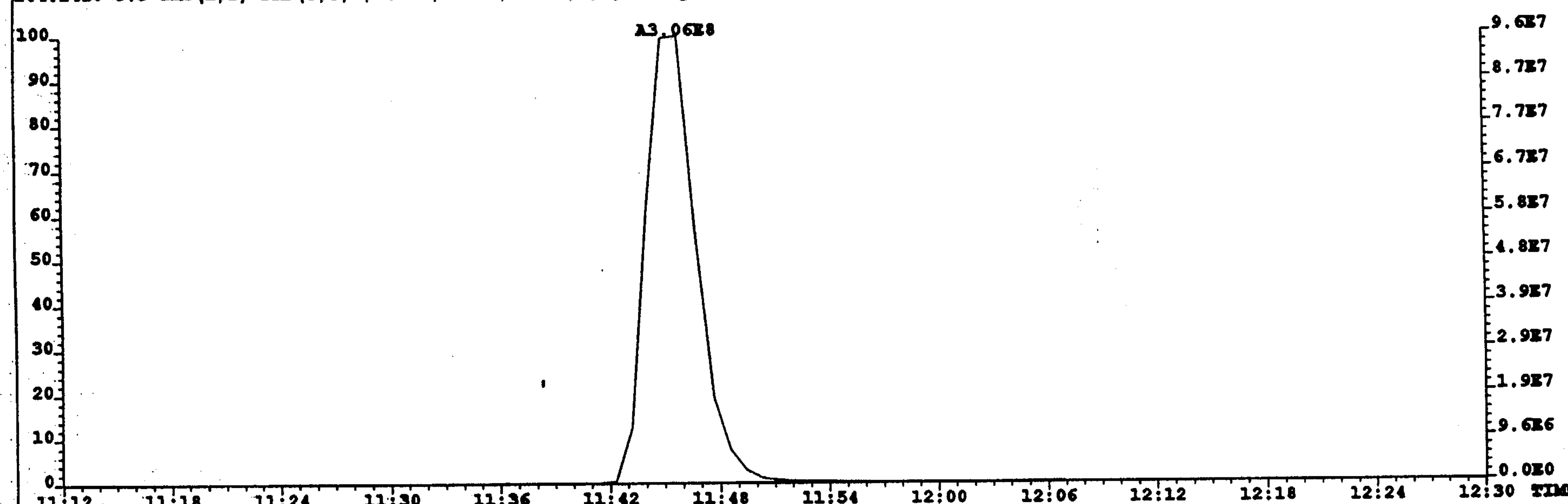
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
160.1128 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



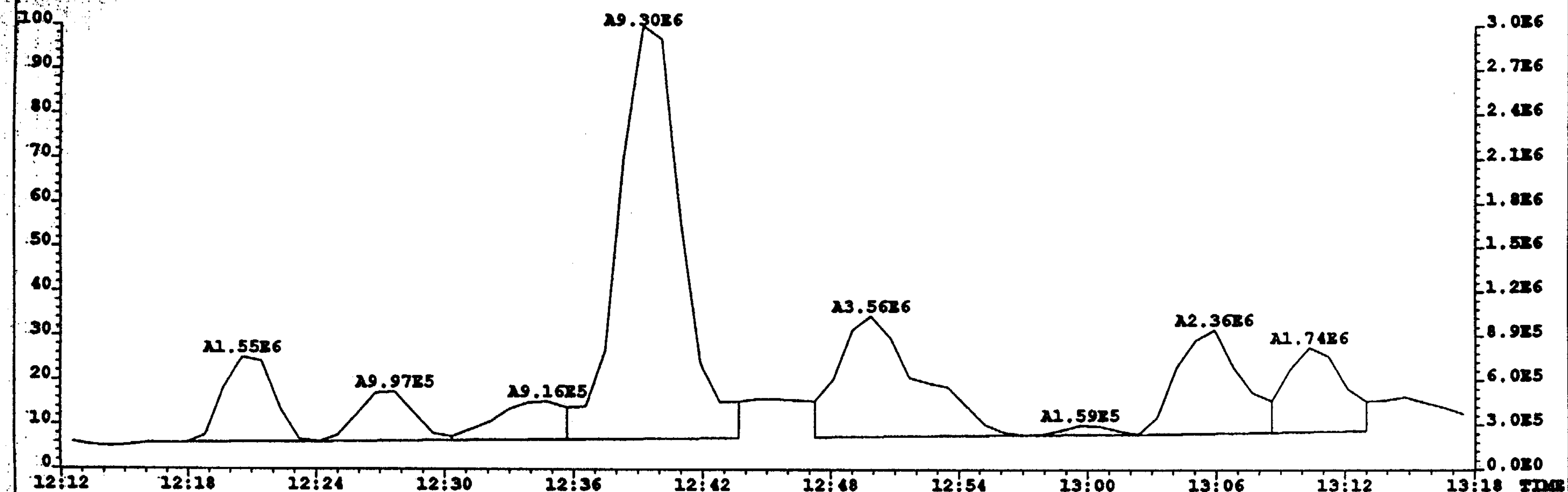
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
156.0783 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



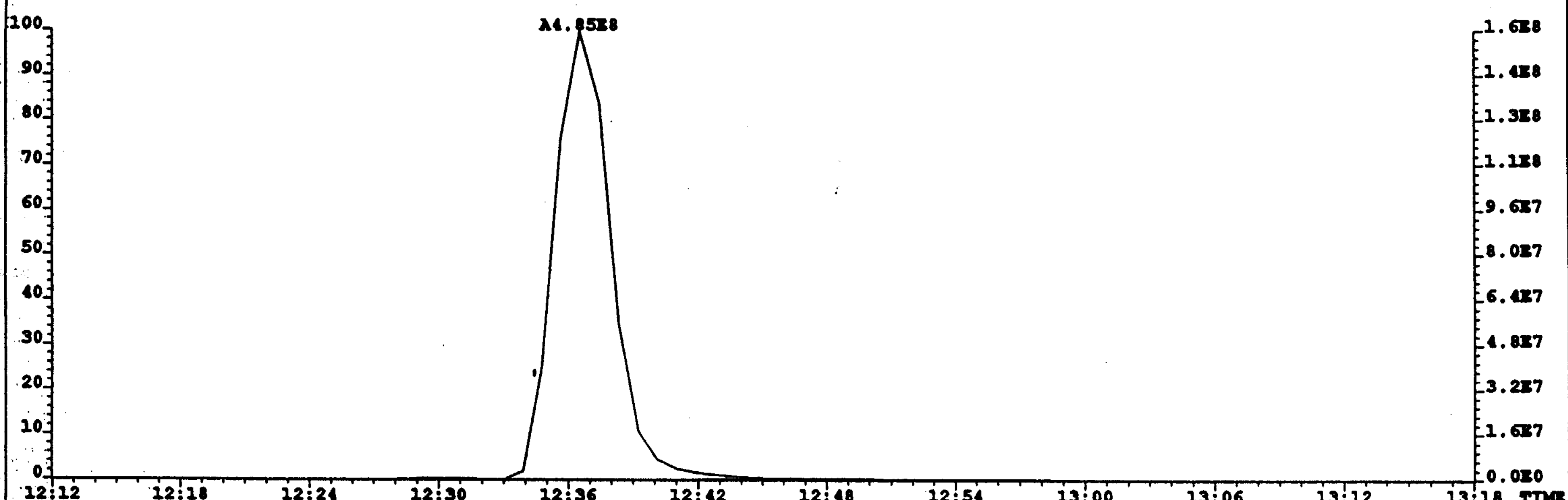
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
164.1410 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



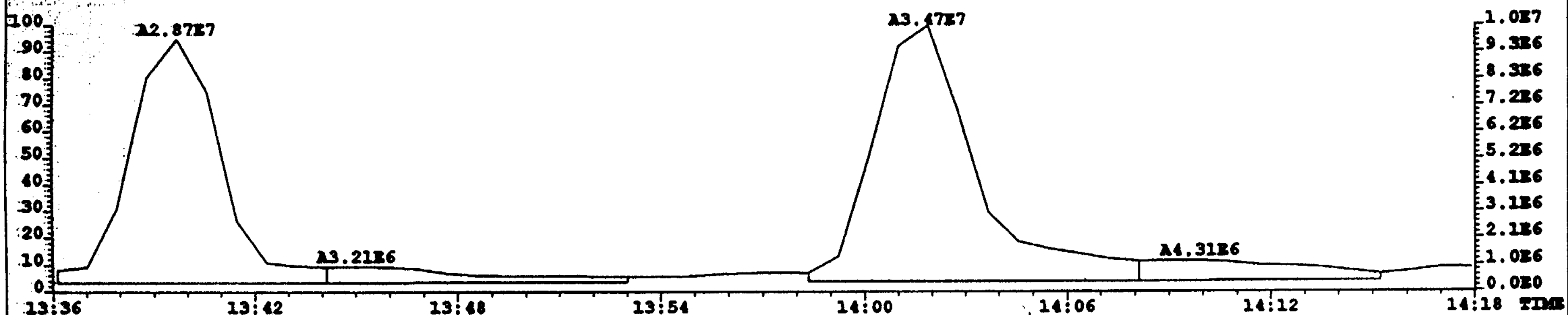
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
166.0783 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



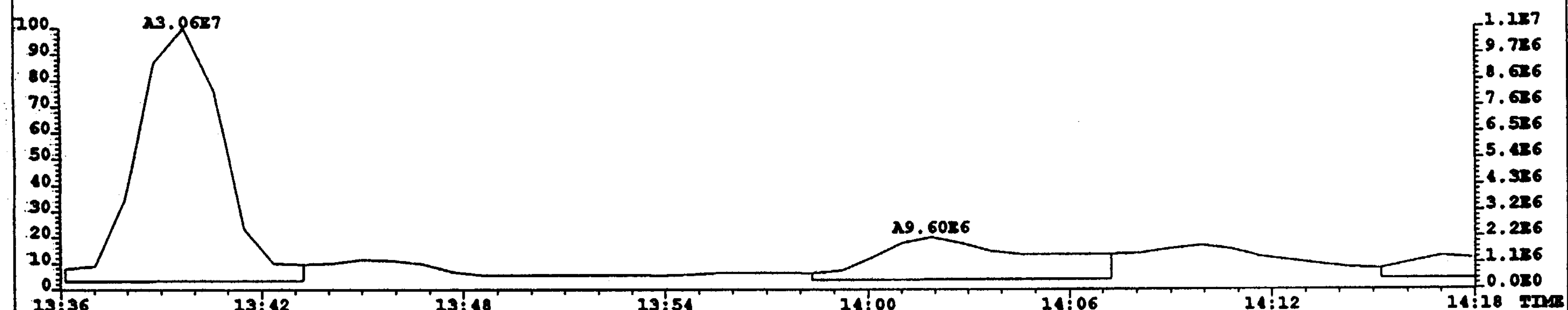
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
176.1410 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



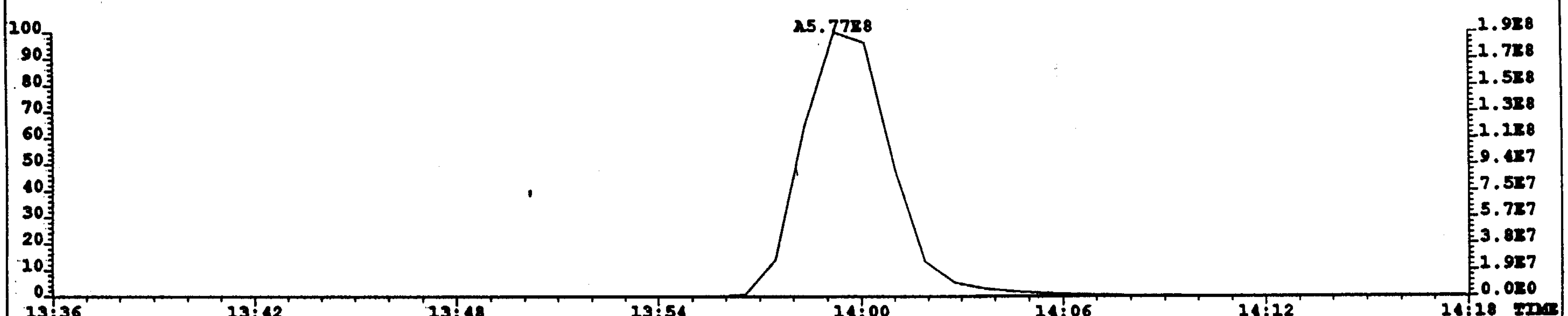
File:05MY92 Acq: 5-MAY-1992 08:59:24 178.0783 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:

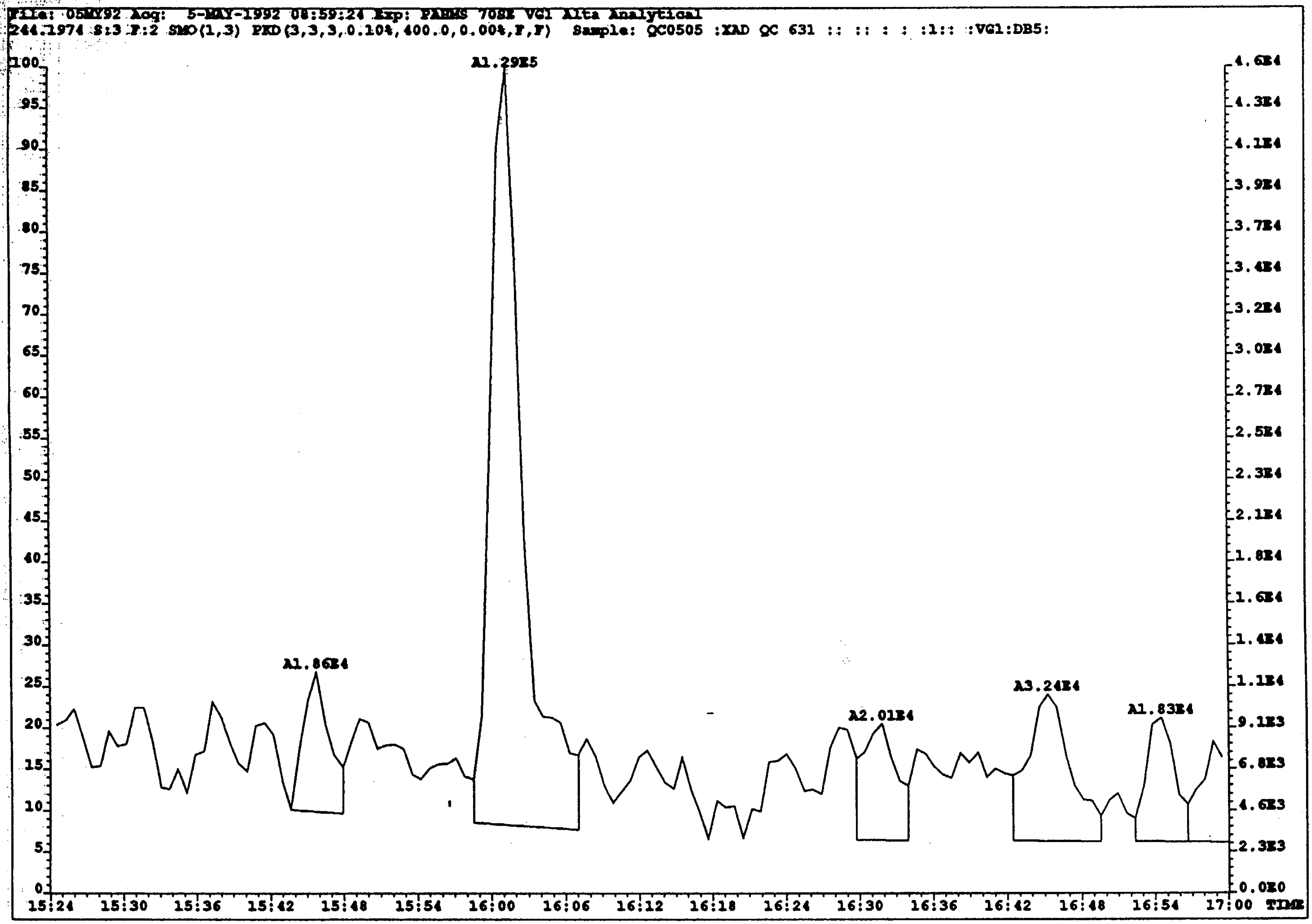


File:05MY92 Acq: 5-MAY-1992 08:59:24 179.0860 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:

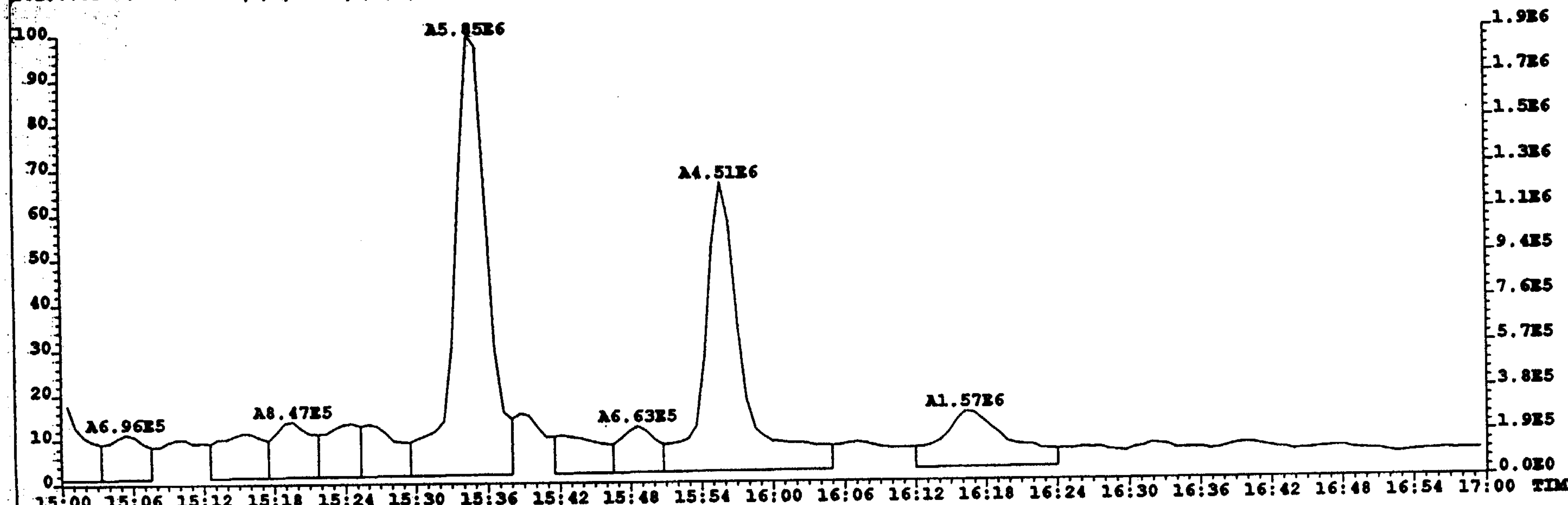


File:05MY92 Acq: 5-MAY-1992 08:59:24 188.1410 S:3 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:

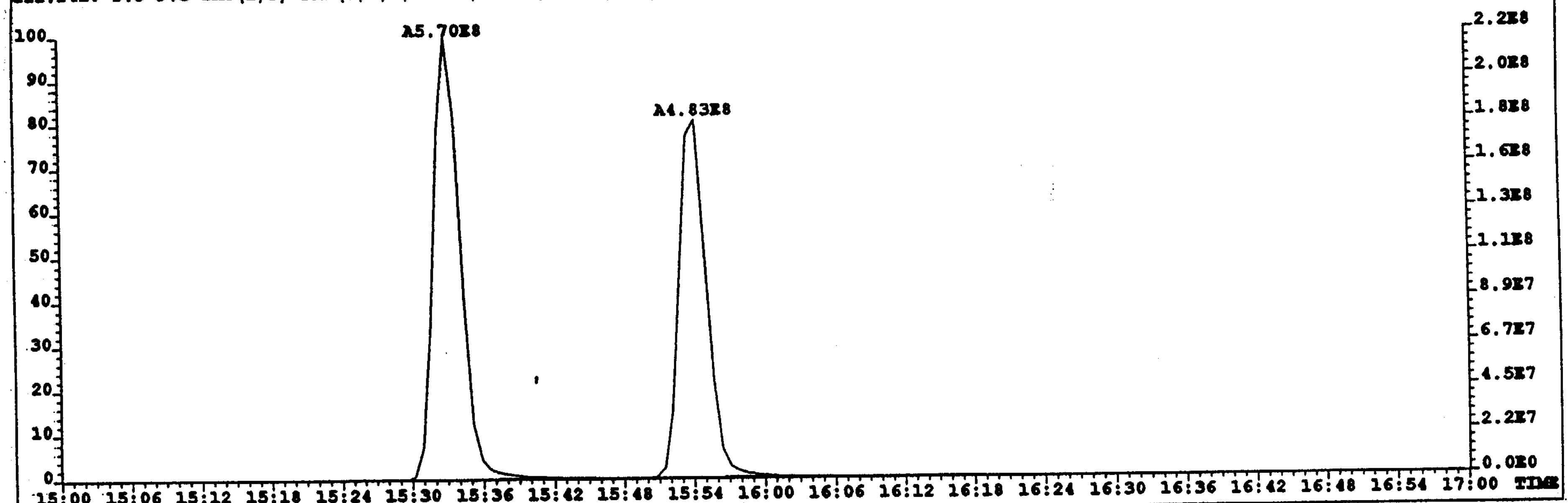



File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
244.1974 S:3 F:2 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:
A1.29E5
A1.86E4
A2.01E4
A3.24E4
A1.83E4
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
4.6E4
4.3E4
4.1E4
3.9E4
3.7E4
3.4E4
3.2E4
3.0E4
2.7E4
2.5E4
2.3E4
2.1E4
1.8E4
1.6E4
1.4E4
1.1E4
9.1E3
6.8E3
4.6E3
2.3E3
0.0E0
15:24
15:30
15:36
15:42
15:48
15:54
16:00
16:06
16:12
16:18
16:24
16:30
16:36
16:42
16:48
16:54
17:00
TIME

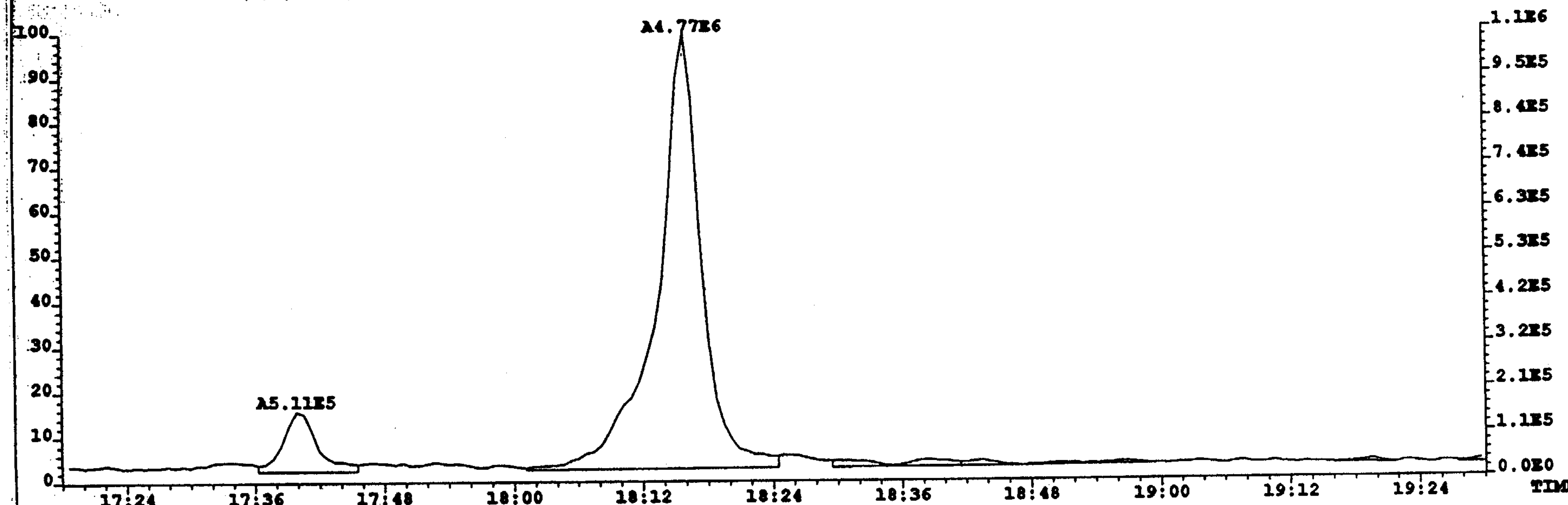
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
202.0782 S:3 F:2 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



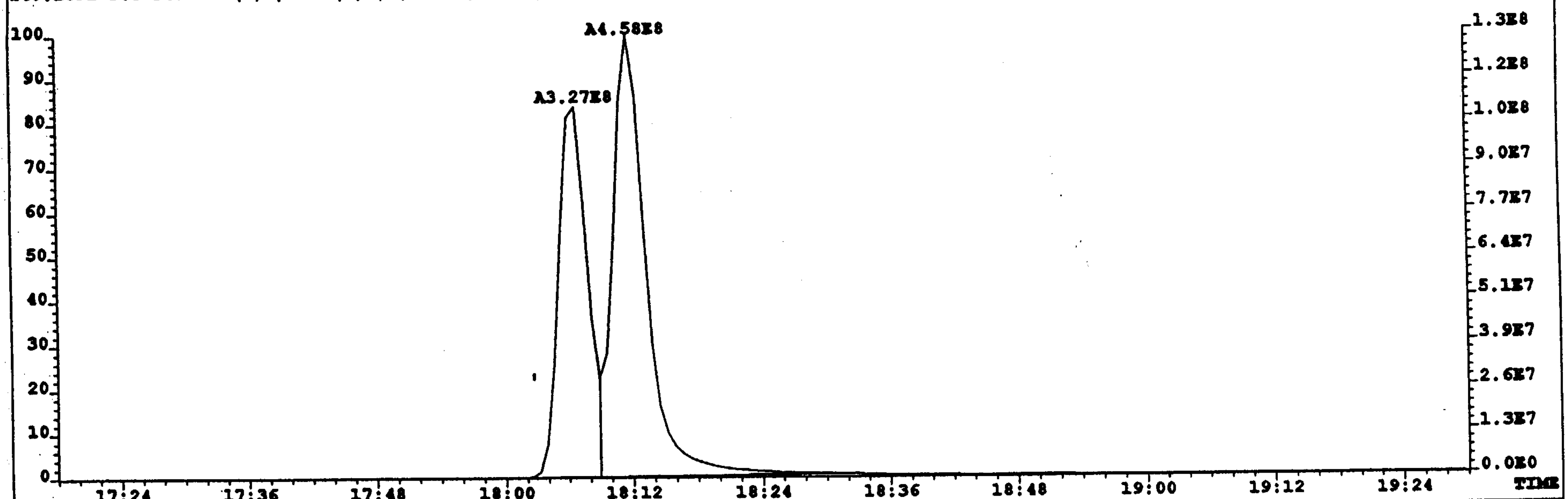
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
212.1410 S:3 F:2 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



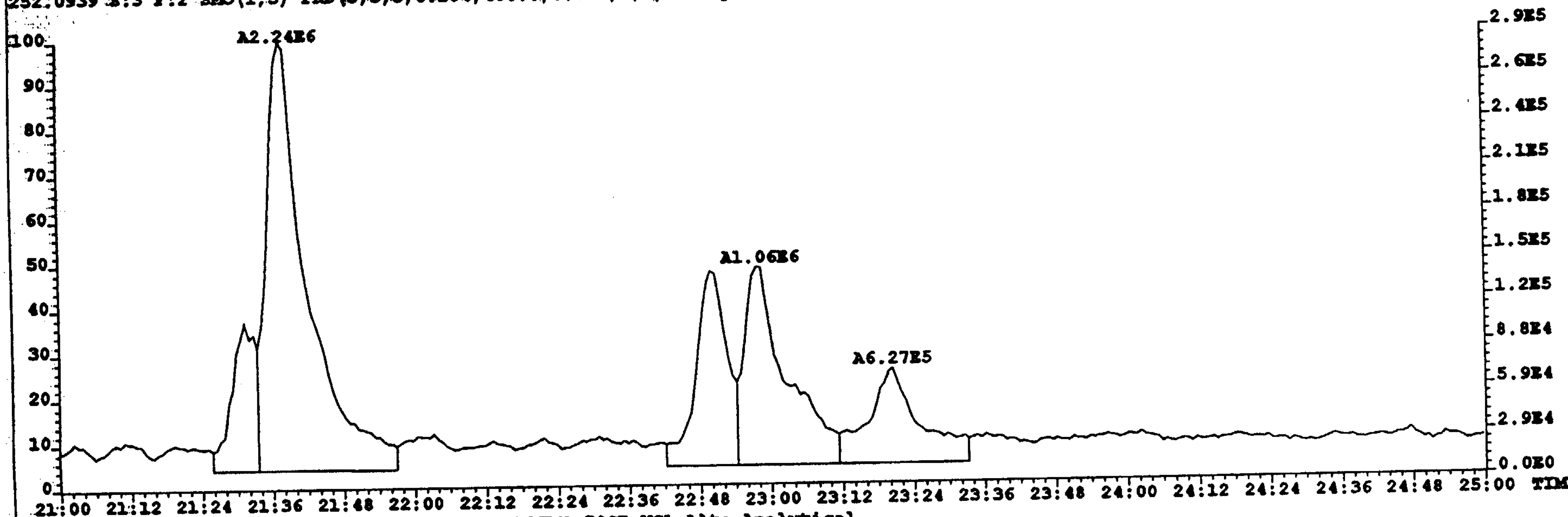
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
228.0939 S:3 F:2 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



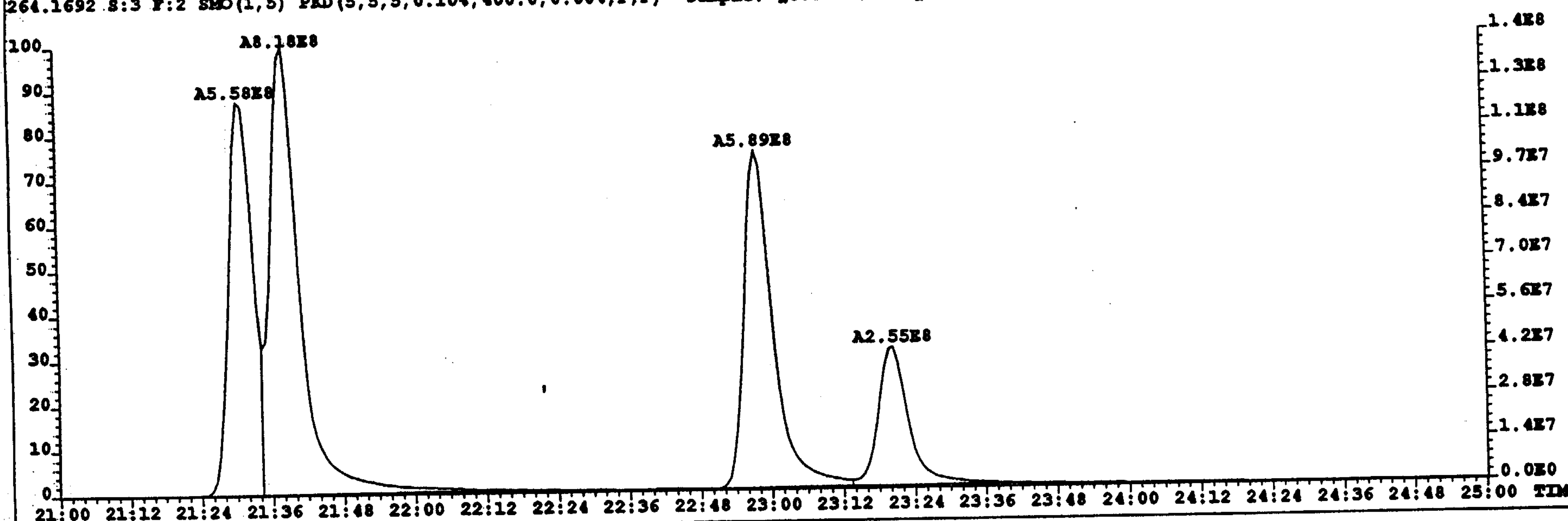
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
240.1692 S:3 F:2 SMO(1,3) PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



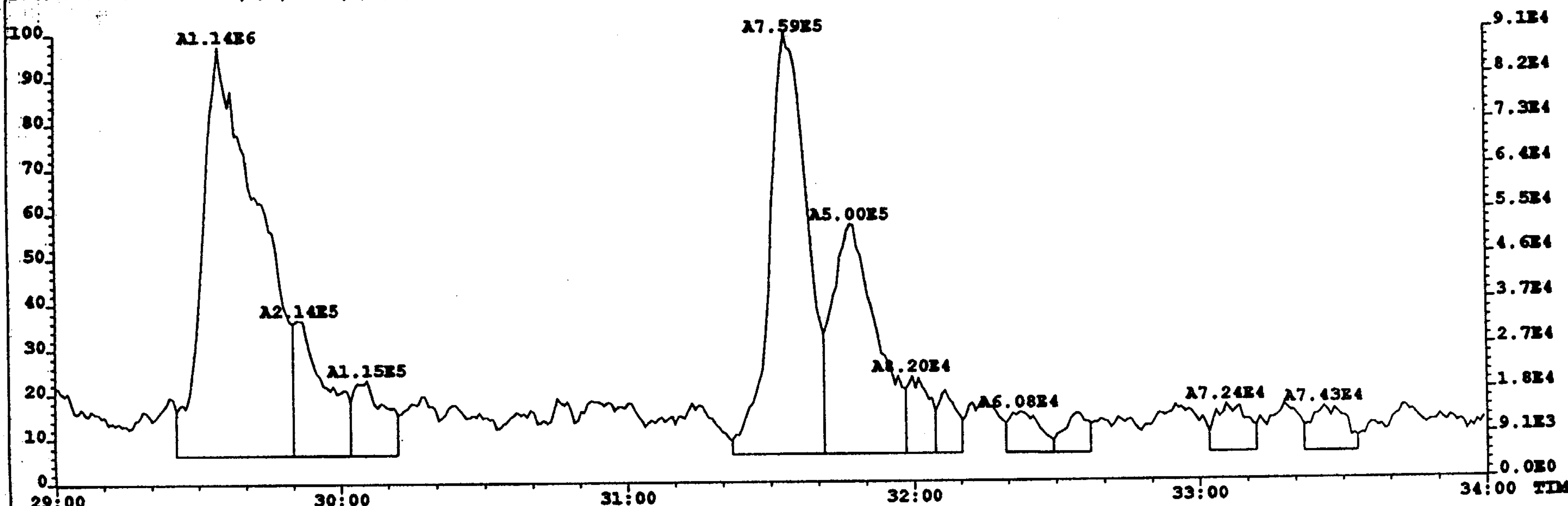
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
252.0939 S:3 F:2 SMO(1,5) PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



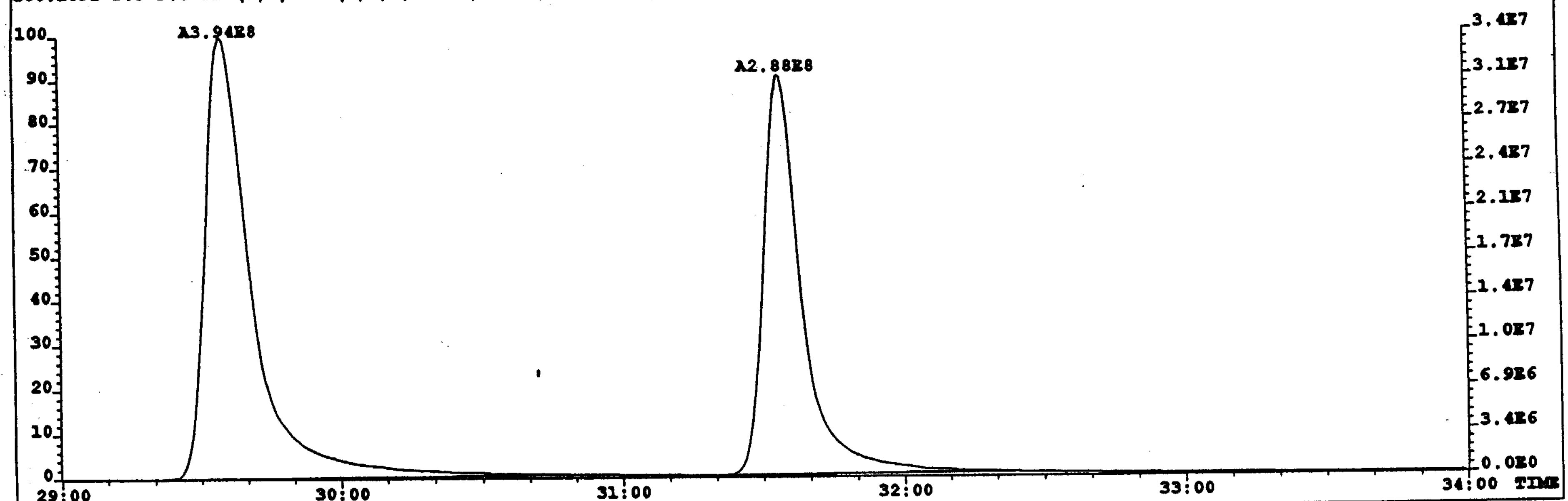
File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
264.1692 S:3 F:2 SMO(1,5) PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
276.0939 S:3 F:2 SMO(1,5) PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



File: 05MY92 Acq: 5-MAY-1992 08:59:24 Exp: PAHMS 70SE VG1 Alta Analytical
288.1692 S:3 F:2 SMO(1,5) PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: QC0505 :XAD QC 631 :: :: : : :1:: :VG1:DB5:



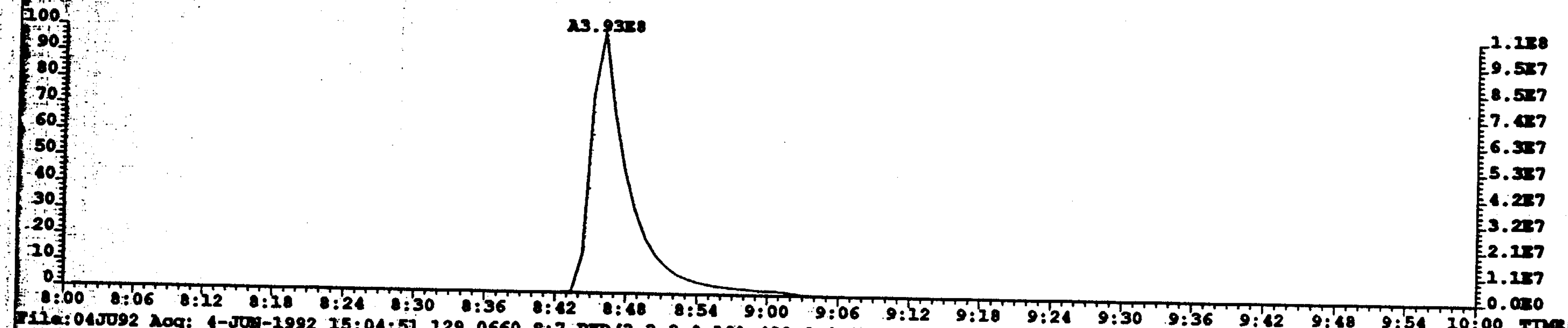
05-JUN-1992 09:14:13 AM DIOXIN/FURAN RESULTS 0113?0LC1

Mass Spec : VG1
GC Column : DB5
Data file : 04JU92
ight : 1

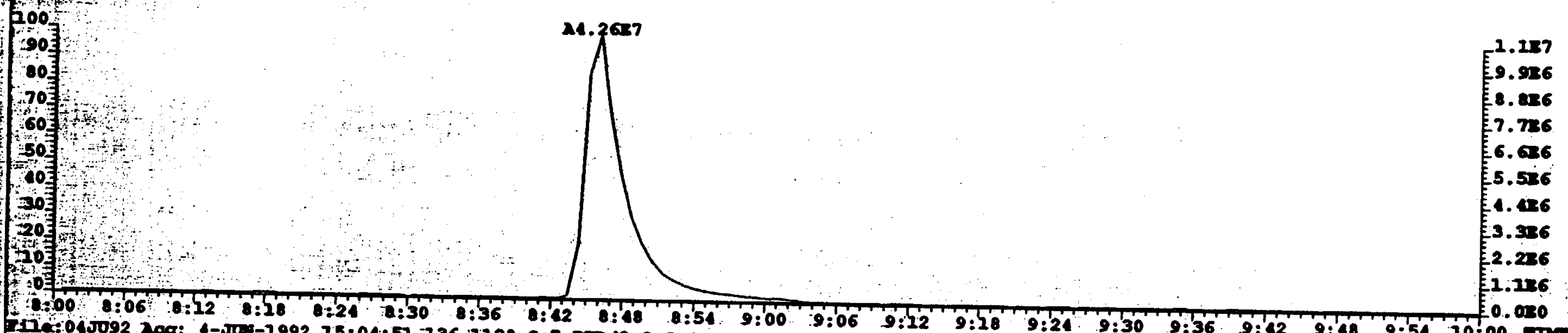
Results : 04JU92071.RES : PAH.TRG
Date analyzed : 4-JUN-1992
11310LC1 !LCS !MSF !CC ! ! ! Cal : IPAH.RRF

Name	Total Response	Isotope Ratio		R. T. mm:ss		RRF	pg/ :	% Rec		
D1-2-METHYL-NAPHTHALENE	238497600	1.00	T	10: 14	Y	1	200.00			
D8-NAPHTHALENE	318014600	1.00	T	8: 43	Y	1.9e+00	142.91	71		
NAPHTHALENE	785583400	1.00	T	8: 46	Y	9.9e-01	496.88		99%	(1.0)
NAPHTHALENE-2ND	85246580	1.00	T	8: 46	Y	1.0e-01	513.63		103%	(0.0)
D8-ACENAPTHYLENE	260963600	1.00	T	11: 47	Y	1.6e+00	138.25	69		
ACENAPTHYLENE	276020400	1.00	T	11: 48	Y	1.1e+00	195.03		98%	(2.0)
ACENAPTHYLENE-2ND	35812960	1.00	T	11: 48	Y	1.4e-01	190.42		95%	(3.1)
D10-ACENAPHTHENE	173452760	1.00	T	12: 3	Y	9.9e-01	147.13	74		
ACENAPHTHENE	179398360	1.00	T	12: 6	Y	1.1e+00	192.08		96%	(0.0)
D10-FLUORENE	191474460	1.00	T	12: 54	Y	1.1e+00	145.42	73		
FLUORENE	172010640	1.00	T	12: 57	Y	9.5e-01	188.91		94%	(4.2)
D10-PHENANTHRENE	158165320	1.00	T	14: 18	Y	9.3e-01	143.32	72		
PHENANTHRENE	502019000	1.00	T	14: 19	Y	1.3e+00	474.84		95%	(3.2)
PHENANTHRENE-2ND	49206840	1.00	T	14: 19	Y	1.3e-01	464.07		93%	(4.2)
ANTHRACENE	201580200	1.00	T	14: 24	Y	1.4e+00	177.29		89%	(0.0)
D10-ANTHRACENE	117626560	1.00	T	14: 22	Y	8.7e-01	113.53	57		
D12-PERYLENE	119727700	1.00	T	24: 10	Y	1	200.00			
D10-FLUORANTHENE	257328800	1.00	T	15: 54	Y	2.1e+00	207.70	104		
FLUORANTHENE	260723200	1.00	T	15: 55	Y	1.2e+00	175.33		88%	(3.5)
D10-PYRENE	233704000	1.00	T	16: 16	Y	1.9e+00	207.59	104		
PYRENE	260405200	1.00	T	16: 18	Y	1.3e+00	177.69		89%	(1.1)
D12-BENZ(A)ANTHRACENE	136513400	1.00	T	18: 36	Y	1.3e+00	178.53	89		
BENZ(A)ANTHRACENE	156240520	1.00	T	18: 40	Y	1.2e+00	186.38		93%	(1.1)
D12-CHRYSENE	226287800	1.00	T	18: 42	Y	2.0e+00	189.70	95		
CHRYSENE	221146000	1.00	T	18: 46	Y	1.0e+00	190.96		95%	(3.1)
D12-BENZO(B)FLUORANTHENE	209388800	1.00	T	22: 13	Y	8.9e-01	391.14	98		
BENZO(B)FLUORANTHENE	154102200	1.00	T	22: 21	Y	1.5e+00	194.90		97%	(0.0)
D12-BENZO(K)FLUORANTHENE	338660800	1.00	T	22: 21	Y	1.5e+00	372.50	93		
BENZO(K)FLUORANTHENE	197463140	1.00	T	22: 27	Y	1.3e+00	184.29		92%	(3.2)
BENZO-E-PYRENE	170342160	1.00	T	23: 38	Y	1.1e+00	190.47		95%	(5.1)
D12-BENZO(A)PYRENE	256309800	1.00	T	23: 46	Y	1.3e+00	334.40	84		
BENZO(A)PYRENE	149996440	1.00	T	23: 54	Y	1.2e+00	201.06		101%	(2.9)
D12-INDENO()PYRENE	160121060	1.00	T	28: 57	Y	6.7e-01	397.58	99		
INDENO(1,2,3-CD)PYRENE	137076100	1.00	T	29: 5	Y	1.9e+00	-181.06		91%	(7.4)
14-DIBENZO-AH-ANTHRACENE	134020900	1.00	T	28: 59	Y	6.0e-01	370.74	93		
DIBENZO-AH-ANTHRACENE	102598360	1.00	T	29: 9	Y	1.4e+00	217.13		109%	(0.9)
D12-BENZO(GHI)PERYLENE	135996800	1.00	T	30: 21	Y	5.9e-01	387.29	97		
BENZO(GHI)PERYLENE	150066020	1.00	T	30: 30	Y	2.2e+00	200.99		100%	(1.0)
D10-PYRENE	257328800	1.00	T	15: 54	Y	1.0e+00	400.00			
D14-TERPHENYL	114942	1.00	T	16: 24	Y	1.1e+00	0.16	0		
D12-BENZO(A)PYRENE	256309800	1.00	T	23: 46	Y	1.0e+00	800.00			
D12-BENZO-E-PYRENE	* No Peak	0.00	T	23: 29	N	4.3e-01	0.00	0		

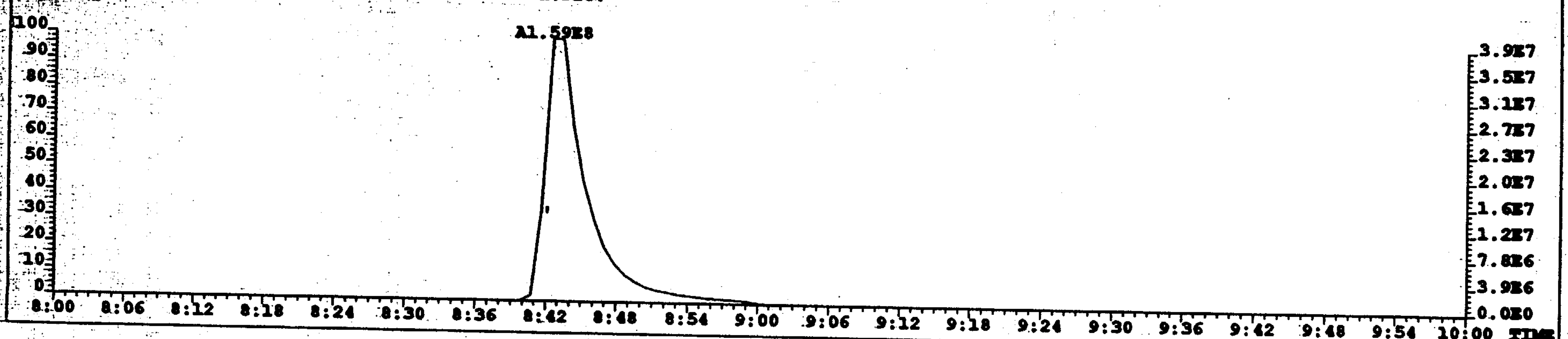
File:04JU92 Acq: 4-JUN-1992 15:04:51 128.0626 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:I1310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:

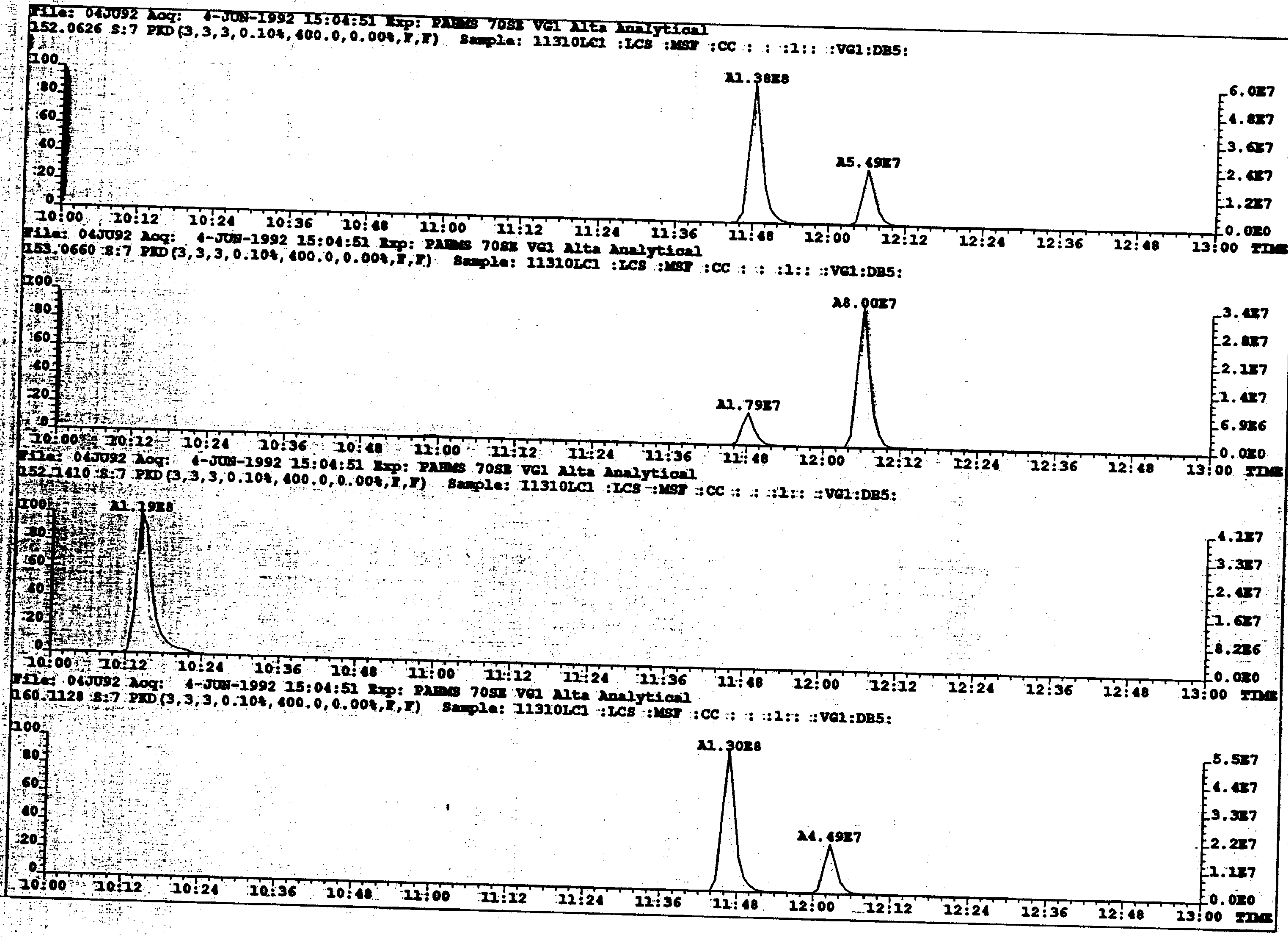


File:04JU92 Acq: 4-JUN-1992 15:04:51 129.0660 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:I1310LC1 :LCS :MSF :CC :: :: ::1:: ::VG1:DB5:



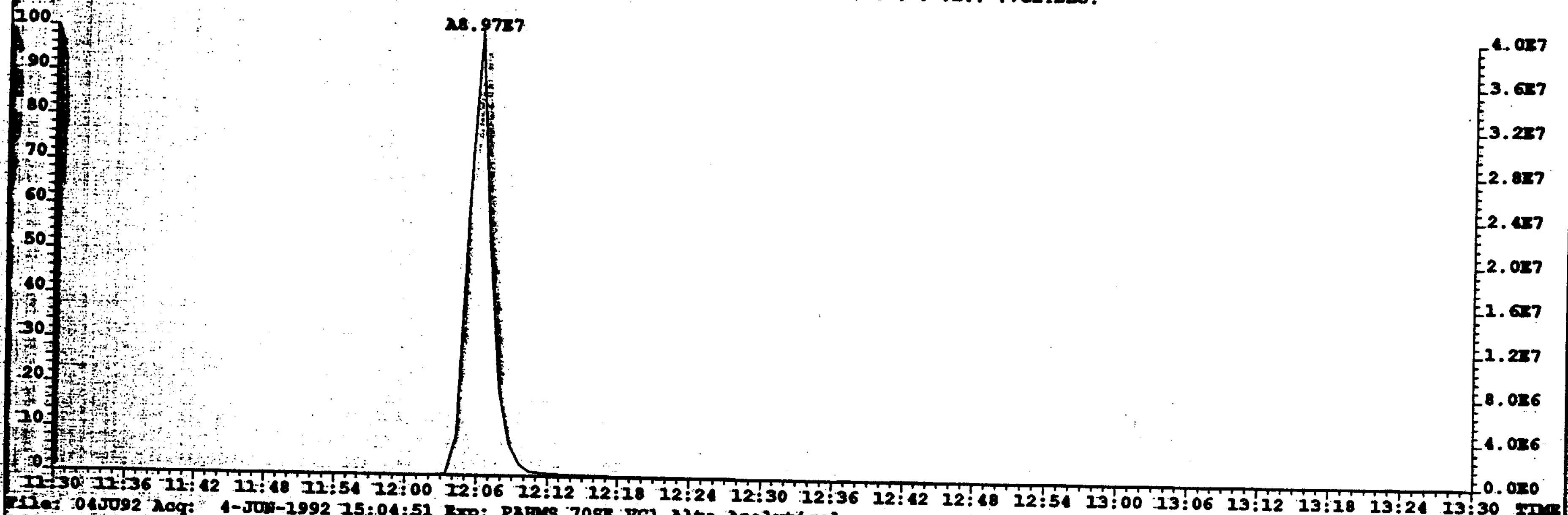
File:04JU92 Acq: 4-JUN-1992 15:04:51 136.1128 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:I1310LC1 :LCS :MSF :CC :: :: ::1:: ::VG1:DB5:



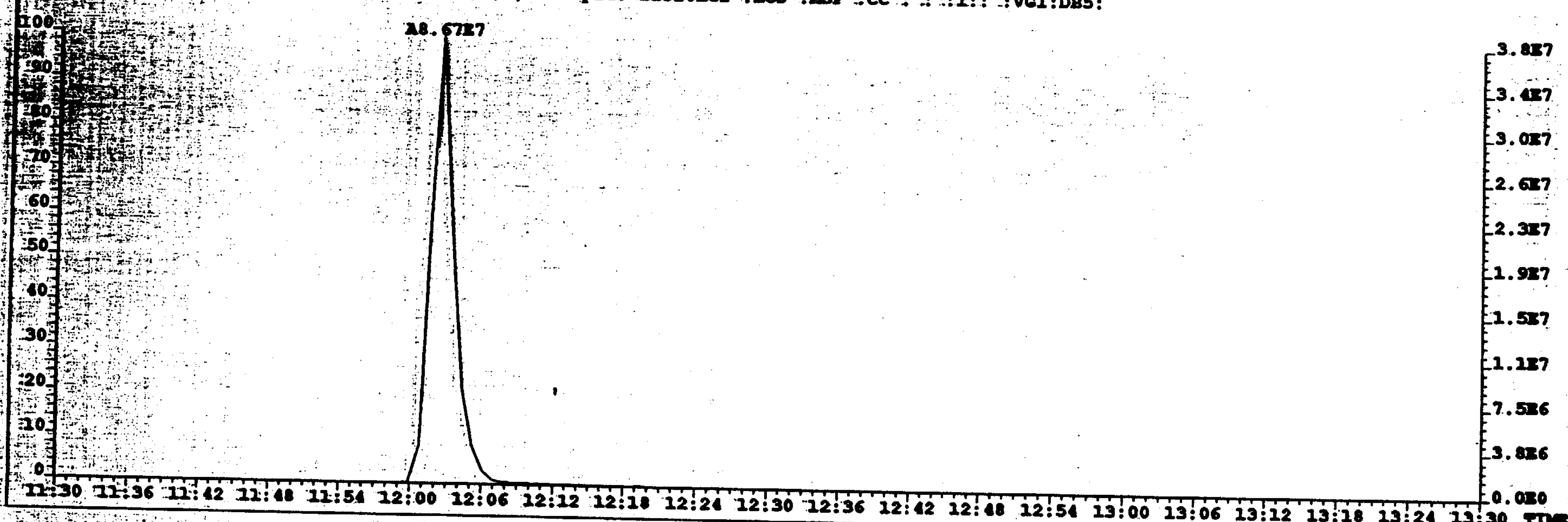


File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
152.0626 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:
A1.38E8
A5.49E7
6.0E7
4.8E7
3.6E7
2.4E7
1.2E7
0.0E0
10:00 10:12 10:24 10:36 10:48 11:00 11:12 11:24 11:36 11:48 12:00 12:12 12:24 12:36 12:48 13:00 TIME
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
153.0660 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:
A1.79E7
A8.00E7
3.4E7
2.8E7
2.1E7
1.4E7
6.9E6
0.0E0
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
152.1410 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:
A1.19E8
4.1E7
3.3E7
2.4E7
1.6E7
8.2E6
0.0E0
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
160.1128 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:
A1.30E8
A4.49E7
5.5E7
4.4E7
3.3E7
2.2E7
1.1E7
0.0E0

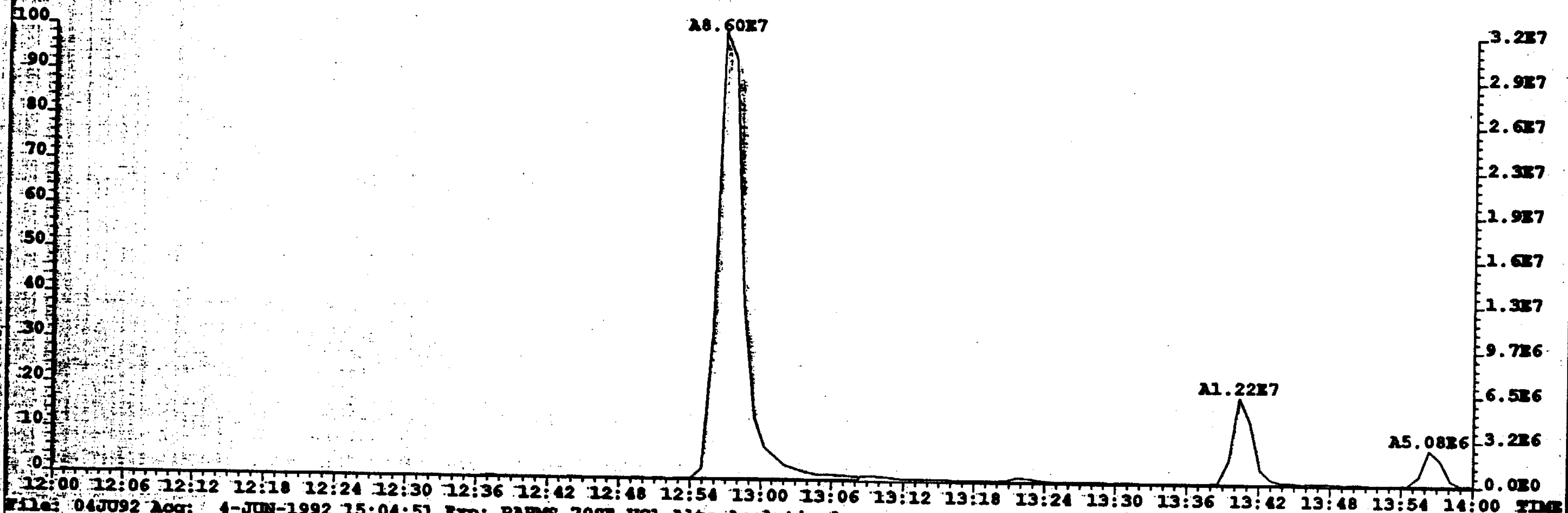
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
154.0783 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:



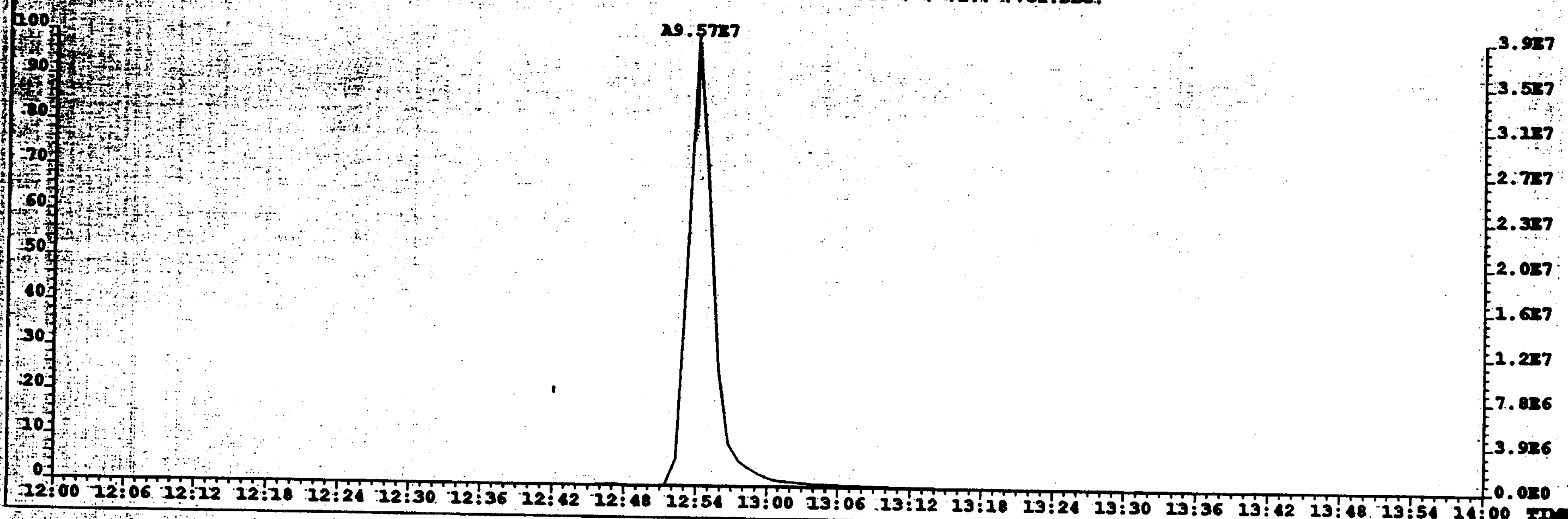
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
164.1410 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:



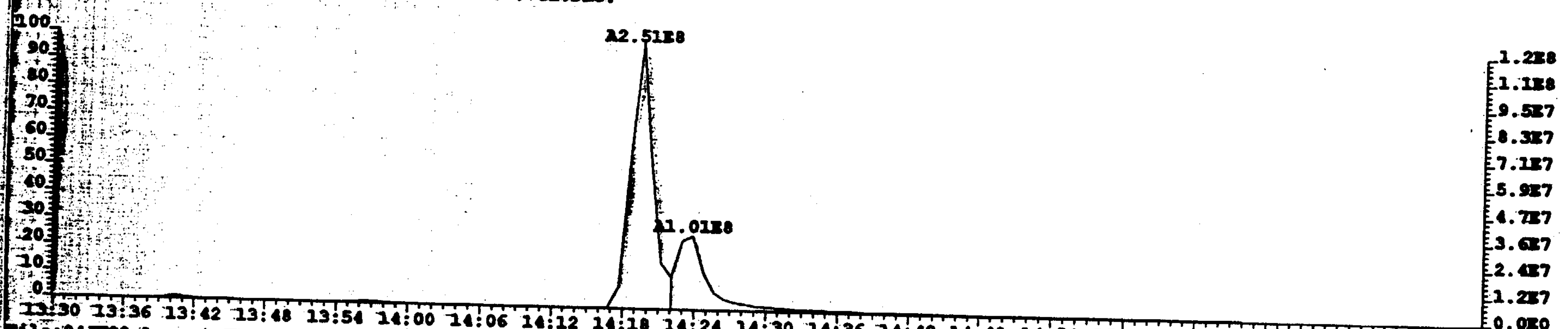
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
166.0783 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:



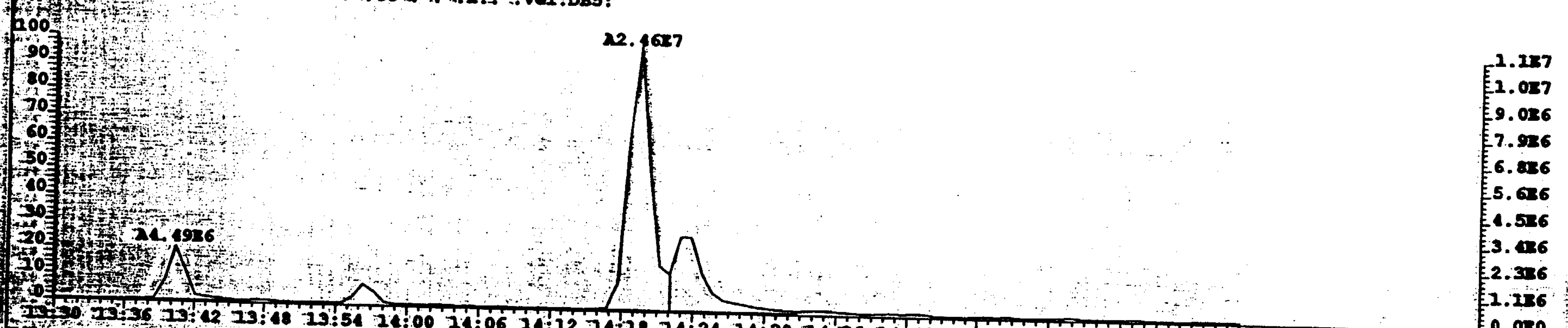
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
176.1410 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:



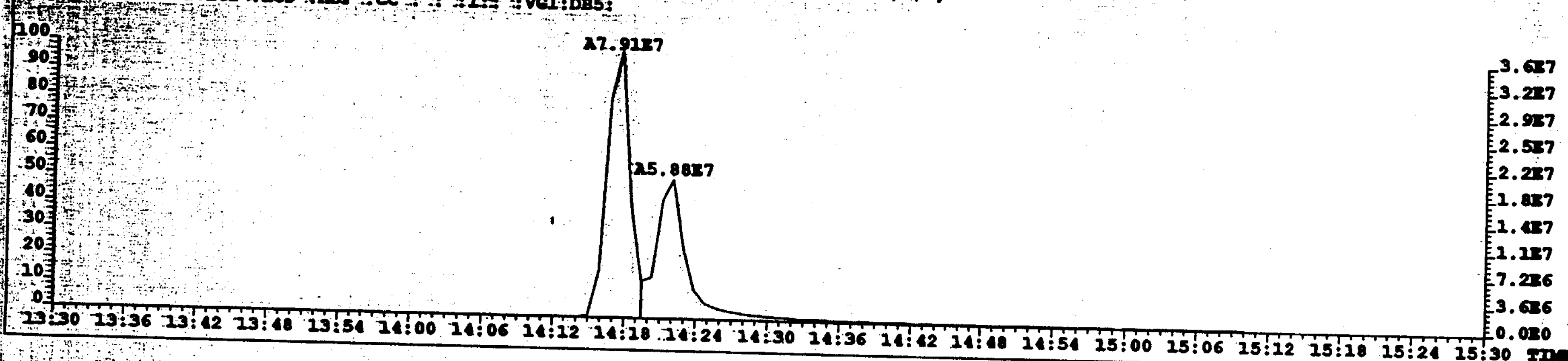
File:04JU92 Acq: 4-JUN-1992 15:04:51 178.0783 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:11310LC1 ::LCS ::MSF ::CC :: :: ::1:: ::VG1:DB5:



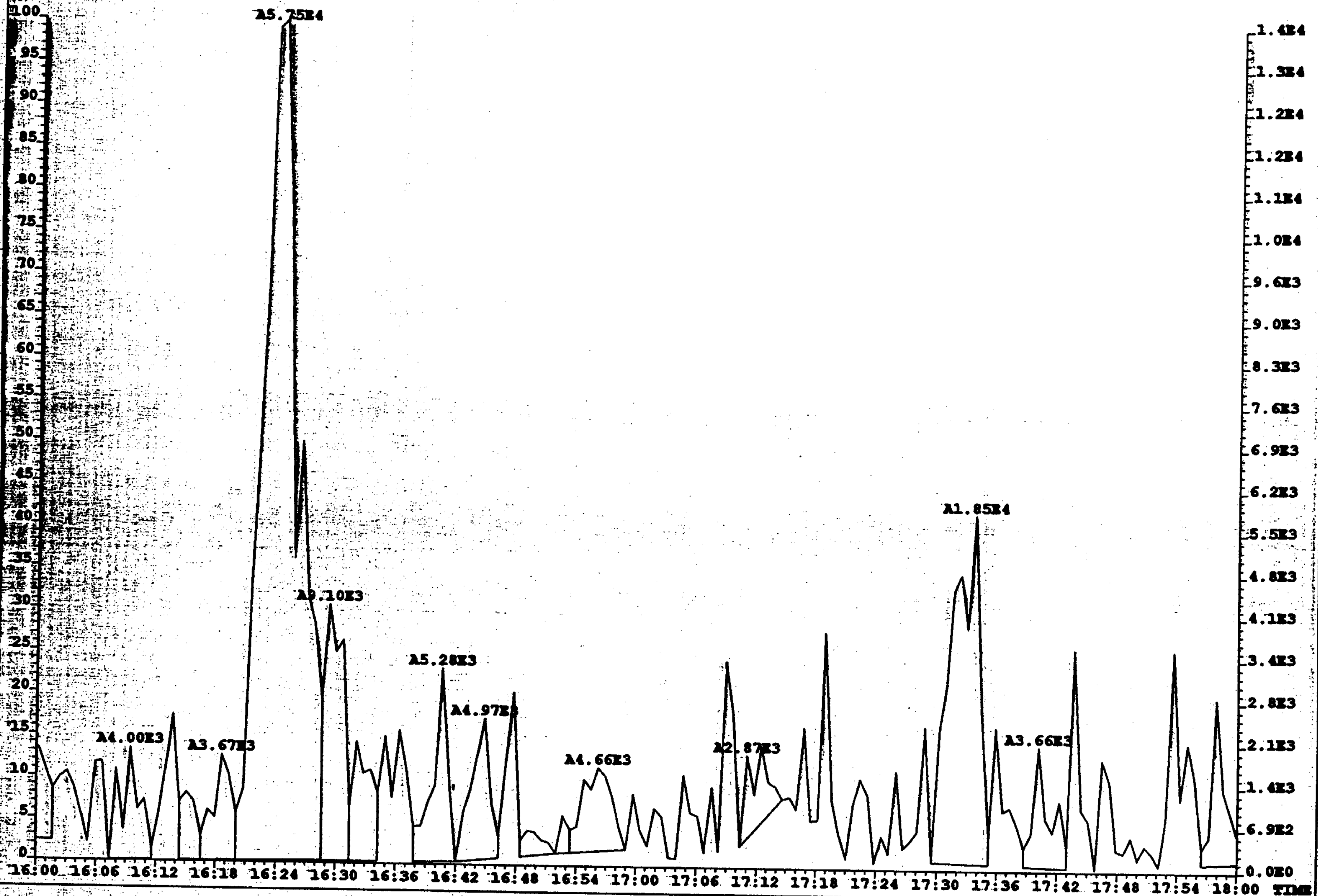
File:04JU92 Acq: 4-JUN-1992 15:04:51 179.0860 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:11310LC1 ::LCS ::MSF ::CC :: :: ::1:: ::VG1:DB5:

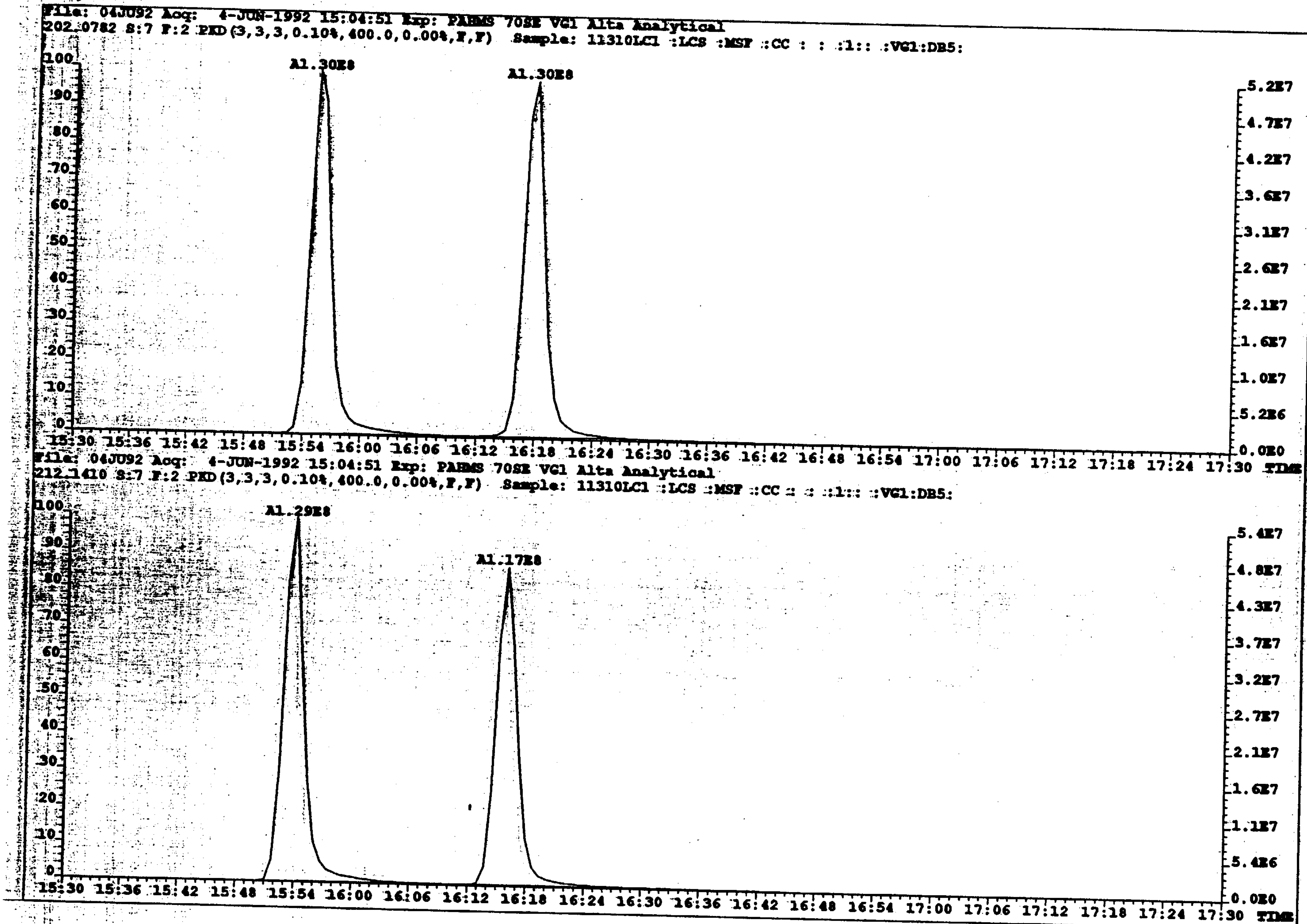


File:04JU92 Acq: 4-JUN-1992 15:04:51 188.1410 S:7 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:11310LC1 ::LCS ::MSF ::CC :: :: ::1:: ::VG1:DB5:

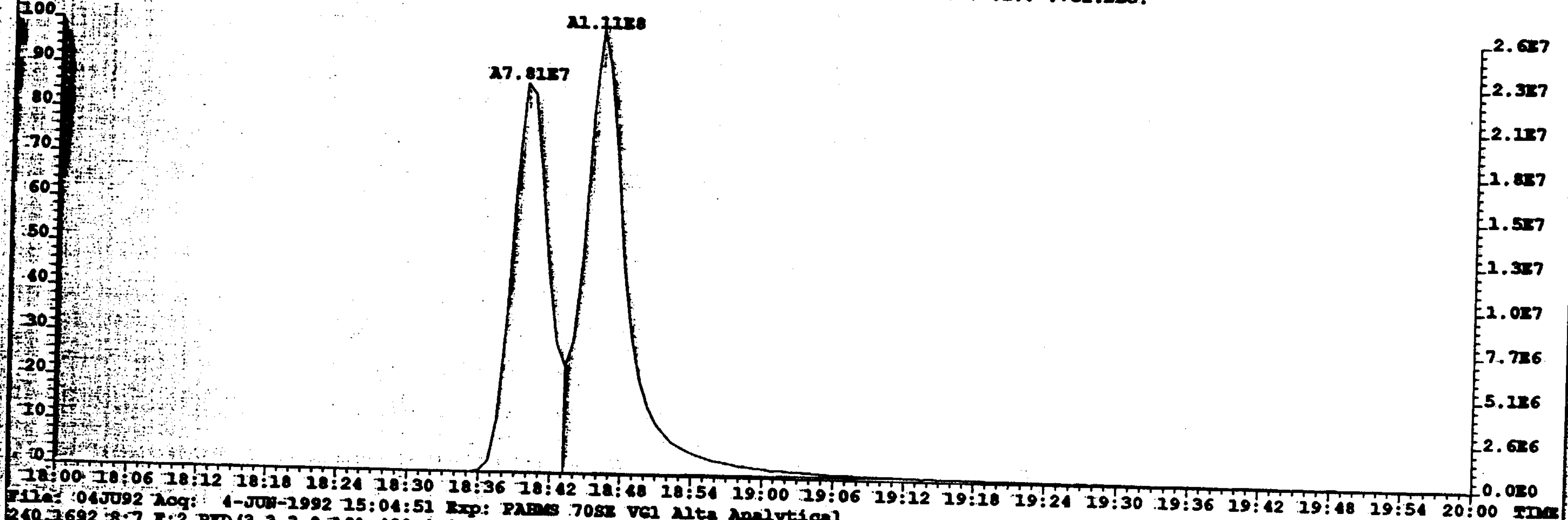


File: 04J092 Acq: 4-JUN-1992 15:04:51 Exp: PARMS 70SE VG1 Alta Analytical
244.1974 S:7 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:

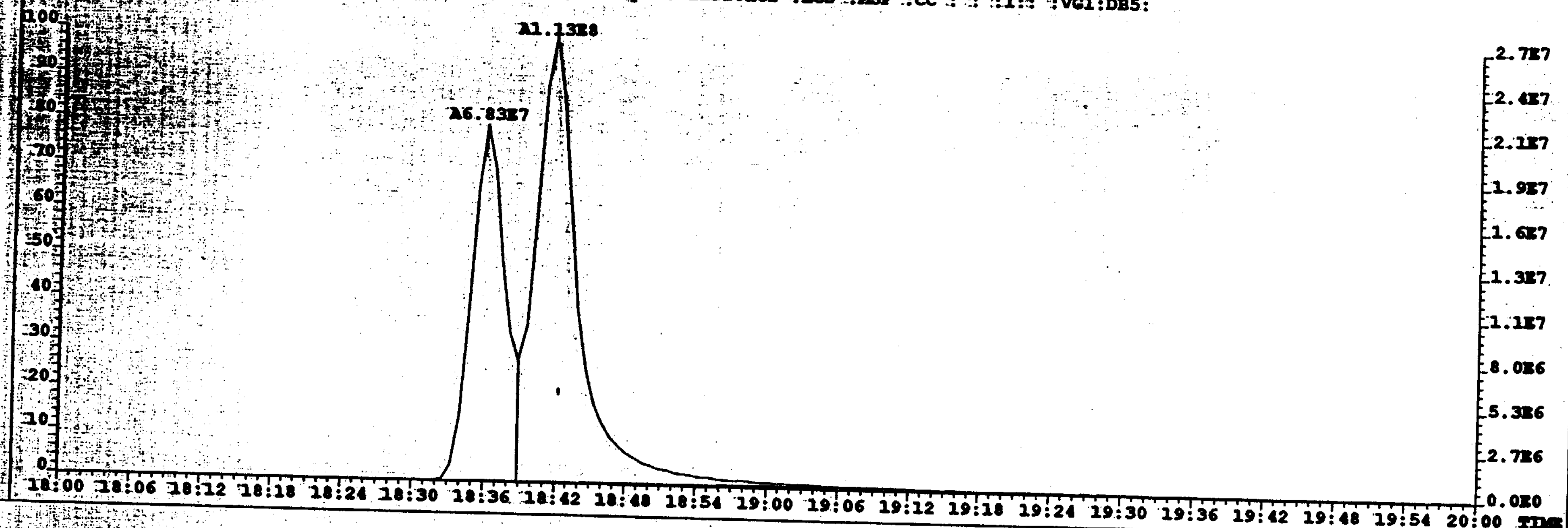



File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
202.0782 S:7 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:
A1.30E8
A1.30E8
100 90 80 70 60 50 40 30 20 10 0
5.2E7 4.7E7 4.2E7 3.6E7 3.1E7 2.6E7 2.1E7 1.6E7 1.0E7 5.2E6 0.0E0
15:30 15:36 15:42 15:48 15:54 16:00 16:06 16:12 16:18 16:24 16:30 16:36 16:42 16:48 16:54 17:00 17:06 17:12 17:18 17:24 17:30 TIME
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
212.1410 S:7 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:
A1.29E8
A1.17E8
100 90 80 70 60 50 40 30 20 10 0
5.4E7 4.8E7 4.3E7 3.7E7 3.2E7 2.7E7 2.1E7 1.6E7 1.1E7 5.4E6 0.0E0
15:30 15:36 15:42 15:48 15:54 16:00 16:06 16:12 16:18 16:24 16:30 16:36 16:42 16:48 16:54 17:00 17:06 17:12 17:18 17:24 17:30 TIME

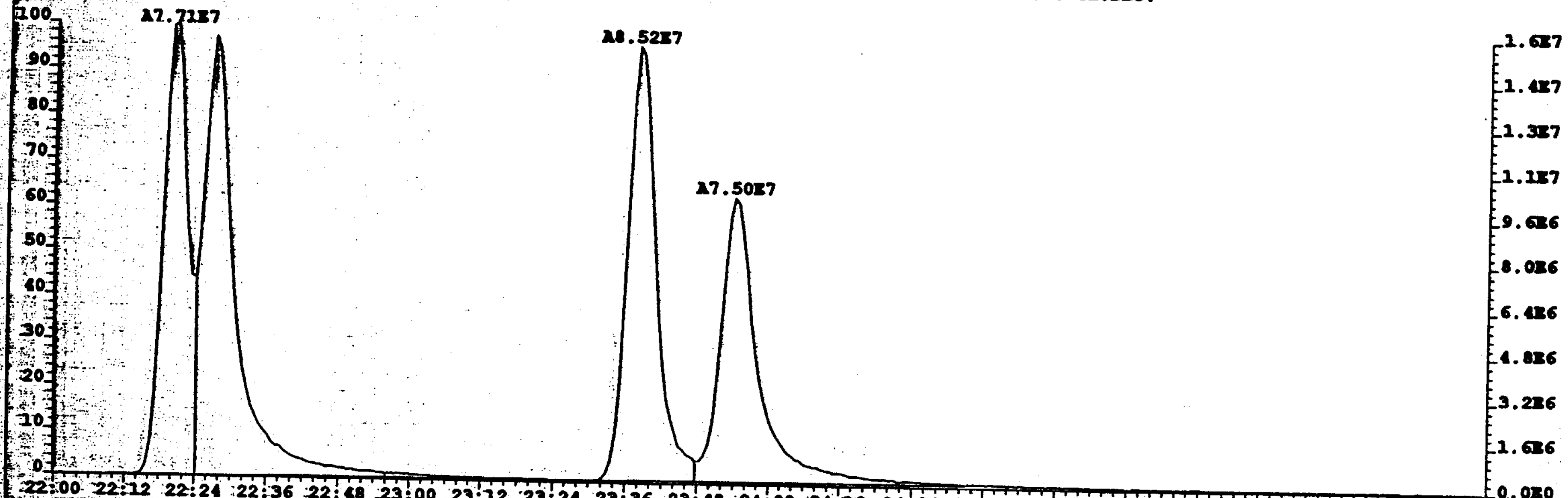
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
228.0939 S:7 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 ::LCS ::MSF :CC : : :1:: :VG1:DB5:



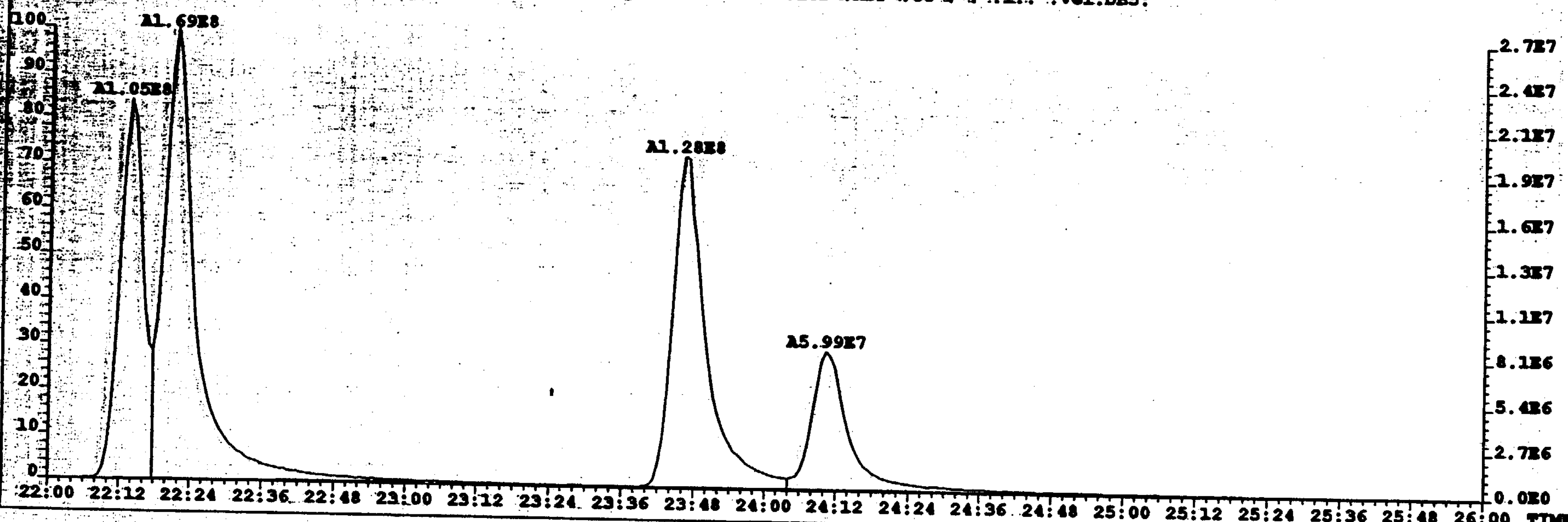
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
240.1692 S:7 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 ::LCS ::MSF :CC : : :1:: :VG1:DB5:



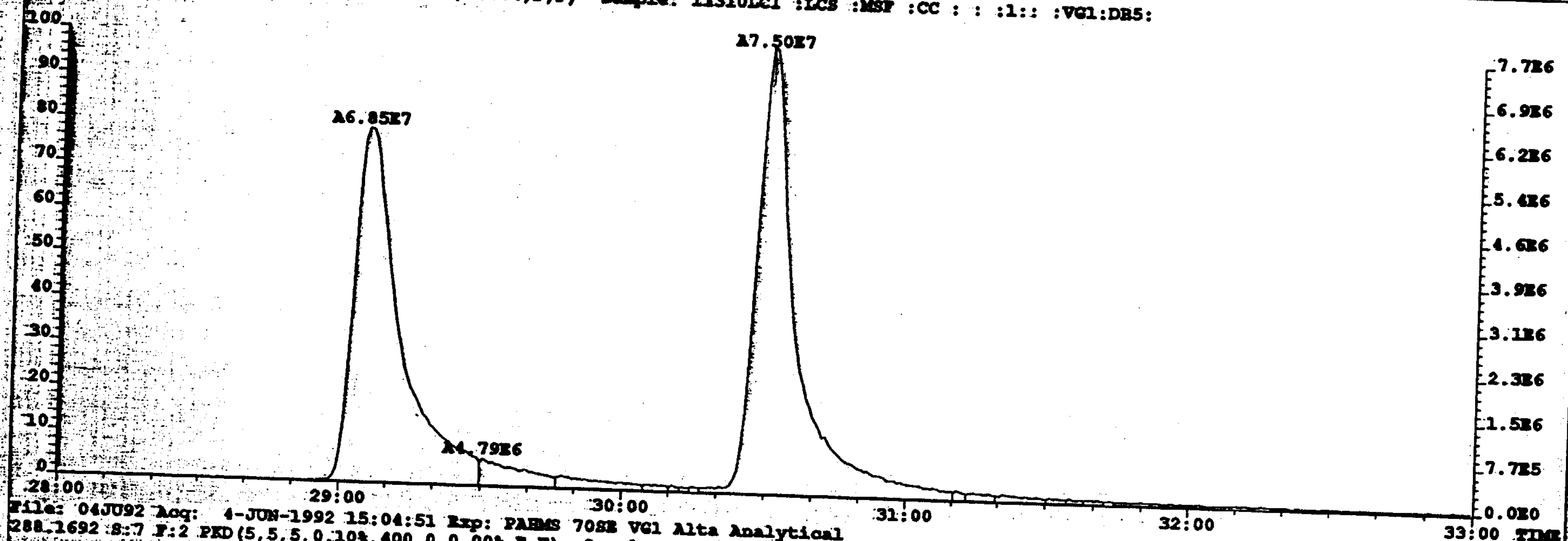
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
252.0939 S:7 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:



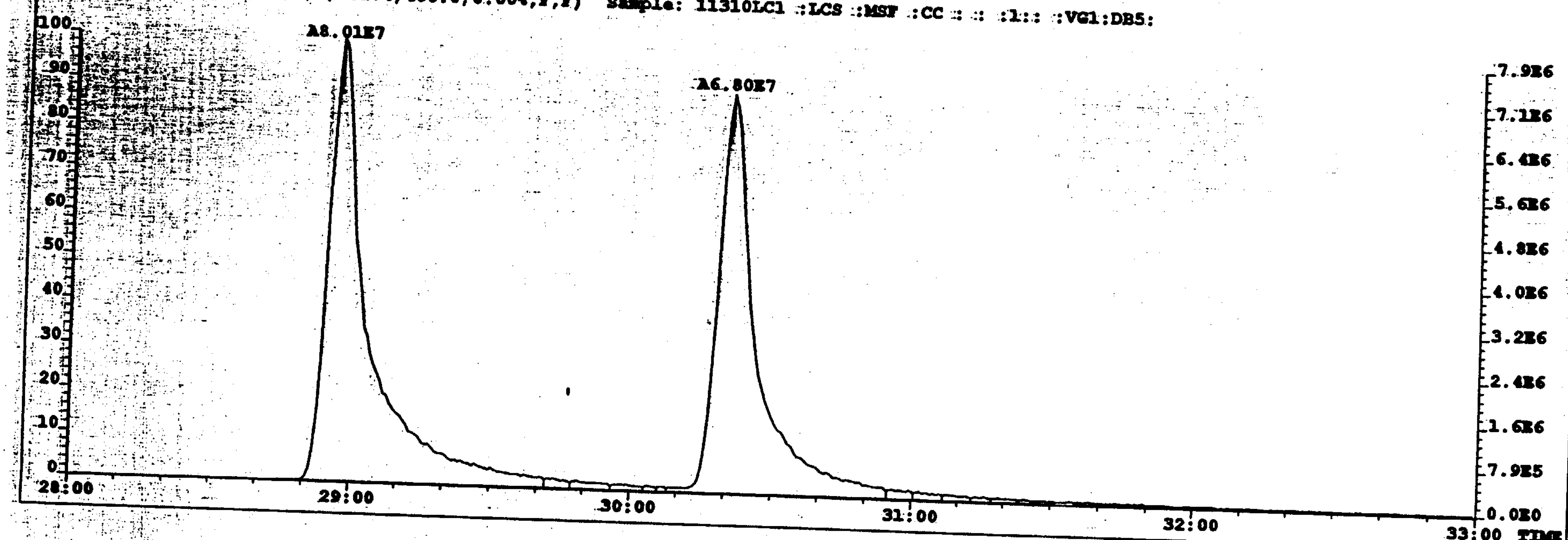
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
264.1692 S:7 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:



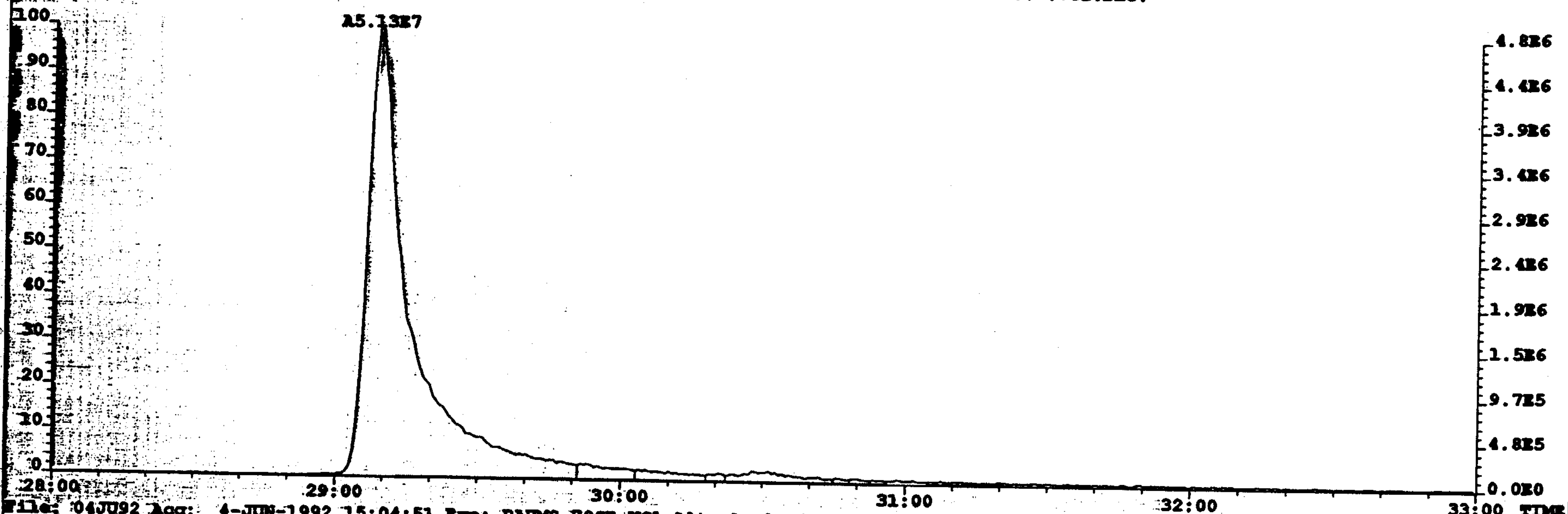
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
276.0939 S:7 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:



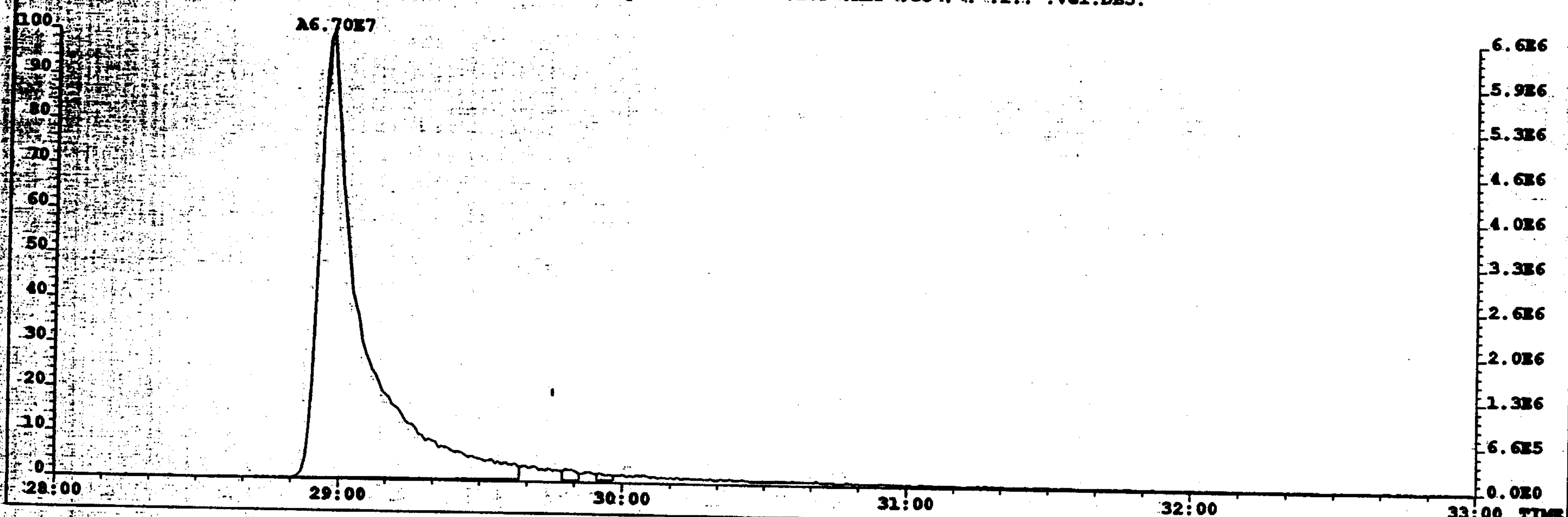
File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
288.1692 S:7 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:



File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
278.1096 S:7 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:



File: 04JU92 Acq: 4-JUN-1992 15:04:51 Exp: PAHMS 70SE VG1 Alta Analytical
292.1974 S:7 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310LC1 :LCS :MSF :CC : : :1:: :VG1:DB5:

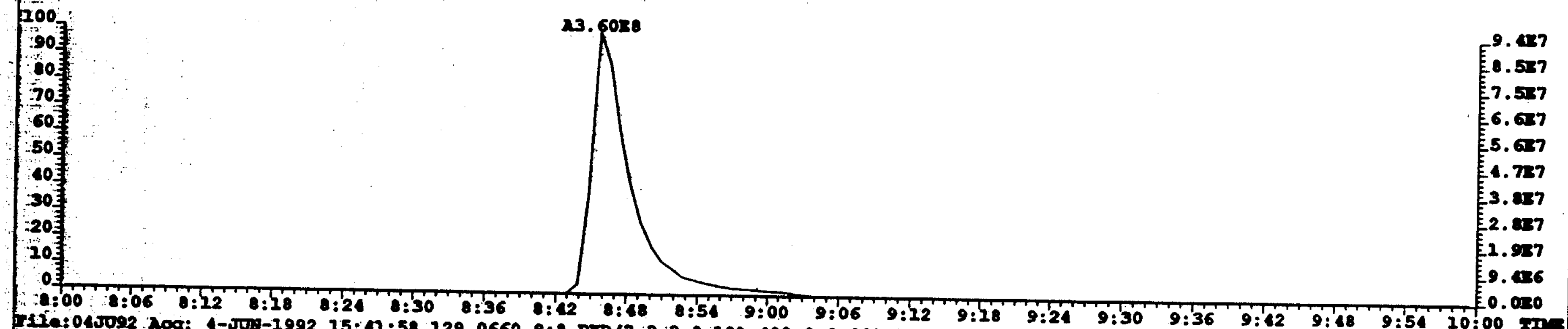


05-JUN-1992 09:22:28 AM   DIOXIN/FURAN RESULTS   911310LC2   1

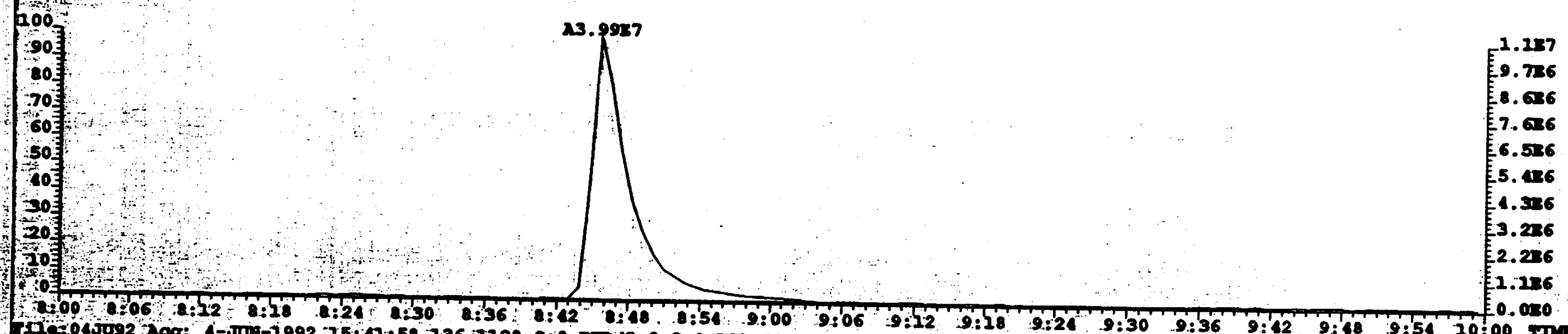
Mass Spec : VG1   Results : 04JU92081.RES   : PAH.TRG
GC Column : DB5   Date analyzed : 4-JUN-1992
Data file : 04JU92   11310LC2 :LCS DUP :MSF :CC : Cal : IPAH.RRF
ight : 1

Name	Total Response	Isotope Ratio		R.T. mm:ss		RRF	pg/ :	% Rec
D1-2-METHYL-NAPHTHALENE	221800200	1:00	T	10: 15	Y	1	200.00	
D8-NAPHTHALENE	296033800	1:00	T	8: 43	Y	1.9e+00	143.05	72
NAPHTHALENE	719312800	1:00	T	8: 46	Y	9.9e-01	488.75 98%	
NAPHTHALENE-2ND	79870700	1:00	T	8: 46	Y	1.0e-01	516.97 103%	
D8-ACENAPTHYLENE	252482600	1:00	T	11: 47	Y	1.6e+00	143.83	72
ACENAPTHYLENE	273559200	1:00	T	11: 49	Y	1.1e+00	199.78 100%	
ACENAPTHYLENE-2ND	35810860	1:00	T	11: 49	Y	1.4e-01	196.81 98%	
D10-ACENAPHTHENE	165199080	1:00	T	12: 3	Y	9.9e-01	150.67	75
ACENAPHTHENE	171540140	1:00	T	12: 7	Y	1.1e+00	192.84 96%	
D10-FLUORENE	178874380	1:00	T	12: 55	Y	1.1e+00	146.08	73
FLUORENE	166076500	1:00	T	12: 57	Y	9.5e-01	195.24 98%	
D10-PHENANTHRENE	154598440	1:00	T	14: 18	Y	9.3e-01	150.64	75
PHENANTHRENE	477187000	1:00	T	14: 20	Y	1.3e+00	461.77 92%	
PHENANTHRENE-2ND	50114440	1:00	T	14: 20	Y	1.3e-01	483.53 97%	
ANTHRACENE	198870280	1:00	T	14: 24	Y	1.4e+00	178.94 89%	
D10-ANTHRACENE	101849920	1:00	T	14: 23	Y	8.7e-01	105.71	53
D12-PERYLENE	98639540	1:00	T	24: 12	Y	1	200.00	
D10-FLUORANTHENE	240577600	1:00	T	15: 55	Y	2.1e+00	235.69	118
FLUORANTHENE	236594200	1:00	T	15: 56	Y	1.2e+00	170.18 85%	
D10-PYRENE	219770400	1:00	T	16: 17	Y	1.9e+00	236.95	118
PYRENE	248015600	1:00	T	16: 19	Y	1.3e+00	179.97 90%	
D12-BENZ(A)ANTHRACENE	124594900	1:00	T	18: 38	Y	1.3e+00	197.78	99
BENZ(A)ANTHRACENE	143388440	1:00	T	18: 41	Y	1.2e+00	187.41 94%	
D12-CHRYSENE	199148360	1:00	T	18: 43	Y	2.0e+00	202.65	101
CHRYSENE	199197400	1:00	T	18: 48	Y	1.0e+00	195.44 98%	
D12-BENZO(B)FLUORANTHENE	189460600	1:00	T	22: 15	Y	8.9e-01	429.58	107
BENZO(B)FLUORANTHENE	139388080	1:00	T	22: 22	Y	1.5e+00	194.84 97%	
D12-BENZO(K)FLUORANTHENE	296117000	1:00	T	22: 23	Y	1.5e+00	395.34	99
BENZO(K)FLUORANTHENE	177651580	1:00	T	22: 29	Y	1.3e+00	189.62 95%	
BENZO-E-PYRENE	156358940	1:00	T	23: 40	Y	1.1e+00	199.96 100%	
D12-BENZO(A)PYRENE	233172400	1:00	T	23: 49	Y	1.3e+00	369.25	92
BENZO(A)PYRENE	140771840	1:00	T	23: 56	Y	1.2e+00	207.42 104%	
D12-INDENO()PYRENE	143138040	1:00	T	28: 59	Y	6.7e-01	431.40	108
INDENO(1,2,3-CD)PYRENE	132053680	1:00	T	29: 7	Y	1.9e+00	195.12 98%	
14-DIBENZO-AH-ANTHRACENE	121702060	1:00	T	29: 0	Y	6.0e-01	408.64	102
DIBENZO-AH-ANTHRACENE	94189400	1.00	T	29: 10	Y	1.4e+00	219.51 110%	
D12-BENZO(GHI)PERYLENE	120364780	1:00	T	30: 22	Y	5.9e-01	416.06	104
BENZO(GHI)PERYLENE	132995480	1.00	T	30: 32	Y	2.2e+00	201.26 101%	
D10-PYRENE	240577600	1:00	T	15: 55	Y	1.0e+00	400.00	
D14-TERPHENYL	69710	1:00	T	16: 25	Y	1.1e+00	0.11	0
D12-BENZO(A)PYRENE	233172400	1.00	T	23: 49	Y	1.0e+00	800.00	
D12-BENZO-E-PYRENE	* No Peak	0:00	T	23: 32	N	4.3e-01	0.00	0

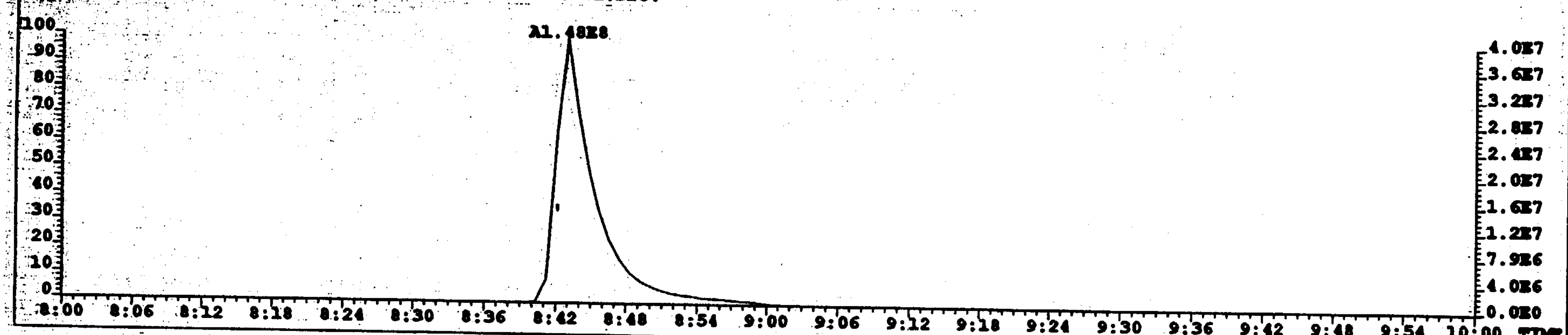
File:04JU92 Acq: 4-JUN-1992 15:41:58 128.0626 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:11310LC2 :LCS DUP :MSF :CC :: :: :1:: :VG1:DB5:

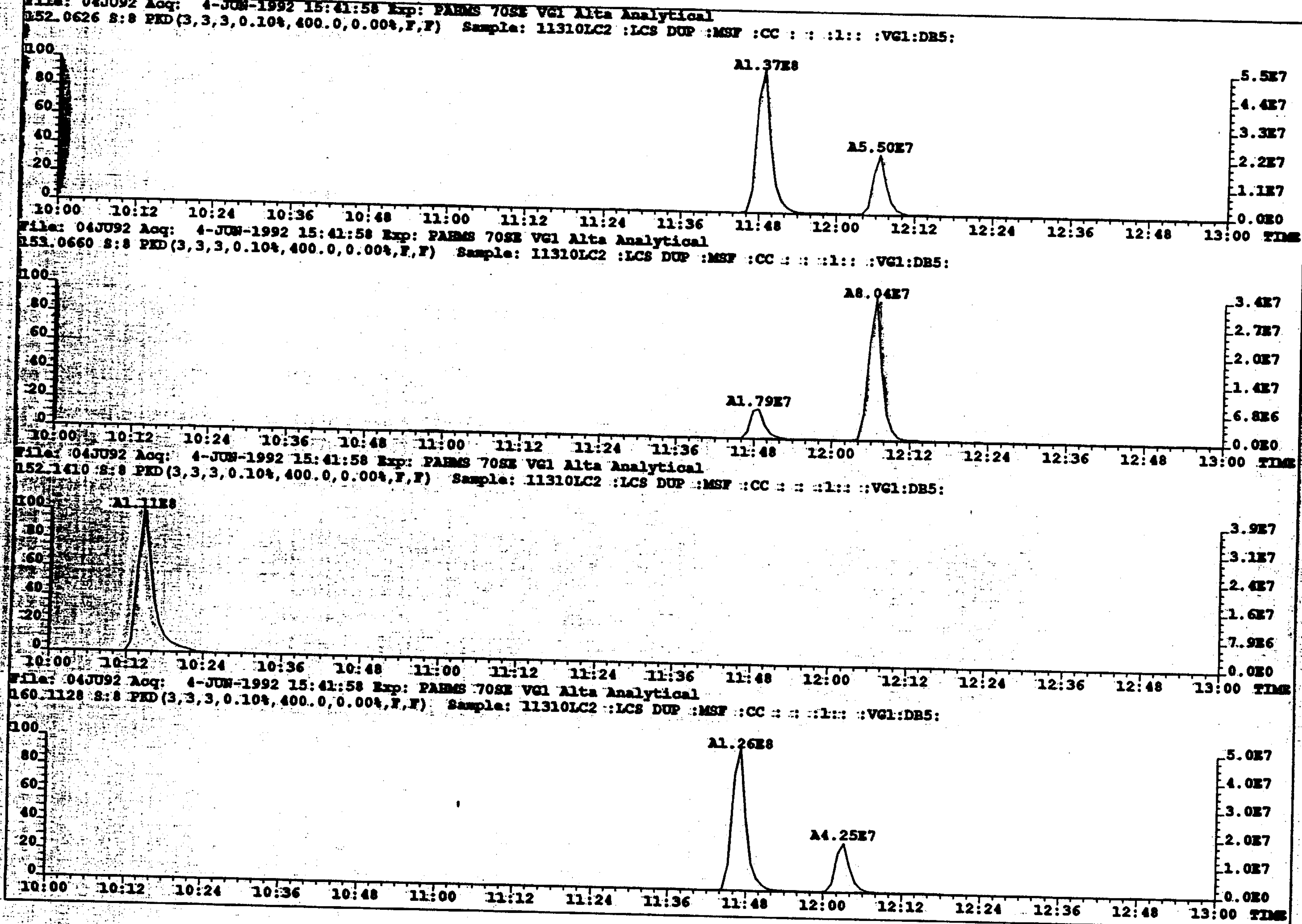


File:04JU92 Acq: 4-JUN-1992 15:41:58 129.0660 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:11310LC2 :LCS DUP :MSF :CC :: :: :1:: :VG1:DB5:

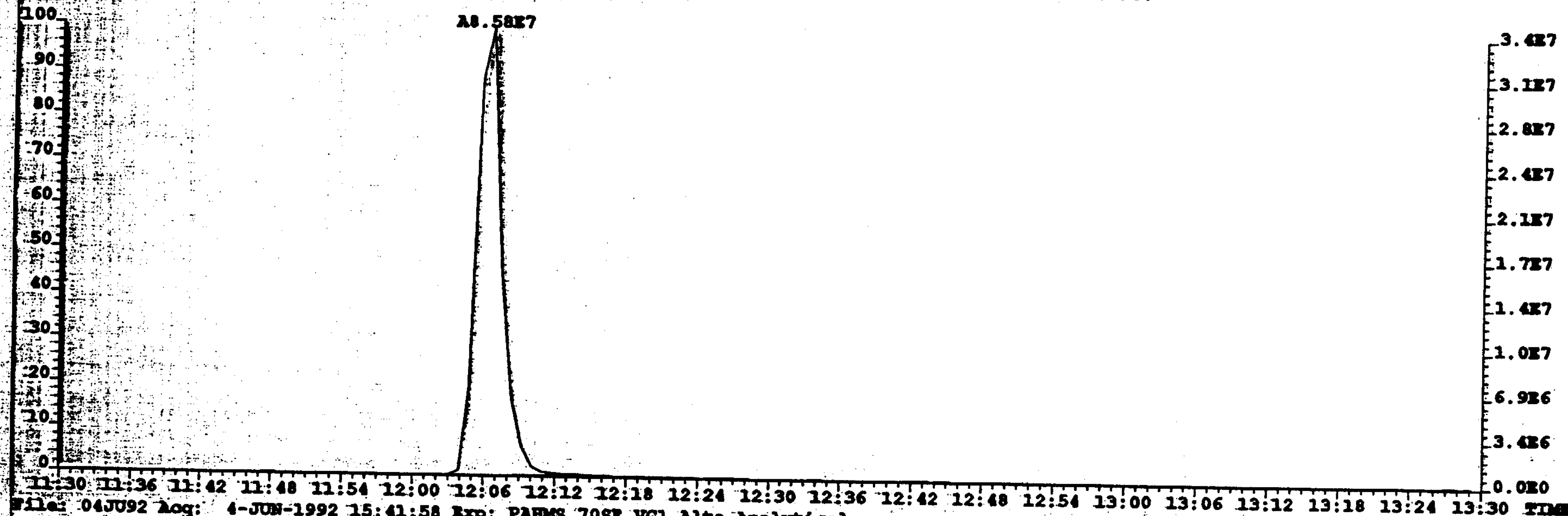


File:04JU92 Acq: 4-JUN-1992 15:41:58 136.1128 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:11310LC2 :LCS DUP :MSF :CC :: :: :1:: :VG1:DB5:

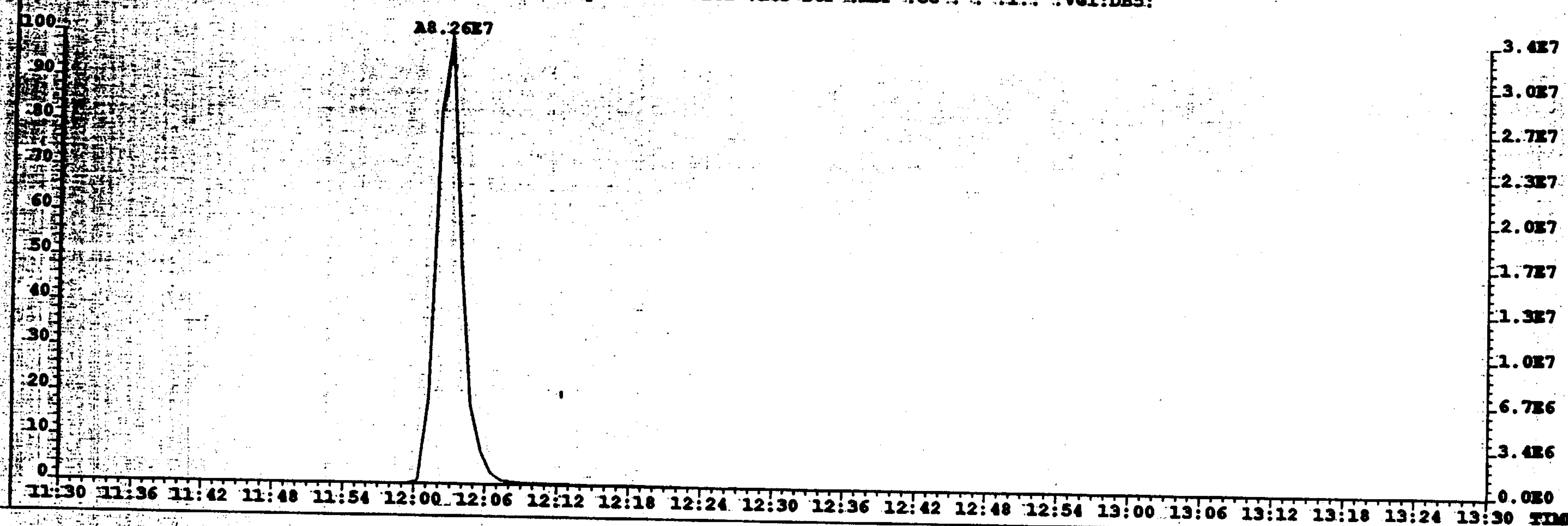



File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
152.0626 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC : : :1:: :VG1:DB5:
A1.37E8
A5.50E7
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
153.0660 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC :: :: ::1:: :VG1:DB5:
A1.79E7
A8.04E7
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
152.1410 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC :: :: ::1:: ::VG1:DB5:
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
160.1128 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC :: :: ::1:: ::VG1:DB5:
A1.26E8
A4.25E7
TIME

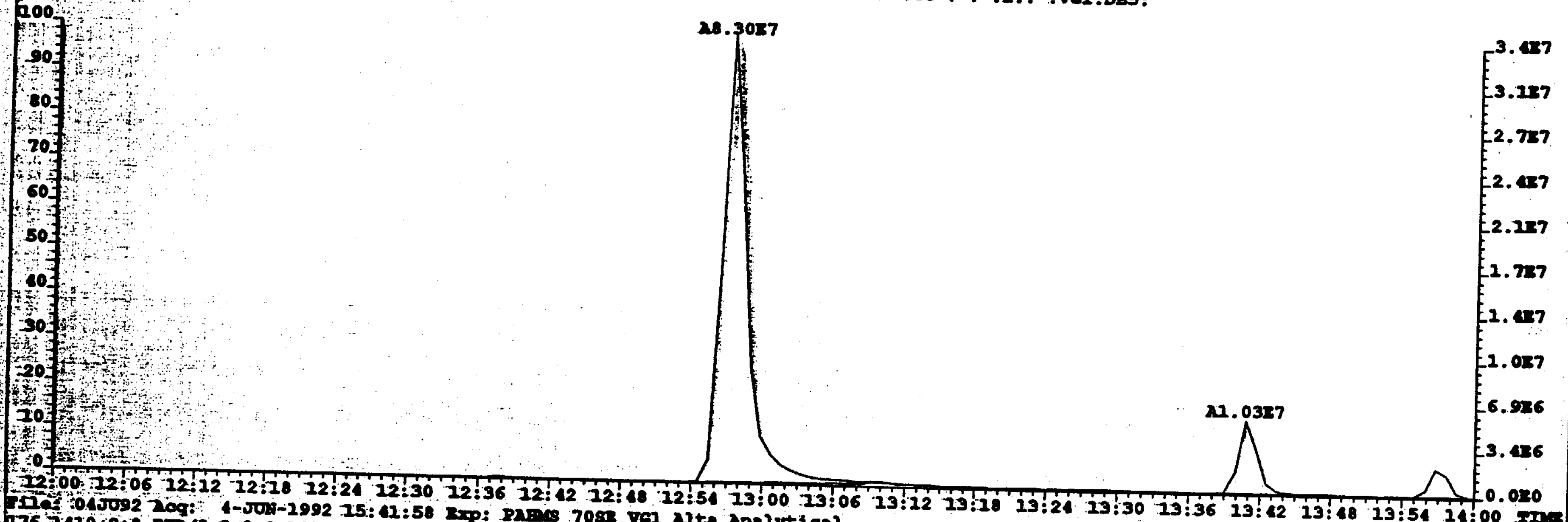
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
154.0783 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC : : :1:: :VG1:DB5:



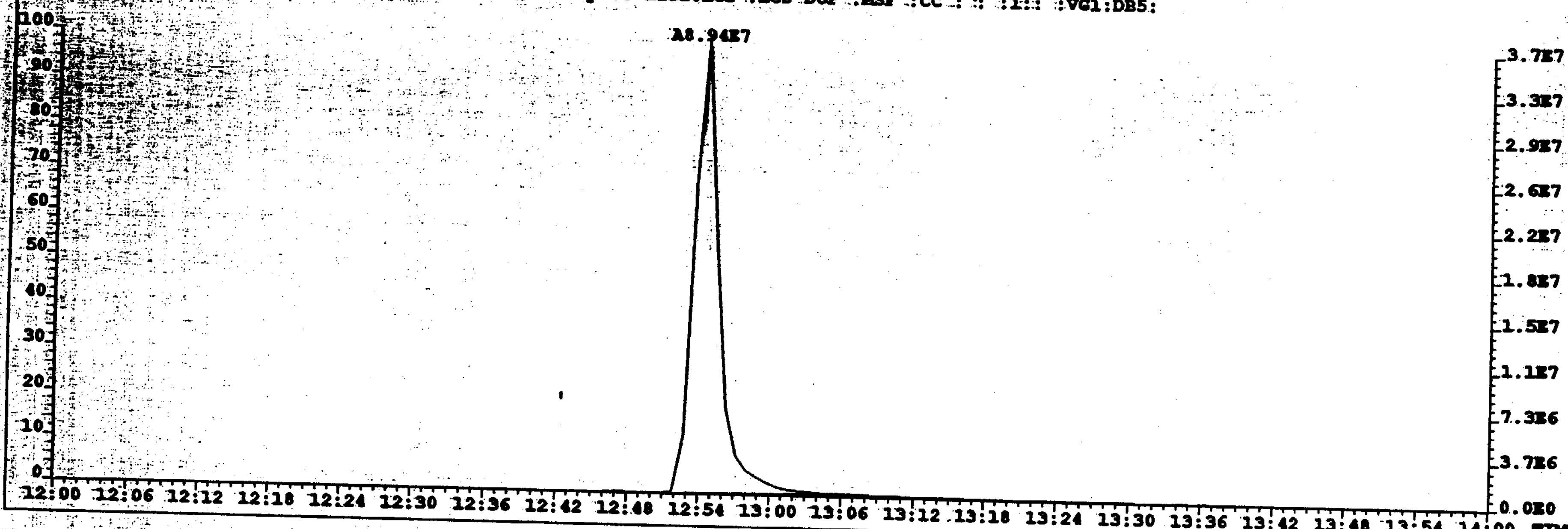
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
164.1410 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC : : :1:: :VG1:DB5:



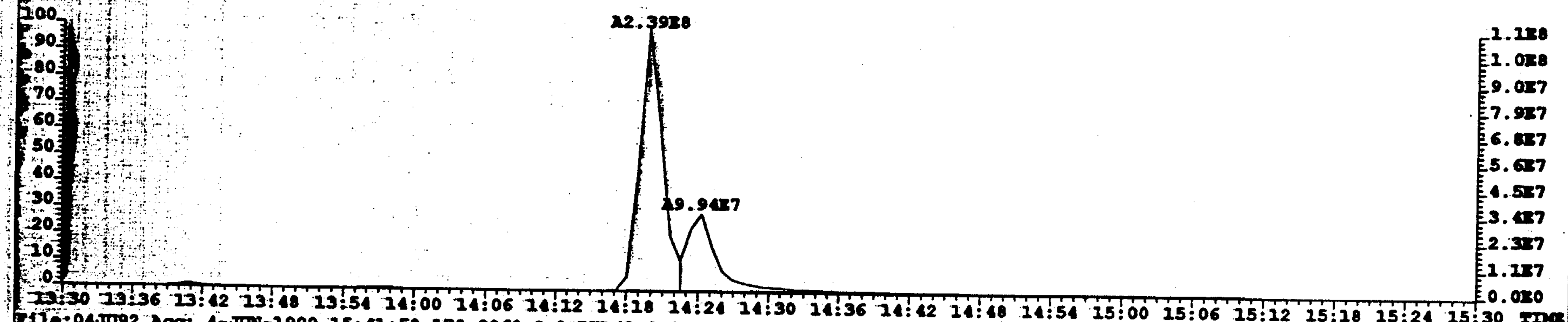
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
166.0783 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC : : :1:: :VG1:DB5:



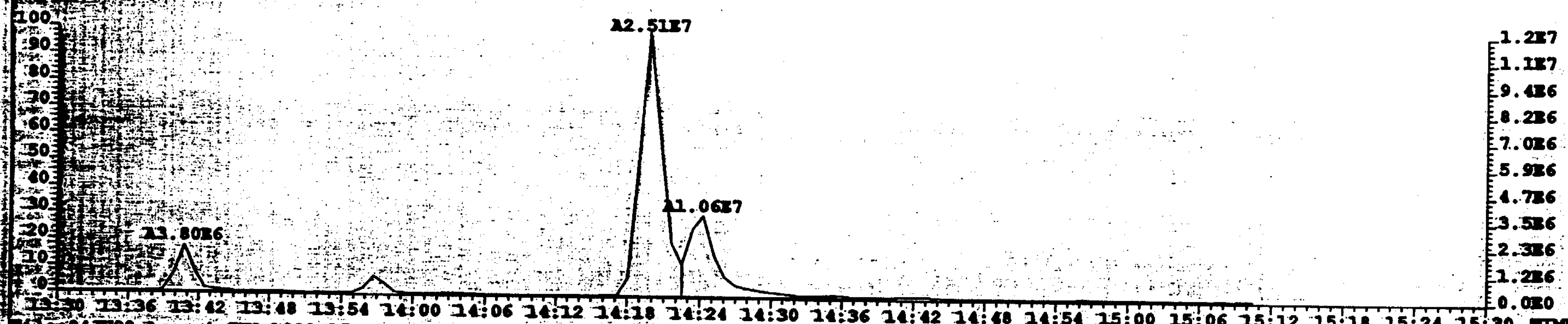
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
176.1410 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP ::MSF :CC : :: :1:: :VG1:DB5:



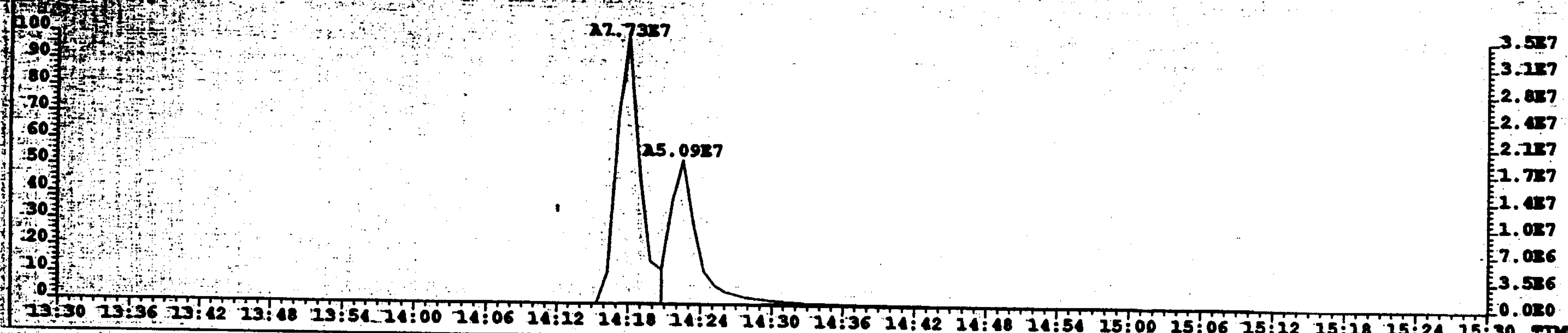
File:04JU92 Acq: 4-JUN-1992 15:41:58 178.0783 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:11310LC2 :LCS DUP ::MSF ::CC : : :1:: :VG1:DB5:



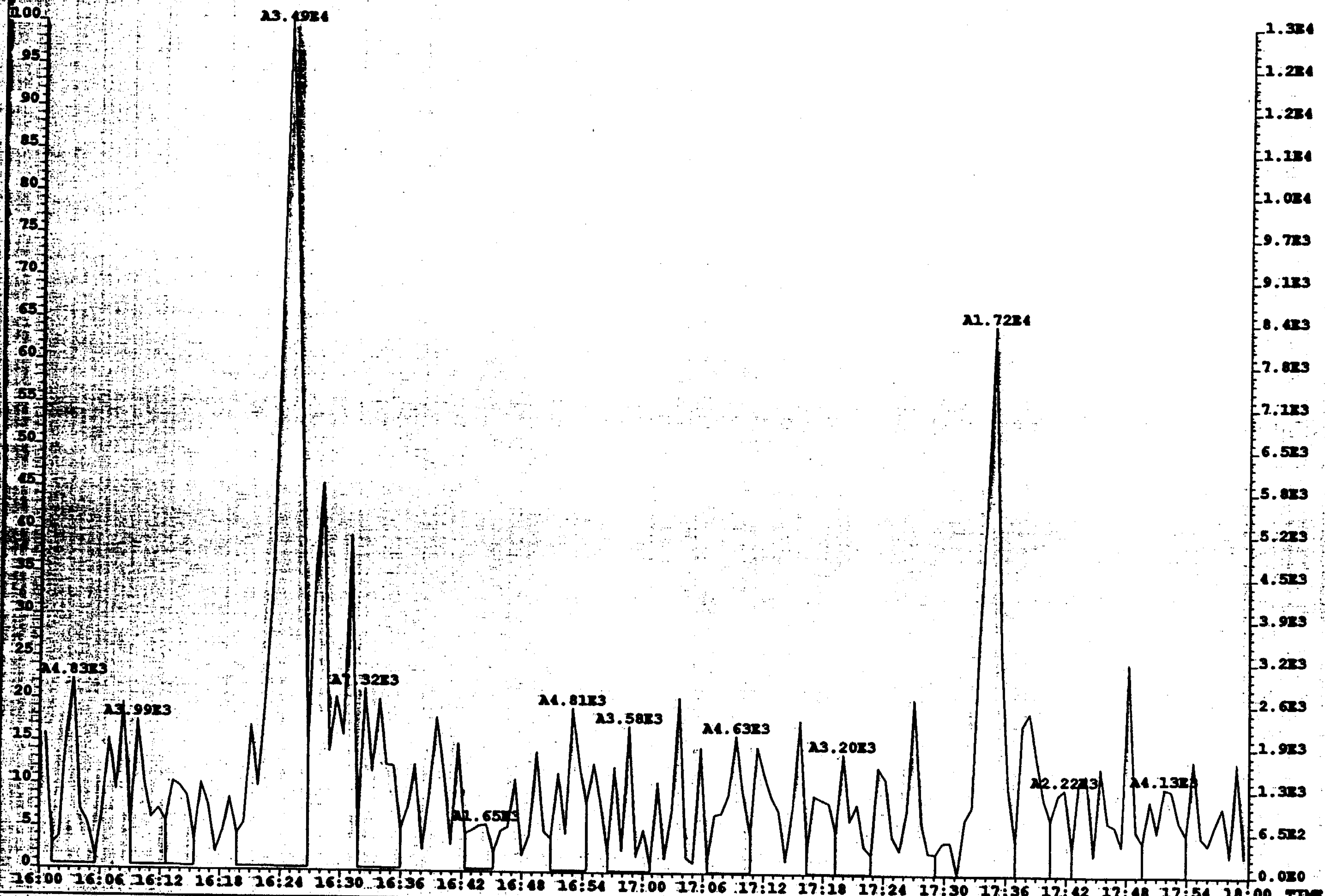
File:04JU92 Acq: 4-JUN-1992 15:41:58 179.0860 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:11310LC2 ::LCS DUP ::MSF ::CC :: : ::1:: ::VG1:DB5:



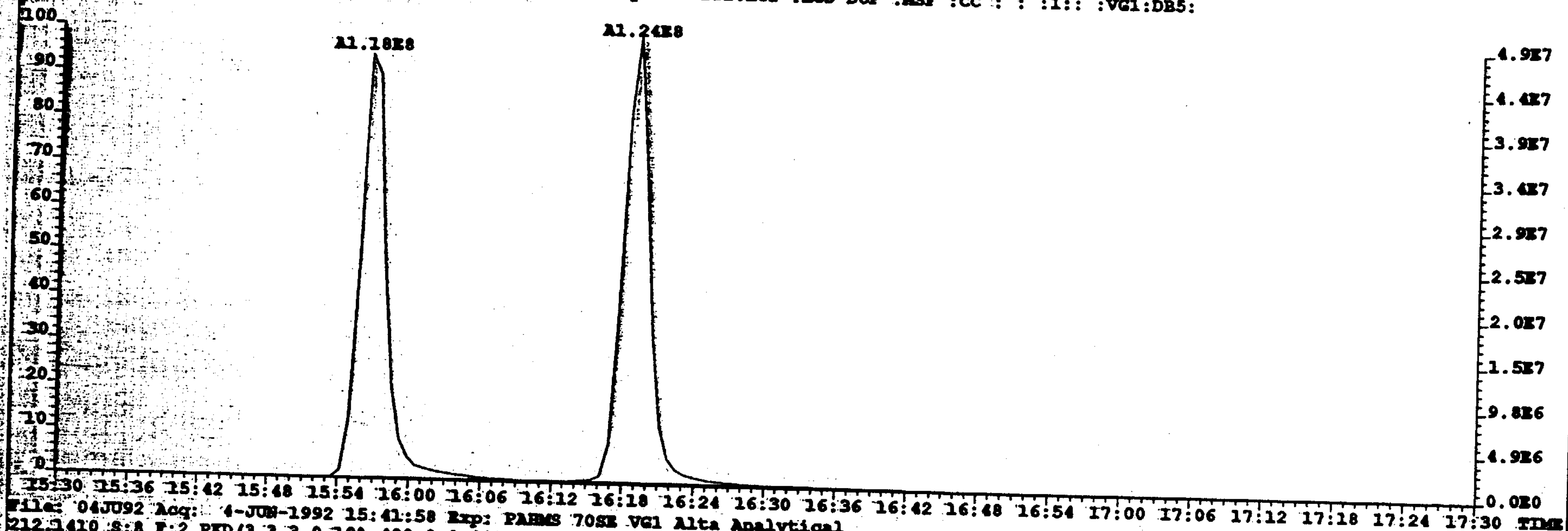
File:04JU92 Acq: 4-JUN-1992 15:41:58 188.1410 S:8 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:11310LC2 ::LCS DUP ::MSF ::CC :: : ::1:: ::VG1:DB5:



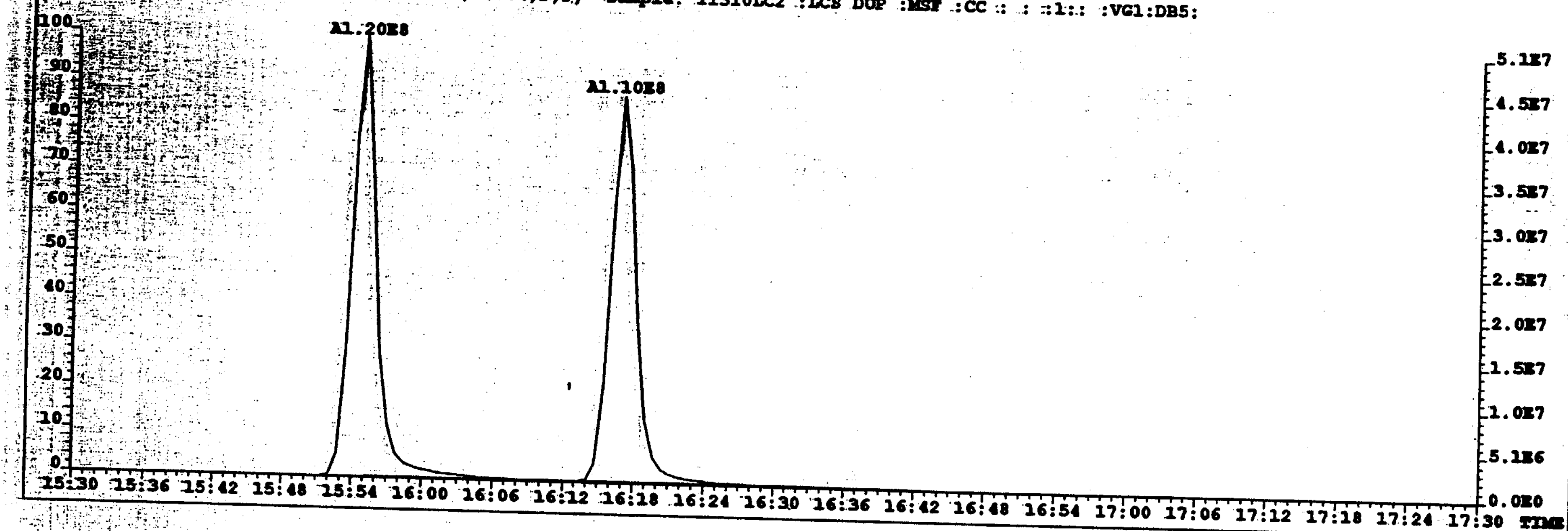
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
244.1974 S:8 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC : : :1:: :VG1:DB5:



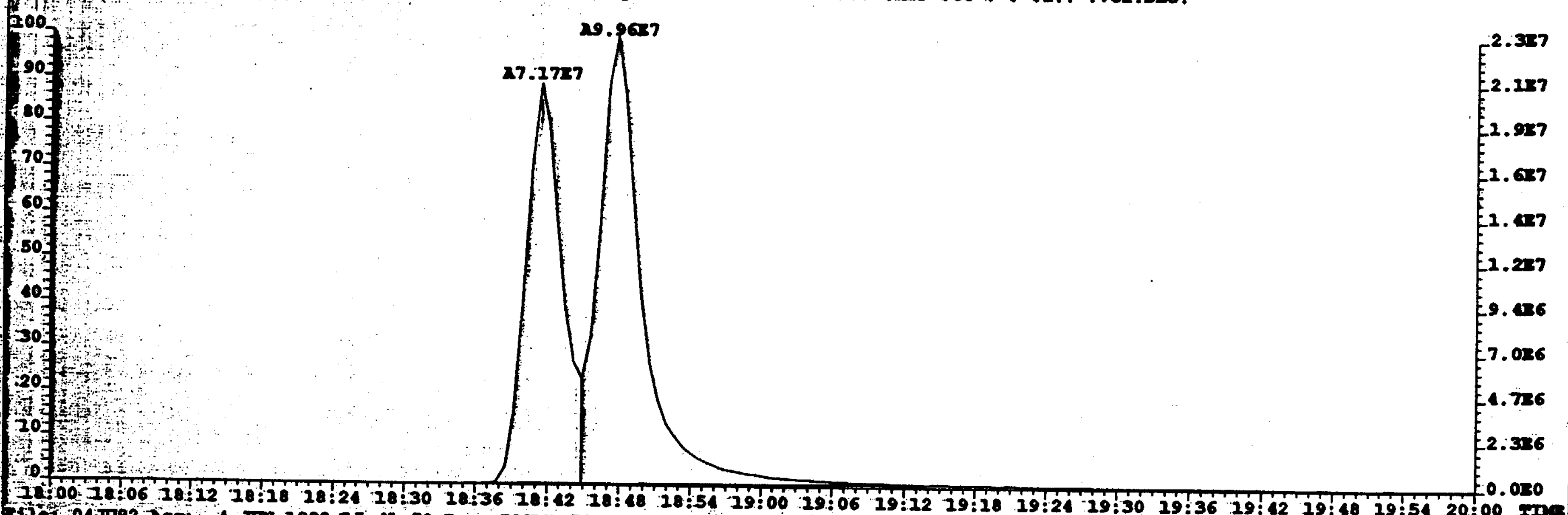
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
202.0782 S:8 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC : : :1:: :VG1:DB5:



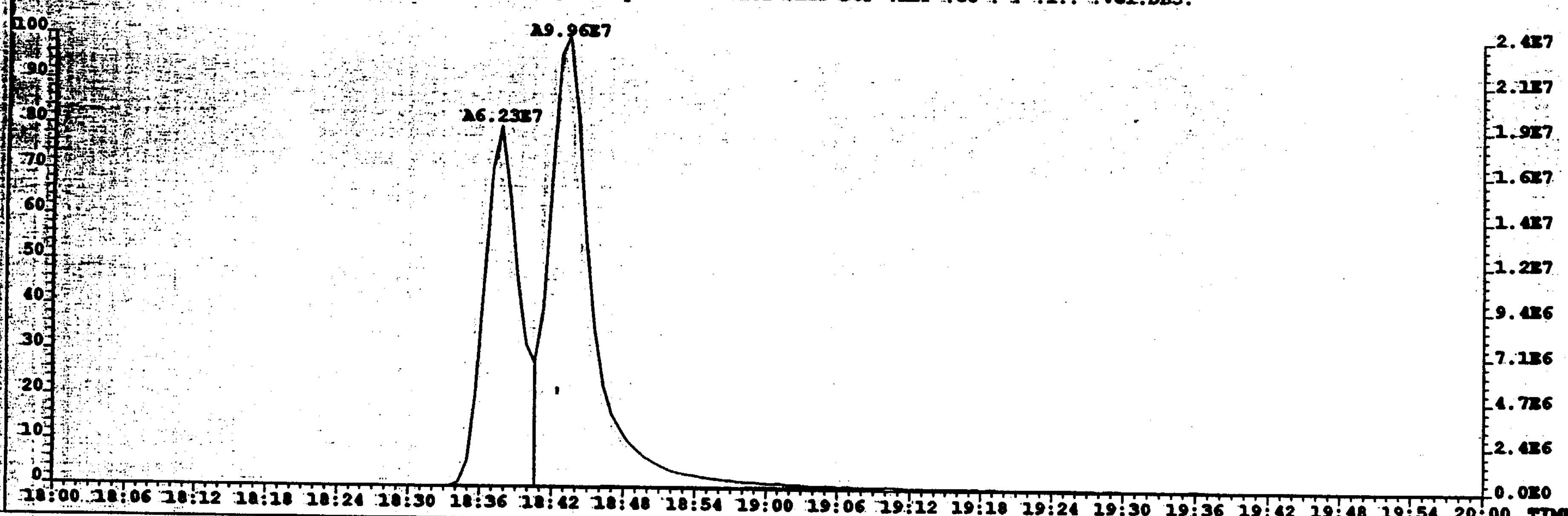
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
212.1410 S:8 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC : : :1:: :VG1:DB5:



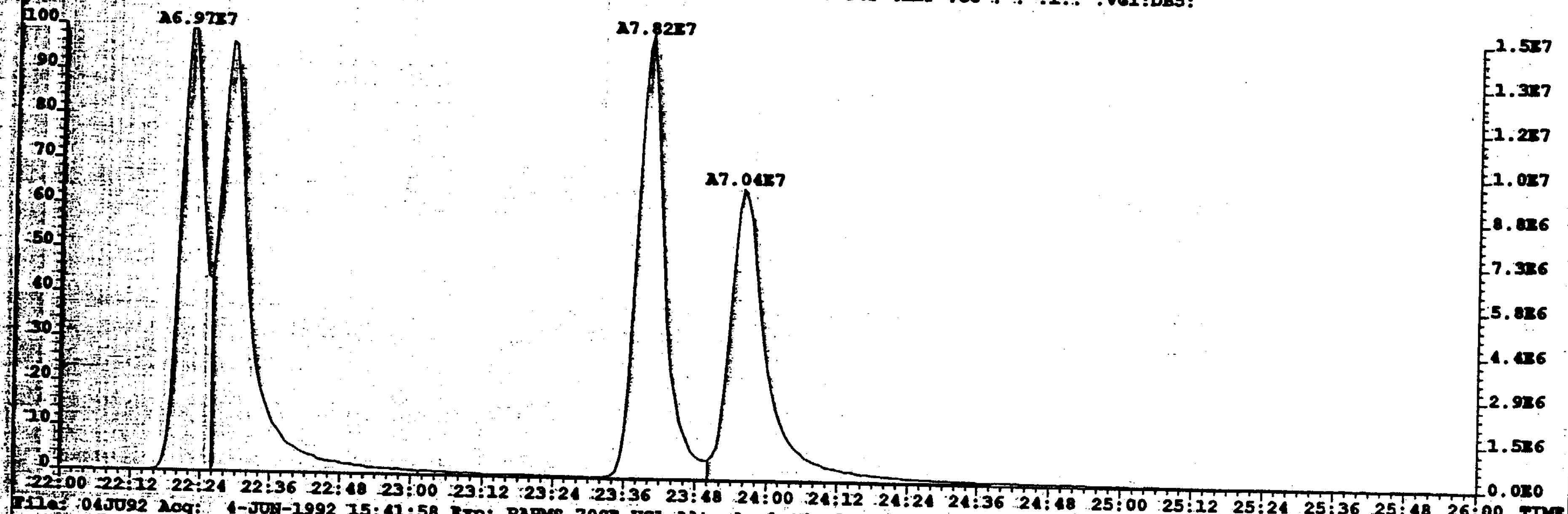
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
228.0939 S:8 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC : : :1:: :VG1:DB5:



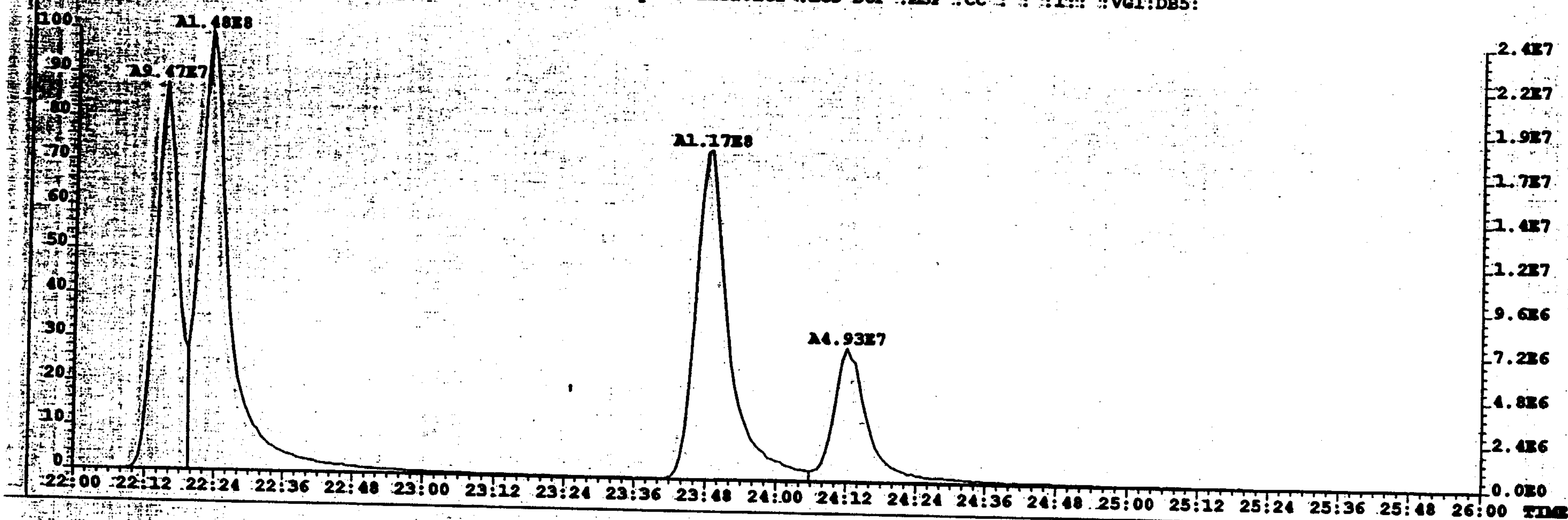
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
240.1692 S:8 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC : : :1:: :VG1:DB5:



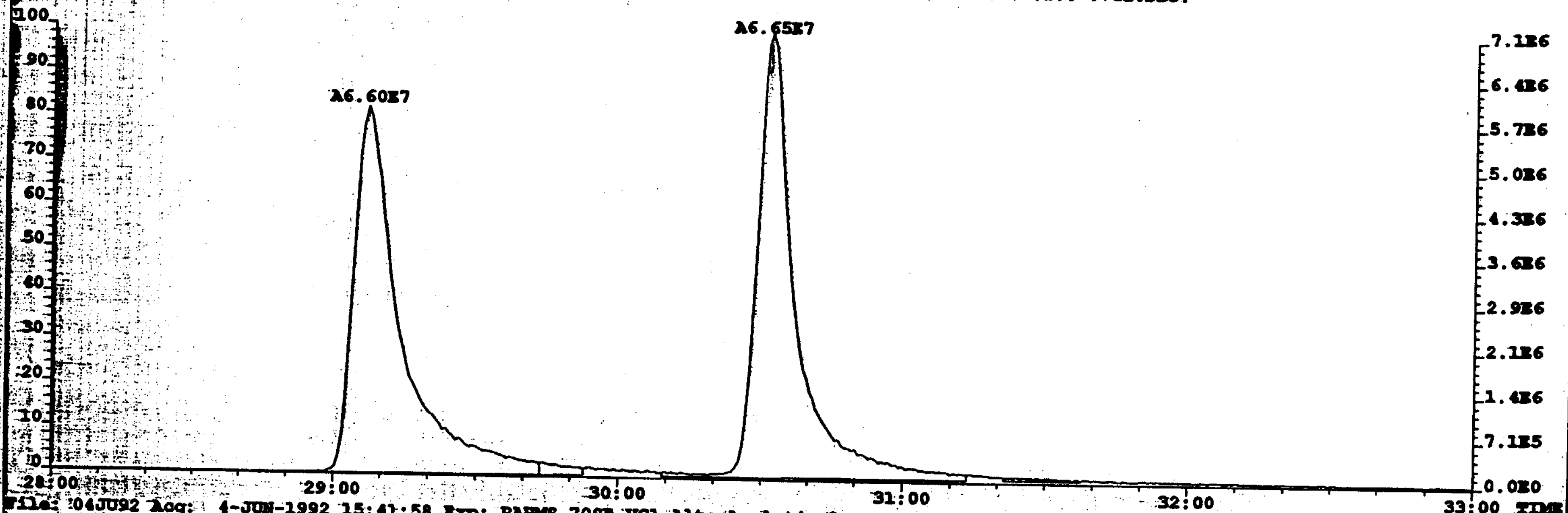
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
252.0939 S:8 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC : : :1:: :VG1:DB5:



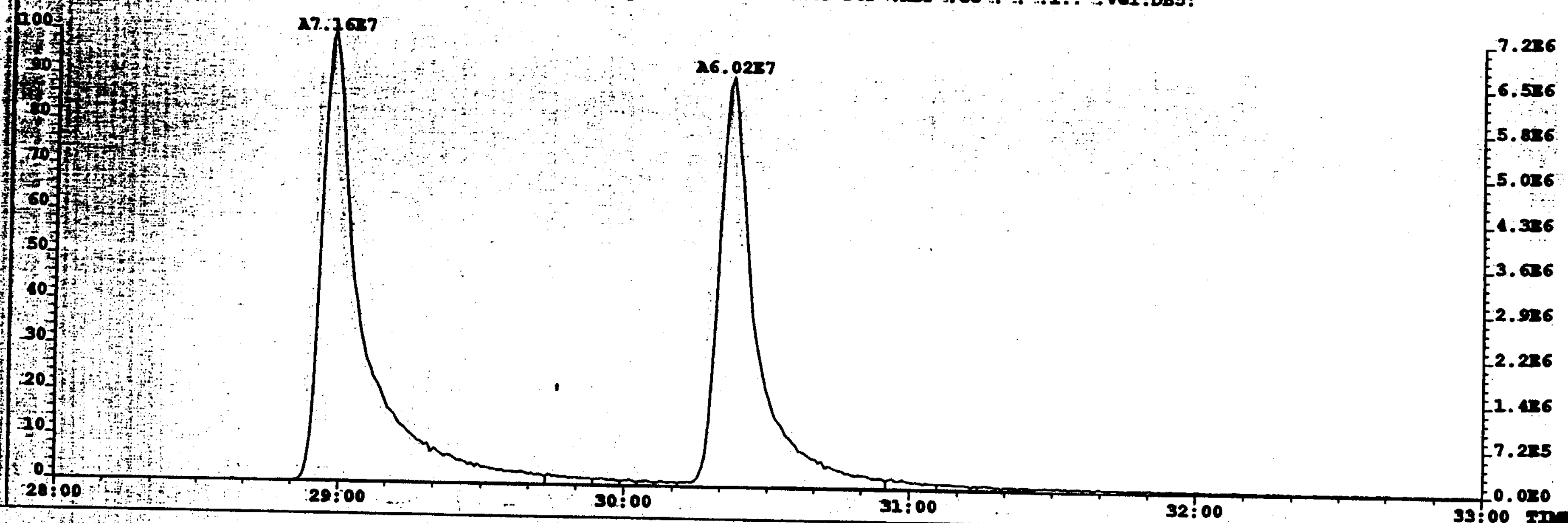
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
264.1692 S:8 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC : : :1:: :VG1:DB5:



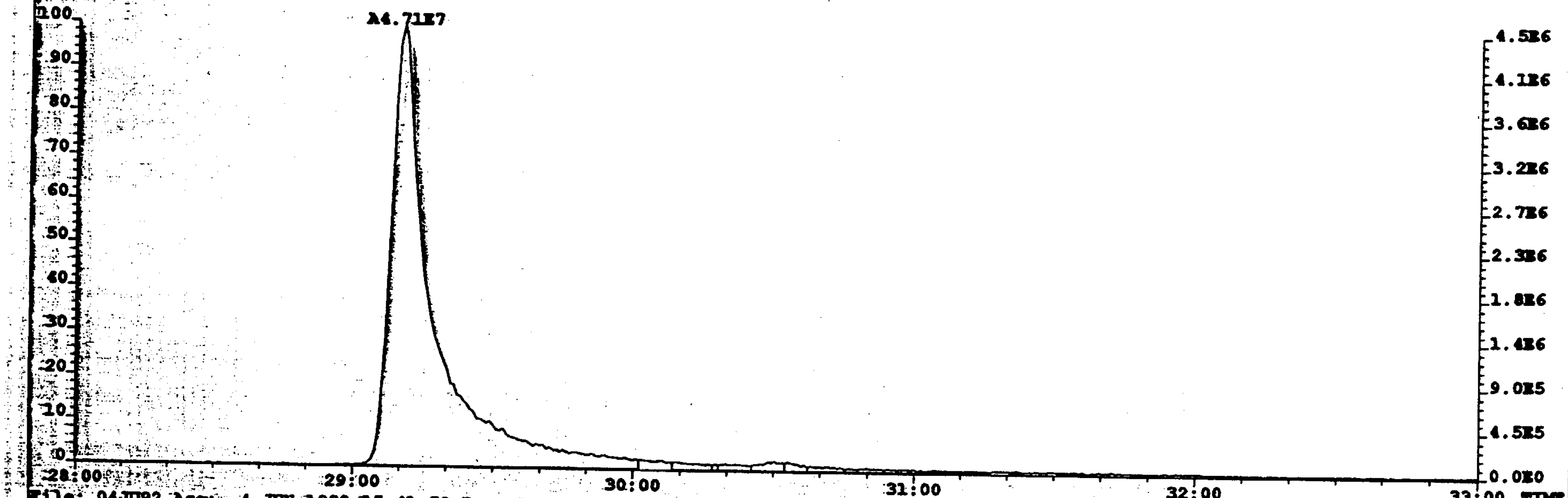
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
276.0939 S:8 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC : : :1:: :VG1:DB5:



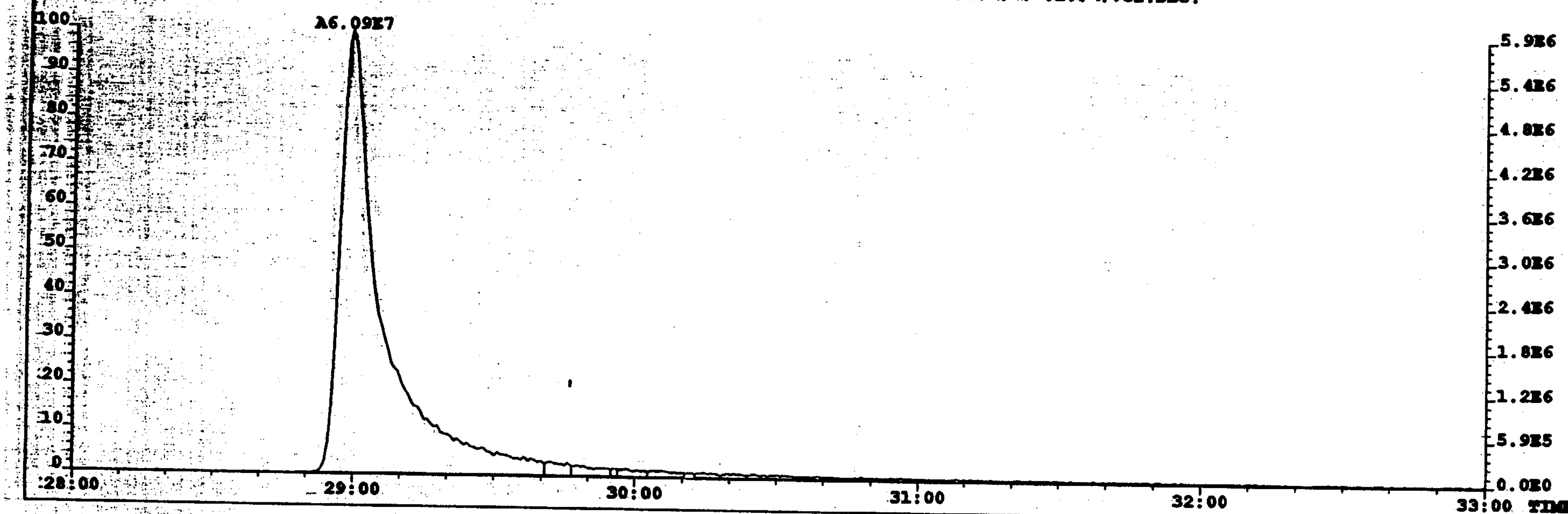
File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
288.1692 S:8 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC :: :: ::1:: :VG1:DB5:



File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
278.1096 S:8 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC : : :1:: :VG1:DB5:



File: 04JU92 Acq: 4-JUN-1992 15:41:58 Exp: PAHMS 70SE VG1 Alta Analytical
292.1974 S:8 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 11310LC2 :LCS DUP :MSF :CC :: :: :1:: :VG1:DB5:

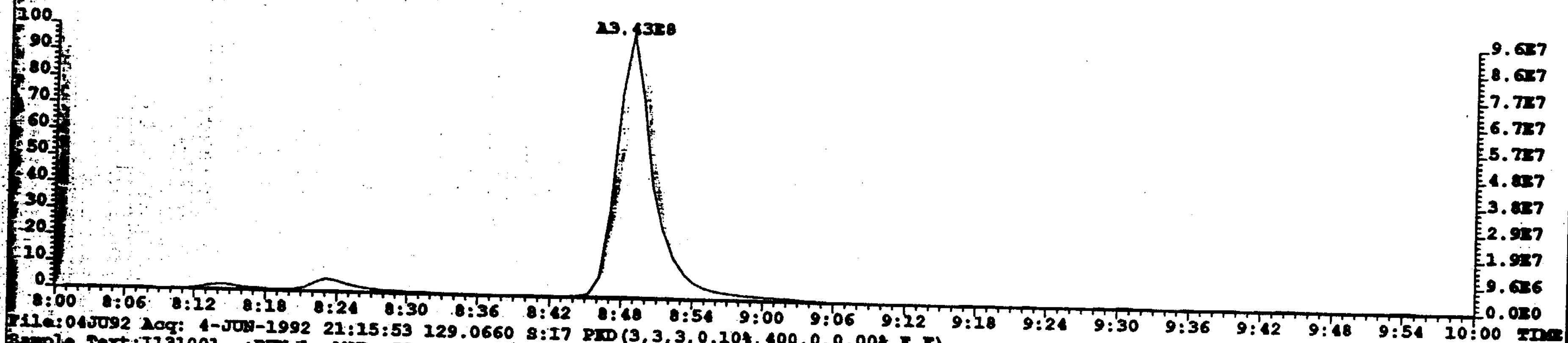


05-JUN-1992 09:30:28 AM DIOXIN/FURAN RESULTS 11310-1 1

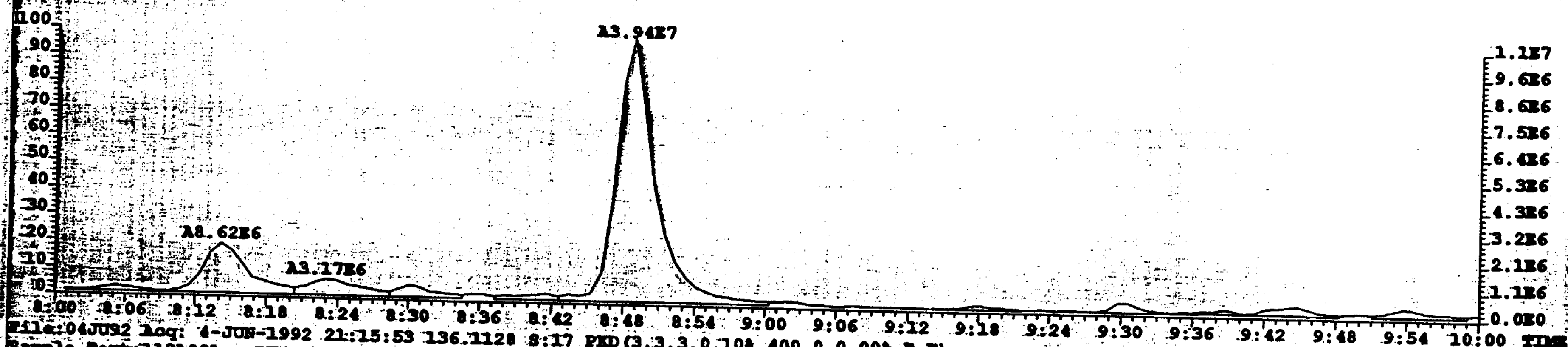
Mass Spec : VG1 Results : 04JU92171.RES : PAH.TRG
GC Column : DB5 Date analyzed : 4-JUN-1992
Data file : 04JU92 1131001 RUN 1 MSF :CC : : Cal : IPAH.RRF
ght : 1

Name	Total Response	Isotope Ratio		R.T mm:ss		RRF	pg/ :	% Rec
D1-2-METHYL-NAPHTHALENE	125765520	1.00	T	10: 16	Y	1	200.00	
D8-NAPHTHALENE	60425100	1.00	T	8: 46	Y	1.9e+00	51.49	26
NAPHTHALENE	685654600	1.00	T	8: 49	Y	9.9e-01	2282.43 2300	
NAPHTHALENE-2ND	78857560	1.00	T	8: 49	Y	1.0e-01	2500.62	
D8-ACENAPTHYLENE	88099380	1.00	T	11: 47	Y	1.6e+00	88.51	44
ACENAPTHYLENE	3.6E6 ~~5910918~~	1.00	T	11: 48	Y	1.1e+00	~~12.37~~ 6.5	
ACENAPTHYLENE-2ND	7068490	1.00	T	11: 48	Y	1.4e-01	111.33	
D10-ACENAPHTHENE	67632560	1.00	T	12: 3	Y	9.9e-01	108.79	54
ACENAPHTHENE	12390980	1.00	T	12: 6	Y	1.1e+00	34.02 34	
D10-FLUORENE	106982460	1.00	T	12: 54	Y	1.1e+00	154.08	77
FLUORENE	44873800	1.00	T	12: 57	Y	9.5e-01	88.20 88	
D10-PHENANTHRENE	1.1E8 ~~88051600~~	1.00	T	14: 20	Y	9.3e-01	~~151.31~~ 209	~~76~~ 104
PHENANTHRENE	5.0E8 ~~No Peak~~	0.00	T	14: 23	N	1.3e+00	~~0.00~~ 640	
PHENANTHRENE-2ND	22892560	1.00	T	14: 26	Y	1.3e-01	387.82	
ANTHRACENE	2.8E7 ~~No Peak~~	0.00	T	14: 27	Y	1.4e+00	~~0.00~~ 37	
D10-ANTHRACENE	88051600	1.00	T	14: 20	Y	8.7e-01	161.17	81
D12-PERYLENE	117550920	1.00	T	24: 6	Y	1	200.00	
D10-FLUORANTHENE	177097300	1.00	T	15: 52	Y	2.1e+00	145.59	73
FLUORANTHENE	5.6E7 ~~70369240~~	1.00	T	15: 53	Y	1.2e+00	~~68.76~~ 55	
D10-PYRENE	155861940	1.00	T	16: 13	Y	1.9e+00	141.01	71
PYRENE	2.14E7 ~~24733220~~	1.00	T	16: 15	Y	1.3e+00	~~25.31~~ 21	
D12-BENZ (A) ANTHRACENE	5.7E6 ~~117402800~~	1.00	T	18: 33	Y	1.3e+00	~~156.30~~ 7	78
BENZ (A) ANTHRACENE	* ~~No Peak~~	0.00	T	18: 36	N	1.2e+00	~~0.00~~ 8.1	
D12-CHRYSENE	193830680	1.00	T	18: 38	Y	2.0e+00	165.50	83
CHRYSENE	1.1E7 ~~17744722~~	1.00	T	18: 42	Y	1.0e+00	~~17.89~~ 11	
D12-BENZO (B) FLUORANTHENE	200591600	1.00	T	22: 10	Y	8.9e-01	381.65	95
BENZO (B) FLUORANTHENE	3462216	1.00	T	22: 16	Y	1.5e+00	4.57 RL5.0	
D12-BENZO (K) FLUORANTHENE	313440400	1.00	T	22: 18	Y	1.5e+00	351.14	88
BENZO (K) FLUORANTHENE	* No Peak	0.00	T	22: 23	N	1.3e+00	0.00 RL5.0	
BENZO-E-PYRENE	1891282	1.00	T	23: 34	Y	1.1e+00	2.28 RL5.0	
D12-BENZO (A) PYRENE	252743400	1.00	T	23: 43	Y	1.3e+00	335.85	84
BENZO (A) PYRENE	275433	1.00	T	23: 48	Y	1.2e+00	0.37 RL5.0	
D12-INDENO () PYRENE	179935140	1.00	T	28: 54	Y	6.7e-01	455.06	114
INDENO (1,2,3-CD) PYRENE	220879	1.00	T	28: 56	Y	1.9e+00	0.26 RL5.0	
14-DIBENZO-AH-ANTHRACENE	158843460	1.00	T	28: 55	Y	6.0e-01	447.55	112
DIBENZO-AH-ANTHRACENE	117395	1.00	T	29: 2	Y	1.4e+00	0.21 RL5.0	
D12-BENZO (GHI) PERYLENE	142291760	1.00	T	30: 18	Y	5.9e-01	412.72	103
BENZO (GHI) PERYLENE	648937	1.00	T	30: 26	Y	2.2e+00	0.83 RL5.0	
D10-~~PYRENE~~ Fluoranthene	177097300	1.00	T	15: 52	Y	1.0e+00	~~400~~ 200.00	
D14-TERPHENYL	648130600	1.00	T	16: 19	Y	1.1e+00	~~1344~~ 672.82	134
D12-BENZO (A) PYRENE	* ~~No Peak~~ 2.5E+8	0.00	T	23: 49	N	1.0e+00	~~800.00~~ 400	
D12-BENZO-E-PYRENE	* ~~No Peak~~ 1.74E7	0.00	T	23: 32	N	4.3e-01	482 ~~*NoR?~~ 500	96%

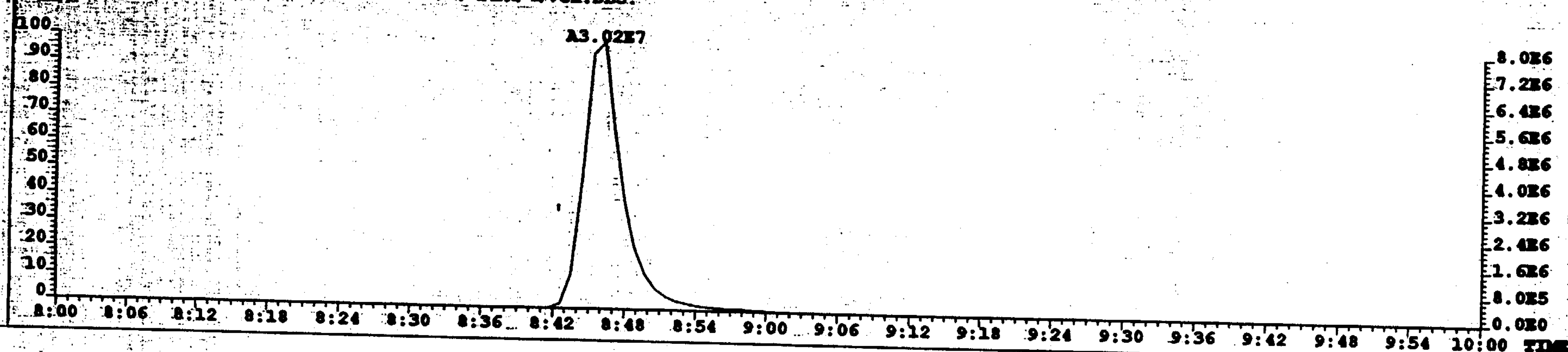
File:04JU92 Acq: 4-JUN-1992 21:15:53 128.0626 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:



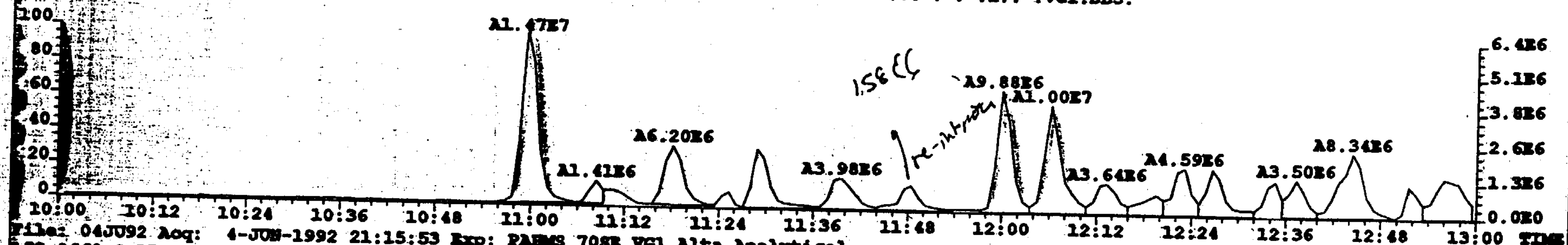
File:04JU92 Acq: 4-JUN-1992 21:15:53 129.0660 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131001 :RUN 1 :MSF :CC : : ::1:: :VG1:DB5:



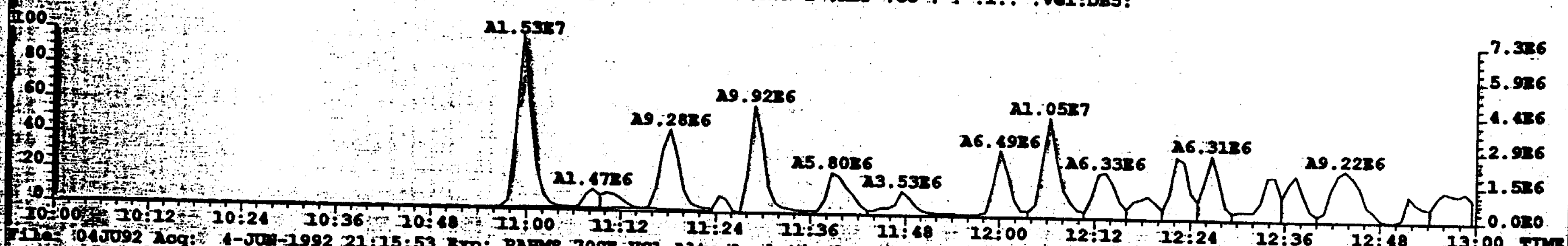
File:04JU92 Acq: 4-JUN-1992 21:15:53 136.1128 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131001 :RUN 1 :MSF :CC : : ::1:: :VG1:DB5:



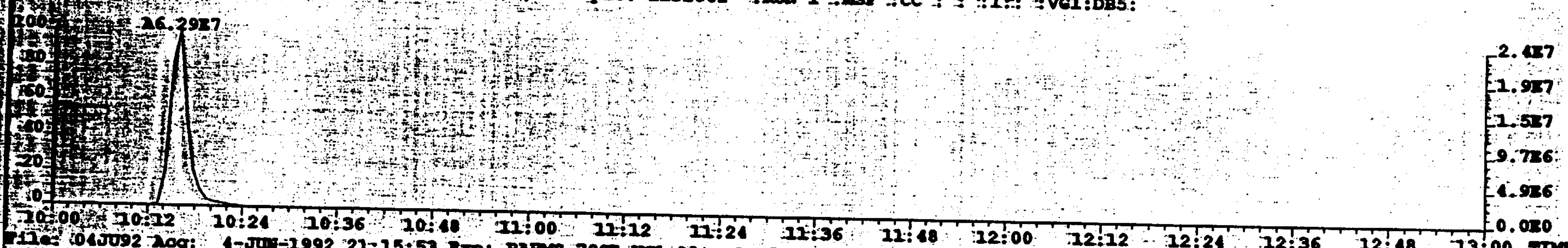
File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
152.0626 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:



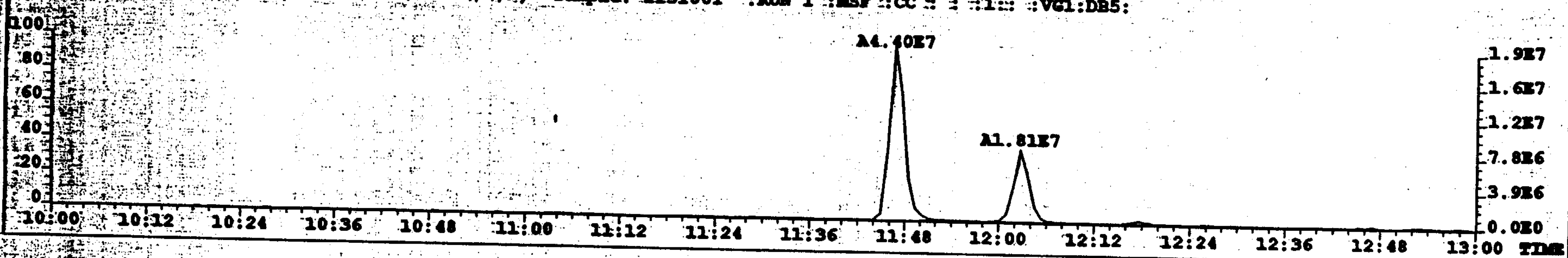
File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
153.0660 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:



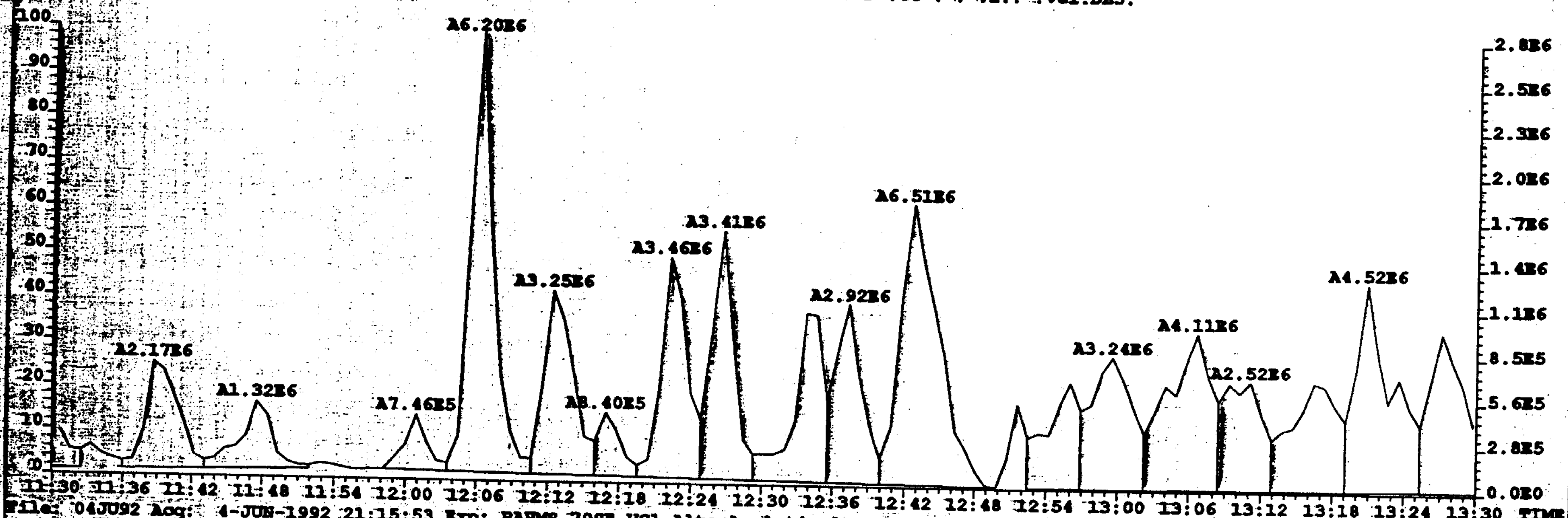
File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
152.1410 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:



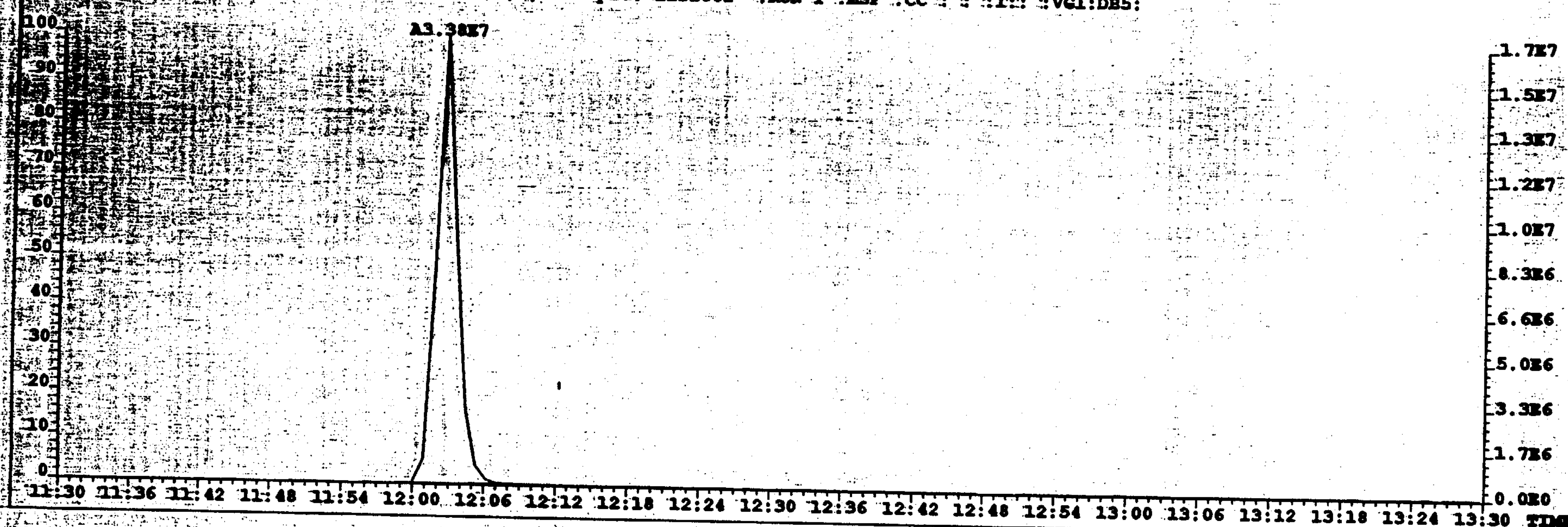
File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
160.1128 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:



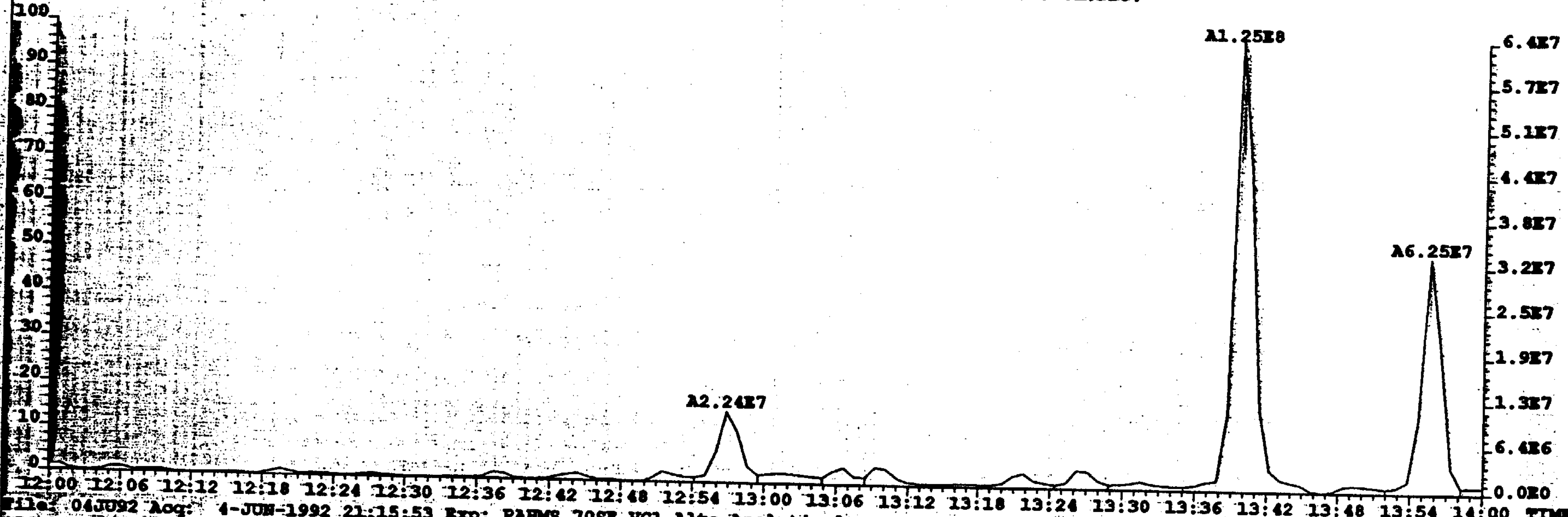
File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
154.0783 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:



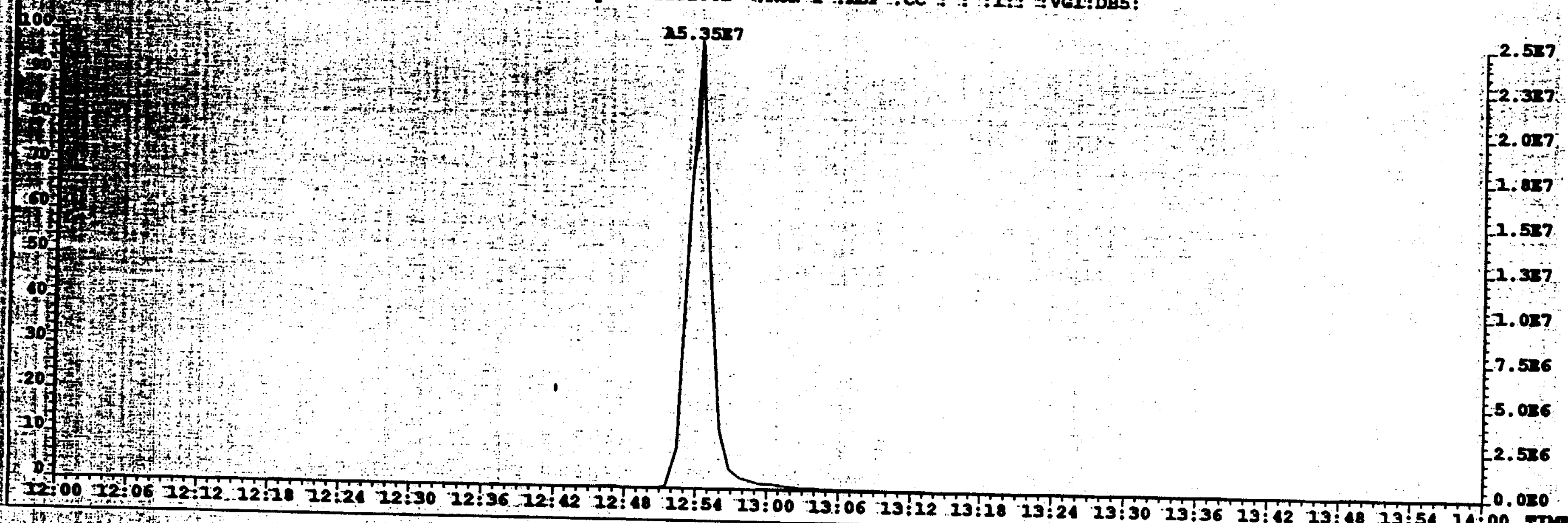
File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
164.1410 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:

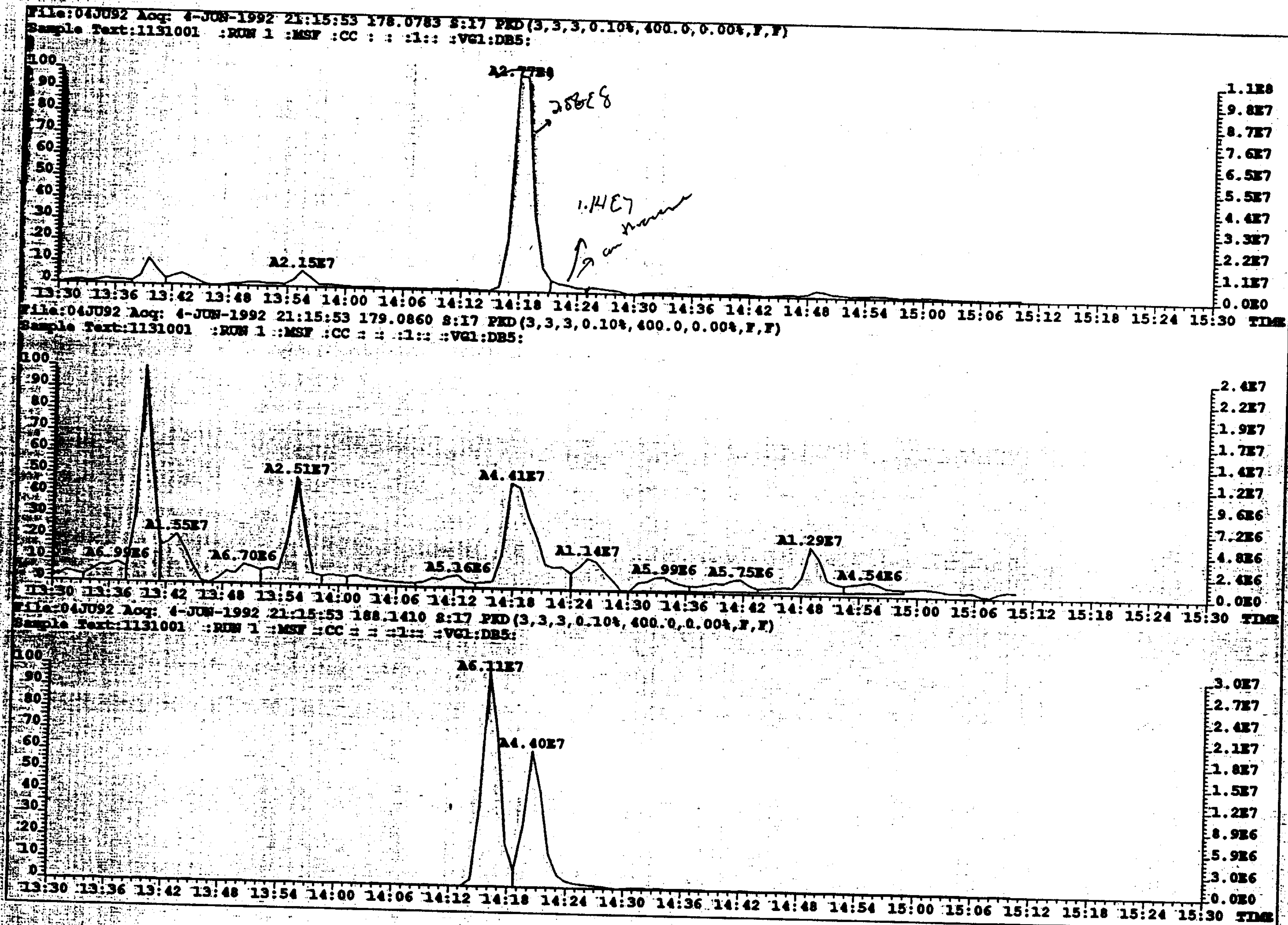


File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
166.0783 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:

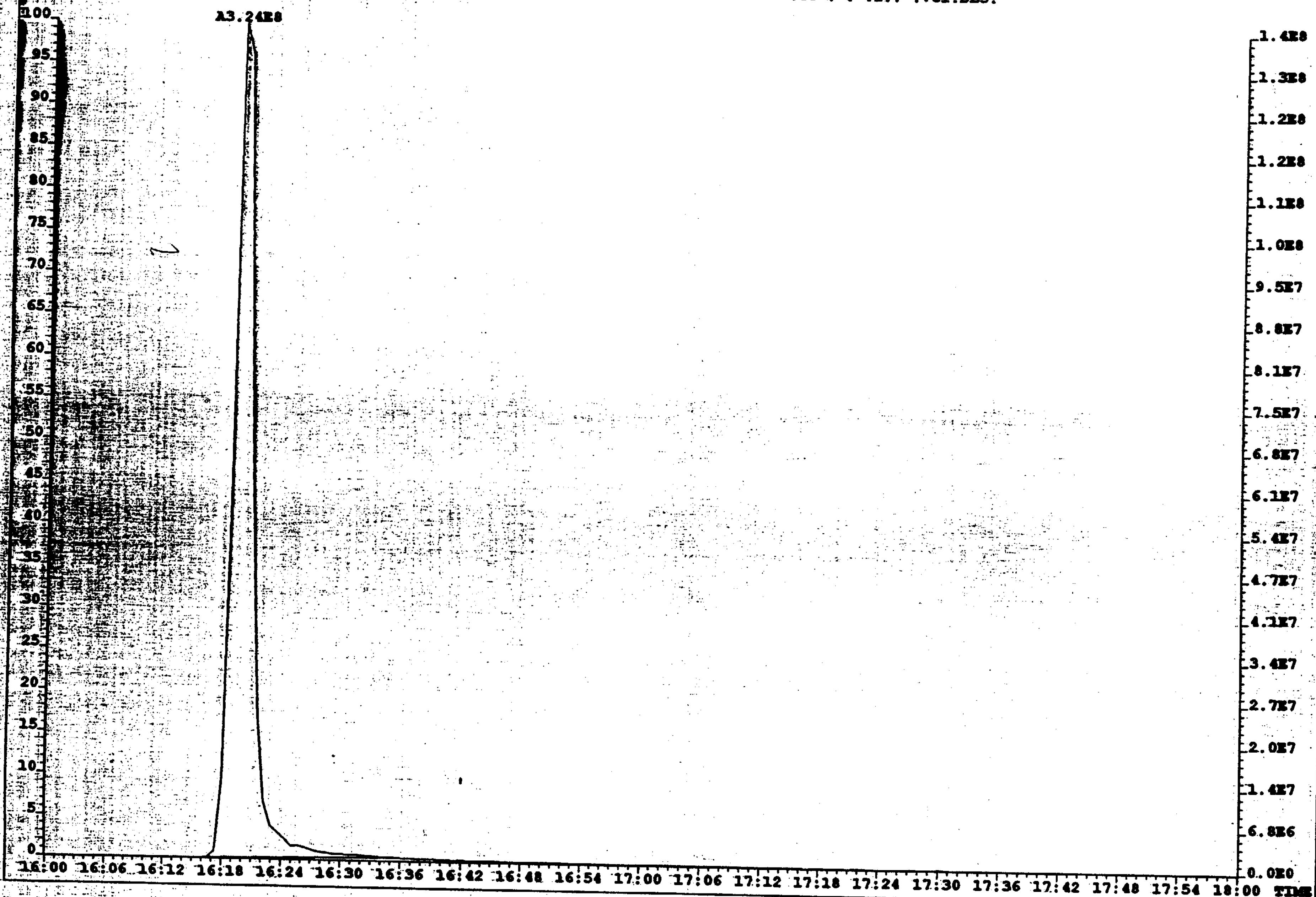


File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
176.1410 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:

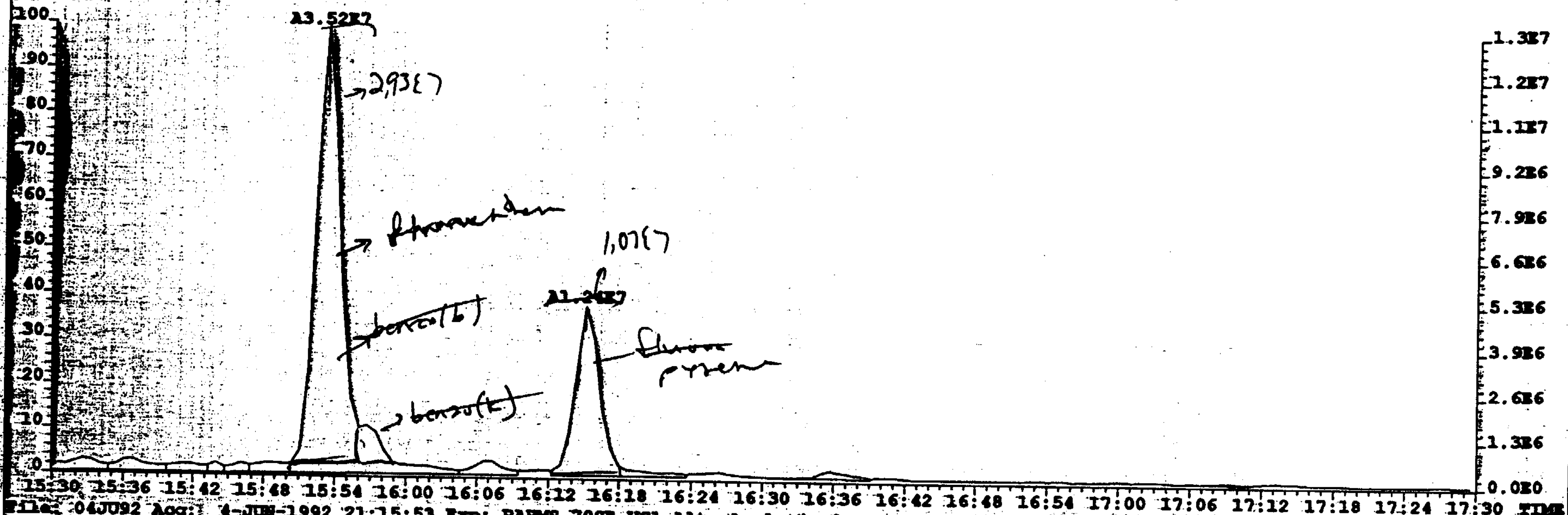



File:04JU92 Acq: 4-JUN-1992 21:15:53 178.0783 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:
A2.15E7
2.88E8
1.14E7
File:04JU92 Acq: 4-JUN-1992 21:15:53 179.0860 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131001 :RUN 1 :MSF :CC :: :1:: :VG1:DB5:
A1.55E7
A6.99E6
A6.70E6
A2.51E7
A5.36E6
A4.41E7
A1.14E7
A5.99E6
A5.75E6
A1.29E7
A4.54E6
File:04JU92 Acq: 4-JUN-1992 21:15:53 188.1410 S:17 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131001 :RUN 1 :MSF :CC :: :1:: :VG1:DB5:
A6.11E7
A4.40E7
13:30 13:36 13:42 13:48 13:54 14:00 14:06 14:12 14:18 14:24 14:30 14:36 14:42 14:48 14:54 15:00 15:06 15:12 15:18 15:24 15:30 TIME
1.1E8
9.8E7
8.7E7
7.6E7
6.5E7
5.5E7
4.4E7
3.3E7
2.2E7
1.1E7
0.0E0
2.4E7
2.2E7
1.9E7
1.7E7
1.4E7
1.2E7
9.6E6
7.2E6
4.8E6
2.4E6
0.0E0
3.0E7
2.7E7
2.4E7
2.1E7
1.8E7
1.5E7
1.2E7
8.9E6
5.9E6
3.0E6
0.0E0

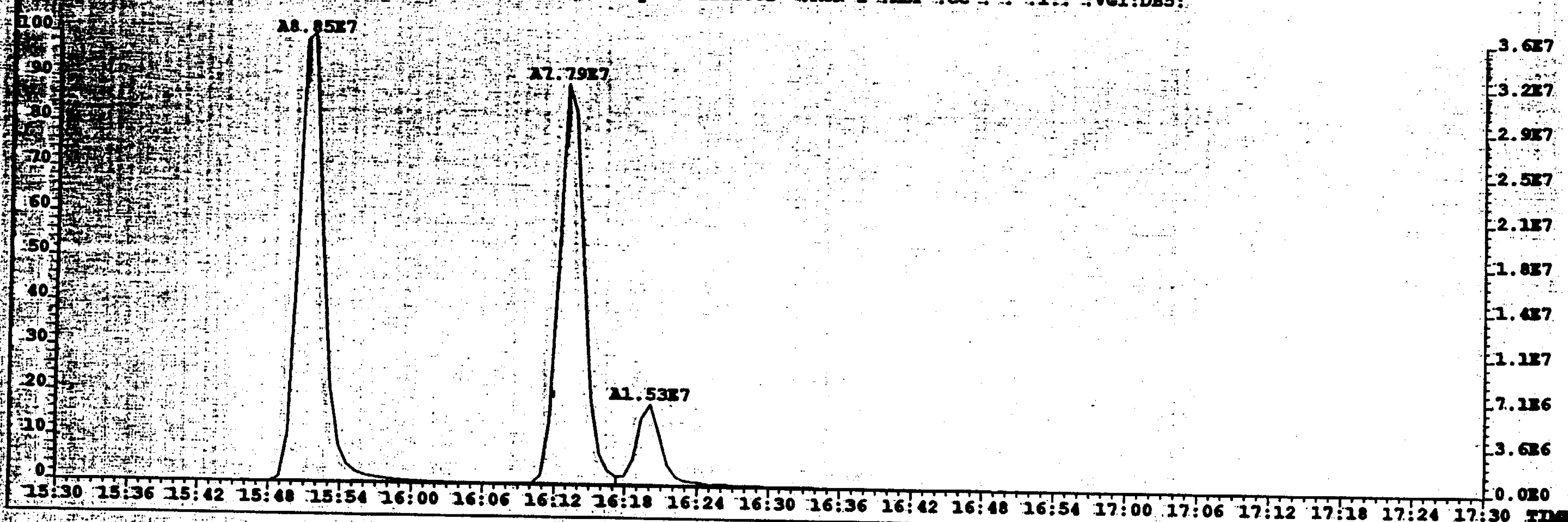
File: 04J092 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
244.1974 S:17 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:



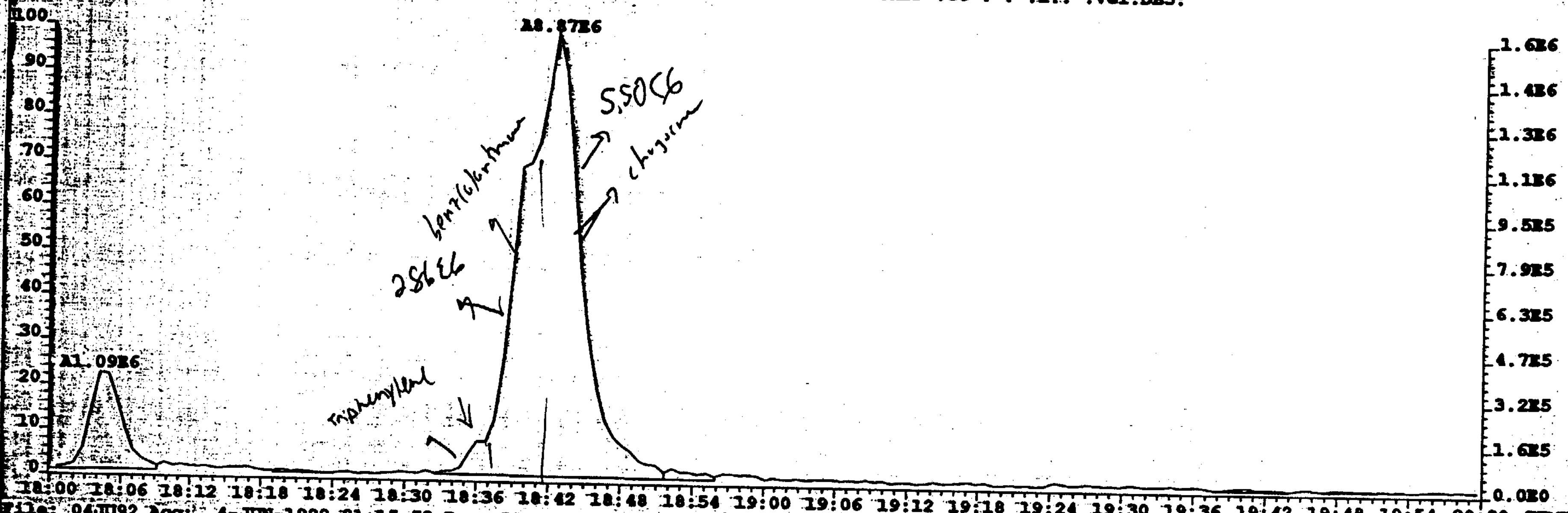
File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
202.0782 S:17 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:



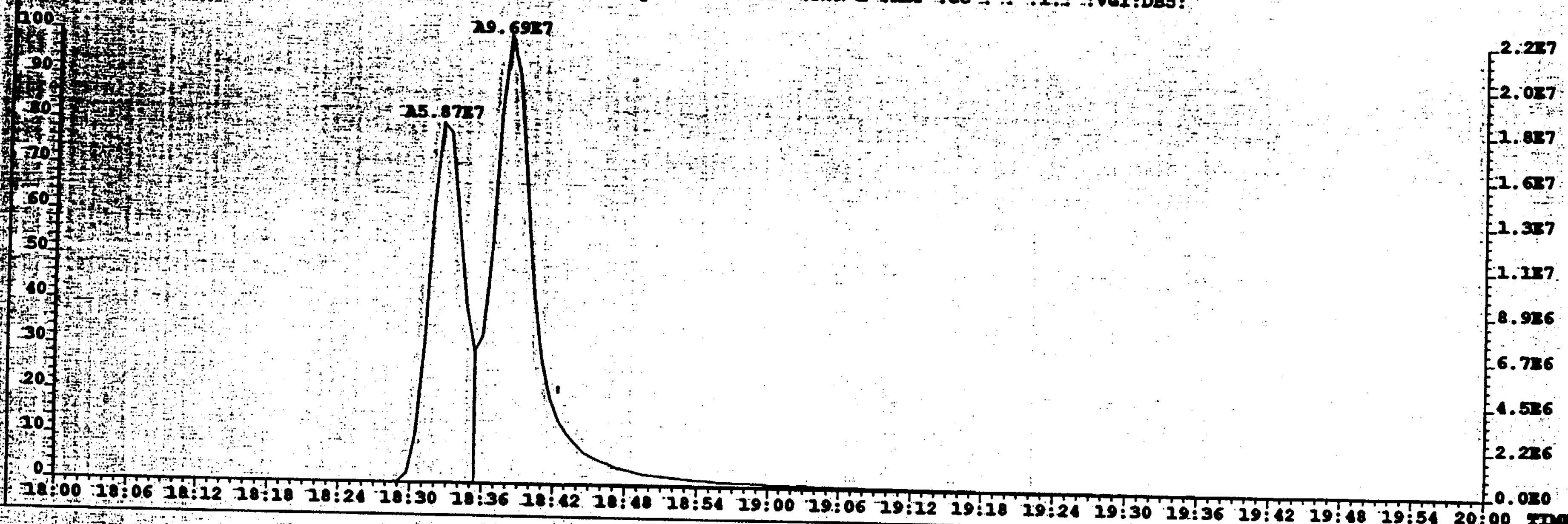
File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
212.1410 S:17 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:

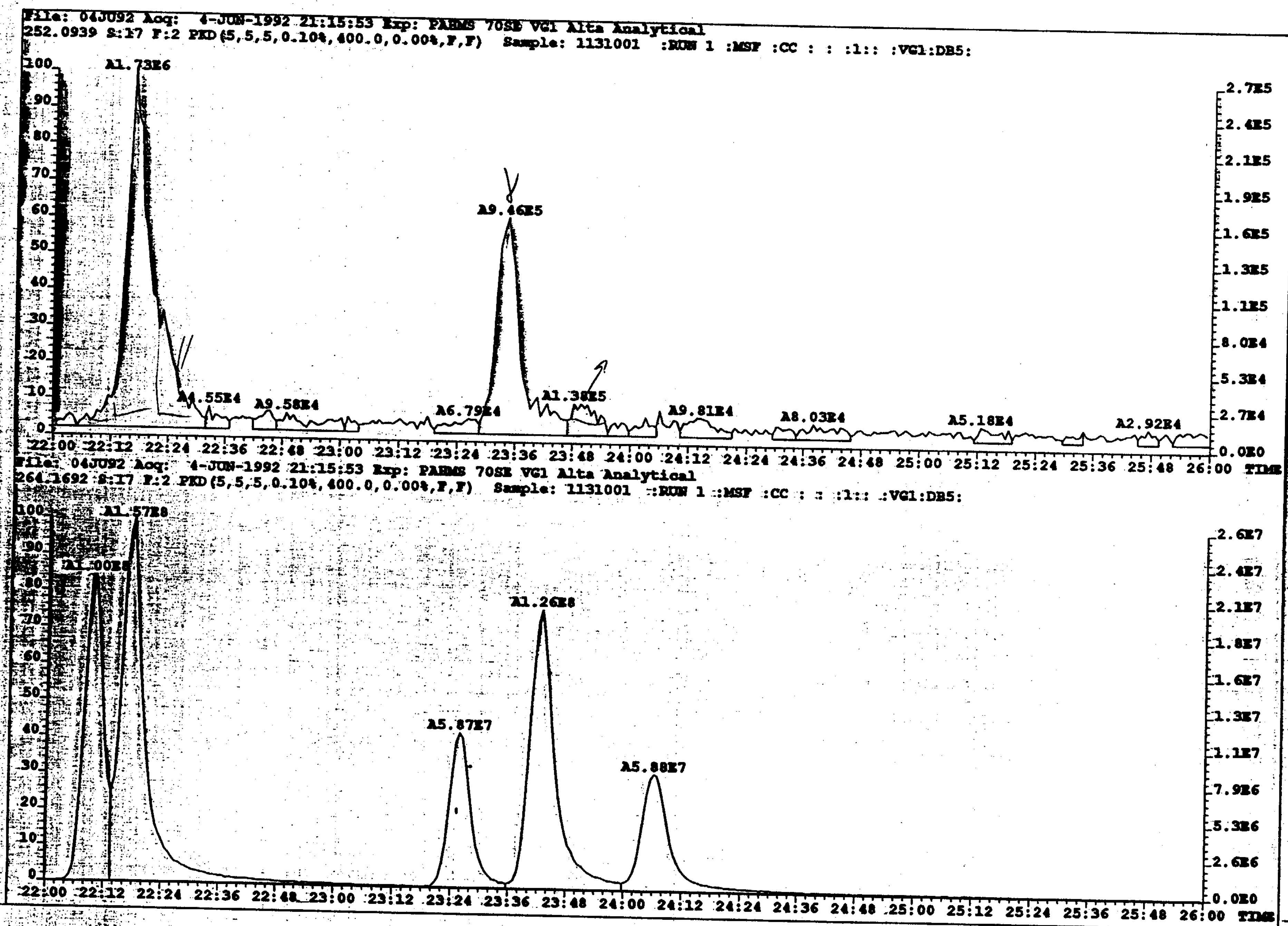


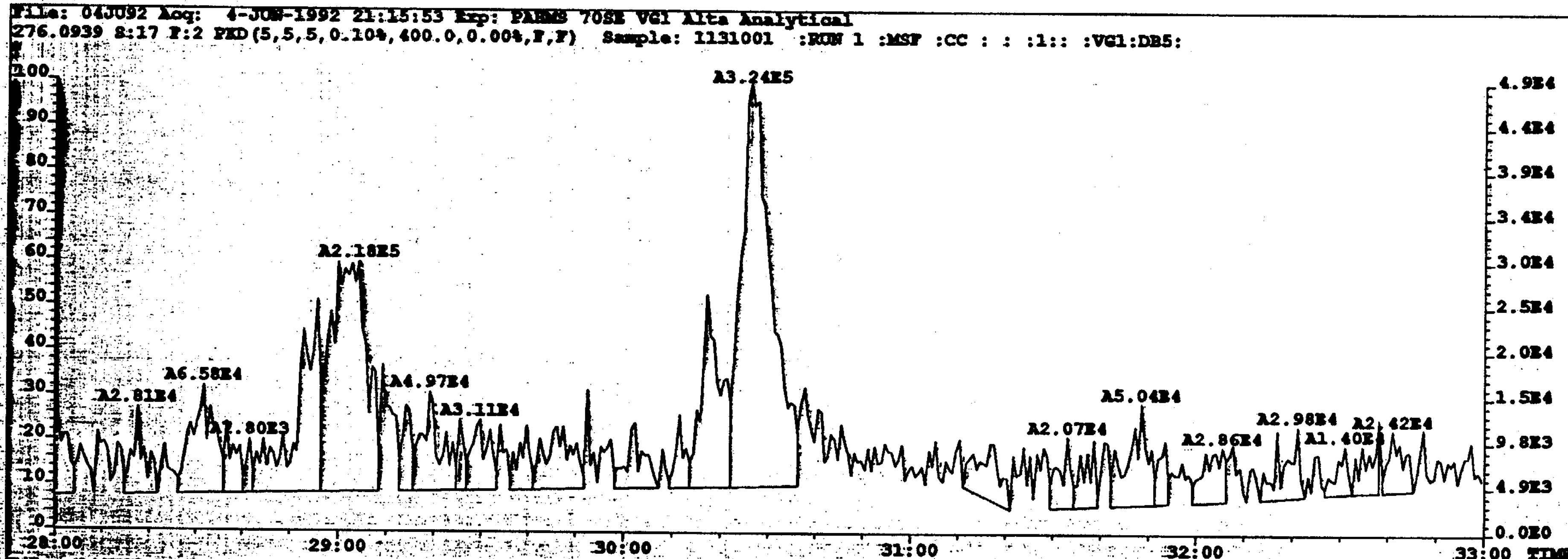
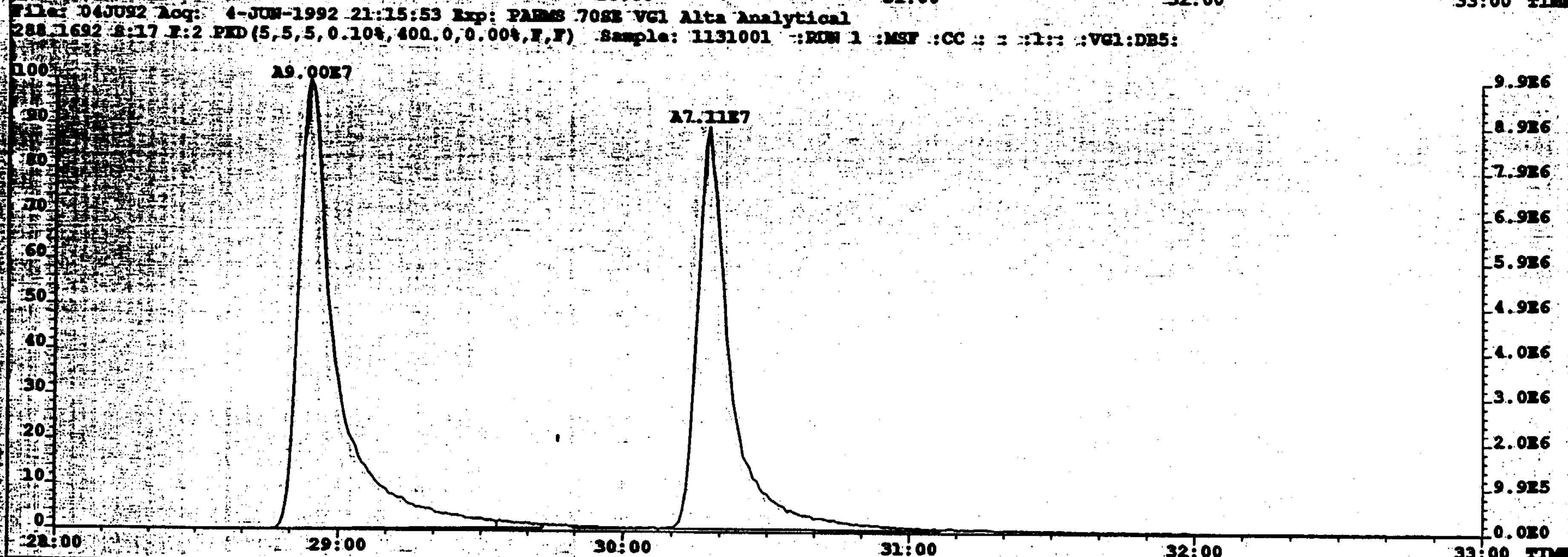
File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
228.0939 S:17 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:



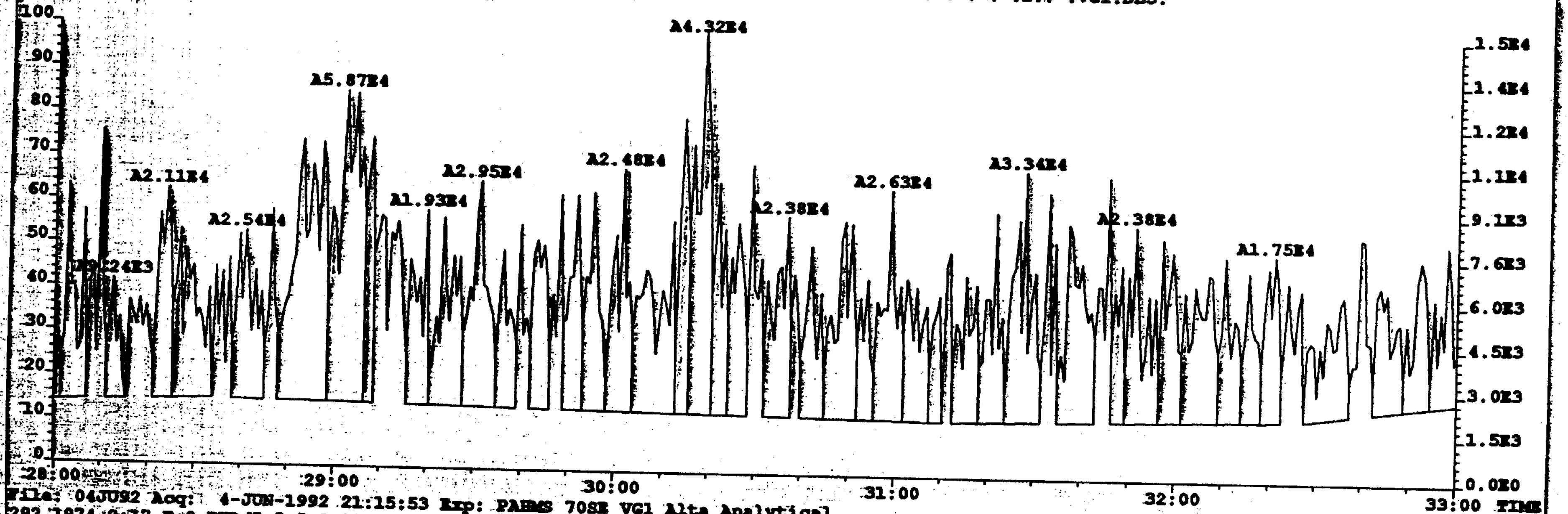
File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
240.1692 S:17 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC :: :: :1:: :VG1:DB5:



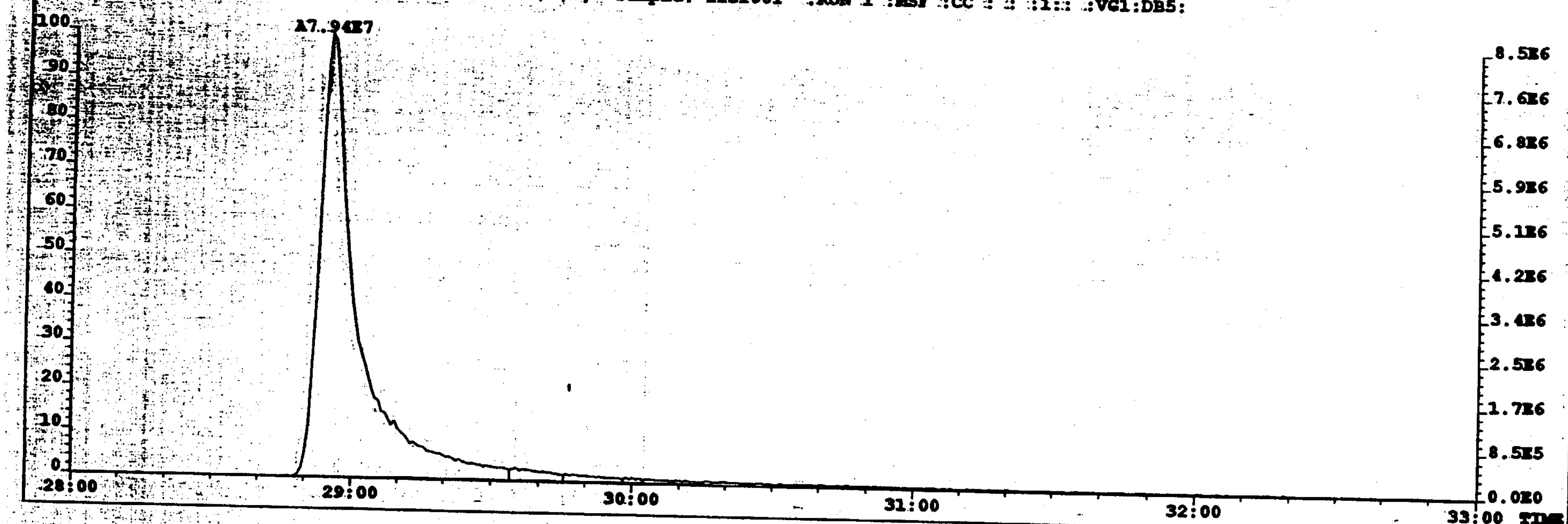

File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
252.0939 S:17 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:
A1.73E6
A9.46E5
A4.55E4
A9.58E4
A6.79E4
A1.38E5
A9.81E4
A8.03E4
A5.18E4
A2.92E4
TIME
File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
264.1692 S:17 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:
A1.57E8
A1.00E8
A5.87E7
A1.26E8
A5.88E7
TIME


File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
276.0939 S:17 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:
A3.24E5
A2.18E5
A6.58E4
A2.81E4
A4.97E4
A3.11E4
A5.04E4
A2.07E4
A2.86E4
A2.98E4
A1.40E4
A2.42E4
100
90
80
70
60
50
40
30
20
10
0
4.9E4
4.4E4
3.9E4
3.4E4
3.0E4
2.5E4
2.0E4
1.5E4
9.8E3
4.9E3
0.0E0
28:00
29:00
30:00
31:00
32:00
33:00 TIME

File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
288.1692 S:17 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC :: :: ::1:: :VG1:DB5:
A9.00E7
A7.11E7
100
90
80
70
60
50
40
30
20
10
0
9.9E6
8.9E6
7.9E6
6.9E6
5.9E6
4.9E6
4.0E6
3.0E6
2.0E6
9.9E5
0.0E0
28:00
29:00
30:00
31:00
32:00
33:00 TIME

File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
278.1096 S:17 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:



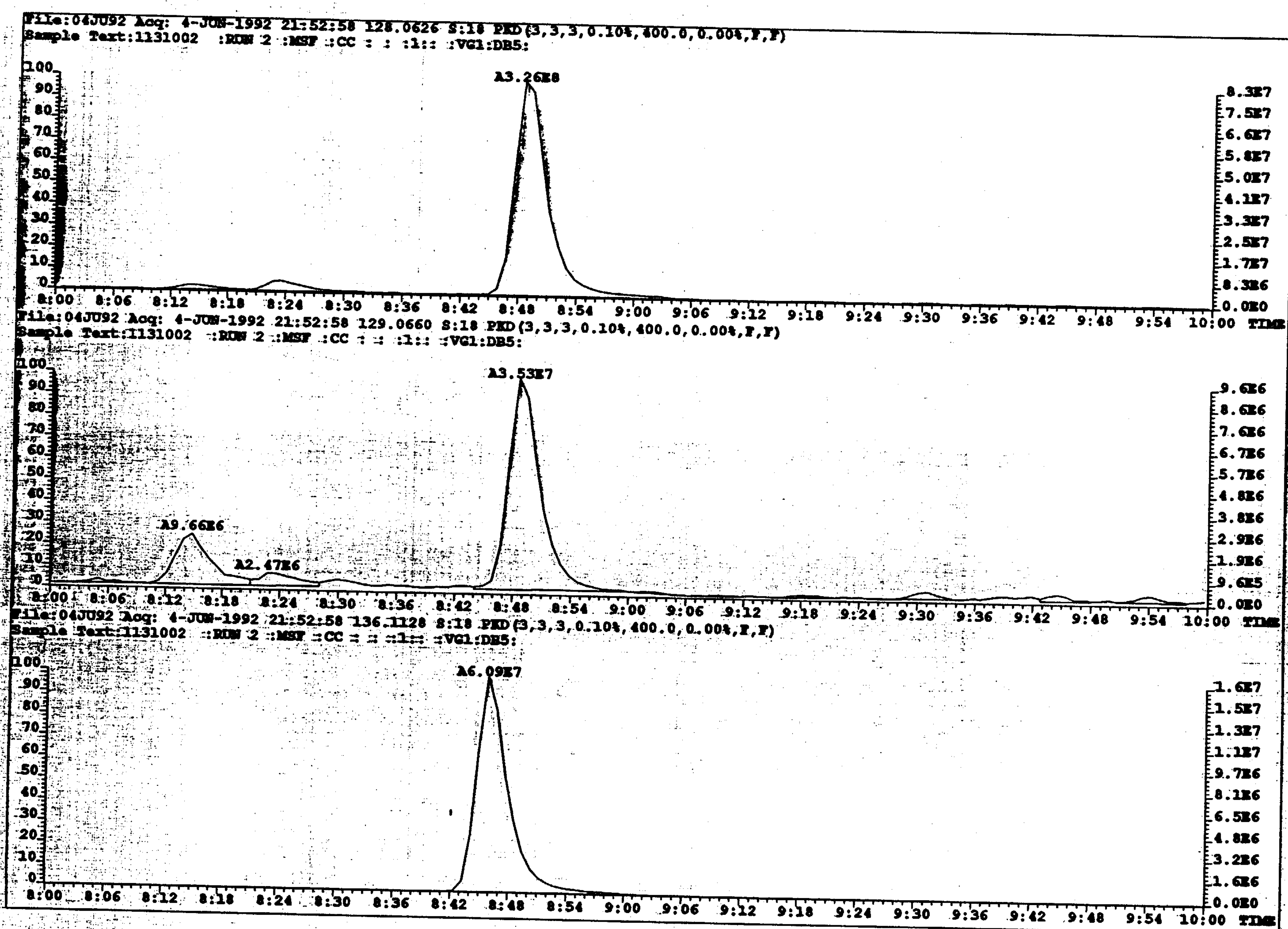
File: 04JU92 Acq: 4-JUN-1992 21:15:53 Exp: PAHMS 70SE VG1 Alta Analytical
292.1974 S:17 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131001 :RUN 1 :MSF :CC : : :1:: :VG1:DB5:



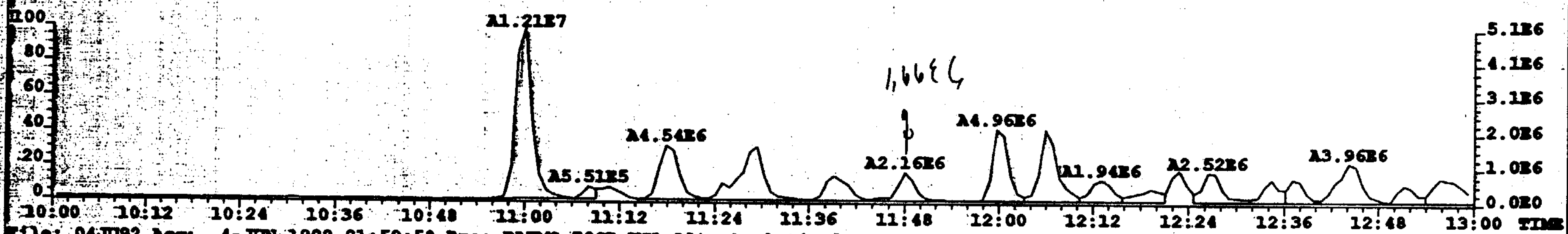
05-JUN-1992 09:33:06 AM DIOXIN/FURAN RESULTS 11310-2 1

Mass Spec : VG1 Results : 04JU92181.RES : PAH.TRG
GC Column : DB5 Date analyzed : 4-JUN-1992
Data file : 04JU92 1131002 :RUN 2 :MSF :CC : : Cal : IPAH.RRF
Weight : 1

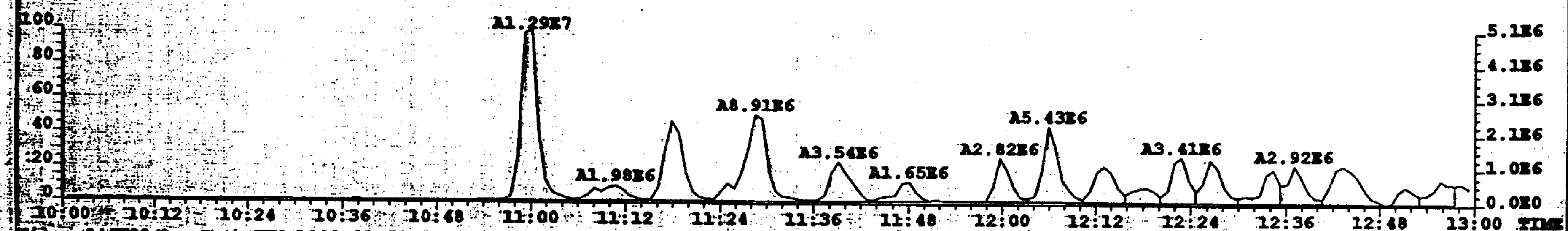
Name	Total Response	Isotope Ratio		R. T. mm:ss		RRF	pg/ :	% Rec
D1-2-METHYL-NAPHTHALENE	104762260	1.00	T	10: 16	Y	1	200.00	
D8-NAPHTHALENE	121735780	1.00	T	8: 46	Y	1.9e+00	124.54	62
NAPHTHALENE	651206000	1.00	T	8: 49	Y	9.9e-01	1075.99 100	
NAPHTHALENE-2ND	70595880	1.00	T	8: 49	Y	1.0e-01	1111.18	
D8-ACENAPTHYLENE	103499940	1.00	T	11: 46	Y	1.6e+00	124.83	62
ACENAPTHYLENE	3.32E6 ~~4314386~~	1.00	T	11: 48	Y	1.1e+00	~~7.69~~ 5.8	
ACENAPTHYLENE-2ND	3299436	1.00	T	11: 48	Y	1.4e-01	44.23	
D10-ACENAPHTHENE	72752320	1.00	T	12: 2	Y	9.9e-01	140.49	70
ACENAPHTHENE	5991848	1.00	T	12: 6	Y	1.1e+00	~~15.30~~ 15	
D10-FLUORENE	91939440	1.00	T	12: 54	Y	1.1e+00	158.96	79
FLUORENE	1.89E7 ~~26862700~~	1.00	T	12: 57	Y	9.5e-01	61.44 43	
D10-PHENANTHRENE	9.41E7 ~~68287700~~	1.00	T	14: 20	Y	9.3e-01	194 ~~140.87~~	~~70~~ 97
PHENANTHRENE	3.5E8 ~~No Peak~~	0.00	T	14: 23	N	1.3e+00	0.00 330	
PHENANTHRENE-2ND	4779706	1.00	T	14: 23	Y	1.3e-01	104.41	
ANTHRACENE	1.3E7 ~~No Peak~~	0.00	T	14: 27	N	1.4e+00	~~0.00~~ 21	
D10-ANTHRACENE	68287700	1.00	T	14: 20	Y	8.7e-01	150.05	75
D12-PERYLENE	101543600	1.00	T	24: 5	Y	1	200.00	
D10-FLUORANTHENE	158365120	1.00	T	15: 51	Y	2.1e+00	150.71	75
FLUORANTHENE	1.96E7 ~~21525100~~	1.00	T	15: 52	Y	1.2e+00	23.52 21	
D10-PYRENE	143427020	1.00	T	16: 12	Y	1.9e+00	150.22	75
PYRENE	7.72E6 ~~10453258~~	1.00	T	16: 14	Y	1.3e+00	11.62 8.3	
D12-BENZ(A)ANTHRACENE	112522760	1.00	T	18: 32	Y	1.3e+00	173.51	87
BENZ(A)ANTHRACENE	5E6 * ~~No Peak~~	0.00	T	18: 35	N	1.2e+00	~~0.00~~ 8.3	
D12-CHRYSENE	182396540	1.00	T	18: 37	Y	2.0e+00	180.29	90
CHRYSENE	9.64E6 ~~16620790~~	1.00	T	18: 42	Y	1.0e+00	~~17.81~~ 11	
D12-BENZO(B)FLUORANTHENE	189532940	1.00	T	22: 8	Y	8.9e-01	417.45	104
BENZO(B)FLUORANTHENE	2881380	1.00	T	22: 16	Y	1.5e+00	4.03 RL=5.0	
D12-BENZO(K)FLUORANTHENE	301193600	1.00	T	22: 16	Y	1.5e+00	390.61	98
BENZO(K)FLUORANTHENE	* No Peak	0.00	T	22: 22	N	1.3e+00	0.00 RL=5.0	
BENZO-E-PYRENE	1516599	1.00	T	23: 33	Y	1.1e+00	1.91 RL=5.0	
D12-BENZO(A)PYRENE	244365800	1.00	T	23: 41	Y	1.3e+00	375.90	94
BENZO(A)PYRENE	168386	1.00	T	23: 48	Y	1.2e+00	0.24 RL=5.0	
D12-INDENO()PYRENE	166748360	1.00	T	28: 54	Y	6.7e-01	488.18	122
INDENO(1,2,3-CD)PYRENE	267975	1.00	T	28: 56	Y	1.9e+00	0.34 RL=5.0	
14-DIBENZO-AH-ANTHRACENE	143322380	1.00	T	28: 54	Y	6.0e-01	467.47	117
DIBENZO-AH-ANTHRACENE	65424	1.00	T	29: 0	Y	1.4e+00	0.13 RL=5.0	
D12-BENZO(GHI)PERYLENE	137781700	1.00	T	30: 17	Y	5.9e-01	462.64	116
BENZO(GHI)PERYLENE	88963	1.00	T	30: 20	Y	2.2e+00	0.12 RL=5.0	
D10-~~PYRENE~~ Fluoranthene	158365120	1.00	T	15: 51	Y	1.0e+00	~~400~~ 200.00	664
D14-TERPHENYL	576219000	1.00	T	16: 19	Y	1.1e+00	~~1337.03~~	134
D12-BENZO(A)PYRENE	2.44E8 * ~~No Peak~~	0.00	T	23: 49	N	1.0e+00	~~800.00~~ 400	
D12-BENZO-E-PYRENE	* ~~No Peak~~ 1.45E8	0.00	T	23: 32	N	4.3e-01	~~*NOR?~~ ~~600~~ 550	110


File:04JU92 Acq: 4-JUN-1992 21:52:58 128.0626 S:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:
A3.26E8
File:04JU92 Acq: 4-JUN-1992 21:52:58 129.0660 S:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131002 ::RUN 2 ::MSF ::CC :: :: ::1:: ::VG1:DB5:
A3.53E7
A9.66E6
A2.47E6
File:04JU92 Acq: 4-JUN-1992 21:52:58 136.1128 S:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131002 ::RUN 2 ::MSF ::CC :: :: ::1:: ::VG1:DB5:
A6.09E7
TIME

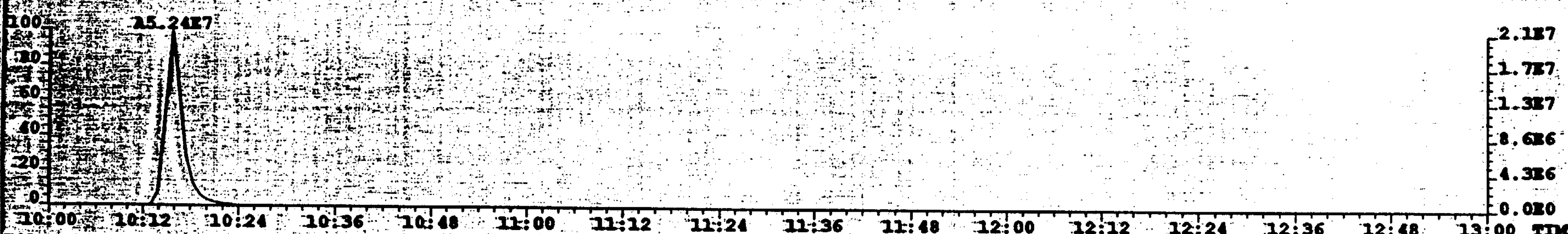
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
152.0626 S:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:



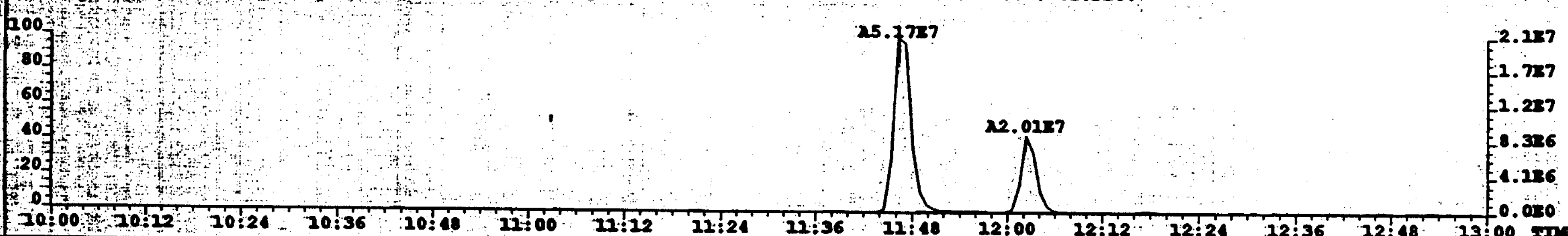
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
153.0660 S:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : :: :1:: :VG1:DB5:



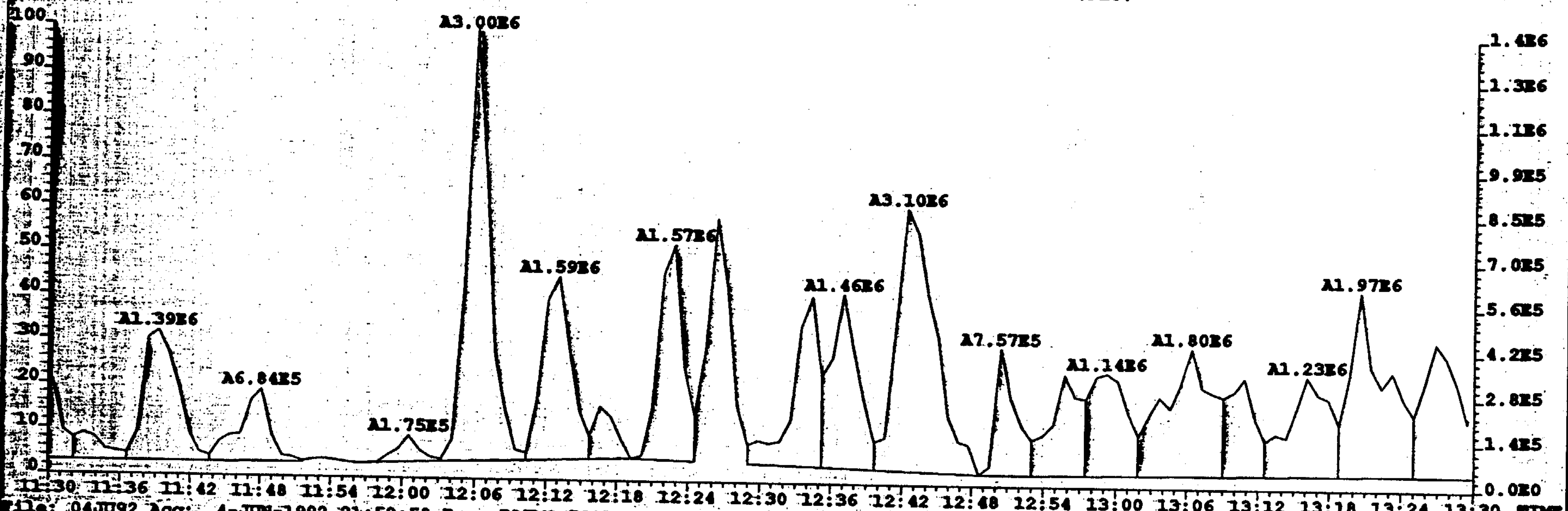
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
152.1410 S:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131002 ::RUN 2 ::MSF ::CC :: :: ::1:: ::VG1:DB5:



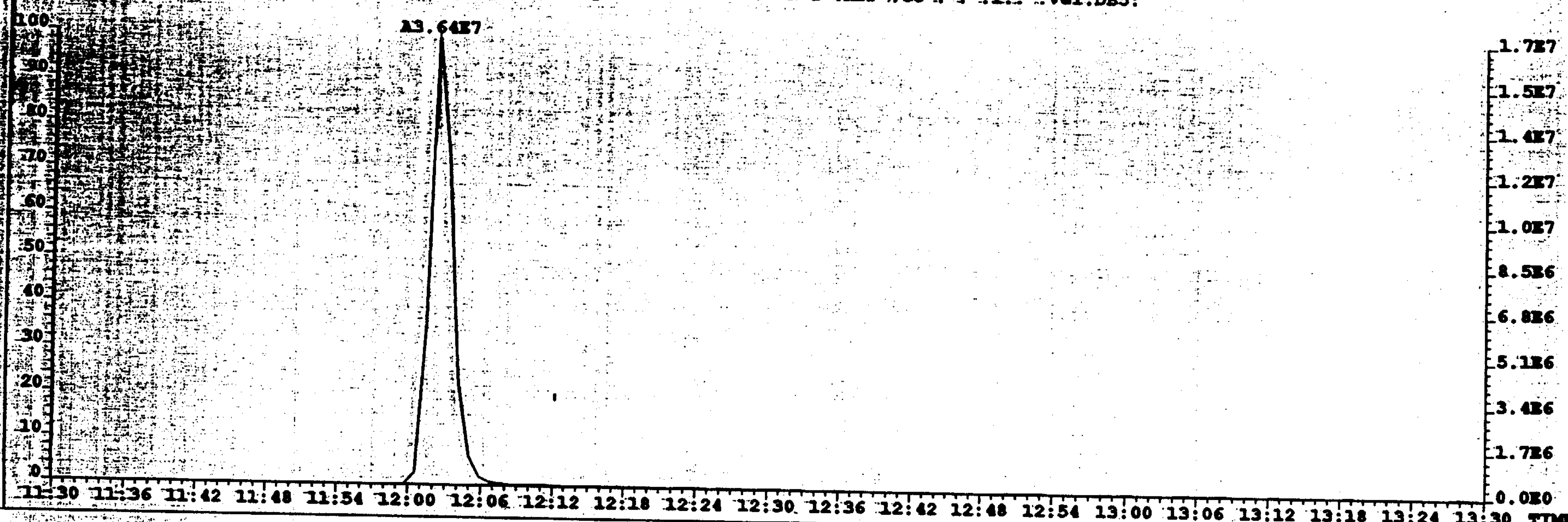
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
160.1128 S:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131002 ::RUN 2 ::MSF ::CC :: :: ::1:: ::VG1:DB5:



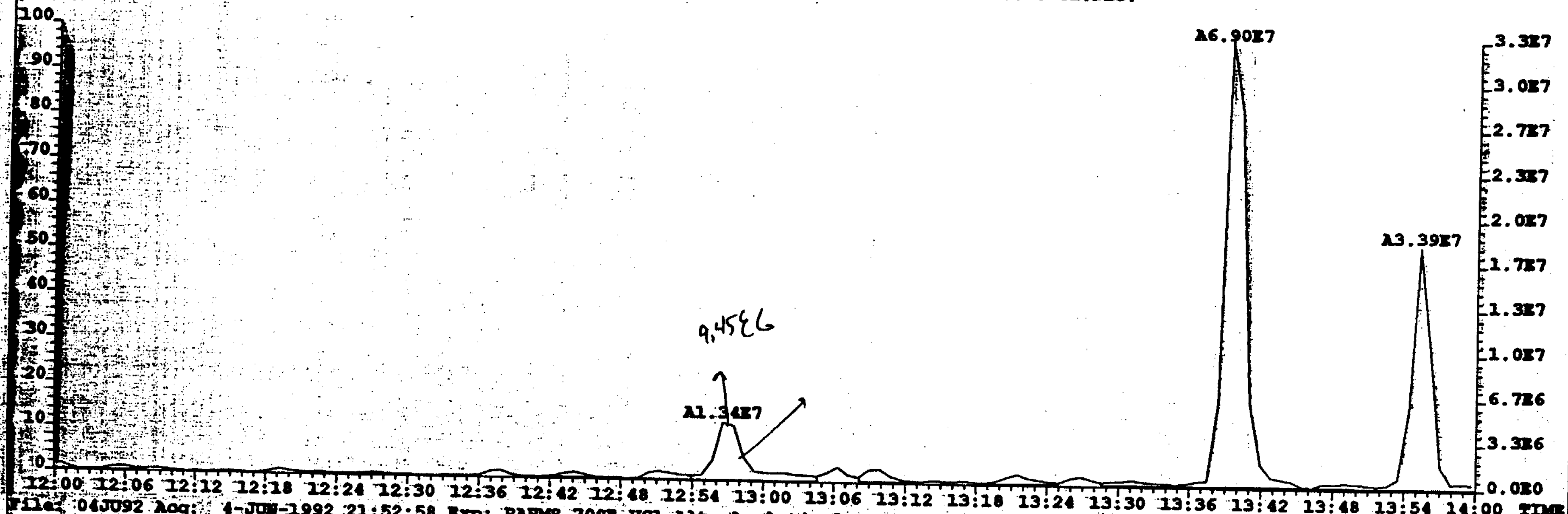
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
154.0783 S:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:



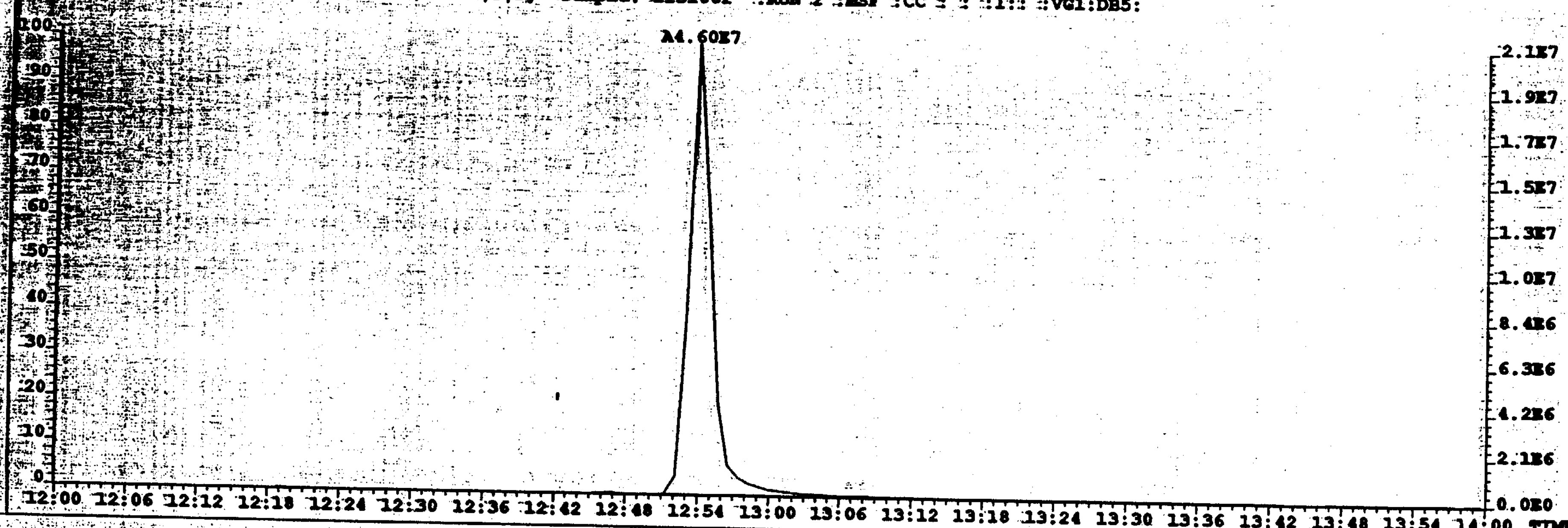
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
164.1410 S:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:



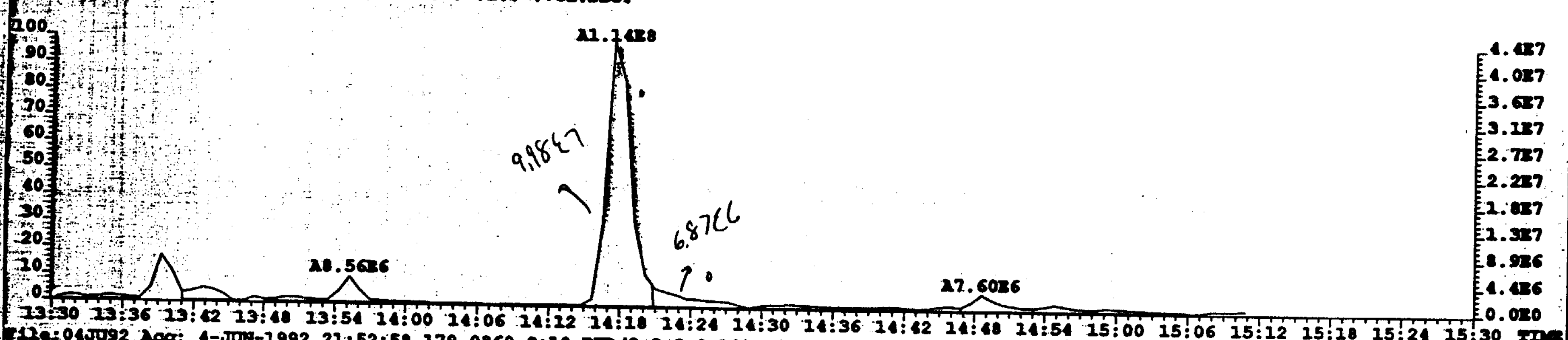
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
166.0783 S:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:



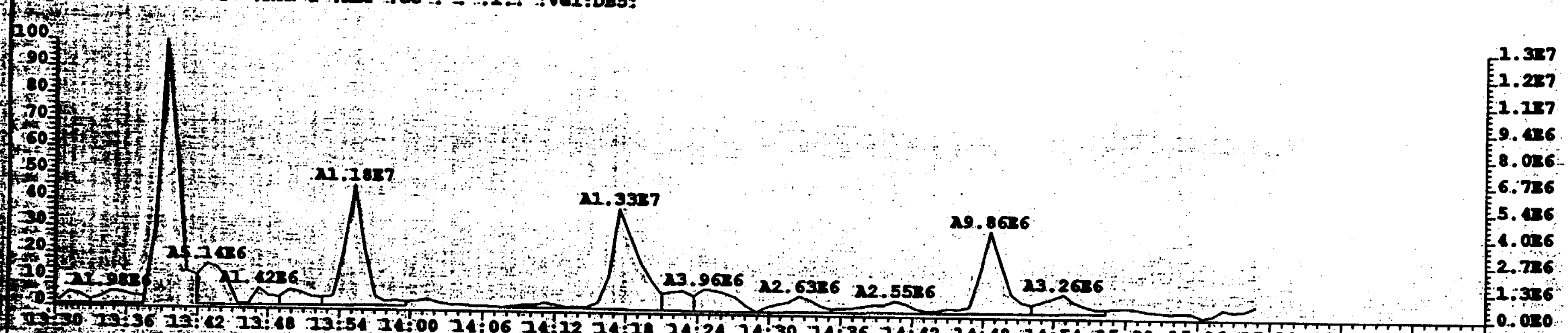
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
176.1410 S:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131002 ::RUN 2 ::MSF ::CC :: :: ::1:: ::VG1:DB5:



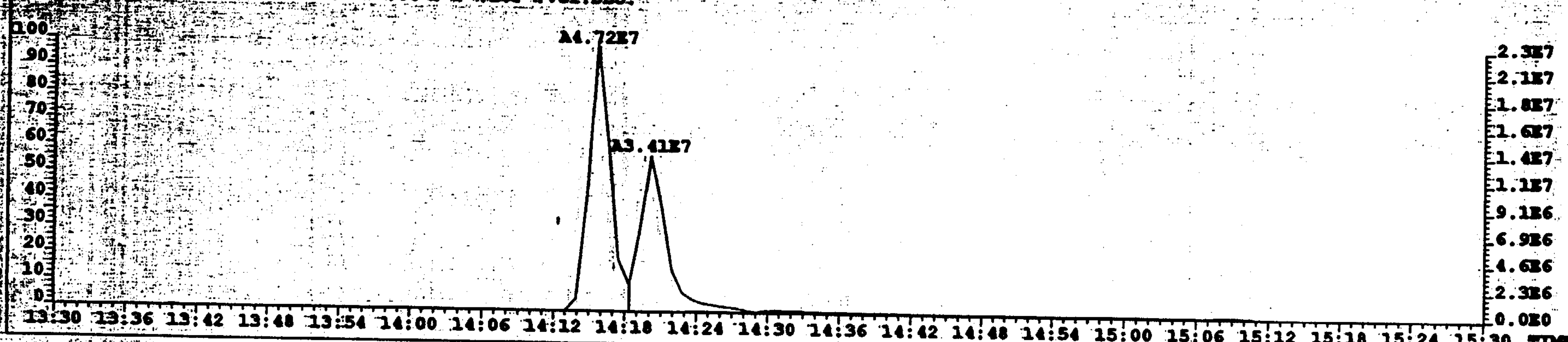
File:04JU92 Acq: 4-JUN-1992 21:52:58 178.0783 8:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:



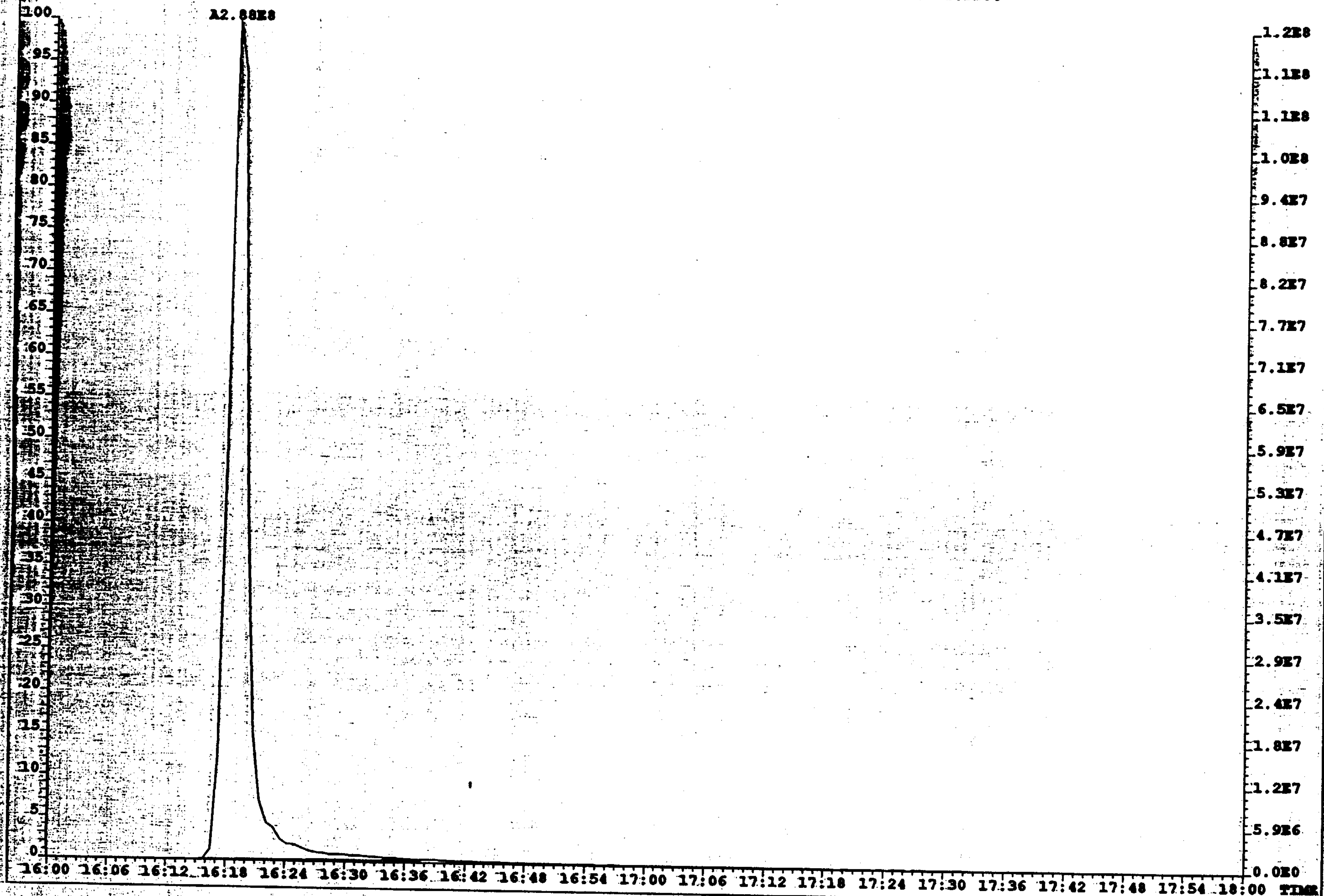
File:04JU92 Acq: 4-JUN-1992 21:52:58 179.0860 8:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:

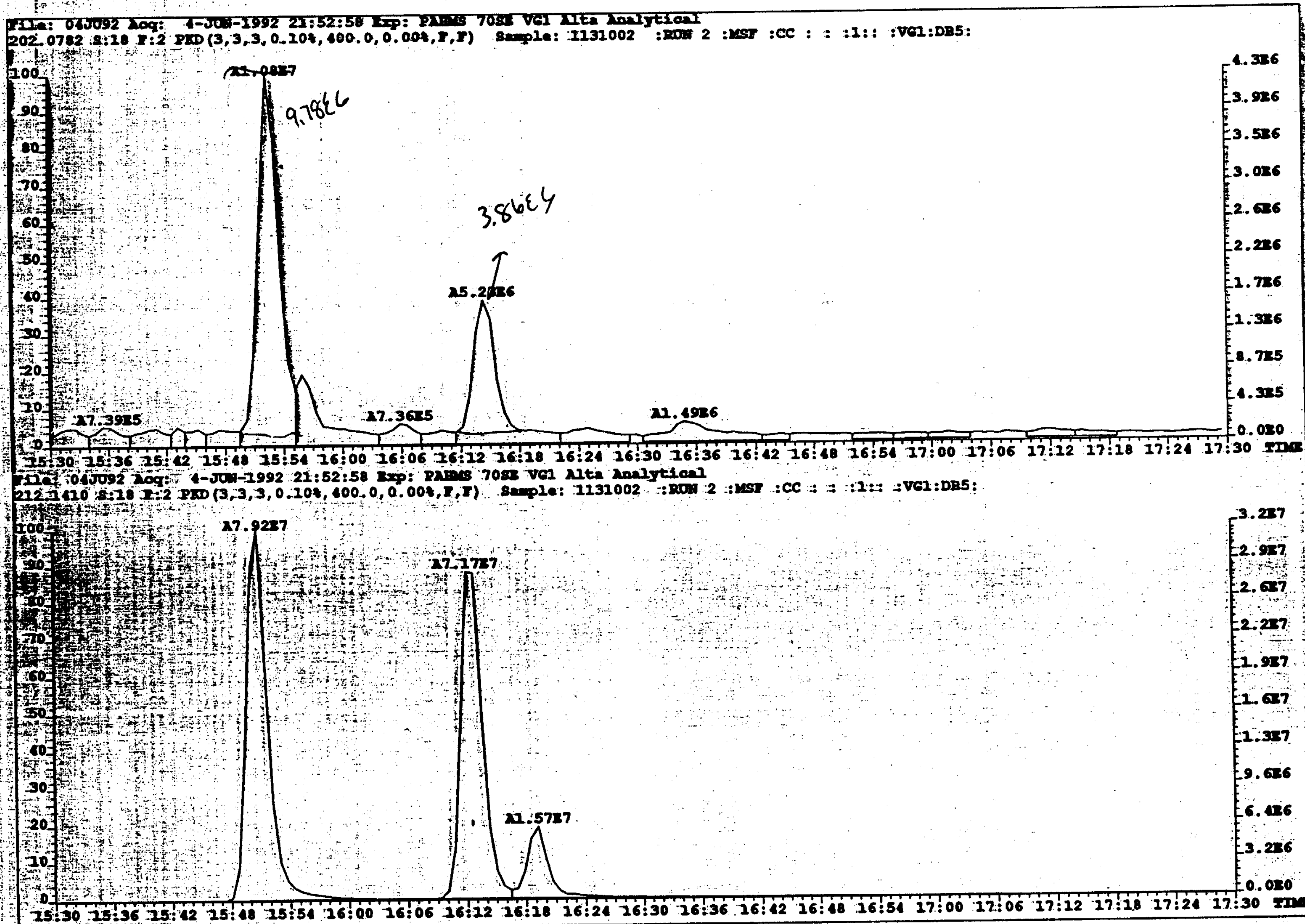


File:04JU92 Acq: 4-JUN-1992 21:52:58 188.1410 8:18 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:

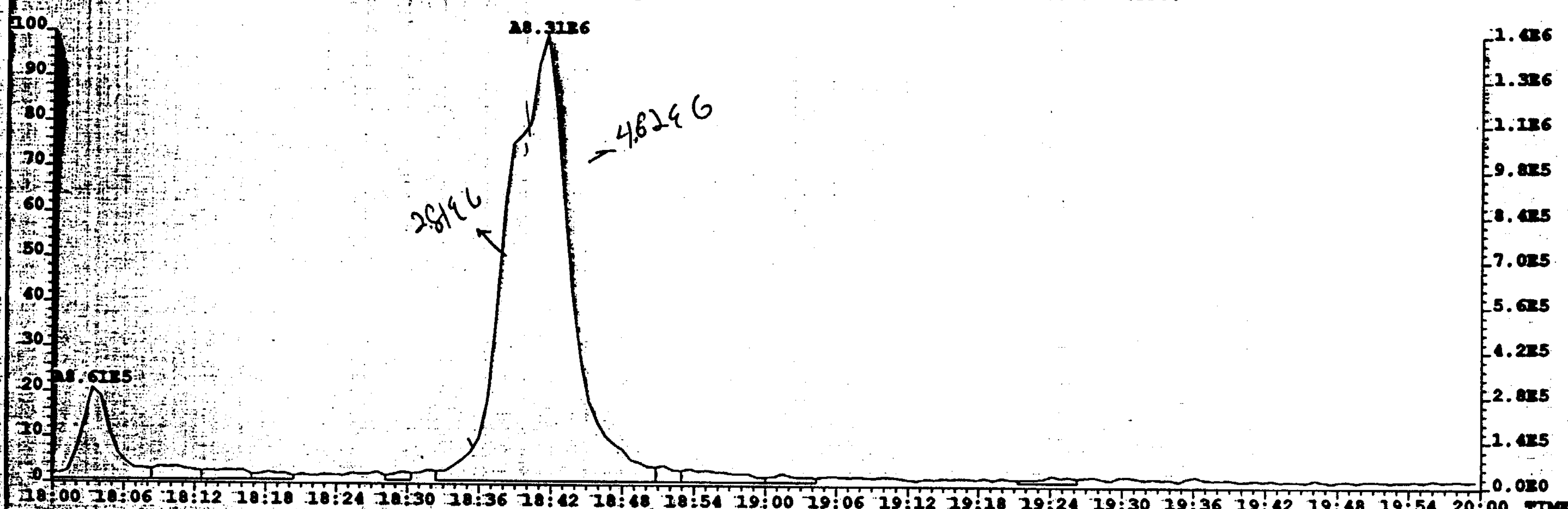


File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
244.1974 S:18 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:

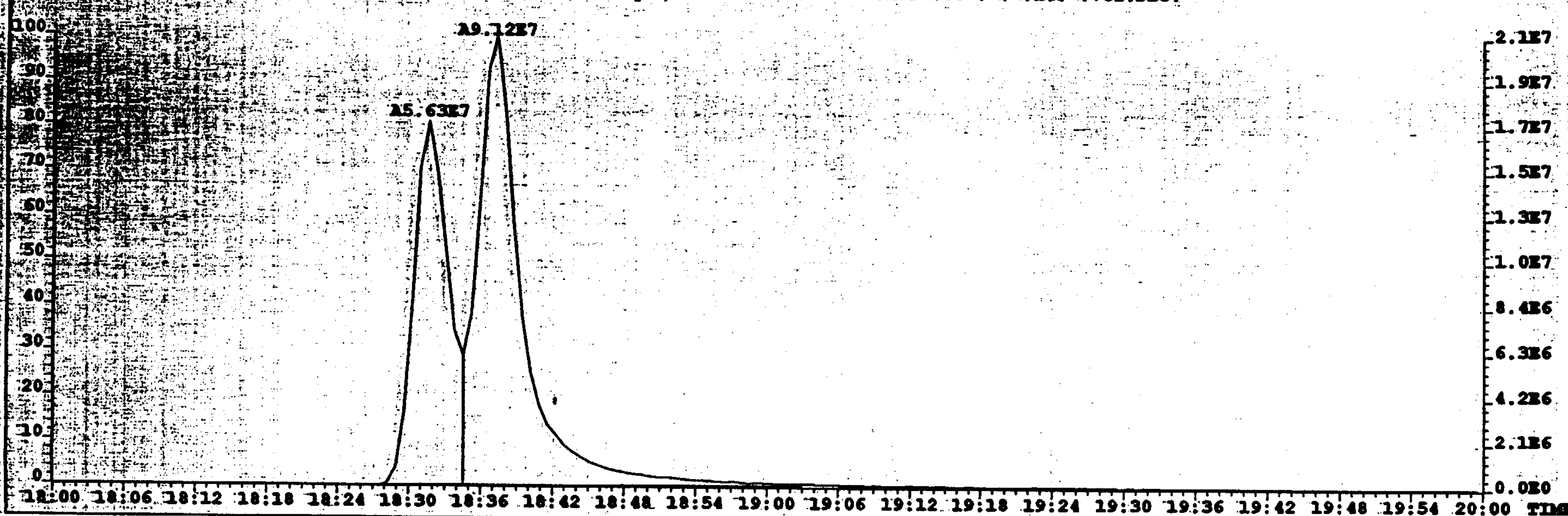



File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
202.0782 S:18 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:
A1.08E7
9.78E6
A5.23E6
3.86E4
A7.39E5
A7.36E5
A1.49E6
4.3E6
3.9E6
3.5E6
3.0E6
2.6E6
2.2E6
1.7E6
1.3E6
8.7E5
4.3E5
0.0E0
15:30 15:36 15:42 15:48 15:54 16:00 16:06 16:12 16:18 16:24 16:30 16:36 16:42 16:48 16:54 17:00 17:06 17:12 17:18 17:24 17:30 TIME
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
212.1410 S:18 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:
A7.92E7
A7.17E7
A1.57E7
3.2E7
2.9E7
2.6E7
2.2E7
1.9E7
1.6E7
1.3E7
9.6E6
6.4E6
3.2E6
0.0E0
15:30 15:36 15:42 15:48 15:54 16:00 16:06 16:12 16:18 16:24 16:30 16:36 16:42 16:48 16:54 17:00 17:06 17:12 17:18 17:24 17:30 TIME

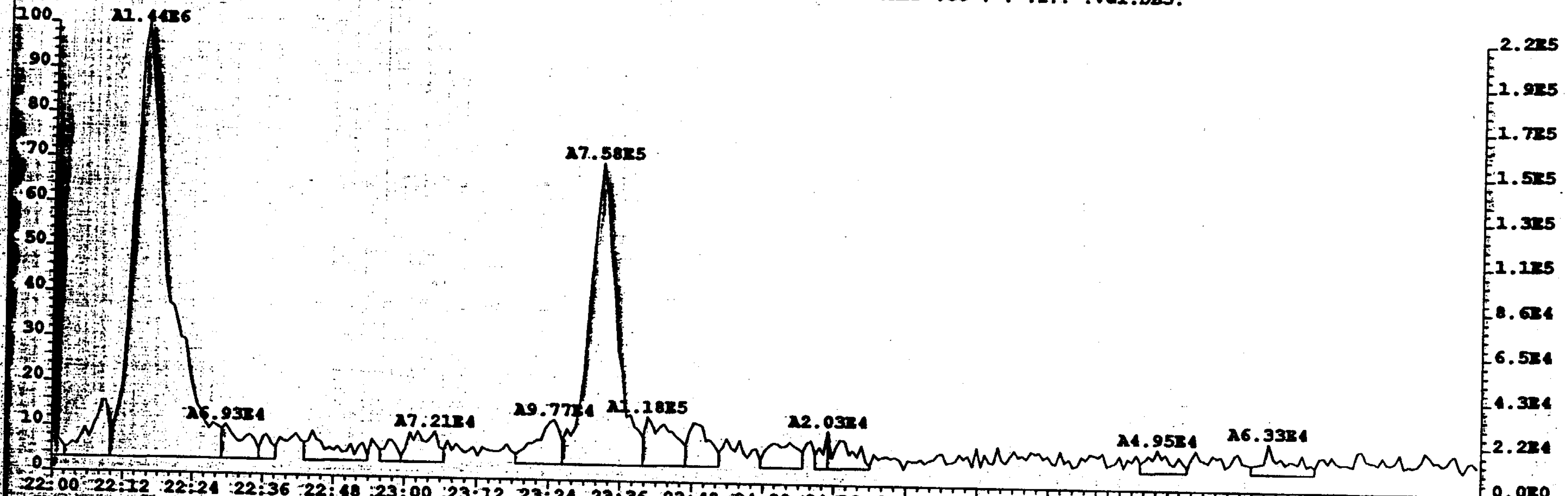
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
228.0939 S:18 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:



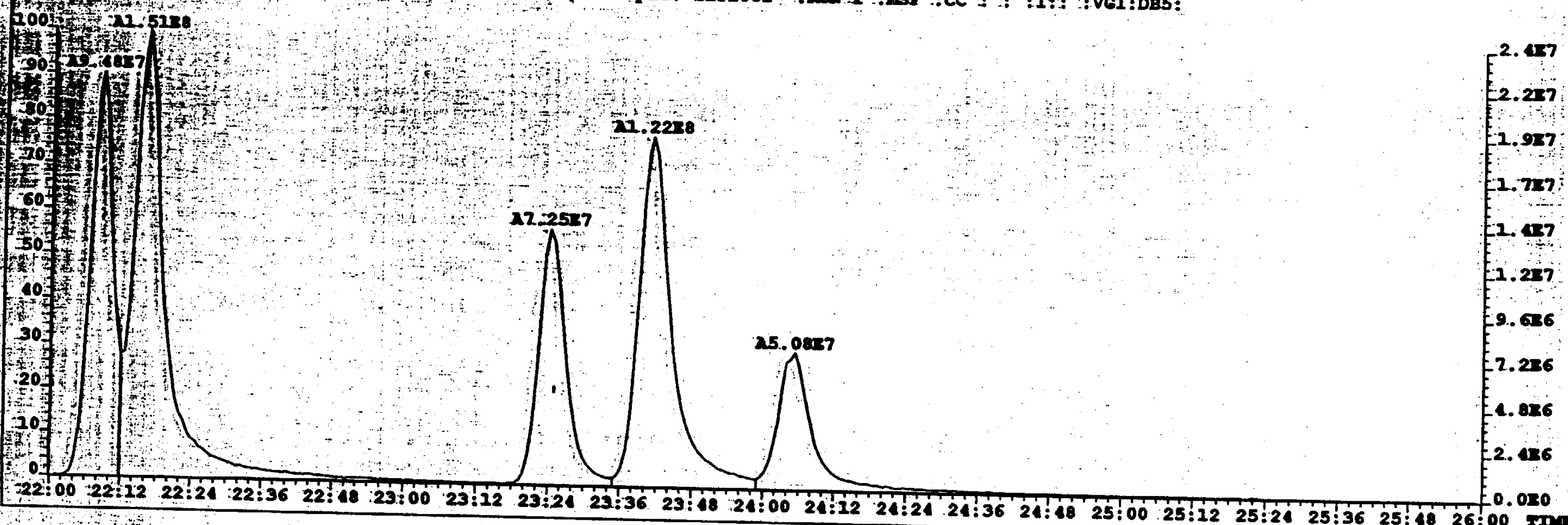
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
240.1692 S:18 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:



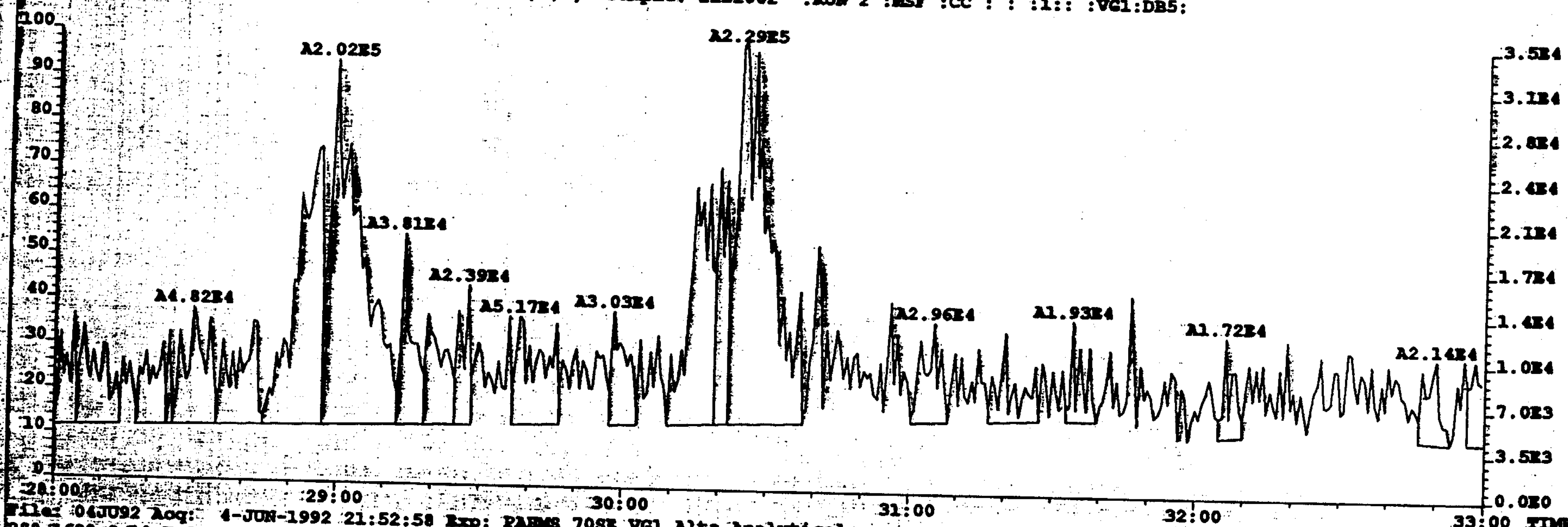
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
252.0939 S:18 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:



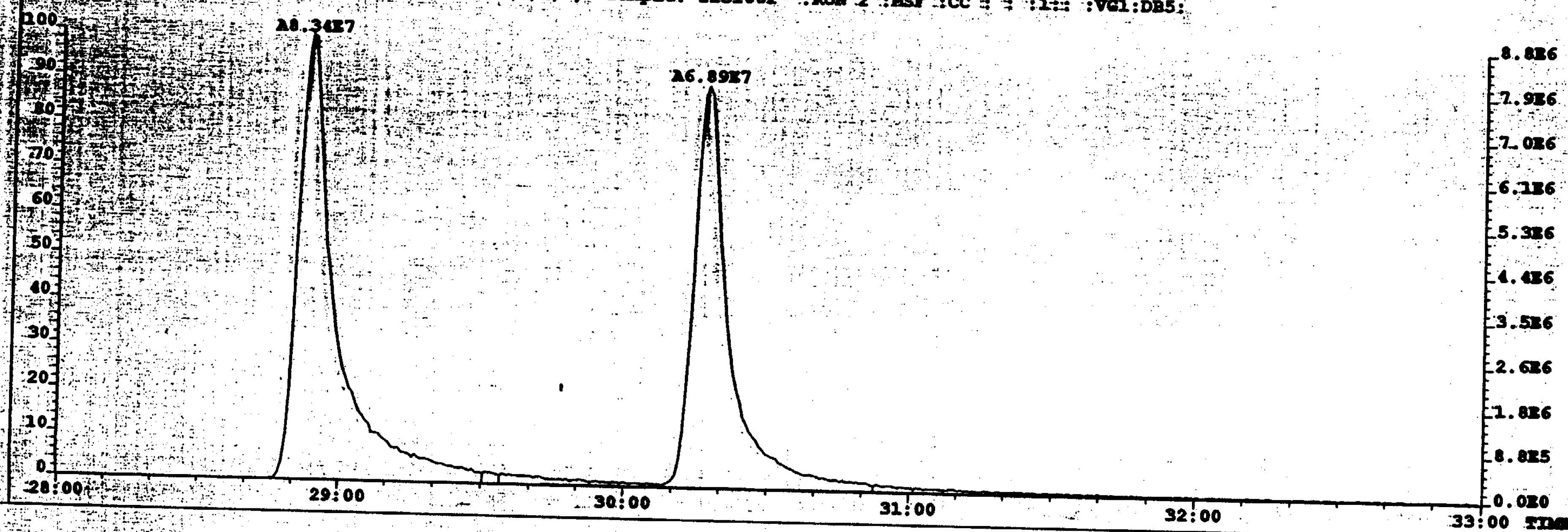
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
264.1692 S:18 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:



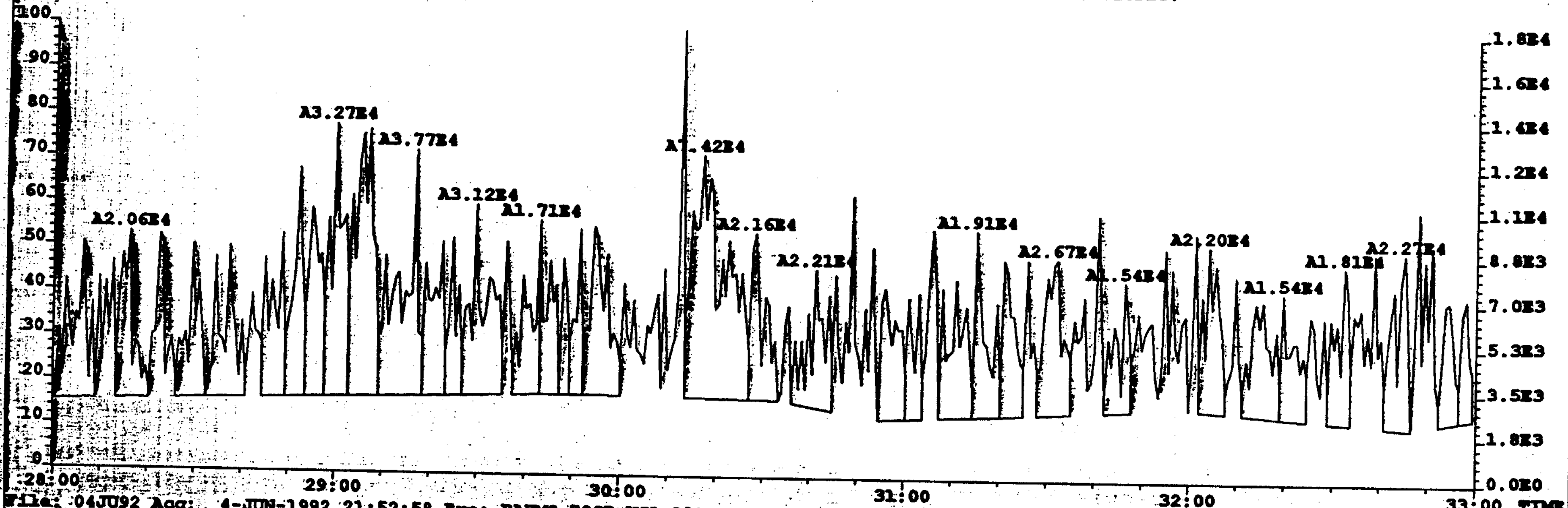
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
276.0939 S:18 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:



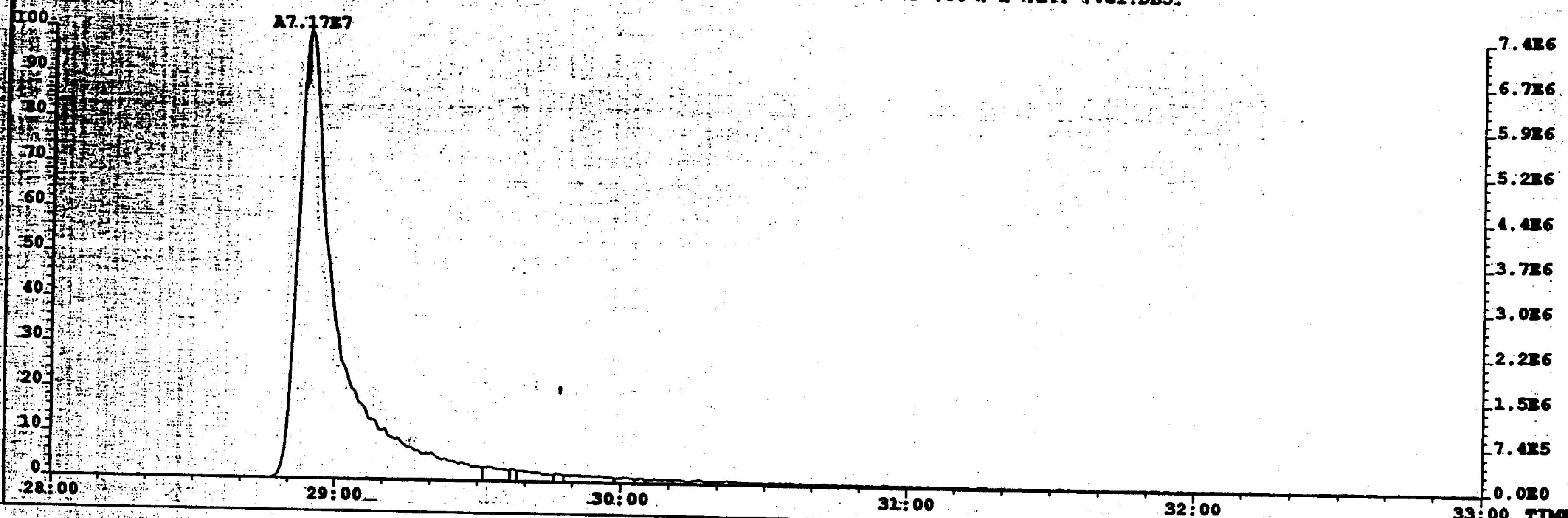
File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
288.1692 S:18 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:



File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
278.1096 S:18 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 :MSF :CC : : :1:: :VG1:DB5:

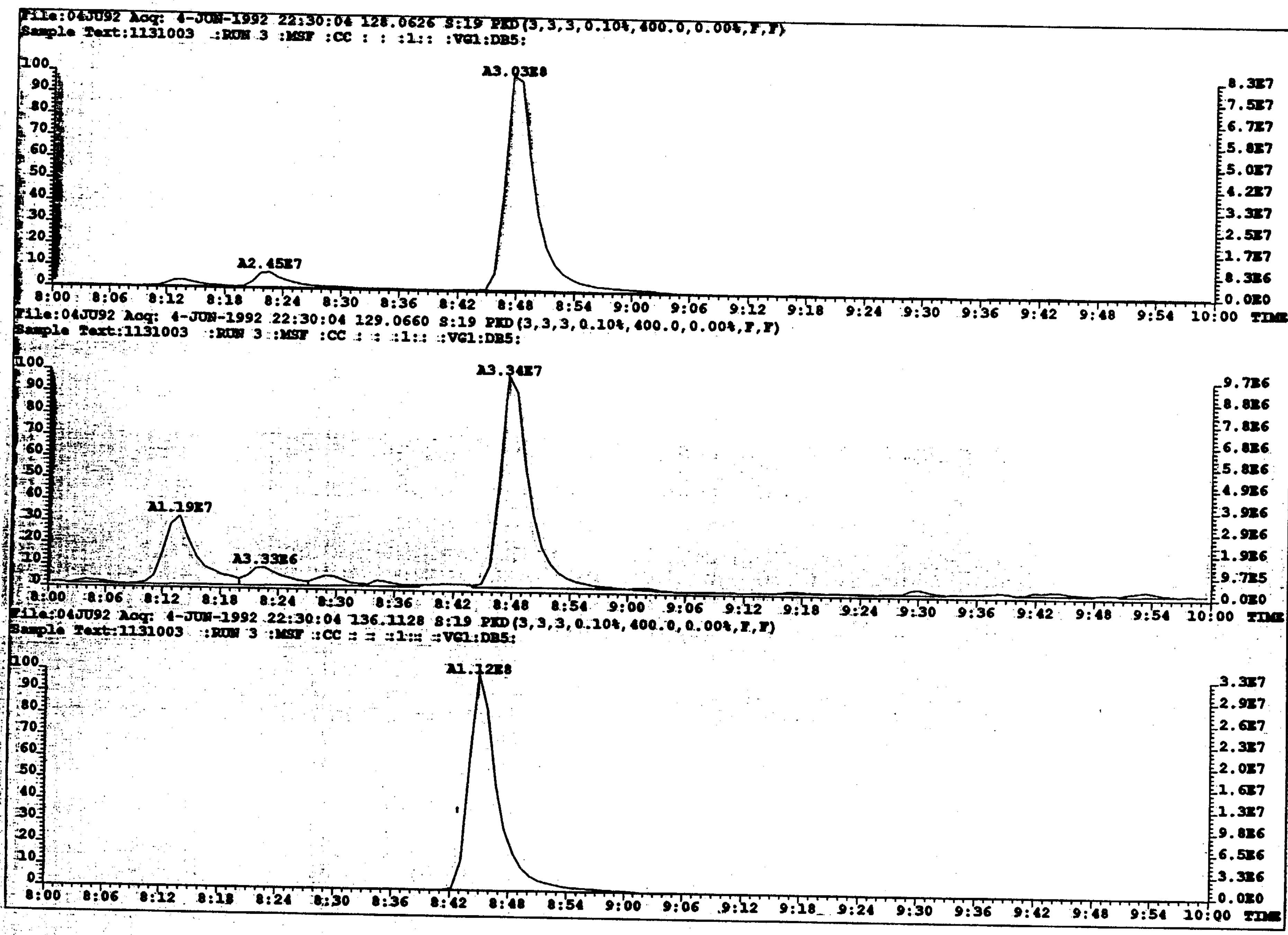


File: 04JU92 Acq: 4-JUN-1992 21:52:58 Exp: PAHMS 70SE VG1 Alta Analytical
292.1974 S:18 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131002 :RUN 2 ::MSF :CC : : ::1:: :VG1:DB5:



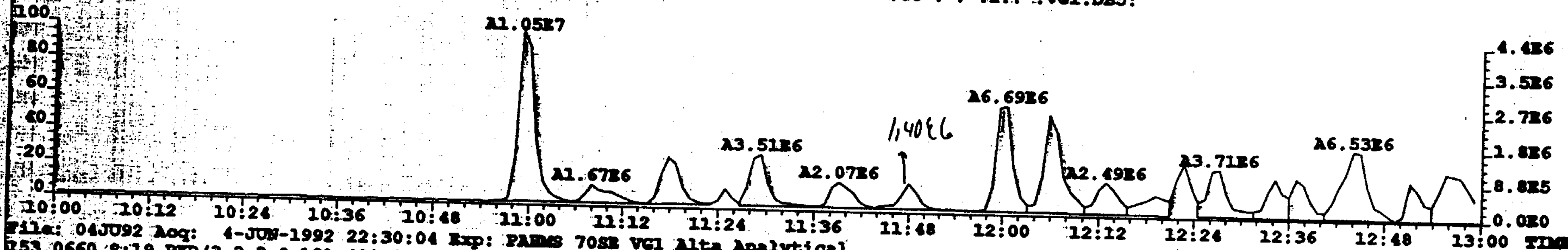
Mass Spec : VG1 Results : 04JU92191.RES : PAH.TRG
GC Column : DB5 Date analyzed : 4-JUN-1992
Data file : 04JU92 1131003 :RUN 3 :MSF :CC : : Cal : IPAH.RRF
ight : 1

Name	Total Response	Isotope Ratio		R.T. mm:ss		RRF	pg/ :	% Rec
D1-2-METHYL-NAPHTHALENE	152160200	1.00	T	10: 16	Y	1	200.00	
D8-NAPHTHALENE	224573200	1.00	T	8: 45	Y	1.9e+00	158.18	79
NAPHTHALENE	605852400	1.00	T	8: 48	Y	9.9e-01	~~542.65~~ 540	
NAPHTHALENE-2ND	66872640	1.00	T	8: 48	Y	1.0e-01	570.58	
D8-ACENAPTHYLENE	161658080	1.00	T	11: 46	Y	1.6e+00	134.24	67
ACENAPTHYLENE	2.80E6 ~~3488642~~	1.00	T	11: 48	Y	1.1e+00	~~3.90~~ RL<5.0	
ACENAPTHYLENE-2ND	3145316	1.00	T	11: 48	Y	1.4e-01	27.00	
D10-ACENAPHTHENE	122985000	1.00	T	12: 2	Y	9.9e-01	163.51	82
ACENAPHTHENE	7948034	1.00	T	12: 6	Y	1.1e+00	12.00 12	
D10-FLUORENE	136922600	1.00	T	12: 54	Y	1.1e+00	162.99	81
FLUORENE	2.30E7 ~~28654440~~	1.00	T	12: 57	Y	9.5e-01	~~44.01~~ 35	
D10-PHENANTHRENE	1.32E8 ~~102867680~~	1.00	T	14: 20	Y	9.3e-01	187 ~~146.11~~	~~73~~ 93%
PHENANTHRENE	1.93E6 ~~12320862~~	1.00	T	14: 25	Y	1.3e+00	~~17.92~~ 220	
PHENANTHRENE-2ND	19087270	1.00	T	14: 26	Y	1.3e-01	276.78	
ANTHRACENE	1.52E7 ~~12320862~~	1.00	T	14: 25	Y	1.4e+00	~~16.66~~ 16	
D10-ANTHRACENE	102867680	1.00	T	14: 20	Y	8.7e-01	155.62	78
D12-PERYLENE	160507280	1.00	T	24: 6	Y	1	200.00	
D10-FLUORANTHENE	235156600	1.00	T	15: 51	Y	2.1e+00	141.58	71
FLUORANTHENE	2.36E7 ~~31120100~~	1.00	T	15: 53	Y	1.2e+00	~~22.90~~ 17	
D10-PYRENE	209808800	1.00	T	16: 13	Y	1.9e+00	139.02	70
PYRENE	1.26E7 ~~16058504~~	1.00	T	16: 15	Y	1.3e+00	~~12.21~~ 8.8	
D12-BENZ(A)ANTHRACENE	168525400	1.00	T	18: 32	Y	1.3e+00	164.40	82
BENZ(A)ANTHRACENE	8.12E6 ~~* No Peak~~	0.00	T	18: 36	N	1.2e+00	~~0.00~~ 8.0	
D12-CHRYSENE	259334200	1.00	T	18: 38	Y	2.0e+00	162.17	81
CHRYSENE	1.32E7 ~~23226380~~	1.00	T	18: 42	Y	1.0e+00	~~17.50~~ 10	
D12-BENZO(B)FLUORANTHENE	256160400	1.00	T	22: 9	Y	8.9e-01	356.94	89
BENZO(B)FLUORANTHENE	4697124	1.00	T	22: 16	Y	1.5e+00	4.86 RL<5.0	
D12-BENZO(K)FLUORANTHENE	444449000	1.00	T	22: 17	Y	1.5e+00	364.65	91
BENZO(K)FLUORANTHENE	* No Peak	0.00	T	22: 23	N	1.3e+00	0.00 RL<5.0	
BENZO-E-PYRENE	1948602	1.00	T	23: 33	Y	1.1e+00	1.66 RL<5.0	
D12-BENZO(A)PYRENE	317543200	1.00	T	23: 42	Y	1.3e+00	309.03	77
BENZO(A)PYRENE	182336	1.00	T	23: 49	Y	1.2e+00	0.20 RL<5.0	
D12-INDENO()PYRENE	212277000	1.00	T	28: 54	Y	6.7e-01	393.17	98
INDENO(1,2,3-CD)PYRENE	272361	1.00	T	28: 56	Y	1.9e+00	0.27 RL<5.0	
14-DIBENZO-AH-ANTHRACENE	195189080	1.00	T	28: 55	Y	6.0e-01	402.77	101
DIBENZO-AH-ANTHRACENE	117984	1.00	T	29: 6	Y	1.4e+00	0.17 RL<5.0	
D12-BENZO(GHI)PERYLENE	175220640	1.00	T	30: 18	Y	5.9e-01	372.22	93
BENZO(GHI)PERYLENE	274556	1.00	T	30: 17	Y	2.2e+00	0.29 RL<5.0	
D10-PYRENE	235156600	1.00	T	15: 51	Y	1.0e+00	200 ~~400.00~~	
D14-TERPHENYL	867832800	1.00	T	16: 19	Y	1.1e+00	~~1356.10~~ 680	136
D12-BENZO(A)PYRENE	317543200 ~~* No Peak~~	0.00	T	23: 49	N	1.0e+00	~~800.00~~ 400	
D12-BENZO-E-PYRENE	~~* No Peak~~ 1.84E8	0.00	T	23: 32	N	4.3e-01	~~*NoR?~~ 540	108

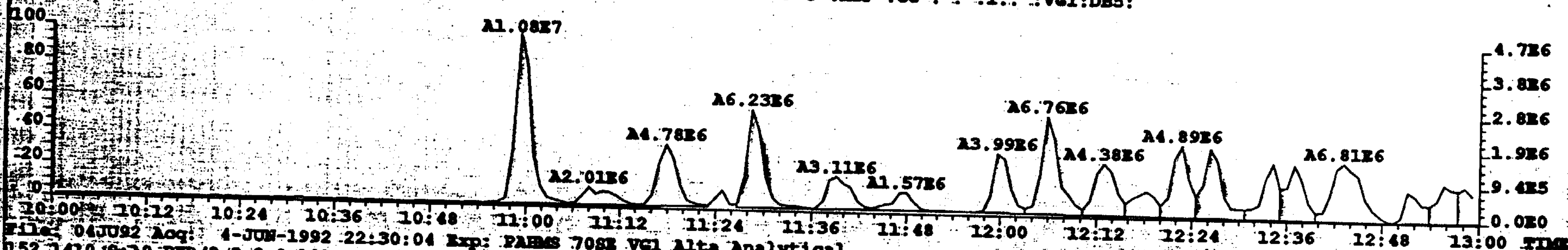


File:04JU92 Acq: 4-JUN-1992 22:30:04 128.0626 S:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:
A3.03E8
A2.45E7
8.3E7
7.5E7
6.7E7
5.8E7
5.0E7
4.2E7
3.3E7
2.5E7
1.7E7
8.3E6
0.0E0
File:04JU92 Acq: 4-JUN-1992 22:30:04 129.0660 S:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:
A3.34E7
A1.19E7
A3.33E6
9.7E6
8.8E6
7.8E6
6.8E6
5.8E6
4.9E6
3.9E6
2.9E6
1.9E6
9.7E5
0.0E0
File:04JU92 Acq: 4-JUN-1992 22:30:04 136.1128 S:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:
A1.12E8
3.3E7
2.9E7
2.6E7
2.3E7
2.0E7
1.6E7
1.3E7
9.8E6
6.5E6
3.3E6
0.0E0
100
90
80
70
60
50
40
30
20
10
0
8:00 8:06 8:12 8:18 8:24 8:30 8:36 8:42 8:48 8:54 9:00 9:06 9:12 9:18 9:24 9:30 9:36 9:42 9:48 9:54 10:00 TIME

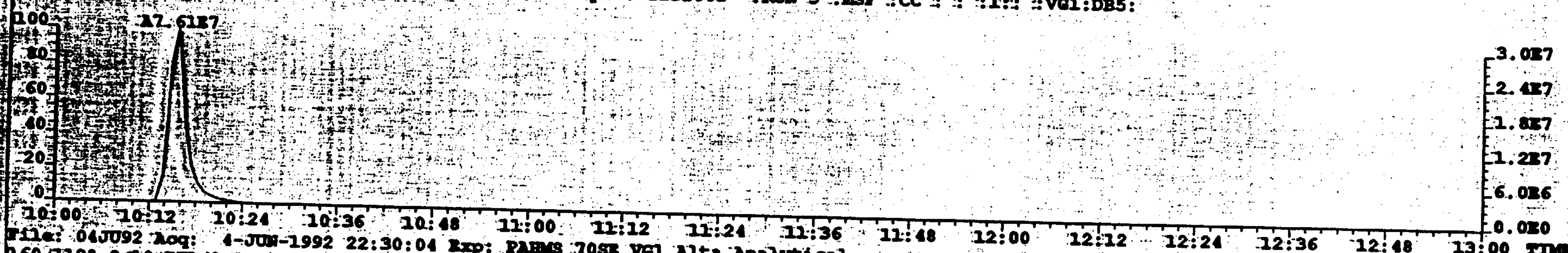
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
152.0626 S:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : : :1:: ::VG1:DB5:



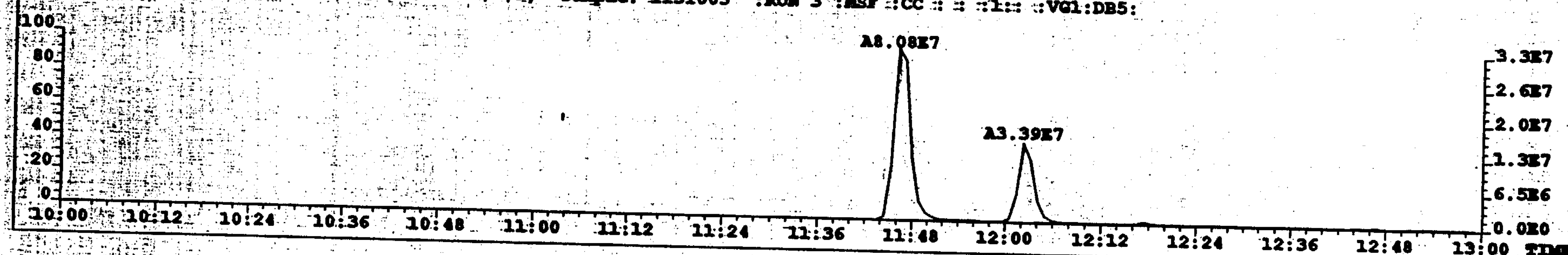
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
153.0660 S:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : : :1:: ::VG1:DB5:



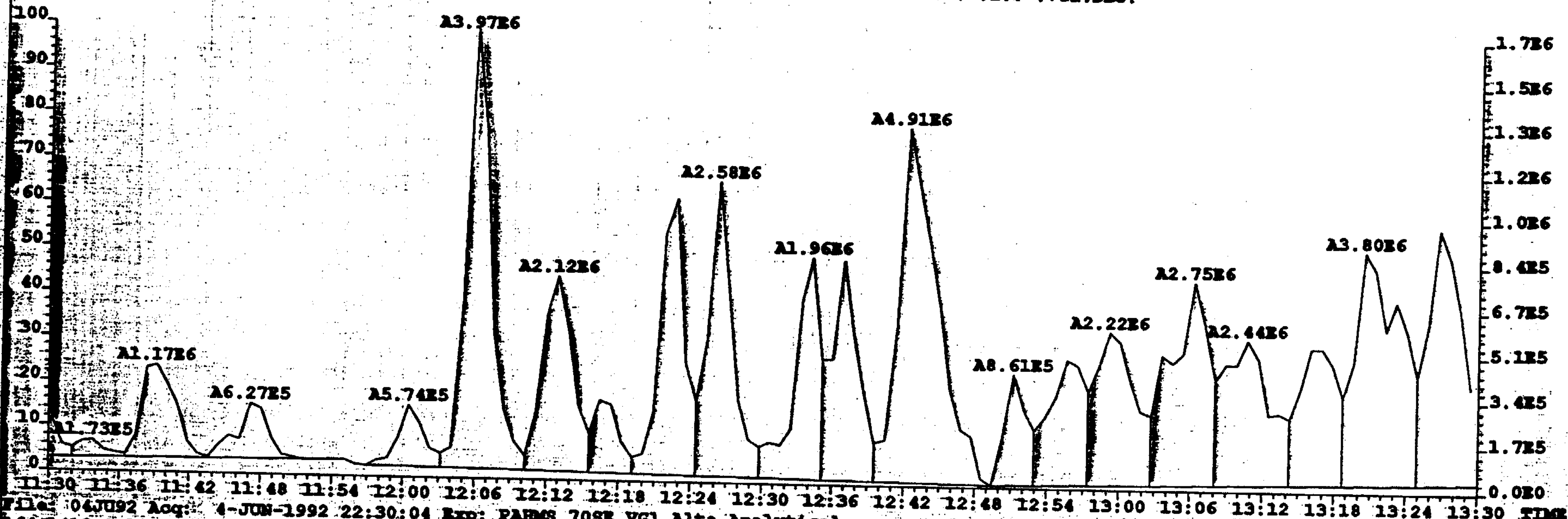
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
152.1410 S:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF ::CC :: :: ::1:: ::VG1:DB5:



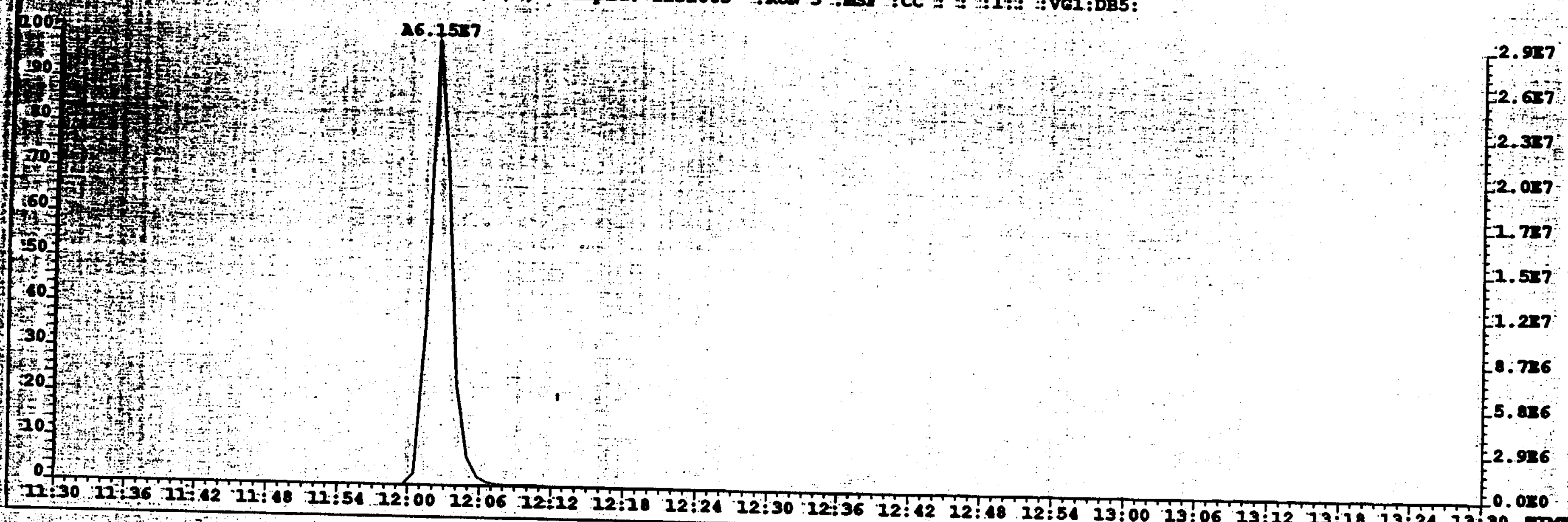
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
160.1128 S:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF ::CC :: :: ::1:: ::VG1:DB5:



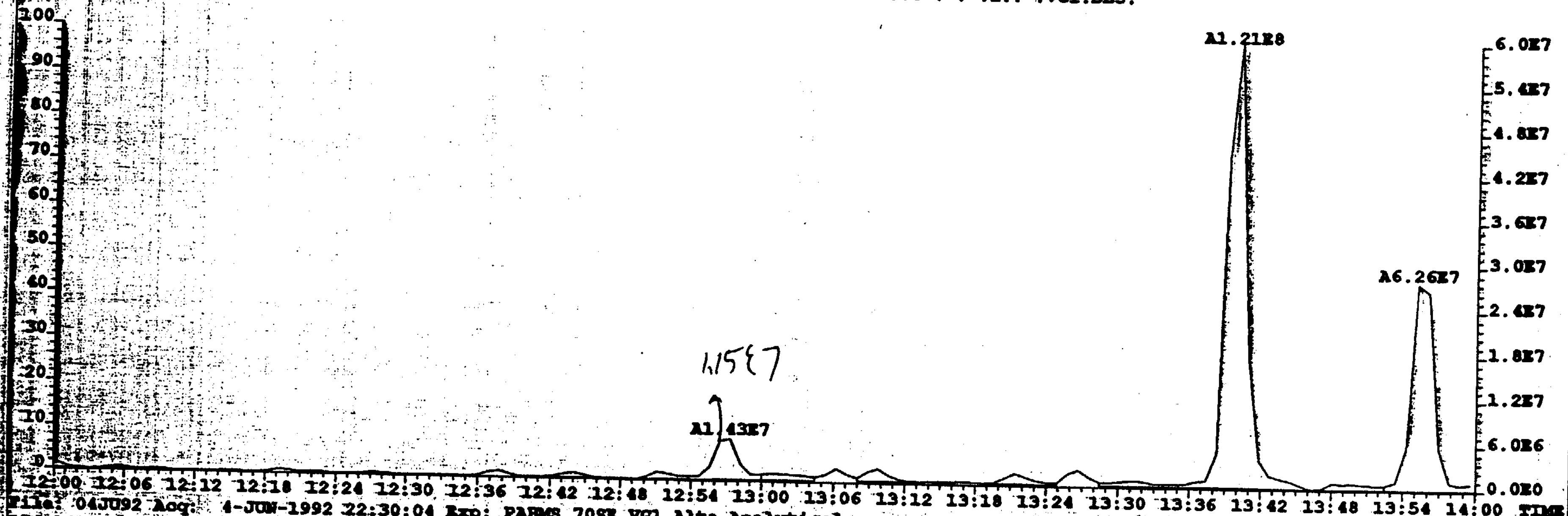
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
154.0783 S:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:



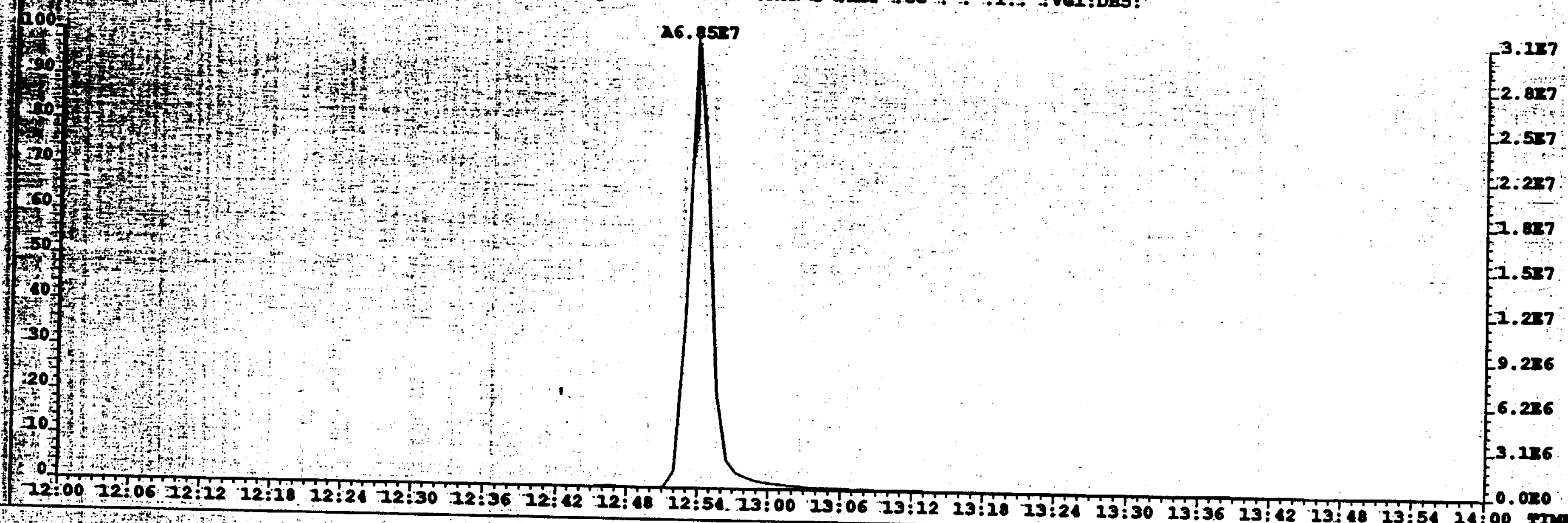
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
164.1410 S:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:

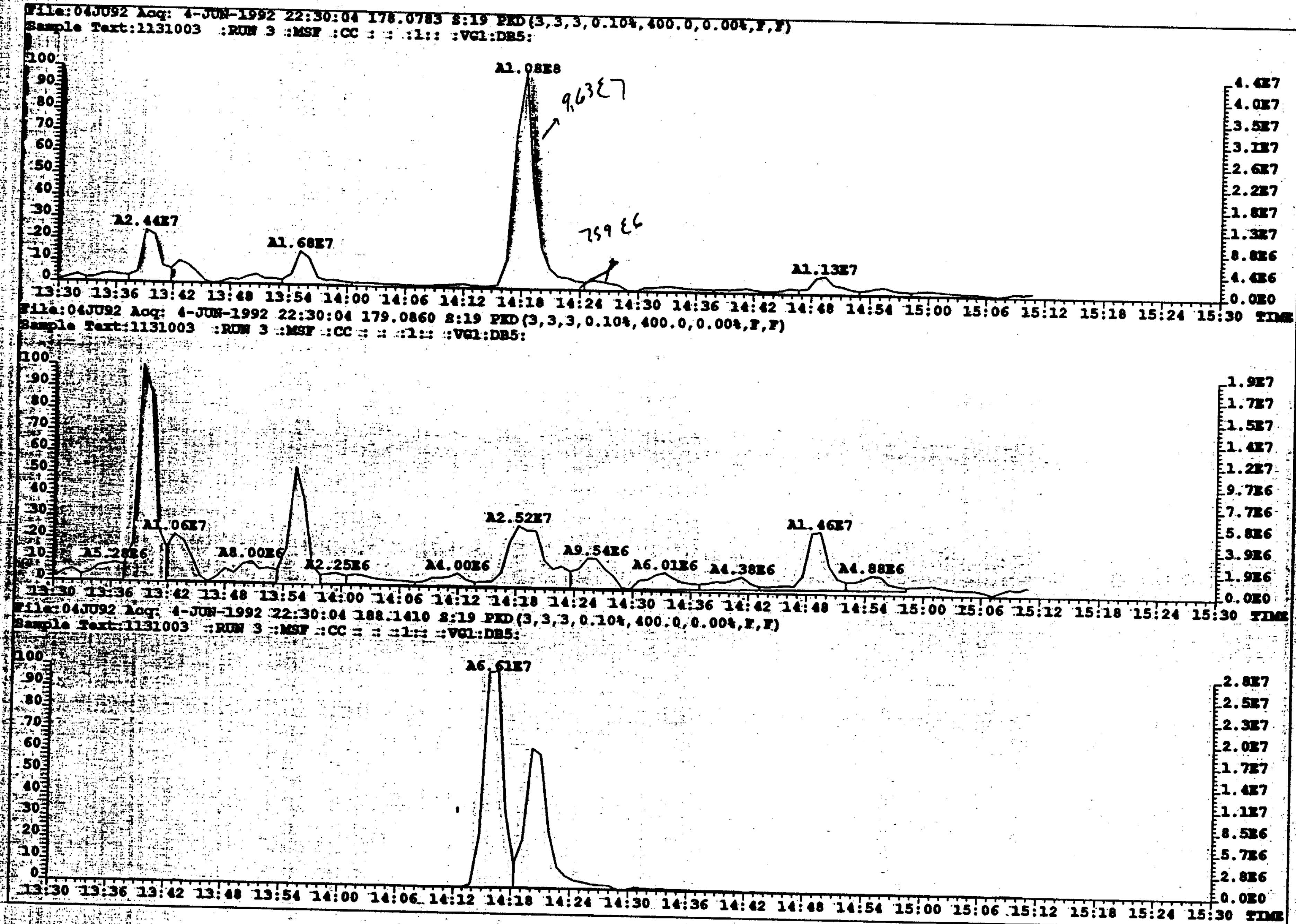


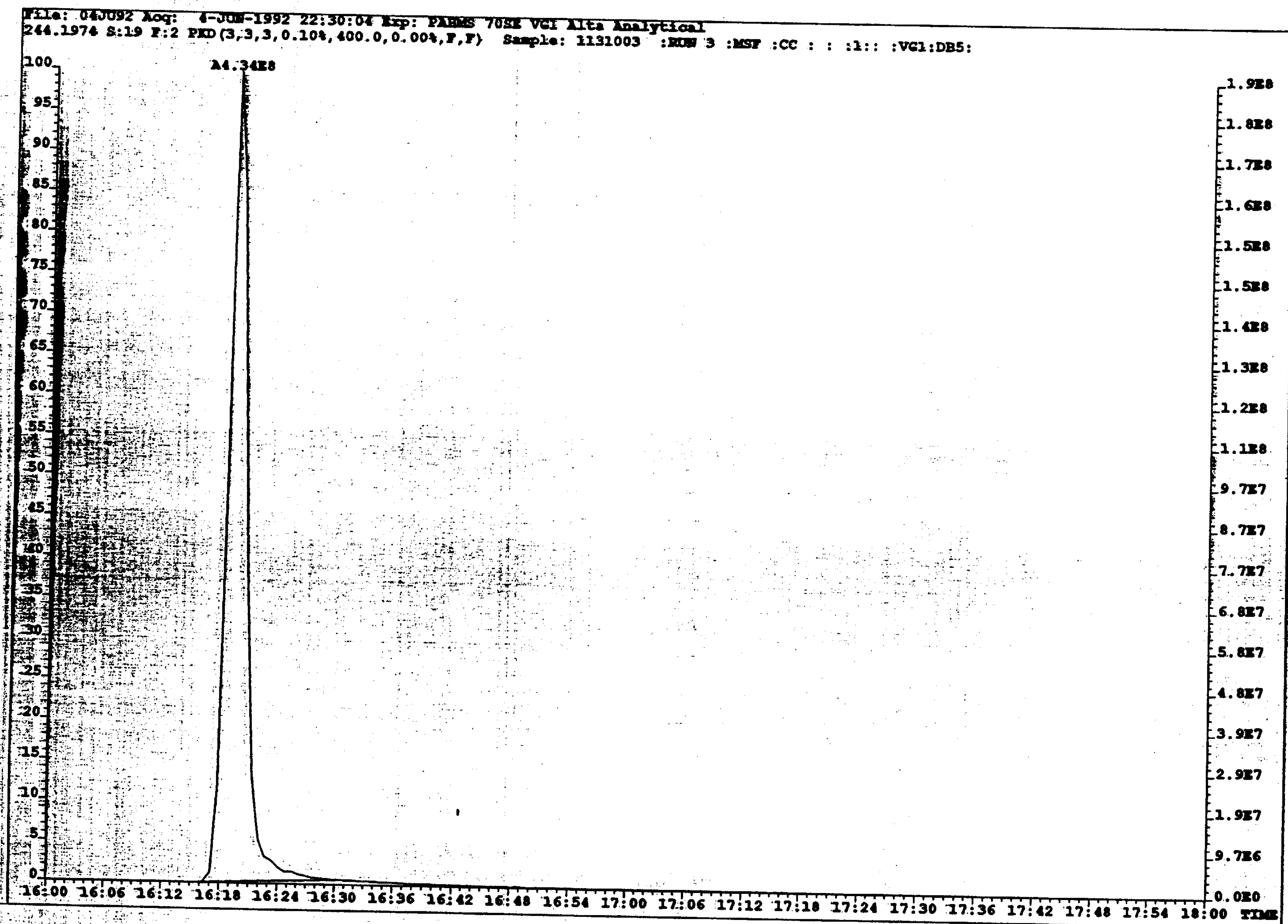
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
166.0783 S:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:



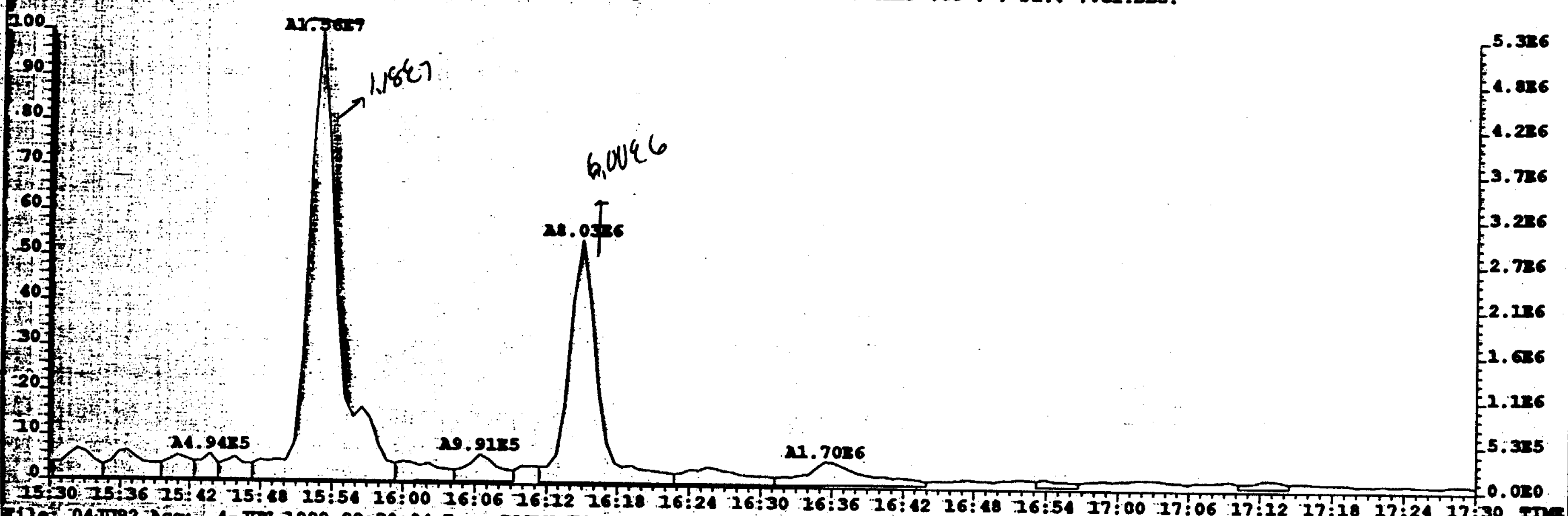
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
176.1410 S:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:



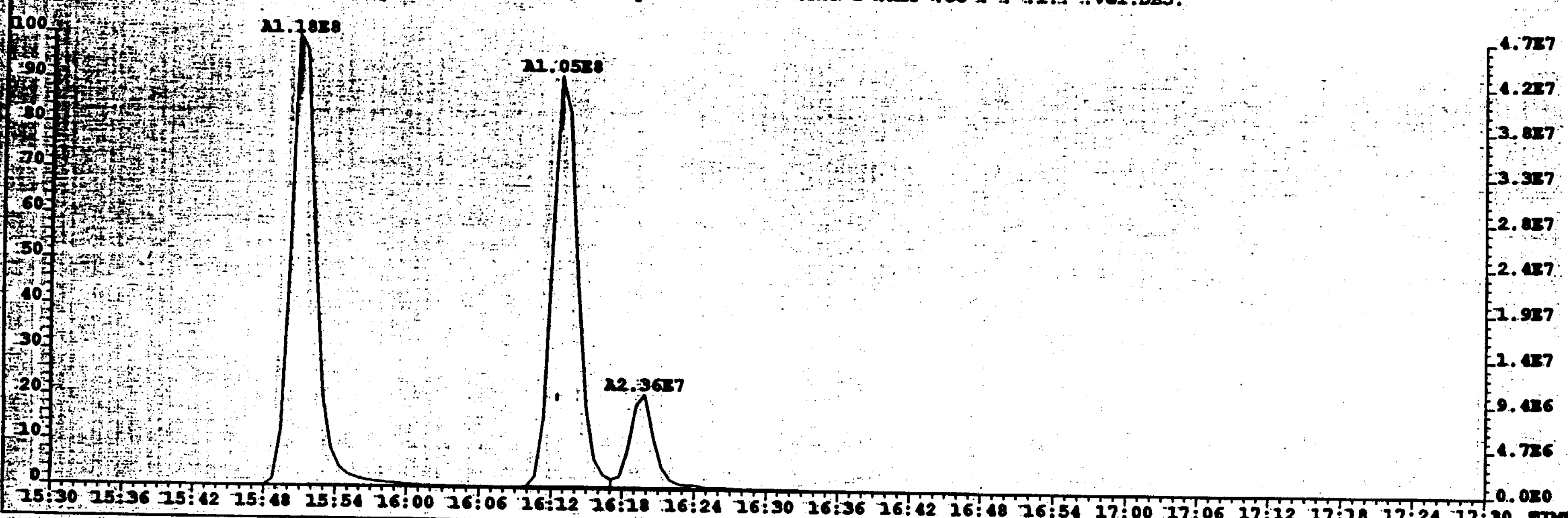

File:04JU92 Acq: 4-JUN-1992 22:30:04 178.0783 8:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:
A2.44E7
A1.68E7
A1.08E8
9,63E7
759 E6
A1.13E7
File:04JU92 Acq: 4-JUN-1992 22:30:04 179.0860 8:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:
A1.06E7
A5.28E6
A8.00E6
A2.25E6
A4.00E6
A2.52E7
A9.54E6
A6.01E6
A4.38E6
A1.46E7
A4.88E6
File:04JU92 Acq: 4-JUN-1992 22:30:04 188.1410 8:19 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:
A6.61E7
TIME


File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PABMS 70SE VGI Alta Analytical
244.1974 S:19 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:
A4.34E8
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
1.9E8
1.8E8
1.7E8
1.6E8
1.5E8
1.5E8
1.4E8
1.3E8
1.2E8
1.1E8
9.7E7
8.7E7
7.7E7
6.8E7
5.8E7
4.8E7
3.9E7
2.9E7
1.9E7
9.7E6
0.0E0
16:00 16:06 16:12 16:18 16:24 16:30 16:36 16:42 16:48 16:54 17:00 17:06 17:12 17:18 17:24 17:30 17:36 17:42 17:48 17:54 18:00
TIME

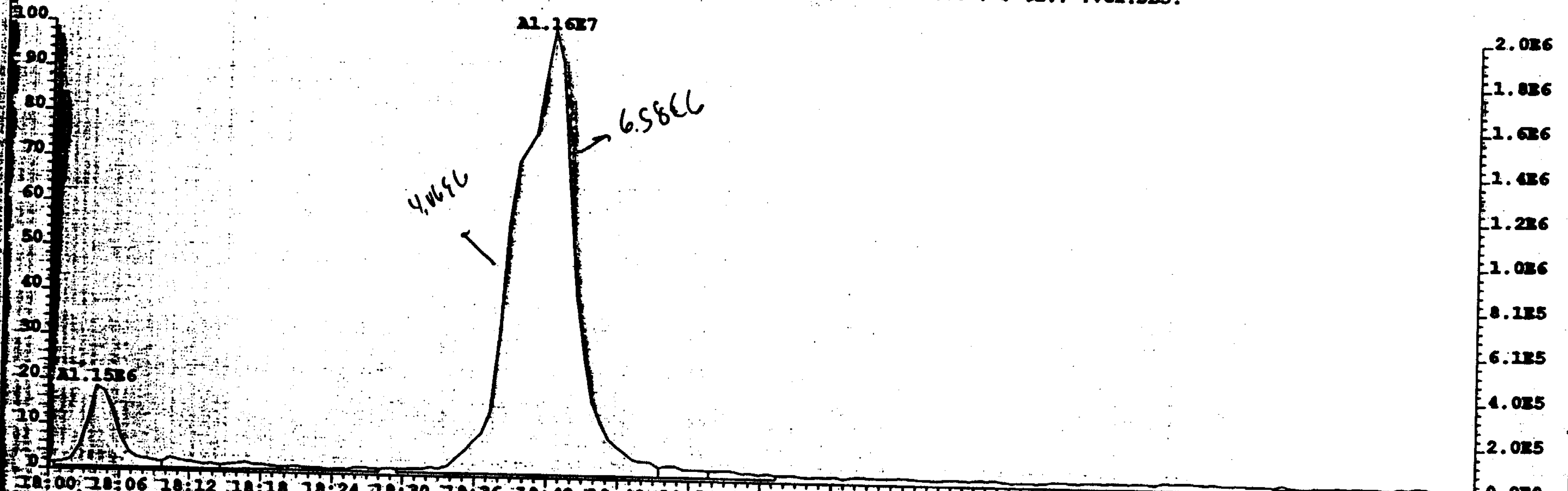
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
202.0782 S:19 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:



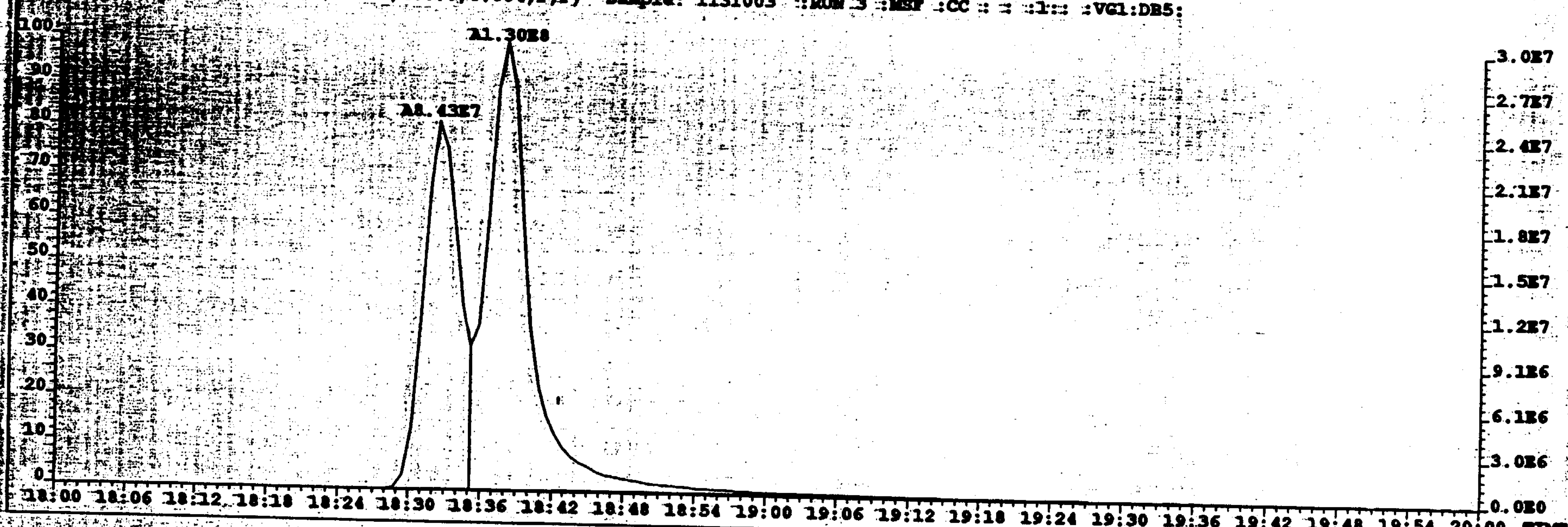
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
212.1410 S:19 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131003 ::RUN 3 ::MSF :CC :: :: ::1:: ::VG1:DB5:



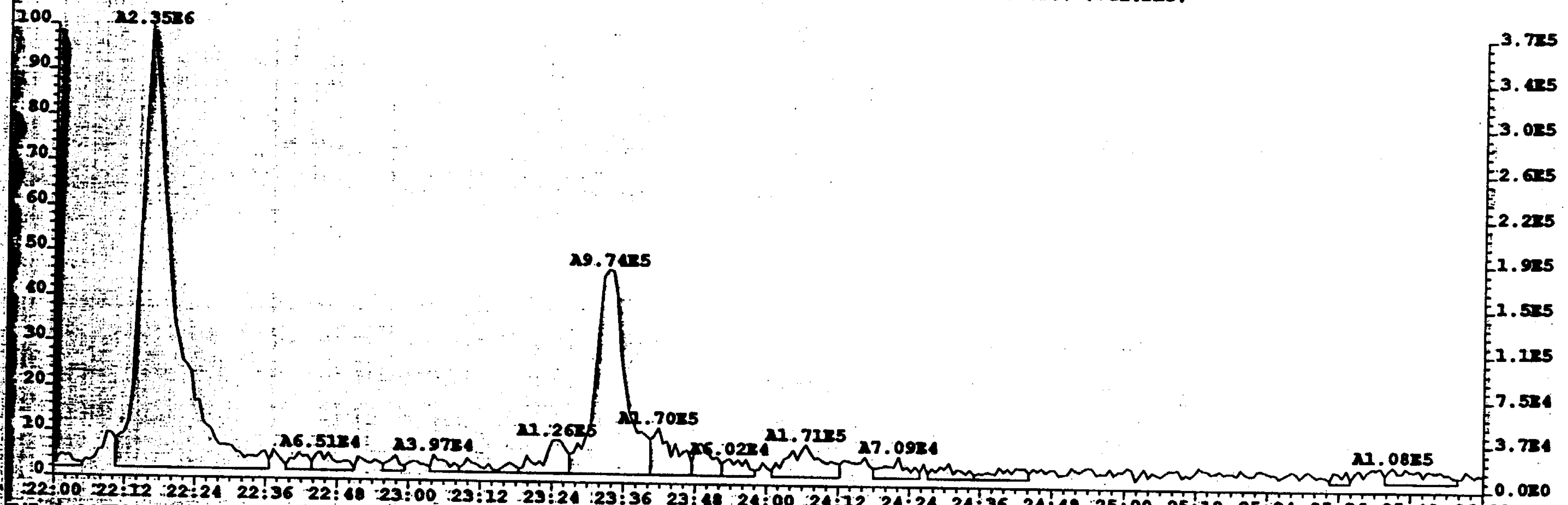
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
228.0939 S:19 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:



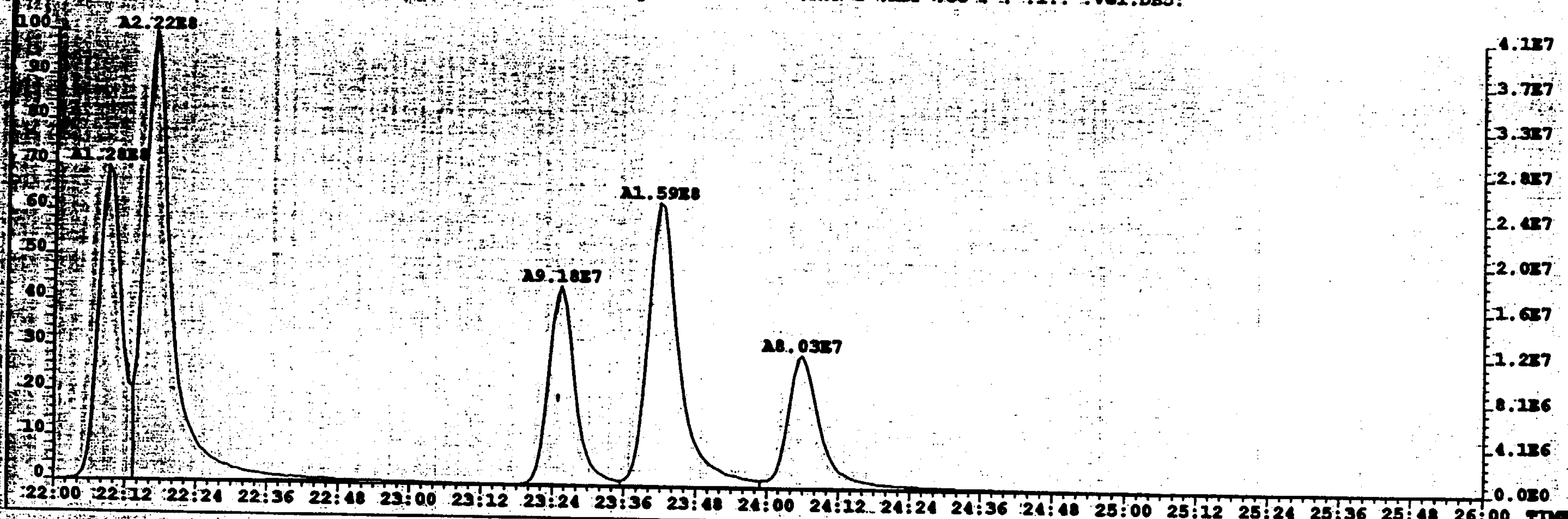
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
240.1692 S:19 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131003 ::RUN 3 ::MSF :CC :: :: ::1:: :VG1:DB5:



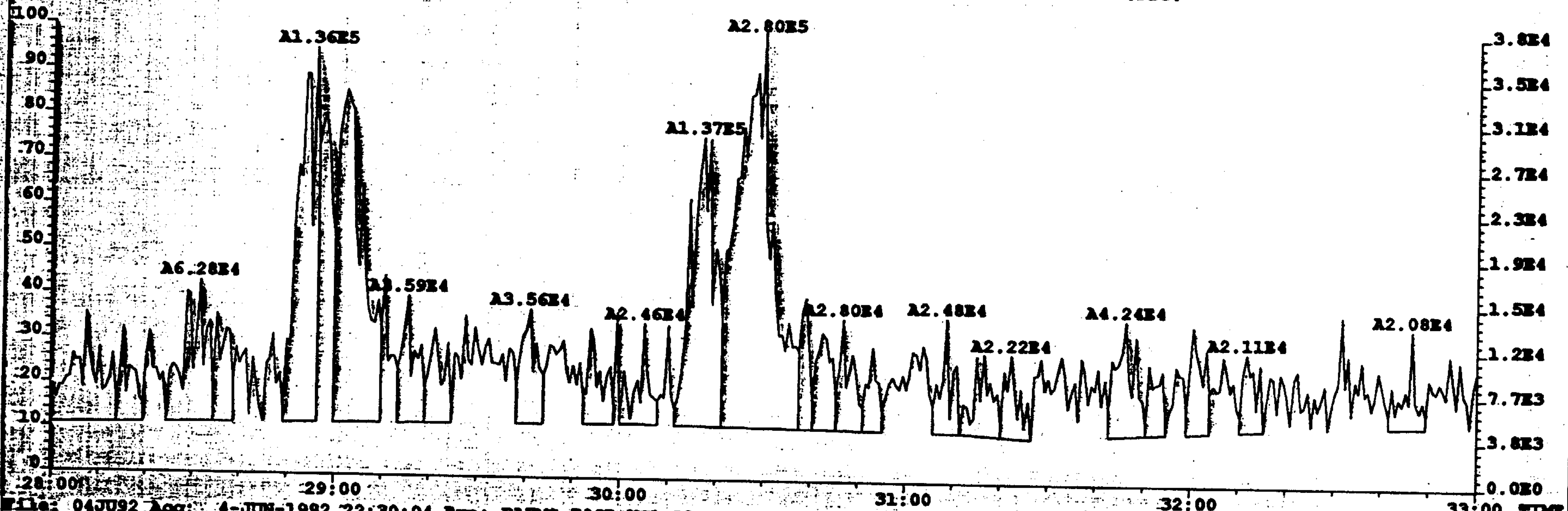
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
252.0939 S:19 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:



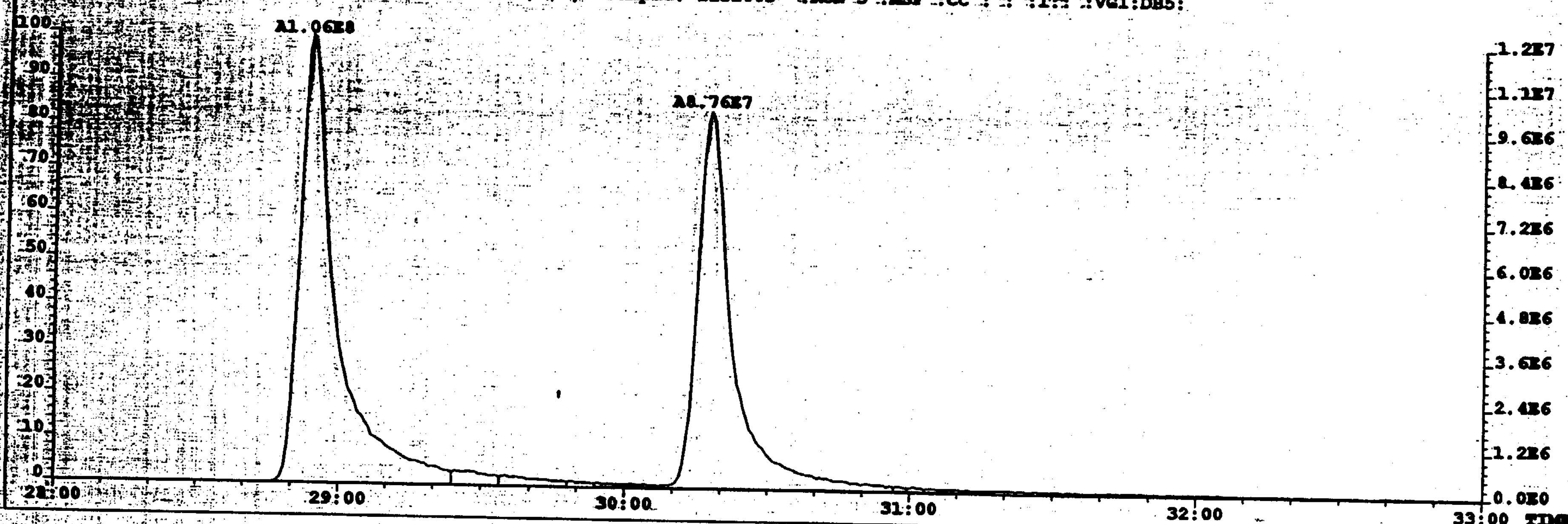
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
264.1692 S:19 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131003 ::RUN 3 :MSF :CC :: :: :1:: :VG1:DB5:



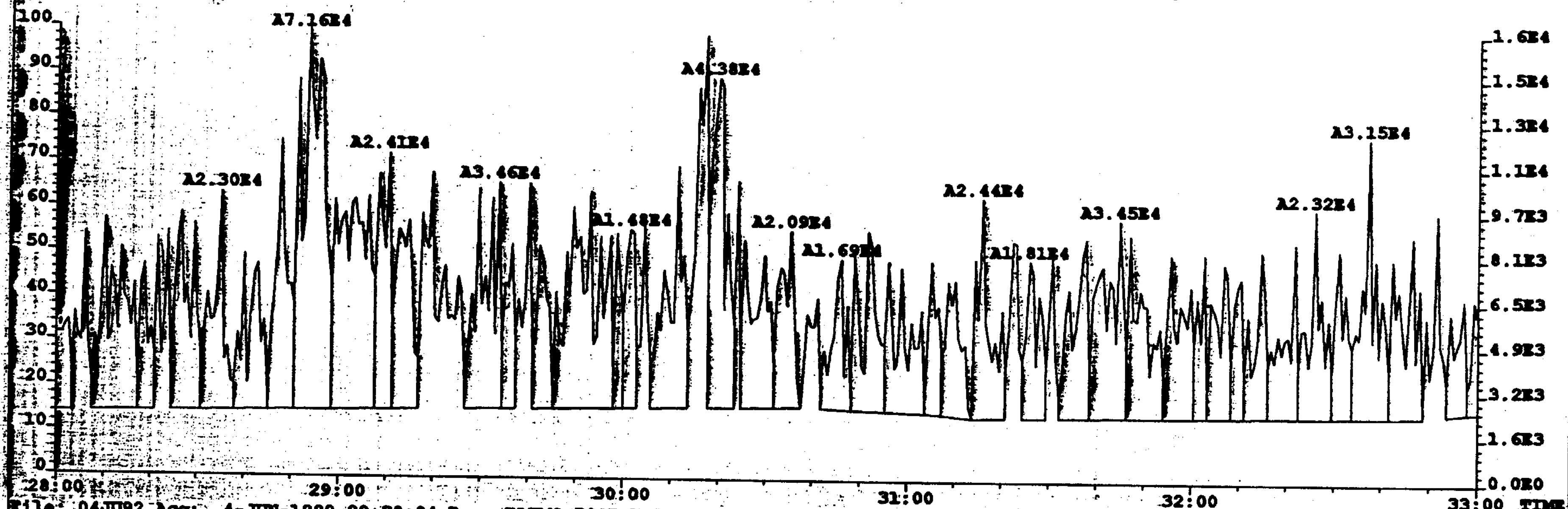
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
276.0939 S:19 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:



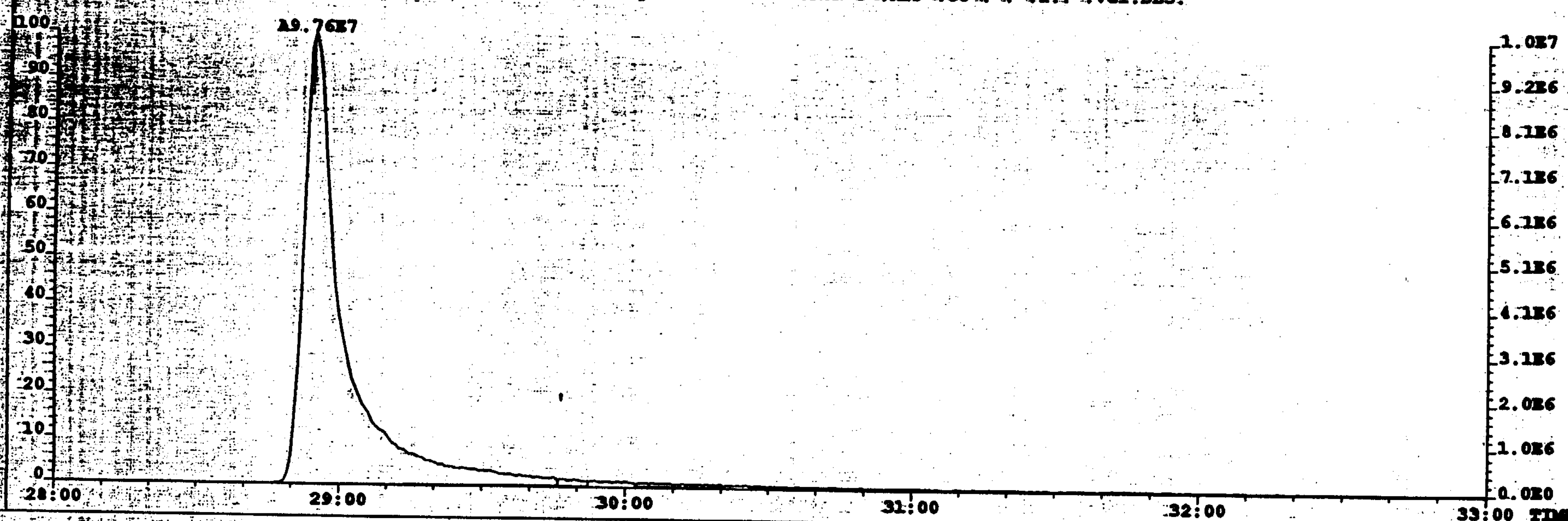
File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
288.1692 S:19 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : :: :1:: :VG1:DB5:



File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
278.1096 S:19 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:



File: 04JU92 Acq: 4-JUN-1992 22:30:04 Exp: PAHMS 70SE VG1 Alta Analytical
292.1974 S:19 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131003 :RUN 3 :MSF :CC : : :1:: :VG1:DB5:

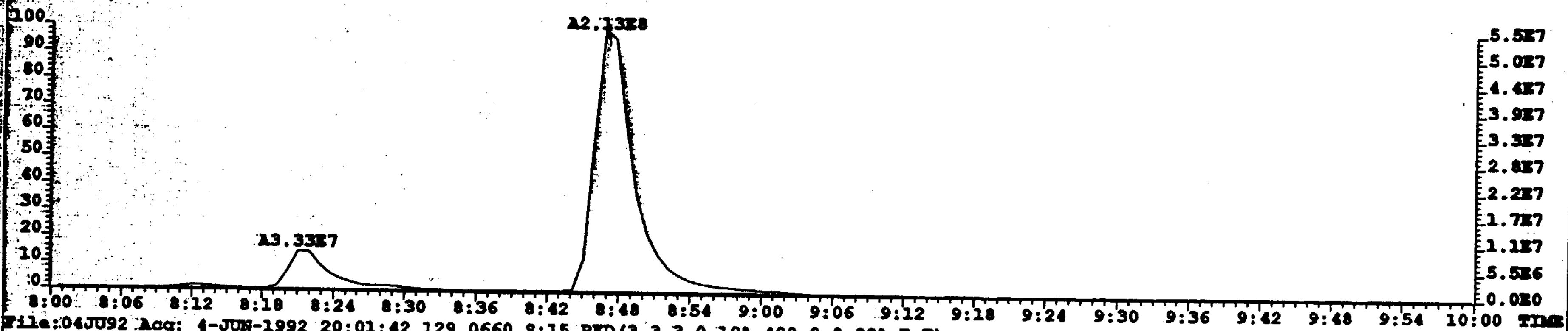


05-JUN-1992 09:27:50 AM DIOXIN/FURAN RESULTS 11310-4 1

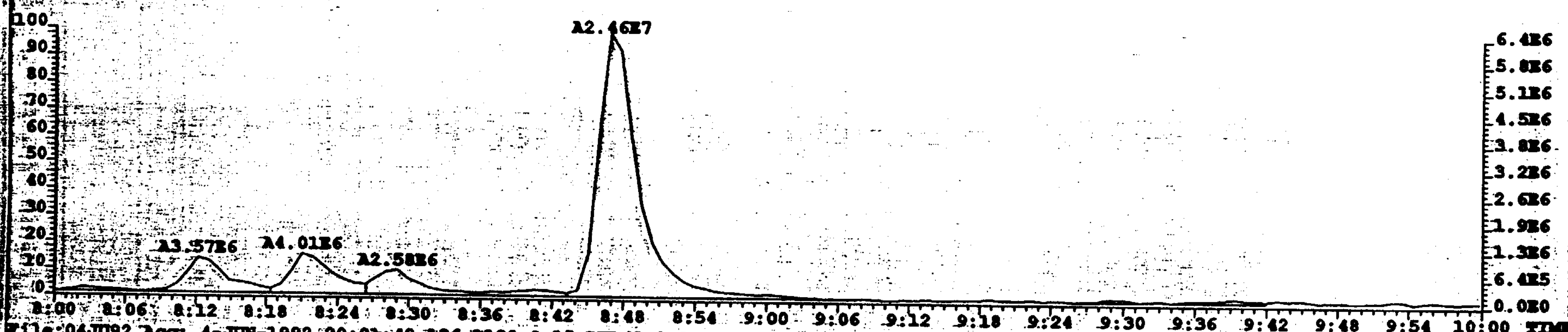
Mass Spec : VG1 Results : 04JU92151.RES : PAH:TRG
GC Column : DB5 Date analyzed : 4-JUN-1992
Data file : 04JU92 1131004 : RUN BLANK :MSF :CC Cal : IPAH:RRF
Weight : 1

Name	Total Response	Isotope Ratio		R.T. mm:ss		RRF	pg/ :	% Rec
D1-2-METHYL-NAPHTHALENE	194307180	1.00	T	10: 15	Y	1	200.00	
D8-NAPHTHALENE	213050800	1.00	T	8: 44	Y	1.9e+00	117.51	59
NAPHTHALENE	425418600	1.00	T	8: 47	Y	9.9e-01	401.65 400	
NAPHTHALENE-2ND	49248740	1.00	T	8: 47	Y	1.0e-01	442.93	
D8-ACENAPTHYLENE	176149440	1.00	T	11: 46	Y	1.6e+00	114.54	57
ACENAPTHYLENE	1596249	1.00	T	11: 48	Y	1.1e+00	1.67 RL5.0	
ACENAPTHYLENE-2ND	768149	1.00	T	11: 48	Y	1.4e-01	6.05	
D10-ACENAPHTHENE	122956720	1.00	T	12: 2	Y	9.9e-01	128.01	64
ACENAPHTHENE	1710554	1.00	T	12: 6	Y	1.1e+00	2.58 RL5.0	
D10-FLUORENE	150035860	1.00	T	12: 54	Y	1.1e+00	139.86	70
FLUORENE	4E6 ~~6074660~~	1.00	T	12: 58	Y	9.5e-01	~~8.51~~ 5.6	
D10-PHENANTHRENE	1.5E8 ~~126262740~~	1.00	T	14: 21	Y	9.3e-01	114 ~~140.44~~	~~70~~ 87
PHENANTHRENE	1.4E7 ~~22198780~~	1.00	T	14: 18	Y	1.3e+00	~~26.30~~ 18	
PHENANTHRENE-2ND	5177442	1.00	T	14: 18	Y	1.3e-01	61.17	
ANTHRACENE	1.7E6 ~~No Peak~~	0.00	T	14: 25	N	1.4e+00	~~0.00~~ RL=5.0	
D10-ANTHRACENE	126262740	1.00	T	14: 21	Y	8.7e-01	149.58	75
D12-PERYLENE	144350420	1.00	T	24: 8	Y	1	200.00	
D10-FLUORANTHENE	~~300459000~~	1.00	T	15: 52	Y	2.1e+00	201.14	101
FLUORANTHENE	2.5E7 ~~29306360~~	1.00	T	15: 54	Y	1.2e+00	~~16.88~~ 14	
D10-PYRENE	276468200	1.00	T	16: 14	Y	1.9e+00	203.69	102
PYRENE	1.7E7 ~~19836854~~	1.00	T	16: 16	Y	1.3e+00	~~11.44~~ 9.5	
D12-BENZ(A)ANTHRACENE	190922280	1.00	T	18: 34	Y	1.3e+00	207.09	104
BENZ(A)ANTHRACENE	7.7E6 * ~~No Peak~~	0.00	T	18: 37	N	1.2e+00	~~0.00~~ 6.8	
D12-CHRYSENE	298813800	1.00	T	18: 39	Y	2.0e+00	207.77	104
CHRYSENE	1.96E7 ~~29110980~~	1.00	T	18: 43	Y	1.0e+00	~~19.04~~ 13	
D12-BENZO(B)FLUORANTHENE	281424400	1.00	T	22: 11	Y	8.9e-01	436.03	109
BENZO(B)FLUORANTHENE	3515048	1.00	T	22: 17	Y	1.5e+00	3.31 RL5.0	
D12-BENZO(K)FLUORANTHENE	451823000	1.00	T	22: 18	Y	1.5e+00	412.20	103
BENZO(K)FLUORANTHENE	* No Peak	0.00	T	22: 24	N	1.3e+00	0.00 RL5.0	
BENZO-E-PYRENE	1500612	1.00	T	23: 36	Y	1.1e+00	1.26 RL5.0	
D12-BENZO(A)PYRENE	358604800	1.00	T	23: 44	Y	1.3e+00	388.05	97
BENZO(A)PYRENE	72686	1.00	T	23: 53	Y	1.2e+00	0.07 RL5.0	
D12-INDENO()PYRENE	226943000	1.00	T	28: 56	Y	6.7e-01	467.38	117
INDENO(1,2,3-CD)PYRENE	176947	1.00	T	29: 1	Y	1.9e+00	0.16 RL5.0	
14-DIBENZO-AH-ANTHRACENE	189084400	1.00	T	28: 56	Y	6.0e-01	433.84	108
DIBENZO-AH-ANTHRACENE	40751	1.00	T	29: 4	Y	1.4e+00	0.06 RL5.0	
D12-BENZO(GHI)PERYLENE	181142640	1.00	T	30: 19	Y	5.9e-01	427.87	107
BENZO(GHI)PERYLENE	345225	1.00	T	30: 29	Y	2.2e+00	0.35 RL5.0	
D10-PYRENE	300459000	1.00	T	15: 52	Y	1.0e+00	200 ~~400.00~~	
D14-TERPHENYL	1074219200	1.00	T	16: 20	Y	1.1e+00	~~1313.78~~ 660	131
D12-BENZO(A)PYRENE	3.5E8 * ~~No Peak~~	0.00	T	23: 49	N	1.0e+00	~~800.00~~ 400	
D12-BENZO-E-PYRENE	* No Peak 2.02E8	0.00	T	23: 32	N	4.3e-01	~~*NoR?~~ 520	105

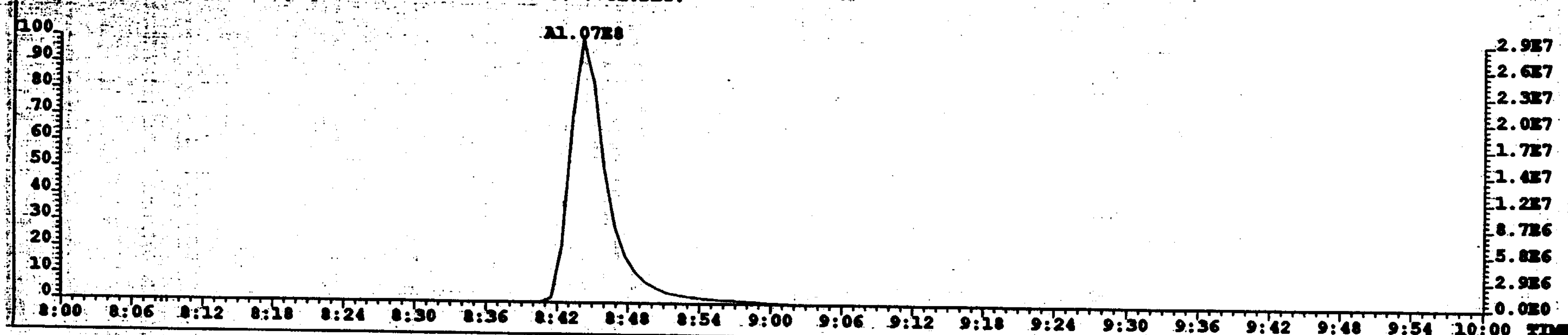
File:04JU92 Acq: 4-JUN-1992 20:01:42 128.0626 S:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:

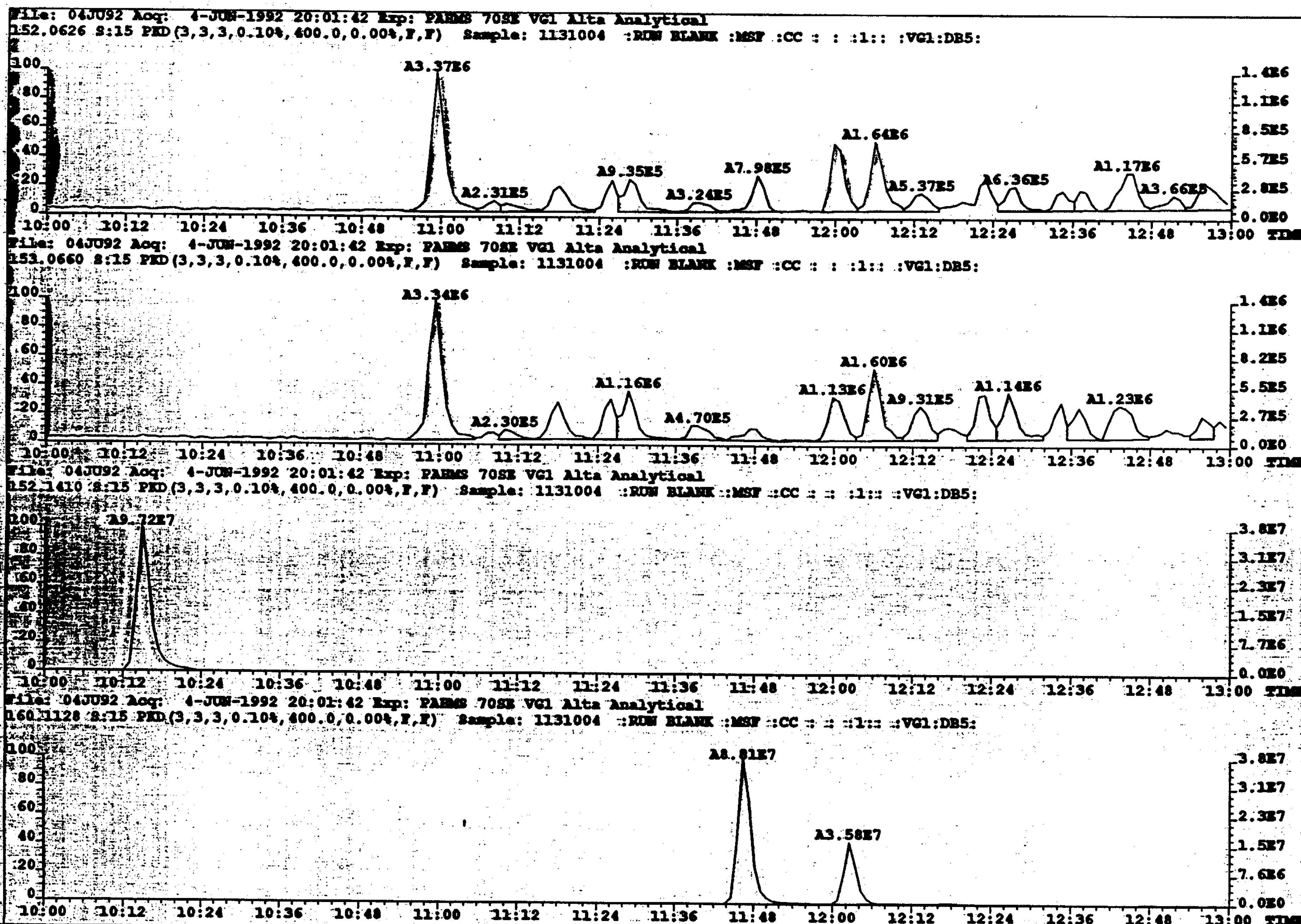


File:04JU92 Acq: 4-JUN-1992 20:01:42 129.0660 S:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:

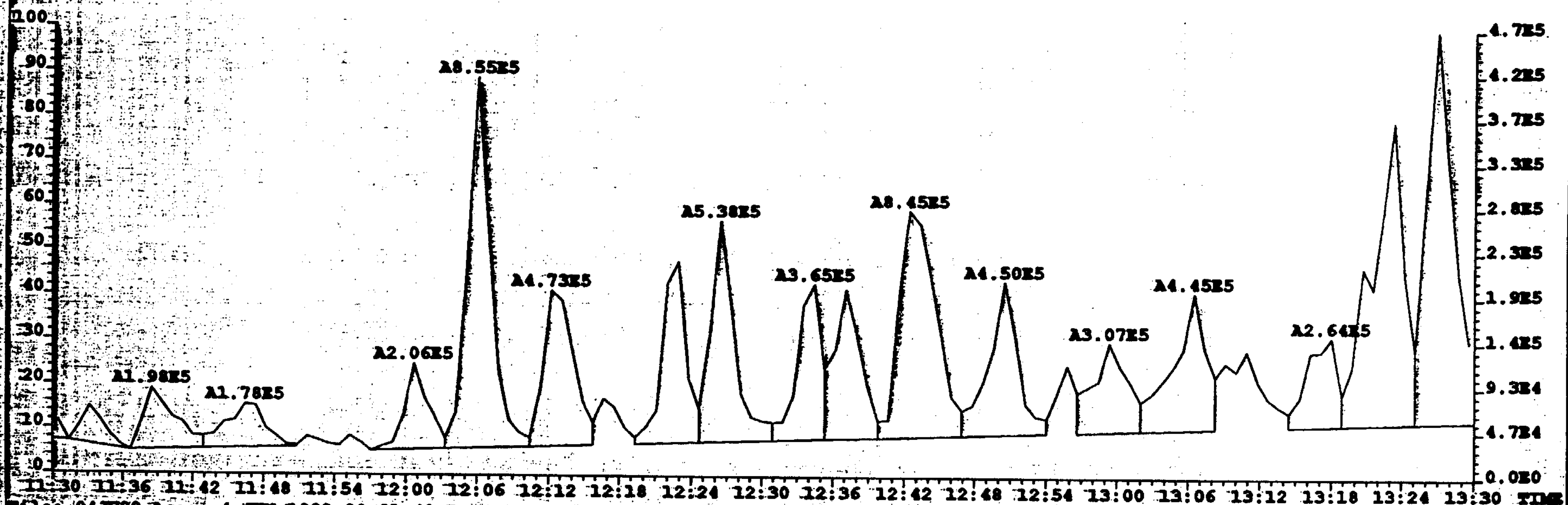


File:04JU92 Acq: 4-JUN-1992 20:01:42 136.1128 S:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:

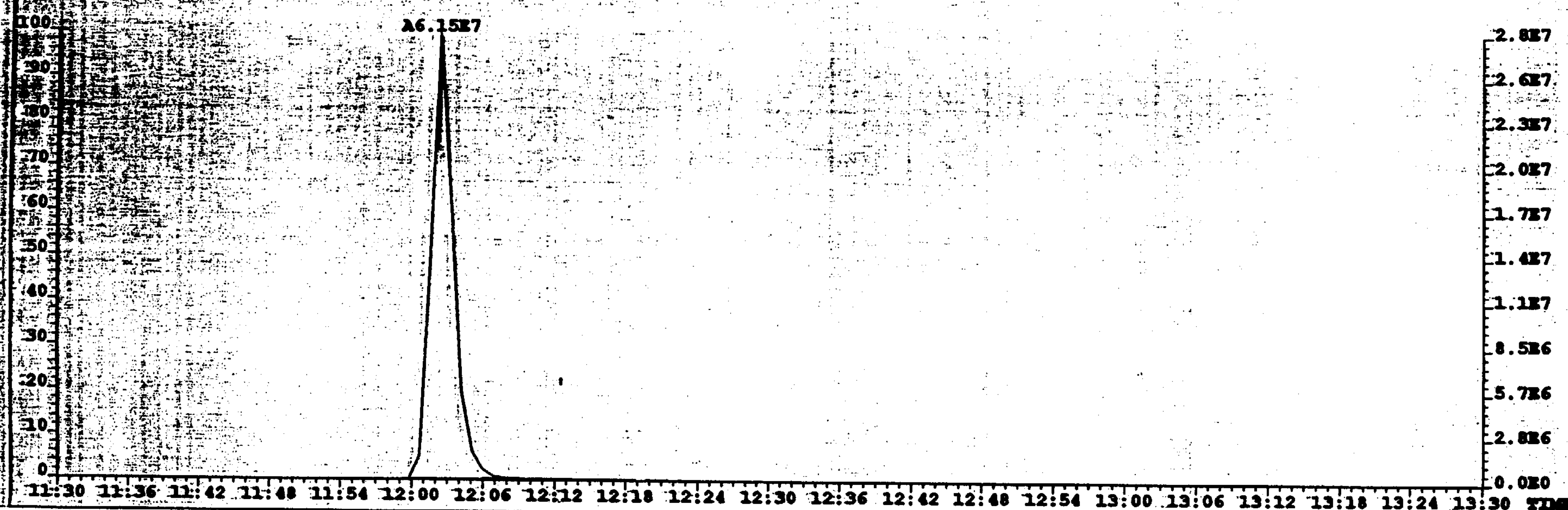



File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
152.0626 S:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:
A3.37E6
A2.31E5
A9.35E5
A3.24E5
A7.98E5
A1.64E6
A5.37E5
A6.36E5
A1.17E6
A3.66E5
File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
153.0660 S:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:
A3.34E6
A2.30E5
A1.16E6
A4.70E5
A1.13E6
A1.60E6
A9.31E5
A1.14E6
A1.23E6
File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
152.1410 S:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK ::MSF ::CC :: :: :1:: ::VG1:DB5:
A9.72E7
File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
160.1128 S:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131004 ::RUN BLANK ::MSF ::CC :: :: ::1:: ::VG1:DB5:
A8.81E7
A3.58E7
10:00 10:12 10:24 10:36 10:48 11:00 11:12 11:24 11:36 11:48 12:00 12:12 12:24 12:36 12:48 13:00 TIME

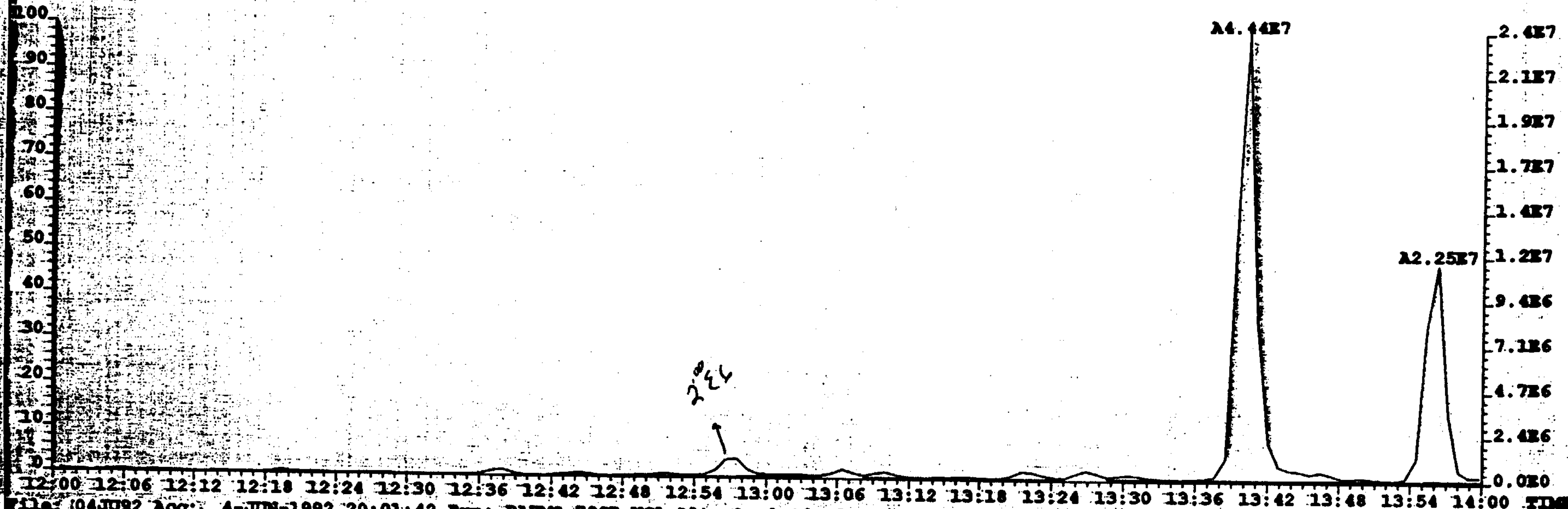
File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
154.0783 S:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



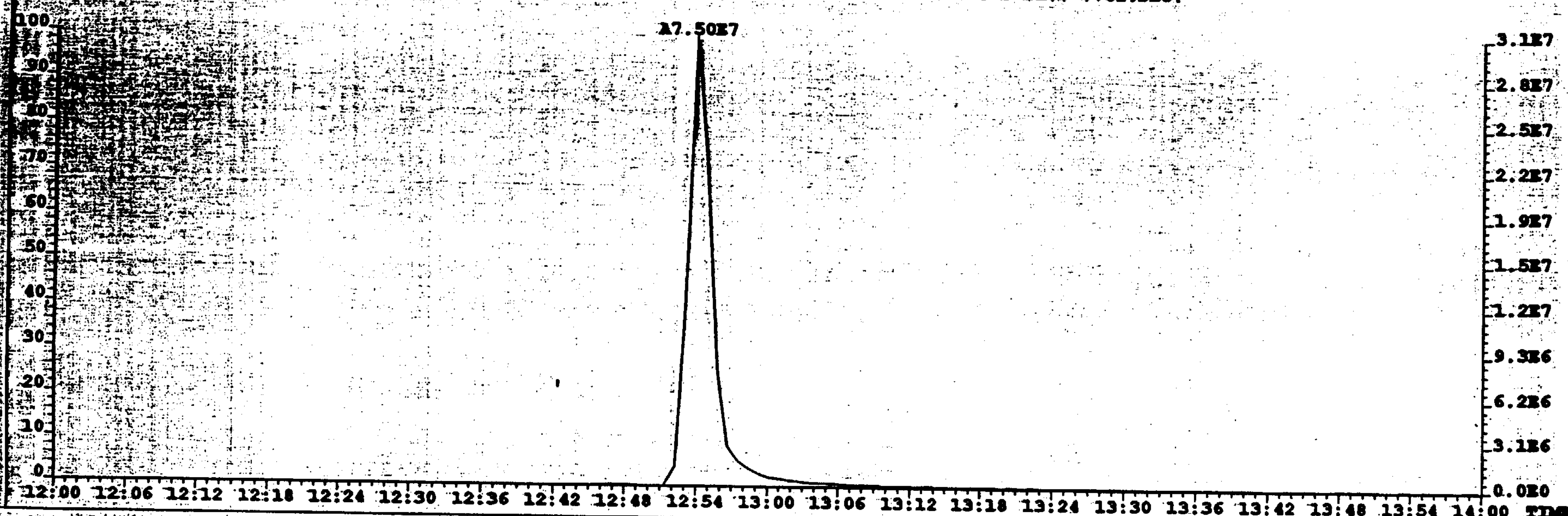
File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
164.1410 S:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC :: : ::1:: :VG1:DB5:



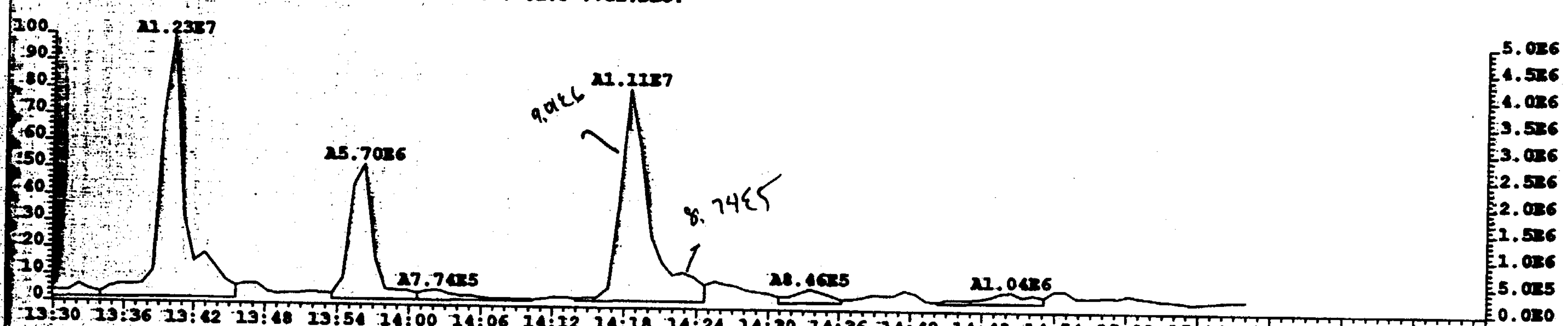
File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
166.0783 S:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



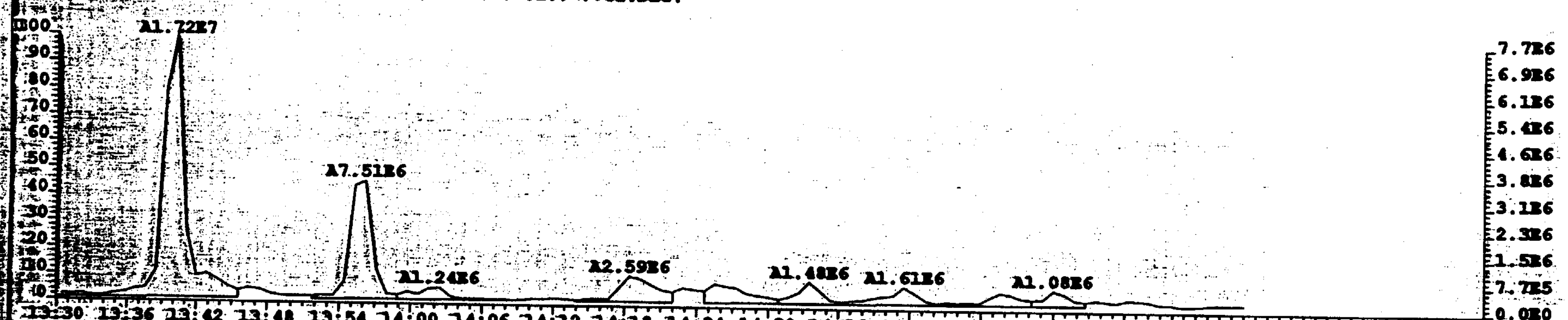
File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
176.1410 S:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



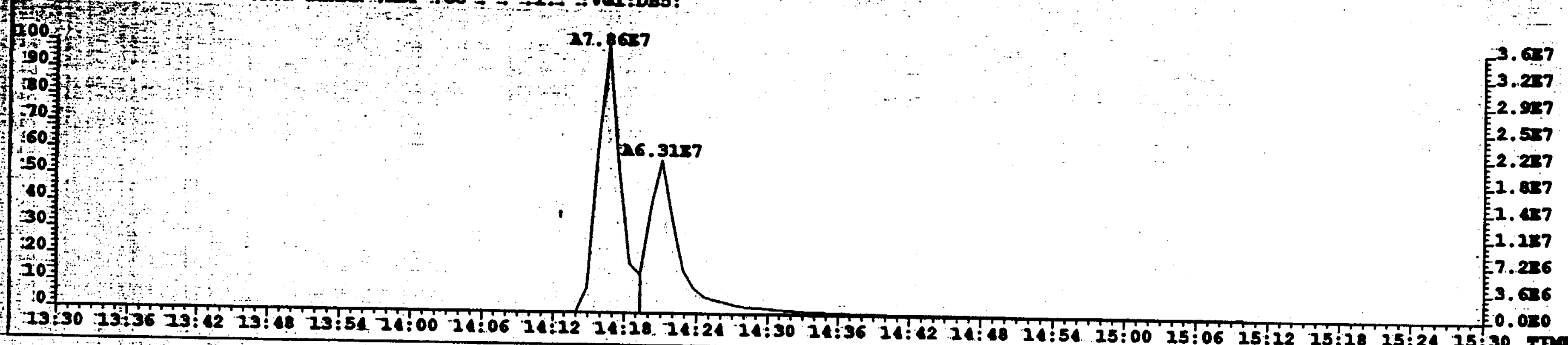
File:04JU92 Acq: 4-JUN-1992 20:01:42 178.0783 8:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



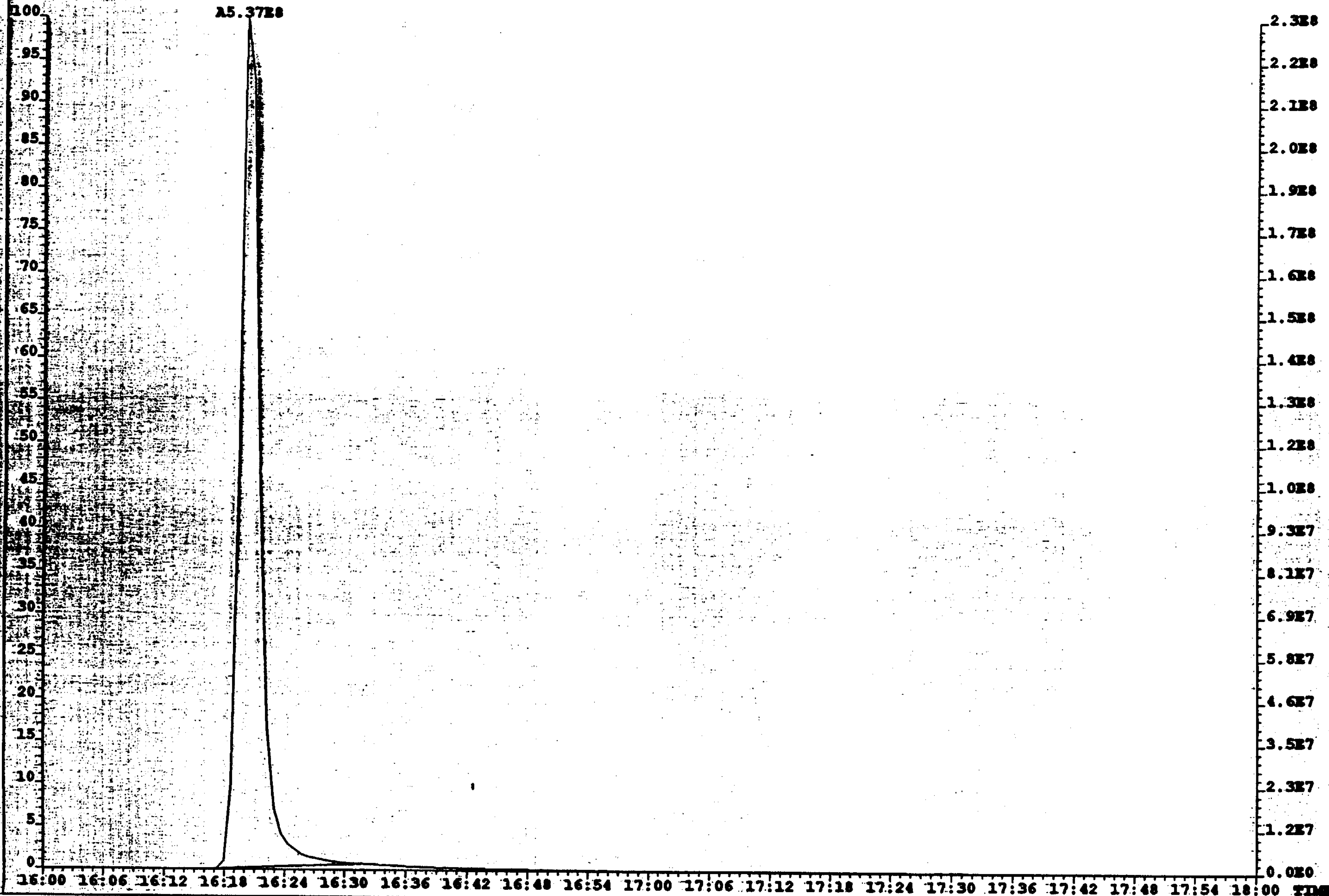
File:04JU92 Acq: 4-JUN-1992 20:01:42 179.0860 8:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



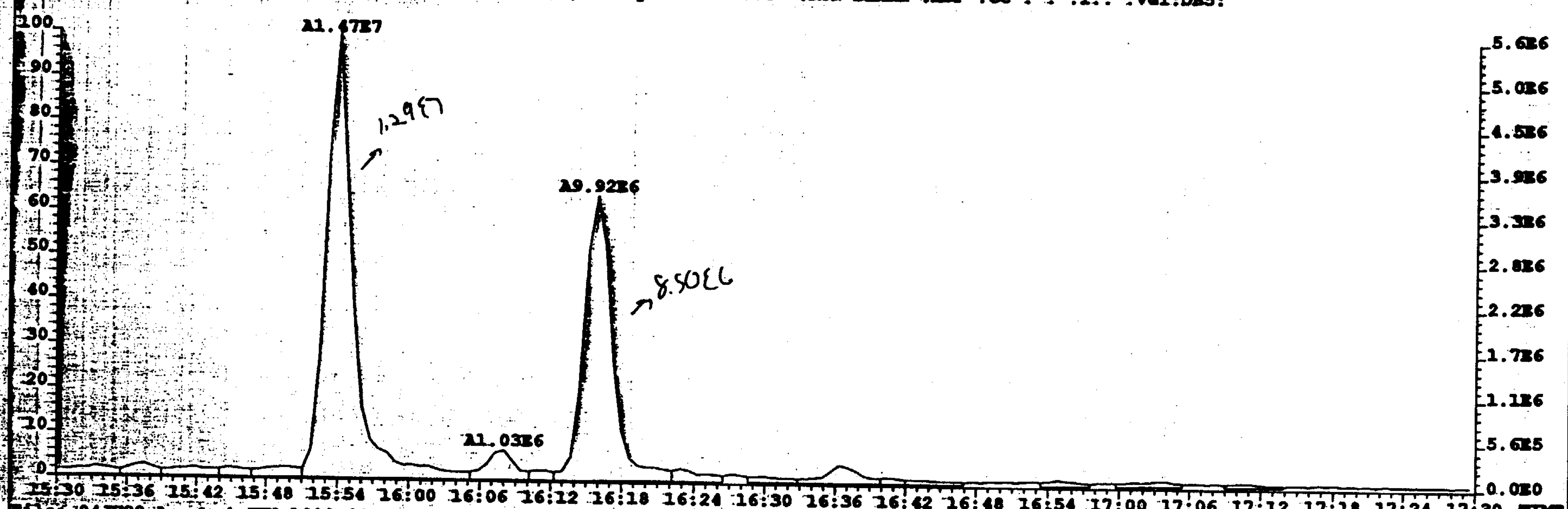
File:04JU92 Acq: 4-JUN-1992 20:01:42 188.1410 8:15 PKD(3,3,3,0.10%,400.0,0.00%,F,F)
Sample Text:1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



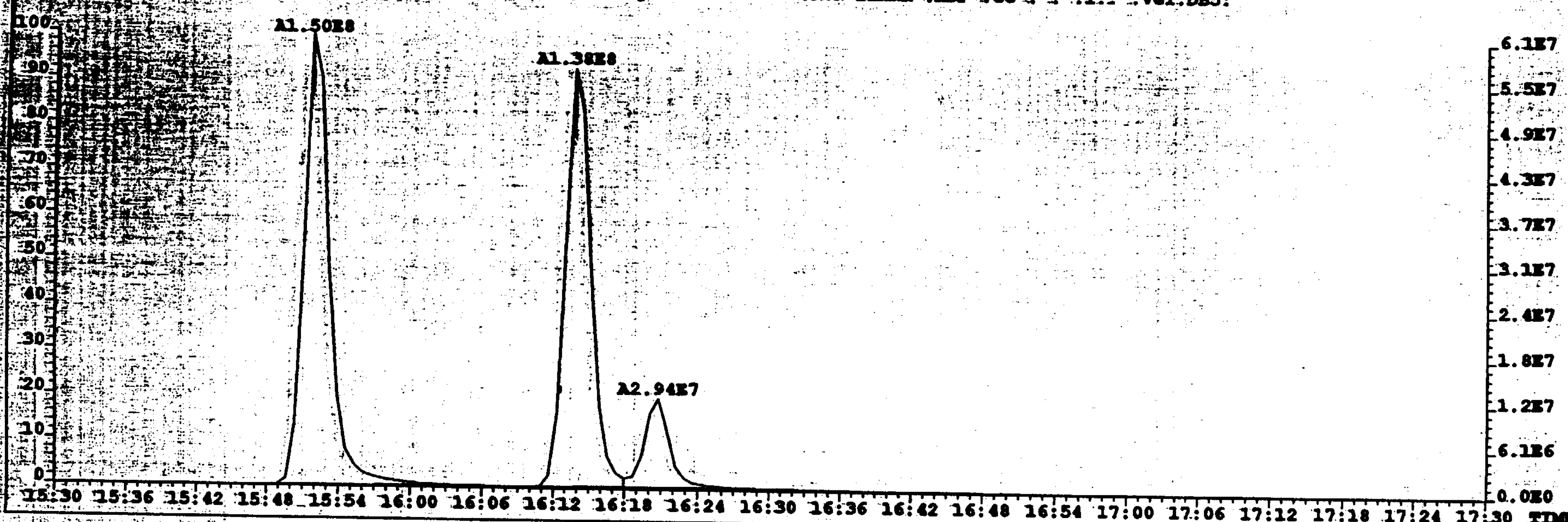
File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PARMS 70SE VG1 Alta Analytical
244.1974 S:15 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



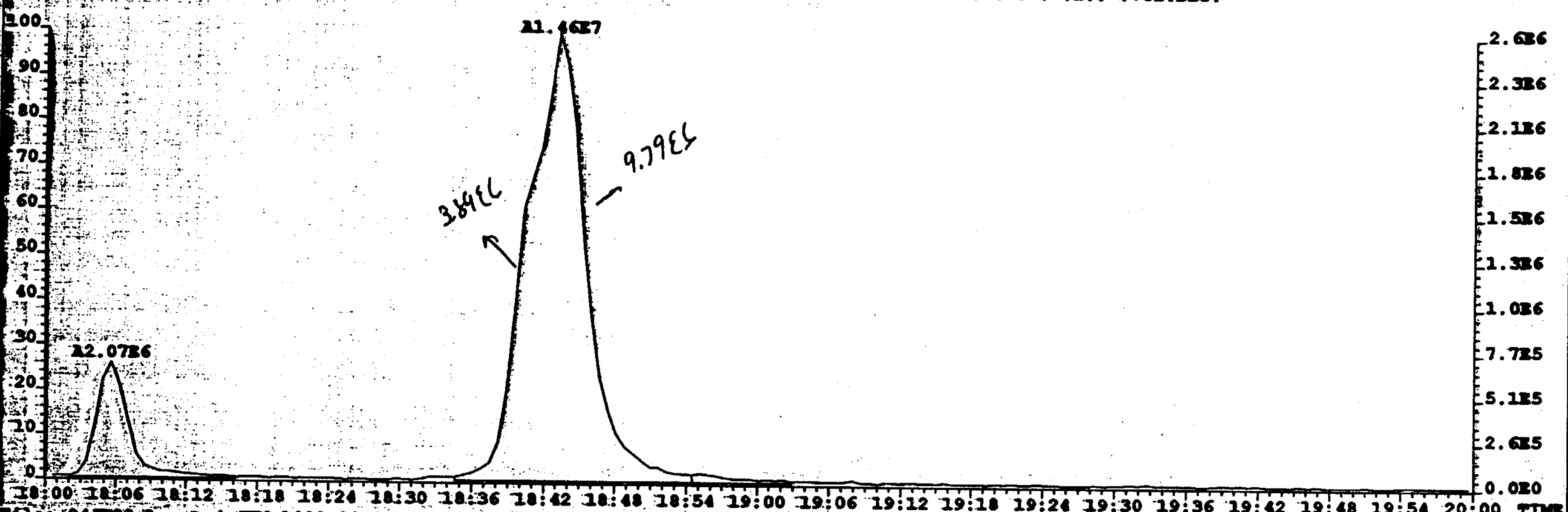
File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
202.0782 S:15 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



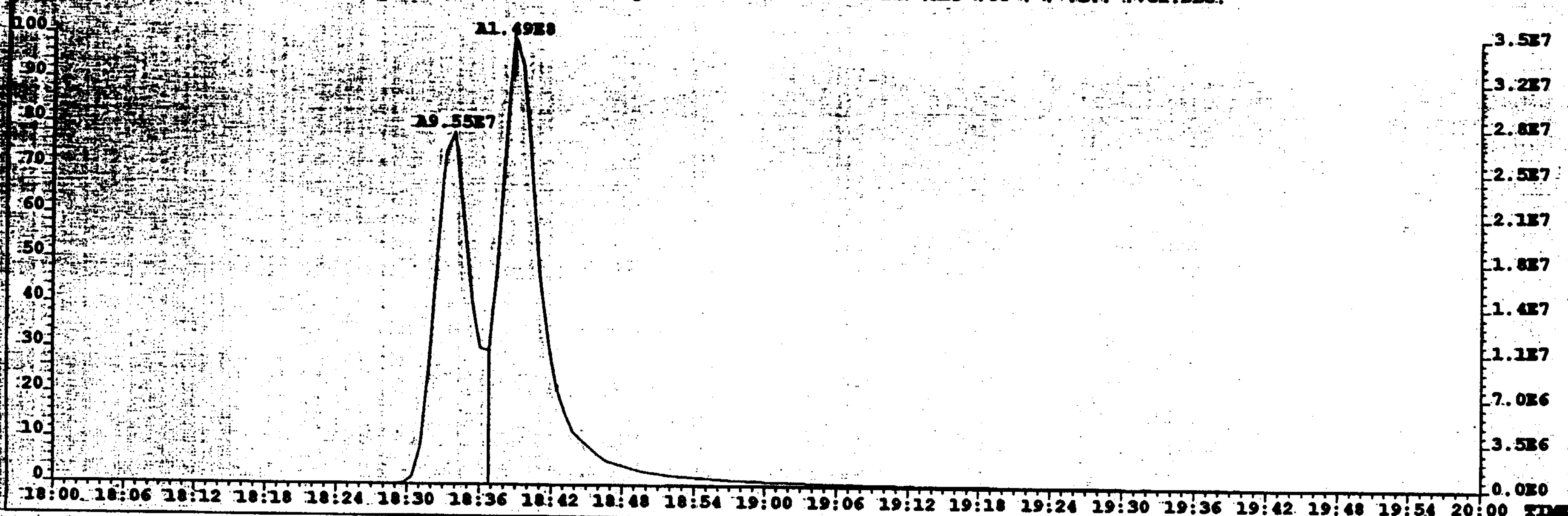
File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
212.1410 S:15 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131004 ::RUN BLANK :MSF ::CC :: :: ::1:: ::VG1:DB5:

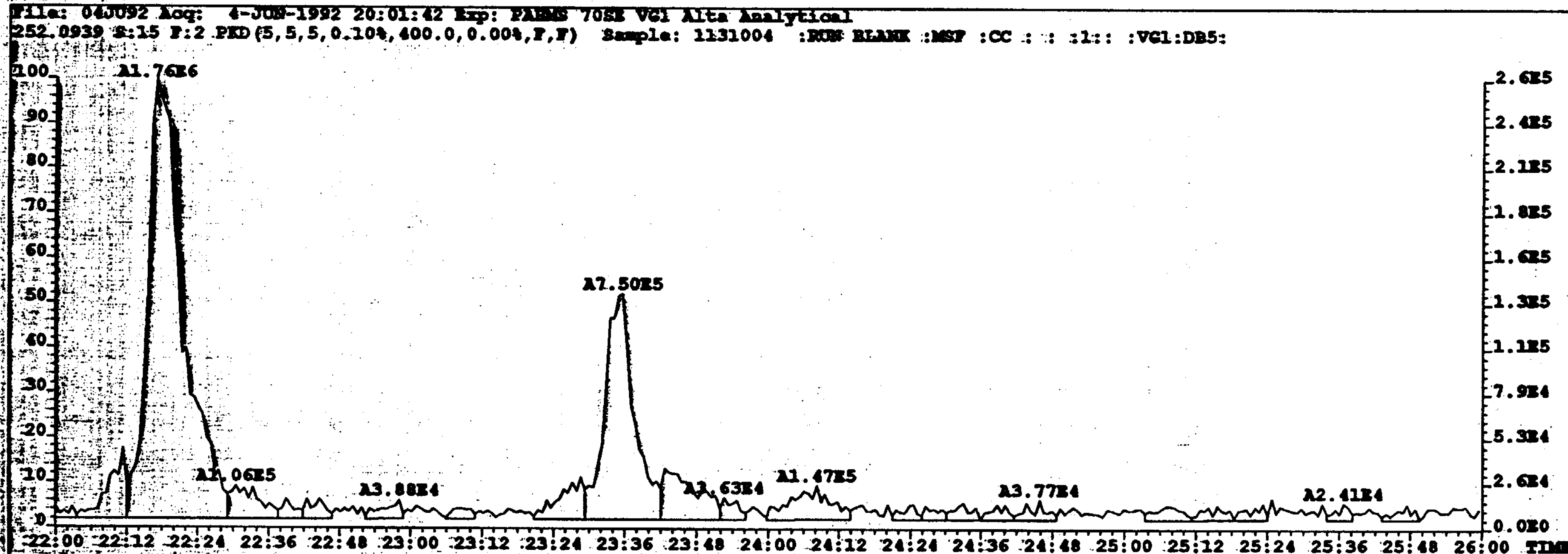


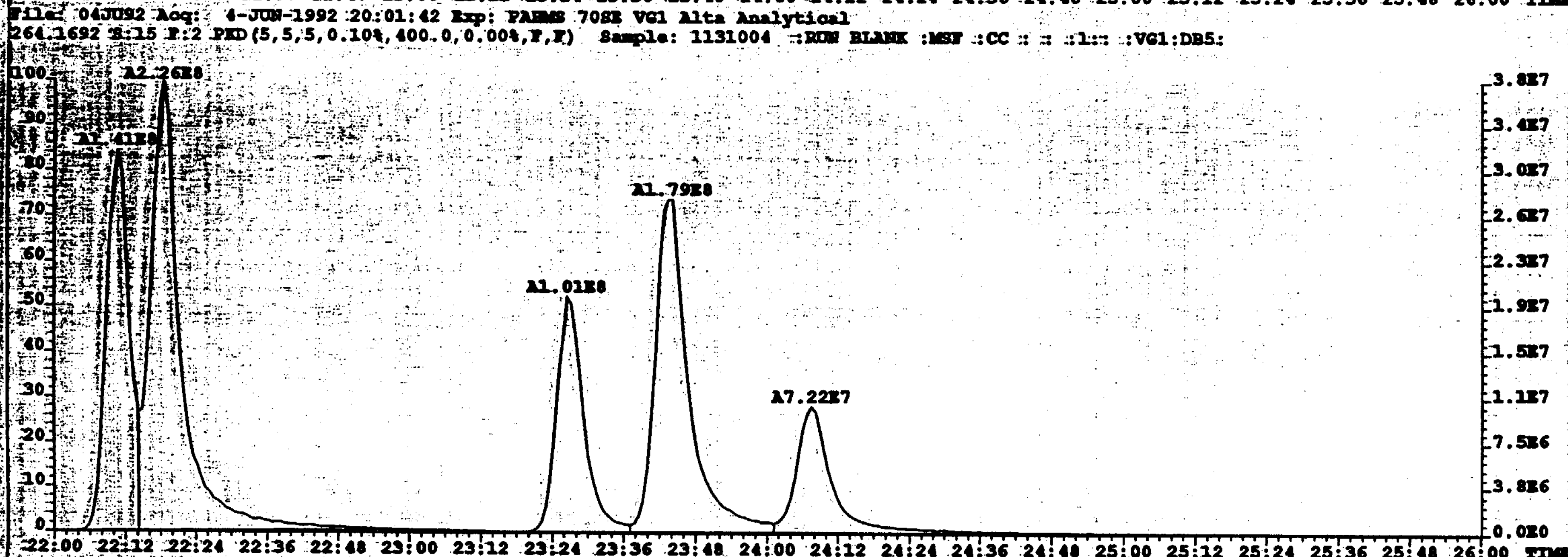
File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
228.0939 S:15 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



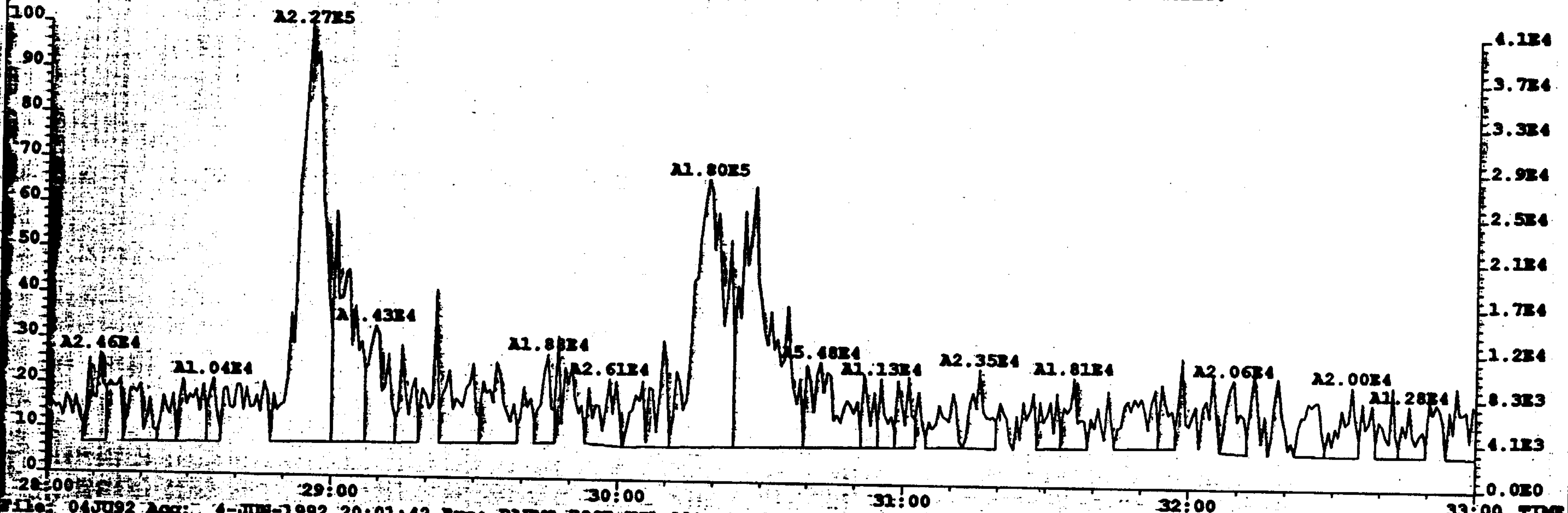
File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
240.1692 S:15 F:2 PKD(3,3,3,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



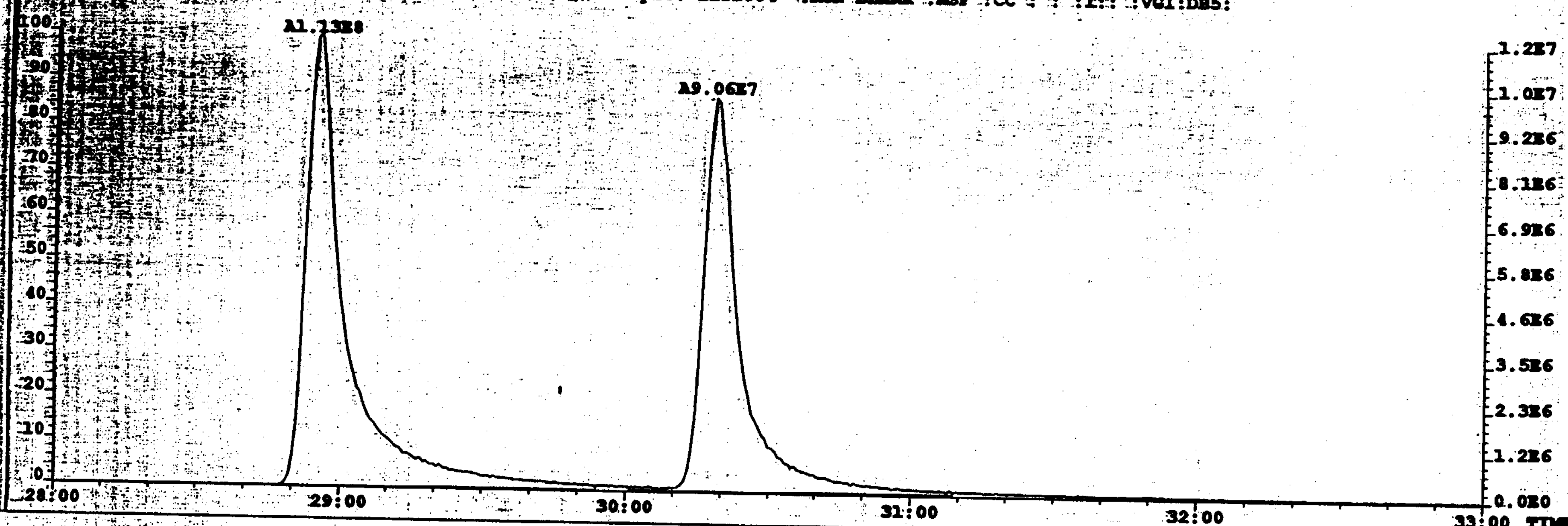

File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
252.0939 S:15 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:
A1.76E6
A1.06E5
A3.88E4
A7.50E5
A3.63E4
A1.47E5
A3.77E4
A2.41E4
100
90
80
70
60
50
40
30
20
10
0
2.6E5
2.4E5
2.1E5
1.8E5
1.6E5
1.3E5
1.1E5
7.9E4
5.3E4
2.6E4
0.0E0
22:00 22:12 22:24 22:36 22:48 23:00 23:12 23:24 23:36 23:48 24:00 24:12 24:24 24:36 24:48 25:00 25:12 25:24 25:36 25:48 26:00 TIME


File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
264.1692 S:15 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC :: :: :1:: :VG1:DB5:
A2.26E8
A1.41E8
A1.01E8
A1.79E8
A7.22E7
100
90
80
70
60
50
40
30
20
10
0
3.8E7
3.4E7
3.0E7
2.6E7
2.3E7
1.9E7
1.5E7
1.1E7
7.5E6
3.8E6
0.0E0
22:00 22:12 22:24 22:36 22:48 23:00 23:12 23:24 23:36 23:48 24:00 24:12 24:24 24:36 24:48 25:00 25:12 25:24 25:36 25:48 26:00 TIME

File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
276.0939 S:15 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



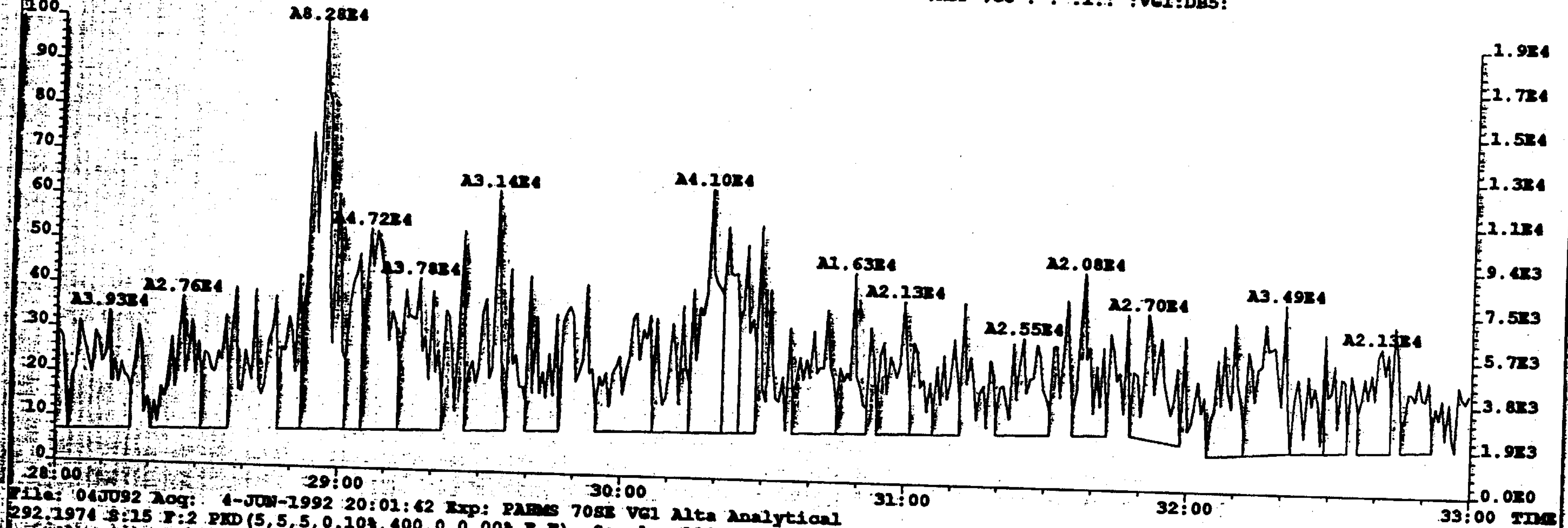
File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
288.1692 S:15 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



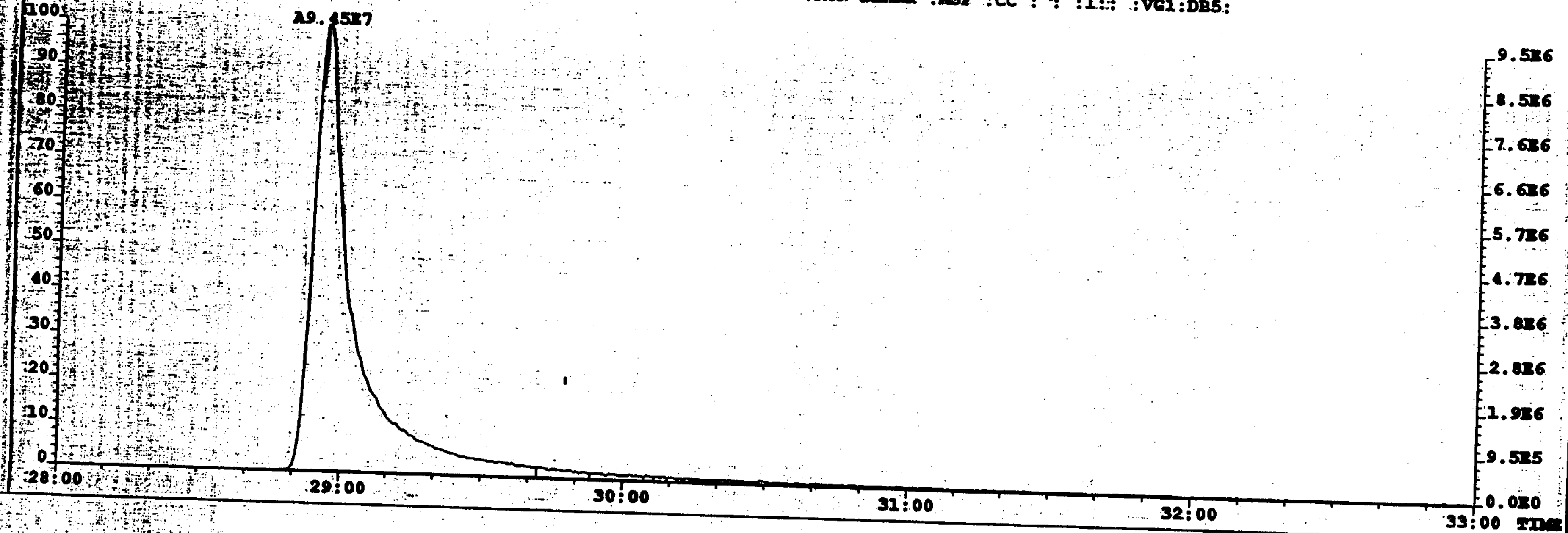
APPENDIX C

CARB METHOD 430

File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
278.1096 S:15 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



File: 04JU92 Acq: 4-JUN-1992 20:01:42 Exp: PAHMS 70SE VG1 Alta Analytical
292.1974 S:15 F:2 PKD(5,5,5,0.10%,400.0,0.00%,F,F) Sample: 1131004 :RUN BLANK :MSF :CC : : :1:: :VG1:DB5:



ALDEHYDE COMPOUNDS
EMISSION CALCULATIONS (lb/hr)

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May-92

Aldehyde Compound	Sample Weight, (ug)				lb/hr				
	Run 1	Run 2	Run 3	Blank	Run 1	Run 2	Run 3	Average	Blank
Acetaldehyde	1.17E+00	5.40E-01	2.20E-01	<2.00E-02	1.81E-02	8.57E-03	3.35E-03	1.00E-02	<3.10E-04
Acrolein	2.70E-01	3.10E-01	4.70E-01	<2.00E-02	4.18E-03	4.92E-03	7.15E-03	5.42E-03	<3.10E-04
Benzaldehyde									
2,5-Dimethylbenzaldehyde									
Formaldehyde	5.28E+00	7.45E+00	1.89E+00	2.90E-01	8.17E-02	1.18E-01	2.88E-02	7.62E-02	4.50E-03
Hexanal									
Isovaleraldehyde									
Propionaldehyde									
m-Tolualdehyde									
o-Tolualdehyde									
p-Tolualdehyde									
Valeraldehyde									

" < " indicates a sample with a non-detectable concentration. Laboratory Detection Limit was used for emission calculation.

lb/hr = ug / (1E+06 ug/g) / (453.592 g/lb) x Qs(std) x (60 min/hr) / Vm(std)

	Run 1	Run 2	Run 3	Blank Value (avg)
Vm(std), ft3 =	3.959	3.804	3.811	3.858
Qs(std), ft3/min =	462,807	456,224	438,482	452,504

ALDEHYDE COMPOUNDS
EMISSION CALCULATIONS (ug/dscm)

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May -92

Aldehyde Compound	Sample Weight, (ug)				ug/dscm				
	Run 1	Run 2	Run 3	Blank	Run 1	Run 2	Run 3	Average	Blank
Acetaldehyde	1.17E+00	5.40E-01	2.20E-01	<2.00E-02	1.04E+01	5.01E+00	2.04E+00	5.83E+00	<1.83E-01
Acrolein	2.70E-01	3.10E-01	4.70E-01	<2.00E-02	2.41E+00	2.88E+00	4.35E+00	3.21E+00	<1.83E-01
Benzaldehyde									
2,5-Dimethylbenzaldehyde									
Formaldehyde	5.28E+00	7.45E+00	1.89E+00	2.90E-01	4.71E+01	6.92E+01	1.75E+01	4.46E+01	2.65E+00
Hexanal									
Isovaleraldehyde									
Propionaldehyde									
m-Tolualdehyde									
o-Tolualdehyde									
p-Tolualdehyde									
Valeraldehyde									

" < " indicates a sample with a non-detectable concentration. Laboratory Detection Limit was used for emission calculation.

ug/dscm = ug / [Vm(std) x 0.028317 m3/ft3]

Vm(std), ft3 =	Run 1	Run 2	Run 3	Blank Value (avg)
	3.959	3.804	3.811	3.858

ALDEHYDE COMPOUNDS
EMISSION CALCULATIONS (lb/MMBtu)

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May -92

Aldehyde Compound	lb/hr Run 1	lb/hr Run 2	lb/hr Run 3	lb/hr Blank	lb/MMBtu Run 1	lb/MMBtu Run 2	lb/MMBtu Run 3	lb/MMBtu Average	lb/MMBtu Blank
Acetaldehyde	1.81E-02	8.57E-03	3.35E-03	<3.10E-04	1.97E-05	9.51E-06	3.87E-06	1.10E-05	<3.47E-07
Acrolein	4.18E-03	4.92E-03	7.15E-03	<3.10E-04	4.54E-06	5.46E-06	8.27E-06	6.09E-06	<3.47E-07
Benzaldehyde									
2,5-Dimethylbenzaldehyde									
Formaldehyde	8.17E-02	1.18E-01	2.88E-02	4.50E-03	8.87E-05	1.31E-04	3.33E-05	8.44E-05	5.03E-06
Hexanal									
Isovaleraldehyde									
Propionaldehyde									
m-Tolualdehyde									
o-Tolualdehyde									
p-Tolualdehyde									
Valeraldehyde									

" < " indicates a sample with a non-detectable concentration. Laboratory Detection Limit was used for emission calculation.

lb/MMBtu = (lb/hr) / (MMBtu/hr)

	Run 1	Run 2	Run 3	Blank Value (avg)
Heat Input, MMBtu/hr =	920.348	901.095	864.572	895.338

ALDEHYDE COMPOUNDS
ANALYTICAL DATA

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27–May –92

Aldehyde Compound	Sample Weight (ug)				Laboratory Detection Limit (ug)			
	Run 1	Run 2	Run 3	Blank	Run 1	Run 2	Run 3	Blank
Acetaldehyde	1.17	0.54	0.22					0.02
Acrolein	0.27	0.31	0.47					0.02
Benzaldehyde								
2,5–Dimethylbenzaldehyde								
Formaldehyde	5.28	7.45	1.89	0.29				
Hexanal								
Isovaleraldehyde								
Propionaldehyde								
m–Tolualdehyde								
o–Tolualdehyde								
p–Tolualdehyde								
Valeraldehyde								

ALDEHYDE COMPOUNDS
FIELD DATA SUMMARY

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May-92

	Run 1	Run 2	Run 3
Vm, Dry gas volume as measured by dry gas meter (dcf)	4.477	4.288	4.203
y, Dry gas meter calibration factor (dimensionless)	0.982	0.982	0.982
Pb, Barometric Pressure at sampling site (in. Hg)	28.95	28.95	28.93
dH, Average pressure differential across the orifice meter (in. H2O)	1.10	1.10	1.10
Tm, Meter temperature (°R)	560.33	558.53	546.00
Vm(std), Dry gas volume as measured by dry gas meter, corrected to standard conditions (dscf)	3.959	3.804	3.811

ALDEHYDE COMPOUNDS
SOURCE TEST CALCULATIONS

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May-92
Run No. 1

FIELD DATA

Standard Temperature, T(std)	60	°F	Standard Pressure, Pstd	29.92	"Hg
Meter Temperature, Tm	100.3	°F	Barometric Pressure, Pb	28.95	"Hg
Meter Orfice, dH	1.10	"H2O	Meter Correction, y	0.982	
Meter Volume, Vm	4.477	ft3			

CALCULATIONS

Vm(std) = [T(std) + 460 / Pstd] x Vm x y x (Pb + (dH / 13.6)) / (Tm + 460) . 3.959 dscf

ALDEHYDE COMPOUNDS
SOURCE TEST CALCULATIONS

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May -92
Run No. 2

FIELD DATA

Standard Temperature, T(std)	60	°F	Standard Pressure, Pstd	29.92	"Hg
Meter Temperature, Tm	98.5	°F	Barometric Pressure, Pb	28.95	"Hg
Meter Orfice, dH	1.10	"H2O	Meter Correction, y	0.982	
Meter Volume, Vm	4.288	ft3			

CALCULATIONS

Vm(std) = [T(std) + 460 / Pstd] x Vm x y x (Pb + (dH / 13.6)) / (Tm + 460) . 3.804 dscf

ALDEHYDE COMPOUNDS
SOURCE TEST CALCULATIONS

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27–May –92
Run No. 3

FIELD DATA

Standard Temperature, T(std)	60	°F	Standard Pressure, Pstd	29.92	"Hg
Meter Temperature, Tm	86.0	°F	Barometric Pressure, Pb	28.93	"Hg
Meter Orfice, dH	1.10	"H2O	Meter Correction, y	0.982	
Meter Volume, Vm	4.203	ft3			

CALCULATIONS

Vm(std) = [T(std) + 460 / Pstd] x Vm x y x (Pb + (dH / 13.6)) / (Tm + 460) . $\boxed{3.811}$ dscf

FUEL BASED CALCULATIONS

SYCAMORE COGENERATION AB258
UNIT 2 (B) – CARB METHOD 430 (ALDEHYDES)

May 27, 1992

FUEL ANALYSIS DATA

Run #	Fuel Value (%), Moisture & Ash Free Carbon	Hydrogen	Nitrogen	Oxygen	Sulfur	GCV BTU/lb	ft3/lb	lb/gal
1	73.46	23.64	1.77	1.13	0.00	22,953		
2	73.46	23.64	1.77	1.13	0.00	22,953		
3	73.46	23.64	1.77	1.13	0.00	22,953		

CALCULATIONS

Run #	Stack Gas Oxygen %	Fuel Gas Flowrate lb/hr	Fuel Gas Flowrate ft3/hr	Fuel Oil Flowrate lb/hr	Fuel Oil Flowrate gal/hr	Solid Fuel lb/hr	Heat Input MMBTU/hr	F–Factor dscf/MMBTU	Qs(std) dscfm
1	15.01	40,097					920.348	8,502.92	462,807
2	15.05	39,258					901.095	8,502.92	456,224
3	15.06	37,667					864.572	8,502.92	438,482

Heat Input, MMBTU/hr = (lb/hr fuel gas) x BTU/lb x MM/1E+06

= (ft3/hr fuel gas) x BTU/lb / (ft3/lb fuel gas) x MM/1E+06

= (lb/hr fuel oil) x BTU/lb x MM/1E+06

= (gal/hr fuel oil) x lb/gal x BTU/lb x MM/1E+06

= (lb/hr solid fuel) x BTU/lb x MM/1E+06

F–Factor, dscf/MMBTU = 1E+06 [3.64 scf/lb x (% H) + 1.53 scf/lb x (% C) + 0.57 scf/lb x (% S) + 0.14 scf/lb x (% N) – 0.46 scf/lb x (% O2)] / (BTU/lb) x [(Tstd + 460) / 528]

Qs(std), dscfm = MMBTU/hr x [F–Factor x (20.9 / (20.9 – %O2)) x (hr / 60 min)]

GCV = Gross Calorific Value of fuel

Standard Temperature = 60 °F

FIELD DATA SHEET

ENGINEERING–SCIENCE, INC.

Company: Sycamore Cogeneration
Test Location: HRSG STACK
Test Method / Parameter: CARB 430 / Aldehyde

Run #: 1
Date: 5-27-92
Operator: T. Delfino

Stack Dimensions: 169"
Barometric Pressure: 28.95 "Hg
Static Pressure: 0.30 "H2O
Pitot Coeff.: 0.84
Filter #: N/A
Control Box #: ~~BAII~~ GRII
Orifice dH@ / y: — / 0.982
Probe Type / Length: TFE / 4'
Nozzle # / Size: N/A

IMPINGER CONTENTS, ml / grams				
Impinger	Contents	Final	Initial	Net
1	DNPH		10ml	
2	DNPH		10ml	
3				
4				
5				
	Silica Gel			
			TOTAL:	

GAS COMPOSITION			
Time	O2	CO2	CO

LEAK RATE	cfm / lpm	"Hg Vacuum
Initial	0.00	5"
Final	0.02	5

Sample Point	Time (1120)	Gas Meter (ft3 / liters)	dP "H2O	dH "H2O	Temperature, °F Meter °C	Stack	Probe	Oven	Impinger	Vacuum "Hg	Rotameter (liters/min)	Comments
A-1	0	1239.295		1.1	37		250		59	2.0	0.50	
2	10	244.6		1.1	37		250		58	2.0		
3	20	250.3		1.1	37		250		58	2.0		
4	30	256.2		1.1	38		250		58	2.0		
	40	262.1		1.1	38		250		57	2.0		
	50	268.0		1.1	38		250		57	2.0		
	60	274.0		1.1	38		250		56	2.0		
	70	279.7		1.1	39		250		56	2.0		
	80	284.7		1.1	39		250		56	2.0		
	90	290.1		1.1	39		250		56	2.0		
	100	295.3		1.1	39		250		58	2.0		
	110	300.4		1.1	38		250		59	2.0		
	120	305.7		1.1	39		250		59	2.0		
	130	310.4		1.1	38		250		59	2.0		
	140	315.3		1.1	38		250		59	2.0		

RUN -1 / CARB 430

Sample Point	Time	Gas Meter (ft3 / liters)	dP "H2O	dH "H2O	Temperature, °F Meter °C	Stack	Probe	Oven	Impinger	Vacuum "Hg	Rotameter (liters/min)	Comments
	150	320.7		1.1	38		250		59	2	0.5	
	160	326.1		1.1	38		250		60	2		
	170	331.2		1.1	38		250		60	2		
	180	336.3		1.1	38		250		59	2		
	190	340.0		1.1	38		250		59	2		
	200	~~344~~.1		1.1	38		250		57	2		
	210	349.0		1.1	37		250		58	2		
	220	354.1		1.1	37		250		58	2		
	230	359.2		1.1	37		250		58	2		
	240	1366.072										
	1520											
total/AVG.	240.0	126.777 liters		1.10	37.96 °C						0.5	
	min.	4.477 ft3			100.33 °F							

FIELD DATA SHEET

ENGINEERING–SCIENCE, INC.

Company: SYCAMORE COGENERATION
Test Location: UNIT B, HRSG STACK
Test Method / Parameter: CARB 430 / Formaldehyde

Run #: 2
Date: 5/27/92
Operator: J. DELFINO

Stack Dimensions: 169.38" ID
Barometric Pressure: 28.95 "Hg
Static Pressure: 0.3 "H2O
Pitot Coeff.: 0.84
Filter #: N/A
Control Box #: GR II
Orifice dH@ / y: 10.982
Probe Type / Length: TFE / 4'
Nozzle # / Size: N/A

IMPINGER CONTENTS, ml / grams				
Impinger	Contents	Final	Initial	Net
1	DNPH		10ml	
2	DNPH		10ml	
3				
4				
5				
	Silica Gel			
			TOTAL:	

GAS COMPOSITION			
Time	O2	CO2	CO

LEAK RATE	cfm (lpm)	"Hg Vacuum
Initial	.000	10.0
Final	0.001	6

Sample Point	Time (1545)	Gas Meter (ft3 / liters)	dP "H2O	dH "H2O	Temperature, °F Meter °C	Stack	Probe	Oven	Impinger	Vacuum "Hg	Rotameter (liters/min)	Comments
	0	1377.322		1.1	36		250		57	2.0	0.50	
	10	82.5		1.1	36		250		57	2.0	0.50	
	20	87.8		1.1	37		250		58	2.0	0.5	
	30	92.7		1.1	37		250		58	3.0	0.5	
	40	97.6		1.1	38		250		59	3.0	0.5	
	50	1402.7		1.1	38		250		59	4.0	0.5	
	60	407.7		1.1	38		250		60	4.0	0.5	
	70	412.8		1.1	39		250		60	5.0	0.5	
	80	417.8		1.1	39		250		61	5.0	0.5	
	90	422.8		1.1	38		250		60	5.0	0.5	
	100	427.8		1.1	38		250		60	5.0	0.5	
	110	432.8		1.1	38		250		59	5.0	0.5	
	120	437.8		1.1	37		250		57	5.0	0.5	
	130	442.8		1.1	37		250		57	5.0	0.5	
	140	447.7		1.1	37		250		58	5.0	0.5	

RUN -2 Carb 430/Formaldehyde

Sample Point	Time	Gas Meter (ft3 / liters)	dP "H2O	dH "H2O	Temperature, °F Meter °C	Stack	Probe	Oven	Impinger	Vacuum "Hg	Rotameter (liters/min)	Comments
	150	453.7		1.1	37		250		58	5.0	0.5	
	160	458.7		1.1	37		250		59	5.0		
	170	463.7		1.1	36		250		60	5.0		
	180	468.7		1.1	36		250		61	5.0		
	190	473.7		1.1	36		250		61	5.0		
	200	478.7		1.1	36		250		60	5.0		
	210	483.6		1.1	36		250		59	5.0		
	220	488.7		1.1	35		250		57	5.0		
	230	493.6		~~30~~ 1.1	35		250		56	5.0		
	240	498.726										
	1945											
total/Avg	240 min.	121.404 l		1.10	36.96°C		250					
		4.288 ft^3			98.53°F							

FIELD DATA SHEET

ENGINEERING–SCIENCE, INC.

Company: SYCAMORE COGENERATION
Test Location: UNIT B, HRSG STACK
Test Method / Parameter: CARB 430/Aldehydes

Run #: 3
Date: 5/27/92
Operator: T. DELFINO

Stack Dimensions: 169.38" ID.
Barometric Pressure: 28.93 "Hg
Static Pressure: 0.3 "H2O
Pitot Coeff.: 0.84
Filter #: TEFLON
Control Box #: GR II
Orifice dH@ / y: 1 0.982
Probe Type / Length: TEFLON / 4'
Nozzle # / Size: N/A

IMPINGER CONTENTS, ml / grams				
Impinger	Contents	Final	Initial	Net
1	DNPH		10ml	
2	DNPH		10ml	
3				
4				
5				
	Silica Gel			
			TOTAL :	

GAS COMPOSITION			
Time	O2	CO2	CO

LEAK RATE	cfm (lpm)	"Hg Vacuum
Initial	0.000	10"
Final	0.000	7"

Sample Point	Time (1955)	Gas Meter (ft3 liters)	dP "H2O	dH "H2O	Temperature, °F Meter °C	Stack	Probe	Oven	Impinger	Vacuum "Hg	Rotameter (liters/min)	Comments
	0	1516.075		1.10	34		250		61	5.0	0.50	
	10	521.0		1.10	33		250		60	5.0		
	20	526.0		1.10	33		250		59	5.0		
	30	531.0		1.10	32		250		57	5.0		
	40	536.0		1.16	32		250		57	5.0		
	50	541.1		1.10	32		250		57	5.0		
	60	546.1		1.10	31		250		56	5.0		
	70	551.1		1.10	31		250		56	5.0		
	80	556.1		1.10	31		250		55	5.0		
	90	561.0		1.10	30		250		54	5.0		
	100	566.0		1.10	30		250		54	5.0		
	110	570.9		1.10	30		250		53	5.0		
	120	575.9		1.10	29		250		53	5.0		
	130	580.9		1.10	29		250		53	5.0		
	140	585.8		1.60	29		250		54	5.0		

RUN -3 / CARB 430 / Aldehyde

Sample Point	Time	Gas Meter (ft3 / liters)	dP "H2O	dH "H2O	Temperature, °F Meter °C	Stack	Probe	Oven	Impinger	Vacuum "Hg	Rotameter (liters/min)	Comments
	~~Atm~~											
	150	590.7		1.10	29		250		53	5.0	0.50	
	160	595.4		1.10	29		250		53	5.0		
	170	600.6		1.10	29		250		54	5.0		
	180	605.5		1.10	28		250		56	5.0		
	190	610.3		1.10	28		250		55	5.0		
	200	615.4		1.10	28		250		53	5.0		
	210	620.2		1.10	28		250		53	5.0		
	220	625.1		1.10	27		250		55	5.0		
	230	630.1		1.10	28		250		54	5.0		
	240	1635.073		HT								
	2355											
Total/AVG	240min.	118.998 l		1.10	30.00						0.50	
		4.203 ft3			86 °F							

AtmAA Inc.
21354 Nordhoff St., Suite 113, Chatsworth, CA 91311 (818) 718-6070 • FAX (818) 718-9779
environmental consultants
laboratory services

June 17, 1992

LTR/212/92

Gary McRae
Engineering Science
2520 Pegasus Drive
Bakersfield, CA 93308

re: WA005.07

Dear Gary:

Please find enclosed the laboratory analysis report and the original chain of custody form for seven DNPH impinger samples received on May 29, 1992.

The samples were analyzed for formaldehyde by high performance liquid chromatography (HPLC).

Also enclosed is an invoice for laboratory analysis work performed.

Sincerely,

AtmAA, Inc.

Dr. Kochy Fung
Air Programs Director

Encl.
KF/kp

AtmAA Inc.
21354 Nordhoff St., Suite 113, Chatsworth, CA 91311 (818) 718-6070 • FAX (818) 718-9779
environmental consultants
laboratory services

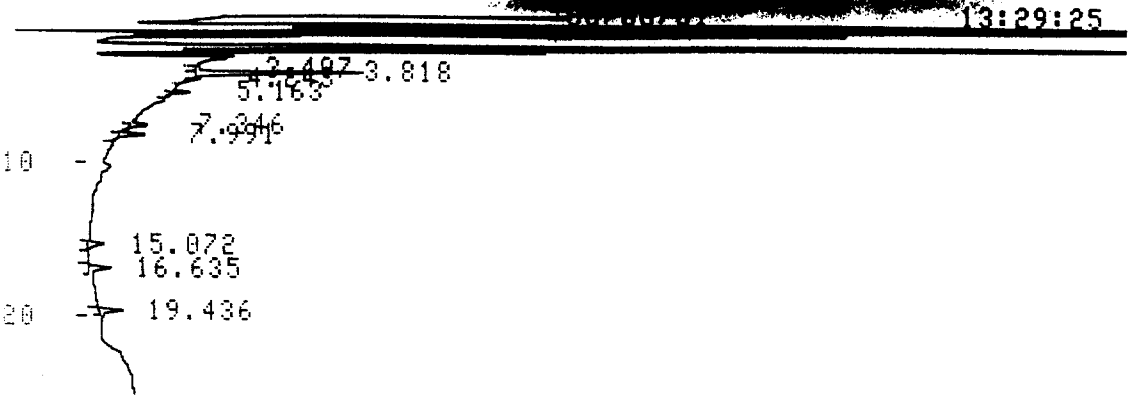
LABORATORY ANALYSIS REPORT

DNPH solutions were analyzed for formaldehyde, acetaldehyde, and acrolein by high performance liquid chromatography.

Report Date : June 12, 1992
Date Received : May 29, 1992
Date Analyzed : June 4, 1992
Client Proj. # : WA005.07

AtmAA Lab. No.	Sample ID	Formal. (ug/sample)	Acetal. (ug/sample)	Acrolein (ug/sample)	Vol.,ml
91502-1	BK9205160 Imp #1	3.30	1.00	0.27	17.8
91502-2	BK9205161 Imp #2	1.98	0.17	<0.02	8.20
91502-3	BK9205162 Imp #3	4.91	0.31	0.20	14.8
91502-4	BK9205163 Imp #4	2.54	0.23	0.11	8.6
91502-5	BK9205164 Imp #5	1.58	<0.02	0.47	16.6
91502-6	BK9205165 Imp #6	0.31	0.22	<0.02	9.6
91502-7	BK9205166 Imp #7	0.29	<0.02	<0.02	9.0
REPEATS:					
91502-3	BK9205162 Imp #3	4.48	0.27	0.22	
91502-4	BK9205163 Imp #4	2.32	0.20	0.12	
91502-1 spiked		7.48	5.57	5.87	
ug spiked		3.87	5.45	5.46	
% Recovery		107.9	83.8	102.6	
Det. Limit		0.06	0.02	0.02	

Dr. Kochy Fung
Air Programs Director

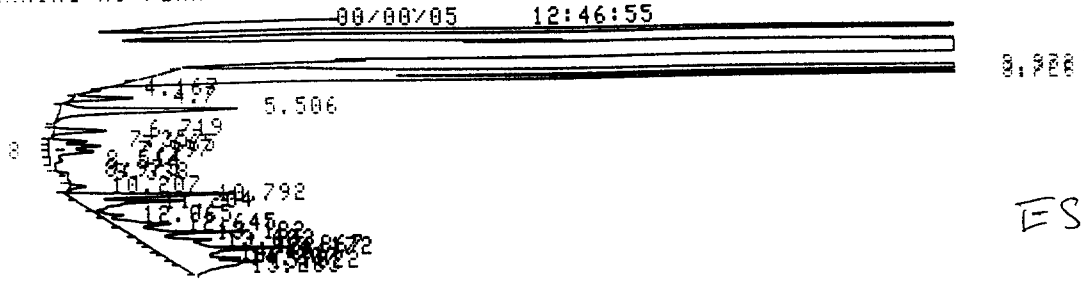


CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.407	787				
2	3.818	15440	V	2	0.0988	HCHO
3	4.243	835		2	0.0071	HCHO
4	5.163	1832		3	0.0352	CH3CHO
5	7.346	2757				
6	7.991	3249		6	0.0325	ACROLEIN
7	15.072	2357				
8	16.635	2733		11	0.0466	CYHXANONE
9	19.436	2288		14		o-TOL'AL
	TOTAL	32278			0.2201	

WARNING NO PEAK

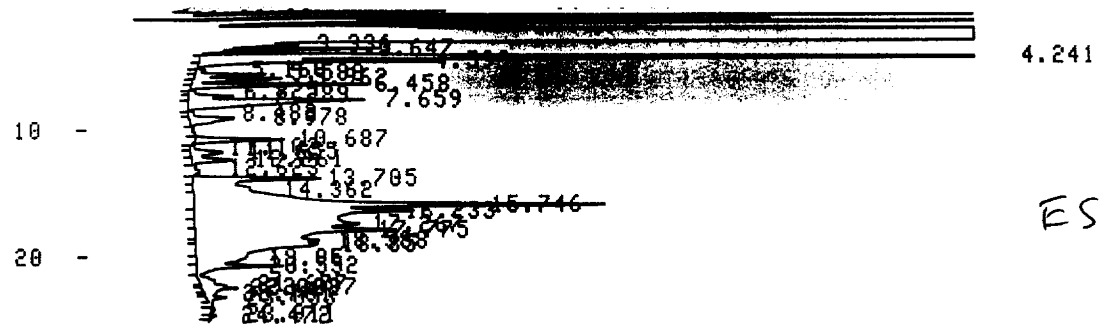
00/00/05 12:46:55



ES-1

CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	RRT	AREA	MK	IDNO	CONC	NAME
1	3.372	0.9047	854885				
2	3.728	1	236299	V	R 1	1.1967	HCHO
3	4.167	1.1179	1703				
4	4.7	1.2608	16161				
5	5.506	1.477	63373				
6	6.719	1.8025	15526				
7	7.357	1.9735	8644				
8	7.665	2.0562	13065	V	3	0.1072	ACRLN
9	7.997	2.1452	12716	V	3	0.1055	ACRLN
10	8.514	2.2841	4011	V	5		PRPNAL
11	9.338	2.5051	1610		4	0.0531	ACTONE
12	10.207	2.7382	4616				
13	10.792	2.8951	44060				
14	11.204	3.0055	29110	V			
15	12.065	3.2367	5042		6		BUTNAL
16	12.645	3.3922	18664	V			
17	13.182	3.5363	31402	V			
18	13.633	3.6573	20183	V	10		HXNAL
19	13.867	3.7199	13892	V	10		HXNAL
0	14.172	3.8019	34035	V			
1	14.466	3.8808	10363	V			
2	14.807	3.9722	20722	V	8	0.2198	MIBK
3	15.022	4.0299	19866	V	8	0.2107	MIBK
4	15.283	4.0999	17016	V			
		TOTAL	1496962			1.893	



ES2

CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.336	3522				
2	3.647	14765				
3	4.241	130431		2	0.821	HCHO
4	4.599	29513	V			
5	5.168	1367		3	0.0318	CH3CH0
6	5.588	8836	V	3	0.086	CH3CH0
7	5.962	12527	V	3	0.1128	CH3CH0
8	6.458	21197	V			
9	6.825	1105				
10	7.289	7339	V			
11	7.659	39220	V	5	0.3648	ACETONE
12	8.482	1105				
13	8.978	10813	V	7	0.1207	PROPANAL
14	10.687	14100				
15	11.102	738				
16	11.655	6495	V			
17	12.261	7402	V			
18	13.705	21452				
19	14.362	17656	V			
20	15.746	121268	V			
21	16.233	74011	V	10	1.8796	BZALDEHYDE
22	17.267	59781	V	11	0.7928	CYHXANONE
23	17.775	64474	V	12	0.8577	PENTANAL
24	18.588	22410	V			
25	18.85	45071	V			
26	19.95	14917	V	13		MIBK
27	20.552	13819	V			
28	21.677	4739		1	0.1016	HEXANAL
29	22.097	2804	V	1	0.072	HEXANAL
30	22.322	4485	V	1	0.0977	HEXANAL
31	22.761	1160	V			
32	23.053	2387	V			
33	23.911	433		15		2HPtnone
34	24.472	516				
	TOTAL	781857			5.3385	

058

223-02037-01

911015

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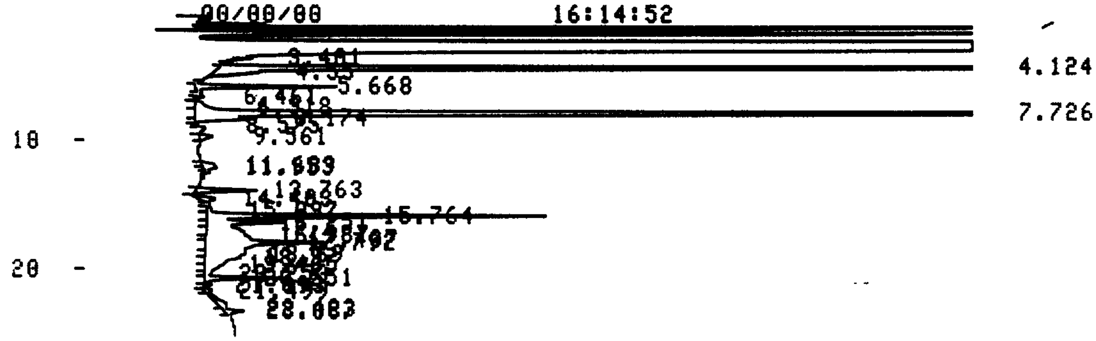


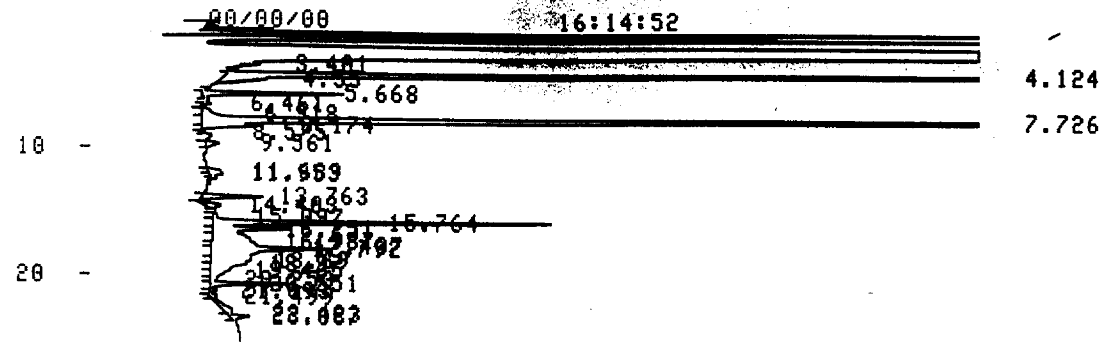
Shimadzu

CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.401	1324				
2	4.124	330258	S	2	2.076	HCHO
3	4.55	1202	T			
4	5.668	16108		3	0.1387	CH3CH0
5	6.461	870				

ES3

TOTAL	781857		5.3385

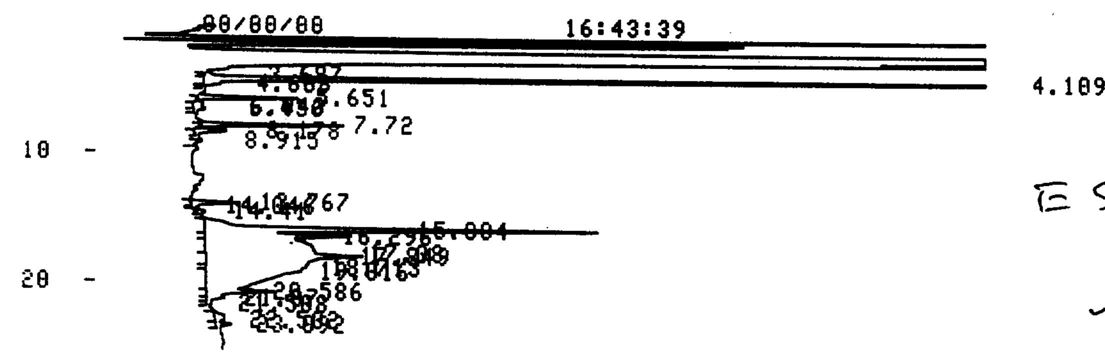


⊕ Shimadzu

ES3

CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.401	1324				
2	4.124	330258	S	2	2.076	HCHO
3	4.55	1202	T			
4	5.668	16108		3	0.1387	CH3CH0
5	6.461	870				
6	6.918	2570				
7	7.726	339941	V	5	3.1498	ACETONE
8	8.174	8763	V	6	0.0876	ACROLEIN
9	8.575	286		7	0.012	PROPANAL
10	9.561	1928				
11	11.689	1655				
12	11.953	1558	V			
13	13.763	8971				
14	14.403	2559				
15	15.097	719				
16	15.764	45358	V			
17	16.251	12787	V	10	0.3254	BZALDEHYDE
18	16.987	12730	V	11	0.1773	CYHXANONE
19	17.407	8648	V			
20	17.792	27946	V	12	0.3796	PENTANAL
21	18.69	10358	V			
22	18.97	7780	V			
23	19.465	3500	V	14		o-TOL'AL
24	20.253	1359	V	13		MIBK
25	20.551	9015	V			
26	21.093	711		1	0.04	HEXANAL
27	21.499	724		1	0.0402	HEXANAL
28	22.423	3634	V	1	0.0847	HEXANAL
29	23.087	2838	V			
	TOTAL	866096			6.5115	



059

ES4

223-02037-01

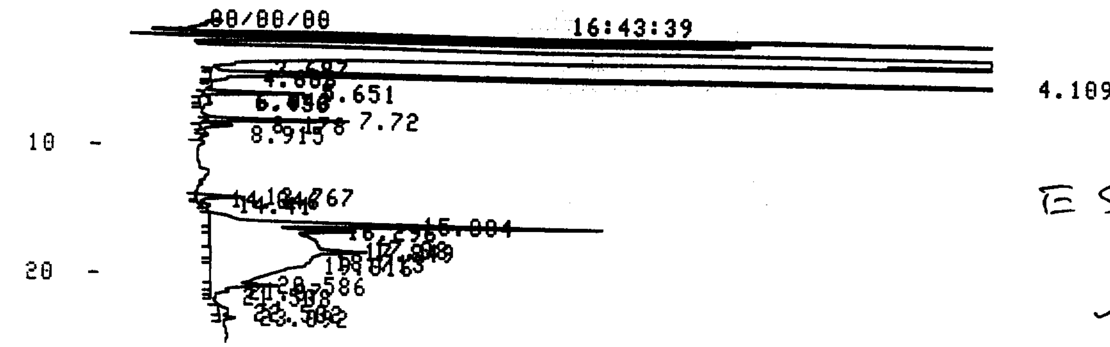
911015

CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.687	955		2	0.0078	HCHO
2	4.109	168743	V	2	1.0616	HCHO
3	4.608	1674	V			
4	5.651	11968		3	0.1087	CH3CH0
5	6.043	2102		3	0.0372	CH3CH0

29	23.087	2838	V
	TOTAL	866096	

059



ES4

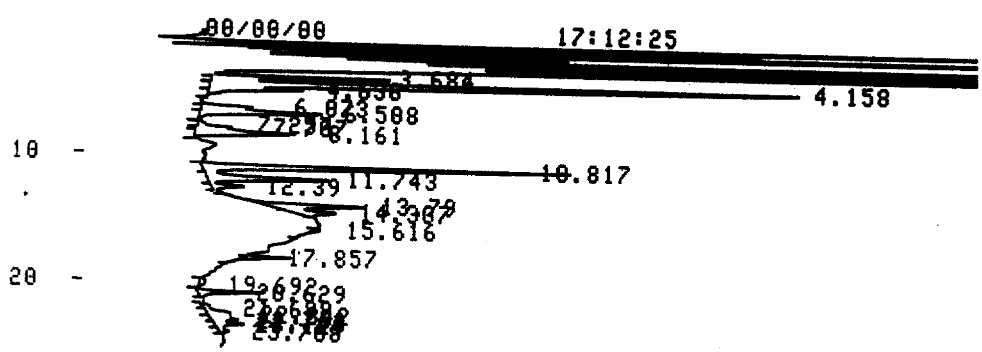
223-02037-01

CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.687	955		2	0.0078	HCHO
2	4.109	168743	V	2	1.0616	HCHO
3	4.608	1674	V			
4	5.651	11968		3	0.1087	CH3CH0
5	6.043	2102		3	0.0372	CH3CH0
6	6.436	1374	V			
7	7.72	15827		5	0.1482	ACETONE
8	8.178	4736		6	0.0474	ACROLEIN
9	8.915	768		7	0.017	PROPANAL
10	13.767	6108				
11	14.046	259	V	9	0.0059	BUTANAL
12	14.41	1202				
13	15.004	63329				
14	16.296	29644	V	10	0.7533	BZALDEHYDE
15	17.08	61713	V	11	0.818	CYHXANONE
16	17.849	57603	V	12	0.7678	PENTANAL
17	18.713	18799	V			
18	19.016	52377	V			
19	20.586	11114	V			
20	21.07	2096	V	1	0.0612	HEXANAL
21	21.508	473	V	1	0.0364	HEXANAL
22	22.502	2333		1	0.0648	HEXANAL
23	23.092	1759	V			
	TOTAL	516956			3.9353	

911015

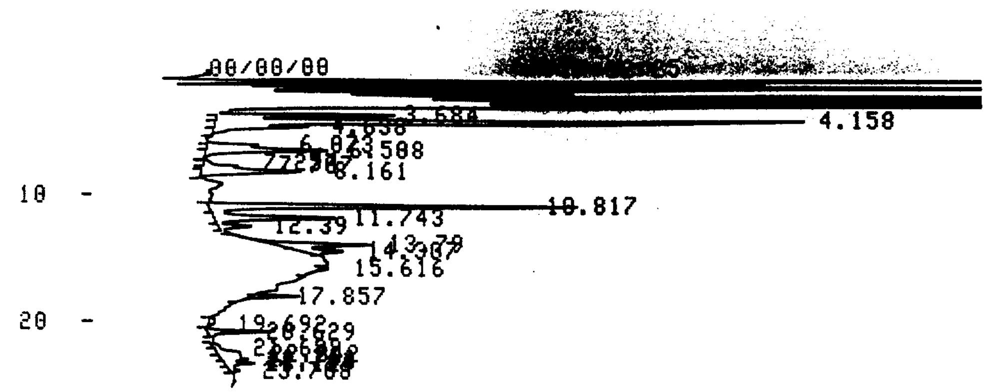
⊕ Shimadzu



ES5

CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.684	21763		2	0.1385	HCHO
2	4.158	103788	V	2	0.6537	HCHO
3	4.638	13255	V			
4	6.073	7651		3	0.0774	CH3CH0
5	6.508	23187	V			
6	7.257	1411				
7	7.787	3901	V	5	0.0377	ACETONE
8	8.161	21735	V	6	0.2173	ACROLEIN
9	10.817	55119				
10	11.743	22761	V			



E55 ✓

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CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.684	21763		2	0.1385	HCHO
2	4.158	103788	V	2	0.6537	HCHO
3	4.638	13255	V			
4	6.073	7651		3	0.0774	CH3CH0
5	6.508	23187	V			
6	7.257	1411				
7	7.707	3901	V	5	0.0377	ACETONE
8	8.161	21735	V	6	0.2173	ACROLEIN
9	10.817	55119				
10	11.743	22761	V			
11	12.39	4683	V			
12	13.79	14336		9	0.1815	BUTANAL
13	14.307	6005	V			
14	15.616	1695				
15	17.857	6011		12	0.0925	PENTANAL
16	19.692	1635		14		o-TOL'AL
17	20.629	8117				
18	21.688	1040		1	0.045	HEXANAL
19	22.342	4841	V	1	0.1032	HEXANAL
20	22.762	5118	V			
21	23.129	3745	V			
22	23.708	1087	V	15		2HPtnone
	TOTAL	332884			1.5468	

060

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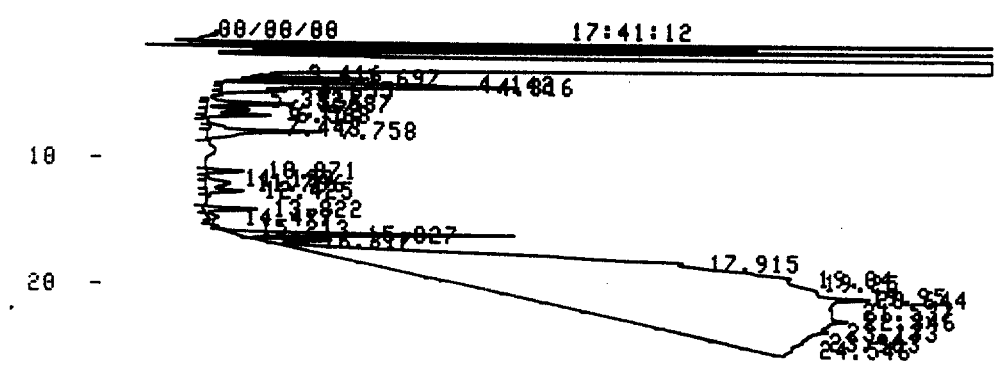

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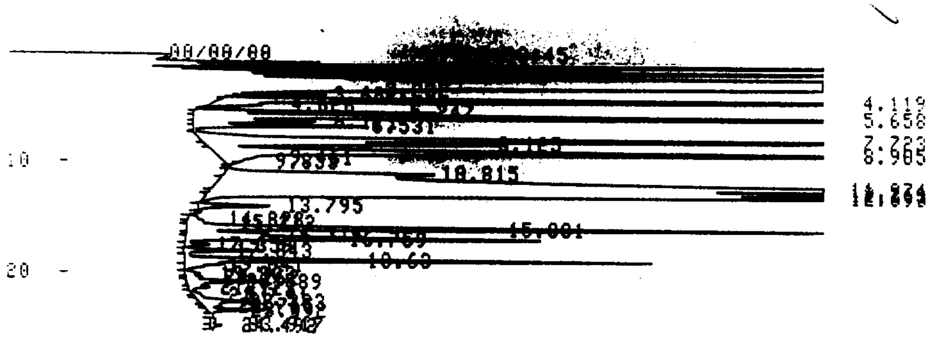
E56 ⊕ Shimadzu

CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.416	1367				
2	3.697	11792		2	0.0759	HCHO
3	4.142	17261		2	0.1102	HCHO
4	4.316	34765	V	2	0.2202	HCHO
5	4.655	7880	V			
6	5.332	703		3	0.027	CH3CH0
7	5.687	11210	V	3	0.1032	CH3CH0
8	6.172	7701	V	3	0.0778	CH3CH0
9	6.568	7565	V			
10	7.443	2047		5	0.0206	ACETONE
11	7.758	20179	V	5	0.1885	ACETONE
12	10.871	4887				
13	11.199	616				
14	11.796	6025	V			

ND acrolein



CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.232	4958				
2	3.682	9118		2	0.0591	HCHO
3	4.119	413988	S	2	2.6019	HCHO
4	4.626	2862	T			
5	5.247	27903		3	0.2243	CH3CH0
6	5.658	253350	V	3	1.859	CH3CH0
7	6.111	21939	V	3	0.181	CH3CH0
8	6.531	26147	V			
9	7.723	232520		5	2.155	ACETONE
10	8.125	50825	V	6	0.5083	ACROLEIN
11	8.905	208504	SV	7	2.1622	PROPANAL
12	9.835	265	T			
13	10.815	42008				
14	11.974	454139	V			
15	12.363	173136	V			
16	12.693	148695	V			
17	13.795	12618		9	0.16	BUTANAL
18	14.828	2107				
19	15.212	3376	V			
20	15.801	117868	V			
21	16.316	14353	V	10	0.3652	BZALDEHYDE
22	16.759	65338	V	11	0.8655	CYHXANONE
23	17.359	3639	V	11	0.0584	CYHXANONE
24	17.843	10636		12	0.1531	PENTANAL
25	18.63	67630	V			
26	19.041	6966	V			
27	19.903	2877		13		MIBK
28	20.262	2072	V	13		MIBK
29	20.589	13646	V			
30	21.123	2699	V	1	0.0704	HEXANAL
31	21.7	1562		1	0.053	HEXANAL
32	21.91	859	V	1	0.0423	HEXANAL
33	22.333	10618	V	1	0.1915	HEXANAL
34	22.765	2422	V			
35	23.092	6623	V			
36	23.917	980		15		2HPtnone
37	24.492	1215	V			
	TOTAL	2420458			11.7101	

ES 1
spiked

062

223-02037-01

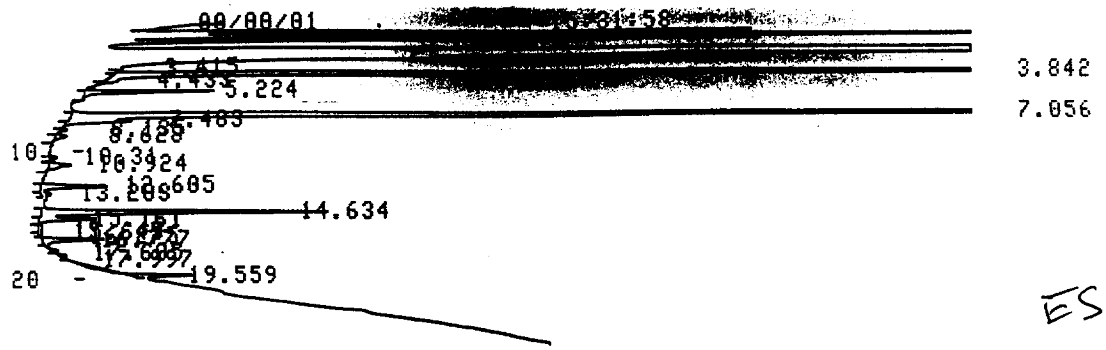
91

6

223-02037-01

911015

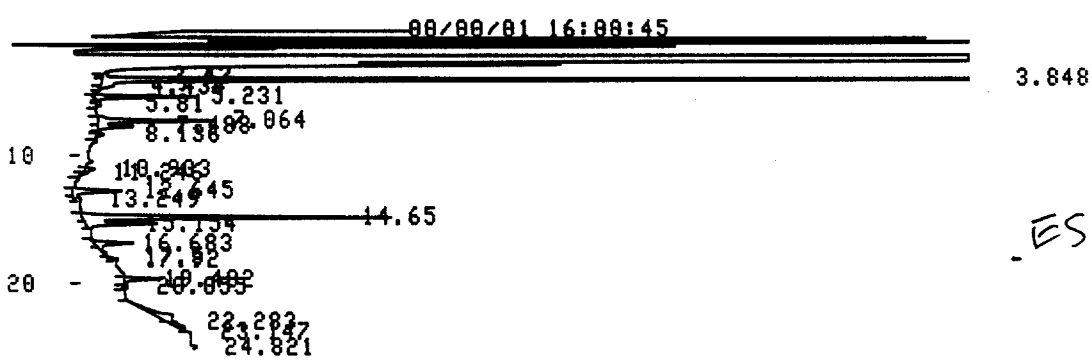
Shimadzu



ES3

CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.415	498				
2	3.842	300940		2	1.8919	HCHO
3	4.433	3171	V	2	0.0217	HCHO
4	5.224	14424		3	0.1265	CH3CHO
5	7.056	304415				
6	7.483	9806	V	5	0.0924	ACETONE
7	8.135	1194		6	0.0119	ACROLEIN
8	8.628	2102		7	0.0308	PROPANAL
9	10.31	1060				
10	10.924	4611				
11	12.605	9480				
12	13.203	1083		8	0.0162	MEK
13	14.634	40038				
14	15.161	7602	V			
15	15.645	824				
16	16.275	252		10	0.0072	BZALDEHYDE
17	16.777	7462		11	0.1084	CYHXANONE
18	17.605	318				
19	17.997	873		12	0.0253	PENTANAL
20	19.559	2135		14		o-TOL'AL
	TOTAL	712287			2.3324	



ES-4

CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.43	808				
2	3.848	153916	V	2	0.9685	HCHO
3	4.434	1604	V	2	0.0119	HCHO
4	5.231	10374		3	0.0971	CH3CHO
5	5.81	665		3	0.0267	CH3CHO
6	7.064	13425				
7	7.488	5162	V	5	0.0494	ACETONE
8	8.136	1204		6	0.012	ACROLEIN
9	10.903	1706				
10	11.246	737	V			
11	12.645	6794				
12	13.249	678		8	0.0111	MEK
13	14.65	40488				
14	15.154	9358	V			
15	16.683	4745		11	0.0729	CYHXANONE
16	17.5	377	V			
17	17.92	918		12	0.0259	PENTANAL
18	19.482	4206		14		o-TOL'AL

080

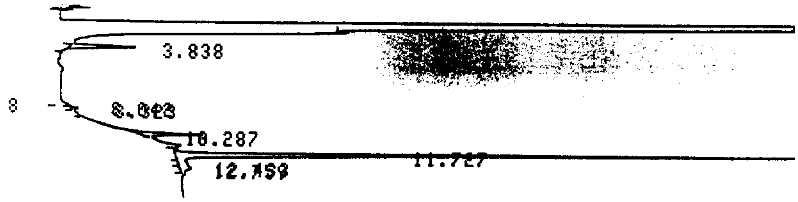
LABORATORY ANALYSIS REPORT

Pre-cleaning on DNPH Solution

DNPH solutions were analyzed for aldehydes by high performance liquid chromatography.

Report Date : May 26, 1992
Date Shipped : May 26, 1992
Date Analyzed : May 26, 1992
P.O. No. :
Client Proj. # :

	ug/ml		
DNPH Blank	HCHO	CH3CHO	Acrolein
1	0.09	<0.01	<0.01
2	0.08	<0.01	<0.01
3	0.08	<0.01	<0.01
4	0.08	<0.01	<0.01
Average	0.08	<0.01	<0.01

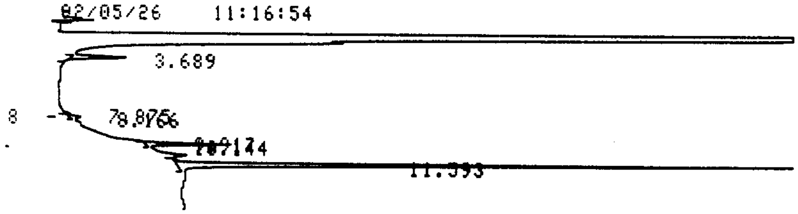


CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	RRT	AREA	MK	IDNO	CONC	NAME
1	3.838	0.3273	20183		2	0.1031	HCHO
4	11.727	1	138785		1	1.3307	HXNAL
		TOTAL	158968			1.4338	

µg/ml extract

82/05/26 11:16:54

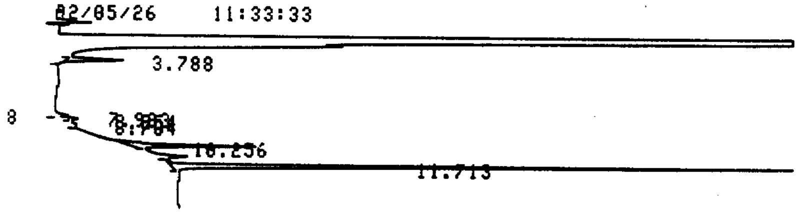


CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	RRT	AREA	MK	IDNO	CONC	NAME
1	3.689	0.3182	16858		2	0.0863	HCHO
4	11.593	1	135118		1	1.3008	HXNAL
		TOTAL	151976			1.3871	

µg/ml extract

82/05/26 11:33:33

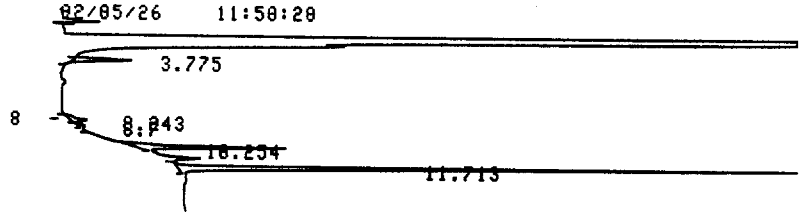


CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	RRT	AREA	MK	IDNO	CONC	NAME
1	3.788	0.3234	17313		2	0.0886	HCHO
4	11.713	1	138273		1	1.3265	HXNAL
		TOTAL	155586			1.4151	

µg/ml extract

82/05/26 11:50:20



CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	RRT	AREA	MK	IDNO	CONC	NAME
1	3.775	0.3223	17900		2	0.0916	HCHO
3	8.7	0.7428	1743		4	0.0537	ACTONE
5	11.713	1	136949		1	1.3157	HXNAL
		TOTAL	156592			1.461	

µg/ml extract.

084 223-02037-01 10710IA SHIMADZU

APPENDIX D

CARB METHOD 410A

VOLATILE ORGANIC COMPOUNDS
EMISSION CALCULATIONS (lb/hr)

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May -92

VOC	Molecular	Sample Concentration (ppb)			lb/hr			
Compound	Weight	Run 1	Run 2	Run 3	Run 1	Run 2	Run 3	Average
Propylene	42.080	<1.60E+02	<1.60E+02	<1.60E+02	<4.95E-01	<4.97E-01	<4.83E-01	<4.92E-01
Hexane	86.170	2.50E+01	5.20E+01	3.00E+01	1.58E-01	3.31E-01	1.85E-01	2.25E-01
1,3-Butadiene	54.091							
Methylene Chloride	84.933							
Chloroform	119.378							
1,2-Dichloroethane	98.960							
1,1,1-Trichloroethane	133.405							
Benzene	78.113	4.10E+00	7.10E+00	4.10E+00	2.36E-02	4.09E-02	2.30E-02	2.92E-02
Carbon Tetrachloride	153.823							
Trichloroethylene	131.389							
1,2-Dibromoethane	187.862							
Tetrachloroethylene	165.834							
P-Xylene + M-Xylene	106.167	9.30E+00	1.20E+01	8.10E+00	7.26E-02	9.40E-02	6.17E-02	7.61E-02
Ethylbenzene	106.167	4.40E+00	6.30E+00	3.90E+00	3.44E-02	4.94E-02	2.97E-02	3.78E-02
O-Xylene	106.167	4.20E+00	5.40E+00	3.70E+00	3.28E-02	4.23E-02	2.82E-02	3.44E-02
Toluene	92.140	1.50E+01	2.00E+01	1.40E+01	1.02E-01	1.36E-01	9.26E-02	1.10E-01

" < " indicates a sample with a non-detectable concentration. Laboratory Detection Limit was used for emission calculation.

lb/hr = (0.00000137 Lb-Mole °R / ft3) x 60 min/hr x Qs(std) x MW x (ppb / 1000) / [T(std) + 460]

Standard Temperature = 60 °F

	Run 1	Run 2	Run 3
Qs(std), ft3/min =	464,805	466,441	453,507

VOLATILE ORGANIC COMPOUNDS
EMISSION CALCULATIONS (lb/MMBtu)

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27–May –92

VOC Compound	Molecular Weight	lb/hr Run 1	lb/hr Run 2	lb/hr Run 3	lb/MMBtu Run 1	lb/MMBtu Run 2	lb/MMBtu Run 3	lb/MMBtu Average
Propylene	42.080	<4.95E–01	<4.97E–01	<4.83E–01	<5.27E–04	<5.43E–04	<5.41E–04	<5.37E–04
Hexane	86.170	1.58E–01	3.31E–01	1.85E–01	1.69E–04	3.61E–04	2.08E–04	2.46E–04
1,3–Butadiene	54.091							
Methylene Chloride	84.933							
Chloroform	119.378							
1,2–Dichloroethane	98.960							
1,1,1–Trichloroethane	133.405							
Benzene	78.113	2.36E–02	4.09E–02	2.30E–02	2.51E–05	4.47E–05	2.57E–05	3.18E–05
Carbon Tetrachloride	153.823							
Trichloroethylene	131.389							
1,2–Dibromoethane	187.862							
Tetrachloroethylene	165.834							
P–Xylene + M–Xylene	106.167	7.26E–02	9.40E–02	6.17E–02	7.72E–05	1.03E–04	6.91E–05	8.30E–05
Ethylbenzene	106.167	3.44E–02	4.94E–02	2.97E–02	3.65E–05	5.39E–05	3.33E–05	4.13E–05
O–Xylene	106.167	3.28E–02	4.23E–02	2.82E–02	3.49E–05	4.62E–05	3.16E–05	3.76E–05
Toluene	92.140	1.02E–01	1.36E–01	9.26E–02	1.08E–04	1.49E–04	1.04E–04	1.20E–04

" < " indicates a sample with a non–detectable concentration. Laboratory Detection Limit was used for emission calculation.

lb/MMBtu = (lb/hr) / (MMBtu/hr)

	Run 1	Run 2	Run 3	Blank Value (avg)
Heat Input, MMBtu/hr =	940.02	914.98	892.67	915.89

VOLATILE ORGANIC COMPOUNDS
ANALYTICAL DATA

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27–May –92

VOC Compound	Molecular Weight	Sample Concentration (ppb)			Detection Limit (ppb)		
		Run 1	Run 2	Run 3	Run 1	Run 2	Run 3
Propylene	42.080	ND	ND	ND	160	160	160
Hexane	86.170	25	52	30			
1,3–Butadiene	54.091						
Methylene Chloride	84.933						
Chloroform	119.378						
1,2–Dichloroethane	98.960						
1,1,1–Trichloroethane	133.405						
Benzene	78.113	4.1	7.1	4.1			
Carbon Tetrachloride	153.823						
Trichloroethylene	131.389						
1,2–Dibromoethane	187.862						
Tetrachloroethylene	165.834						
P–Xylene + M–Xylene	106.167	9.3	12	8.1			
Ethylbenzene	106.167	4.4	6.3	3.9			
O–Xylene	106.167	4.2	5.4	3.7			
Toluene	92.140	15	20	14			

FUEL BASED CALCULATIONS

SYCAMORE COGENERATION AB258
UNIT 2 (B) – CARB METHOD 410A (VOC)

May 27, 1992

FUEL ANALYSIS DATA

Run #	Fuel Value (%), Moisture & Ash Free: Carbon	Hydrogen	Nitrogen	Oxygen	Sulfur	GCV BTU/lb	ft3/lb	lb/gal
1	73.46	23.64	1.77	1.13	0.00	22,953		
2	73.46	23.64	1.77	1.13	0.00	22,953		
3	73.46	23.64	1.77	1.13	0.00	22,953		

CALCULATIONS

Run #	Stack Gas Oxygen %	Fuel Gas Flowrate lb/hr	Fuel Gas Flowrate ft3/hr	Fuel Oil Flowrate lb/hr	Fuel Oil Flowrate gal/hr	Solid Fuel lb/hr	Heat Input MMBTU/hr	F-Factor dscf/MMBTU	Qs(std) dscfm
1	14.91	40,954					940.015	8,502.92	464,805
2	15.09	39,863					914.977	8,502.92	466,441
3	15.07	38,891					892.667	8,502.92	453,507

Heat Input, MMBTU/hr = (lb/hr fuel gas) x BTU/lb x MM/1E+06

= (ft3/hr fuel gas) x BTU/lb / (ft3/lb fuel gas) x MM/1E+06

= (lb/hr fuel oil) x BTU/lb x MM/1E+06

= (gal/hr fuel oil) x lb/gal x BTU/lb x MM/1E+06

= (lb/hr solid fuel) x BTU/lb x MM/1E+06

F-Factor, dscf/MMBTU = 1E+06 [3.64 scf/lb x (% H) + 1.53 scf/lb x (% C) + 0.57 scf/lb x (% S) + 0.14 scf/lb x (% N) – 0.46 scf/lb x (% O2)] / (BTU/lb) x [(Tstd + 460) / 528]

Qs(std), dscfm = MMBTU/hr x [F-Factor x (20.9 / (20.9 – %O2)) x (hr / 60 min)]

GCV = Gross Calorific Value of fuel

Standard Temperature = 60 °F

INTEGRATED BAG GAS SAMPLING
FIELD DATA SHEET

Company Sycamore Cogeneration

Date 5/27/92

Test Location Unit 2, HRSG stack

Test Method / Parameter CARB 410A / VOC

ENGINEERING–SCIENCE, INC.

Run No.	Laboratory No.	Start Time	Rotameter (liter/min)	End Time	Rotameter (liter/min)	Total Time (min)	Leak Rate (liter/min)	Comments
1	BK9205157	0910	0.2	1010	0.2	60.0	0.0	
2	BK9205158	1400	0.2	1500	0.2	60.0	0.0	
3	BK9205159	1840	0.2	1940	0.2	60.0	0.0	

Note: Using a 10 liter sample bag, set the flowrate as follows: 15 min sample = 0.67 l/min; 30 min sample = 0.33 l/min; 60min sample = 0.17 l/min.

Performance Analytical Inc.
Environmental Testing and Consulting

LABORATORY REPORT

Client:	ENGINEERING-SCIENCE, INC.	Date of Report:	06/02/92
Address:	2520 Pegasus Drive	Date Received:	05/29/92
	Bakersfield, CA 93308	PAI Project No:	4200,4201
Contact:	Mr. Gary McRae	Purchase Order:	Verbal

Client Project: Sycamore AB2588 #WA005.07

Seven (7) Charcoal Tube Samples labeled: "BK9205150" through "BK9205156"

Three (3) Tedlar Bag Samples labeled: "BK9205157" through "BK9205159"

The samples were received at the laboratory under chain of custody on May 29, 1992. The samples were received intact. All of the charcoal tube samples were received wet, except the sample BK9205156. The dates of analysis are indicated on the attached data sheets.

Propylene Oxide Analysis

The charcoal tube samples were analyzed for Propylene Oxide according to NIOSH Method 1612. The analyses were performed using a gas chromatograph equipped with a flame ionization detector.

Propylene Analysis

The Tedlar bag samples were analyzed for Propylene using a gas chromatograph equipped with a flame ionization detector.

Data Release Authorization:

Ku-Jih Chen
Principal Chemist

Reviewed and Approved:

Christopher Casteel
Laboratory Manager

Performance Analytical Inc.
Environmental Testing and Consulting

Volatile Organic Compound Analysis

The Tedlar Bag samples were also analyzed for Benzene, Toluene, Ethylbenzene, Total Xylenes and Hexane by gas chromatography/mass spectrometry (GC/MS). The analyses were performed according to the methodology outlined in EPA Method TO-14 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, EPA 600/4-84-041, U.S. Environmental Protection Agency, Research Triangle Park, NC, April, 1984 and May, 1988. The method was modified for using Tedlar Bags. The analyses were performed by gas chromatography/mass spectrometry utilizing thermal desorption/ cryogenic concentration. The instrumentation used for sample analysis was comprised of a Finnigan Model 4500 GC/MS/DS interfaced to an Entech 2000 automated whole air inlet system/cryogenic concentrator. A thick film (5 micron) crossbonded 100% Dimethylpolysiloxane megabore column (RT_x-1, Restek Corporation, Bellefonte, PA) was used to achieve chromatographic separation.

The results of analyses are included on the attached data sheets.

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Performance Analytical Inc.
Environmental Testing and Consulting

PERFORMANCE ANALYTICAL INC.

RESULTS OF PROPYLENE ANALYSIS

Client: Engineering Science, Inc.

Client Project ID: WA005.07
PAI Project ID: #4200

Test Code: GC/FID
Instrument ID: HP 5890A/FID #4
Analyst: Ku-Jih Chen
Verified By: Michael Tuday

Matrix: Tedlar Bags
Date Received: 05/29/92
Date Analyzed: 05/29/92
Volume Analyzed: 2.5 ml

Client Sample ID	PAI Sample ID	CAS# 115-07-1 Result (PPM)	PROPYLENE Detection Limit (PPM)
BK9205157 (05/27/92) Run #1	9202184	ND	0.16
BK9205158 (05/27/92) Run #2	9202185	ND	0.16
BK9205159 (05/27/92) Run # 3	9202186	ND	0.16
BK9205159 (05/27/92)	LAB DUPLICATE	ND	0.16
N/A (05/29/92)	METHOD BLANK	ND	0.16

ND = Not Detected - Less Than Indicated Detection Limit

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Performance Analytical Inc.
Environmental Testing and Consulting

PERFORMANCE ANALYTICAL INC.

RESULTS OF ANALYSIS

Client: Engineering Science, Inc.

Client Sample ID: N/A

PAI Sample ID: PAI Method Blank

Test Code: GC/MS Mod. EPA TO-14
Analyst: Kathleen Aguilera
Instrument ID: Finnigan 4500B/Entech 2000
Verified by: Michael Tuday

Matrix: Tedlar Bag
Date Received: N/A
Date Analyzed: 05/29/92
Volume Analyzed: 1.00 Liter

CAS #	COMPOUND	RESULT (UG/M^3)	DETECTION LIMIT (UG/M^3)	RESULT (PPB)	DETECTION LIMIT (PPB)
71-43-2	BENZENE	ND	5.0	ND	1.6
108-88-3	TOLUENE	ND	5.0	ND	1.3
100-41-4	ETHYLBENZENE	ND	5.0	ND	1.2
1330-20-7	m- & p-XYLENES	ND	5.0	ND	1.2
95-47-6	o-XYLENE	ND	5.0	ND	1.2
110-54-3	HEXANE	ND	5.0	ND	1.4

ND = Not Detected TR = Trace Level - Below Indicated Detection Limit

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Performance Analytical Inc.
Environmental Testing and Consulting

PERFORMANCE ANALYTICAL INC.

RESULTS OF ANALYSIS

Client: Engineering Science, Inc.

Client Sample ID: BK9205157 (05/27/92) Run #1

PAI Sample ID: 9202184

Test Code: GC/MS Mod. EPA TO-14
Analyst: Kathleen Aguilera
Instrument ID: Finnigan 4500B/Entech 2000
Verified by: Michael Tuday

Matrix: Tedlar Bag
Date Received: 05/29/92
Date Analyzed: 05/29/92
Volume Analyzed: 1.00 Liter

CAS #	COMPOUND	RESULT (UG/M^3)	DETECTION LIMIT (UG/M^3)	RESULT (PPB)	DETECTION LIMIT (PPB)
71-43-2	BENZENE	13	5.0	4.1	1.6
108-88-3	TOLUENE	56	5.0	15	1.3
100-41-4	ETHYLBENZENE	19	5.0	4.4	1.2
1330-20-7	m- & p-XYLENES	40	5.0	9.3	1.2
95-47-6	o-XYLENE	18	5.0	4.2	1.2
110-54-3	HEXANE	87	5.0	25	1.4

ND = Not Detected TR = Trace Level - Below Indicated Detection Limit

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Performance Analytical Inc.
Environmental Testing and Consulting

PERFORMANCE ANALYTICAL INC.

RESULTS OF ANALYSIS

Client: Engineering Science, Inc.

Client Sample ID: BK9205158 (05/27/92) Run #2

PAI Sample ID: 9202185

Test Code:	GC/MS Mod. EPA TO-14	Matrix:	Tedlar Bag
Analyst:	Kathleen Aguilera	Date Received:	05/29/92
Instrument ID:	Finnigan 4500B/Entech 2000	Date Analyzed:	05/29/92
Verified by:	Michael Tuday	Volume Analyzed:	1.00 Liter

CAS #	COMPOUND	RESULT (UG/M^3)	DETECTION LIMIT (UG/M^3)	RESULT (PPB)	DETECTION LIMIT (PPB)
71-43-2	BENZENE	23	5.0	7.1	1.6
108-88-3	TOLUENE	77	5.0	20	1.3
100-41-4	ETHYLBENZENE	27	5.0	6.3	1.2
1330-20-7	m- & p-XYLENES	51	5.0	12	1.2
95-47-6	o-XYLENE	24	5.0	5.4	1.2
110-54-3	HEXANE	180	5.0	52	1.4

ND = Not Detected TR = Trace Level - Below Indicated Detection Limit

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Performance Analytical Inc.
Environmental Testing and Consulting

PERFORMANCE ANALYTICAL INC.

RESULTS OF ANALYSIS

Client: Engineering Science, Inc.

Client Sample ID: BK9205159 (05/27/92) Run #3

PAI Sample ID: 9202186

Test Code: GC/MS Mod. EPA TO-14
Analyst: Kathleen Aguilera
Instrument ID: Finnigan 4500B/Entech 2000
Verified by: Michael Tuday

Matrix: Tedlar Bag
Date Received: 05/29/92
Date Analyzed: 05/29/92
Volume Analyzed: 1.00 Liter

CAS #	COMPOUND	RESULT (UG/M^3)	DETECTION LIMIT (UG/M^3)	RESULT (PPB)	DETECTION LIMIT (PPB)
71-43-2	BENZENE	13	5.0	4.1	1.6
108-88-3	TOLUENE	51	5.0	14	1.3
100-41-4	ETHYLBENZENE	17	5.0	3.9	1.2
1330-20-7	m- & p-XYLENES	35	5.0	8.1	1.2
95-47-6	o-XYLENE	16	5.0	3.7	1.2
110-54-3	HEXANE	110	5.0	30	1.4

ND = Not Detected TR = Trace Level - Below Indicated Detection Limit

Performance Analytical Inc.
Environmental Testing and Consulting

PERFORMANCE ANALYTICAL INC.

RESULTS OF ANALYSIS

Client: Engineering Science, Inc.

Client Sample ID: BK9205159 (05/27/92)

PAI Sample ID: 9202186 (Laboratory Duplicate)

Test Code: GC/MS Mod. EPA TO-14
Analyst: Kathleen Aguilera
Instrument ID: Finnigan 4500B/Entech 2000
Verified by: Michael Tuday

Matrix: Tedlar Bag
Date Received: 05/29/92
Date Analyzed: 05/29/92
Volume Analyzed: 1.00 Liter

CAS #	COMPOUND	RESULT (UG/M^3)	DETECTION LIMIT (UG/M^3)	RESULT (PPB)	DETECTION LIMIT (PPB)
71-43-2	BENZENE	14	5.0	4.2	1.6
108-88-3	TOLUENE	51	5.0	14	1.3
100-41-4	ETHYLBENZENE	18	5.0	4.1	1.2
1330-20-7	m- & p-XYLENES	35	5.0	8.2	1.2
95-47-6	o-XYLENE	17	5.0	3.8	1.2
110-54-3	HEXANE	110	5.0	30	1.4

ND = Not Detected TR = Trace Level - Below Indicated Detection Limit

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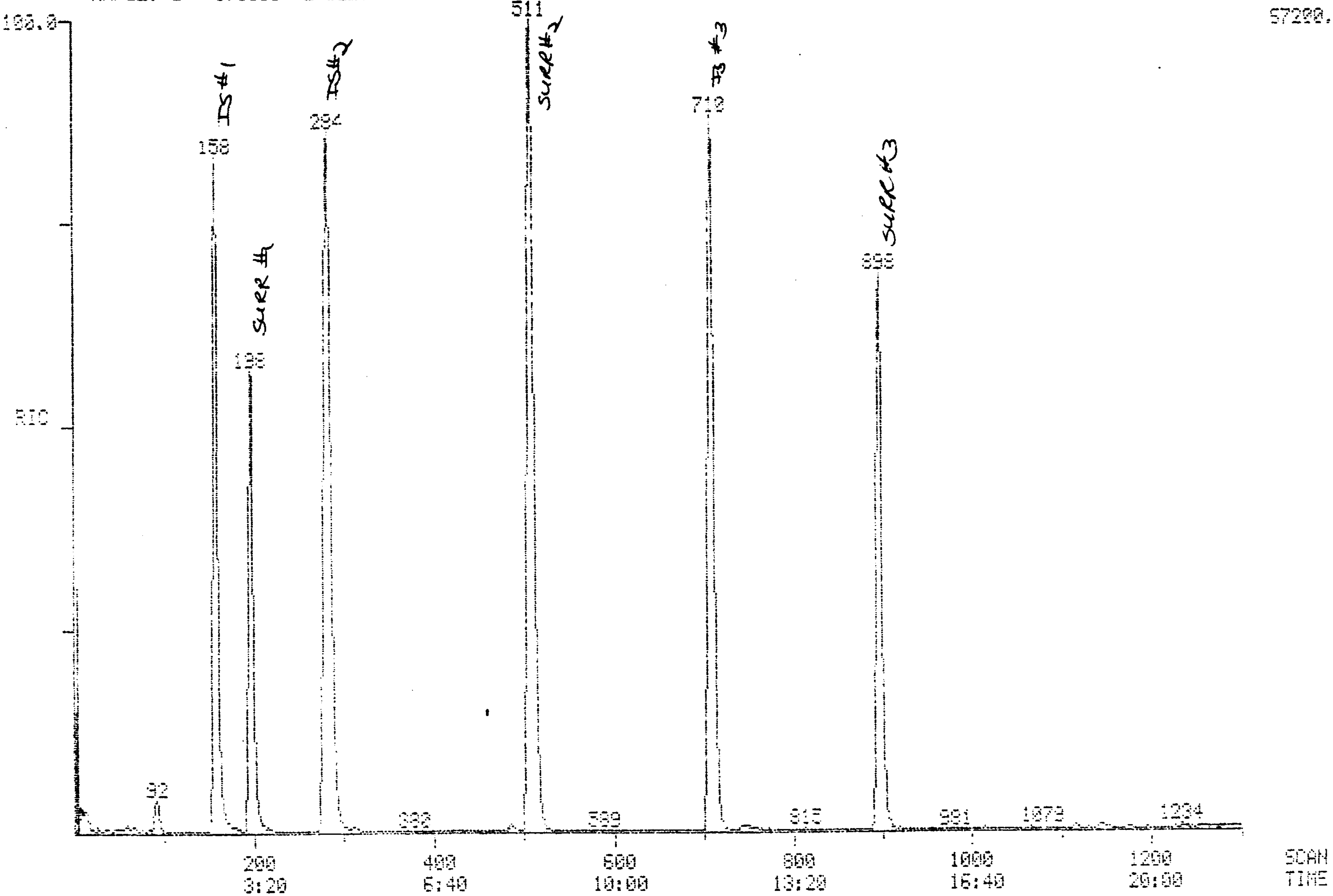
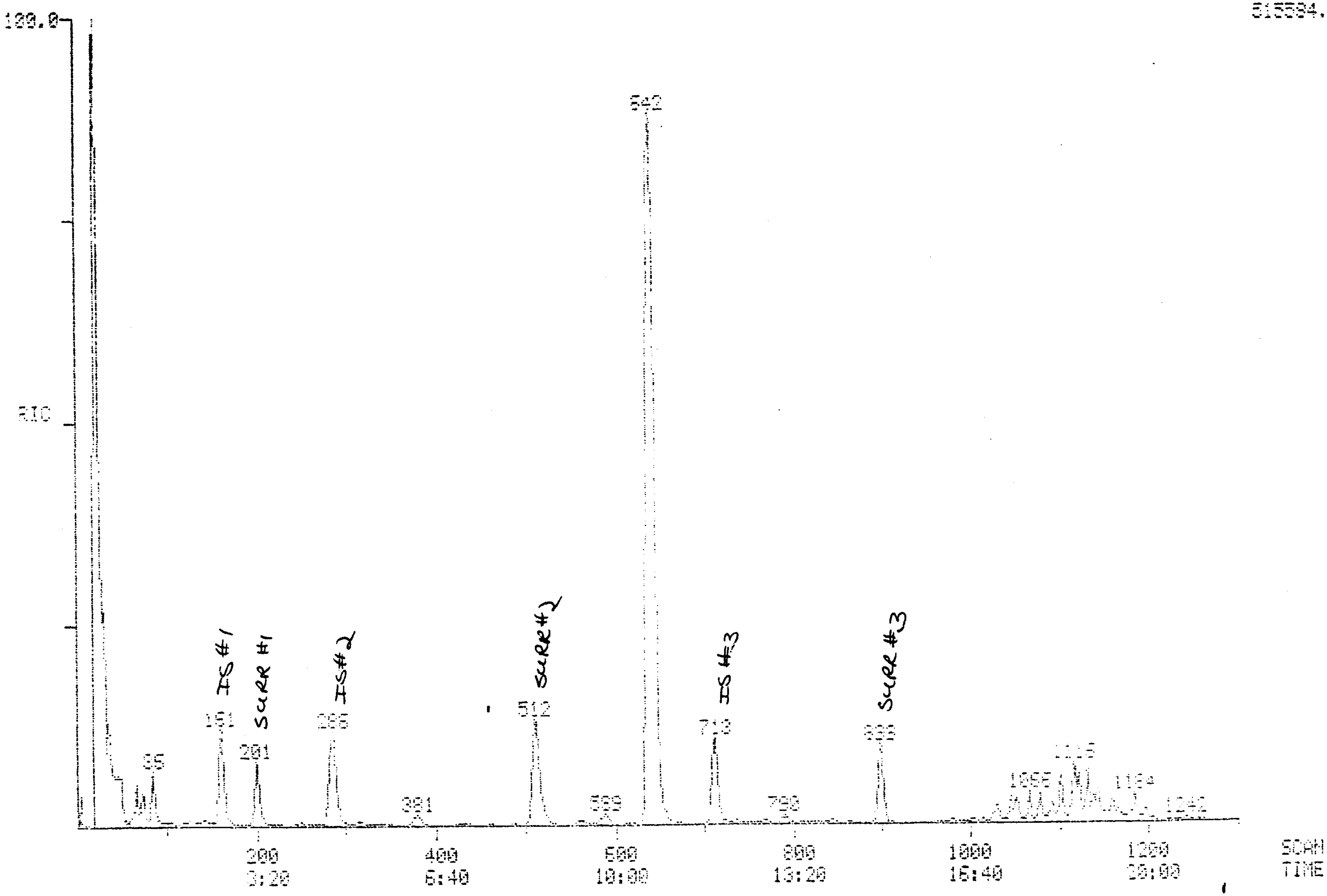
RIC
05/29/92 15:33:00
SAMPLE: PAI LAB BLANK (TO-14)
CONDS.: 5 MIN AT 35C, THEN 5C/MIN TO 100C, THEN 25C/MIN TO 200C
RANGE: G 1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

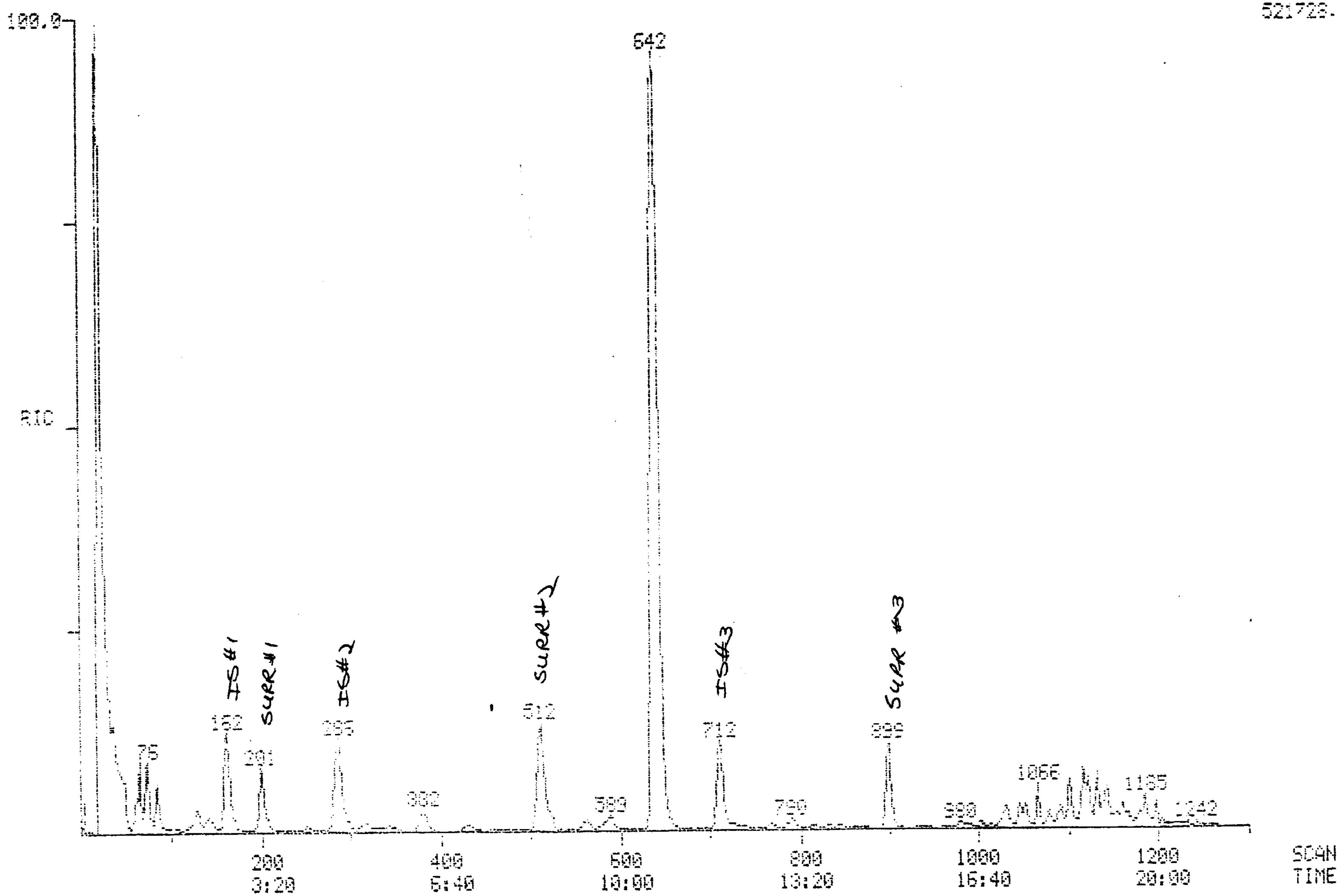
DATA: 052992B10 #1 SCANS 1 TO 1300
CALI: 02259203 #5



RIC   DATA: 052992B13 #1   SCANS   1 TO 1300
05/29/92 18:14:00   CALI: 02299203 #5
SAMPLE: ESI BK9205157 (1.0L) #9202184
CONDS.: 5 MIN AT 35C, THEN 5C/MIN TO 100C, THEN 25C/MIN TO 200C
RANGE: G   1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



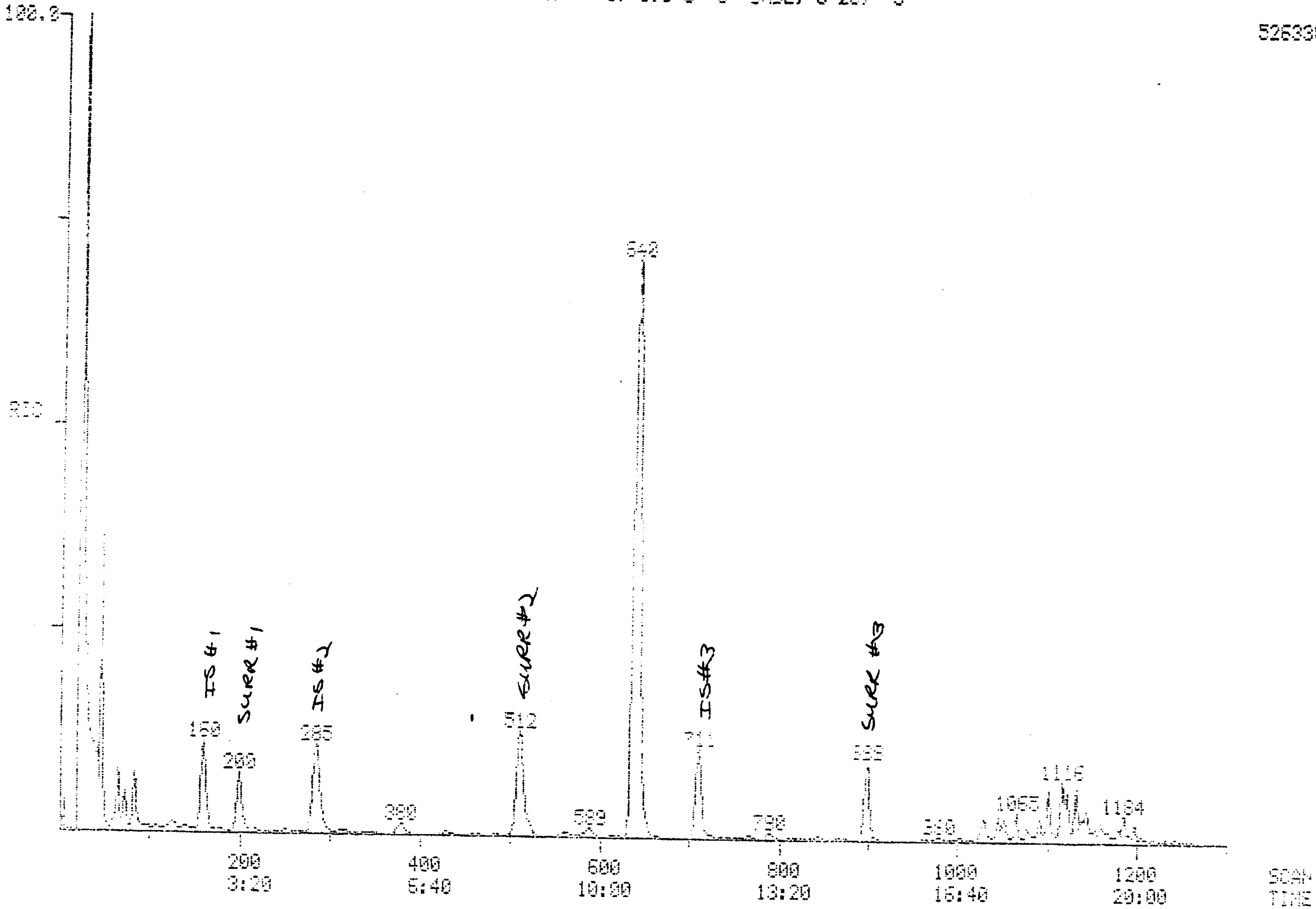
RIC   DATA: 052992B14 #1   SCANS   1 TO 1300
05/29/92 19:00:00   CALI: 02239203 #5
SAMPLE: ESI BK9205158 (1.0L) #S202165
CONDS.: 5 MIN AT 35C, THEN 5C/MIN TO 100C, THEN 25C/MIN TO 200C
RANGE: G   1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



RIC
05/29/92 19:45:00
SAMPLE: ESI BK9205159 (1.0L) #9202186
CONDS.: 5 MIN AT 35C, THEN 5C/MIN TO 100C, THEN 25C/MIN TO 200C
RANGE: G 1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: 052992815 #1
CALI: 02299203 #5

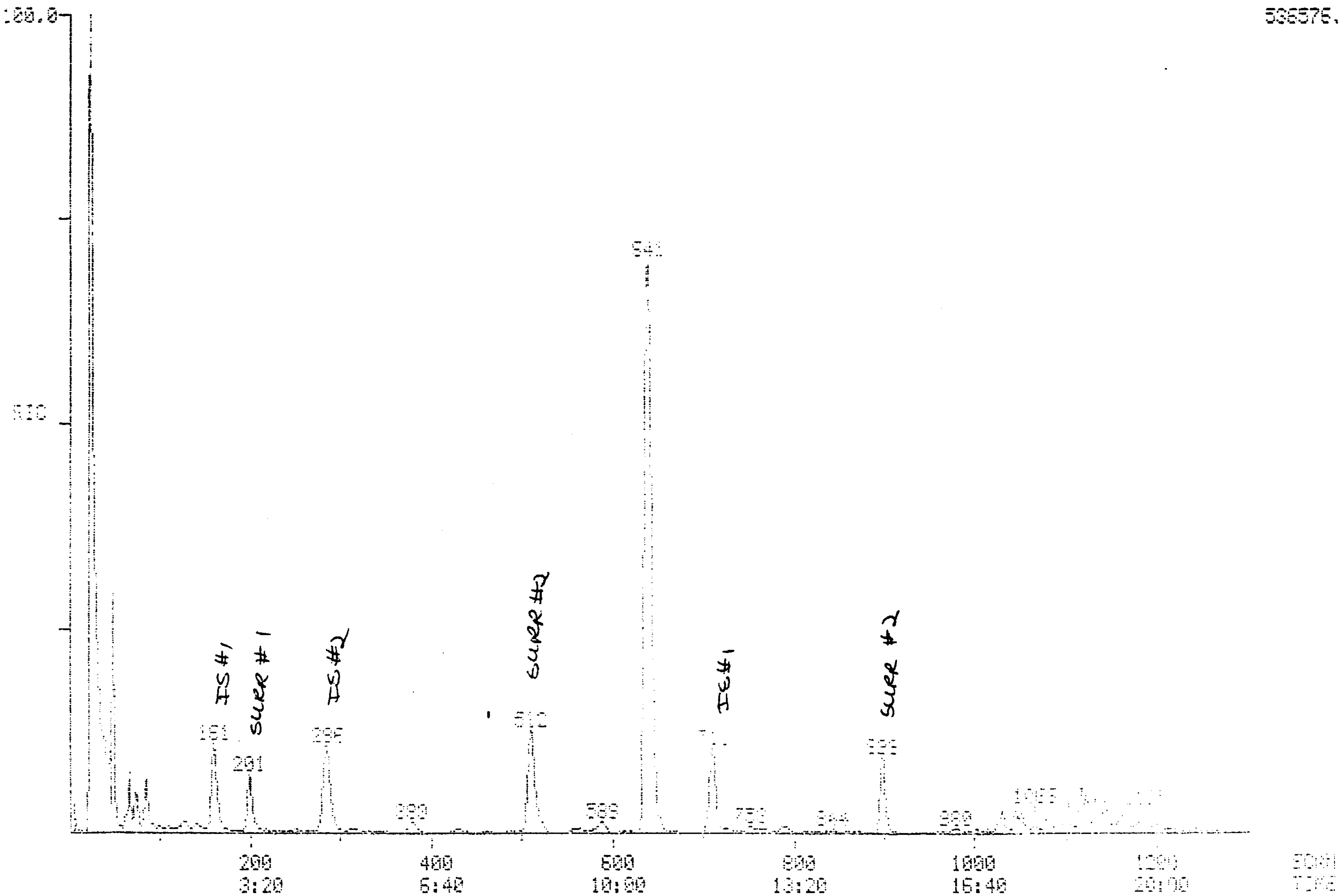
SCANS 1 TO 1300



RIC
05/29/92 20:31:00
SAMPLE: ESI BK9205153 (1.0L) #9202186 DUPLICATE
CONDS.: 5 MIN AT 35C, THEN 5C/MIN TO 100C, THEN 25C/MIN TO 200C
RANGE: G 1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: 052992B16 #1
CALI: 02239203 #5

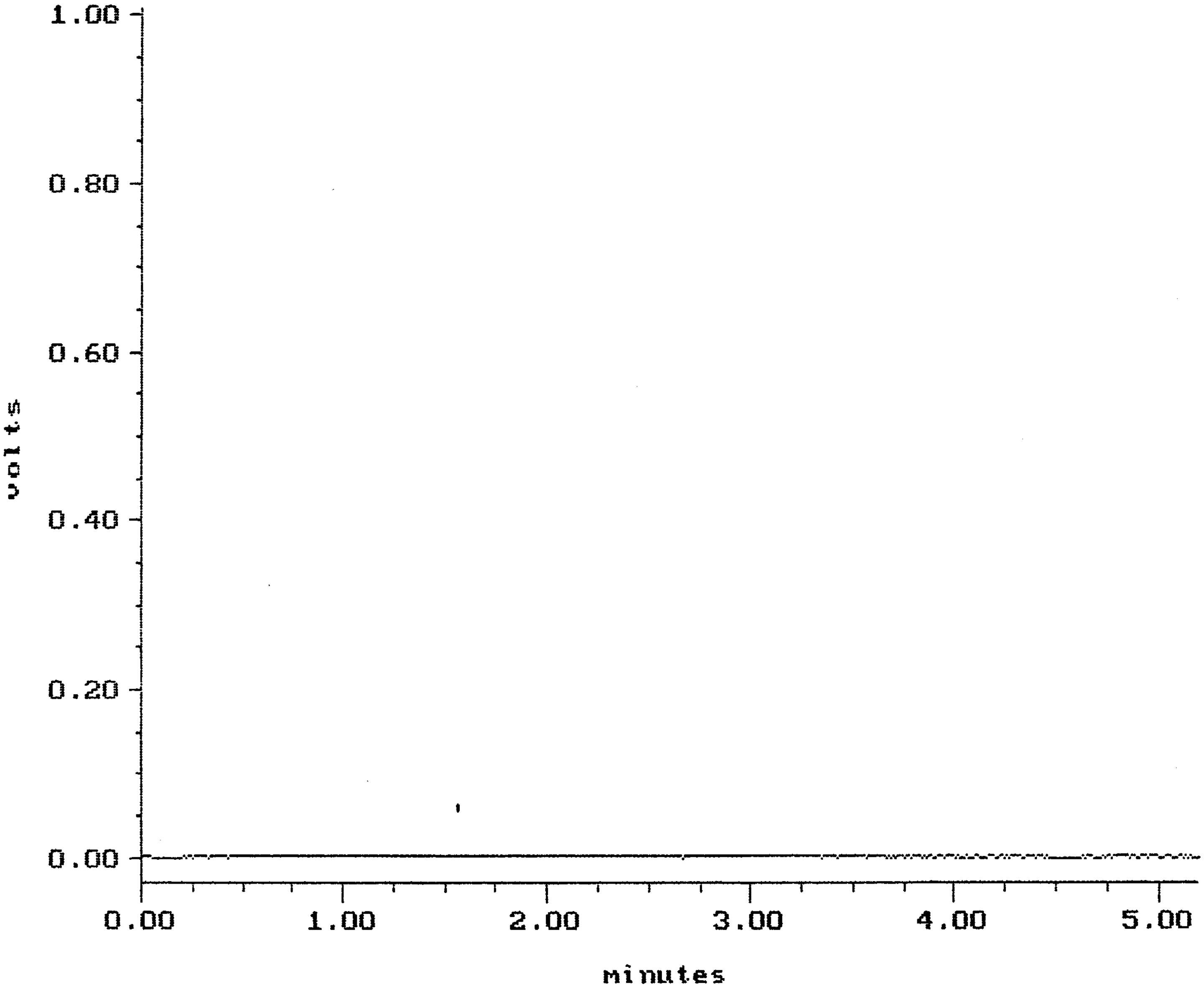
SCANS 1 TO 1300



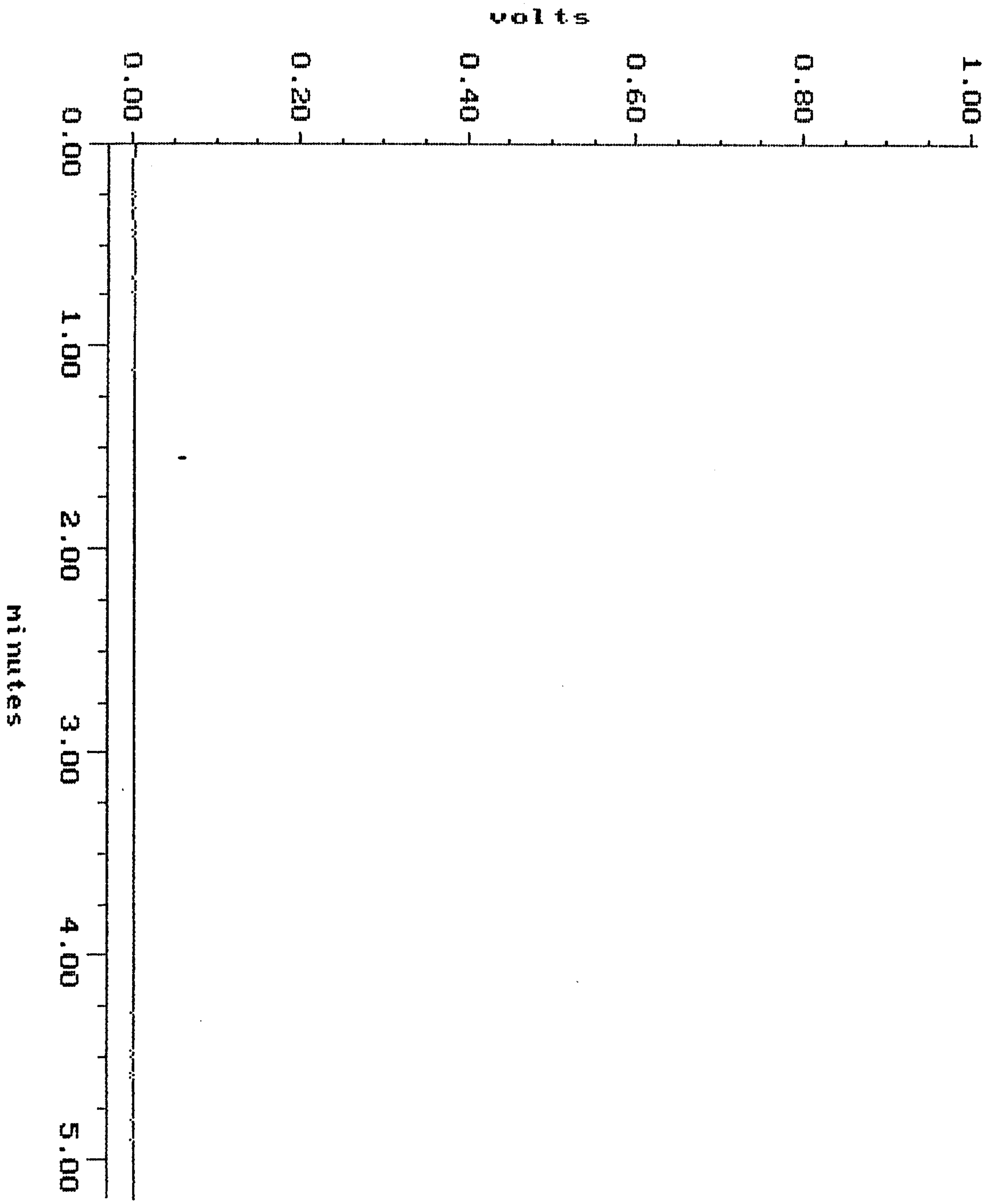
Sample: MB 2.5ml 5/29
Acquired: 29-MAY-92 12:07
Inj Vol: 2500.00

Channel: FID #4
Method: D:\GCFID\A4119\PROP4119

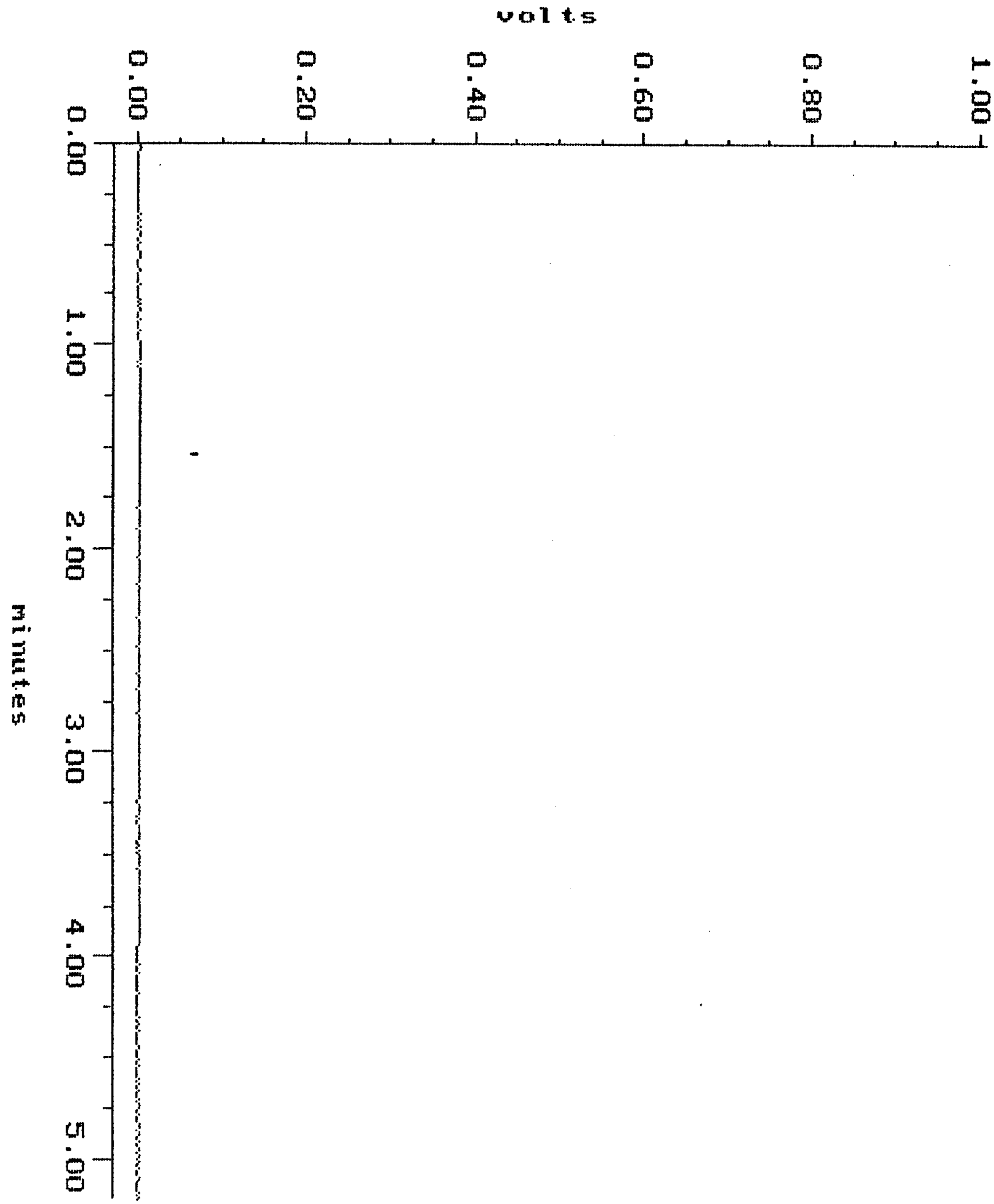
Filename: PP411910
Operator: CJP



Sample: BK9205157 2.5ml	Channel: FID #4	Filename: PP411911
Acquired: 29-MAY-92 12:24	Method: D:\GCFID\A4119\PROP4119	Operator: CJP
Inj Vol: 2500.00		



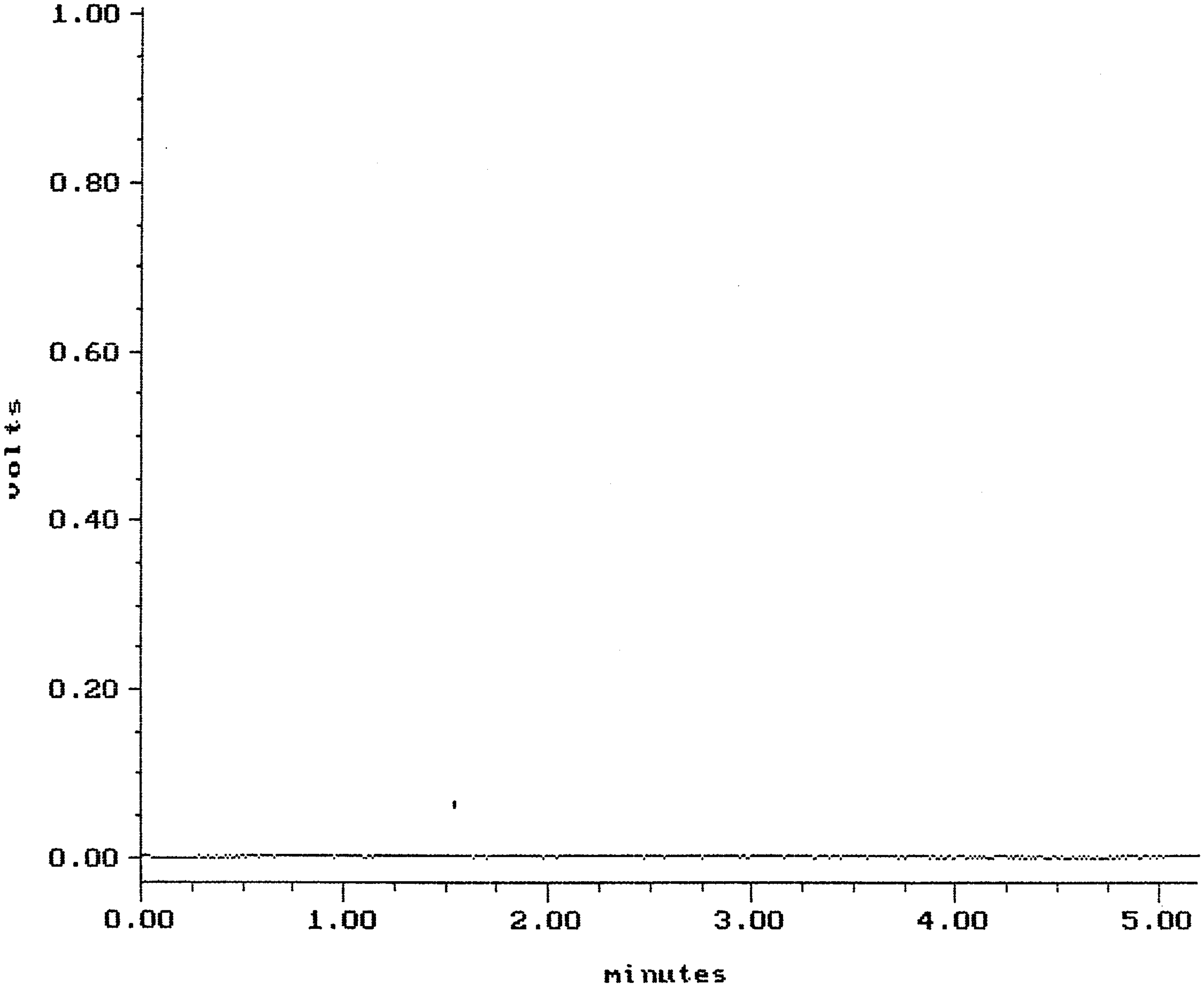
Sample: BK9205158 2.5ml   Channel: FID #4   Filename: PP411912
Acquired: 29-MAY-92 12:32   Method: D:\GCFID\A4119\PROP4119   Operator: CJP
Inj Vol: 2500.00



Sample: BK9205159 2.5ml
Acquired: 29-MAY-92 12:48
Inj Vol: 2500.00

Channel: FID #4
Method: D:\GCFID\A4119\PROP4119

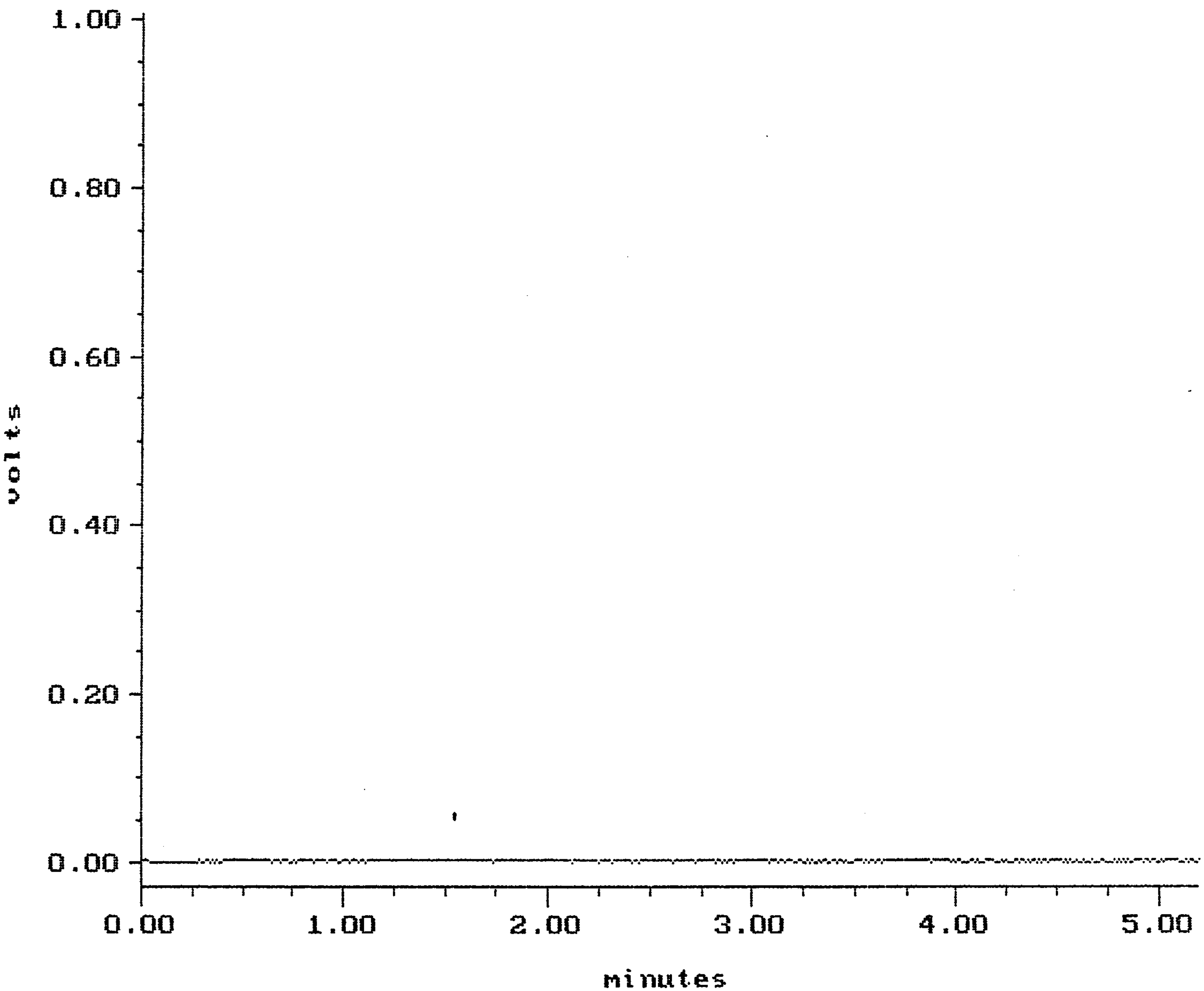
Filename: PP411913
Operator: CJP



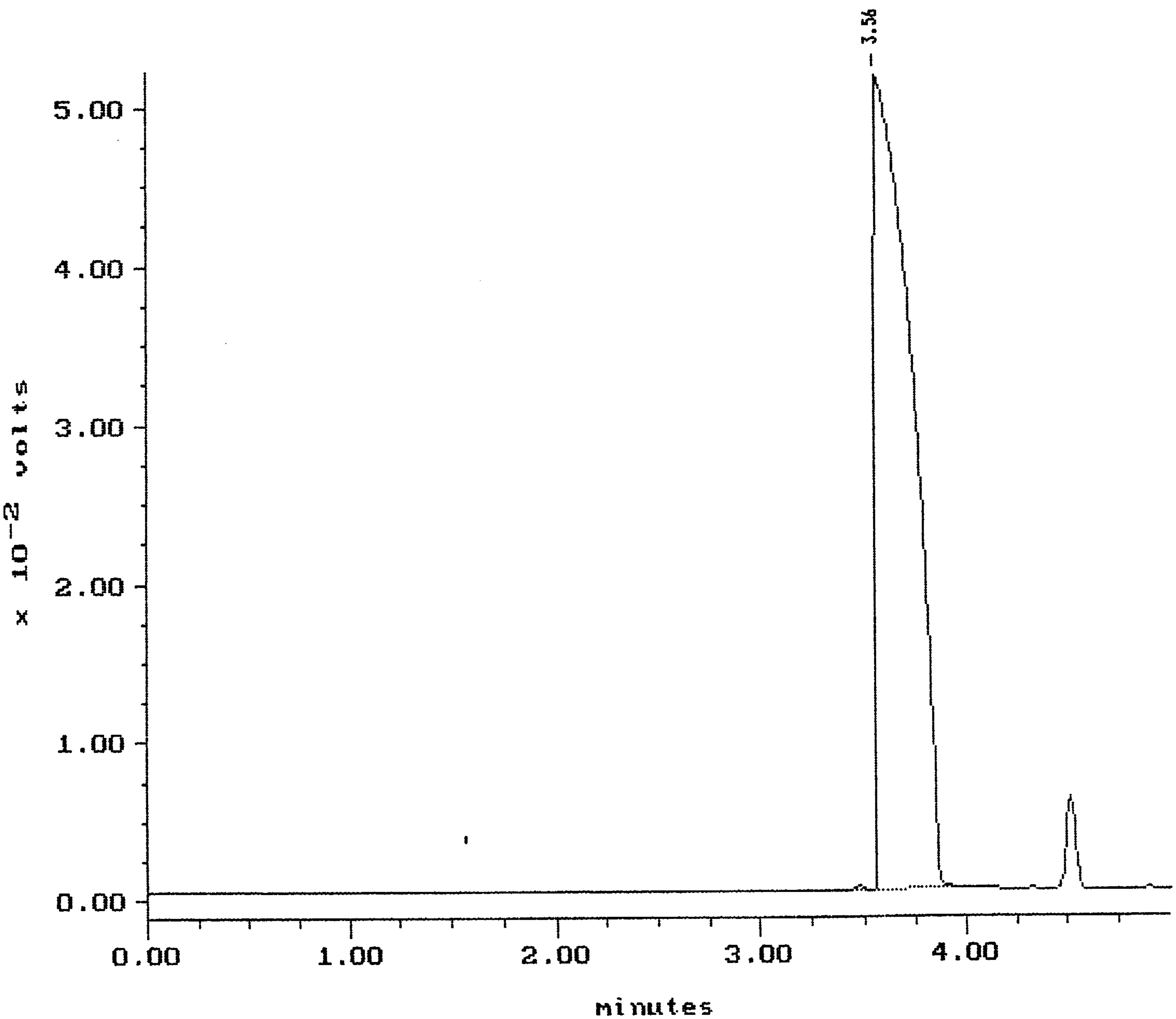
Sample: BK9205159 DUP
Acquired: 29-MAY-92 13:04
Inj Vol: 2500.00

Channel: FID #4
Method: D:\GCFID\A4119\PROP4119

Filename: PP411914
Operator: CJP



Sample: MB 6/01
Acquired: 01-JUN-92 9:18
Channel: FID #4
Method: D:\GCFID\A4201\PPOX4201
Filename: PO420103
Operator: CJP



APPENDIX E

NIOSH METHOD 1612

PROPYLENE OXIDE
EMISSION CALCULATIONS (lb/hr)

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27–May –92

	Sample Weight, (ug)				lb/hr				
Compound	Run 1	Run 2	Run 3	Blank	Run 1	Run 2	Run 3	Average	Blank
Propylene Oxide	<1.00E+00	<1.00E+00	<1.00E+00	<1.00E+00	<3.45E–02	<3.85E–02	<4.96E–02	<4.09E–02	<3.99E–02

" < " indicates a sample with a non–detectable concentration. Laboratory Detection Limit was used for emission calculation.

lb/hr = ug / (1E+06 ug/g) / (453.592 g/lb) x Qs(std) x (60 min/hr) / Vm(std)

	Run 1	Run 2	Run 3	Blank Value (avg)
Vm(std), ft3 =	1.765	1.573	1.204	1.514
Qs(std), ft3/min =	460,156	457,392	451,663	456,404

PROPYLENE OXIDE
EMISSION CALCULATIONS (ug/dscm)

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May -92

	Sample Weight, (ug)				ug/dscm				
Compound	Run 1	Run 2	Run 3	Blank	Run 1	Run 2	Run 3	Average	Blank
Propylene Oxide	<1.00E+00	<1.00E+00	<1.00E+00	<1.00E+00	<2.00E+01	<2.25E+01	<2.93E+01	<2.39E+01	<2.33E+01

" < " indicates a sample with a non-detectable concentration. Laboratory Detection Limit was used for emission calculation.

ug/dscm = ug / [Vm(std) x 0.028317 m3/ft3]

	Run 1	Run 2	Run 3	Blank Value (avg)
Vm(std), ft3 =	1.765	1.573	1.204	1.514

PROPYLENE OXIDE
EMISSION CALCULATIONS (lb/MMBtu)

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May -92

	lb/hr				lb/MMBtu				
Compound	Run 1	Run 2	Run 3	Blank	Run 1	Run 2	Run 3	Average	Blank
Propylene Oxide	<3.45E-02	<3.85E-02	<4.96E-02	<3.99E-02	<3.76E-05	<4.24E-05	<5.56E-05	<4.52E-05	<4.40E-05

" < " indicates a sample with a non-detectable concentration. Laboratory Detection Limit was used for emission calculation.

lb/MMBtu = (lb/hr) / (MMBtu/hr)

	Run 1	Run 2	Run 3	Blank Value (avg)
Heat Input, MMBtu/hr =	916.630	908.036	892.088	905.585

PROPYLENE OXIDE
ANALYTICAL DATA

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27–May –92

Compound	Sample Weight (ug)				Laboratory Detection Limit (ug)			
	Run 1	Run 2	Run 3	Blank	Run 1	Run 2	Run 3	Blank
Propylene Oxide	ND	ND	ND	ND	1	1	1	1

PROPYLENE OXIDE
FIELD DATA SUMMARY

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27-May-92

	Run 1	Run 2	Run 3
Vm, Dry gas volume as measured by dry gas meter (dcf)	1.965	1.771	1.335
y, Dry gas meter calibration factor (dimensionless)	0.983	0.983	0.983
Pb, Barometric Pressure at sampling site (in. Hg)	28.95	28.95	28.95
dH, Average pressure differential across the orifice meter (in. H2O)	0.18	0.15	0.18
Tm, Meter temperature (°R)	550.89	557.11	548.67
Vm(std), Dry gas volume as measured by dry gas meter, corrected to standard conditions (dscf)	1.765	1.573	1.204

PROPYLENE OXIDE
SOURCE TEST CALCULATIONS

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27–May –92
Run No. 1

FIELD DATA					
Standard Temperature, T(std)	60	°F	Standard Pressure, Pstd	29.92	"Hg
Meter Temperature, Tm	90.9	°F	Barometric Pressure, Pb	28.95	"Hg
Meter Orfice, dH	0.18	"H2O	Meter Correction, y	0.983	
Meter Volume, Vm	1.965	ft3			

CALCULATIONS

Vm(std) = [T(std) + 460 / Pstd] x Vm x y x (Pb + (dH / 13.6)) / (Tm + 460) .. $\boxed{1.765}$ dscf

PROPYLENE OXIDE
SOURCE TEST CALCULATIONS

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27–May –92
Run No. 2

FIELD DATA					
Standard Temperature, T(std)	60	°F	Standard Pressure, Pstd	29.92	"Hg
Meter Temperature, Tm	97.1	°F	Barometric Pressure, Pb	28.95	"Hg
Meter Orfice, dH	0.15	"H2O	Meter Correction, y	0.983	
Meter Volume, Vm	1.771	ft3			

CALCULATIONS

Vm(std) = [T(std) + 460 / Pstd] x Vm x y x (Pb + (dH / 13.6)) / (Tm + 460) .. 1.573 dscf

PROPYLENE OXIDE
SOURCE TEST CALCULATIONS

SYCAMORE COGENERATION COMPANY
UNIT 2, HRSG OUTLET STACK

27–May –92
Run No. 3

FIELD DATA

Standard Temperature, T(std)	60	°F	Standard Pressure, Pstd	29.92	"Hg
Meter Temperature, Tm	88.7	°F	Barometric Pressure, Pb	28.95	"Hg
Meter Orfice, dH	0.18	"H2O	Meter Correction, y	0.983	
Meter Volume, Vm	1.335	ft3			

CALCULATIONS

Vm(std) = [T(std) + 460 / Pstd] x Vm x y x (Pb + (dH / 13.6)) / (Tm + 460) .. $\boxed{1.204}$ dscf

FIELD DATA SHEET

ENGINEERING–SCIENCE, INC.

Company: TEXACO Sycamore
Test Location: UNIT B OUTLET STACK
Test Method / Parameter: NIOSH 1612 / Propylene Oxide

Run #: 1
Date: 5-29-92
Operator: JP

Stack Dimensions: 169.38" ID
Barometric Pressure: 28.95 "Hg
Static Pressure: +0.3 "H2O
Pitot Coeff.: 0.84
Filter #: –
Control Box #: S1
Orifice dH@ / y: .983 / —
Probe Type / Length: SS / 4FT
Nozzle # / Size: – / –

~~Impinger~~	Contents	Final	Initial	Net
~~IMPINGER~~ CONTENTS, ml / grams				
1	Charcoal	Tube #1		
2	Charcoal	Tube #2		
3				
4				
5				
	Silica Gel			
			TOTAL :	

GAS COMPOSITION			
Time	O2	CO2	CO

LEAK RATE	cfm / lpm	"Hg Vacuum
Initial	.001	5.0"
Final	0.001	9.0"

Sample Point	Time	Gas Meter (ft3 / liters)	dP "H2O	dH "H2O	Temperature, °F Meter	Stack	Probe	Oven	Impinger	Vacuum "Hg	Rotameter (liters/min)	Comments
A-1	1205	9653.865		.16	90.0					5.0	.5	
	1220	9660.210		.12	90.0					5.0	.5	
	1235	9666.702		.18	90.0					5.5	.5	
	1250	9672.350		.20	91.0					6.0	.45	
	1305	9676.720		.14	91.0					6.0	.45	
	1320	9681.220		.16	91.0					6.5	.45	
	1335	9688.120		.22	91.0					7.5	.5	
	1350	9693.751		.20	92.0					8.0	.5	
	1405	9709.510		.20	92.0					8.5	.5	
	120.0 min	55.650 l		0.18	90.89							
		1.9653 ft3										

FIELD DATA SHEET

ENGINEERING-SCIENCE, INC.

Company: Texaco Sycamore
Test Location: Unit B Outlet Stack
Test Method / Parameter: NIOSH Method 1612, Propylene oxide

Run #: 2
Date: 5-27-92
Operator: JP

Stack Dimensions: 169.38 I.D.
Barometric Pressure: 28.95 "Hg
Static Pressure: 0.30 "H2O
Pitot Coeff.: 0.84
Filter #: —
Control Box #: 51
Orifice dH@ / y: ~~.983~~ / 0.983
Probe Type / Length: SS / 4 ft
Nozzle # / Size: – / –

~~IMPINGER~~ CONTENTS, ml / grams				
Impinger	Contents	Final	Initial	Net
1	Charcoal Tube #1			
2	Charcoal Tube #2			
3				
4				
5				
	Silica Gel			
			TOTAL :	

GAS COMPOSITION			
Time	O2	CO2	CO

LEAK RATE	cfm / lpm	"Hg Vacuum
Initial	.001	15.0"
Final	.010	15.0"

Sample Point	Time	Gas Meter (ft3 / liters)	dP "H2O	dH "H2O	Temperature, °F Meter	Stack	Probe	Oven	Impinger	Vacuum "Hg	Rotameter (liters/min)	Comments
	1435											
A-1	0	9699.510		.20	92					8.5	.5	
	15	9707.205		.14	92					8.5	.5	
	30	9712.350		.14	92					8.5	.5	
	45	9717.741		.16	94					10.0	.5	
	60	9723.340		.14	98					10.0	.5	
	75	9729.510		.16	102					10.0	.5	
	90	9736.810		.16	102					9.5	.5	
	105	9744.110		.12	102					9.5	.5	
	120	9749.670		.14	100					9.5	.5	
	1635											
TOTAL/AVG	120.0 min.	50.16 l 1.771 ft3		0.15	97.11							

FIELD DATA SHEET

ENGINEERING–SCIENCE, INC.

Company: TEXACO Sycamore
Test Location: UNIT B OUTLET STACK
Test Method / Parameter: NIOSH Method 1612, Propylene oxide

Run #: 3
Date: 5-27-92
Operator: JP

Stack Dimensions: 169.38" ID
Barometric Pressure: 28.95 "Hg
Static Pressure: +0.30 "H2O
Pitot Coeff.: 0.84
Filter #: —
Control Box #: 51
Orifice dH@ / y: ~~.985~~ / 0.983
Probe Type / Length: SS / 4FT
Nozzle # / Size: — / —

IMPINGER CONTENTS, ml / grams				
Impinger	Contents	Final	Initial	Net
1	Charcoal Tube #1			
2	Charcoal Tube #2			
3				
4				
5				
	Silica Gel			
			TOTAL :	

GAS COMPOSITION			
Time	O2	CO2	CO

LEAK RATE	cfm (lpm)	"Hg Vacuum
Initial	0.010	15.00
Final	0.005	5

Sample Point	Time	Gas Meter (ft3 (liters))	dP "H2O	dH "H2O	Temperature, °F Meter	Stack	Probe	Oven	Impinger	Vacuum "Hg	Rotameter (liters/min)	Comments
	1900											
A-1	0	9759.352		.16	92					3.5	.5	
	15	9755.651		.16	92					3.5	.5	
	30	9760.380		.14	91					4.0	.5	
	45	9765.310		.14	91					4.0	.5	
	60	9770.212		.22	90					5.0	.5	
	75	9776.860		.20	89					4.0	.5	
	90	9783.510		.20	87					4.0	.5	
	105	9789.120		.20	84					4.0	.5	
	120	9797.142		.20	82					4.0	.5	
	2100											
TOTAL/AVG	120.0	37.790 l		0.18	88.67							
	min.	1.335 ft3										

FUEL BASED CALCULATIONS

SYCAMORE COGENERATION AB258
UNIT 2 (B) – NIOSH 1612 (PROPYLENE OXIDE)

May 27, 1992

FUEL ANALYSIS DATA

Run #	Fuel Value (%), Moisture & Ash Free: Carbon	Hydrogen	Nitrogen	Oxygen	Sulfur	GCV BTU/lb	ft3/lb	lb/gal
1	73.46	23.64	1.77	1.13	0.00	22,953		
2	73.46	23.64	1.77	1.13	0.00	22,953		
3	73.46	23.64	1.77	1.13	0.00	22,953		

CALCULATIONS

Run #	Stack Gas Oxygen %	Fuel Gas Flowrate lb/hr	Fuel Gas Flowrate ft3/hr	Fuel Oil Flowrate lb/hr	Fuel Oil Flowrate gal/hr	Solid Fuel lb/hr	Heat Input MMBTU/hr	F-Factor dscf/MMBTU	Qs(std) dscfm
1	15.00	39,935					916.630	8,502.92	460,156
2	15.02	39,560					908.036	8,502.92	457,392
3	15.05	38,866					892.088	8,502.92	451,663

Heat Input, MMBTU/hr = (lb/hr fuel gas) x BTU/lb x MM/1E+06

= (ft3/hr fuel gas) x BTU/lb / (ft3/lb fuel gas) x MM/1E+06

= (lb/hr fuel oil) x BTU/lb x MM/1E+06

= (gal/hr fuel oil) x lb/gal x BTU/lb x MM/1E+06

= (lb/hr solid fuel) x BTU/lb x MM/1E+06

F-Factor, dscf/MMBTU = 1E+06 [3.64 scf/lb x (% H) + 1.53 scf/lb x (% C) + 0.57 scf/lb x (% S) + 0.14 scf/lb x (% N) – 0.46 scf/lb x (% O2)] / (BTU/lb) x [(Tstd + 460) / 528]

Qs(std), dscfm = MMBTU/hr x [F-Factor x (20.9 / (20.9 – %O2)) x (hr / 60 min)]

GCV = Gross Calorific Value of fuel

Standard Temperature = 60 °F

Performance Analytical Inc.
Environmental Testing and Consulting

LABORATORY REPORT

Client:	ENGINEERING-SCIENCE, INC.	Date of Report:	06/02/92
Address:	2520 Pegasus Drive	Date Received:	05/29/92
	Bakersfield, CA 93308	PAI Project No:	4200,4201
Contact:	Mr. Gary McRae	Purchase Order:	Verbal

Client Project: Sycamore AB2588 #WA005.07

Seven (7) Charcoal Tube Samples labeled: "BK9205150" through "BK9205156"

Three (3) Tedlar Bag Samples labeled: "BK9205157" through "BK9205159"

The samples were received at the laboratory under chain of custody on May 29, 1992. The samples were received intact. All of the charcoal tube samples were received wet, except the sample BK9205156. The dates of analysis are indicated on the attached data sheets.

Propylene Oxide Analysis

The charcoal tube samples were analyzed for Propylene Oxide according to NIOSH Method 1612. The analyses were performed using a gas chromatograph equipped with a flame ionization detector.

Propylene Analysis

The Tedlar bag samples were analyzed for Propylene using a gas chromatograph equipped with a flame ionization detector.

Data Release Authorization:

Ku-Jih Chen
Principal Chemist

Reviewed and Approved:

Christopher Casteel

Christopher Casteel
Laboratory Manager

Performance Analytical Inc.
Environmental Testing and Consulting

PERFORMANCE ANALYTICAL INC.

RESULTS OF PROPYLENE OXIDE ANALYSIS

Client: Engineering Science, Inc.

Client Project ID: WA005.07
PAI Project ID: #4201

Test Code: NIOSH 1612
Instrument ID: HP 5890A/FID #3
Analyst: Ku-Jih Chen
Verified By: Michael Tuday

Matrix: Charcoal Tubes
Date Received: 05/29/92
Date Analyzed: 06/01/92
Volume Analyzed: 1.0 ul

Client Sample ID	PAI Sample ID	PROPYLENE OXIDE Result (ug/Tube)	Detection Limit (ug/Tube)
BK9205150 (05/27/92)	9202187	ND	1.0
BK9205151 (05/27/92)	9202188	ND	1.0
BK9205152 (05/27/92)	9202189	ND	1.0
BK9205153 (05/27/92)	9202190	ND	1.0
BK9205154 (05/27/92)	9202191	ND	1.0
BK9205155 (05/27/92)	9202192	ND	1.0
BK9205155 (05/27/92)	LAB DUPLICATE	ND	1.0
BK9205156 (05/27/92)	9202193	ND	1.0
N/A (06/01/92)	METHOD BLANK	ND	1.0

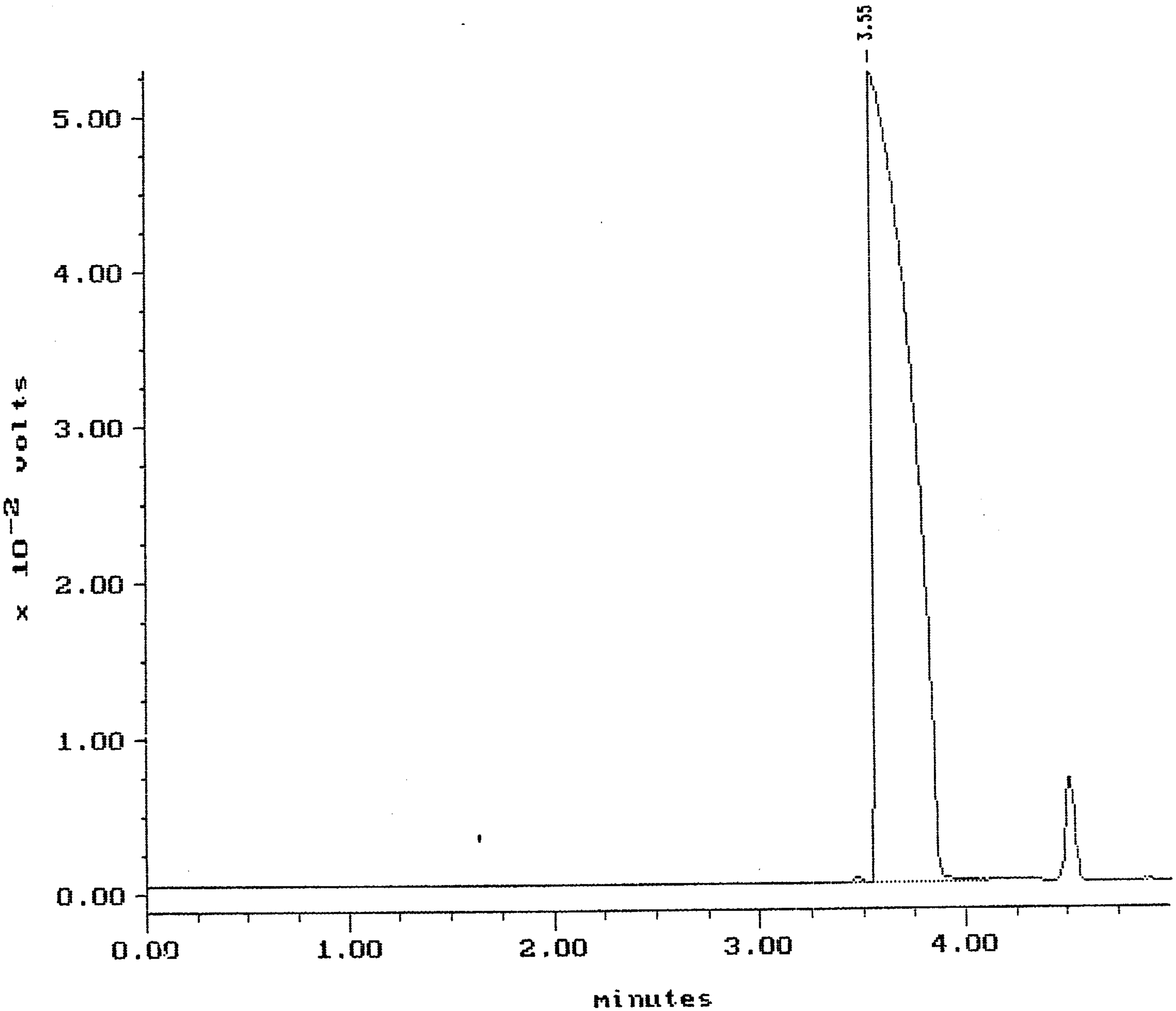
ND = Not Detected - Less Than Indicated Detection Limit

20954 Osborne Street, Canoga Park, CA 91304 • Phone 818 709-1139 • Fax 818 709-2915

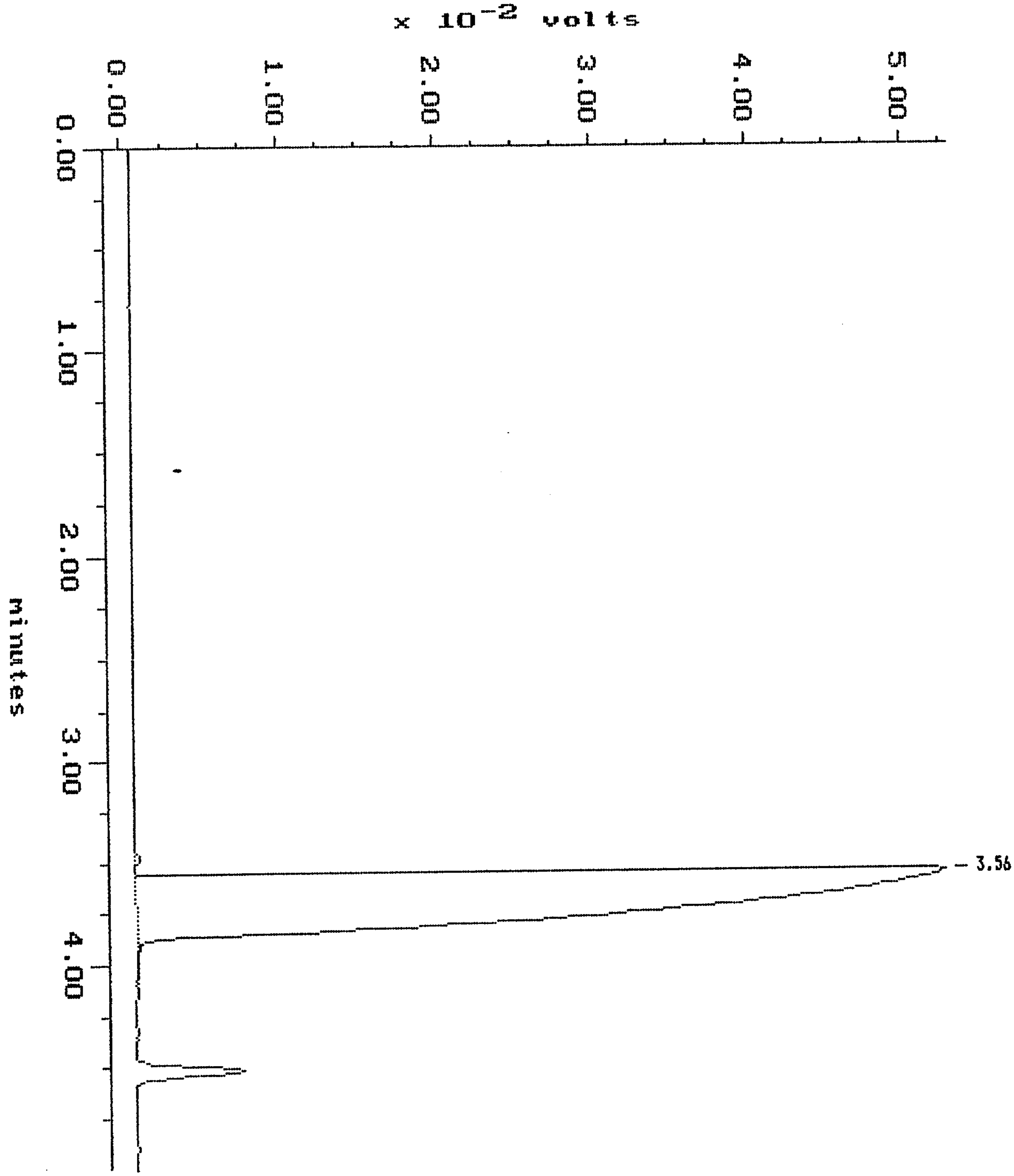
Sample: BK9205150
Acquired: 01-JUN-92 9:46

Channel: FID #4
Method: D:\GCFID\A4201\PPOX4201

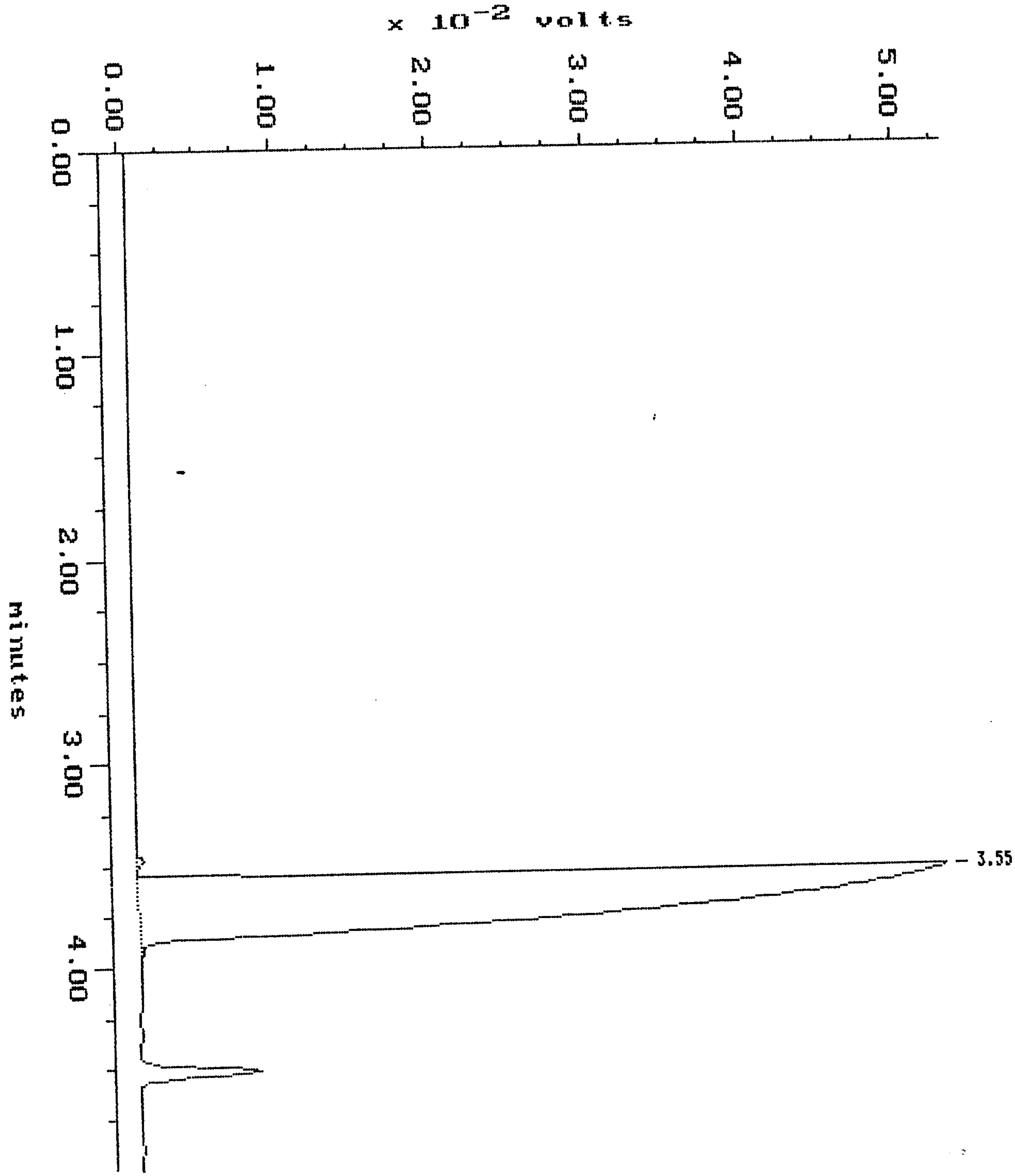
Filename: PO420105
Operator: CJP



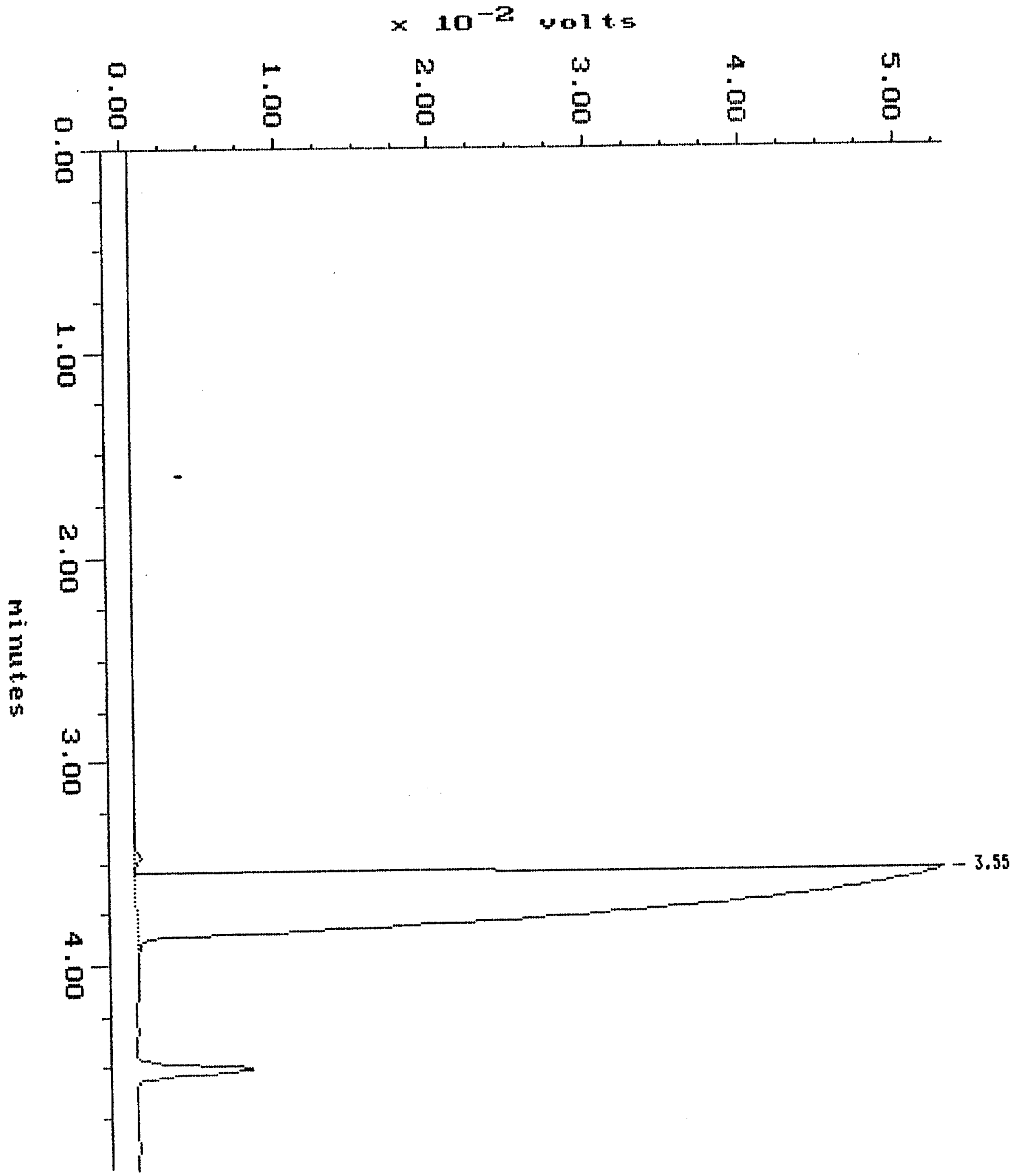
Sample: BK9205151 Channel: FID #4 Filename: P0420106
Acquired: 01-JUN-92 10:01 Method: D:\GCFID\A4201\PPOX4201 Operator: CJP



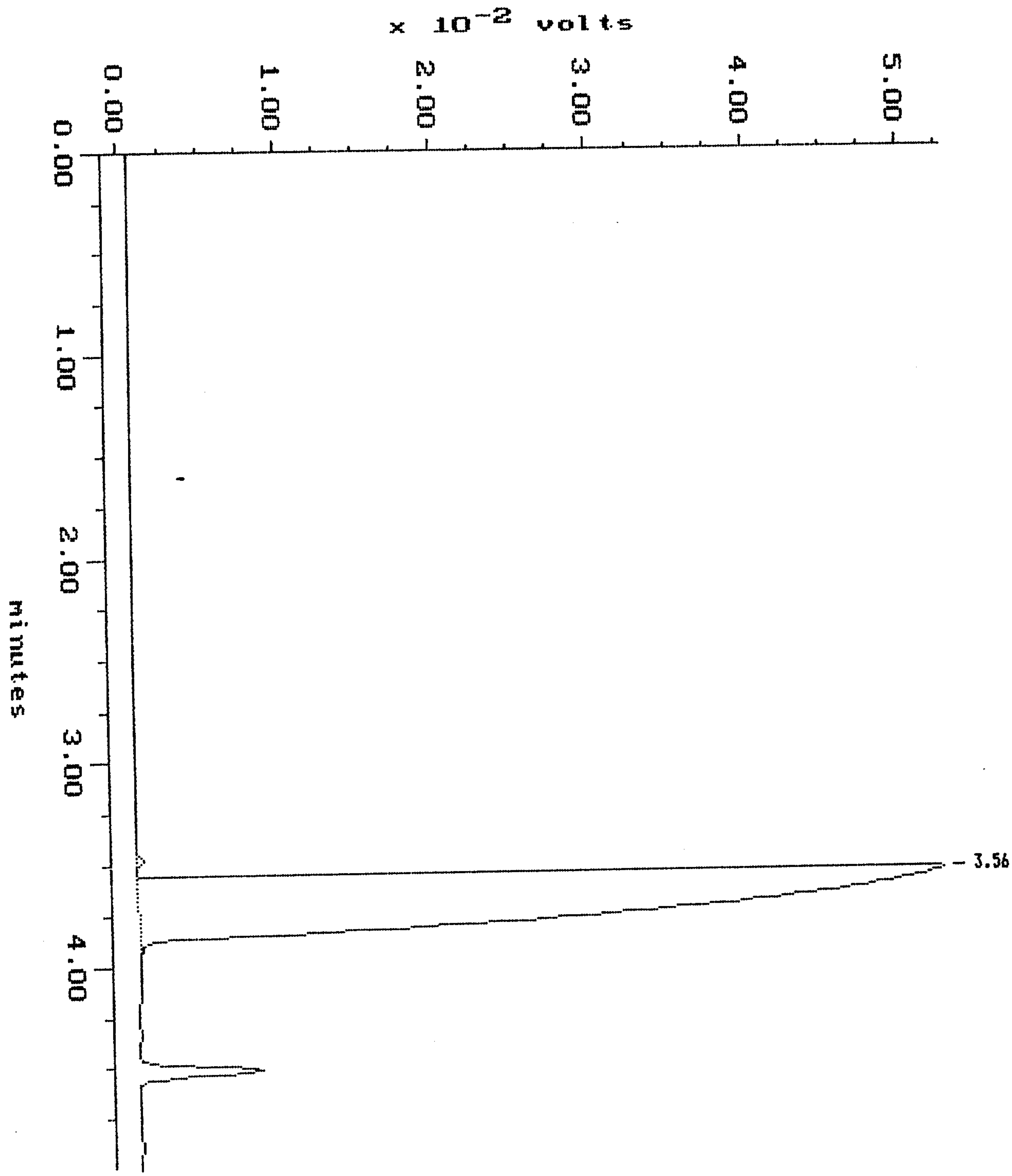
Sample: BK9205152 Channel: FID #4 Filename: P0420107
Acquired: 01-JUN-92 10:16 Method: D:\GCFID\A4201\PPOX4201 Operator: CJP



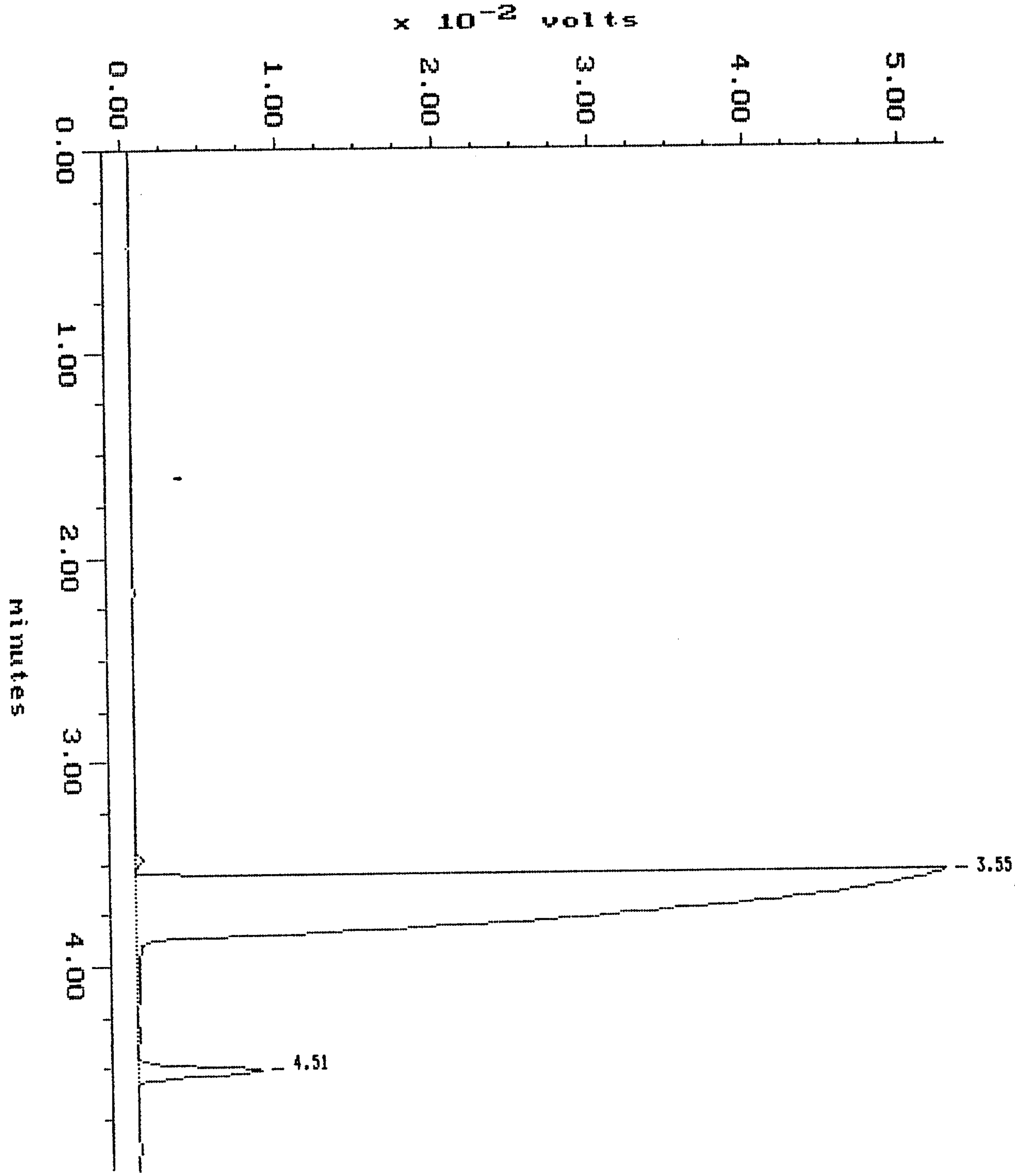
Sample: BK9205153 Channel: FID #4 Filename: PD420108
Acquired: 01-JUN-92 10:31 Method: D:\GCFID\A4201\PPOX4201 Operator: CJP



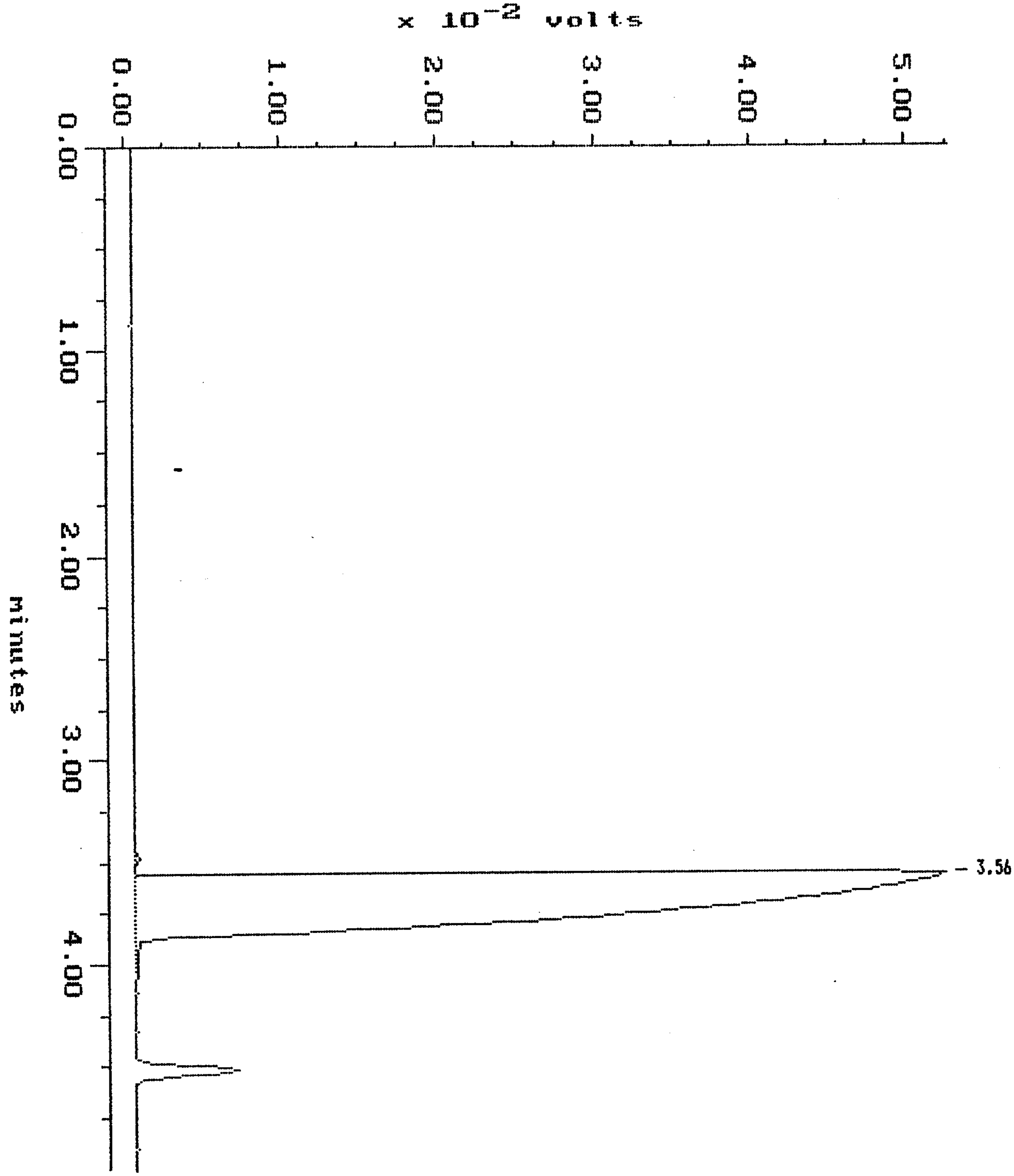
Sample: BK9205154 Channel: FID #4 Filename: PO420109
Acquired: 01-JUN-92 10:46 Method: D:\GCFID\A4201\PPDX4201 Operator: CJP



Sample: BK9205155 Channel: FID #4 Filename: P0420110
Acquired: 01-JUN-92 11:06 Method: D:\GCFID\A4201\PPDX4201 Operator: CJP



Sample: BK9205156 Channel: FID #4 Filename: P0420104
Acquired: 01-JUN-92 9:35 Method: D:\GCFID\A4201\PPOX4201 Operator: CJP



Sample: BK9205155 DUP
Acquired: 01-JUN-92 11:16

Channel: FID #4
Method: D:\GCFID\A4201\PPDX4201

Filename: PO420111
Operator: CJP